Stormwater Report

Stormwater Management Report

Vessel Multi-Family Development

446 Hopmeadow Street Simsbury, CT 06089

December 16, 2022

Prepared for: **Vessel Technologies, Inc.** 46 West 55th Street New York, NY 10019 Prepared by: **H+H Engineering Associates, LLC**232 Greenmanville Avenue
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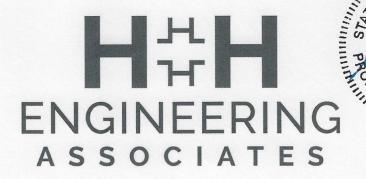


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1. INTRODUCTION

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 Noo3C 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. 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 NRCS soil mapping, the underlying soil consists of Hinckley loamy sand (Hydrologic Group A). The Site is not located within a FEMA Flood Hazard Zone (see Figure 2 – Firmette Map).

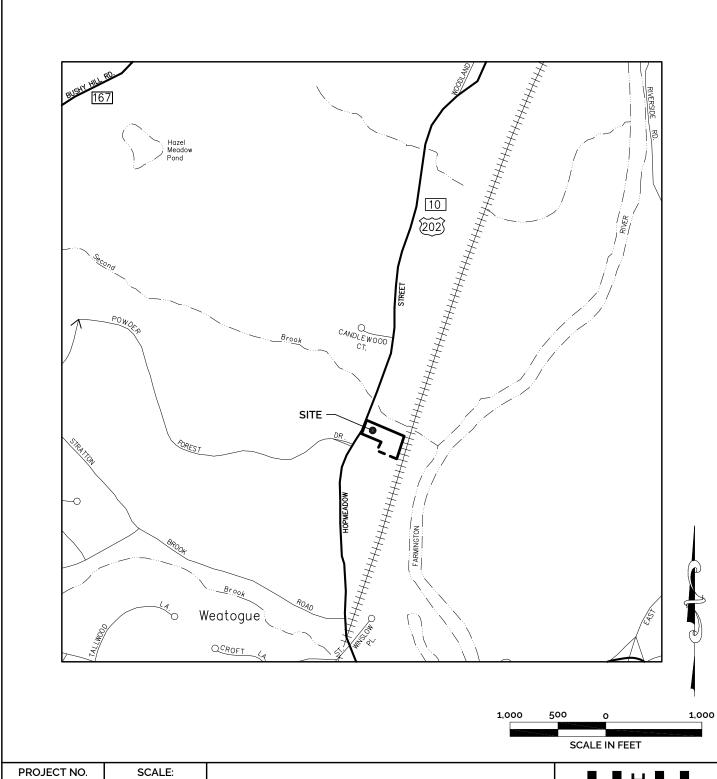
The proposed development consists of the construction of a new four-story 14,063 square-foot multi-family residential building, consisting of 77 one-bedroom units (575 square-feet) and 3 two-bedroom units (1,048 square-feet). Site improvements will include a new two-way access drive from Hopmeadow Street, 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 to the greatest extent practicable.



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

VESSEL MULTI-FAMILY HOUSING
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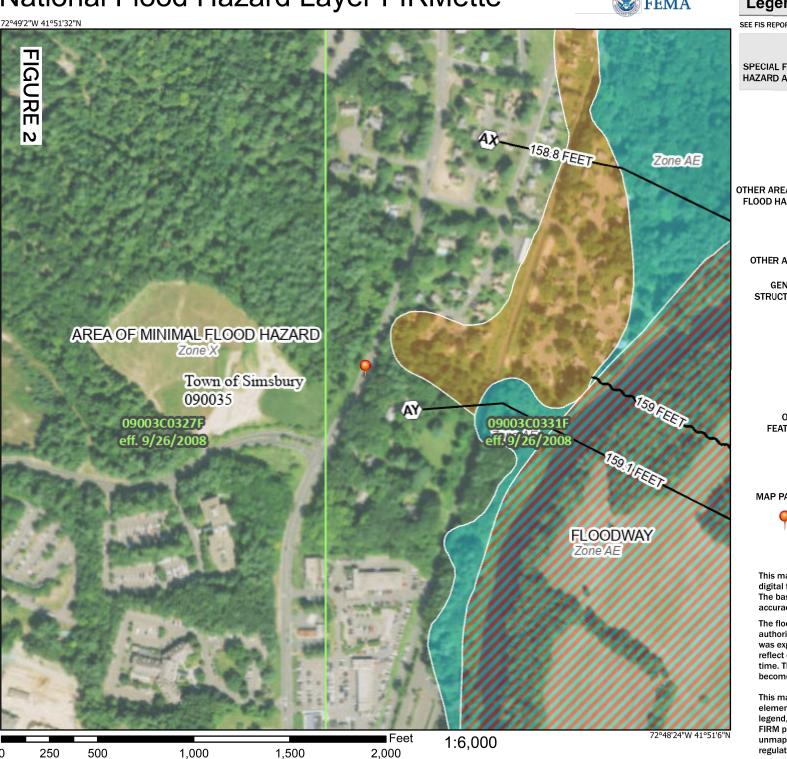
ENGINEERING ASSOCIATES

Z.\SHARED\H+H ENGINEERING ASSOCIATES\PROJECTS\2022\2022\2022-0013 - VESSELL - 446 HOPMEADOW ST, SIMSBURY\DWGS\DRAINAGE\DRAINAGE\DRAINAGE FIGURES.DWG Tab: FIGURE 1 - SITE MAP Saved: 12/14/2022 9:44 PM Plotted: 12/14/2022 9

232 Greenmanville Avenue Suite 201 Mystic, CT 06355 860-980-8008 (O); 413-579-4488 (M) www.hh-engineers.com

National Flood Hazard Layer FIRMette

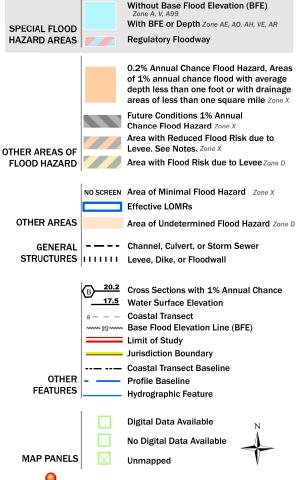




Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

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



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 pin displayed on the map is an approximate

an authoritative property location.

point selected by the user and does not represent

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.

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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 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 two separate drywells/basins 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 4.67 acres of land, currently developed as multiple single-family residences, and includes 2.48 acres of lawn, 1.78 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 southern edge of the off-site wetland to the north of the 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, and described as follows:

- DA1: For analysis purposes, the proposed condition DA1 was subdivided into 2 subareas.
 - DA1A: Approximately 1.37 acres of land, located mostly offsite, consisting of 0.67 acres of lawn, 0.55 acres of woods and 0.15 acres of impervious surfaces that drain to Stormwater Management Area C (drywell and basin).
 - DA1B: Approximately 0.31 acres of land, located mostly offsite, consisting of 0.20 acres of lawn, 0.06 acres of woods and 0.0514 acres of impervious surfaces that is captured on site by a new curtain and directed to Stormwater Management Area C.
- 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 0.29 acres of land, located partially offsite, consisting of 0.25 acres of lawn, and 0.04 of wood that drains to Stormwater Management Area B,



- **DA3**: Approximately 0.32 acres of land, located mostly offsite and along Hopmeadow Street, consisting of 0.16 acres of lawn, 0.13 acres of woods, and 0.03 acres of impervious surfaces that drain to Stormwater Management Area D (drywell and basin).
- **DA4**: Approximately 0.97 acres of land consisting of 0.84 acres of new pavement and walkways, and 0.13 acres of lawn that drain to Stormwater Management Area A (ADS Stormtech SC-3500).
- DA5: Approximately 1.09 acres of land north and east of the proposed improvements consisting of 0.43 acres of lawn, 0.64 acres of woods and 0.02 acres of impervious surfaces that drain to the wetland.

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 and roof (DA4) into the proposed ADS Stormtech MC-3500 infiltration/detention system, which will retain, attenuate and infiltrate stormwater runoff from the impervious areas and treat stormwater runoff through filtration using two isolator rows that are sized to treat in excess of the Water Quality Flow (WQF) and infiltrate through the 2-year storm event. The flow is directed into two separate Isolator Rows, which are a row 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 the off-site runoff (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 25-year storm event. Overflow from the basin is directed to an outlet pipe and riprap apron located to the north. An overflow spillway is proposed to direct runoff toward the

catchment system located in Hopmeadow Street in case of emergency. The bioretention basin plantings are native and have been designed by a Landscape Architect.

- Stormwater Management Area C: Drywell and Collection Basin Off-site stormwater runoff generated from the properties to the south continue onto the Site. A portion of this runoff (DA1A) is collected by a shallow detention basin surrounding a 6'(dia.) x 2'(h) concrete drywell which is designed to infiltrate stormwater runoff. The detention basin also provides stormwater storage capacity for larger storm events. The remaining stormwater runoff entering the Site (DA1B) is collected by a curtain drain with a 6" underdrain prior to reaching the proposed parking lot and is redirected to the concrete drywell. The Drywell and Collection Basin is designed to infiltrate through the 100-year storm event. An overflow spillway is proposed to direct runoff away from the building in case of emergency.
- 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 catchment system located in Hopmeadow Street in case of emergency.

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.

5.4 Storm Drain System Outlet Locations

Stormwater Management Area A – Outflow from the ADS Stormtech MC-3500 system is directed through an outlet control structure and 12" HDPE pipe to a wooded area to the north which then sheetflows to the off-site inland wetland.

Stormwater Management Area B – Overflow from the bioretention pond is directed through an outlet control structure and 12" HDPE pipe to a wooded area to the north which then sheetflows to the off-site inland wetland. Emergency overflow is directed through a riprap spillway located on the eastern slope of the basin and directs flow to the east, away from the proposed building.

Stormwater Management Area C – Emergency overflow from the drywell and collection basin is directed through a riprap spillway located on the northern slope of the basin and directs flow toward 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 western slope of the basin and directs flow toward the catchment system in Hopmeadow Street.

PEAK RATE OF RUNOFF (CFS) SUMMARY			
STORM FREQUENCY	ANALYSIS POINT - EDGE OF WETLAND		
STORM FREQUENCY	EXISTING	PROPOSED	CHANGE
WQV	0.00	0.00	NO CHANGE
2-YEAR	0.01	0.00	-0.01
10-YEAR	0.50	0.47	-0.03
25-YEAR	1.61	1.46	-0.15
100-YEAR	4.45	4.22	-0.23

RUNOFF VOLUME (CF) SUMMARY			
CTORM EDEOLIENCY	ANA	LYSIS POINT - EDGE OF WET	LAND
STORM FREQUENCY	EXISTING	PROPOSED	CHANGE
WQV	0	o	NO CHANGE
2-YEAR	223	0	-223
10-YEAR	6,149	1,999	-4,150
25-YEAR	13,040	4,644	-8,396
100-YEAR	27,291	12,013	-15,278

PROJECT NO.	SCALE:	
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DRAWING: FIGURE 5 STORMWATER REPORT -STORMWATER RUNOFF SUMMARY

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STORMWATER MANAGEMENT AREA 'A' ADS STORMTECH SC-3500 INFILTRATION SYSTEM

STORM FREQUENCY	WATER SURFACE ELEVATION (FT.)	STORAGE VOLUME (CF)
WQV	84.72	14
2 YEAR	85.95	1,258
10 YEAR	87.41	3,298
25 YEAR	88.23	4,298
100 YEAR	89.19	5,196

ADS STORMTECH SC-3500 INFILTRATION SYSTEM ELEVATIONS:

TOP OF STONE ELEV. = 90.20 TOP OF CHAMBER ELEV. = 89.20 BOTTOM OF CHAMBER ELEV. = 85.45 BOTTOM OF STONE ELEV. = 84.70

OUTLET CONTROL STRUCTURE ELEVATIONS:

TOP OF FRAME (MANHOLE COVER) ELEV. = 93.60 RECTANGULAR WEIR INV. ELEV. = 89.00 4"x12" UPPER ORIFICE = 87.80 4" DIA. LOW-FLOW ORIFICE = 86.00 12" INV. OUT ELEV. = 84.70

EXFILTRATION RATE = 20.0 IN/HR

STORMWATER MANAGEMENT AREA 'B' BIORETENTION BASIN

WATER SURFACE ELEVATION (FT.)	STORAGE VOLUME (CF)		
91.24	267		
92.11	1,521		
92.83	2,933		
93.28	4,015		
93.50	4.576		
	91.24 92.11 92.83 93.28		

BIORETENTION BASIN ELEVATIONS:

TOP OF BERM ELEV. = 94.10 TOP OF SPILLWAY ELEV. = 93.60 BOTTOM OF BASIN ELEV. = 91.00

OUTLET CONTROL STRUCTURE ELEVATIONS: TOP OF FRAME (CB GRATE) ELEV. = 93.40

12" INV. OUT ELEV. = 90.00

EXFILTRATION RATE = 2.0 IN/HR

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STORMWATER REPORT -STORMWATER TREATMENT PRACTICES STAGE-STORAGE SUMMARIES

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STORMWATER MANAGEMENT AREA 'C' DRYWELL AND COLLECTION BASIN		
ENCY	WATER SURFACE ELEVATION (FT.)	STORAGE V

STORM FREQUENCY	WATER SURFACE ELEVATION (FT.)	STORAGE VOLUME (CF)
WQV	89.10	0
2 YEAR	89.12	1
10 YEAR	93.41	253
25 YEAR	93.76	548
100 YEAR	94.29	1,656

DRYWELL ELEVATIONS:

TOP OF FRAME (CB GRATE) ELEV. = 93.00 6" INV. IN (FROM CURTAIN DRAIN) = 91.70 BOTTOM OF DRYWELL ELEV. = 90.10 BOTTOM OF STONE ELEV. = 89.10

COLLECTION BASIN ELEVATIONS:

TOP OF BERM ELEV. = 94.80 TOP OF SPILLWAY ELEV. = 94.30 BOTTOM OF BASIN ELEV. = 93.00

EXFILTRATION RATE = 20.0 IN/HR

STORMWATER MANAGEMENT AREA 'D' DRYWELL AND COLLECTION BASIN

STORM FREQUENCY	WATER SURFACE ELEVATION (FT.)	STORAGE VOLUME (CF)	
WQV	91.50	o	
2 YEAR	91.50	o	
10 YEAR	92.40	33	
25 YEAR	97.83	251	
100 YEAR	98.51	393	

DRYWELL ELEVATIONS:

TOP OF FRAME (CB GRATE) ELEV. = 97.40 BOTTOM OF DRYWELL ELEV. = 92.50 BOTTOM OF STONE ELEV. = 91.50

COLLECTION BASIN ELEVATIONS:

TOP OF BERM ELEV. = 100.10 TOP OF SPILLWAY ELEV. = 99.60 BOTTOM OF BASIN ELEV. = 97.40

EXFILTRATION RATE = 20.0 IN/HR

PROJECT NO.	SCALE:	
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STORMWATER REPORT -STORMWATER TREATMENT PRACTICES STAGE-STORAGE SUMMARIES

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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.

Technical Appendices for Stormwater Management Report

Vessel Multi-Family Development

446 Hopmeadow Street Simsbury, CT 06089

December 16, 2022

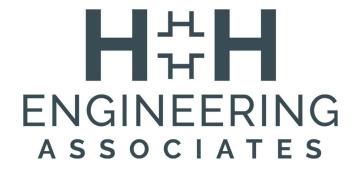
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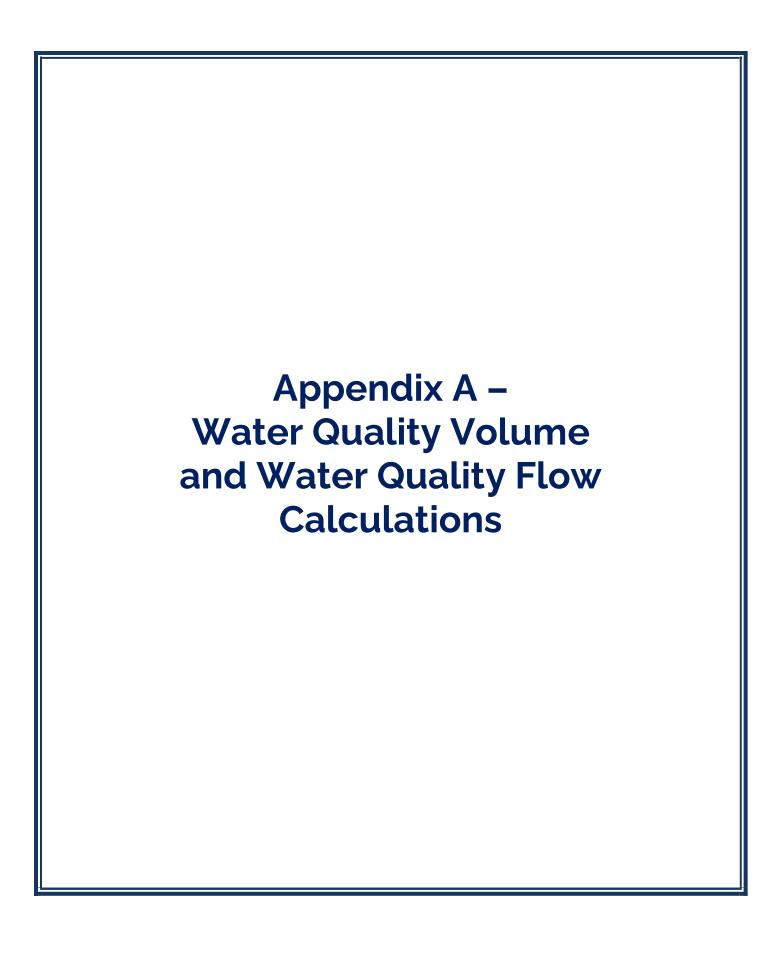
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Mystic, CT 06355





WQV & WQF CALCULATIONS - STORMWATER MANAGEMENT AREA 'A'

Project: 446 Hopmeadow Street, Simsbury

Calculated By

Date

Client: Vessel Technologies, Inc. SMM 12/14/2022

Water Quality Volume (WQV)

0.97 ac A = Area draining to the practice

 A_{l} = Impervious area draining to the practice

0.87 decimal I = Percent impervious area draining to the practice, in decimal form

0.83 unitless $R_V = \text{Runoff coefficient} = 0.05 + (0.9 \times I)$

0.81 ac-in $WQV = 1" \times R_V \times A$

2,934 cf WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")

Water Quality Flow (WQF)

1.00 inches P = amount of rainfall.

0.83 inches Q = Water Quality Depth. Q=WQV/A

98 unitless CN = unit peak discharge curve number. CN=1000/(10+5P+10Q-10*[Q²+1.25*Q*P]^{0.5})

0.2 inches S = potential maximum retention. S = (1000/CN) - 10

0.032 inches la = initial abstraction. la=0.2S

10.0 minutes T_c = Time of Concentration

 $590.0\,$ cfs/mi²/in $\,$ qu is the unit peak discharge. Obtain this value from TR- $55\,$ exhibits 4-II and 4-III

0.745 cfs WQF = qu x WQV. Conversion: to convert "cfs/mi²/in * ac-in" to "cfs" multiply by 1mi²/640ac

Designer | Stormwater Management Area 'A'

Notes:

ADS Stormtech SC-3500 Infiltration System

ADS Stormtech SC-740 Isolator Row Sizing:

Two isolator rows are provided (total units = 21).

Treated flow rate = 0.40 CFS / unit X 21 units = 8.40 CFS

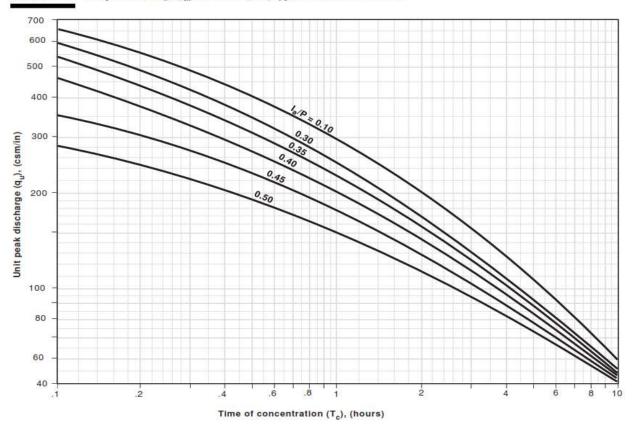
Treated flow rate > WQF

(Inflow rate from 100-year storm event = 6.83 CFS)

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



 $\textbf{Exhibit 4-III} \ \ Unit peal \ discharge \ (q_u) \ for \ NRCS \ (SCS) \ type \ III \ rainfall \ distribution$



WQV & WQF CALCULATIONS - STORMWATER MANAGEMENT AREA 'B'

Project:446 Hopmeadow Street, SimsburyCalculated ByDate

Client: Vessel Technologies, Inc. SMM 12/14/2022

Water Quality Volume (WQV)

0.62 ac A = Area draining to the practice

0.32 ac A_1 = Impervious area draining to the practice

0.52 decimal I = Percent impervious area draining to the practice, in decimal form

0.52 unitless R_V = Runoff coefficient = 0.05 + (0.9 x I)

0.32 ac-in $WQV = 1" \times R_V \times A$

1,167 cf WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")

Water Quality Flow (WQF)

1.00 inches P = amount of rainfall.

0.52 inches Q = Water Quality Depth. Q=WQV/A

94 unitless CN = unit peak discharge curve number. CN=1000/(10+5P+10Q-10*[Q²+1.25*Q*P]^{0.5})

0.6 inches S = potential maximum retention. S = (1000/CN) - 10

0.121 inches la = initial abstraction. la=0.2S

minutes T_c = Time of Concentration

cfs/mi²/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/mi²/in * ac-in" to "cfs" multiply by 1mi²/640ac

Designer Stormwater Management Area 'B'

Notes:

Bioretention Basin

Treated volume (volume stored prior to discharging) = 4,315 CF

Contributing WQV = 1,157 CF

Treated volume = 373% of Water Quality Volume



WQV & WQF CALCULATIONS - STORMWATER MANAGEMENT AREA 'C'

Project:446 Hopmeadow Street, SimsburyCalculated ByDate

Client: Vessel Technologies, Inc. SMM 12/14/2022

Water Quality Volume (WQV)

1.68 ac A = Area draining to the practice

0.20 ac A_1 = Impervious area draining to the practice

0.12 decimal I = Percent impervious area draining to the practice, in decimal form

0.16 unitless R_V = Runoff coefficient = 0.05 + (0.9 x I)

0.26 ac-in $WQV = 1" \times R_V \times A$

958 cf WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")

Water Quality Flow (WQF)

1.00 inches P = amount of rainfall.

0.16 inches Q = Water Quality Depth. Q=WQV/A

84 unitless CN = unit peak discharge curve number. CN=1000/(10+5P+10Q-10*[Q^2 +1.25* Q^* P]^{0.5})

1.9 inches S = potential maximum retention. S = (1000/CN) - 10

0.374 inches la = initial abstraction. la=0.2S

minutes T_c = Time of Concentration

cfs/mi²/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/mi²/in * ac-in" to "cfs" multiply by 1mi²/640ac

Designer Stormwater Management Area 'C'

Notes:

Drywell and Collection Basin

Treated volume (volume stored through 100-yr event) = 1,656 CF Contributing WQV = 958 CF

Treated volume = 173% of Water Quality Volume



WQV & WQF CALCULATIONS - STORMWATER MANAGEMENT AREA 'D'

Project:446 Hopmeadow Street, SimsburyCalculated ByDate

Client: Vessel Technologies, Inc. SMM 12/14/2022

Water Quality Volume (WQV)

0.32 ac A = Area draining to the practice

0.03 ac A_1 = Impervious area draining to the practice

0.09 decimal I = Percent impervious area draining to the practice, in decimal form

0.13 unitless R_V = Runoff coefficient = 0.05 + (0.9 x I)

0.04 ac-in $WQV = 1" \times R_V \times A$

156 cf WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")

Water Quality Flow (WQF)

1.00 inches P = amount of rainfall.

0.13 inches Q = Water Quality Depth. Q=WQV/A

83 unitless CN = unit peak discharge curve number. CN=1000/(10+5P+10Q-10*[Q^2 +1.25* Q^2 P)^{0.5})

2.0 inches S = potential maximum retention. S = (1000/CN) - 10

0.407 inches la = initial abstraction. la=0.2S

minutes T_c = Time of Concentration

cfs/mi²/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/mi²/in * ac-in" to "cfs" multiply by 1mi²/640ac

Designer Stormwater Management Area 'C'

Notes:

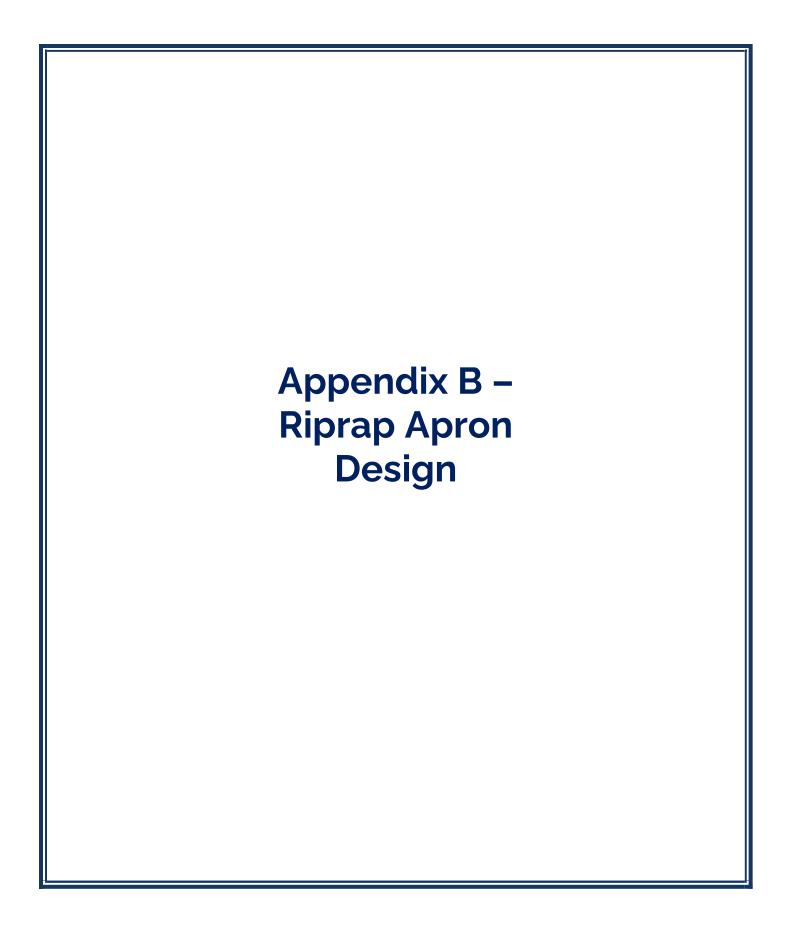
Drywell and Collection Basin

Treated volume (volume stored through 100-yr event) = 393 CF

Contributing WQV = 156 CF

Treated volume = 252% of Water Quality Volume





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) = $\frac{1.8 \text{ (Q-5)}}{(\text{Sp})^{3/2}}$ + 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

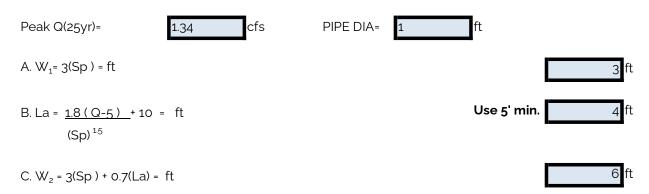


Table 11.11 Allowable Outlet Velocities for Type A and B Riprap Aprons

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)=

4.6 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) = $\frac{1.8 \text{ (Q-5)}}{(\text{Sp})^{3/2}}$ + 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

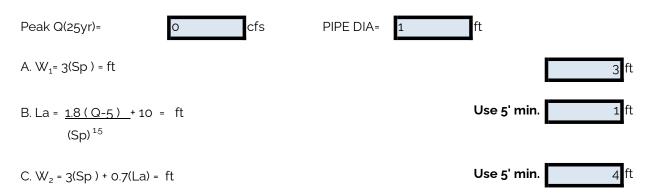


Table 11.11 Allowable Outlet Velocities for Type A and B Riprap Aprons

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)= 0 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) = $\frac{1.8 \text{ (Q-5)}}{(\text{Sp})^{3/2}}$ + 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

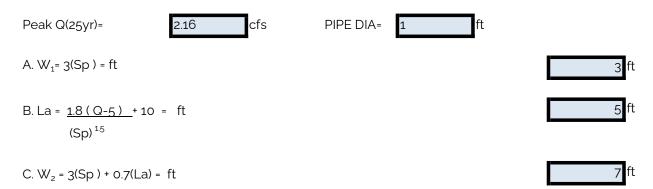


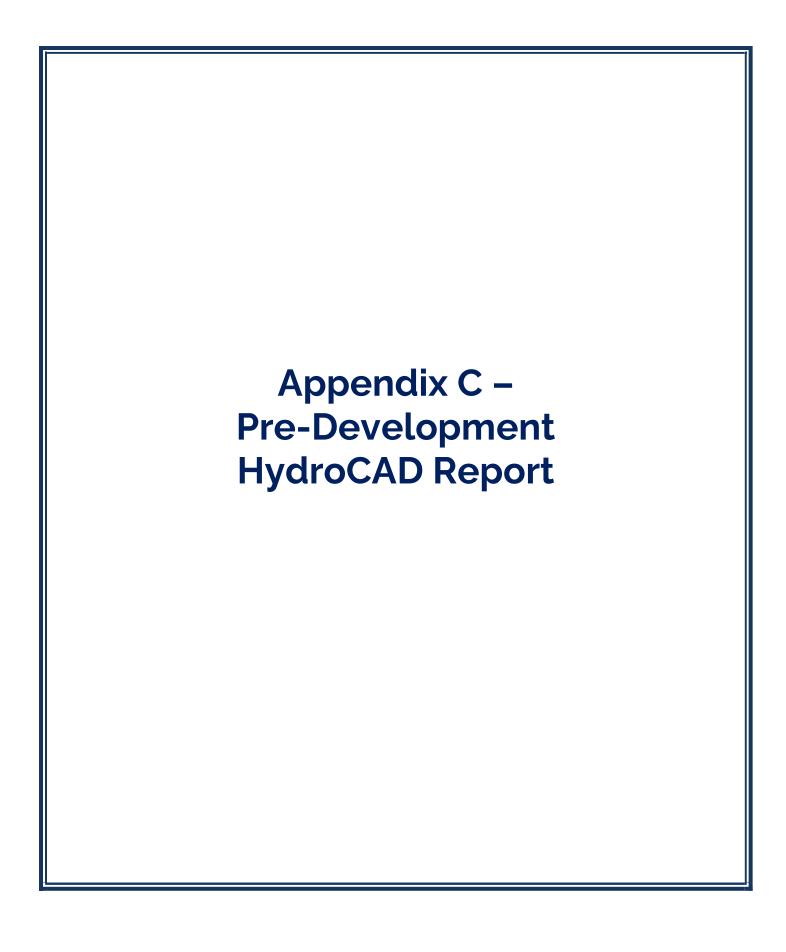
Table 11.11 Allowable Outlet Velocities for Type A and B Riprap Aprons

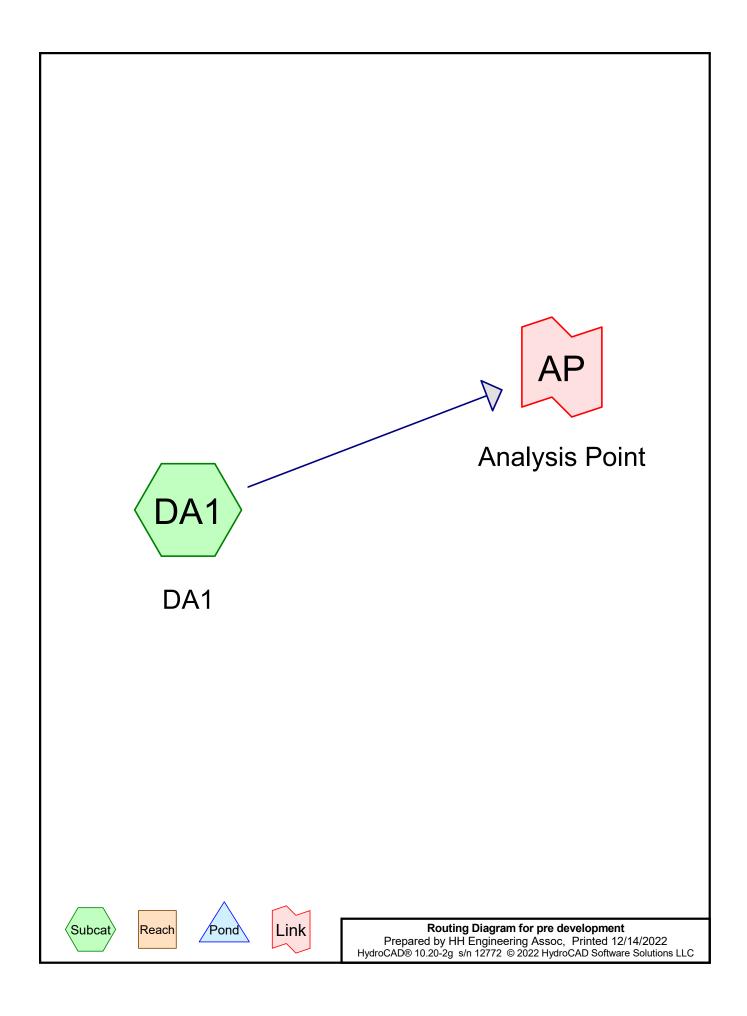
Outlet Velocity - mps (fps)	Riprap Specification
0-2.44 (0-8)	Modified
2.44-3.05 (8-10)	Intermediate
3.05-4.27 (10-14)	Standard

V(25yr)=

5.05 fps

Therfore; Use Modified Riprap





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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

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Area Listing (all nodes)

Area	CN	Description
(sq-ft)		(subcatchment-numbers)
684	76	Gravel roads, HSG A (DA1)
108,124	39	Pasture/grassland/range, Good, HSG A (DA1)
11,948	98	Paved parking, HSG A (DA1)
4,938	98	Roofs, HSG A (DA1)
77,918	30	Woods, Good, HSG A (DA1)
203,612	41	TOTAL AREA

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Soil Listing (all nodes)

Area	Soil	Subcatchment
(sq-ft)	Group	Numbers
203,612	HSG A	DA1
0	HSG B	
0	HSG C	
0	HSG D	
0	Other	
203,612		TOTAL AREA

pre development
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Ground Covers (all nodes)

HSG-A	HSG-B	HSG-C	HSG-D	Other	Total	Ground
(sq-ft)	(sq-ft)	(sq-ft)	(sq-ft)	(sq-ft)	(sq-ft)	Cover
684	0	0	0	0	684	Gravel roads
108,124	0	0	0	0	108,124	Pasture/grasslan
						d/range, Good
11,948	0	0	0	0	11,948	Paved parking
4,938	0	0	0	0	4,938	Roofs
77,918	0	0	0	0	77,918	Woods, Good
203,612	0	0	0	0	203,612	TOTAL AREA

pre development

Type III 24-hr WQV Rainfall=1.00"

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Time span=0.00-72.00 hrs, dt=0.02 hrs, 3601 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=203,612 sf 8.29% Impervious Runoff Depth=0.00"

Flow Length=764' Tc=22.5 min CN=41 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 = 203,612 sf Runoff Volume = 0 cf Average Runoff Depth = 0.00" 91.71% Pervious = 186,726 sf 8.29% Impervious = 16,886 sf

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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= 0.02 hrs Type III 24-hr WQV Rainfall=1.00"

A	rea (sf)	CN D	escription			
1	08,124	39 Pasture/grassland/range, Good, HSG A				
	11,948	98 P				
	77,918	30 V	Voods, Go	od, HSG A		
	4,938	98 R	oofs, HSG	βA		
	684	76 G	ravel road	ls, HSG A		
2	203,612	41 V	Veighted A	verage		
1	86,726	9	1.71% Per	vious Area		
	16,886	8	.29% Impe	ervious Area	a	
Tc	Length	Slope	Velocity	Capacity	Description	
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)		
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	
0.4		0.0045	٥		Woodland Kv= 5.0 fps	
0.1	22	0.0345	3.77		Shallow Concentrated Flow, shallow	
4 -	0.4	0.0400	0.70		Paved Kv= 20.3 fps	
1.5	61	0.0100	0.70		Shallow Concentrated Flow, shallow	
2.0	407	0.0450	4.00		Short Grass Pasture Kv= 7.0 fps	
2.0	127	0.0450	1.06		Shallow Concentrated Flow, shallow	
1.5	136	0.0441	1.47		Woodland Kv= 5.0 fps Shallow Concentrated Flow, shallow	
1.5	130	0.0441	1.47		Short Grass Pasture Kv= 7.0 fps	
3.4	283	0.0750	1.37		Shallow Concentrated Flow, shallow	
5.4	200	0.07.00	1.07		Woodland Kv= 5.0 fps	
22.5	764	Total			Troodiana Itt- 0.0 ipo	
22.5	704	ı Ulai				

Type III 24-hr WQV Rainfall=1.00"

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Summary for Link AP: Analysis Point

Inflow Area = 203,612 sf, 8.29% 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= 0.02 hrs

Type III 24-hr 2-Year Rainfall=3.32"

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Time span=0.00-72.00 hrs, dt=0.02 hrs, 3601 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=203,612 sf 8.29% Impervious Runoff Depth=0.01"

Flow Length=764' Tc=22.5 min CN=41 Runoff=0.01 cfs 223 cf

Link AP: Analysis Point Inflow=0.01 cfs 223 cf
Primary=0.01 cfs 223 cf

Total Runoff Area = 203,612 sf Runoff Volume = 223 cf Average Runoff Depth = 0.01" 91.71% Pervious = 186,726 sf 8.29% Impervious = 16,886 sf HydroCAD® 10.20-2g s/n 12772 © 2022 HydroCAD Software Solutions LLC

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Summary for Subcatchment DA1: DA1

Runoff = 0.01 cfs @ 21.88 hrs, Volume= 223 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= 0.02 hrs Type III 24-hr 2-Year Rainfall=3.32"

A	rea (sf)	CN D	escription							
1	08,124	39 P	39 Pasture/grassland/range, Good, HSG A							
	11,948	98 P	Paved parking, HSG A							
	77,918	30 V	loods, Go	od, HSG A						
	4,938	98 R	oofs, HSG	βA						
	684	76 G	ravel road	ls, HSG A						
2	203,612	41 W	/eighted A	verage						
1	86,726	9	1.71% Per	vious Area						
	16,886	8	.29% Impe	ervious Area	a					
Tc	Length	Slope	Velocity	Capacity	Description					
<u>(min)</u>	(feet)	(ft/ft)	(ft/sec)	(cfs)						
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					
0.0	407	0.0450	4.00		Short Grass Pasture Kv= 7.0 fps					
2.0	127	0.0450	1.06		Shallow Concentrated Flow, shallow					
4 -	400	0.0444	4 47		Woodland Kv= 5.0 fps					
1.5	136	0.0441	1.47		Shallow Concentrated Flow, shallow					
2.4	202	0.0750	1 27		Short Grass Pasture Kv= 7.0 fps					
3.4	283	0.0750	1.37		Shallow Concentrated Flow, shallow					
	704	Takal			Woodland Kv= 5.0 fps					
22.5	764	Total								

Type III 24-hr 2-Year Rainfall=3.32"

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Summary for Link AP: Analysis Point

Inflow Area = 203,612 sf, 8.29% Impervious, Inflow Depth = 0.01" for 2-Year event

Inflow = 0.01 cfs @ 21.88 hrs, Volume= 223 cf

Primary = 0.01 cfs @ 21.88 hrs, Volume= 223 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Type III 24-hr 10-Year Rainfall=5.35"

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Time span=0.00-72.00 hrs, dt=0.02 hrs, 3601 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=203,612 sf 8.29% Impervious Runoff Depth=0.36"

Flow Length=764' Tc=22.5 min CN=41 Runoff=0.50 cfs 6,149 cf

Link AP: Analysis Point Inflow=0.50 cfs 6,149 cf Primary=0.50 cfs 6,149 cf

> Total Runoff Area = 203,612 sf Runoff Volume = 6,149 cf Average Runoff Depth = 0.36" 91.71% Pervious = 186,726 sf 8.29% Impervious = 16,886 sf

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Summary for Subcatchment DA1: DA1

Runoff = 0.50 cfs @ 12.61 hrs, Volume= 6,149 cf, Depth= 0.36"

Routed to Link AP : Analysis Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Type III 24-hr 10-Year Rainfall=5.35"

A	rea (sf)	CN D	escription						
1	08,124	39 P	39 Pasture/grassland/range, Good, HSG A						
	11,948	98 P	aved park	ing, HSG A					
	77,918	30 V	Voods, Go	od, HSG A					
	4,938	98 R	oofs, HSG	βA					
	684	76 G	Fravel road	ls, HSG A					
2	203,612	41 V	Veighted A	verage					
1	86,726	9	1.71% Per	vious Area					
	16,886	8	.29% Impe	ervious Area	a				
Tc	Length	Slope	Velocity	Capacity	Description				
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)					
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				
0.4		0.0045	٥		Woodland Kv= 5.0 fps				
0.1	22	0.0345	3.77		Shallow Concentrated Flow, shallow				
4 -	0.4	0.0400	0.70		Paved Kv= 20.3 fps				
1.5	61	0.0100	0.70		Shallow Concentrated Flow, shallow				
2.0	407	0.0450	4.00		Short Grass Pasture Kv= 7.0 fps				
2.0	127	0.0450	1.06		Shallow Concentrated Flow, shallow				
1.5	136	0.0441	1.47		Woodland Kv= 5.0 fps Shallow Concentrated Flow, shallow				
1.5	130	0.0441	1.47		Short Grass Pasture Kv= 7.0 fps				
3.4	283	0.0750	1.37		Shallow Concentrated Flow, shallow				
5.4	200	0.07.00	1.07		Woodland Kv= 5.0 fps				
22.5	764	Total			Troodiana Itt- 0.0 ipo				
22.5	704	ı Ulai							

Type III 24-hr 10-Year Rainfall=5.35"

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Summary for Link AP: Analysis Point

Inflow Area = 203,612 sf, 8.29% Impervious, Inflow Depth = 0.36" for 10-Year event

Inflow = 0.50 cfs @ 12.61 hrs, Volume= 6,149 cf

Primary = 0.50 cfs @ 12.61 hrs, Volume= 6,149 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Type III 24-hr 25-Year Rainfall=6.61"

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Time span=0.00-72.00 hrs, dt=0.02 hrs, 3601 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=203,612 sf 8.29% Impervious Runoff Depth=0.77"

Flow Length=764' Tc=22.5 min CN=41 Runoff=1.61 cfs 13,040 cf

Link AP: Analysis Point Inflow=1.61 cfs 13,040 cf

Primary=1.61 cfs 13,040 cf

Total Runoff Area = 203,612 sf Runoff Volume = 13,040 cf Average Runoff Depth = 0.77" 91.71% Pervious = 186,726 sf 8.29% Impervious = 16,886 sf HydroCAD® 10.20-2g s/n 12772 © 2022 HydroCAD Software Solutions LLC

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Summary for Subcatchment DA1: DA1

Runoff = 1.61 cfs @ 12.49 hrs, Volume= 13,040 cf, Depth= 0.77"

Routed to Link AP : Analysis Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Type III 24-hr 25-Year Rainfall=6.61"

A	rea (sf)	CN D	escription						
1	08,124	39 P	39 Pasture/grassland/range, Good, HSG A						
	11,948	98 P	aved park	ing, HSG A					
	77,918	30 V	Voods, Go	od, HSG A					
	4,938	98 R	oofs, HSG	βA					
	684	76 G	Fravel road	ls, HSG A					
2	203,612	41 V	Veighted A	verage					
1	86,726	9	1.71% Per	vious Area					
	16,886	8	.29% Impe	ervious Area	a				
Tc	Length	Slope	Velocity	Capacity	Description				
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)					
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				
0.4		0.0045	٥		Woodland Kv= 5.0 fps				
0.1	22	0.0345	3.77		Shallow Concentrated Flow, shallow				
4 -	0.4	0.0400	0.70		Paved Kv= 20.3 fps				
1.5	61	0.0100	0.70		Shallow Concentrated Flow, shallow				
2.0	407	0.0450	4.00		Short Grass Pasture Kv= 7.0 fps				
2.0	127	0.0450	1.06		Shallow Concentrated Flow, shallow				
1.5	136	0.0441	1.47		Woodland Kv= 5.0 fps Shallow Concentrated Flow, shallow				
1.5	130	0.0441	1.47		Short Grass Pasture Kv= 7.0 fps				
3.4	283	0.0750	1.37		Shallow Concentrated Flow, shallow				
5.4	200	0.07.00	1.07		Woodland Kv= 5.0 fps				
22.5	764	Total			Troodiana Itt- 0.0 ipo				
22.5	704	ı Ulai							

Type III 24-hr 25-Year Rainfall=6.61"

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Summary for Link AP: Analysis Point

Inflow Area = 203,612 sf, 8.29% Impervious, Inflow Depth = 0.77" for 25-Year event

Inflow = 1.61 cfs @ 12.49 hrs, Volume= 13,040 cf

Primary = 1.61 cfs @ 12.49 hrs, Volume= 13,040 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Type III 24-hr 100-Year Rainfall=8.56"

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Time span=0.00-72.00 hrs, dt=0.02 hrs, 3601 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=203,612 sf 8.29% Impervious Runoff Depth=1.61"

Flow Length=764' Tc=22.5 min CN=41 Runoff=4.45 cfs 27,291 cf

Link AP: Analysis Point Inflow=4.45 cfs 27,291 cf Primary=4.45 cfs 27,291 cf

Total Runoff Area = 203,612 sf Runoff Volume = 27,291 cf Average Runoff Depth = 1.61" 91.71% Pervious = 186,726 sf 8.29% Impervious = 16,886 sf

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Summary for Subcatchment DA1: DA1

Runoff = 4.45 cfs @ 12.39 hrs, Volume= 27,291 cf, Depth= 1.61"

Routed to Link AP : Analysis Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Type III 24-hr 100-Year Rainfall=8.56"

А	rea (sf)	CN D	escription							
1	08,124	39 P	39 Pasture/grassland/range, Good, HSG A							
	11,948									
	77,918	30 V	Voods, Go	od, HSG A						
	4,938	98 R	loofs, HSG	βA						
	684	76 G	ravel road	s, HSG A						
2	03,612	41 V	Veighted A	verage						
1	86,726	_		vious Area						
	16,886	8	.29% Impe	ervious Area	a					
_					—					
Tc	Length	Slope	Velocity	Capacity	Description					
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)						
1.7	24	0.0824	0.23		Sheet Flow, Sheetflow					
44 =		0.0405	0.44		Grass: Short n= 0.150 P2= 3.43"					
11.7	76	0.0485	0.11		Sheet Flow, sheetflow					
0.6	25	0.0368	0.96		Woods: Light underbrush n= 0.400 P2= 3.43"					
0.6	35	0.0300	0.96		Shallow Concentrated Flow, shallow Woodland Kv= 5.0 fps					
0.1	22	0.0345	3.77		Shallow Concentrated Flow, shallow					
0.1	22	0.0040	5.77		Paved Kv= 20.3 fps					
1.5	61	0.0100	0.70		Shallow Concentrated Flow, shallow					
1.0	0.1	0.0100	0.70		Short Grass Pasture Kv= 7.0 fps					
2.0	127	0.0450	1.06		Shallow Concentrated Flow, shallow					
					Woodland Kv= 5.0 fps					
1.5	136	0.0441	1.47		Shallow Concentrated Flow, shallow					
					Short Grass Pasture Kv= 7.0 fps					
3.4	283	0.0750	1.37		Shallow Concentrated Flow, shallow					
					Woodland Kv= 5.0 fps					
22.5	764	Total								

Type III 24-hr 100-Year Rainfall=8.56"

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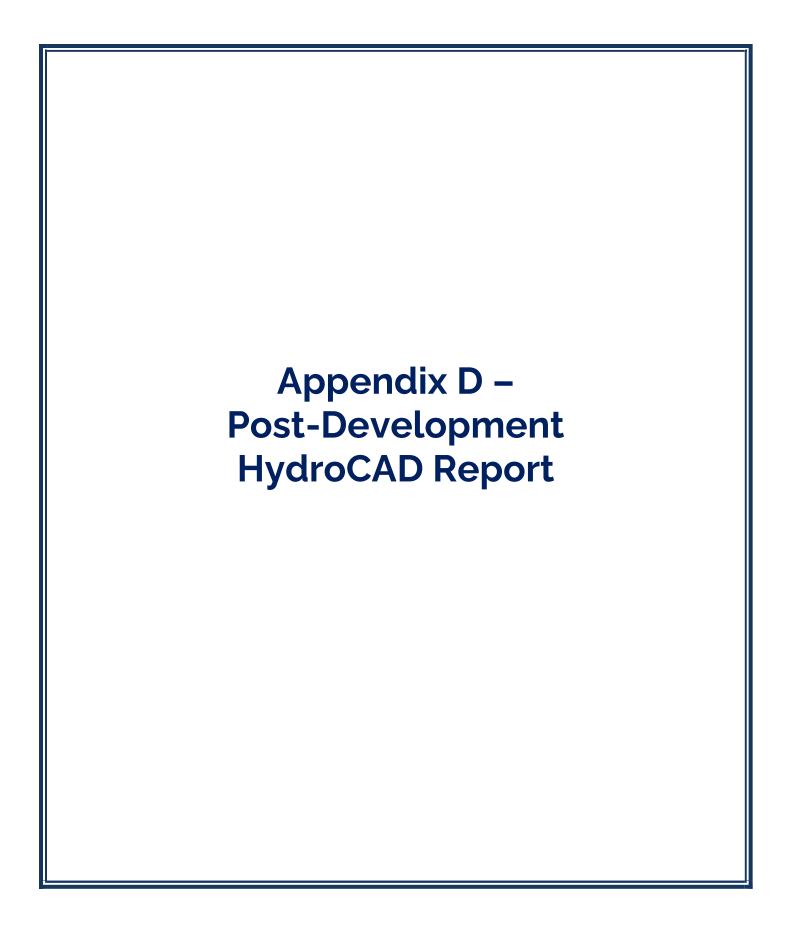
Summary for Link AP: Analysis Point

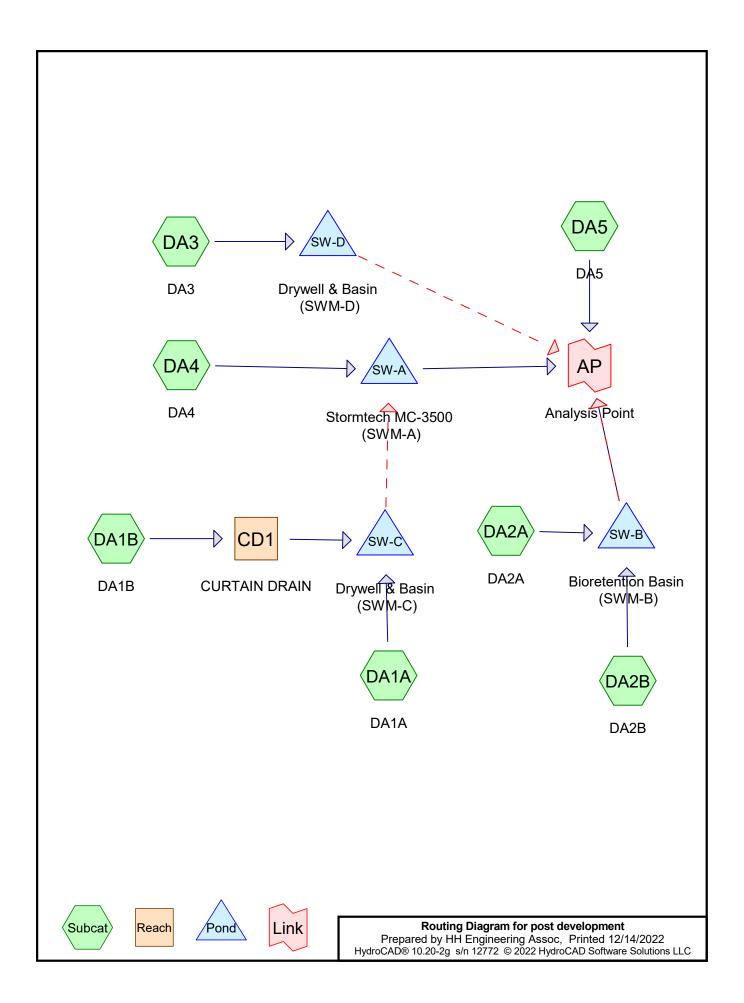
Inflow Area = 203,612 sf, 8.29% Impervious, Inflow Depth = 1.61" for 100-Year event

Inflow = 4.45 cfs @ 12.39 hrs, Volume= 27,291 cf

Primary = 4.45 cfs @ 12.39 hrs, Volume= 27,291 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs





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Rainfall Events Listing

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	1-Year	Type III 24-hr		Default	24.00	1	2.65	2
3	2-Year	Type III 24-hr		Default	24.00	1	3.32	2
4	5-Year	Type III 24-hr		Default	24.00	1	4.43	2
5	10-Year	Type III 24-hr		Default	24.00	1	5.35	2
6	25-Year	Type III 24-hr		Default	24.00	1	6.61	2
7	50-Year	Type III 24-hr		Default	24.00	1	7.53	2
8	100-Year	Type III 24-hr		Default	24.00	1	8.56	2

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Area Listing (all nodes)

Area	CN	Description
(sq-ft)		(subcatchment-numbers)
80,497	39	>75% Grass cover, Good, HSG A (DA1A, DA1B, DA2B, DA3, DA4, DA5)
47,330	98	Paved parking, HSG A (DA1A, DA1B, DA3, DA4, DA5)
14,063	98	Roofs, HSG A (DA2A)
61,709	30	Woods, Good, HSG A (DA1A, DA1B, DA2B, DA3, DA5)
203,599	54	TOTAL AREA

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Soil Listing (all nodes)

Area	Soil	Subcatchment
(sq-ft)	Group	Numbers
203,599	HSG A	DA1A, DA1B, DA2A, DA2B, DA3, DA4, DA5
0	HSG B	
0	HSG C	
0	HSG D	
0	Other	
203,599		TOTAL AREA

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Ground Covers (all nodes)

HSG-A	HSG-B	HSG-C	HSG-D	Other	Total	Ground
(sq-ft)	(sq-ft)	(sq-ft)	(sq-ft)	(sq-ft)	(sq-ft)	Cover
80,497	0	0	0	0	80,497	>75% Grass
						cover, Good
47,330	0	0	0	0	47,330	Paved parking
14,063	0	0	0	0	14,063	Roofs
61,709	0	0	0	0	61,709	Woods, Good
203,599	0	0	0	0	203,599	TOTAL AREA

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Pipe Listing (all nodes)

Line#	Node	In-Invert	Out-Invert	Length	Slope	n	Width	Diam/Height	Inside-Fill
	Number	(feet)	(feet)	(feet)	(ft/ft)		(inches)	(inches)	(inches)
 1	SW-A	84.70	84.10	44.0	0.0136	0.012	0.0	12.0	0.0
2	SW-B	90.00	87.00	125.0	0.0240	0.010	0.0	12.0	0.0

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Time span=0.00-72.00 hrs, dt=0.02 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment DA1A: DA1A Runoff Area=1.366 ac 10.54% Impervious Runoff Depth=0.00"

Flow Length=337' Tc=17.4 min CN=42 Runoff=0.00 cfs 0 cf

Subcatchment DA1B: DA1B Runoff Area=13,628 sf 16.84% Impervious Runoff Depth=0.00"

Tc=10.0 min CN=47 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=12,794 sf 0.00% Impervious Runoff Depth=0.00"

Flow Length=189' Tc=11.5 min CN=38 Runoff=0.00 cfs 0 cf

Subcatchment DA3: DA3 Runoff Area=14,032 sf 9.11% Impervious Runoff Depth=0.00"

Tc=10.0 min CN=41 Runoff=0.00 cfs 0 cf

Subcatchment DA4: DA4 Runoff Area=42,316 sf 86.93% Impervious Runoff Depth=0.32"

Tc=10.0 min CN=90 Runoff=0.30 cfs 1,129 cf

Subcatchment DA5: DA5 Runoff Area=1.085 ac 1.47% Impervious Runoff Depth=0.00"

Flow Length=332' Tc=11.4 min CN=35 Runoff=0.00 cfs 0 cf

Reach CD1: CURTAIN DRAIN Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0 cf

n=0.033 L=163.0' S=0.0166'/' Capacity=45.63 cfs Outflow=0.00 cfs 0 cf

Pond SW-A: Stormtech MC-3500 (SWM-A) Peak Elev=84.72' Storage=14 cf Inflow=0.30 cfs 1,129 cf

Discarded=0.30 cfs 1,129 cf Primary=0.00 cfs 0 cf Outflow=0.30 cfs 1,129 cf

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

Peak Elev=91.24' Storage=267 cf Inflow=0.30 cfs 927 cf

Discarded=0.05 cfs 927 cf Primary=0.00 cfs 0 cf Secondary=0.00 cfs 0 cf Outflow=0.05 cfs 927 cf

Pond SW-C: Drywell & Basin (SWM-C) Peak Elev=89.10' 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

Pond SW-D: Drywell & Basin (SWM-D) Peak Elev=91.50' 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 0 cf
Primary=0.00 cfs 0 cf

Total Runoff Area = 203,599 sf Runoff Volume = 2,056 cf Average Runoff Depth = 0.12" 69.85% Pervious = 142,206 sf 30.15% Impervious = 61,393 sf HydroCAD® 10.20-2g s/n 12772 © 2022 HydroCAD Software Solutions LLC

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Summary for Subcatchment DA1A: DA1A

Runoff = 0.00 cfs @ 0.00 hrs, Volume=

0 cf, Depth= 0.00"

Routed to Pond SW-C : Drywell & Basin (SWM-C)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Type III 24-hr WQV Rainfall=1.00"

_	Area	(ac) C	N Desc	cription						
	0.	673	39 >759	% Grass c	over, Good	, HSG A				
	0.549 30 Woods, Good, HSG A									
	0.	144 9	8 Pave	ed parking	, HSG A					
	1.	366 4	l2 Weid	ghted Aver	age					
	1.	222		6% Pervio						
	0.	144	10.5	4% Imperv	ious Area					
				•						
	Tc	Length	Slope	Velocity	Capacity	Description				
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	·				
	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							

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Summary for Subcatchment DA1B: DA1B

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

Routed to Reach CD1 : CURTAIN DRAIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Type III 24-hr WQV Rainfall=1.00"

400					Discot Fator Discot Fator			
(min)	(feet)	(ft/ft) (ft/sec) (cfs)					
Tc	Length	Slope	e Velocity	Capacity	Description			
	_,		10.0470 Importious / trea					
	2,295		16.84% Imp	ervious Are	rea			
	11,333		83.16% Per	vious Area	a			
	13,628	47	Weighted Average					
	2,295	98	Paved park	ing, HSG A	A			
	2,607	30	Woods, Go	od, HSG A	\mathcal{A}			
	8,726	39	>75% Grass	s cover, Go	lood, HSG A			
Ar	rea (sf)	CN	Description					

10.0

Direct Entry, Direct Entry

Type III 24-hr WQV Rainfall=1.00"

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Summary for Subcatchment DA2A: DA2A

Runoff = 0.30 cfs @ 12.07 hrs, Volume= 9
Routed to Pond SW-B : Bioretention Basin (SWM-B)

927 cf, Depth= 0.79"

Rouled to Pond SW-B. Bioretention Basin (SWW-B)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Type III 24-hr WQV Rainfall=1.00"

A	rea (sf)	CN [Description		
	14,063	98 F	Roofs, HSG	Α	
	14,063	1	100.00% Im	pervious A	rea
Тс	Length	Slope	Velocity	Capacity	Description
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
5.0					Direct Entry, Direct Entry

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Summary for Subcatchment DA2B: DA2B

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

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Type III 24-hr WQV Rainfall=1.00"

	\rea (sf)	CN	Description			
	11,225	39	>75% Gras	s cover, Go	ood, HSG A	
	1,569	30	Woods, Go	od, HSG A		
	12,794	38	Weighted A	verage		
	12,794		100.00% Pe	ervious Are	a	
Tc (min)	Length (feet)	Slope (ft/ft)		Capacity (cfs)	Description	
10.6	100	0.0150	0.16		Sheet Flow, Sheetflow	
0.9	89	0.0550	1.64		Grass: Short n= 0.150 P2= 3.43" Shallow Concentrated Flow, Shallow Short Grass Pasture Kv= 7.0 fps	
11.5	189	Total				

Type III 24-hr WQV Rainfall=1.00"

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Summary for Subcatchment DA3: DA3

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

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Type III 24-hr WQV Rainfall=1.00"

_	Area (sf)	CN	Description	Description						
	7,100	39	>75% Gras	s cover, Go	ood, HSG A					
	5,653	30	Woods, Go	od, HSG A						
	1,279	98	Paved park	Paved parking, HSG A						
-	14,032	41	Weighted A	verage						
	12,753		90.89% Pei	rvious Area						
	1,279		9.11% Impe	ervious Area	a					
	Tc Length	Slo	pe Velocity	Capacity	Description					
_	(min) (feet)	(ft/	ft) (ft/sec)	(cfs)						
	40.0				- :					

10.0

Direct Entry, Direct Entry

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Summary for Subcatchment DA4: DA4

Runoff = 0.30 cfs @ 12.15 hrs, Volume= 1,129 cf, Depth= 0.32" Routed to Pond SW-A : Stormtech MC-3500 (SWM-A)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Type III 24-hr WQV Rainfall=1.00"

	Ar	ea (sf)	CN	Description						
		5,530	39	>75% Grass cover, Good, HSG A						
	3	36,786	98	Paved parking, HSG A						
_	4	12,316	90	90 Weighted Average						
		5,530		13.07% Pervious Area						
	3	36,786		86.93% Imp	ervious Ar	ea				
	Tc	Length	Slope	Velocity	Capacity	Description				
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)					
	400					Discout Fortune	Discoul Forture			

10.0

Direct Entry, Direct Entry

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Summary for Subcatchment DA5: DA5

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= 0.02 hrs Type III 24-hr WQV Rainfall=1.00"

	Area	(ac) C	N Desc	cription		
	0.	427 3	39 >759	% Grass co	over, Good	, HSG A
	0.	642 3	30 Woo	ds, Good,	HSG A	
	0.	.016 9	8 Pave	ed parking	, HSG A	
	1.	.085 3	35 Weig	ghted Aver	age	
	1.	069	98.5	3% Pervio	us Area	
	0.	016	1.47	% Impervi	ous Area	
	_					
	Tc	Length	Slope	Velocity	Capacity	Description
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
	1.1	18	0.1330	0.27		Sheet Flow, Sheetflow
						Grass: Short n= 0.150 P2= 3.43"
	7.5	82	0.0240	0.18		Sheet Flow, Sheetflow
	4.0	440	0.0000	4.04		Grass: Short n= 0.150 P2= 3.43"
	1.9	118	0.0220	1.04		Shallow Concentrated Flow, Shallow
	0.0	4.4	0.0500	4 40		Short Grass Pasture Kv= 7.0 fps
	0.2	14	0.0500	1.12		Shallow Concentrated Flow, Shallow
	0.2	32	0.1400	2.62		Woodland Kv= 5.0 fps Shallow Concentrated Flow, Shallow
	0.2	32	0.1400	2.02		Short Grass Pasture Kv= 7.0 fps
	0.5	68	0.2350	2.42		Shallow Concentrated Flow, Shallow
	0.0	00	0.2000	۷.٦۷		Woodland Kv= 5.0 fps
_	11.4	332	Total			Troodiana itt 0.0 ipo
	11.4	332	i Ulai			

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Summary for Reach CD1: CURTAIN DRAIN

Inflow Area = 13,628 sf, 16.84% 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 Pond SW-C : Drywell & Basin (SWM-C)

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min

Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs Average Depth at Peak Storage= 0.00' Bank-Full Depth= 4.50' Flow Area= 9.0 sf, Capacity= 45.63 cfs

2.00' x 4.50' deep channel, n= 0.033 Riprap, 1-inch Length= 163.0' Slope= 0.0166 '/' Inlet Invert= 96.00', Outlet Invert= 93.30'

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Stage-Area-Storage for Reach CD1: CURTAIN DRAIN

Elevation		Storage		End-Area	Storage
(feet)	(sq-ft)	(cubic-feet)	(feet)	(sq-ft)	(cubic-feet)
96.00	0.0	0	98.60	5.2	848
96.05	0.1	16	98.65	5.3	864
96.10	0.2	33	98.70	5.4	880
96.15	0.3	49	98.75	5.5	897
96.20	0.4	65	98.80	5.6	913
96.25	0.5	82	98.85	5.7	929
96.30	0.6	98	98.90	5.8	945
96.35	0.7	114	98.95	5.9	962
96.40	8.0	130	99.00	6.0	978
96.45	0.9	147	99.05	6.1	994
96.50	1.0	163	99.10	6.2	1,011
96.55	1.1	179	99.15	6.3	1,027
96.60	1.2	196	99.20	6.4	1,043
96.65	1.3	212	99.25	6.5	1,060
96.70	1.4	228	99.30	6.6	1,076
96.75	1.5	245	99.35	6.7	1,092
96.80	1.6	261	99.40	6.8	1,108
96.85	1.7	277	99.45	6.9	1,125
96.90	1.8	293	99.50	7.0	1,141
96.95	1.9	310	99.55	7.1	1,157
97.00	2.0	326	99.60	7.2	1,174
97.05	2.1	342	99.65	7.3	1,190
97.10	2.2	359	99.70	7.4	1,206
97.15	2.3	375	99.75	7.5	1,223
97.20	2.4	391	99.80	7.6	1,239
97.25	2.5	408	99.85	7.7	1,255
97.30	2.6	424	99.90	7.8	1,271
97.35	2.7	440	99.95	7.9	1,288
97.40	2.8	456	100.00	8.0	1,304
97.45	2.9	473	100.05	8.1	1,320
97.50	3.0	489	100.03	8.2	1,337
97.55	3.1	505	100.15	8.3	1,353
97.60	3.2	522	100.13	8.4	1,369
97.65	3.2	538	100.25	8.5	1,386
97.70	3.4	554	100.23	8.6	1,402
97.75	3.5	571	100.35	8.7	1,418
97.80	3.6	587	100.33	8.8	1,434
97.85	3.0	603	100.40	8.9	1,451
	_	619	100.43		
97.90	3.8 3.9	636	100.50	9.0	1,467
97.95					
98.00	4.0	652			
98.05	4.1 4.2	668 685			
98.10		685 701			
98.15	4.3	701 717			
98.20	4.4	717 724			
98.25	4.5 4.6	734 750			
98.30		750 766			
98.35	4.7	766 782			
98.40	4.8	782 700			
98.45	4.9	799			
98.50	5.0	815			
98.55	5.1	831			

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

Inflow Area = 42,316 sf, 86.93% Impervious, Inflow Depth = 0.32" for WQV event Inflow 0.30 cfs @ 12.15 hrs, Volume= 1.129 cf 0.30 cfs @ 12.16 hrs, Volume= Outflow 1,129 cf, Atten= 1%, Lag= 0.9 min Discarded = 0.30 cfs @ 12.16 hrs, Volume= 1.129 cf 0.00 cfs @ 0.00 hrs, Volume= Primary 0 cf

Routed to Link AP: Analysis Point

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Peak Elev= 84.72' @ 12.16 hrs Surf.Area= 1,761 sf Storage= 14 cf

Plug-Flow detention time= 0.8 min calculated for 1,129 cf (100% of inflow) Center-of-Mass det. time= 0.8 min (867.3 - 866.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	84.70'	2,519 cf	22.75'W x 77.40'L x 5.50'H Field A
			9,685 cf Overall - 3,388 cf Embedded = 6,297 cf x 40.0% Voids
#2A	85.45'	3,388 cf	ADS_StormTech MC-3500 d +Cap x 30 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
			30 Chambers in 3 Rows
			Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf
	_	5,907 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	84.70'	12.0" Round Outlet Pipe
	•		L= 44.0' CPP, end-section conforming to fill, Ke= 0.500
			Inlet / Outlet Invert= 84.70' / 84.10' S= 0.0136 '/' Cc= 0.900
			n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#2	Device 1	86.00'	4.0" Vert. Low Flow Orifice C= 0.600
			Limited to weir flow at low heads
#3	Device 1	87.80'	11.0" W x 4.0" H Vert. Upper Orifice C= 0.600
			Limited to weir flow at low heads
#4	Device 1	89.00'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#5	Discarded	84.70'	20.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.82 cfs @ 12.16 hrs HW=84.72' (Free Discharge) **-5=Exfiltration** (Exfiltration Controls 0.82 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=84.70' (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)

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Pond SW-A: Stormtech MC-3500 (SWM-A) - 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

10 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 75.40' Row Length +12.0" End Stone x 2 = 77.40' Base Length

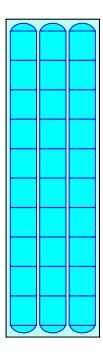
3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width 9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

30 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 3,388.0 cf Chamber Storage

9,684.7 cf Field - 3,388.0 cf Chambers = 6,296.7 cf Stone x 40.0% Voids = 2,518.7 cf Stone Storage

Chamber Storage + Stone Storage = 5,906.6 cf = 0.136 af Overall Storage Efficiency = 61.0% Overall System Size = 77.40' x 22.75' x 5.50'

30 Chambers 358.7 cy Field 233.2 cy Stone





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

	Curfoss	Ctanana I	Flavetian	Confo	Ctonono
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
84.70	1,761	0	89.90	1,761	5,695
84.80	1,761	70	90.00	1,761	5,766
84.90	1,761	141	90.10	1,761	5,836
85.00	1,761	211	90.20	1,761	5,907
85.10	1,761	282			
85.20	1,761	352			
85.30	1,761	423			
85.40	1,761	493			
85.50	1,761	602			
85.60 85.70	1,761 1,761	750 897			
85.70 85.80	1,761 1,761	1,044			
85.90	1,761	1,190			
86.00	1,761	1,335			
86.10	1,761	1,480			
86.20	1,761	1,624			
86.30	1,761	1,768			
86.40	1,761	1,910			
86.50	1,761	2,052			
86.60	1,761	2,193			
86.70	1,761	2,333			
86.80	1,761	2,472			
86.90	1,761	2,610			
87.00 87.10	1,761	2,747			
87.10 87.20	1,761 1,761	2,882 3,017			
87.30	1,761	3,150			
87.40	1,761	3,281			
87.50	1,761	3,411			
87.60	1,761	3,540			
87.70	1,761	3,667			
87.80	1,761	3,791			
87.90	1,761	3,914			
88.00	1,761	4,035			
88.10	1,761	4,153			
88.20	1,761	4,269			
88.30	1,761 1,761	4,382			
88.40 88.50	1,761 1,761	4,492 4,599			
88.60	1,761	4,702			
88.70	1,761	4,800			
88.80	1,761	4,892			
88.90	1,761	4,976			
89.00	1,761	5,055			
89.10	1,761	5,130			
89.20	1,761	5,202			
89.30	1,761	5,273			
89.40	1,761	5,343			
89.50	1,761 1,761	5,414			
89.60 80.70	1,761 1,761	5,484 5,554			
89.70 89.80	1,761	5,554 5,625			
00.00	1,701	0,020			
		•			

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

Inflow Area = 26,857 sf, 52.36% Impervious, Inflow Depth = 0.41" for WQV event Inflow 0.30 cfs @ 12.07 hrs, Volume= 927 cf 0.05 cfs @ 12.51 hrs, Volume= Outflow = 927 cf, Atten= 82%, Lag= 26.3 min 0.05 cfs @ 12.51 hrs, Volume= Discarded = 927 cf 0.00 cfs @ 0.00 hrs, Volume= Primary = 0 cf Routed to Link AP: Analysis Point 0.00 cfs @ 0.00 hrs, Volume= 0 cf Secondary = Routed to Link AP: Analysis Point

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Peak Elev= 91.24' @ 12.51 hrs Surf.Area= 1,180 sf Storage= 267 cf

Plug-Flow detention time= 34.6 min calculated for 927 cf (100% of inflow)

Invest Aveil Otenson Otenson Description

Center-of-Mass det. time= 34.6 min (821.5 - 786.9)

Volume	Invert	Avail.Stor	age Storage D	Description	
#1	91.00'	6,32	5 cf Custom S	Stage Data (Pris	matic) Listed below (Recalc)
Clayetie	· · · · · · ·	mf Λ	In a Ctava	Cura Stara	
Elevation	_	rf.Area	Inc.Store	Cum.Store	
(fee	et)	(sq-ft)	(cubic-feet)	(cubic-feet)	
91.0	00	1,031	0	0	
92.0	00	1,649	1,340	1,340	
93.0	00	2,324	1,987	3,327	
94.0	00	3,055	2,690	6,016	
94.1	10	3,132	309	6,325	
Device	Routing	Invert	Outlet Devices	}	
#1	Primary	90.00'	12.0" Round (Outlet Pipe	
	•		L= 125.0' CM	P, square edge l	neadwall, Ke= 0.500
			Inlet / Outlet In	vert= 90.00' / 87	.00' S= 0.0240 '/' Cc= 0.900
			n= 0.010 PVC	s, smooth interior	, Flow Area= 0.79 sf
#2	Device 1	93.40'	24.0" x 24.0" F	Horiz. Grate C=	= 0.600
			Limited to weir	flow at low head	S
#3	Secondary	93.60'	10.0' long x 3.	.0' breadth Broa	d-Crested Rectangular Weir
	,				80 1.00 1.20 1.40 1.60 1.80 2.00
			2.50 3.00 3.50		
					3 2.67 2.65 2.64 2.64 2.68 2.68
			, ,	2 2.97 3.07 3.3	
#4	Discarded	91.00'		filtration over Su	
11-	Discaraca	31.00	E.000 111/111 EA		ii iuoo ui ou

Discarded OutFlow Max=0.05 cfs @ 12.51 hrs HW=91.24' (Free Discharge) **4=Exfiltration** (Exfiltration Controls 0.05 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=91.00' (Free Discharge)
1=Outlet Pipe (Passes 0.00 cfs of 2.67 cfs potential flow)
2=Grate (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=91.00' (Free Discharge) 3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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

	J	· ·			`
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
91.00	1,031	0	93.60	2,763	4,852
91.05	1,062	52	93.65	2,799	4,992
91.10 91.15	1,093 1,124	106 162	93.70 93.75	2,836 2,872	5,132 5,275
91.20	1,155	219	93.80	2,909	5,420
91.25	1,186	277	93.85	2,945	5,566
91.30	1,216	337	93.90	2,982	5,714
91.35 91.40	1,247 1,278	399 462	93.95 94.00	3,018 3,055	5,864 6,016
91.45	1,309	527	94.05	3,093	6,170
91.50	1,340	593	94.10	3,132	6,325
91.55 91.60	1,371 1,402	661 730			
91.65	1,433	801			
91.70	1,464	873			
91.75	1,495	947			
91.80 91.85	1,525 1,556	1,023 1,100			
91.90	1,587	1,178			
91.95	1,618	1,258			
92.00 92.05	1,649 1,683	1,340 1,423			
92.10	1,716	1,508			
92.15	1,750	1,595			
92.20	1,784	1,683			
92.25 92.30	1,818 1,851	1,773 1,865			
92.35	1,885	1,958			
92.40	1,919	2,054			
92.45 92.50	1,953 1,987	2,150 2,249			
92.55	2,020	2,349			
92.60	2,054	2,451			
92.65	2,088	2,554			
92.70 92.75	2,122 2,155	2,660 2,767			
92.80	2,189	2,875			
92.85	2,223	2,985			
92.90 92.95	2,257 2,290	3,097 3,211			
93.00	2,324	3,327			
93.05	2,361	3,444			
93.10	2,397	3,563			
93.15 93.20	2,434 2,470	3,683 3,806			
93.25	2,507	3,930			
93.30	2,543	4,057			
93.35 93.40	2,580 2,616	4,185 4,315			
93.45	2,653	4,446			
93.50	2,690	4,580			
93.55	2,726	4,715			

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

 Inflow Area =
 73,131 sf, 11.72% 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 Pond SW-A: Stormtech MC-3500 (SWM-A)

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Peak Elev= 89.10' @ 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.Stor	rage S	torage	Description	
#1	89.10'	3,21	4 cf D	rywell	& Basin (Prisma	atic) Listed below (Recalc)
	_					
Elevation	on Su	ırf.Area	Inc.S		Cum.Store	
(fee	et)	(sq-ft)	(cubic-f	eet)	(cubic-feet)	
89.1	10	31		0	0	
90.1	10	44		38	38	
91.1	10	44		44	82	
92.1	10	44		44	126	
93.0	00	15		27	152	
93.5	50	564		145	297	
94.0	00	2,107		368	965	
94.3	30	2,623		709	1,674	
94.8	30	3,537	1,	540	3,214	
Device	Routing	Invert	Outlet	Device	es	
#1	Discarded	89.10'	20.000	in/hr l	Exfiltration over	Surface area
#2	Secondary	94.30'	10.0' lc	ng x	3.0' breadth Bro	ad-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. (Englis	h) 2.44 2.58 2.6	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

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=89.10' (Free Discharge) **1=Exfiltration** (Passes 0.00 cfs of 0.01 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=89.10' (Free Discharge) 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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

	J	· ·		•	,
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
89.10	31	0	94.30	2,623	1,674
89.20	32	3	94.40	2,806	1,945
89.30	34	6	94.50	2,989	2,235
89.40	35	10	94.60	3,171	2,543
89.50	36	13	94.70	3,354	2,869
89.60	38	17	94.80	3,537	3,214
89.70	39	21			
89.80	40	25			
89.90	41	29			
90.00	43	33			
90.10	44	38			
90.20	44	42			
90.30	44	46			
90.40	44	51			
90.50	44	55			
90.60	44	60			
90.70	44	64			
90.80	44	68			
90.90	44	73			
91.00	44	77			
91.10	44	82			
91.20	44	86			
91.30	44	90			
91.40	44	95 95			
91.50	44	99			
91.60	44	104			
91.70	44	104			
	44				
91.80	44 44	112			
91.90		117			
92.00	44	121			
92.10	44	126			
92.20	41	130			
92.30	38	134			
92.40	34	137			
92.50	31	141			
92.60	28	143			
92.70	25	146			
92.80	21	148			
92.90	18	150			
93.00	15	152			
93.10	125	159			
93.20	235	177			
93.30	344	206			
93.40	454	246			
93.50	564	297			
93.60	873	369			
93.70	1,181	471			
93.80	1,490	605			
93.90	1,798	769			
94.00	2,107	965			
94.10	2,279	1,184			
94.20	2,451	1,420			
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Summary for Pond SW-D: Drywell & Basin (SWM-D)

Inflow Area = 14,032 sf, 9.11% 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= 0.02 hrs Peak Elev= 91.50' @ 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 Avai	I.Storage Storag	ge Description
#1	91.50'	2,064 cf Drywe	ell & Basin (Prismatic) Listed below (Recalc)
Elevation (feet) 91.50	Surf.Area (sq-ft) 31	Inc.Store (cubic-feet) 0	Cum.Store (cubic-feet) 0
92.50	44	38	38
93.50	44	44	82
94.50	44	44	126
95.50	44	44	170
96.50	44	44	214
97.40	4	22	235
98.00	97	30	265
99.00	709	403	668
99.06	1,117	55	723
100.00	1,424	1,194	1,917
100.10	1,505	146	2,064

Device	Routing	Invert	Outlet Devices
#1	Discarded	91.50'	20.000 in/hr Exfiltration over Surface area
#2	Secondary	99.60'	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=91.50' (Free Discharge) **1=Exfiltration** (Passes 0.00 cfs of 0.01 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=91.50' (Free Discharge) 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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

Elevation	Surface	Storage	Elevation	Surface	Storage
(feet)	(sq-ft)	(cubic-feet)	(feet)	(sq-ft)	(cubic-feet)
91.50	31	0	96.70	35	221
91.60	32	3	96.80	31	225
91.70	34	6	96.90	26	228
91.80	35	10	97.00	22	230
91.90	36	13	97.10	17	232
92.00	38	17	97.20	13	233
92.10	39	21	97.30	8	234
92.20	40	25	97.40	4	235
92.30	41	29	97.50	19	236
92.40	43	33	97.60	35	239
92.50	44	38	97.70	51	243
92.60	44	42	97.80	66	249
92.70	44	46	97.90	82	256
92.80 92.90	44 44	51 55	98.00	97 158	265 278
93.00	44 44	60	98.10 98.20	219	276 297
93.10	44	64	98.30	281	322
93.10	44	68	98.40	342	353
93.30	44	73	98.50	403	390
93.40	44	77	98.60	464	434
93.50	44	82	98.70	525	483
93.60	44	86	98.80	587	539
93.70	44	90	98.90	648	601
93.80	44	95	99.00	709	668
93.90	44	99	99.10	1,130	768
94.00	44	104	99.20	1,163	883
94.10	44	108	99.30	1,195	1,001
94.20	44	112	99.40	1,228	1,122
94.30	44	117	99.50	1,261	1,246
94.40	44	121	99.60	1,293	1,374
94.50	44	126	99.70	1,326	1,505
94.60 94.70	44 44	130	99.80	1,359	1,639
94.70 94.80	44 44	134 139	99.90 100.00	1,391 1,424	1,777 1,917
94.90	44	143	100.00	1,505	2,064
95.00	44	148	100.10	1,303	2,004
95.10	44	152			
95.20	44	156			
95.30	44	161			
95.40	44	165			
95.50	44	170			
95.60	44	174			
95.70	44	178			
95.80	44	183			
95.90	44	187			
96.00	44	192			
96.10	44	196			
96.20	44	200			
96.30 96.40	44 44	205 209			
96.40 96.50	44 44	209 214			
96.60	40	218			
55.55	70	210			
			ı		

post development

Type III 24-hr WQV Rainfall=1.00"

Prepared by HH Engineering Assoc

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Summary for Link AP: Analysis Point

Inflow Area = 116,436 sf, 44.27% 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= 0.02 hrs

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Time span=0.00-72.00 hrs, dt=0.02 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment DA1A: DA1A Runoff Area=1.366 ac 10.54% Impervious Runoff Depth=0.00"

Flow Length=337' Tc=17.4 min CN=42 Runoff=0.00 cfs 0 cf

Subcatchment DA1B: DA1B Runoff Area=13,628 sf 16.84% Impervious Runoff Depth=0.01"

Tc=10.0 min CN=47 Runoff=0.00 cfs 15 cf

Subcatchment DA2A: DA2A Runoff Area=14,063 sf 100.00% Impervious Runoff Depth=2.42"

Tc=5.0 min CN=98 Runoff=0.85 cfs 2,836 cf

Subcatchment DA2B: DA2B Runoff Area=12,794 sf 0.00% Impervious Runoff Depth=0.00"

Flow Length=189' Tc=11.5 min CN=38 Runoff=0.00 cfs 0 cf

Subcatchment DA3: DA3 Runoff Area=14,032 sf 9.11% Impervious Runoff Depth=0.00"

Tc=10.0 min CN=41 Runoff=0.00 cfs 0 cf

Subcatchment DA4: DA4 Runoff Area=42,316 sf 86.93% Impervious Runoff Depth=1.67"

Tc=10.0 min CN=90 Runoff=1.65 cfs 5,873 cf

Subcatchment DA5: DA5 Runoff Area=1.085 ac 1.47% Impervious Runoff Depth=0.00"

Flow Length=332' Tc=11.4 min CN=35 Runoff=0.00 cfs 0 cf

Reach CD1: CURTAIN DRAIN Avg. Flow Depth=0.00' Max Vel=0.71 fps Inflow=0.00 cfs 15 cf

n=0.033 L=163.0' S=0.0166'/' Capacity=45.63 cfs Outflow=0.00 cfs 15 cf

Pond SW-A: Stormtech MC-3500 (SWM-A) Peak Elev=85.49' Storage=591 cf Inflow=1.65 cfs 5,873 cf

Discarded=0.82 cfs 5,873 cf Primary=0.00 cfs 0 cf Outflow=0.82 cfs 5,873 cf

Pond SW-B: Bioretention Basin (SWM-B) Peak Elev=91.86' Storage=1,118 cf Inflow=0.85 cfs 2,836 cf

Discarded=0.07 cfs 2,836 cf Primary=0.00 cfs 0 cf Secondary=0.00 cfs 0 cf Outflow=0.07 cfs 2,836 cf

Pond SW-C: Drywell & Basin (SWM-C)

Peak Elev=89.10' Storage=0 cf Inflow=0.00 cfs 15 cf

Discarded=0.00 cfs 15 cf Secondary=0.00 cfs 0 cf Outflow=0.00 cfs 15 cf

Pond SW-D: Drywell & Basin (SWM-D) Peak Elev=91.50' 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 0 cf Primary=0.00 cfs 0 cf

> Total Runoff Area = 203,599 sf Runoff Volume = 8,724 cf Average Runoff Depth = 0.51" 69.85% Pervious = 142,206 sf 30.15% Impervious = 61,393 sf

Summary for Subcatchment DA1A: DA1A

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

Routed to Pond SW-C : Drywell & Basin (SWM-C)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Type III 24-hr 1-Year Rainfall=2.65"

_	Area	(ac) C	N Desc	cription		
	0.	673 3	39 >759	% Grass co	over, Good	, HSG A
	0.	549 3	30 Woo	ds, Good,	HSG A	
	0.	144 9	8 Pave	ed parking	, HSG A	
	1.	366 4	l2 Wei	ghted Aver	age	
	1.	222	89.4	6% Pervio	us Area	
	0.	144	10.5	4% Imperv	/ious Area	
	Tc	Length	Slope	Velocity	Capacity	Description
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
	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			

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Summary for Subcatchment DA1B: DA1B

Runoff = 0.00 cfs @ 21.27 hrs, Volume= 15 cf, Depth= 0.01"

Routed to Reach CD1: CURTAIN DRAIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Type III 24-hr 1-Year Rainfall=2.65"

400					Discot Fator Discot Fator			
(min)	(feet)	(ft/ft) (ft/sec)	(cfs)				
Tc	Length	Slope	e Velocity	Capacity	Description			
	_,		. 0.0 . 70	, c. ,	. 54			
	2,295		16.84% Imp	ervious Are	rea			
	11,333		83.16% Per	vious Area	a			
	13,628	47	Weighted A	verage				
	2,295	98	Paved parking, HSG A					
	2,607	30	Woods, Good, HSG A					
	8,726	39	>75% Grass	s cover, Go	lood, HSG A			
Ar	rea (sf)	CN	Description					

10.0

Direct Entry, Direct Entry

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Summary for Subcatchment DA2A: DA2A

Runoff = 0.85 cfs @ 12.07 hrs, Volume= 2,836 cf, Depth= 2.42" 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= 0.02 hrs Type III 24-hr 1-Year Rainfall=2.65"

Ar	ea (sf)	CN E	Description		
	14,063	98 F	Roofs, HSG	Α	
	14,063	1	00.00% In	pervious A	rea
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	•	•			Direct Entry, Direct Entry

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Summary for Subcatchment DA2B: DA2B

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

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Type III 24-hr 1-Year Rainfall=2.65"

	A	rea (sf)	CN	Description							
		11,225	39	39 >75% Grass cover, Good, HSG A							
		1,569	30	Voods, Good, HSG A							
12,794 38 Weighted Average											
		12,794		100.00% Pe	ervious Are	a					
	Tc	Length	Slope	,	Capacity	Description					
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)						
	10.6	100	0.0150	0.16		Sheet Flow, Sheetflow					
						Grass: Short n= 0.150 P2= 3.43"					
0.9 89 0.0550 1.64 Sha						Shallow Concentrated Flow, Shallow					
						Short Grass Pasture Kv= 7.0 fps					
	11.5	189	Total								

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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= 0.02 hrs Type III 24-hr 1-Year Rainfall=2.65"

400					Discout Forture B	No 4 Poston -		
min)	(feet)	(ft/ft) (ft/sec)	(cfs)				
Тс	Length	Slop	e Velocity	Capacity	Description			
	1,279		9.11% Impe	ervious Area	a			
	,							
	,							
	14.032	41	Weighted Average					
	1,279	98	Paved park	ing, HSG A	ı			
	5,653	30	•	•				
	,			,	ou, Hod A			
	7 100	30	>75% Gras	s cover Go	od HSC A			
Ar	rea (sf)	CN	Description					
	Tc min)	14,032 12,753 1,279 Tc Length min) (feet)	7,100 39 5,653 30 1,279 98 14,032 41 12,753 1,279 Tc Length Slope min) (feet) (ft/ft	7,100 39 >75% Gras 5,653 30 Woods, Go 1,279 98 Paved park 14,032 41 Weighted A 12,753 90.89% Per 1,279 9.11% Impe	7,100 39 >75% Grass cover, Go 5,653 30 Woods, Good, HSG A 1,279 98 Paved parking, HSG A 14,032 41 Weighted Average 12,753 90.89% Pervious Area 1,279 9.11% Impervious Area Tc Length Slope Velocity Capacity min) (feet) (ft/ft) (ft/sec) (cfs)	7,100 39 >75% Grass cover, Good, HSG A 5,653 30 Woods, Good, HSG A 1,279 98 Paved parking, HSG A 14,032 41 Weighted Average 12,753 90.89% Pervious Area 1,279 9.11% Impervious Area Tc Length Slope Velocity Capacity Description min) (feet) (ft/ft) (ft/sec) (cfs)	7,100 39 >75% Grass cover, Good, HSG A 5,653 30 Woods, Good, HSG A 1,279 98 Paved parking, HSG A 14,032 41 Weighted Average 12,753 90.89% Pervious Area 1,279 9.11% Impervious Area Tc Length Slope Velocity Capacity Description min) (feet) (ft/ft) (ft/sec) (cfs)	

10.0

Direct Entry, Direct Entry

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Summary for Subcatchment DA4: DA4

Runoff = 1.65 cfs @ 12.14 hrs, Volume= 5,873 cf, Depth= 1.67"

Routed to Pond SW-A: Stormtech MC-3500 (SWM-A)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Type III 24-hr 1-Year Rainfall=2.65"

Area	a (sf)	CN	Description						
5	5,530	39	>75% Gras	s cover, Go	ood, HSG A				
36	5,786	98	Paved parking, HSG A						
42	2,316	90	Weighted Average						
5	5,530		13.07% Per	vious Area					
36	5,786		86.93% Imp	ervious Ar	ea				
	ength	Slope	,	Capacity	Description				
(min)	(feet)	(ft/ft	(ft/sec)	(cfs)					
10.0					Direct Entry	Direct Entry			

10.0

Direct Entry, Direct Entry

Summary for Subcatchment DA5: DA5

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= 0.02 hrs Type III 24-hr 1-Year Rainfall=2.65"

	Area	(ac) C	N Desc	cription		
	0.	427 3	9 >759	% Grass co	over, Good	, HSG A
	0.	642 3	0 Woo	ds, Good,	HSG A	
	0.	016 9	8 Pave	ed parking,	, HSG A	
	1.	085 3	5 Weig	ghted Aver	age	
	1.	069	98.5	3% Pervio	us Area	
	0.	016	1.47	% Impervi	ous Area	
	_					
	Tc	Length	Slope	Velocity	Capacity	Description
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
	1.1	18	0.1330	0.27		Sheet Flow, Sheetflow
						Grass: Short n= 0.150 P2= 3.43"
	7.5	82	0.0240	0.18		Sheet Flow, Sheetflow
	4.0	440	0.0000	4.04		Grass: Short n= 0.150 P2= 3.43"
	1.9	118	0.0220	1.04		Shallow Concentrated Flow, Shallow
	0.0	4.4	0.0500	4.40		Short Grass Pasture Kv= 7.0 fps
	0.2	14	0.0500	1.12		Shallow Concentrated Flow, Shallow
	0.2	32	0.1400	2.62		Woodland Kv= 5.0 fps Shallow Concentrated Flow, Shallow
	0.2	32	0.1400	2.02		Short Grass Pasture Kv= 7.0 fps
	0.5	68	0.2350	2.42		Shallow Concentrated Flow, Shallow
	0.0	00	0.2000	۷.٦۷		Woodland Kv= 5.0 fps
_	11.4	332	Total			Troodidita itt 0.0 ipo
	11.4	332	i Ulai			

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Summary for Reach CD1: CURTAIN DRAIN

Inflow Area = 13,628 sf, 16.84% Impervious, Inflow Depth = 0.01" for 1-Year event

Inflow = 0.00 cfs @ 21.27 hrs, Volume= 15 cf

Outflow = 0.00 cfs @ 21.30 hrs, Volume= 15 cf, Atten= 0%, Lag= 1.8 min

Routed to Pond SW-C : Drywell & Basin (SWM-C)

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Max. Velocity= 0.71 fps, Min. Travel Time= 3.8 min Avg. Velocity = 0.71 fps, Avg. Travel Time= 3.8 min

Peak Storage= 0 cf @ 21.30 hrs Average Depth at Peak Storage= 0.00', Surface Width= 2.00' Bank-Full Depth= 4.50' Flow Area= 9.0 sf, Capacity= 45.63 cfs

2.00' x 4.50' deep channel, n= 0.033 Riprap, 1-inch Length= 163.0' Slope= 0.0166 '/' Inlet Invert= 96.00', Outlet Invert= 93.30'

Stage-Area-Storage for Reach CD1: CURTAIN DRAIN

Flevation	End-Area	Storage	l Flevation	End-Area	Storage
(feet)	(sq-ft)	(cubic-feet)	(feet)	(sq-ft)	(cubic-feet)
96.00	0.0	0	98.60	5.2	848
96.05	0.1	16	98.65	5.3	864
96.10	0.2	33	98.70	5.4	880
96.15	0.3	49	98.75	5.5	897
96.20	0.4	65	98.80	5.6	913
96.25	0.5	82	98.85	5.7	929
96.30	0.6	98	98.90	5.8	945
96.35	0.7	114	98.95	5.9	962
96.40	0.8	130	99.00	6.0	978
96.45	0.9	147	99.05	6.1	994
96.50	1.0	163	99.10	6.2	1,011
96.55	1.1	179	99.15	6.3	1,027
96.60	1.2	196	99.20	6.4	1,043
96.65	1.3	212	99.25	6.5	1,060
96.70	1.4	228	99.30	6.6	1,076
96.75	1.5	245	99.35	6.7	1,092
96.80	1.6	261	99.40	6.8	1,108
96.85	1.7	277	99.45	6.9	1,125
96.90	1.8	293	99.50	7.0	1,141
96.95	1.9	310	99.55	7.1	1,157
97.00	2.0	326	99.60	7.2	1,174
97.05	2.1	342	99.65	7.3	1,190
97.10	2.2	359	99.70	7.4	1,206
97.15	2.3	375	99.75	7.5	1,223
97.20	2.4	391	99.80	7.6	1,239
97.25	2.5	408	99.85	7.7	1,255
97.30	2.6	424	99.90	7.8	1,271
97.35 97.40	2.7 2.8	440 456	99.95 100.00	7.9 8.0	1,288 1,304
97.45	2.0	473	100.00	8.1	1,320
97.43	3.0	489	100.03	8.2	1,320
97.55	3.1	505	100.15	8.3	1,353
97.60	3.2	522	100.13	8.4	1,369
97.65	3.3	538	100.25	8.5	1,386
97.70	3.4	554	100.30	8.6	1,402
97.75	3.5	571	100.35	8.7	1,418
97.80	3.6	587	100.40	8.8	1,434
97.85	3.7	603	100.45	8.9	1,451
97.90	3.8	619	100.50	9.0	1,467
97.95	3.9	636			,
98.00	4.0	652			
98.05	4.1	668			
98.10	4.2	685			
98.15	4.3	701			
98.20	4.4	717			
98.25	4.5	734			
98.30	4.6	750			
98.35	4.7	766			
98.40	4.8	782			
98.45	4.9	799			
98.50	5.0	815			
98.55	5.1	831			
			I		

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

Inflow Area = 42,316 sf, 86.93% Impervious, Inflow Depth = 1.67" for 1-Year event Inflow 1.65 cfs @ 12.14 hrs, Volume= 5.873 cf 0.82 cfs @ 12.02 hrs, Volume= Outflow 5,873 cf, Atten= 51%, Lag= 0.0 min Discarded = 0.82 cfs @ 12.02 hrs, Volume= 5.873 cf Primary 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= 0.02 hrs Peak Elev= 85.49' @ 12.37 hrs Surf.Area= 1,761 sf Storage= 591 cf

Plug-Flow detention time= 3.5 min calculated for 5,872 cf (100% of inflow) Center-of-Mass det. time= 3.5 min (821.6 - 818.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	84.70'	2,519 cf	22.75'W x 77.40'L x 5.50'H Field A
			9,685 cf Overall - 3,388 cf Embedded = 6,297 cf x 40.0% Voids
#2A	85.45'	3,388 cf	ADS_StormTech MC-3500 d +Cap x 30 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
			30 Chambers in 3 Rows
			Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf
	_	5,907 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	84.70'	12.0" Round Outlet Pipe
	•		L= 44.0' CPP, end-section conforming to fill, Ke= 0.500
			Inlet / Outlet Invert= 84.70' / 84.10' S= 0.0136 '/' Cc= 0.900
			n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#2	Device 1	86.00'	4.0" Vert. Low Flow Orifice C= 0.600
			Limited to weir flow at low heads
#3	Device 1	87.80'	11.0" W x 4.0" H Vert. Upper Orifice C= 0.600
			Limited to weir flow at low heads
#4	Device 1	89.00'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#5	Discarded	84.70'	20.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.82 cfs @ 12.02 hrs HW=84.76' (Free Discharge) **-5=Exfiltration** (Exfiltration Controls 0.82 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=84.70' (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)

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Pond SW-A: Stormtech MC-3500 (SWM-A) - 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

10 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 75.40' Row Length +12.0" End Stone x 2 = 77.40' Base Length

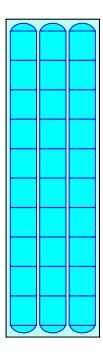
3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width 9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

30 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 3,388.0 cf Chamber Storage

9,684.7 cf Field - 3,388.0 cf Chambers = 6,296.7 cf Stone x 40.0% Voids = 2,518.7 cf Stone Storage

Chamber Storage + Stone Storage = 5,906.6 cf = 0.136 af Overall Storage Efficiency = 61.0% Overall System Size = 77.40' x 22.75' x 5.50'

30 Chambers 358.7 cy Field 233.2 cy Stone





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

Elevation	Surface	Storage	Elevation	Surface	Storage
(feet)	(sq-ft)	(cubic-feet)	(feet)	(sq-ft)	(cubic-feet)
84.70	1,761	0	89.90	1,761	5,695
84.80	1,761	70	90.00	1,761	5,766
84.90	1,761	141	90.10	1,761	5,836
85.00	1,761	211	90.20	1,761	5,907
85.10	1,761	282	30.20	1,701	3,301
85.20	1,761	352			
85.30	1,761	423			
85.40	1,761	493			
85.50	1,761	602			
85.60	1,761	750			
85.70	1,761	897			
85.80	1,761	1,044			
85.90	1,761	1,190			
86.00	1,761	1,335			
86.10	1,761	1,480			
86.20	1,761	1,624			
86.30	1,761	1,768			
86.40	1,761	1,910			
86.50	1,761	2,052			
86.60	1,761	2,193			
86.70	1,761	2,333			
86.80	1,761	2,472			
86.90	1,761	2,610			
87.00	1,761	2,747			
	1,761				
87.10		2,882			
87.20	1,761	3,017			
87.30	1,761	3,150			
87.40	1,761	3,281			
87.50	1,761	3,411			
87.60	1,761	3,540			
87.70	1,761	3,667			
87.80	1,761	3,791			
87.90	1,761	3,914			
88.00	1,761	4,035			
88.10	1,761	4,153			
88.20	1,761	4,269			
88.30	1,761	4,382			
88.40	1,761	4,492			
88.50	1,761	4,599			
88.60	1,761	4,702			
88.70	1,761	4,800			
88.80	1,761	4,892			
88.90	1,761	4,976			
89.00	1,761	5,055			
89.10	1,761	5,130			
89.20	1,761	5,202			
89.30	1,761	5,273			
89.40	1,761	5,343			
89.50	1,761	5,414			
89.60	1,761	5,484			
89.70	1,761	5,554			
89.80	1,761	5,534 5,625			
03.00	1,701	3,023			
			1		

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

Inflow Area = 26,857 sf, 52.36% Impervious, Inflow Depth = 1.27" for 1-Year event Inflow 0.85 cfs @ 12.07 hrs, Volume= 2.836 cf 0.07 cfs @ 12.95 hrs, Volume= Outflow = 2,836 cf, Atten= 92%, Lag= 52.8 min 2,836 cf Discarded = 0.07 cfs @ 12.95 hrs, Volume= Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf Routed to Link AP: Analysis Point 0.00 cfs @ 0.00 hrs. Volume= 0 cf Secondary = Routed to Link AP: Analysis Point

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Peak Elev= 91.86' @ 12.95 hrs Surf.Area= 1,563 sf Storage= 1,118 cf

Plug-Flow detention time= 130.4 min calculated for 2,835 cf (100% of inflow)

Center-of-Mass det. time= 130.4 min (890.0 - 759.6)

Volume	Invert	Avail.Sto	rage Storage	Description	
#1	91.00'	6,32	25 cf Custom	Stage Data (Pri	ismatic) Listed below (Recalc)
	_		_		
Elevation		rf.Area	Inc.Store	Cum.Store	
(fee	et)	(sq-ft)	(cubic-feet)	(cubic-feet)	
91.0	00	1,031	0	0	
92.0	00	1,649	1,340	1,340	
93.0	00	2,324	1,987	3,327	
94.0	00	3,055	2,690	6,016	
94.1	10	3,132	309	6,325	
Device	Routing	Invert	Outlet Device	S	
#1	Primary	90.00'	12.0" Round	Outlet Pipe	
			L= 125.0' CN	ИР, square edge	headwall, Ke= 0.500
			Inlet / Outlet I	nvert= 90.00' / 8	7.00' S= 0.0240 '/' Cc= 0.900
			n= 0.010 PV	C, smooth interio	or, Flow Area= 0.79 sf
#2	Device 1	93.40'	24.0" x 24.0"	Horiz. Grate (C= 0.600
			Limited to we	ir flow at low hea	ads
#3	Secondary	93.60'	10.0' long x	3.0' breadth Bro	ad-Crested Rectangular Weir
			Head (feet) 0	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	
					68 2.67 2.65 2.64 2.64 2.68 2.68
			2.72 2.81 2.9	92 2.97 3.07 3	.32
#4	Discarded	91.00'	2.000 in/hr Ex	cfiltration over S	Surface area

Discarded OutFlow Max=0.07 cfs @ 12.95 hrs HW=91.86' (Free Discharge) **4=Exfiltration** (Exfiltration Controls 0.07 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=91.00' (Free Discharge)
1=Outlet Pipe (Passes 0.00 cfs of 2.67 cfs potential flow)
2=Grate (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=91.00' (Free Discharge) 3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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

	_	_			
Elevation	Surface	Storage	Elevation	Surface	Storage
(feet)	(sq-ft)	(cubic-feet)	(feet)	(sq-ft)	(cubic-feet)
91.00	1,031	0	93.60	2,763	4,852
91.05	1,062	52	93.65	2,799	4,992
91.10	1,093	106	93.70	2,836	5,132
91.15	1,124	162	93.75	2,872	5,275
91.20	1,155	219	93.80	2,909	5,420
91.25	1,186	277	93.85	2,945	5,566
91.30	1,216	337	93.90	2,982	5,714
91.35	1,247	399	93.95	3,018	5,864
91.40	1,278	462	94.00	3,055	6,016
91.45	1,309	527	94.05	3,093	6,170
91.50	1,340	593	94.10	3,132	6,325
91.55	1,371	661		•	,
91.60	1,402	730			
91.65	1,433	801			
91.70	1,464	873			
91.75	1,495	947			
91.80	1,525	1,023			
91.85	1,556	1,100			
91.90	1,587	1,178			
91.95	1,618	1,258			
92.00	1,649	1,340			
92.05	1,683	1,423			
92.10	1,716	1,508			
92.15	1,750	1,595			
92.20	1,784	1,683			
92.25	1,818	1,773			
92.30	1,851	1,865			
92.35	1,885	1,958			
92.40	1,919	2,054			
92.45	1,953	2,150			
92.50	1,987	2,249			
92.55	2,020	2,349			
92.60	2,054	2,451			
92.65	2,088	2,554			
92.70	2,122	2,660			
92.75	2,155	2,767			
92.80	2,189	2,875			
92.85	2,223	2,985			
92.90	2,257	3,097			
92.95	2,290	3,211			
93.00	2,324	3,327			
93.05	2,361	3,444			
93.10	2,397	3,563			
93.15	2,434	3,683			
93.20	2,470	3,806			
93.25	2,507	3,930			
93.30	2,543	4,057			
93.35	2,580	4,185			
93.40	2,616	4,315			
93.45	2,653	4,446			
93.50	2,690	4,580			
93.55	2,726	4,715			
55.55	2,120	7,110			
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Summary for Pond SW-C: Drywell & Basin (SWM-C)

Inflow Area = 73,131 sf, 11.72% Impervious, Inflow Depth = 0.00" for 1-Year event

Inflow = 0.00 cfs @ 21.30 hrs, Volume= 15 cf

Outflow = 0.00 cfs @ 21.33 hrs, Volume= 15 cf, Atten= 0%, Lag= 1.5 min

Discarded = 0.00 cfs @ 21.33 hrs, Volume= 15 cf Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routed to Pond SW-A: Stormtech MC-3500 (SWM-A)

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Peak Elev= 89.10' @ 21.33 hrs Surf.Area= 31 sf Storage= 0 cf

Plug-Flow detention time= 2.0 min calculated for 15 cf (100% of inflow)

Center-of-Mass det. time= 2.0 min (1,205.7 - 1,203.6)

Volume	Invert	Avail.Sto	rage Storage	e Description
#1	89.10'	3,2	14 cf Drywel	II & Basin (Prismatic) Listed below (Recalc)
Elevation (fee		urf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
89.		31	0	0
90.´		44	38	38
91.	-	44	44	82
92.1		44	44	126
93.0	00	15	27	152
93.5	50	564	145	297
94.0	00	2,107	668	965
94.3	30	2,623	709	1,674
94.8	30	3,537	1,540	3,214
Device	Routing	Invert	Outlet Devic	ees
#1	Discarded	20 10'	20 000 in/hr	Exfiltration over Surface area

#1	Discarded	89.10'	20.000 in/hr Exfiltration over Surface area
#2	Secondary	94.30'	10.0' 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

Discarded OutFlow Max=0.01 cfs @ 21.33 hrs HW=89.10' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.01 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=89.10' (Free Discharge) 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Storage (cubic-feet)

1,674

1,945

2,235

2,543

2,869

3,214

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

Surface

(sq-ft)

2,623

2,806

2,989

3,171

3,354

3,537

Elevation

(feet)

94.30

94.40

94.50

94.60

94.70

94.80

	J	J
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
89.10	31	0
89.20	32	3
89.30	34	6
89.40	35	10
89.50	36	13
89.60	38	17
89.70	39	21
89.80	40	25
89.90	41	29
90.00	43	33
90.10	44	38
90.20	44	42
90.30 90.40	44 44	46 51
90.50	44	55
90.60	44	60
90.70	44	64
90.80	44	68
90.90	44	73
91.00	44	77
91.10	44	82
91.20	44	86
91.30	44	90
91.40	44	95
91.50 91.60	44 44	99
91.70	44	104 108
91.80	44	112
91.90	44	117
92.00	44	121
92.10	44	126
92.20	41	130
92.30	38	134
92.40	34	137
92.50	31	141
92.60	28	143
92.70	25	146
92.80	21	148
92.90 93.00	18 15	150 152
93.10	125	159
93.20	235	177
93.30	344	206
93.40	454	246
93.50	564	297
93.60	873	369
93.70	1,181	471
93.80	1,490	605
93.90	1,798	769 065
94.00	2,107	965
94.10 94.20	2,279 2,451	1,184 1,420
J 7 .20	۷,۳۵۱	1,420
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Summary for Pond SW-D: Drywell & Basin (SWM-D)

Inflow Area = 14,032 sf, 9.11% Impervious, Inflow Depth = 0.00" for 1-Year event Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0 cf 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= 0.02 hrs Peak Elev= 91.50' @ 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 Ava	ail.Storage Sto	orage Description	
#1	91.50'	2,064 cf Dr	ywell & Basin (Prisr	matic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Sto (cubic-fe		
91.50	31	(0000-10-	0 0	
92.50	44		38 38	
93.50	44		44 82	
94.50	44		44 126	
95.50	44		44 170	
96.50	44	•	44 214	
97.40	4		22 235	
98.00	97		30 265	
99.00	709	4	03 668	
99.06	1,117		55 723	
100.00	1,424	1,1	94 1,917	
100.10	1,505	1	46 2,064	

Device	Routing	Invert	Outlet Devices
#1	Discarded	91.50'	20.000 in/hr Exfiltration over Surface area
#2	Secondary	99.60'	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=91.50' (Free Discharge) **1=Exfiltration** (Passes 0.00 cfs of 0.01 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=91.50' (Free Discharge) 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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

Elevation	Surface	Storage	Elevation	Surface	Storage
(feet)	(sq-ft)	(cubic-feet)	(feet)	(sq-ft)	(cubic-feet)
91.50	31	0	96.70	35	221
91.60	32	3	96.80	31	225
91.70	34	6	96.90	26	228
91.80	35	10	97.00	22	230
91.90	36	13	97.10	17	232
92.00	38	17	97.20	13	233
92.10	39	21	97.30	8	234
92.20	40	25	97.40	4	235
92.30	41	29	97.50	19	236
92.40	43	33	97.60	35	239
92.50	44	38	97.70	51	243
92.60	44	42	97.80	66	249
92.70	44	46	97.90	82	256
92.80 92.90	44 44	51 55	98.00	97 158	265 278
93.00	44 44	60	98.10 98.20	219	276 297
93.10	44	64	98.30	281	322
93.10	44	68	98.40	342	353
93.30	44	73	98.50	403	390
93.40	44	77	98.60	464	434
93.50	44	82	98.70	525	483
93.60	44	86	98.80	587	539
93.70	44	90	98.90	648	601
93.80	44	95	99.00	709	668
93.90	44	99	99.10	1,130	768
94.00	44	104	99.20	1,163	883
94.10	44	108	99.30	1,195	1,001
94.20	44	112	99.40	1,228	1,122
94.30	44	117	99.50	1,261	1,246
94.40	44	121	99.60	1,293	1,374
94.50	44	126	99.70	1,326	1,505
94.60 94.70	44 44	130	99.80	1,359	1,639
94.70 94.80	44 44	134 139	99.90 100.00	1,391 1,424	1,777 1,917
94.90	44	143	100.00	1,505	2, 064
95.00	44	148	100.10	1,303	2,004
95.10	44	152			
95.20	44	156			
95.30	44	161			
95.40	44	165			
95.50	44	170			
95.60	44	174			
95.70	44	178			
95.80	44	183			
95.90	44	187			
96.00	44	192			
96.10	44	196			
96.20	44	200			
96.30 96.40	44 44	205 209			
96.40 96.50	44 44	209 214			
96.60	40	218			
55.55	70	210			
			ı		

post development

Type III 24-hr 1-Year Rainfall=2.65"

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Summary for Link AP: Analysis Point

Inflow Area = 116,436 sf, 44.27% Impervious, Inflow Depth = 0.00" for 1-Year event

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

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

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Time span=0.00-72.00 hrs, dt=0.02 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment DA1A: DA1A Runoff Area=1.366 ac 10.54% Impervious Runoff Depth=0.02"

Flow Length=337' Tc=17.4 min CN=42 Runoff=0.00 cfs 107 cf

Subcatchment DA1B: DA1B Runoff Area=13,628 sf 16.84% Impervious Runoff Depth=0.09"

Tc=10.0 min CN=47 Runoff=0.00 cfs 104 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=12,794 sf 0.00% Impervious Runoff Depth=0.00"

Flow Length=189' Tc=11.5 min CN=38 Runoff=0.00 cfs 0 cf

Subcatchment DA3: DA3 Runoff Area=14,032 sf 9.11% Impervious Runoff Depth=0.01"

Tc=10.0 min CN=41 Runoff=0.00 cfs 15 cf

Subcatchment DA4: DA4 Runoff Area=42,316 sf 86.93% Impervious Runoff Depth=2.28"

Tc=10.0 min CN=90 Runoff=2.24 cfs 8,040 cf

Subcatchment DA5: DA5 Runoff Area=1.085 ac 1.47% Impervious Runoff Depth=0.00"

Flow Length=332' Tc=11.4 min CN=35 Runoff=0.00 cfs 0 cf

Reach CD1: CURTAIN DRAIN Avg. Flow Depth=0.00' Max Vel=0.71 fps Inflow=0.00 cfs 104 cf

n=0.033 L=163.0' S=0.0166 '/' Capacity=45.63 cfs Outflow=0.00 cfs 104 cf

Pond SW-A: Stormtech MC-3500 (SWM-A) Peak Elev=85.95' Storage=1,258 cf Inflow=2.24 cfs 8,040 cf

Discarded=0.82 cfs 8,040 cf Primary=0.00 cfs 0 cf Outflow=0.82 cfs 8,040 cf

Pond SW-B: Bioretention Basin (SWM-B) Peak Elev=92.11' Storage=1,521 cf Inflow=1.08 cfs 3,618 cf

Discarded=0.08 cfs 3,618 cf Primary=0.00 cfs 0 cf Secondary=0.00 cfs 0 cf Outflow=0.08 cfs 3,618 cf

Pond SW-C: Drywell & Basin (SWM-C) Peak Elev=89.12' Storage=1 cf Inflow=0.01 cfs 212 cf

Discarded=0.01 cfs 212 cf Secondary=0.00 cfs 0 cf Outflow=0.01 cfs 212 cf

Pond SW-D: Drywell & Basin (SWM-D) Peak Elev=91.50' Storage=0 cf Inflow=0.00 cfs 15 cf

Discarded=0.00 cfs 15 cf Secondary=0.00 cfs 0 cf Outflow=0.00 cfs 15 cf

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

> Total Runoff Area = 203,599 sf Runoff Volume = 11,885 cf Average Runoff Depth = 0.70" 69.85% Pervious = 142,206 sf 30.15% Impervious = 61,393 sf

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Summary for Subcatchment DA1A: DA1A

Runoff = 0.00 cfs @ 17.42 hrs, Volume=

107 cf, Depth= 0.02"

Routed to Pond SW-C : Drywell & Basin (SWM-C)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Type III 24-hr 2-Year Rainfall=3.32"

Area	(ac) C	N Desc	cription					
					, HSG A			
0.	<u>144 9</u>	8 Pave	ed parking	, HSG A				
1.366 42 Weighted Average								
1.	222	89.4	6% Pervio	us Area				
0.	144	10.5	4% Imperv	∕ious Area				
Tc	Length	Slope	Velocity	Capacity	Description			
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	·			
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			
			0.00		Woodland Kv= 5.0 fps			
0.1	20	0.3400	4 08		Shallow Concentrated Flow, Shallow			
· · ·	_0	0.0100	1.00		Short Grass Pasture Kv= 7.0 fps			
17 4	337	Total						
	0. 0. 0. 1. 1. 0.	0.673 3 0.549 3 0.144 9 1.366 4 1.222 0.144 Tc Length (min) (feet) 1.7 24 11.7 76 0.6 35 0.1 22 1.5 61 1.7 99 0.1 20	0.673 39 >759 0.549 30 Woo 0.144 98 Pave 1.366 42 Weig 1.222 89.4 0.144 10.5 Tc Length Slope (min) (feet) (ft/ft) 1.7 24 0.0824 11.7 76 0.0485 0.6 35 0.0368 0.1 22 0.0345 1.5 61 0.0100 1.7 99 0.0394 0.1 20 0.3400	0.673 39 >75% Grass condence 0.549 30 Woods, Good, Go	0.673 39 >75% Grass cover, Good 0.549 30 Woods, Good, HSG A 0.144 98 Paved parking, HSG A 1.366 42 Weighted Average 1.222 89.46% Pervious Area 0.144 10.54% Impervious Area Tc Length Slope Velocity Capacity (min) (feet) (ft/ft) (ft/sec) (cfs) 1.7 24 0.0824 0.23 11.7 76 0.0485 0.11 0.6 35 0.0368 0.96 0.1 22 0.0345 3.77 1.5 61 0.0100 0.70 1.7 99 0.0394 0.99 0.1 20 0.3400 4.08			

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Summary for Subcatchment DA1B: DA1B

Runoff = 0.00 cfs @ 14.64 hrs, Volume= 104 cf, Depth= 0.09"

Routed to Reach CD1: CURTAIN DRAIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Type III 24-hr 2-Year Rainfall=3.32"

				Discot Fator Discot Fator				
(feet)	(ft/ft	(ft/sec)	(cfs)	•				
Length	Slope	e Velocity	Capacity	Description				
2,295		16.84% Impervious Area						
11,333		83.16% Pervious Area						
13,628	47	Weighted Average						
2,295	98	Paved parki	ing, HSG A	A				
2,607	30	•	•					
8,726	39	>75% Grass cover, Good, HSG A						
rea (sf)	CN	Description						
	8,726 2,607 2,295 13,628 11,333 2,295 Length	8,726 39 2,607 30 2,295 98 13,628 47 11,333 2,295 Length Slope	8,726 39 >75% Grass 2,607 30 Woods, Go 2,295 98 Paved parki 13,628 47 Weighted A 11,333 83.16% Per 2,295 16.84% Imp	8,726 39 >75% Grass cover, Go 2,607 30 Woods, Good, HSG A 2,295 98 Paved parking, HSG A 13,628 47 Weighted Average 11,333 83.16% Pervious Area 2,295 16.84% Impervious Ar Length Slope Velocity Capacity				

10.0

Direct Entry, Direct Entry

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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= 0.02 hrs Type III 24-hr 2-Year Rainfall=3.32"

Aı	rea (sf)	CN E	Description		
	14,063	98 F	Roofs, HSG		
	14,063	1	00.00% In	pervious A	rea
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Direct Entry

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Summary for Subcatchment DA2B: DA2B

Runoff = 0.00 cfs @ 24.03 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= 0.02 hrs Type III 24-hr 2-Year Rainfall=3.32"

_	A	rea (sf)	CN	Description			
		11,225	39 >75% Grass cove			ood, HSG A	
		1,569	30	Woods, Go	od, HSG A		
		12,794	38	Weighted A	verage		
		12,794		100.00% Pe	ervious Are	a	
	Тс	Length	Slope	•	Capacity	Description	
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)		
	10.6	100	0.0150	0.16		Sheet Flow, Sheetflow	
						Grass: Short n= 0.150 P2= 3.43"	
	0.9	89	0.0550	1.64		Shallow Concentrated Flow, Shallow	
_						Short Grass Pasture Kv= 7.0 fps	
	11.5	189	Total				

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Summary for Subcatchment DA3: DA3

Runoff = 0.00 cfs @ 21.70 hrs, Volume= 15 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= 0.02 hrs Type III 24-hr 2-Year Rainfall=3.32"

40.0					Diseast Festing Diseast Festing				
(min)	(feet)	(ft/ft)) (ft/sec)	(cfs)					
Tc	Length	Slope	Velocity	Capacity	Description				
	1,279		9.11% Impervious Area						
	12,753		90.89% Pervious Area						
	14,032		Weighted Average						
	1,279	98	Paved parki	ng, HSG A	A				
	5,653	30	Woods, Go	od, HSG A	1				
	7,100	39	>75% Grass cover, Good, HSG A						
Ar	rea (sf)	CN	Description						

10.0

Direct Entry, Direct Entry

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Summary for Subcatchment DA4: DA4

Runoff = 2.24 cfs @ 12.14 hrs, Volume= 8,040 cf, Depth= 2.28" Routed to Pond SW-A : Stormtech MC-3500 (SWM-A)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Type III 24-hr 2-Year Rainfall=3.32"

Area	a (sf)	CN	Description					
5	5,530	39	>75% Gras	s cover, Go	ood, HSG A			
36	5,786	98	Paved park	ing, HSG A	<u>.</u>			
42	2,316	90	Weighted A	verage				
5	5,530		13.07% Pervious Area					
36	6,786		86.93% Impervious Area					
	ength	Slope	,	Capacity	Description			
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)				
10.0					Direct Entry	Direct Entry		

10.0

Direct Entry, Direct Entry

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Summary for Subcatchment DA5: DA5

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= 0.02 hrs Type III 24-hr 2-Year Rainfall=3.32"

Area	(ac) C	N Desc	cription		
0.	.427 3	39 >759	% Grass co	over, Good	, HSG A
0.	.642	30 Woo	ds, Good,	HSG A	
0	.016	8 Pave	ed parking,	, HSG A	
1.	.085 3	35 Weig	ghted Aver	age	
1.	.069	98.5	3% Pervio	us Area	
0	.016	1.47	% Impervi	ous Area	
Tc	Length	Slope	Velocity	Capacity	Description
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
1.1	18	0.1330	0.27		Sheet Flow, Sheetflow
					Grass: Short n= 0.150 P2= 3.43"
7.5	82	0.0240	0.18		Sheet Flow, Sheetflow
					Grass: Short n= 0.150 P2= 3.43"
1.9	118	0.0220	1.04		Shallow Concentrated Flow, Shallow
0.0	4.4	0.0500	4.40		Short Grass Pasture Kv= 7.0 fps
0.2	14	0.0500	1.12		Shallow Concentrated Flow, Shallow
0.2	22	0.4400	2.62		Woodland Kv= 5.0 fps
0.2	32	0.1400	2.62		Shallow Concentrated Flow, Shallow
0.5	68	0.2350	2.42		Short Grass Pasture Kv= 7.0 fps Shallow Concentrated Flow, Shallow
0.5	00	0.2330	2.42		Woodland Kv= 5.0 fps
11 1	222	Total			vvooulariu IVV- 0.0 ips
11.4	332	Total			

post development

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Summary for Reach CD1: CURTAIN DRAIN

Inflow Area = 13,628 sf, 16.84% Impervious, Inflow Depth = 0.09" for 2-Year event

Inflow = 0.00 cfs @ 14.64 hrs, Volume= 104 cf

Outflow = 0.00 cfs @ 14.70 hrs, Volume= 104 cf, Atten= 0%, Lag= 3.5 min

Routed to Pond SW-C : Drywell & Basin (SWM-C)

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Max. Velocity= 0.71 fps, Min. Travel Time= 3.8 min Avg. Velocity = 0.71 fps, Avg. Travel Time= 3.8 min

Peak Storage= 1 cf @ 14.70 hrs Average Depth at Peak Storage= 0.00', Surface Width= 2.00' Bank-Full Depth= 4.50' Flow Area= 9.0 sf, Capacity= 45.63 cfs

2.00' x 4.50' deep channel, n= 0.033 Riprap, 1-inch Length= 163.0' Slope= 0.0166 '/' Inlet Invert= 96.00', Outlet Invert= 93.30'

Stage-Area-Storage for Reach CD1: CURTAIN DRAIN

Elevation	End-Area	Storago	Elevation	End Area	Storago
(feet)	(sq-ft)	Storage (cubic-feet)	(feet)	End-Area (sq-ft)	Storage (cubic-feet)
96.00	0.0	0	98.60	5.2	848
96.05	0.1	16	98.65	5.3	864
96.10	0.2	33	98.70	5.4	880
96.15	0.3	49	98.75	5.5	897
96.20	0.4	65	98.80	5.6	913
96.25	0.5	82	98.85	5.7	929
96.30	0.6	98	98.90	5.8	945
96.35	0.7	114	98.95	5.9	962
96.40	8.0	130	99.00	6.0	978
96.45	0.9	147	99.05	6.1	994
96.50	1.0	163	99.10	6.2	1,011
96.55	1.1	179	99.15	6.3	1,027
96.60	1.2	196	99.20	6.4	1,043
96.65 96.70	1.3 1.4	212 228	99.25 99.30	6.5 6.6	1,060 1,076
96.75	1.4	245	99.35	6.7	1,076 1,092
96.80	1.6	261	99.40	6.8	1,108
96.85	1.7	277	99.45	6.9	1,125
96.90	1.8	293	99.50	7.0	1,141
96.95	1.9	310	99.55	7.1	1,157
97.00	2.0	326	99.60	7.2	1,174
97.05	2.1	342	99.65	7.3	1,190
97.10	2.2	359	99.70	7.4	1,206
97.15	2.3	375	99.75	7.5	1,223
97.20	2.4	391	99.80	7.6	1,239
97.25	2.5	408	99.85	7.7	1,255
97.30	2.6	424	99.90	7.8	1,271
97.35 97.40	2.7 2.8	440 456	99.95 100.00	7.9 8.0	1,288 1,304
97.40	2.6 2.9	473	100.00	8.1	1,320
97.50	3.0	489	100.03	8.2	1,337
97.55	3.1	505	100.15	8.3	1,353
97.60	3.2	522	100.20	8.4	1,369
97.65	3.3	538	100.25	8.5	1,386
97.70	3.4	554	100.30	8.6	1,402
97.75	3.5	571	100.35	8.7	1,418
97.80	3.6	587	100.40	8.8	1,434
97.85	3.7	603	100.45	8.9	1,451
97.90	3.8	619	100.50	9.0	1,467
97.95	3.9	636			
98.00	4.0	652			
98.05	4.1	668			
98.10 98.15	4.2 4.3	685 701			
98.20	4.4	717			
98.25	4.5	734			
98.30	4.6	750			
98.35	4.7	766			
98.40	4.8	782			
98.45	4.9	799			
98.50	5.0	815			
98.55	5.1	831			

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

Inflow Area = 42,316 sf, 86.93% Impervious, Inflow Depth = 2.28" for 2-Year event Inflow 2.24 cfs @ 12.14 hrs, Volume= 8.040 cf 0.82 cfs @ 11.94 hrs, Volume= Outflow 8,040 cf, Atten= 64%, Lag= 0.0 min Discarded = 0.82 cfs @ 11.94 hrs, Volume= 8.040 cf 0.00 cfs @ 0.00 hrs, Volume= Primary 0 cf

Routed to Link AP: Analysis Point

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Peak Elev= 85.95' @ 12.47 hrs Surf.Area= 1,761 sf Storage= 1,258 cf

Plug-Flow detention time= 7.4 min calculated for 8,038 cf (100% of inflow) Center-of-Mass det. time= 7.4 min (816.6 - 809.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	84.70'	2,519 cf	22.75'W x 77.40'L x 5.50'H Field A
			9,685 cf Overall - 3,388 cf Embedded = 6,297 cf x 40.0% Voids
#2A	85.45'	3,388 cf	ADS_StormTech MC-3500 d +Cap x 30 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
			30 Chambers in 3 Rows
			Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf
		5,907 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	84.70'	12.0" Round Outlet Pipe
	•		L= 44.0' CPP, end-section conforming to fill, Ke= 0.500
			Inlet / Outlet Invert= 84.70' / 84.10' S= 0.0136 '/' Cc= 0.900
			n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#2	Device 1	86.00'	4.0" Vert. Low Flow Orifice C= 0.600
			Limited to weir flow at low heads
#3	Device 1	87.80'	11.0" W x 4.0" H Vert. Upper Orifice C= 0.600
			Limited to weir flow at low heads
#4	Device 1	89.00'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#5	Discarded	84.70'	20.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.82 cfs @ 11.94 hrs HW=84.76' (Free Discharge) **-5=Exfiltration** (Exfiltration Controls 0.82 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=84.70' (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-A: Stormtech MC-3500 (SWM-A) - 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

10 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 75.40' Row Length +12.0" End Stone x 2 = 77.40' Base Length

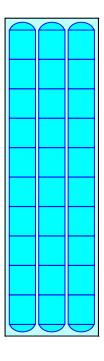
3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width 9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

30 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 3,388.0 cf Chamber Storage

9,684.7 cf Field - 3,388.0 cf Chambers = 6,296.7 cf Stone x 40.0% Voids = 2,518.7 cf Stone Storage

Chamber Storage + Stone Storage = 5,906.6 cf = 0.136 af Overall Storage Efficiency = 61.0% Overall System Size = 77.40' x 22.75' x 5.50'

30 Chambers 358.7 cy Field 233.2 cy Stone





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

(feet (sq-ft) (cubic-feet) (feet) (sq-ft) (cubic-feet) (sq-f	Elevation	Surface	Storage	Elevation	Surface	Storage
84.80						
84.90 1,761 141 90.10 1,761 5,836 85.00 1,761 211 85.10 1,761 352 85.20 1,761 352 85.30 1,761 423 85.50 1,761 493 85.50 1,761 750 85.70 1,761 897 85.80 1,761 1,90 86.00 1,761 1,761 1,80 86.00 1,761 1,761 1,80 86.00 1,761 1,761 86.30 1,761 1,761 86.30 1,761 1,761 86.30 1,761 1,761 86.30 1,761 1,761 86.50 1,761 1,761 86.50 1,761 1,761 86.50 1,761 1,761 86.50 1,761 1,761 86.50 1,761 1,761 86.50 1,761 1,761 86.50 1,761 1,761 86.50 1,761 1,761 86.50 1,761 2,333 86.80 1,761 2,472 86.90 1,761 2,472 86.90 1,761 2,513 86.90 1,761 2,610 87.00 1,761 2,747 87.10 1,761 3,281 87.50 1,761 3,281 87.50 1,761 3,540 87.70 1,761 3,540 87.70 1,761 3,914 88.00 1,761 4,163 88.20 1,761 4,035 88.10 1,761 4,035 88.20 1,761 4,035 88.20 1,761 4,035 88.20 1,761 4,035 88.20 1,761 4,035 88.20 1,761 4,035 88.20 1,761 4,030 88.20 1,761 5,273 89.30 1,761 5,273 89.30 1,761 5,273 89.30 1,761 5,273 89.30 1,761 5,273 89.30 1,761 5,273 89.30 1,761 5,273 89.30 1,761 5,273 89.30 1,761 5,273 89.30 1,761 5,273 8						
85.00						
85.10	84.90	1,761	141	90.10	1,761	5,836
85.20 1,761 352 85.30 1,761 423 85.40 1,761 493 85.50 1,761 602 85.60 1,761 897 85.80 1,761 1,044 85.90 1,761 1,190 86.00 1,761 1,335 86.10 1,761 1,480 86.20 1,761 1,624 86.30 1,761 1,761 863 86.40 1,761 1,761 1,910 86.50 1,761 2,052 86.60 1,761 2,052 86.60 1,761 2,333 86.80 1,761 2,472 86.90 1,761 2,610 87.00 1,761 2,610 87.00 1,761 2,882 87.20 1,761 3,017 87.30 1,761 3,150 87.40 1,761 3,281 87.50 1,761 3,540 87.70 1,761 3,540 87.70 1,761 3,667 87.80 1,761 3,540 87.70 1,761 3,540 87.70 1,761 3,540 87.70 1,761 3,540 87.70 1,761 3,540 87.70 1,761 3,540 87.70 1,761 3,540 87.70 1,761 3,540 87.70 1,761 3,540 87.70 1,761 3,540 87.70 1,761 3,540 87.70 1,761 3,667 87.80 1,761 4,035 88.80 1,761 4,035 88.80 1,761 4,035 88.10 1,761 4,035 88.10 1,761 4,035 88.20 1,761 4,035 88.30 1,761 4,035 88.40 1,761 4,035 88.50 1,761 4,092 88.50 1,761 4,092 88.50 1,761 4,092 88.50 1,761 4,092 88.50 1,761 4,092 88.50 1,761 5,130 89.20 1,761 5,130 89.20 1,761 5,130 89.20 1,761 5,130 89.20 1,761 5,130 89.20 1,761 5,202 89.30 1,761 5,484 89.50 1,761 5,484 89.70 1,761 5,554	85.00	1,761	211	90.20	1,761	5,907
85.20 1,761 352 85.30 1,761 423 85.40 1,761 493 85.50 1,761 602 85.60 1,761 897 85.80 1,761 1,044 85.90 1,761 1,190 86.00 1,761 1,335 86.10 1,761 1,480 86.20 1,761 1,624 86.30 1,761 1,761 863 86.40 1,761 1,761 1,910 86.50 1,761 2,052 86.60 1,761 2,052 86.60 1,761 2,333 86.80 1,761 2,472 86.90 1,761 2,610 87.00 1,761 2,610 87.00 1,761 2,882 87.20 1,761 3,017 87.30 1,761 3,150 87.40 1,761 3,281 87.50 1,761 3,540 87.70 1,761 3,540 87.70 1,761 3,667 87.80 1,761 3,540 87.70 1,761 3,540 87.70 1,761 3,540 87.70 1,761 3,540 87.70 1,761 3,540 87.70 1,761 3,540 87.70 1,761 3,540 87.70 1,761 3,540 87.70 1,761 3,540 87.70 1,761 3,540 87.70 1,761 3,540 87.70 1,761 3,667 87.80 1,761 4,035 88.80 1,761 4,035 88.80 1,761 4,035 88.10 1,761 4,035 88.10 1,761 4,035 88.20 1,761 4,035 88.30 1,761 4,035 88.40 1,761 4,035 88.50 1,761 4,092 88.50 1,761 4,092 88.50 1,761 4,092 88.50 1,761 4,092 88.50 1,761 4,092 88.50 1,761 5,130 89.20 1,761 5,130 89.20 1,761 5,130 89.20 1,761 5,130 89.20 1,761 5,130 89.20 1,761 5,202 89.30 1,761 5,484 89.50 1,761 5,484 89.70 1,761 5,554			282			
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85.90						
86.00 1,761 1,335 86.10 1,761 1,480 86.20 1,761 1,624 86.30 1,761 1,768 86.40 1,761 1,910 86.50 1,761 2,052 86.60 1,761 2,193 86.70 1,761 2,333 86.80 1,761 2,472 86.90 1,761 2,610 87.00 1,761 2,82 87.20 1,761 3,017 87.10 1,761 3,017 87.30 1,761 3,150 87.40 1,761 3,281 87.50 1,761 3,411 87.60 1,761 3,411 87.60 1,761 3,540 87.70 1,761 3,914 88.00 1,761 4,153 88.20 1,761 4,035 88.10 1,761 4,153 88.20 1,761 4,153 88.20 1,761 4,153 88.20 1,761 4,153 88.20 1,761 4,153 88.30 1,761 4,153 88.30 1,761 4,153 88.40 1,761 4,163 88.50 1,761 4,163 88.70 1,761 4,892 88.80 1,761 4,892 88.80 1,761 4,892 88.80 1,761 4,976 89.00 1,761 5,130 89.20 1,761 5,130 89.20 1,761 5,130 89.20 1,761 5,130 89.20 1,761 5,273 89.40 1,761 5,343 89.50 1,761 5,554						
86.10 1,761 1,480 86.20 1,761 1,624 86.30 1,761 1,628 86.40 1,761 1,910 86.50 1,761 2,052 86.60 1,761 2,193 86.70 1,761 2,333 86.80 1,761 2,472 86.90 1,761 2,610 87.00 1,761 2,882 87.20 1,761 3,017 87.30 1,761 3,150 87.40 1,761 3,281 87.50 1,761 3,281 87.60 1,761 3,647 87.70 1,761 3,667 87.80 1,761 3,667 87.80 1,761 3,914 88.00 1,761 4,035 88.10 1,761 4,035 88.10 1,761 4,153 88.20 1,761 4,269 88.30 1,761 4,289 88.30 1,761 4,299 88.50 1,761 4,492 88.50 1,761 4,492 88.50 1,761 4,492 88.50 1,761 4,892 88.90 1,761 4,892 88.90 1,761 4,976 89.00 1,761 5,055 89.10 1,761 5,055 89.10 1,761 5,055 89.10 1,761 5,055 89.10 1,761 5,273 89.40 1,761 5,273 89.40 1,761 5,273 89.40 1,761 5,554						
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86.30						
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89.80 1,761 5,625						
	89.80	1,761	5,625			

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

Inflow Area = 26,857 sf, 52.36% Impervious, Inflow Depth = 1.62" for 2-Year event Inflow 1.08 cfs @ 12.07 hrs, Volume= 3.618 cf 0.08 cfs @ 13.07 hrs, Volume= Outflow = 3,618 cf, Atten= 93%, Lag= 60.3 min 3,618 cf Discarded = 0.08 cfs @ 13.07 hrs, Volume= 0.00 cfs @ 0.00 hrs, Volume= Primary = 0 cf Routed to Link AP: Analysis Point 0.00 cfs @ 0.00 hrs. Volume= 0 cf Secondary =

Routed to Link AP: Analysis Point

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Peak Elev= 92.11' @ 13.07 hrs Surf.Area= 1,721 sf Storage= 1,521 cf

Plug-Flow detention time= 170.7 min calculated for 3,617 cf (100% of inflow)

Center-of-Mass det. time= 170.6 min (925.4 - 754.7)

Volume	Invert	Avail.Sto	rage Storage	Description	
#1	91.00'	6,32	25 cf Custom	Stage Data (Pri	ismatic) Listed below (Recalc)
	_		_		
Elevation		rf.Area	Inc.Store	Cum.Store	
(fee	et)	(sq-ft)	(cubic-feet)	(cubic-feet)	
91.0	00	1,031	0	0	
92.0	00	1,649	1,340	1,340	
93.0	00	2,324	1,987	3,327	
94.0	00	3,055	2,690	6,016	
94.1	10	3,132	309	6,325	
Device	Routing	Invert	Outlet Device	S	
#1	Primary	90.00'	12.0" Round	Outlet Pipe	
			L= 125.0' CN	ИР, square edge	headwall, Ke= 0.500
			Inlet / Outlet I	nvert= 90.00' / 8	7.00' S= 0.0240 '/' Cc= 0.900
			n= 0.010 PV	C, smooth interio	or, Flow Area= 0.79 sf
#2	Device 1	93.40'	24.0" x 24.0"	Horiz. Grate (C= 0.600
			Limited to we	ir flow at low hea	ads
#3	Secondary	93.60'	10.0' long x	3.0' breadth Bro	ad-Crested Rectangular Weir
			Head (feet) 0	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	
					68 2.67 2.65 2.64 2.64 2.68 2.68
			2.72 2.81 2.9	92 2.97 3.07 3	.32
#4	Discarded	91.00'	2.000 in/hr Ex	cfiltration over S	Surface area

Discarded OutFlow Max=0.08 cfs @ 13.07 hrs HW=92.11' (Free Discharge) **4=Exfiltration** (Exfiltration Controls 0.08 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=91.00' (Free Discharge) **-1=Outlet Pipe** (Passes 0.00 cfs of 2.67 cfs potential flow) **2=Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=91.00' (Free Discharge) **1 3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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

Elevation (feet) Surface (sq-ft) Storage (cubic-feet) Elevation (feet) Surface (sq-ft) Storage (cubic-feet) 91.05 1,062 52 93.65 2,763 4,852 91.05 1,062 52 93.65 2,799 4,992 91.10 1,093 106 93.70 2,836 5,132 91.20 1,155 219 93.80 2,909 5,420 91.30 1,216 337 93.90 2,945 5,568 91.30 1,216 337 93.90 2,945 5,568 91.35 1,247 399 93.95 3,018 5,864 91.45 1,309 527 94.05 3,093 6,170 91.45 1,309 527 94.05 3,093 6,170 91.50 1,340 593 94.10 3,132 6,325 91.55 1,371 661 1 91.05 1,433 801 91.75 1,495 947 91.85 </th <th></th> <th>· ·</th> <th>J</th> <th></th> <th></th> <th>`</th>		· ·	J			`
91.00						
91.10		1,031		93.60	2,763	
91.15						
91.20						
91.25						
91.35	91.25	1,186	277	93.85	2,945	5,566
91.40						
91.45						
91.50						
91.60	91.50		593			
91.65						
91.70						
91.75						
91.85		1,495				
91.90						
91.95						
92.05			1,258			
92.10 1,716 1,508 92.15 1,750 1,595 92.20 1,784 1,683 92.25 1,818 1,773 92.30 1,851 1,865 92.35 1,885 1,958 92.40 1,919 2,054 92.45 1,953 2,150 92.50 1,987 2,249 92.55 2,020 2,349 92.60 2,054 2,451 92.65 2,088 2,554 92.70 2,122 2,660 92.75 2,155 2,767 92.80 2,189 2,875 92.85 2,223 2,985 92.90 2,257 3,097 92.95 2,290 3,211 93.00 2,324 3,327						
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92.85 2,223 2,985 92.90 2,257 3,097 92.95 2,290 3,211 93.00 2,324 3,327						
92.90 2,257 3,097 92.95 2,290 3,211 93.00 2,324 3,327			·			
93.00 2,324 3,327	92.90	2,257	3,097			
U3 U5 2 361 3 444 1	93.00 93.05	2,324 2,361	3,327 3,444			
93.10 2,397 3,563						
93.15 2,434 3,683	93.15	2,434	3,683			
93.20 2,470 3,806 93.25 2,507 3,930						
93.25 2,507 3,930 93.30 2,543 4,057						
93.35 2,580 4,185						
93.40 2,616 4,315						
93.45 2,653 4,446 93.50 2,690 4,580						
93.55 2,726 4,715						

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

Inflow Area = 73,131 sf, 11.72% Impervious, Inflow Depth = 0.03" for 2-Year event

Inflow = 0.01 cfs @ 16.88 hrs, Volume= 212 cf

Outflow = 0.01 cfs @ 16.91 hrs, Volume= 212 cf, Atten= 0%, Lag= 2.1 min

Discarded = 0.01 cfs @ 16.91 hrs, Volume= 212 cf Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routed to Pond SW-A: Stormtech MC-3500 (SWM-A)

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Peak Elev= 89.12' @ 16.91 hrs Surf.Area= 31 sf Storage= 1 cf

Plug-Flow detention time= 2.0 min calculated for 212 cf (100% of inflow)

Center-of-Mass det. time= 2.0 min (1,120.5 - 1,118.5)

Volume	Invert	Avail.Sto	rage Storage	Description
#1	89.10'	3,21	14 cf Drywell	& Basin (Prismatic) Listed below (Recalc)
Elevation	on Si	urf.Area	Inc.Store	Cum.Store
(fee		(sq-ft)	(cubic-feet)	(cubic-feet)
89.	10	31	0	0
90.	10	44	38	38
91.1	10	44	44	82
92.	10	44	44	126
93.0	00	15	27	152
93.	50	564	145	297
94.0	00	2,107	668	965
94.3	30	2,623	709	1,674
94.8	30	3,537	1,540	3,214
Device	Routing	Invert	Outlet Device	es
#1	Discarded	89.10'	20.000 in/hr l	Exfiltration over Surface area
#2	Secondary	94.30'	10.0' long x	3.0' breadth Broad-Crested Rectangular Weir
			Head (feet) 0	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

2.72 2.81 2.92 2.97 3.07 3.32

Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68

Discarded OutFlow Max=0.01 cfs @ 16.91 hrs HW=89.12' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.01 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=89.10' (Free Discharge) 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Storage (cubic-feet)

1,674

1,945

2,235

2,543 2,869

3,214

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

	J	•		•
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)
89.10	31	0	94.30	2,623
89.20	32	3	94.40	2,806
89.30	34	6	94.50	2,989
89.40	35	10	94.60	3,171
89.50	36	13	94.70	3,354
89.60	38	17	94.80	3,537
89.70	39	21		
89.80	40	25		
89.90	41	29		
90.00	43	33		
90.10	44	38		
90.20	44	42		
90.30	44	46		
90.40	44	51		
90.50	44	55		
90.60	44	60		
90.70	44	64		
90.80	44	68		
90.90	44	73		
91.00	44	77		
91.10	44	82		
91.20	44	86		
91.30	44	90		
91.40	44	95 95		
	44			
91.50	44	99		
91.60		104		
91.70	44	108		
91.80	44	112		
91.90	44	117		
92.00	44	121		
92.10	44	126		
92.20	41	130		
92.30	38	134		
92.40	34	137		
92.50	31	141		
92.60	28	143		
92.70	25	146		
92.80	21	148		
92.90	18	150		
93.00	15	152		
93.10	125	159		
93.20	235	177		
93.30	344	206		
93.40	454	246		
93.50	564	297		
93.60	873	369		
93.70	1,181	471		
93.80	1,490	605		
93.90	1,798	769		
94.00	2,107	965		
94.10	2,279	1,184		
94.20	2,451	1,420		
J T .20	۷,۳۵۱	1,420		
		ı		

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

Inflow Area = 14,032 sf, 9.11% Impervious, Inflow Depth = 0.01" for 2-Year event

Inflow = 0.00 cfs @ 21.70 hrs, Volume= 15 cf

Outflow = 0.00 cfs @ 21.74 hrs, Volume= 15 cf, Atten= 0%, Lag= 2.3 min

Routed to Link AP : Analysis Point

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Peak Elev= 91.50' @ 21.74 hrs Surf.Area= 31 sf Storage= 0 cf

Plug-Flow detention time= 3.0 min calculated for 15 cf (100% of inflow)

Center-of-Mass det. time= 3.0 min (1,222.7 - 1,219.6)

Volume	Invert Ava	il.Storage S	Storage	Description	
#1	91.50'	2,064 cf	Orywell	& Basin (Prisma	atic) Listed below (Recalc)
Elevation	Surf.Area	Inc.S	tore	Cum.Store	
(feet)	(sq-ft)	(cubic-	feet)	(cubic-feet)	
91.50	31		0	0	
92.50	44		38	38	
93.50	44		44	82	
94.50	44		44	126	
95.50	44		44	170	
96.50	44		44	214	
97.40	4		22	235	
98.00	97		30	265	
99.00	709		403	668	
99.06	1,117		55	723	
100.00	1,424	1	,194	1,917	
100.10	1,505		146	2,064	
Device Ro	outing Ir	vert Outlet	Device	S	

Device	Routing	IIIVEIL	Outlet Devices
#1	Discarded	91.50'	20.000 in/hr Exfiltration over Surface area
#2	Secondary	99.60'	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 @ 21.74 hrs HW=91.50' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.01 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=91.50' (Free Discharge) 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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

		_	•		
Elevation	Surface	Storage	Elevation	Surface	Storage
(feet)	(sq-ft)	(cubic-feet)	(feet)	(sq-ft)	(cubic-feet)
91.50	31 32	0 3	96.70	35 31	221 225
91.60 91.70	32 34	6	96.80 96.90	26	228
91.80	35 35	10	97.00	20 22	230
91.90	36	13	97.10	17	232
92.00	38	17	97.10	13	233
92.10	39	21	97.30	8	234
92.20	40	25	97.40	4	235
92.30	41	29	97.50	19	236
92.40	43	33	97.60	35	239
92.50	44	38	97.70	51	243
92.60	44	42	97.80	66	249
92.70	44	46	97.90	82	256
92.80	44	51	98.00	97	265
92.90	44	55	98.10	158	278
93.00	44	60	98.20	219	297
93.10	44	64	98.30	281	322
93.20	44	68	98.40	342	353
93.30	44	73	98.50	403	390
93.40	44	77	98.60	464	434
93.50	44	82	98.70	525	483
93.60	44	86	98.80	587	539
93.70 93.80	44 44	90 95	98.90 99.00	648 709	601 668
93.90	44	99	99.10	1,130	768
94.00	44	104	99.20	1,163	883
94.10	44	104	99.30	1,105	1,001
94.20	44	112	99.40	1,228	1,122
94.30	44	117	99.50	1,261	1,246
94.40	44	121	99.60	1,293	1,374
94.50	44	126	99.70	1,326	1,505
94.60	44	130	99.80	1,359	1,639
94.70	44	134	99.90	1,391	1,777
94.80	44	139	100.00	1,424	1,917
94.90	44	143	100.10	1,505	2,064
95.00	44	148			
95.10	44	152			
95.20	44	156			
95.30	44	161			
95.40	44	165			
95.50	44 44	170			
95.60 95.70	44 44	174 178			
95.70 95.80	44	183			
95.90	44	187			
96.00	44	192			
96.10	44	196			
96.20	44	200			
96.30	44	205			
96.40	44	209			
96.50	44	214			
96.60	40	218			

post development

Type III 24-hr 2-Year Rainfall=3.32"

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Summary for Link AP: Analysis Point

Inflow Area = 116,436 sf, 44.27% Impervious, Inflow Depth = 0.00" for 2-Year event

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

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

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Time span=0.00-72.00 hrs, dt=0.02 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment DA1A: DA1A Runoff Area=1.366 ac 10.54% Impervious Runoff Depth=0.18"

Flow Length=337' Tc=17.4 min CN=42 Runoff=0.04 cfs 891 cf

Subcatchment DA1B: DA1B Runoff Area=13,628 sf 16.84% Impervious Runoff Depth=0.35"

Tc=10.0 min CN=47 Runoff=0.04 cfs 399 cf

Subcatchment DA2A: DA2A Runoff Area=14,063 sf 100.00% Impervious Runoff Depth=4.19"

Tc=5.0 min CN=98 Runoff=1.44 cfs 4,915 cf

Subcatchment DA2B: DA2B Runoff Area=12,794 sf 0.00% Impervious Runoff Depth=0.08"

Flow Length=189' Tc=11.5 min CN=38 Runoff=0.00 cfs 83 cf

Subcatchment DA3: DA3 Runoff Area=14,032 sf 9.11% Impervious Runoff Depth=0.15"

Tc=10.0 min CN=41 Runoff=0.01 cfs 177 cf

Subcatchment DA4: DA4 Runoff Area=42,316 sf 86.93% Impervious Runoff Depth=3.33"

Tc=10.0 min CN=90 Runoff=3.22 cfs 11,738 cf

Subcatchment DA5: DA5 Runoff Area=1.085 ac 1.47% Impervious Runoff Depth=0.03"

Flow Length=332' Tc=11.4 min CN=35 Runoff=0.00 cfs 105 cf

Reach CD1: CURTAIN DRAIN Avg. Flow Depth=0.03' Max Vel=0.71 fps Inflow=0.04 cfs 399 cf

n=0.033 L=163.0' S=0.0166 '/' Capacity=45.63 cfs Outflow=0.04 cfs 399 cf

Pond SW-A: Stormtech MC-3500 (SWM-A) Peak Elev=86.70' Storage=2,332 cf Inflow=3.22 cfs 11,738 cf

Discarded=0.82 cfs 11,097 cf Primary=0.31 cfs 642 cf Outflow=1.12 cfs 11,738 cf

Pond SW-B: Bioretention Basin (SWM-B) Peak Elev=92.50' Storage=2,244 cf Inflow=1.44 cfs 4,998 cf

Discarded=0.09 cfs 4,998 cf Primary=0.00 cfs 0 cf Secondary=0.00 cfs 0 cf Outflow=0.09 cfs 4,998 cf

Pond SW-C: Drywell & Basin (SWM-C) Peak Elev=93.09' Storage=158 cf Inflow=0.07 cfs 1,291 cf

Discarded=0.05 cfs 1,291 cf Secondary=0.00 cfs 0 cf Outflow=0.05 cfs 1,291 cf

Pond SW-D: Drywell & Basin (SWM-D) Peak Elev=91.54' Storage=1 cf Inflow=0.01 cfs 177 cf

Discarded=0.01 cfs 177 cf Secondary=0.00 cfs 0 cf Outflow=0.01 cfs 177 cf

Link AP: Analysis Point Inflow=0.31 cfs 746 cf
Primary=0.31 cfs 746 cf

Total Runoff Area = 203,599 sf Runoff Volume = 18,309 cf Average Runoff Depth = 1.08" 69.85% Pervious = 142,206 sf 30.15% Impervious = 61,393 sf HydroCAD® 10.20-2g s/n 12772 © 2022 HydroCAD Software Solutions LLC

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Summary for Subcatchment DA1A: DA1A

Runoff = 0.04 cfs @ 12.68 hrs, Volume=

891 cf, Depth= 0.18"

Routed to Pond SW-C : Drywell & Basin (SWM-C)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Type III 24-hr 5-Year Rainfall=4.43"

_	Area	(ac) C	N Desc	cription		
	0.	673 3	9 >759	% Grass co	over, Good	, HSG A
	0.	549 3	0 Woo	ds, Good,	HSG A	
	0.	144 9	8 Pave	ed parking	, HSG A	
_	1.	366 4	2 Weig	ghted Aver	age	
	1.	222	89.4	6% Pervio	us Area	
	0.	144	10.5	4% Imperv	ious Area	
	Tc	Length	Slope	Velocity	Capacity	Description
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
	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			

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Summary for Subcatchment DA1B: DA1B

Runoff = 0.04 cfs @ 12.39 hrs, Volume= 399 cf, Depth= 0.35"

Routed to Reach CD1: CURTAIN DRAIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Type III 24-hr 5-Year Rainfall=4.43"

Area (sf)	CN	Description			
8,726	39	>75% Gras			
2,607	30	Woods, Go			
2,295	98	Paved park			
13,628	47	Weighted A			
11,333		83.16% Per	vious Area	l	
2,295		16.84% Imp	ervious Ar	ea	
Tc Length	Slo		Capacity	Description	
(min) (feet)	(ft/	ft) (ft/sec)	(cfs)		
40.0				Discot Fater, Discot Fater,	

10.0

Direct Entry, Direct Entry

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Summary for Subcatchment DA2A: DA2A

Runoff = 1.44 cfs @ 12.07 hrs, Volume= 4,915 cf, Depth= 4.19" 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= 0.02 hrs Type III 24-hr 5-Year Rainfall=4.43"

Aı	rea (sf)	CN E	Description		
	14,063	98 F	Roofs, HSG	Α	
	14,063	1	00.00% In	pervious A	rea
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Direct Entry

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Summary for Subcatchment DA2B: DA2B

Runoff = 0.00 cfs @ 15.15 hrs, Volume= 8 Routed to Pond SW-B : Bioretention Basin (SWM-B)

83 cf, Depth= 0.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Type III 24-hr 5-Year Rainfall=4.43"

	A	rea (sf)	CN	<u>Description</u>			
		11,225	39	>75% Gras	s cover, Go	ood, HSG A	
		1,569	30	Woods, Go	od, HSG A		
		12,794	38	Weighted A	verage		
		12,794		100.00% Pe	ervious Are	a	
	12,701						
	Тс	Length	Slope	,	Capacity	Description	
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)		
	10.6	100	0.0150	0.16		Sheet Flow, Sheetflow	
						Grass: Short n= 0.150 P2= 3.43"	
	0.9	89	0.0550	1.64		Shallow Concentrated Flow, Shallow	
_						Short Grass Pasture Kv= 7.0 fps	
	11.5	189	Total				

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Summary for Subcatchment DA3: DA3

Runoff = 0.01 cfs @ 13.72 hrs, Volume=

177 cf, Depth= 0.15"

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= 0.02 hrs Type III 24-hr 5-Year Rainfall=4.43"

400					Discot Finter Discot Finter		
(min)	(feet)	(ft/ft)) (ft/sec)	(cfs)			
Tc	Length	Slope	e Velocity	Capacity	Description		
	1,279		9.11% Impe	rvious Area	ea		
	12,753		90.89% Per	vious Area	a		
	14,032		41 Weighted Average				
	1,279	98	Paved parki	ng, HSG A	A		
	5,653	30	Woods, Go	od, HSG A	\mathcal{A}		
	7,100	39	>75% Grass	s cover, Go	lood, HSG A		
Ar	rea (sf)	CN	Description				

10.0

Direct Entry, Direct Entry

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Summary for Subcatchment DA4: DA4

Runoff = 3.22 cfs @ 12.14 hrs, Volume= 11,738 cf, Depth= 3.33" Routed to Pond SW-A : Stormtech MC-3500 (SWM-A)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Type III 24-hr 5-Year Rainfall=4.43"

Area (sf)	CN	Description	Description					
5,530	39	>75% Gras	s cover, Go	ood, HSG A				
36,786	98	Paved park	Paved parking, HSG A					
42,316	90	Weighted A	Weighted Average					
5,530		13.07% Per	vious Area					
36,786		86.93% Imp	ervious Ar	ea				
Tc Length	h Slo _l	pe Velocity	Capacity	Description				
(min) (feet	:) (ft/	ft) (ft/sec)	(cfs)					
10.0				Discot Fater	Discot Fotos			

10.0

Direct Entry, Direct Entry

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Summary for Subcatchment DA5: DA5

Runoff = 0.00 cfs @ 20.85 hrs, Volume= 105 cf, Depth= 0.03"

Routed to Link AP : Analysis Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Type III 24-hr 5-Year Rainfall=4.43"

	Area	(ac) C	N Desc	cription		
	0.	427 3	9 >759	% Grass co	over, Good	, HSG A
	0.	642 3	0 Woo	ds, Good,	HSG A	
	0.	016 9	8 Pave	ed parking,	, HSG A	
	1.	085 3	5 Weig	ghted Aver	age	
	1.	069	98.5	3% Pervio	us Area	
	0.	016	1.47	% Impervi	ous Area	
	_					
	Tc	Length	Slope	Velocity	Capacity	Description
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
	1.1	18	0.1330	0.27		Sheet Flow, Sheetflow
						Grass: Short n= 0.150 P2= 3.43"
	7.5	82	0.0240	0.18		Sheet Flow, Sheetflow
	4.0	440	0.0000	4.04		Grass: Short n= 0.150 P2= 3.43"
	1.9	118	0.0220	1.04		Shallow Concentrated Flow, Shallow
	0.0	4.4	0.0500	4.40		Short Grass Pasture Kv= 7.0 fps
	0.2	14	0.0500	1.12		Shallow Concentrated Flow, Shallow
	0.2	32	0.1400	2.62		Woodland Kv= 5.0 fps Shallow Concentrated Flow, Shallow
	0.2	32	0.1400	2.02		Short Grass Pasture Kv= 7.0 fps
	0.5	68	0.2350	2.42		Shallow Concentrated Flow, Shallow
	0.0	00	0.2000	۷.٦۷		Woodland Kv= 5.0 fps
_	11.4	332	Total			Troodidita itt 0.0 ipo
	11.4	332	i Ulai			

post development

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Summary for Reach CD1: CURTAIN DRAIN

Inflow Area = 13,628 sf, 16.84% Impervious, Inflow Depth = 0.35" for 5-Year event

Inflow = 0.04 cfs @ 12.39 hrs, Volume= 399 cf

Outflow = 0.04 cfs @ 12.46 hrs, Volume= 399 cf, Atten= 4%, Lag= 3.9 min

Routed to Pond SW-C : Drywell & Basin (SWM-C)

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Max. Velocity= 0.71 fps, Min. Travel Time= 3.8 min Avg. Velocity = 0.71 fps, Avg. Travel Time= 3.8 min

Peak Storage= 10 cf @ 12.46 hrs Average Depth at Peak Storage= 0.03', Surface Width= 2.00' Bank-Full Depth= 4.50' Flow Area= 9.0 sf, Capacity= 45.63 cfs

2.00' x 4.50' deep channel, n= 0.033 Riprap, 1-inch Length= 163.0' Slope= 0.0166 '/' Inlet Invert= 96.00', Outlet Invert= 93.30'

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Stage-Area-Storage for Reach CD1: CURTAIN DRAIN

			1		
Elevation		Storage		End-Area	Storage
(feet)	(sq-ft)	(cubic-feet)	(feet)	(sq-ft)	(cubic-feet)
96.00	0.0	0	98.60	5.2	848
96.05	0.1	16	98.65	5.3	864
96.10	0.2	33	98.70	5.4	880
96.15	0.3	49	98.75	5.5	897
96.20	0.4	65	98.80	5.6	913
96.25	0.5	82	98.85	5.7	929
96.30	0.6	98	98.90	5.8	945
96.35	0.7	114	98.95	5.9	962
96.40	0.7	130	99.00	6.0	978
96.45	0.0	147	99.05	6.1	994
96.50	1.0	163	99.10	6.2	1,011
96.55	1.1	179	99.15	6.3	1,027
96.60	1.2	196	99.20	6.4	1,043
96.65	1.3	212	99.25	6.5	1,060
96.70	1.4	228	99.30	6.6	1,076
96.75	1.5	245	99.35	6.7	1,092
96.80	1.6	261	99.40	6.8	1,108
96.85	1.7	277	99.45	6.9	1,125
96.90	1.8	293	99.50	7.0	1,141
96.95	1.9	310	99.55	7.1	1,157
97.00	2.0	326	99.60	7.2	1,174
97.05	2.1	342	99.65	7.3	1,190
97.10	2.2	359	99.70	7.4	1,206
97.15	2.3	375	99.75	7.5	1,223
97.20	2.4	391	99.80	7.6	1,239
97.25	2.5	408	99.85	7.7	1,255
97.30	2.6	424	99.90	7.8	1,271
97.35	2.7	440	99.95	7.9	1,288
97.40	2.7	456	100.00	8.0	1,304
	2.0				
97.45		473	100.05	8.1	1,320
97.50	3.0	489	100.10	8.2	1,337
97.55	3.1	505	100.15	8.3	1,353
97.60	3.2	522	100.20	8.4	1,369
97.65	3.3	538	100.25	8.5	1,386
97.70	3.4	554	100.30	8.6	1,402
97.75	3.5	571	100.35	8.7	1,418
97.80	3.6	587	100.40	8.8	1,434
97.85	3.7	603	100.45	8.9	1,451
97.90	3.8	619	100.50	9.0	1,467
97.95	3.9	636			
98.00	4.0	652			
98.05	4.1	668			
98.10	4.2	685			
98.15	4.3	701			
98.20	4.4	717			
98.25	4.5	734			
98.30	4.6	750			
98.35	4.7	766			
98.40	4.8	782			
98.45	4.9	799			
98.50	5.0	815			
98.55	5.0 5.1	831			
90.00	3 . I	031			

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

Inflow Area = 42,316 sf, 86.93% Impervious, Inflow Depth = 3.33" for 5-Year event Inflow 3.22 cfs @ 12.14 hrs, Volume= 11.738 cf Outflow 1.12 cfs @ 12.47 hrs, Volume= 11,738 cf, Atten= 65%, Lag= 20.2 min Discarded = 0.82 cfs @ 11.82 hrs, Volume= 11.097 cf 0.31 cfs @ 12.47 hrs, Volume= Primary 642 cf

Routed to Link AP: Analysis Point

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Peak Elev= 86.70' @ 12.47 hrs Surf.Area= 1,761 sf Storage= 2,332 cf

Plug-Flow detention time= 12.6 min calculated for 11,735 cf (100% of inflow)

Center-of-Mass det. time= 12.6 min (811.2 - 798.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	84.70'	2,519 cf	22.75'W x 77.40'L x 5.50'H Field A
			9,685 cf Overall - 3,388 cf Embedded = 6,297 cf x 40.0% Voids
#2A	85.45'	3,388 cf	ADS_StormTech MC-3500 d +Cap x 30 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
			30 Chambers in 3 Rows
			Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf
		5,907 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	84.70'	12.0" Round Outlet Pipe
	•		L= 44.0' CPP, end-section conforming to fill, Ke= 0.500
			Inlet / Outlet Invert= 84.70' / 84.10' S= 0.0136 '/' Cc= 0.900
			n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#2	Device 1	86.00'	4.0" Vert. Low Flow Orifice C= 0.600
			Limited to weir flow at low heads
#3	Device 1	87.80'	11.0" W x 4.0" H Vert. Upper Orifice C= 0.600
			Limited to weir flow at low heads
#4	Device 1	89.00'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#5	Discarded	84.70'	20.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.82 cfs @ 11.82 hrs HW=84.76' (Free Discharge) **-5=Exfiltration** (Exfiltration Controls 0.82 cfs)

Primary OutFlow Max=0.31 cfs @ 12.47 hrs HW=86.70' (Free Discharge)

-1=Outlet Pipe (Passes 0.31 cfs of 4.63 cfs potential flow)

2=Low Flow Orifice (Orifice Controls 0.31 cfs @ 3.51 fps)

-3=Upper Orifice (Controls 0.00 cfs)

-4=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

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Pond SW-A: Stormtech MC-3500 (SWM-A) - 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

10 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 75.40' Row Length +12.0" End Stone x 2 = 77.40' Base Length

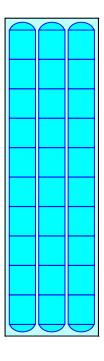
3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width 9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

30 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 3,388.0 cf Chamber Storage

9,684.7 cf Field - 3,388.0 cf Chambers = 6,296.7 cf Stone x 40.0% Voids = 2,518.7 cf Stone Storage

Chamber Storage + Stone Storage = 5,906.6 cf = 0.136 af Overall Storage Efficiency = 61.0% Overall System Size = 77.40' x 22.75' x 5.50'

30 Chambers 358.7 cy Field 233.2 cy Stone





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

Elevation	Surface	Storage	Elevation	Surface	Storage
(feet)	(sq-ft)	(cubic-feet)	(feet)	(sq-ft)	(cubic-feet)
84.70	1,761	0	89.90	1,761	5,695
84.80	1,761	70	90.00	1,761	5,766
84.90	1,761	141	90.10	1,761	5,836
85.00	1,761	211	90.20	1,761	5,907
85.10	1,761	282		•	•
85.20	1,761	352			
85.30	1,761	423			
85.40	1,761	493			
85.50		602			
	1,761				
85.60	1,761	750			
85.70	1,761	897			
85.80	1,761	1,044			
85.90	1,761	1,190			
86.00	1,761	1,335			
86.10	1,761	1,480			
86.20	1,761	1,624			
86.30	1,761	1,768			
86.40	1,761	1,910			
86.50	1,761	2,052			
86.60	1,761	2,193			
86.70	1,761	2,333			
86.80	1,761	2,472			
86.90	1,761	2,610			
87.00	1,761	2,747			
87.10	1,761	2,882			
87.20	1,761	3,017			
87.30	1,761	3,150			
87.40	1,761	3,281			
87.50	1,761	3,411			
87.60	1,761	3,540			
87.70	1,761	3,667			
87.80	1,761	3,791			
87.90	1,761	3,914			
88.00	1,761	4,035			
88.10	1,761	4,153			
88.20	1,761	4,269			
88.30	1,761	4,382			
88.40	1,761	4,492			
88.50	1,761	4,599			
88.60	1,761	4,702			
88.70	1,761	4,800			
88.80	1,761	4,892			
88.90	1,761	4,976			
89.00	1,761	5,055			
89.10	1,761	5,130			
89.20	1,761	5,202			
89.30	1,761	5,273			
89.40	1,761	5,343			
89.50	1,761	5,414			
89.60	1,761	5,484			
89.70	1,761	5,554			
89.80	1,761	5,625			

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

Inflow Area = 26,857 sf, 52.36% Impervious, Inflow Depth = 2.23" for 5-Year event Inflow 1.44 cfs @ 12.07 hrs, Volume= 4.998 cf 0.09 cfs @ 13.50 hrs, Volume= Outflow = 4,998 cf, Atten= 94%, Lag= 86.0 min Discarded = 0.09 cfs @ 13.50 hrs, Volume= 4,998 cf 0.00 cfs @ 0.00 hrs, Volume= Primary = 0 cf Routed to Link AP: Analysis Point 0.00 cfs @ 0.00 hrs. Volume= 0 cf Secondary = Routed to Link AP: Analysis Point

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Peak Elev= 92.50' @ 13.50 hrs Surf.Area= 1,985 sf Storage= 2,244 cf

Invest Aveil Otensons Otensons Description

Plug-Flow detention time= 236.0 min calculated for 4,997 cf (100% of inflow)

Center-of-Mass det. time= 236.0 min (990.8 - 754.8)

Volume	Invert	Avail.Stor	age Storage [Description	
#1	91.00'	6,32	5 cf Custom	Stage Data (Pris	matic) Listed below (Recalc)
Classatia	· · · · · · ·	mf Λ	In a Ctore	Cura Stara	
Elevation	_	rf.Area	Inc.Store	Cum.Store	
(fee	et)	(sq-ft)	(cubic-feet)	(cubic-feet)	
91.0	00	1,031	0	0	
92.0	00	1,649	1,340	1,340	
93.0	00	2,324	1,987	3,327	
94.0	00	3,055	2,690	6,016	
94.1	10	3,132	309	6,325	
Device	Routing	Invert	Outlet Devices	i	
#1	Primary	90.00'	12.0" Round (Outlet Pipe	
	•		L= 125.0' CM	P, square edge I	neadwall, Ke= 0.500
			Inlet / Outlet In	vert= 90.00' / 87	.00' S= 0.0240 '/' Cc= 0.900
			n= 0.010 PVC	, smooth interior	, Flow Area= 0.79 sf
#2	Device 1	93.40'	24.0" x 24.0" F	Horiz. Grate C=	= 0.600
			Limited to weir	flow at low head	S
#3	Secondary	93.60'	10.0' long x 3.	.0' breadth Broa	d-Crested Rectangular Weir
	•				80 1.00 1.20 1.40 1.60 1.80 2.00
			2.50 3.00 3.50		
					3 2.67 2.65 2.64 2.64 2.68 2.68
			, ,	2 2.97 3.07 3.3	
#4	Discarded	91.00'		filtration over Su	
	000.000	00			

Discarded OutFlow Max=0.09 cfs @ 13.50 hrs HW=92.50' (Free Discharge) **4=Exfiltration** (Exfiltration Controls 0.09 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=91.00' (Free Discharge)
1=Outlet Pipe (Passes 0.00 cfs of 2.67 cfs potential flow)
2=Grate (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=91.00' (Free Discharge) 3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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

	_	_			
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
91.00	1,031	(cubic-leet) 0	93.60	2,763	4,852
91.05	1,062	52	93.65	2,799	4,992
91.10	1,093	106	93.70	2,836	5,132
91.15	1,124	162	93.75	2,872	5,275
91.20	1,155	219	93.80	2,909	5,420
91.25	1,186	277	93.85	2,945	5,566
91.30	1,216	337	93.90	2,982	5,714
91.35	1,247	399	93.95	3,018	5,864
91.40	1,278	462	94.00	3,055	6,016
91.45	1,309	527	94.05	3,093	6,170
91.50 91.55	1,340 1,371	593 661	94.10	3,132	6,325
91.60	1,402	730			
91.65	1,433	801			
91.70	1,464	873			
91.75	1,495	947			
91.80	1,525	1,023			
91.85	1,556	1,100			
91.90	1,587	1,178			
91.95 92.00	1,618 1,649	1,258 1,340			
92.05	1,683	1,423			
92.10	1,716	1,508			
92.15	1,750	1,595			
92.20	1,784	1,683			
92.25	1,818	1,773			
92.30	1,851	1,865			
92.35	1,885	1,958			
92.40 92.45	1,919 1,953	2,054 2,150			
92.50	1,987	2,130			
92.55	2,020	2,349			
92.60	2,054	2,451			
92.65	2,088	2,554			
92.70	2,122	2,660			
92.75	2,155	2,767			
92.80 92.85	2,189 2,223	2,875 2,985			
92.90	2,257	3,097			
92.95	2,290	3,211			
93.00	2,324	3,327			
93.05	2,361	3,444			
93.10	2,397	3,563			
93.15	2,434	3,683			
93.20 93.25	2,470 2,507	3,806 3,930			
93.25	2,507 2,543	3,930 4,057			
93.35	2,580	4,185			
93.40	2,616	4,315			
93.45	2,653	4,446			
93.50	2,690	4,580			
93.55	2,726	4,715			

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

Inflow Area = 73,131 sf, 11.72% Impervious, Inflow Depth = 0.21" for 5-Year event

Inflow = 0.07 cfs @ 12.58 hrs, Volume= 1,291 cf

Outflow = 0.05 cfs @ 13.61 hrs, Volume= 1,291 cf, Atten= 29%, Lag= 61.6 min

Discarded = 0.05 cfs @ 13.61 hrs, Volume = 1,291 cfSecondary = 0.00 cfs @ 0.00 hrs, Volume = 0 cf

Routed to Pond SW-A: Stormtech MC-3500 (SWM-A)

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Peak Elev= 93.09' @ 13.61 hrs Surf.Area= 111 sf Storage= 158 cf

Plug-Flow detention time= 91.1 min calculated for 1,291 cf (100% of inflow)

Center-of-Mass det. time= 91.1 min (1,093.0 - 1,001.8)

Volume	Invert	Avail.Sto	rage Storage	Description		
#1	89.10'	3,21	14 cf Drywel	l & Basin (Prisma	atic) Listed below (R	Recalc)
- 1			les of the second	0		
Elevatio		ırf.Area	Inc.Store	Cum.Store		
(fee	t)	(sq-ft)	(cubic-feet)	(cubic-feet)		
89.1	0	31	0	0		
90.1	0	44	38	38		
91.1	0	44	44	82		
92.1	0	44	44	126		
93.0	0	15	27	152		
93.5	50	564	145	297		
94.0	0	2,107	668	965		
94.3	80	2,623	709	1,674		
94.8	80	3,537	1,540	3,214		
Device	Routing	Invert	Outlet Device	es		
#1	Discarded	89.10'	20.000 in/hr	Exfiltration over	Surface area	
#2	Secondary	94.30'	10.0' long x	3.0' breadth Bro	ad-Crested Rectang	gular Weir
	,		_		0.80 1.00 1.20 1.4	-

2.50 3.00 3.50 4.00 4.50

2.72 2.81 2.92 2.97 3.07 3.32

Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68

Discarded OutFlow Max=0.05 cfs @ 13.61 hrs HW=93.09' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.05 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=89.10' (Free Discharge) 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Storage (cubic-feet)

1,674

1,945

2,235

2,543

2,869

3,214

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

	_			_
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)
				
89.10	31	0	94.30	2,623
89.20	32	3	94.40	2,806
89.30	34	6	94.50	2,989
89.40	35	10	94.60	3,171
89.50	36	13	94.70	3,354
89.60	38	17	94.80	3,537
89.70	39	21		-,
89.80	40	25		
89.90	41	29		
90.00	43	33		
	44	38		
90.10				
90.20	44	42		
90.30	44	46		
90.40	44	51		
90.50	44	55		
90.60	44	60		
90.70	44	64		
90.80	44	68		
90.90	44	73		
91.00	44	77		
91.10	44	82		
91.20	44	86		
91.30	44	90		
91.40	44	95		
91.50	44	99		
91.60	44	104		
91.70	44	104		
91.80	44	112		
91.90	44	117		
92.00	44	121		
92.10	44	126		
92.20	41	130		
92.30	38	134		
92.40	34	137		
92.50	31	141		
92.60	28	143		
92.70	25	146		
92.80	21	148		
92.90	18	150		
93.00	15	152		
93.10	125	159		
93.10	235	177		
93.20	235 344	206		
93.40	454	246		
93.50	564	297		
93.60	873	369		
93.70	1,181	471		
93.80	1,490	605		
93.90	1,798	769		
94.00	2,107	965		
94.10	2,279	1,184		
94.20	2,451	1,420		
	,	,		
		'	ı	

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

Inflow Area = 14,032 sf, 9.11% Impervious, Inflow Depth = 0.15" for 5-Year event

Inflow = 0.01 cfs @ 13.72 hrs, Volume= 177 cf

Outflow = 0.01 cfs @ 13.77 hrs, Volume= 177 cf, Atten= 0%, Lag= 3.1 min

Discarded = 0.01 cfs @ 13.77 hrs, Volume= 177 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= 0.02 hrs Peak Elev= 91.54' @ 13.77 hrs Surf.Area= 32 sf Storage= 1 cf

Plug-Flow detention time= 3.0 min calculated for 177 cf (100% of inflow)

Center-of-Mass det. time= 3.0 min (1,031.1 - 1,028.0)

Volume	Invert Ava	il.Storage	Storage I	Description	
#1	91.50'	2,064 cf	Orywell &	& Basin (Prismat	tic) Listed below (Recalc)
Elevation	Surf.Area	Inc.S	Store	Cum.Store	
(feet)	(sq-ft)	(cubic-	feet)	(cubic-feet)	
91.50	31		0	0	
92.50	44		38	38	
93.50	44		44	82	
94.50	44		44	126	
95.50	44		44	170	
96.50	44		44	214	
97.40	4		22	235	
98.00	97		30	265	
99.00	709		403	668	
99.06	1,117		55	723	
100.00	1,424	1	,194	1,917	
100.10	1,505		146	2,064	
Device Ro	outing In	vert Outlet	Devices	;	

DCVICC	rtouting	IIIVCIL	Odilct Devices
#1	Discarded	91.50'	20.000 in/hr Exfiltration over Surface area
#2	Secondary	99.60'	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 @ 13.77 hrs HW=91.54' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.01 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=91.50' (Free Discharge) 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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

Elevation	Surface	Storage	Elevation	Surface	Storage
(feet)	(sq-ft)	(cubic-feet)	(feet)	(sq-ft)	(cubic-feet)
91.50	31	0	96.70	35	221
91.60	32	3	96.80	31	225
91.70	34	6	96.90	26	228
91.80	35	10	97.00	22	230
91.90	36	13	97.10	17	232
92.00	38	17	97.20	13	233
92.10	39	21	97.30	8	234
92.20	40	25	97.40	4	235
92.30	41	29	97.50	19	236
92.40	43	33	97.60	35	239
92.50	44	38	97.70	51	243
92.60	44	42	97.80	66	249
92.70	44	46 54	97.90	82	256
92.80 92.90	44 44	51 55	98.00	97 158	265 278
93.00	44 44	60	98.10 98.20	219	276 297
93.10	44	64	98.30	281	322
93.10	44	68	98.40	342	353
93.30	44	73	98.50	403	390
93.40	44	77	98.60	464	434
93.50	44	82	98.70	525	483
93.60	44	86	98.80	587	539
93.70	44	90	98.90	648	601
93.80	44	95	99.00	709	668
93.90	44	99	99.10	1,130	768
94.00	44	104	99.20	1,163	883
94.10	44	108	99.30	1,195	1,001
94.20	44	112	99.40	1,228	1,122
94.30	44	117	99.50	1,261	1,246
94.40	44	121	99.60	1,293	1,374
94.50	44	126	99.70	1,326	1,505
94.60 94.70	44 44	130	99.80	1,359	1,639
94.70 94.80	44 44	134 139	99.90 100.00	1,391 1,424	1,777 1,917
94.90	44	143	100.00	1,505	2, 064
95.00	44	148	100.10	1,303	2,004
95.10	44	152			
95.20	44	156			
95.30	44	161			
95.40	44	165			
95.50	44	170			
95.60	44	174			
95.70	44	178			
95.80	44	183			
95.90	44	187			
96.00	44	192			
96.10	44	196			
96.20	44	200			
96.30 96.40	44 44	205 209			
96.40 96.50	44 44	209 214			
96.60	40	218			
50.00	40	210			
			ı		

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Type III 24-hr 5-Year Rainfall=4.43"

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Summary for Link AP: Analysis Point

Inflow Area = 116,436 sf, 44.27% Impervious, Inflow Depth = 0.08" for 5-Year event

Inflow = 0.31 cfs @ 12.47 hrs, Volume= 746 cf

Primary = 0.31 cfs @ 12.47 hrs, Volume= 746 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

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Time span=0.00-72.00 hrs, dt=0.02 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment DA1A: DA1A Runoff Area=1.366 ac 10.54% Impervious Runoff Depth=0.41"

Flow Length=337' Tc=17.4 min CN=42 Runoff=0.20 cfs 2,026 cf

Subcatchment DA1B: DA1B Runoff Area=13,628 sf 16.84% Impervious Runoff Depth=0.67"

Tc=10.0 min CN=47 Runoff=0.12 cfs 757 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=12,794 sf 0.00% Impervious Runoff Depth=0.24"

Flow Length=189' Tc=11.5 min CN=38 Runoff=0.01 cfs 252 cf

Subcatchment DA3: DA3 Runoff Area=14,032 sf 9.11% Impervious Runoff Depth=0.36"

Tc=10.0 min CN=41 Runoff=0.04 cfs 424 cf

Subcatchment DA4: DA4 Runoff Area=42,316 sf 86.93% Impervious Runoff Depth=4.21"

Tc=10.0 min CN=90 Runoff=4.03 cfs 14,862 cf

Subcatchment DA5: DA5 Runoff Area=1.085 ac 1.47% Impervious Runoff Depth=0.13"

Flow Length=332' Tc=11.4 min CN=35 Runoff=0.02 cfs 521 cf

Reach CD1: CURTAIN DRAIN Avg. Flow Depth=0.06' Max Vel=0.93 fps Inflow=0.12 cfs 757 cf

n=0.033 L=163.0' S=0.0166 '/' Capacity=45.63 cfs Outflow=0.12 cfs 757 cf

Pond SW-A: Stormtech MC-3500 (SWM-A) Peak Elev=87.41' Storage=3,298 cf Inflow=4.03 cfs 14,862 cf

Discarded=0.82 cfs 13,384 cf Primary=0.47 cfs 1,477 cf Outflow=1.28 cfs 14,862 cf

Pond SW-B: Bioretention Basin (SWM-B) Peak Elev=92.83' Storage=2,933 cf Inflow=1.75 cfs 6,244 cf

Discarded=0.10 cfs 6,244 cf Primary=0.00 cfs 0 cf Secondary=0.00 cfs 0 cf Outflow=0.10 cfs 6,244 cf

Pond SW-C: Drywell & Basin (SWM-C) Peak Elev=93.41' Storage=253 cf Inflow=0.29 cfs 2,782 cf

Discarded=0.22 cfs 2,782 cf Secondary=0.00 cfs 0 cf Outflow=0.22 cfs 2,782 cf

Pond SW-D: Drywell & Basin (SWM-D) Peak Elev=92.40' Storage=33 cf Inflow=0.04 cfs 424 cf

Discarded=0.02 cfs 424 cf Secondary=0.00 cfs 0 cf Outflow=0.02 cfs 424 cf

Link AP: Analysis Point Inflow=0.47 cfs 1,999 cf

Primary=0.47 cfs 1,999 cf

Total Runoff Area = 203,599 sf Runoff Volume = 24,833 cf Average Runoff Depth = 1.46" 69.85% Pervious = 142,206 sf 30.15% Impervious = 61,393 sf

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Summary for Subcatchment DA1A: DA1A

Runoff = 0.20 cfs @ 12.51 hrs, Volume= 2 Routed to Pond SW-C : Drywell & Basin (SWM-C)

2,026 cf, Depth= 0.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Type III 24-hr 10-Year Rainfall=5.35"

	Area	(ac) C	N Desc	cription		
Ī	0.	673 3	39 >759	% Grass c	over, Good	, HSG A
	0.	549 3	30 Woo	ds, Good,	HSG A	,
	0.	144 9	8 Pave	ed parking	, HSG A	
	1.	366 4	2 Weig	ghted Aver	age	
	1.	222		6% Pervio		
	0.	144	10.5	4% Imperv	/ious Area	
	Tc	Length	Slope	Velocity	Capacity	Description
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
	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
	4 7	00	0.0004	0.00		Short Grass Pasture Kv= 7.0 fps
	1.7	99	0.0394	0.99		Shallow Concentrated Flow, Shallow
	0.4	00	0.0400	4.00		Woodland Kv= 5.0 fps
	0.1	20	0.3400	4.08		Shallow Concentrated Flow, Shallow
_	4					Short Grass Pasture Kv= 7.0 fps
	17.4	337	Total			

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Summary for Subcatchment DA1B: DA1B

Runoff = 0.12 cfs @ 12.21 hrs, Volume=

757 cf, Depth= 0.67"

Routed to Reach CD1: CURTAIN DRAIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Type III 24-hr 10-Year Rainfall=5.35"

Area (sf)	CN	Description							
8,726	39	>75% Grass cover, Good, HSG A							
2,607	30	Woods, Good, HSG A							
2,295	98	Paved parking, HSG A	Paved parking, HSG A						
13,628	47	Weighted Average							
11,333		83.16% Pervious Area							
2,295		16.84% Impervious Area							
Tc Length	Slo								
(min) (feet)	(ft/	/ft) (ft/sec) (cfs)							

10.0

Direct Entry, Direct Entry

Type III 24-hr 10-Year Rainfall=5.35"

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Summary for Subcatchment DA2A: DA2A

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

5,992 cf, Depth= 5.11"

reduced to 1 one over B . Bioretention Busin (GVVIVI B)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Type III 24-hr 10-Year Rainfall=5.35"

Aı	rea (sf)	CN E	Description					
	14,063	98 F	Roofs, HSG A					
	14,063	1	100.00% Impervious Area					
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description			
5.0					Direct Entry, Direct Entry			

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Summary for Subcatchment DA2B: DA2B

Runoff = 0.01 cfs @ 12.54 hrs, Volume=

252 cf, Depth= 0.24"

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= 0.02 hrs Type III 24-hr 10-Year Rainfall=5.35"

	Α	rea (sf)	CN	Description							
		11,225	39	>75% Gras	75% Grass cover, Good, HSG A						
		1,569	30	Woods, Go	oods, Good, HSG A						
		12,794	38	Weighted A	verage						
		12,794		100.00% Pe	ervious Are	a					
	Tc	Length	Slope	•	Capacity	Description					
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)						
	10.6	100	0.0150	0.16		Sheet Flow, Sheetflow					
						Grass: Short n= 0.150 P2= 3.43"					
	0.9	89	0.0550	1.64		Shallow Concentrated Flow, Shallow					
_						Short Grass Pasture Kv= 7.0 fps					
_	11.5	189	Total	·	·						

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Summary for Subcatchment DA3: DA3

Runoff = 0.04 cfs @ 12.43 hrs, Volume= 424 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= 0.02 hrs Type III 24-hr 10-Year Rainfall=5.35"

_	Area (sf)	CN	Description							
	7,100	39	>75% Gras	>75% Grass cover, Good, HSG A						
	5,653	30	Woods, Go	Woods, Good, HSG A						
	1,279	98	Paved park	Paved parking, HSG A						
	14,032	41	Weighted A	Weighted Average						
	12,753		90.89% Pei	vious Area						
	1,279		9.11% Impe	9.11% Impervious Area						
	Tc Length			Capacity	Description					
_	(min) (feet) (ft/	ft) (ft/sec)	(cfs)						
	10.0				Diverse Frager Diverse Frager					

10.0

Direct Entry, Direct Entry

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Summary for Subcatchment DA4: DA4

Runoff = 4.03 cfs @ 12.14 hrs, Volume= 14,862 cf, Depth= 4.21" Routed to Pond SW-A : Stormtech MC-3500 (SWM-A)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Type III 24-hr 10-Year Rainfall=5.35"

_	Area (s	f) CN	Description	Description						
	5,53	39	>75% Gras	>75% Grass cover, Good, HSG A						
_	36,78	86 98	Paved park	Paved parking, HSG A						
	42,31	6 90	Weighted A	Weighted Average						
	5,53	80	13.07% Per	13.07% Pervious Area						
	36,78	86	86.93% Imp	86.93% Impervious Area						
	Tc Leng	,	. ,	Capacity	Description					
	(min) (fe	et) (ft,	/ft) (ft/sec)	(cfs)						
	10.0				Direct Entry	Direct Entry				

10.0

Direct Entry, Direct Entry

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Summary for Subcatchment DA5: DA5

Runoff = 0.02 cfs @ 14.78 hrs, Volume= 521 cf, Depth= 0.13"

Routed to Link AP : Analysis Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Type III 24-hr 10-Year Rainfall=5.35"

Area	(ac) C	N Desc	cription						
0.	.427 3	39 >75%	% Grass c	over, Good	, HSG A				
0.	.642 3		ds, Good,	•	,				
0.	0.016 98 Paved parking, HSG A								
1.085 35 Weighted Average									
1.069 98.53% Pervious Area									
0.	.016	1.47	% Impervi	ous Area					
_									
Tc	Length	Slope	Velocity	Capacity	Description				
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)					
1.1	18	0.1330	0.27		Sheet Flow, Sheetflow				
					Grass: Short n= 0.150 P2= 3.43"				
7.5	82	0.0240	0.18		Sheet Flow, Sheetflow				
4.0	440	0.0000	4.04		Grass: Short n= 0.150 P2= 3.43"				
1.9	118	0.0220	1.04		Shallow Concentrated Flow, Shallow				
0.0	4.4	0.0500	4 40		Short Grass Pasture Kv= 7.0 fps				
0.2	14	0.0500	1.12		Shallow Concentrated Flow, Shallow				
0.2	32	0.1400	2.62		Woodland Kv= 5.0 fps Shallow Concentrated Flow, Shallow				
0.2	32	0.1400	2.02		Short Grass Pasture Kv= 7.0 fps				
0.5	68	0.2350	2.42		Shallow Concentrated Flow, Shallow				
0.0	00	0.2000	۷.٦٢		Woodland Kv= 5.0 fps				
11.4	332	Total			Troodiana 1tt 0.0 ipo				
11.4	332	Total							

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Summary for Reach CD1: CURTAIN DRAIN

Inflow Area = 13,628 sf, 16.84% Impervious, Inflow Depth = 0.67" for 10-Year event

Inflow = 0.12 cfs @ 12.21 hrs, Volume= 757 cf

Outflow = 0.12 cfs @ 12.26 hrs, Volume= 757 cf, Atten= 3%, Lag= 3.4 min

Routed to Pond SW-C : Drywell & Basin (SWM-C)

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Max. Velocity= 0.93 fps, Min. Travel Time= 2.9 min Avg. Velocity = 0.72 fps, Avg. Travel Time= 3.8 min

Peak Storage= 20 cf @ 12.26 hrs Average Depth at Peak Storage= 0.06', Surface Width= 2.00' Bank-Full Depth= 4.50' Flow Area= 9.0 sf, Capacity= 45.63 cfs

2.00' x 4.50' deep channel, n= 0.033 Riprap, 1-inch Length= 163.0' Slope= 0.0166 '/' Inlet Invert= 96.00', Outlet Invert= 93.30' post development

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Stage-Area-Storage for Reach CD1: CURTAIN DRAIN

Elevation En	d Aroa	Storage	Elevation	End-Area	Storage
(feet)	(sq-ft)	(cubic-feet)	(feet)	(sq-ft)	(cubic-feet)
96.00	0.0	0	98.60	5.2	848
96.05	0.1	16	98.65	5.3	864
96.10	0.2	33	98.70	5.4	880
96.15	0.3	49	98.75	5.5	897
96.20	0.4	65	98.80	5.6	913
96.25	0.5	82	98.85	5.7	929
96.30	0.6	98	98.90	5.8	945
96.35	0.7	114	98.95	5.9	962
96.40	0.8	130	99.00	6.0	978
96.45	0.9	147	99.05	6.1	994
96.50	1.0	163	99.10	6.2	1,011
96.55	1.1 1.2	179	99.15	6.3	1,027
96.60 06.65	1.2	196 212	99.20 99.25	6.4 6.5	1,043 1,060
96.65 96.70	1.3	228	99.23	6.6	1,000
96.75	1.5	245	99.35	6.7	1,070
96.80	1.6	261	99.40	6.8	1,108
96.85	1.7	277	99.45	6.9	1,125
96.90	1.8	293	99.50	7.0	1,141
96.95	1.9	310	99.55	7.1	1,157
97.00	2.0	326	99.60	7.2	1,174
97.05	2.1	342	99.65	7.3	1,190
97.10	2.2	359	99.70	7.4	1,206
97.15	2.3	375	99.75	7.5	1,223
97.20	2.4	391	99.80	7.6	1,239
97.25	2.5	408	99.85	7.7	1,255
97.30 97.35	2.6 2.7	424 440	99.90 99.95	7.8 7.9	1,271 1,288
97.33 97.40	2.7	456	100.00	7.9 8.0	1,304
97.45	2.9	473	100.05	8.1	1,320
97.50	3.0	489	100.10	8.2	1,337
97.55	3.1	505	100.15	8.3	1,353
97.60	3.2	522	100.20	8.4	1,369
97.65	3.3	538	100.25	8.5	1,386
97.70	3.4	554	100.30	8.6	1,402
97.75	3.5	571	100.35	8.7	1,418
97.80	3.6	587	100.40	8.8	1,434
97.85	3.7	603	100.45	8.9	1,451
97.90	3.8	619	100.50	9.0	1,467
97.95 98.00	3.9 4.0	636 652			
98.05	4.0	668			
98.10	4.2	685			
98.15	4.3	701			
98.20	4.4	717			
98.25	4.5	734			
98.30	4.6	750			
98.35	4.7	766			
98.40	4.8	782			
98.45	4.9	799			
98.50	5.0	815			
98.55	5.1	831			

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

Inflow Area = 42,316 sf, 86.93% Impervious, Inflow Depth = 4.21" for 10-Year event
Inflow = 4.03 cfs @ 12.14 hrs, Volume= 14,862 cf
Outflow = 1.28 cfs @ 12.50 hrs, Volume= 14,862 cf, Atten= 68%, Lag= 21.6 min
Discarded = 0.82 cfs @ 11.76 hrs, Volume= 13,384 cf
Primary = 0.47 cfs @ 12.50 hrs, Volume= 1,477 cf

Routed to Link AP: Analysis Point

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Peak Elev= 87.41' @ 12.50 hrs Surf.Area= 1,761 sf Storage= 3,298 cf

Plug-Flow detention time= 16.3 min calculated for 14,858 cf (100% of inflow)

Center-of-Mass det. time= 16.3 min (808.5 - 792.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	84.70'	2,519 cf	22.75'W x 77.40'L x 5.50'H Field A
			9,685 cf Overall - 3,388 cf Embedded = 6,297 cf x 40.0% Voids
#2A	85.45'	3,388 cf	ADS_StormTech MC-3500 d +Cap x 30 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
			30 Chambers in 3 Rows
			Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf
		5,907 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	84.70'	12.0" Round Outlet Pipe
	-		L= 44.0' CPP, end-section conforming to fill, Ke= 0.500
			Inlet / Outlet Invert= 84.70' / 84.10' S= 0.0136 '/' Cc= 0.900
			n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#2	Device 1	86.00'	4.0" Vert. Low Flow Orifice C= 0.600
			Limited to weir flow at low heads
#3	Device 1	87.80'	11.0" W x 4.0" H Vert. Upper Orifice C= 0.600
			Limited to weir flow at low heads
#4	Device 1	89.00'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#5	Discarded	84.70'	20.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.82 cfs @ 11.76 hrs HW=84.76' (Free Discharge) **5=Exfiltration** (Exfiltration Controls 0.82 cfs)

Primary OutFlow Max=0.47 cfs @ 12.50 hrs HW=87.41' (Free Discharge)

1=Outlet Pipe (Passes 0.47 cfs of 5.63 cfs potential flow)

2=Low Flow Orifice (Orifice Controls 0.47 cfs @ 5.37 fps)

-3=Upper Orifice (Controls 0.00 cfs)

-4=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

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Pond SW-A: Stormtech MC-3500 (SWM-A) - 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

10 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 75.40' Row Length +12.0" End Stone x 2 = 77.40' Base Length

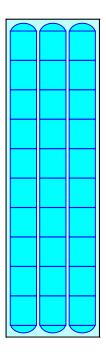
3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width 9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

30 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 3,388.0 cf Chamber Storage

9,684.7 cf Field - 3,388.0 cf Chambers = 6,296.7 cf Stone x 40.0% Voids = 2,518.7 cf Stone Storage

Chamber Storage + Stone Storage = 5,906.6 cf = 0.136 af Overall Storage Efficiency = 61.0% Overall System Size = 77.40' x 22.75' x 5.50'

30 Chambers 358.7 cy Field 233.2 cy Stone





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

(teet) (sq-ft) (cubic-feet) (teet) (sq-ft) (cubic-feet) (sq-ft) (cubic-feet) (sq-ft) (Elevation	Surface	Storage	Elevation	Surface	Storage
84.80	(feet)	(sq-ft)	(cubic-feet)	(feet)	(sq-ft)	(cubic-feet)
84.90	84.70	1,761	0	89.90	1,761	5,695
84.90	84.80	1,761	70	90.00	1,761	5,766
85.00						
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86.00	85.90	1,761	1,190			
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89.70 1,761 5,554						
89.80 1,761 5,625						
	89.80	1,761	5,625			

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

Inflow Area = 26,857 sf, 52.36% Impervious, Inflow Depth = 2.79" for 10-Year event Inflow 1.75 cfs @ 12.07 hrs, Volume= 6.244 cf 0.10 cfs @ 13.91 hrs, Volume= Outflow = 6,244 cf, Atten= 94%, Lag= 110.1 min Discarded = 0.10 cfs @ 13.91 hrs, Volume= 6,244 cf 0.00 cfs @ 0.00 hrs, Volume= Primary = 0 cf Routed to Link AP: Analysis Point 0.00 cfs @ 0.00 hrs. Volume= 0 cf Secondary = Routed to Link AP: Analysis Point

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Peak Elev= 92.83' @ 13.91 hrs Surf.Area= 2,207 sf Storage= 2,933 cf

Plug-Flow detention time= 289.8 min calculated for 6,242 cf (100% of inflow)

Center-of-Mass det. time= 289.8 min (1,046.3 - 756.5)

Volume	Invert	Avail.Sto	rage Storage	Description	
#1	91.00'	6,32	25 cf Custom	Stage Data (Pr	ismatic) Listed below (Recalc)
	_				
Elevation	_	rf.Area	Inc.Store	Cum.Store	
(fee	et)	(sq-ft)	(cubic-feet)	(cubic-feet)	
91.0	00	1,031	0	0	
92.0	00	1,649	1,340	1,340	
93.0	00	2,324	1,987	3,327	
94.0	00	3,055	2,690	6,016	
94.1	10	3,132	309	6,325	
Device	Routing	Invert	Outlet Devices	S	
#1	Primary	90.00'	12.0" Round	Outlet Pipe	
			L= 125.0' CN	/IP, square edge	headwall, Ke= 0.500
			Inlet / Outlet In	nvert= 90.00' / 8	7.00' S= 0.0240 '/' Cc= 0.900
			n= 0.010 PV0	C, smooth interio	or, Flow Area= 0.79 sf
#2	Device 1	93.40'	24.0" x 24.0"	Horiz. Grate (C= 0.600
			Limited to wei	r flow at low hea	ads
#3	Secondary	93.60'			oad-Crested Rectangular Weir
					0.80 1.00 1.20 1.40 1.60 1.80 2.00
			2.50 3.00 3.5	50 4.00 4.50	
			Coef. (English	n) 2.44 2.58 2.	68 2.67 2.65 2.64 2.64 2.68 2.68
			2.72 2.81 2.9	92 2.97 3.07 3	.32
#4	Discarded	91.00'	2.000 in/hr Ex	filtration over S	Surface area

Discarded OutFlow Max=0.10 cfs @ 13.91 hrs HW=92.83' (Free Discharge) **4=Exfiltration** (Exfiltration Controls 0.10 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=91.00' (Free Discharge)
1=Outlet Pipe (Passes 0.00 cfs of 2.67 cfs potential flow)
2=Grate (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=91.00' (Free Discharge) 3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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

	•	· ·			,
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
91.00	1,031	0	93.60	2,763	4,852
91.05	1,062	52	93.65	2,799	4,992
91.10	1,093	106	93.70	2,836	5,132
91.15	1,124	162	93.75	2,872	5,275
91.20	1,155	219	93.80	2,909	5,420
91.25	1,186	277	93.85	2,945	5,566
91.30	1,216	337	93.90	2,982	5,714
91.35	1,247	399	93.95	3,018	5,864
91.40 91.45	1,278 1,309	462 527	94.00 94.05	3,055 3,093	6,016 6,170
91.50	1,340	593	94.03	3,093 3,132	6,325
91.55	1,371	661	34.10	3,132	0,020
91.60	1,402	730			
91.65	1,433	801			
91.70	1,464	873			
91.75	1,495	947			
91.80	1,525	1,023			
91.85	1,556	1,100			
91.90	1,587	1,178			
91.95 92.00	1,618 1,649	1,258 1,340			
92.05	1,683	1,423			
92.10	1,716	1,508			
92.15	1,750	1,595			
92.20	1,784	1,683			
92.25	1,818	1,773			
92.30	1,851	1,865			
92.35	1,885	1,958			
92.40	1,919	2,054			
92.45	1,953	2,150			
92.50 92.55	1,987 2,020	2,249 2,349			
92.60	2,054	2,451			
92.65	2,088	2,554			
92.70	2,122	2,660			
92.75	2,155	2,767			
92.80	2,189	2,875			
92.85	2,223	2,985			
92.90	2,257	3,097			
92.95	2,290	3,211			
93.00 93.05	2,324 2,361	3,327 3,444			
93.05	2,397	3,563			
93.15	2,434	3,683			
93.20	2,470	3,806			
93.25	2,507	3,930			
93.30	2,543	4,057			
93.35	2,580	4,185			
93.40	2,616	4,315			
93.45	2,653	4,446			
93.50	2,690	4,580 4,715			
93.55	2,726	4,715			

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

Inflow Area = 73,131 sf, 11.72% Impervious, Inflow Depth = 0.46" for 10-Year event

Inflow = 0.29 cfs @ 12.47 hrs, Volume= 2,782 cf

Outflow = 0.22 cfs @ 12.68 hrs, Volume= 2,782 cf, Atten= 25%, Lag= 12.6 min

Discarded = 0.22 cfs @ 12.68 hrs, Volume= 2,782 cf Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routed to Pond SW-A: Stormtech MC-3500 (SWM-A)

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Peak Elev= 93.41' @ 12.68 hrs Surf.Area= 471 sf Storage= 253 cf

Plug-Flow detention time= 46.8 min calculated for 2,782 cf (100% of inflow)

Center-of-Mass det. time= 46.8 min (1,004.3 - 957.5)

Volume	Invert	Avail.Sto	rage	Storage	Description	
#1	89.10'	3,2	14 cf	Drywell	& Basin (Prism	natic) Listed below (Recalc)
Elevation	on Su	ırf.Area	Inc.	Store	Cum.Store	
(fee	et)	(sq-ft)	(cubic	:-feet)	(cubic-feet)	
89.1	10	31		0	0	
90.1	10	44		38	38	
91.1	10	44		44	82	
92.1	10	44		44	126	
93.0	00	15		27	152	
93.5	50	564		145	297	
94.0	00	2,107		668	965	
94.3	30	2,623		709	1,674	
94.8	30	3,537		1,540	3,214	
Device	Routing	Invert	Outle	et Device	es	
#1	Discarded	89.10'	20.00	00 in/hr l	Exfiltration over	r Surface area
#2	Secondary	94.30'	10.0'	long x	3.0' breadth Bro	oad-Crested Rectangular Weir
			Head	l (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	. (Englis	h) 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

Discarded OutFlow Max=0.22 cfs @ 12.68 hrs HW=93.41' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.22 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=89.10' (Free Discharge) 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Storage (cubic-feet)

1,674

1,945

2,235

2,543

2,869

3,214

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

Surface

(sq-ft) 2,623

2,806

2,989

3,171

3,354

3,537

	Otage-Ai	ca-otorage to	i i ona ovi-o. Di
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)
89.10	31	Ő	94.30
89.20	32	3	94.40
89.30	34	6	94.50
89.40	35	10	94.60
89.50	36	13	94.70
89.60	38	17	94.80
89.70	39	21	000
89.80	40	25	
89.90	41	29	
90.00	43	33	
90.10	44	38	
90.20	44	42	
90.30	44	46	
90.40	44	51	
90.50	44	55	
90.60	44	60	
90.70	44	64	
90.80	44	68	
90.90	44	73	
91.00	44	77	
91.10	44	82	
91.20	44	86	
91.30	44	90	
91.40 91.50	44 44	95 99	
91.60	44	104	
91.70	44	104	
91.80	44	112	
91.90	44	117	
92.00	44	121	
92.10	44	126	
92.20	41	130	
92.30	38	134	
92.40	34	137	
92.50	31	141	
92.60	28	143	
92.70	25	146	
92.80	21	148	
92.90	18	150	
93.00	15	152	
93.10	125	159	
93.20	235	177	
93.30	344	206	
93.40	454	246	
93.50	564	297	
93.60	873	369	
93.70	1,181	471	
93.80	1,490	605	
93.90	1,798	769 065	
94.00 94.10	2,107	965	
94.10 94.20	2,279 2,451	1,184 1,420	
Ð4.∠U	۷,40۱	1,420	

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

Inflow Area = 14,032 sf, 9.11% Impervious, Inflow Depth = 0.36" for 10-Year event

Inflow = 0.04 cfs @ 12.43 hrs, Volume= 424 cf

Outflow = 0.02 cfs @ 13.03 hrs, Volume= 424 cf, Atten= 52%, Lag= 36.0 min

Discarded = 0.02 cfs @ 13.03 hrs, Volume= 424 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= 0.02 hrs Peak Elev= 92.40' @ 13.03 hrs Surf.Area= 43 sf Storage= 33 cf

Plug-Flow detention time= 12.1 min calculated for 424 cf (100% of inflow)

Center-of-Mass det. time= 12.1 min (982.5 - 970.4)

Volume	Invert Avai	I.Storage Stora	ge Description	
#1	91.50'	2,064 cf Dryv	vell & Basin (Prismatic) Listed below (Reca	alc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet		
91.50	31	Ò	0	
92.50	44	38	38	
93.50	44	44	82	
94.50	44	44	126	
95.50	44	44	170	
96.50	44	44	214	
97.40	4	22	235	
98.00	97	30	265	
99.00	709	403	668	
99.06	1,117	55	723	
100.00	1,424	1,194	1,917	
100.10	1,505	146	2,064	

Device	Routing	Invert	Outlet Devices
#1	Discarded	91.50'	20.000 in/hr Exfiltration over Surface area
#2	Secondary	99.60'	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 @ 13.03 hrs HW=92.40' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=91.50' (Free Discharge) 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
91.50	31	0	96.70	35	221
91.60	32	3	96.80	31	225
91.70	34	6	96.90	26	228
91.80	35	10	97.00	22	230
91.90	36	13	97.10	17	232
92.00	38	17	97.10	13	233
92.10	39	21	97.30	8	234
92.20	40	25	97.40	4	235
92.30	41	29	97.50	19	236
92.40	43	33	97.60	35	239
92.50	44	38	97.70	51	243
92.60	44	42	97.80	66	249
92.70	44	46	97.90	82	256
92.80	44	51	98.00	97	265
92.90	44	55	98.10	158	278
93.00	44	60	98.20	219	297
93.10	44	64	98.30	281	322
93.20	44	68	98.40	342	353
93.30	44	73	98.50	403	390
93.40	44	77	98.60	464	434
93.50	44	82	98.70	525	483
93.60	44	86	98.80	587	539
93.70	44	90	98.90	648	601
93.80	44	95	99.00	709	668
93.90	44	99	99.10	1,130	768
94.00	44	104	99.20	1,163	883
94.10	44	108	99.30	1,195	1,001
94.20	44	112	99.40	1,228	1,122
94.30	44	117	99.50	1,261	1,246
94.40	44	121	99.60	1,293	1,374
94.50	44	126	99.70	1,326	1,505
94.60	44	130	99.80	1,359	1,639
94.70	44	134	99.90	1,391	1,777
94.80	44	139	100.00	1,424	1,917
94.90	44	143	100.10	1,505	2,064
95.00	44	148			
95.10	44	152			
95.20	44	156			
95.30	44	161			
95.40	44	165			
95.50	44	170			
95.60	44	174			
95.70	44	178			
95.80	44	183			
95.90	44	187			
96.00	44	192			
96.10	44	196			
96.20	44	200			
96.30	44	205			
96.40	44	209			
96.50	44	214			
96.60	40	218			
			I		

post development

Type III 24-hr 10-Year Rainfall=5.35"

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Summary for Link AP: Analysis Point

Inflow Area = 116,436 sf, 44.27% Impervious, Inflow Depth = 0.21" for 10-Year event

Inflow = 0.47 cfs @ 12.50 hrs, Volume= 1,999 cf

Primary = 0.47 cfs @ 12.50 hrs, Volume= 1,999 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

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Time span=0.00-72.00 hrs, dt=0.02 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment DA1A: DA1A Runoff Area=1.366 ac 10.54% Impervious Runoff Depth=0.84"

Flow Length=337' Tc=17.4 min CN=42 Runoff=0.58 cfs 4,158 cf

Subcatchment DA1B: DA1B Runoff Area=13,628 sf 16.84% Impervious Runoff Depth=1.21"

Tc=10.0 min CN=47 Runoff=0.30 cfs 1,378 cf

Subcatchment DA2A: DA2A Runoff Area=14,063 sf 100.00% Impervious Runoff Depth=6.37"

Tc=5.0 min CN=98 Runoff=2.16 cfs 7,467 cf

Subcatchment DA2B: DA2B Runoff Area=12,794 sf 0.00% Impervious Runoff Depth=0.57"

Flow Length=189' Tc=11.5 min CN=38 Runoff=0.07 cfs 607 cf

Subcatchment DA3: DA3 Runoff Area=14,032 sf 9.11% Impervious Runoff Depth=0.77"

Tc=10.0 min CN=41 Runoff=0.13 cfs 899 cf

Subcatchment DA4: DA4 Runoff Area=42,316 sf 86.93% Impervious Runoff Depth=5.44"

Tc=10.0 min CN=90 Runoff=5.14 cfs 19,188 cf

Subcatchment DA5: DA5 Runoff Area=1.085 ac 1.47% Impervious Runoff Depth=0.39"

Flow Length=332' Tc=11.4 min CN=35 Runoff=0.13 cfs 1,538 cf

Reach CD1: CURTAIN DRAIN Avg. Flow Depth=0.11' Max Vel=1.28 fps Inflow=0.30 cfs 1,378 cf

n=0.033 L=163.0' S=0.0166 '/' Capacity=45.63 cfs Outflow=0.29 cfs 1,378 cf

Pond SW-A: Stormtech MC-3500 (SWM-A) Peak Elev=88.23' Storage=4,298 cf Inflow=5.14 cfs 19,188 cf

Discarded=0.82 cfs 16,083 cf Primary=1.34 cfs 3,105 cf Outflow=2.15 cfs 19,188 cf

Pond SW-B: Bioretention Basin (SWM-B) Peak Elev=93.28' Storage=4,015 cf Inflow=2.16 cfs 8,074 cf

Discarded=0.12 cfs 8,074 cf Primary=0.00 cfs 0 cf Secondary=0.00 cfs 0 cf Outflow=0.12 cfs 8,074 cf

Pond SW-C: Drywell & Basin (SWM-C) Peak Elev=93.76' Storage=548 cf Inflow=0.80 cfs 5,536 cf

Discarded=0.63 cfs 5,536 cf Secondary=0.00 cfs 0 cf Outflow=0.63 cfs 5,536 cf

Pond SW-D: Drywell & Basin (SWM-D) Peak Elev=97.83' Storage=251 cf Inflow=0.13 cfs 899 cf

Discarded=0.03 cfs 899 cf Secondary=0.00 cfs 0 cf Outflow=0.03 cfs 899 cf

Link AP: Analysis Point Inflow=1.46 cfs 4,644 cf

Primary=1.46 cfs 4,644 cf

Total Runoff Area = 203,599 sf Runoff Volume = 35,235 cf Average Runoff Depth = 2.08" 69.85% Pervious = 142,206 sf 30.15% Impervious = 61,393 sf HydroCAD® 10.20-2g s/n 12772 © 2022 HydroCAD Software Solutions LLC

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Summary for Subcatchment DA1A: DA1A

Runoff = 0.58 cfs @ 12.37 hrs, Volume= 4,158 cf, Depth= 0.84"

Routed to Pond SW-C : Drywell & Basin (SWM-C)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Type III 24-hr 25-Year Rainfall=6.61"

_	Area	(ac) C	N Desc	cription		
	0.	673 3	9 >759	% Grass co	over, Good	, HSG A
	0.	549 3	0 Woo	ds, Good,	HSG A	
	0.	144 9	8 Pave	ed parking	, HSG A	
_	1.	366 4	2 Weig	ghted Aver	age	
	1.	222	89.4	6% Pervio	us Area	
	0.	144	10.5	4% Imperv	ious Area	
	Tc	Length	Slope	Velocity	Capacity	Description
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
	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			

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Summary for Subcatchment DA1B: DA1B

Runoff = 0.30 cfs @ 12.17 hrs, Volume= 1,378

1,378 cf, Depth= 1.21"

Routed to Reach CD1: CURTAIN DRAIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Type III 24-hr 25-Year Rainfall=6.61"

	rea (sf)	CN	Description						
	8,726	39	>75% Grass	>75% Grass cover, Good, HSG A					
	2,607	30	Woods, Go	od, HSG A					
	2,295	98	Paved parki	Paved parking, HSG A					
	13,628	47	Weighted Average						
	11,333		83.16% Per	vious Area					
	2,295		16.84% Imp	ervious Are	ea				
Tc	Length	Slop	,	Capacity	Description				
(min)	(feet)	(ft/f	t) (ft/sec)	(cfs)					
400									

10.0

Direct Entry, Direct Entry

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Summary for Subcatchment DA2A: DA2A

Runoff = 2.16 cfs @ 12.07 hrs, Volume= 7 Routed to Pond SW-B : Bioretention Basin (SWM-B)

7,467 cf, Depth= 6.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Type III 24-hr 25-Year Rainfall=6.61"

Aı	rea (sf)	CN E	Description				
	14,063	98 F	Roofs, HSG A				
	14,063	1	100.00% Impervious Area				
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description		
5.0					Direct Entry, Direct Entry		

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Summary for Subcatchment DA2B: DA2B

Runoff = 0.07 cfs @ 12.40 hrs, Volume=

607 cf, Depth= 0.57"

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= 0.02 hrs Type III 24-hr 25-Year Rainfall=6.61"

	A	rea (sf)	CN	Description					
		11,225	39	>75% Grass cover, Good, HSG A					
		1,569	30	Woods, Go	od, HSG A				
		12,794	38 Weighted Average						
12,794 100.00% Pervious Area						a			
	Тс	Length	Slope	,	Capacity	Description			
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)				
	10.6	100	0.0150	0.16		Sheet Flow, Sheetflow			
						Grass: Short n= 0.150 P2= 3.43"			
	0.9	89	0.0550	1.64		Shallow Concentrated Flow, Shallow			
_						Short Grass Pasture Kv= 7.0 fps			
	11.5	189	Total						

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Summary for Subcatchment DA3: DA3

Runoff = 0.13 cfs @ 12.23 hrs, Volume= 899 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= 0.02 hrs Type III 24-hr 25-Year Rainfall=6.61"

_	Area (sf)	CN	Description							
	7,100	39	>75% Gras	>75% Grass cover, Good, HSG A						
	5,653	30	Woods, Go	od, HSG A						
	1,279	98	Paved park	Paved parking, HSG A						
	14,032	41	41 Weighted Average							
	12,753		90.89% Pervious Area							
	1,279		9.11% Impe	ervious Are	a					
	Tc Length		. ,	Capacity	Description					
_	(min) (feet) (ft/	ft) (ft/sec)	(cfs)						
	10.0				Divert Fater, Divert Fater,					

10.0

Direct Entry, Direct Entry

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Summary for Subcatchment DA4: DA4

Runoff = 5.14 cfs @ 12.13 hrs, Volume= 19,188 cf, Depth= 5.44" Routed to Pond SW-A: Stormtech MC-3500 (SWM-A)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Type III 24-hr 25-Year Rainfall=6.61"

_	Are	ea (sf)	CN	Description					
		5,530	39	>75% Grass cover, Good, HSG A					
	3	36,786	98	Paved parking, HSG A					
_	4	12,316	90	Weighted Average					
		5,530		13.07% Pervious Area					
	3	36,786		86.93% Imp	ervious Are	ea			
		Length	Slope	,	Capacity	Description			
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)				
	400					D: 4 E 4	B: (E)		

10.0

Direct Entry, Direct Entry

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Summary for Subcatchment DA5: DA5

Runoff = 0.13 cfs @ 12.48 hrs, Volume= 1,538 cf, Depth= 0.39"

Routed to Link AP : Analysis Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Type III 24-hr 25-Year Rainfall=6.61"

	Area	(ac) C	N Desc	cription		
	0.	427 3	9 >759	% Grass co	over, Good	, HSG A
	0.	642 3	0 Woo	ds, Good,	HSG A	
	0.	016 9	8 Pave	ed parking,	, HSG A	
	1.	085 3	5 Weig	ghted Aver	age	
	1.	069	98.5	3% Pervio	us Area	
	0.	016	1.47	% Impervi	ous Area	
	_					
	Tc	Length	Slope	Velocity	Capacity	Description
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
	1.1	18	0.1330	0.27		Sheet Flow, Sheetflow
						Grass: Short n= 0.150 P2= 3.43"
	7.5	82	0.0240	0.18		Sheet Flow, Sheetflow
	4.0	440	0.0000	4.04		Grass: Short n= 0.150 P2= 3.43"
	1.9	118	0.0220	1.04		Shallow Concentrated Flow, Shallow
	0.0	4.4	0.0500	4.40		Short Grass Pasture Kv= 7.0 fps
	0.2	14	0.0500	1.12		Shallow Concentrated Flow, Shallow
	0.2	32	0.1400	2.62		Woodland Kv= 5.0 fps Shallow Concentrated Flow, Shallow
	0.2	32	0.1400	2.02		Short Grass Pasture Kv= 7.0 fps
	0.5	68	0.2350	2.42		Shallow Concentrated Flow, Shallow
	0.0	00	0.2000	۷.٦۷		Woodland Kv= 5.0 fps
_	11.4	332	Total			Troodidita itt 0.0 ipo
	11.4	332	i Ulai			

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Summary for Reach CD1: CURTAIN DRAIN

Inflow Area = 13,628 sf, 16.84% Impervious, Inflow Depth = 1.21" for 25-Year event

Inflow = 0.30 cfs @ 12.17 hrs, Volume= 1,378 cf

Outflow = 0.29 cfs @ 12.20 hrs, Volume= 1,378 cf, Atten= 2%, Lag= 1.6 min

Routed to Pond SW-C : Drywell & Basin (SWM-C)

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Max. Velocity= 1.28 fps, Min. Travel Time= 2.1 min Avg. Velocity = 0.73 fps, Avg. Travel Time= 3.7 min

Peak Storage= 37 cf @ 12.20 hrs Average Depth at Peak Storage= 0.11', Surface Width= 2.00' Bank-Full Depth= 4.50' Flow Area= 9.0 sf, Capacity= 45.63 cfs

2.00' x 4.50' deep channel, n= 0.033 Riprap, 1-inch Length= 163.0' Slope= 0.0166 '/' Inlet Invert= 96.00', Outlet Invert= 93.30' post development

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Stage-Area-Storage for Reach CD1: CURTAIN DRAIN

Elevation En	d Aroa	Storage	Elevation	End-Area	Storage
(feet)	(sq-ft)	(cubic-feet)	(feet)	(sq-ft)	(cubic-feet)
96.00	0.0	0	98.60	5.2	848
96.05	0.1	16	98.65	5.3	864
96.10	0.2	33	98.70	5.4	880
96.15	0.3	49	98.75	5.5	897
96.20	0.4	65	98.80	5.6	913
96.25	0.5	82	98.85	5.7	929
96.30	0.6	98	98.90	5.8	945
96.35	0.7	114	98.95	5.9	962
96.40	0.8	130	99.00	6.0	978
96.45	0.9	147	99.05	6.1	994
96.50	1.0	163	99.10	6.2	1,011
96.55	1.1 1.2	179	99.15	6.3	1,027
96.60 06.65	1.2	196 212	99.20 99.25	6.4 6.5	1,043 1,060
96.65 96.70	1.3	228	99.23	6.6	1,000
96.75	1.5	245	99.35	6.7	1,070
96.80	1.6	261	99.40	6.8	1,108
96.85	1.7	277	99.45	6.9	1,125
96.90	1.8	293	99.50	7.0	1,141
96.95	1.9	310	99.55	7.1	1,157
97.00	2.0	326	99.60	7.2	1,174
97.05	2.1	342	99.65	7.3	1,190
97.10	2.2	359	99.70	7.4	1,206
97.15	2.3	375	99.75	7.5	1,223
97.20	2.4	391	99.80	7.6	1,239
97.25	2.5	408	99.85	7.7	1,255
97.30 97.35	2.6 2.7	424 440	99.90 99.95	7.8 7.9	1,271 1,288
97.33 97.40	2.7	456	100.00	7.9 8.0	1,304
97.45	2.9	473	100.05	8.1	1,320
97.50	3.0	489	100.10	8.2	1,337
97.55	3.1	505	100.15	8.3	1,353
97.60	3.2	522	100.20	8.4	1,369
97.65	3.3	538	100.25	8.5	1,386
97.70	3.4	554	100.30	8.6	1,402
97.75	3.5	571	100.35	8.7	1,418
97.80	3.6	587	100.40	8.8	1,434
97.85	3.7	603	100.45	8.9	1,451
97.90	3.8	619	100.50	9.0	1,467
97.95 98.00	3.9 4.0	636 652			
98.05	4.0	668			
98.10	4.2	685			
98.15	4.3	701			
98.20	4.4	717			
98.25	4.5	734			
98.30	4.6	750			
98.35	4.7	766			
98.40	4.8	782			
98.45	4.9	799			
98.50	5.0	815			
98.55	5.1	831			

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

Inflow Area = 42,316 sf, 86.93% Impervious, Inflow Depth = 5.44" for 25-Year event Inflow 5.14 cfs @ 12.13 hrs, Volume= 19.188 cf Outflow 2.15 cfs @ 12.41 hrs, Volume= 19,188 cf, Atten= 58%, Lag= 16.3 min Discarded = 0.82 cfs @ 11.68 hrs, Volume= 16.083 cf 1.34 cfs @ 12.41 hrs, Volume= Primary 3,105 cf

Routed to Link AP: Analysis Point

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Peak Elev= 88.23' @ 12.41 hrs Surf.Area= 1,761 sf Storage= 4,298 cf

Plug-Flow detention time= 18.5 min calculated for 19,183 cf (100% of inflow)

Center-of-Mass det. time= 18.5 min (803.8 - 785.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	84.70'	2,519 cf	22.75'W x 77.40'L x 5.50'H Field A
			9,685 cf Overall - 3,388 cf Embedded = 6,297 cf x 40.0% Voids
#2A	85.45'	3,388 cf	ADS_StormTech MC-3500 d +Cap x 30 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
			30 Chambers in 3 Rows
			Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf
		5,907 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	84.70'	12.0" Round Outlet Pipe
	-		L= 44.0' CPP, end-section conforming to fill, Ke= 0.500
			Inlet / Outlet Invert= 84.70' / 84.10' S= 0.0136 '/' Cc= 0.900
			n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#2	Device 1	86.00'	4.0" Vert. Low Flow Orifice C= 0.600
			Limited to weir flow at low heads
#3	Device 1	87.80'	11.0" W x 4.0" H Vert. Upper Orifice C= 0.600
			Limited to weir flow at low heads
#4	Device 1	89.00'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#5	Discarded	84.70'	20.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.82 cfs @ 11.68 hrs HW=84.76' (Free Discharge) **-5=Exfiltration** (Exfiltration Controls 0.82 cfs)

Primary OutFlow Max=1.34 cfs @ 12.41 hrs HW=88.22' (Free Discharge)

-1=Outlet Pipe (Passes 1.34 cfs of 6.58 cfs potential flow)

2=Low Flow Orifice (Orifice Controls 0.60 cfs @ 6.91 fps)

-3=Upper Orifice (Orifice Controls 0.73 cfs @ 2.40 fps) -4=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

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Pond SW-A: Stormtech MC-3500 (SWM-A) - 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

10 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 75.40' Row Length +12.0" End Stone x 2 = 77.40' Base Length

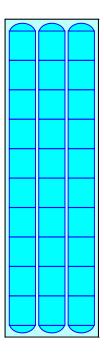
3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width 9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

30 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 3,388.0 cf Chamber Storage

9,684.7 cf Field - 3,388.0 cf Chambers = 6,296.7 cf Stone x 40.0% Voids = 2,518.7 cf Stone Storage

Chamber Storage + Stone Storage = 5,906.6 cf = 0.136 af Overall Storage Efficiency = 61.0% Overall System Size = 77.40' x 22.75' x 5.50'

30 Chambers 358.7 cy Field 233.2 cy Stone





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

Elevation	Surface	Storage	Elevation
(feet)	(sq-ft)	Storage (cubic-feet)	(fee
84.70	1,761	0	89.9
84.80	1,761	70	90.0
84.90	1,761	141	90.
85.00 85.10	1,761 1,761	211 282	90.2
85.20	1,761	352	
85.30	1,761	423	
85.40	1,761	493	
85.50	1,761	602	
85.60	1,761	750	
85.70	1,761	897	
85.80 85.90	1,761 1,761	1,044 1,190	
86.00	1,761	1,335	
86.10	1,761	1,480	
86.20	1,761	1,624	
86.30	1,761	1,768	
86.40	1,761	1,910	
86.50	1,761 1,761	2,052 2,193	
86.60 86.70	1,761	2,193	
86.80	1,761	2,472	
86.90	1,761	2,610	
87.00	1,761	2,747	
87.10	1,761	2,882	
87.20 87.30	1,761 1,761	3,017 3,150	
87.40	1,761	3,130	
87.50	1,761	3,411	
87.60	1,761	3,540	
87.70	1,761	3,667	
87.80	1,761	3,791	
87.90	1,761	3,914	
88.00 88.10	1,761 1,761	4,035 4,153	
88.20	1,761	4,269	
88.30	1,761	4,382	
88.40	1,761	4,492	
88.50	1,761	4,599	
88.60	1,761	4,702	
88.70	1,761	4,800	
88.80 88.90	1,761 1,761	4,892 4,976	
89.00	1,761	5,055	
89.10	1,761	5,130	
89.20	1,761	5,202	
89.30	1,761	5,273	
89.40	1,761	5,343	
89.50 89.60	1,761 1,761	5,414 5,484	
89.70	1,761	5,554	
89.80	1,761	5,625	
	•		

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
89.90	1,761	5,695
90.00	1,761	5,766
90.10	1,761	5,836
90.20	1,761	5.907

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

Inflow Area = 26,857 sf, 52.36% Impervious, Inflow Depth = 3.61" for 25-Year event Inflow 2.16 cfs @ 12.07 hrs, Volume= 8.074 cf 8,074 cf, Atten= 95%, Lag= 140.2 min 0.12 cfs @ 14.41 hrs, Volume= Outflow = 0.12 cfs @ 14.41 hrs, Volume= 8,074 cf Discarded = 0.00 cfs @ 0.00 hrs, Volume= Primary = 0 cf Routed to Link AP: Analysis Point 0.00 cfs @ 0.00 hrs. Volume= 0 cf Secondary = Routed to Link AP : Analysis Point

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Peak Elev= 93.28' @ 14.41 hrs Surf.Area= 2,531 sf Storage= 4,015 cf

Invest Aveil Otenson Otenson Description

Plug-Flow detention time= 360.3 min calculated for 8,074 cf (100% of inflow)

Center-of-Mass det. time= 360.2 min (1,118.9 - 758.7)

Volume	Invert	Avail.Stor	rage Storage [Description	
#1	91.00'	6,32	25 cf Custom 9	Stage Data (Pris	smatic) Listed below (Recalc)
Elevation	on Su	rf.Area	Inc.Store	Cum.Store	
(fee	et)	(sq-ft)	(cubic-feet)	(cubic-feet)	
91.0	00	1,031	0	0	
92.0	00	1,649	1,340	1,340	
93.0	00	2,324	1,987	3,327	
94.0	00	3,055	2,690	6,016	
94.1	10	3,132	309	6,325	
Device	Routing	Invert	Outlet Devices	;	
#1	Primary	90.00'	12.0" Round (Outlet Pipe	
			L= 125.0' CM	IP, square edge	headwall, Ke= 0.500
			Inlet / Outlet In	vert= 90.00' / 87	'.00' S= 0.0240 '/' Cc= 0.900
			n= 0.010 PVC	, smooth interior	r, Flow Area= 0.79 sf
#2	Device 1	93.40'	24.0" x 24.0" F	Horiz. Grate C	= 0.600
			Limited to weir	flow at low head	ds
#3	Secondary	93.60'	10.0' long x 3.	.0' breadth Broa	nd-Crested Rectangular Weir
					.80 1.00 1.20 1.40 1.60 1.80 2.00
			2.50 3.00 3.5	0 4.00 4.50	
					8 2.67 2.65 2.64 2.64 2.68 2.68
			2.72 2.81 2.93	2 2.97 3.07 3.3	32
#4	Discarded	91.00'	2.000 in/hr Ext	filtration over S	urface area

Discarded OutFlow Max=0.12 cfs @ 14.41 hrs HW=93.28' (Free Discharge) **4=Exfiltration** (Exfiltration Controls 0.12 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=91.00' (Free Discharge)
1=Outlet Pipe (Passes 0.00 cfs of 2.67 cfs potential flow)
2=Grate (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=91.00' (Free Discharge) 3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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

Elevation Surface (feet) (sq-ft) (cubic-feet)						
91.00						
91.05			<u> </u>			
91.10						
91.15 1.124 162 93.75 2.872 5.275 91.20 1.155 219 93.80 2.909 5.420 91.25 1.186 277 93.85 2.945 5.566 91.30 1.216 337 93.90 2.982 5.714 91.35 1.247 399 93.95 3.018 5.864 91.40 1.278 462 94.00 3.055 6.016 91.45 1.309 527 94.05 3.093 6.170 91.50 1.340 593 94.10 3.132 6.325 91.55 1.371 661 91.60 1.402 730 91.65 1.433 801 91.70 1.464 873 91.75 1.495 94.79 91.80 1.525 1.023 91.85 1.556 1.100 91.90 1.587 1.178 91.95 1.618 1.258 92.00 1.649 1.340 92.05 1.683 1.423 92.10 1.716 1.586 92.15 1.750 1.595 92.20 1.784 1.683 92.20 1.784 1.683 92.25 1.818 1.773 92.30 1.851 1.865 92.35 1.885 1.958 92.40 1.919 2.054 92.45 1.953 2.150 92.55 2.020 2.349 92.55 2.020 2.349 92.66 2.054 2.451 92.65 2.088 2.554 92.70 2.122 2.660 92.75 2.155 2.767 92.80 2.189 2.875 92.85 2.290 3.211 93.00 2.324 3.327 93.05 2.361 3.444 93.10 2.397 3.563 93.15 2.434 3.683 93.20 2.470 3.806 93.25 2.507 3.930 93.30 93.35 2.580 4.185 93.40 2.616 4.315 93.45 93.55 2.650 4.486 93.55 2.650 4.486 93.55 2.650 4.580						
91.20 91.25 1,186 277 93.85 2,945 5,566 91.30 1,216 337 93.90 2,982 5,714 91.35 1,247 399 93.95 3,018 5,864 91.40 1,278 462 94.00 3,055 6,016 91.45 1,309 527 94.05 3,093 6,170 91.55 1,371 661 91.60 1,402 730 91.65 1,433 801 91.70 1,464 873 91.75 1,495 94.79 91.80 1,525 1,023 91.85 1,556 1,100 91.90 1,587 1,178 91.90 1,587 1,178 91.90 1,587 1,178 91.90 1,587 1,178 91.90 1,587 1,716 1,508 92.10 1,716 1,508 92.25 1,818 1,773 92.30 1,851 1,865 92.35 1,885 1,958 92.40 1,919 2,054 92.45 1,953 2,150 92.55 2,020 2,349 92.65 2,088 2,554 92.70 2,122 2,660 92.75 2,155 2,767 92.80 2,189 2,287 92.90 2,257 3,097 92.95 2,290 92.85 92.90 2,257 3,097 92.95 2,287 92.90 2,257 92.90 2,257 92.95 2,290 92.85 92.90 2,257 3,097 92.95 2,281 93.05 2,361 3,444 93.10 2,397 3,306 93.25 2,507 3,930 93.30 93.30 2,543 4,067 93.35 93.35 2,580 4,185 93.40 93.45 93.55 2,690 4,580						
91.25						
91.30						
91.35						
91.40						
91.45						
91.50						
91.55						
91.60				94.10	3,132	6,325
91.65						
91.70						
91.75						
91.80						
91.85						
91.90						
91.95						
92.00						
92.05						
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92.35 1,885 1,958 92.40 1,919 2,054 92.45 1,963 2,150 92.50 1,987 2,249 92.55 2,020 2,349 92.60 2,054 2,451 92.65 2,088 2,554 92.70 2,122 2,660 92.75 2,155 2,767 92.80 2,189 2,875 92.85 2,223 2,985 92.90 2,257 3,097 92.95 2,290 3,211 93.00 2,324 3,327 93.05 2,361 3,444 93.10 2,397 3,563 93.15 2,434 3,683 93.20 2,470 3,806 93.25 2,507 3,930 93.35 2,580 4,185 93.40 2,616 4,315 93.45 2,653 4,446 93.50 2,690 4,580						
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92.55 2,020 2,349 92.60 2,054 2,451 92.65 2,088 2,554 92.70 2,122 2,660 92.75 2,155 2,767 92.80 2,189 2,875 92.85 2,223 2,985 92.90 2,257 3,097 92.95 2,290 3,211 93.00 2,324 3,327 93.05 2,361 3,444 93.10 2,397 3,563 93.15 2,434 3,683 93.20 2,470 3,806 93.25 2,507 3,930 93.30 2,543 4,057 93.35 2,580 4,185 93.40 2,616 4,315 93.45 2,653 4,446 93.50 2,690 4,580	92.45	1,953	2,150			
92.60 2,054 2,451 92.65 2,088 2,554 92.70 2,122 2,660 92.75 2,155 2,767 92.80 2,189 2,875 92.85 2,223 2,985 92.90 2,257 3,097 92.95 2,290 3,211 93.00 2,324 3,327 93.05 2,361 3,444 93.10 2,397 3,563 93.15 2,434 3,683 93.20 2,470 3,806 93.25 2,507 3,930 93.30 2,543 4,057 93.35 2,580 4,185 93.40 2,616 4,315 93.45 2,653 4,446 93.50 2,690 4,580						
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Summary for Pond SW-C: Drywell & Basin (SWM-C)

Inflow Area = 73,131 sf, 11.72% Impervious, Inflow Depth = 0.91" for 25-Year event

Inflow = 0.80 cfs @ 12.33 hrs, Volume= 5,536 cf

Outflow = 0.63 cfs @ 12.56 hrs, Volume= 5,536 cf, Atten= 21%, Lag= 14.1 min

Routed to Pond SW-A: Stormtech MC-3500 (SWM-A)

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Peak Elev= 93.76' @ 12.56 hrs Surf.Area= 1,367 sf Storage= 548 cf

Plug-Flow detention time= 28.2 min calculated for 5,535 cf (100% of inflow)

Center-of-Mass det. time= 28.3 min (952.8 - 924.5)

Volume	Invert	Avail.Sto	rage Storage	Description
#1	89.10'	3,2	14 cf Drywell	& Basin (Prismatic) Listed below (Recalc)
Elevation	on Si	urf.Area	Inc.Store	Cum.Store
(fee	et)	(sq-ft)	(cubic-feet)	(cubic-feet)
89.	10	31	0	0
90.	10	44	38	38
91.	10	44	44	82
92.	10	44	44	126
93.0	00	15	27	152
93.5		564	145	297
94.0		2,107	668	965
94.3		2,623	709	1,674
94.8	80	3,537	1,540	3,214
Device	Routing	Invert	Outlet Device	es ·
#1	Discarded	89.10'	20.000 in/hr E	Exfiltration over Surface area
#2	Secondary	94.30'	10.0' long x 3	3.0' breadth Broad-Crested Rectangular Weir
			Head (feet) 0	0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00

94.30' 10.0' 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

Discarded OutFlow Max=0.63 cfs @ 12.56 hrs HW=93.76' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.63 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=89.10' (Free Discharge) 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Storage (cubic-feet)

1,674

1,945

2,235

2,543

2,869

3,214

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

Surface

(sq-ft) 2,623

2,806

2,989

3,171

3,354

3,537

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)
89.10	31	Ő	94.30
89.20	32	3	94.40
89.30	34	6	94.50
89.40	35	10	94.60
89.50	36	13	94.70
89.60	38	17	94.80
89.70	39	21	
89.80	40	25	
89.90	41	29	
90.00	43	33	
90.10	44	38	
90.20	44	42	
90.30	44	46	
90.40	44	51	
90.50	44	55	
90.60	44	60	
	44	64	
90.70			
90.80	44	68	
90.90	44	73	
91.00	44	77	
91.10	44	82	
91.20	44	86	
91.30	44	90	
91.40	44	95	
91.50	44	99	
91.60	44	104	
91.70	44	108	
91.80	44	112	
91.90	44	117	
92.00	44	121	
92.10	44	126	
92.20	41	130	
92.30	38	134	
92.40	34	137	
92.50	31	141	
	28	143	
92.60			
92.70	25	146	
92.80	21	148	
92.90	18	150	
93.00	15	152	
93.10	125	159	
93.20	235	177	
93.30	344	206	
93.40	454	246	
93.50	564	297	
93.60	873	369	
93.70	1,181	471	
93.80	1,490	605	
93.90	1,798	769	
94.00	2,107	965	
94.10	2,279	1,184	
94.20	2,451	1,420	
		ı	

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

Inflow Area = 14,032 sf, 9.11% Impervious, Inflow Depth = 0.77" for 25-Year event

Inflow = 0.13 cfs @ 12.23 hrs, Volume= 899 cf

Outflow = 0.03 cfs @ 13.79 hrs, Volume= 899 cf, Atten= 75%, Lag= 94.0 min

Discarded = 0.03 cfs @ 13.79 hrs, Volume= 899 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= 0.02 hrs Peak Elev= 97.83' @ 13.79 hrs Surf.Area= 70 sf Storage= 251 cf

Plug-Flow detention time= 216.9 min calculated for 898 cf (100% of inflow)

Center-of-Mass det. time= 216.9 min (1,147.4 - 930.5)

Volume	Invert Ava	I.Storage St	orage Description	
#1	91.50'	2,064 cf Dr	ywell & Basin (Prisr	matic) Listed below (Recalc)
Elevation	Surf.Area	Inc.Sto	ore Cum.Store)
(feet)	(sq-ft)	(cubic-fe	et) (cubic-feet)	
91.50	31		0 0	
92.50	44		38 38	}
93.50	44		44 82	
94.50	44		44 126	3
95.50	44		44 170	
96.50	44		44 214	
97.40	4		22 235	5
98.00	97		30 265	5
99.00	709	4	03 668	}
99.06	1,117		55 723	}
100.00	1,424	1,1	94 1,917	•
100.10	1,505	1	46 2,064	
Device Ro	outing In	vert Outlet D)evices	

DCVICC	rtouting	IIIVCIL	Odilct Devices
#1	Discarded	91.50'	20.000 in/hr Exfiltration over Surface area
#2	Secondary	99.60'	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=0.03 cfs @ 13.79 hrs HW=97.83' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.03 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=91.50' (Free Discharge) 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
91.50	31	0	96.70	35	221
91.60	32	3	96.80	31	225
91.70	34	6	96.90	26	228
91.80	35	10	97.00	22	230
91.90	36	13	97.10	17	232
92.00	38	17	97.10	13	233
92.10	39	21	97.30	8	234
92.20	40	25	97.40	4	235
92.30	41	29	97.50	19	236
92.40	43	33	97.60	35	239
92.50	44	38	97.70	51	243
92.60	44	42	97.80	66	249
92.70	44	46	97.90	82	256
92.80	44	51	98.00	97	265
92.90	44	55	98.10	158	278
93.00	44	60	98.20	219	297
93.10	44	64	98.30	281	322
93.20	44	68	98.40	342	353
93.30	44	73	98.50	403	390
93.40	44	77	98.60	464	434
93.50	44	82	98.70	525	483
93.60	44	86	98.80	587	539
93.70	44	90	98.90	648	601
93.80	44	95	99.00	709	668
93.90	44	99	99.10	1,130	768
94.00	44	104	99.20	1,163	883
94.10	44	108	99.30	1,195	1,001
94.20	44	112	99.40	1,228	1,122
94.30	44	117	99.50	1,261	1,246
94.40	44	121	99.60	1,293	1,374
94.50	44	126	99.70	1,326	1,505
94.60	44	130	99.80	1,359	1,639
94.70	44	134	99.90	1,391	1,777
94.80	44	139	100.00	1,424	1,917
94.90	44	143	100.10	1,505	2,064
95.00	44	148			
95.10	44	152			
95.20	44	156			
95.30	44	161			
95.40	44	165			
95.50	44	170			
95.60	44	174			
95.70	44	178			
95.80	44	183			
95.90	44	187			
96.00	44	192			
96.10	44	196			
96.20	44	200			
96.30	44	205			
96.40	44	209			
96.50	44	214			
96.60	40	218			

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Type III 24-hr 25-Year Rainfall=6.61"

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Summary for Link AP: Analysis Point

Inflow Area = 116,436 sf, 44.27% Impervious, Inflow Depth = 0.48" for 25-Year event

Inflow = 1.46 cfs @ 12.41 hrs, Volume= 4,644 cf

Primary = 1.46 cfs @ 12.41 hrs, Volume= 4,644 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

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Time span=0.00-72.00 hrs, dt=0.02 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment DA1A: DA1A Runoff Area=1.366 ac 10.54% Impervious Runoff Depth=1.22"

Flow Length=337' Tc=17.4 min CN=42 Runoff=1.00 cfs 6,068 cf

Subcatchment DA1B: DA1B Runoff Area=13,628 sf 16.84% Impervious Runoff Depth=1.68"

Tc=10.0 min CN=47 Runoff=0.45 cfs 1,909 cf

Subcatchment DA2A: DA2A Runoff Area=14,063 sf 100.00% Impervious Runoff Depth=7.29"

Tc=5.0 min CN=98 Runoff=2.46 cfs 8,544 cf

Subcatchment DA2B: DA2B Runoff Area=12,794 sf 0.00% Impervious Runoff Depth=0.88"

Flow Length=189' Tc=11.5 min CN=38 Runoff=0.14 cfs 943 cf

Subcatchment DA3: DA3 Runoff Area=14,032 sf 9.11% Impervious Runoff Depth=1.14"

Tc=10.0 min CN=41 Runoff=0.25 cfs 1,329 cf

Subcatchment DA4: DA4 Runoff Area=42,316 sf 86.93% Impervious Runoff Depth=6.34"

Tc=10.0 min CN=90 Runoff=5.94 cfs 22,369 cf

Subcatchment DA5: DA5 Runoff Area=1.085 ac 1.47% Impervious Runoff Depth=0.65"

Flow Length=332' Tc=11.4 min CN=35 Runoff=0.30 cfs 2,561 cf

Reach CD1: CURTAIN DRAIN Avg. Flow Depth=0.15' Max Vel=1.49 fps Inflow=0.45 cfs 1,909 cf

n=0.033 L=163.0' S=0.0166 '/' Capacity=45.63 cfs Outflow=0.44 cfs 1,909 cf

Pond SW-A: Stormtech MC-3500 (SWM-A) Peak Elev=88.71' Storage=4,810 cf Inflow=5.94 cfs 22,369 cf

Discarded=0.82 cfs 17,819 cf Primary=1.94 cfs 4,550 cf Outflow=2.75 cfs 22,369 cf

Pond SW-B: Bioretention Basin (SWM-B) Peak Elev=93.43' Storage=4,405 cf Inflow=2.49 cfs 9,487 cf

Discarded=0.12 cfs 8,865 cf Primary=0.18 cfs 622 cf Secondary=0.00 cfs 0 cf Outflow=0.30 cfs 9,487 cf

Pond SW-C: Drywell & Basin (SWM-C) Peak Elev=93.99' Storage=934 cf Inflow=1.35 cfs 7,977 cf

Discarded=0.95 cfs 7,977 cf Secondary=0.00 cfs 0 cf Outflow=0.95 cfs 7,977 cf

Pond SW-D: Drywell & Basin (SWM-D) Peak Elev=98.20' Storage=298 cf Inflow=0.25 cfs 1,329 cf

Discarded=0.10 cfs 1,329 cf Secondary=0.00 cfs 0 cf Outflow=0.10 cfs 1,329 cf

Link AP: Analysis Point Inflow=2.23 cfs 7,733 cf

Primary=2.23 cfs 7,733 cf

Total Runoff Area = 203,599 sf Runoff Volume = 43,723 cf Average Runoff Depth = 2.58" 69.85% Pervious = 142,206 sf 30.15% Impervious = 61,393 sf

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Summary for Subcatchment DA1A: DA1A

Runoff = 1.00 cfs @ 12.32 hrs, Volume=

6,068 cf, Depth= 1.22"

Routed to Pond SW-C : Drywell & Basin (SWM-C)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Type III 24-hr 50-Year Rainfall=7.53"

_	Area	(ac) C	N Desc	cription							
	0.	673 3	39 >759	>75% Grass cover, Good, HSG A							
	0.549 30 Woods, Good, HSG A										
	0.144 98 Paved parking, HSG A										
1.366 42 Weighted Average											
	1.	222	•	6% Pervio	•						
		144	10.5	4% Imperv	ious Area						
				•							
	Tc	Length	Slope	Velocity	Capacity	Description					
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	·					
	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								

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Summary for Subcatchment DA1B: DA1B

Runoff = 0.45 cfs @ 12.16 hrs, Volume= 1,909 cf, Depth= 1.68"

Routed to Reach CD1: CURTAIN DRAIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Type III 24-hr 50-Year Rainfall=7.53"

400					Discot Fator Discot Fator				
(min)	(feet)	(ft/ft) (ft/sec)	(cfs)					
Tc	Length	Slope	e Velocity	Capacity	Description				
	_,		. 0.0 . 70	, c. ,	. 54				
	2,295	16.84% Impervious Area							
	11,333		83.16% Pervious Area						
	13,628	47	Weighted Average						
	2,295	98	Paved park	ing, HSG A	A				
	2,607	30	Woods, Go	od, HSG A	\mathcal{A}				
	8,726	39	>75% Grass	s cover, Go	lood, HSG A				
Ar	rea (sf)	CN	Description						

10.0

Direct Entry, Direct Entry

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Summary for Subcatchment DA2A: DA2A

Runoff = 2.46 cfs @ 12.07 hrs, Volume= 8,544 Routed to Pond SW-B : Bioretention Basin (SWM-B)

8,544 cf, Depth= 7.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Type III 24-hr 50-Year Rainfall=7.53"

Aı	rea (sf)	CN D	escription						
	14,063	98 F	Roofs, HSG A						
	14,063	1	100.00% Impervious Area						
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description				
5.0					Direct Entry, Direct Entry				

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Summary for Subcatchment DA2B: DA2B

Runoff = 0.14 cfs @ 12.27 hrs, Volume=

943 cf, Depth= 0.88"

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= 0.02 hrs Type III 24-hr 50-Year Rainfall=7.53"

	A	rea (sf)	CN	Description						
		11,225	39	>75% Grass cover, Good, HSG A						
		1,569 30 Woods, Good, HSG A								
		12,794	38	Weighted A	verage					
		12,794		100.00% Pe	ervious Are	a				
	Тс	Length	Slope	,	Capacity	Description				
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)					
	10.6	100	0.0150	0.16		Sheet Flow, Sheetflow				
						Grass: Short n= 0.150 P2= 3.43"				
	0.9	89	0.0550	1.64		Shallow Concentrated Flow, Shallow				
_						Short Grass Pasture Kv= 7.0 fps				
	11.5	189	Total							

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Summary for Subcatchment DA3: DA3

Runoff = 0.25 cfs @ 12.18 hrs, Volume=

1,329 cf, Depth= 1.14"

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= 0.02 hrs Type III 24-hr 50-Year Rainfall=7.53"

_	Area (sf)	CN	Description				
	7,100	39	39 >75% Grass cover, Good, HSG A				
	5,653	30	Woods, Go				
	1,279	98	98 Paved parking, HSG A				
	14,032	41	41 Weighted Average				
	12,753		90.89% Pervious Area				
	1,279		9.11% Impe	ervious Are	a		
	Tc Length		. ,	Capacity	Description		
_	(min) (feet) (ft/	ft) (ft/sec)	(cfs)			
	10.0				Divert Fater, Divert Fater,		

10.0

Direct Entry, Direct Entry

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Summary for Subcatchment DA4: DA4

Runoff = 5.94 cfs @ 12.13 hrs, Volume= 22,369 cf, Depth= 6.34" Routed to Pond SW-A : Stormtech MC-3500 (SWM-A)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Type III 24-hr 50-Year Rainfall=7.53"

Area	a (sf)	CN	Description				
5	5,530	39	>75% Gras	s cover, Go	ood, HSG A		
36	5,786	98	Paved park				
42	2,316	90 Weighted Average					
5	5,530		13.07% Pervious Area				
36	5,786		86.93% Imp	ervious Ar	ea		
	ength	Slope	,	Capacity	Description		
(min)	(feet)	(ft/ft	(ft/sec)	(cfs)			
10.0					Direct Entry	Direct Entry	

10.0

Direct Entry, Direct Entry

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Summary for Subcatchment DA5: DA5

Runoff = 0.30 cfs @ 12.40 hrs, Volume= 2,561 cf, Depth= 0.65"

Routed to Link AP : Analysis Point

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Type III 24-hr 50-Year Rainfall=7.53"

	Area	(ac) C	N Desc	cription		
	0.	427 3	9 >759	% Grass co	over, Good	, HSG A
	0.	642 3	0 Woo	ds, Good,	HSG A	
	0.	016 9	8 Pave	ed parking,	, HSG A	
	1.	085 3	5 Weig	ghted Aver	age	
	1.	069	98.5	3% Pervio	us Area	
	0.	016	1.47	% Impervi	ous Area	
	_					
	Tc	Length	Slope	Velocity	Capacity	Description
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
	1.1	18	0.1330	0.27		Sheet Flow, Sheetflow
						Grass: Short n= 0.150 P2= 3.43"
	7.5	82	0.0240	0.18		Sheet Flow, Sheetflow
	4.0	440	0.0000	4.04		Grass: Short n= 0.150 P2= 3.43"
	1.9	118	0.0220	1.04		Shallow Concentrated Flow, Shallow
	0.0	4.4	0.0500	4.40		Short Grass Pasture Kv= 7.0 fps
	0.2	14	0.0500	1.12		Shallow Concentrated Flow, Shallow
	0.2	32	0.1400	2.62		Woodland Kv= 5.0 fps Shallow Concentrated Flow, Shallow
	0.2	32	0.1400	2.02		Short Grass Pasture Kv= 7.0 fps
	0.5	68	0.2350	2.42		Shallow Concentrated Flow, Shallow
	0.0	00	0.2000	۷.٦۷		Woodland Kv= 5.0 fps
_	11.4	332	Total			Troodidita itt 0.0 ipo
	11.4	332	i Ulai			

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Summary for Reach CD1: CURTAIN DRAIN

Inflow Area = 13,628 sf, 16.84% Impervious, Inflow Depth = 1.68" for 50-Year event

Inflow = 0.45 cfs @ 12.16 hrs, Volume= 1,909 cf

Outflow = 0.44 cfs @ 12.18 hrs, Volume= 1,909 cf, Atten= 2%, Lag= 1.3 min

Routed to Pond SW-C: Drywell & Basin (SWM-C)

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Max. Velocity= 1.49 fps, Min. Travel Time= 1.8 min Avg. Velocity = 0.75 fps, Avg. Travel Time= 3.6 min

Peak Storage= 48 cf @ 12.18 hrs Average Depth at Peak Storage= 0.15', Surface Width= 2.00' Bank-Full Depth= 4.50' Flow Area= 9.0 sf, Capacity= 45.63 cfs

2.00' x 4.50' deep channel, n= 0.033 Riprap, 1-inch Length= 163.0' Slope= 0.0166 '/' Inlet Invert= 96.00', Outlet Invert= 93.30'

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Stage-Area-Storage for Reach CD1: CURTAIN DRAIN

Elevation En	d Aroa	Storage	Elevation	End-Area	Storage
(feet)	(sq-ft)	(cubic-feet)	(feet)	(sq-ft)	(cubic-feet)
96.00	0.0	0	98.60	5.2	848
96.05	0.1	16	98.65	5.3	864
96.10	0.2	33	98.70	5.4	880
96.15	0.3	49	98.75	5.5	897
96.20	0.4	65	98.80	5.6	913
96.25	0.5	82	98.85	5.7	929
96.30	0.6	98	98.90	5.8	945
96.35	0.7	114	98.95	5.9	962
96.40	0.8	130	99.00	6.0	978
96.45	0.9	147	99.05	6.1	994
96.50	1.0	163	99.10	6.2	1,011
96.55	1.1 1.2	179	99.15	6.3	1,027
96.60 06.65	1.2	196 212	99.20 99.25	6.4 6.5	1,043 1,060
96.65 96.70	1.3	228	99.23	6.6	1,000
96.75	1.5	245	99.35	6.7	1,070
96.80	1.6	261	99.40	6.8	1,108
96.85	1.7	277	99.45	6.9	1,125
96.90	1.8	293	99.50	7.0	1,141
96.95	1.9	310	99.55	7.1	1,157
97.00	2.0	326	99.60	7.2	1,174
97.05	2.1	342	99.65	7.3	1,190
97.10	2.2	359	99.70	7.4	1,206
97.15	2.3	375	99.75	7.5	1,223
97.20	2.4	391	99.80	7.6	1,239
97.25	2.5	408	99.85	7.7	1,255
97.30 97.35	2.6 2.7	424 440	99.90 99.95	7.8 7.9	1,271 1,288
97.33 97.40	2.7	456	100.00	7.9 8.0	1,304
97.45	2.9	473	100.05	8.1	1,320
97.50	3.0	489	100.10	8.2	1,337
97.55	3.1	505	100.15	8.3	1,353
97.60	3.2	522	100.20	8.4	1,369
97.65	3.3	538	100.25	8.5	1,386
97.70	3.4	554	100.30	8.6	1,402
97.75	3.5	571	100.35	8.7	1,418
97.80	3.6	587	100.40	8.8	1,434
97.85	3.7	603	100.45	8.9	1,451
97.90	3.8	619	100.50	9.0	1,467
97.95 98.00	3.9 4.0	636 652			
98.05	4.0	668			
98.10	4.2	685			
98.15	4.3	701			
98.20	4.4	717			
98.25	4.5	734			
98.30	4.6	750			
98.35	4.7	766			
98.40	4.8	782			
98.45	4.9	799			
98.50	5.0	815			
98.55	5.1	831			

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

Inflow Area = 42,316 sf, 86.93% Impervious, Inflow Depth = 6.34" for 50-Year event
Inflow = 5.94 cfs @ 12.13 hrs, Volume= 22,369 cf
Outflow = 2.75 cfs @ 12.37 hrs, Volume= 22,369 cf, Atten= 54%, Lag= 14.1 min
Discarded = 0.82 cfs @ 11.64 hrs, Volume= 17,819 cf
Primary = 1.94 cfs @ 12.37 hrs, Volume= 4,550 cf

Routed to Link AP: Analysis Point

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Peak Elev= 88.71' @ 12.37 hrs Surf.Area= 1,761 sf Storage= 4,810 cf

Plug-Flow detention time= 18.2 min calculated for 22,362 cf (100% of inflow)

Center-of-Mass det. time= 18.2 min (799.6 - 781.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	84.70'	2,519 cf	22.75'W x 77.40'L x 5.50'H Field A
			9,685 cf Overall - 3,388 cf Embedded = 6,297 cf x 40.0% Voids
#2A	85.45'	3,388 cf	ADS_StormTech MC-3500 d +Cap x 30 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
			30 Chambers in 3 Rows
			Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf
		5,907 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	84.70'	12.0" Round Outlet Pipe
	•		L= 44.0' CPP, end-section conforming to fill, Ke= 0.500
			Inlet / Outlet Invert= 84.70' / 84.10' S= 0.0136 '/' Cc= 0.900
			n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#2	Device 1	86.00'	4.0" Vert. Low Flow Orifice C= 0.600
			Limited to weir flow at low heads
#3	Device 1	87.80'	11.0" W x 4.0" H Vert. Upper Orifice C= 0.600
			Limited to weir flow at low heads
#4	Device 1	89.00'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#5	Discarded	84.70'	20.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.82 cfs @ 11.64 hrs HW=84.76' (Free Discharge) **5=Exfiltration** (Exfiltration Controls 0.82 cfs)

Primary OutFlow Max=1.93 cfs @ 12.37 hrs HW=88.71' (Free Discharge)

-1=Outlet Pipe (Passes 1.93 cfs of 7.08 cfs potential flow)

2=Low Flow Orifice (Orifice Controls 0.67 cfs @ 7.68 fps) **3=Upper Orifice** (Orifice Controls 1.26 cfs @ 4.14 fps)

-4=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

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Pond SW-A: Stormtech MC-3500 (SWM-A) - 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

10 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 75.40' Row Length +12.0" End Stone x 2 = 77.40' Base Length

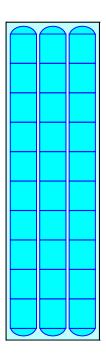
3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width 9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

30 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 3,388.0 cf Chamber Storage

9,684.7 cf Field - 3,388.0 cf Chambers = 6,296.7 cf Stone x 40.0% Voids = 2,518.7 cf Stone Storage

Chamber Storage + Stone Storage = 5,906.6 cf = 0.136 af Overall Storage Efficiency = 61.0% Overall System Size = 77.40' x 22.75' x 5.50'

30 Chambers 358.7 cy Field 233.2 cy Stone





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

Elevation	Surface	Storage	Elevation	Surface	Storage
(feet)	(sq-ft)	(cubic-feet)	(feet)	(sq-ft)	(cubic-feet)
84.70	1,761	0	89.90	1,761	5,695
84.80	1,761	70	90.00	1,761	5,766
84.90	1,761	141	90.10	1,761	5,836
85.00	1,761	211	90.20	1,761	5,907
85.10	1,761	282		.,	-,
85.20	1,761	352			
85.30	1,761	423			
85.40	1,761	493			
85.50	1,761	602			
85.60	1,761	750			
85.70	1,761	897			
85.80	1,761	1,044			
85.90	1,761	1,190			
86.00	1,761	1,335			
86.10	1,761	1,480			
86.20	1,761	1,624			
86.30	1,761	1,768			
86.40	1,761				
86.50	1,761	1,910			
		2,052			
86.60	1,761	2,193			
86.70	1,761	2,333			
86.80	1,761	2,472			
86.90	1,761	2,610			
87.00	1,761	2,747			
87.10	1,761	2,882			
87.20	1,761	3,017			
87.30	1,761	3,150			
87.40	1,761	3,281			
87.50	1,761	3,411			
87.60	1,761	3,540			
87.70	1,761	3,667			
87.80	1,761	3,791			
87.90	1,761	3,914			
88.00	1,761	4,035			
88.10	1,761	4,153			
88.20	1,761	4,269			
88.30	1,761	4,382			
88.40	1,761	4,492			
88.50	1,761	4,599			
88.60	1,761	4,702			
88.70	1,761	4,800			
88.80	1,761	4,892			
88.90	1,761	4,976			
89.00	1,761	5,055			
89.10	1,761	5,130			
89.20	1,761	5,202			
89.30	1,761	5,273			
89.40	1,761	5,343			
89.50	1,761	5,414			
89.60	1,761	5,484			
89.70	1,761	5,554			
89.80	1,761	5,625			

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

Inflow Area = 26,857 sf, 52.36% Impervious, Inflow Depth = 4.24" for 50-Year event Inflow 2.49 cfs @ 12.07 hrs, Volume= 9.487 cf 0.30 cfs @ 12.77 hrs, Volume= Outflow = 9,487 cf, Atten= 88%, Lag= 42.1 min 8,865 cf Discarded = 0.12 cfs @ 12.77 hrs, Volume= 0.18 cfs @ 12.77 hrs, Volume= Primary = 622 cf Routed to Link AP: Analysis Point 0.00 cfs @ 0.00 hrs, Volume= 0 cf Secondary =

Routed to Link AP: Analysis Point

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Peak Elev= 93.43' @ 12.77 hrs Surf.Area= 2,642 sf Storage= 4,405 cf

Plug-Flow detention time= 358.3 min calculated for 9,484 cf (100% of inflow)

Center-of-Mass det. time= 358.4 min (1,118.3 - 760.0)

Volume	Invert	Avail.Sto	rage Storage	Description	
#1	91.00'	6,32	25 cf Custom	Stage Data (Pr	ismatic) Listed below (Recalc)
Elevation		rf.Area	Inc.Store	Cum.Store	
(fee	et)	(sq-ft)	(cubic-feet)	(cubic-feet)	
91.0	00	1,031	0	0	
92.0	00	1,649	1,340	1,340	
93.0	00	2,324	1,987	3,327	
94.0	00	3,055	2,690	6,016	
94.1	10	3,132	309	6,325	
Device	Routing	Invert	Outlet Device	es	
#1	Primary	90.00'	12.0" Round	Outlet Pipe	
	•		L= 125.0' CI	MP, square edge	e headwall, Ke= 0.500
			Inlet / Outlet I	nvert= 90.00' / 8	37.00' S= 0.0240 '/' Cc= 0.900
			n= 0.010 PV	C, smooth interio	or, Flow Area= 0.79 sf
#2	Device 1	93.40'	24.0" x 24.0"	Horiz. Grate (C= 0.600
			Limited to we	ir flow at low hea	ads
#3	Secondary	93.60'	10.0' long x	3.0' breadth Bro	oad-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	h) 2.44 2.58 2.	68 2.67 2.65 2.64 2.64 2.68 2.68
				9 ² 2.97 3.07 3	
#4	Discarded	91.00'	2.000 in/hr E	xfiltration over	Surface area

Discarded OutFlow Max=0.12 cfs @ 12.77 hrs HW=93.43' (Free Discharge) **4=Exfiltration** (Exfiltration Controls 0.12 cfs)

Primary OutFlow Max=0.17 cfs @ 12.77 hrs HW=93.43' (Free Discharge)
1=Outlet Pipe (Passes 0.17 cfs of 6.48 cfs potential flow)
2=Grate (Weir Controls 0.17 cfs @ 0.61 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=91.00' (Free Discharge) 3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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

	J	· ·			•
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
91.00	1,031	0	93.60	2,763	4,852
91.05	1,062	52	93.65	2,799	4,992
91.10	1,093	106	93.70	2,836	5,132
91.15	1,124	162	93.75	2,872	5,275
91.20	1,155	219	93.80	2,909	5,420
91.25	1,186	277	93.85	2,945	5,566
91.30	1,216	337	93.90	2,982	5,714
91.35	1,247	399	93.95	3,018	5,864
91.40	1,278	462	94.00	3,055	6,016
91.45	1,309	527	94.05	3,093	6,170
91.50	1,340	593	94.10	3,132	6,325
91.55	1,371	661			
91.60	1,402	730			
91.65	1,433	801			
91.70	1,464	873			
91.75	1,495	947			
91.80	1,525	1,023			
91.85	1,556	1,100			
91.90	1,587	1,178			
91.95	1,618	1,258			
92.00	1,649	1,340			
92.05	1,683	1,423			
92.10	1,716	1,508			
92.15	1,750	1,595			
92.20	1,784	1,683			
92.25	1,818	1,773			
92.30	1,851	1,865			
92.35	1,885	1,958			
92.40	1,919	2,054			
92.45	1,953	2,150			
92.50	1,987	2,249			
92.55	2,020	2,349			
92.60	2,054	2,451			
92.65	2,088	2,554			
92.70	2,122	2,660			
92.75	2,155	2,767			
92.80	2,189	2,875			
92.85	2,223	2,985			
92.90	2,257	3,097			
92.95	2,290	3,211			
93.00	2,324	3,327			
93.05	2,361	3,444			
93.10	2,397	3,563			
93.15	2,434	3,683			
93.20	2,470	3,806			
93.25	2,507	3,930			
93.30	2,543	4,057			
93.35	2,580	4,037 4,185			
93.40	2,616	4,165			
93.45	2,653	4,446			
93.50	2,690	4,440			
93.55	2,726	4,715			

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

Inflow Area = 73,131 sf, 11.72% Impervious, Inflow Depth = 1.31" for 50-Year event

Inflow = 1.35 cfs @ 12.29 hrs, Volume= 7,977 cf

Outflow = 0.95 cfs @ 12.56 hrs, Volume= 7,977 cf, Atten= 29%, Lag= 16.4 min

Routed to Pond SW-A: Stormtech MC-3500 (SWM-A)

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Peak Elev= 93.99' @ 12.56 hrs Surf.Area= 2,061 sf Storage= 934 cf

Plug-Flow detention time= 23.4 min calculated for 7,975 cf (100% of inflow)

Center-of-Mass det. time= 23.5 min (932.9 - 909.4)

Volume	Invert	Avail.Sto	rage Storag	e Description	
#1	89.10'	3,21	14 cf Drywe	II & Basin (Prism	atic) Listed below (Recalc)
Elevatio	_	ırf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	
89.		31	(CUDIC-ICCI) ()	0	
90.1		44	38	38	
91.1		44	44	82	
92.		44	44	126	
93.0		15	27	152	
93.5		564	145	297	
94.0	00	2,107	668	965	
94.3	30	2,623	709	1,674	
94.8	30	3,537	1,540	3,214	
Device	Routing	Invert	Outlet Devic	20	
					Courte an area
#1 #2	Discarded	89.10'		Exfiltration over	
#2	Secondary	94.30'			ad-Crested Rectangular Weir
					0.80 1.00 1.20 1.40 1.60 1.80 2.00
				3.50 4.00 4.50	00 0 07 0 05 0 04 0 04 0 00 0 00
			, ,	sh) 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

Discarded OutFlow Max=0.95 cfs @ 12.56 hrs HW=93.99' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.95 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=89.10' (Free Discharge) 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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

Elevation (feet) Surface (sq-ft) Storage (cubic-feet) Elevation (sq-ft) Surface (sq-ft) Storage (feet) Surface (sq-ft) Storage (cubic-feet) 89.10 31 0 94.40 2.663 1,674 89.30 34 6 94.50 2.989 2.235 89.40 35 10 94.60 3,171 2.543 89.60 38 17 39.70 3.354 2.869 89.60 38 17 94.80 3,537 3,214 89.80 40 25 89.90 41 29 90.00 43 33 90.10 44 38 90.20 44 42 90.30 44 46 90.40 44 55 90.60 44 64 90.90 44 73 91.00 44 73 91.00 44 73 91.00 44 73 91.00 44 95 91.00 44 96 91.00 44 96 91.00		010.907	ou otorugo ro		2.7	· · · · · · · · · · · · · · · · · · ·
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89.30			0	94.30		1,674
89.40 35 10 94.60 3,171 2,543 89.50 36 13 94.70 3,354 2,868 89.60 38 17 94.80 3,537 3,214 89.80 40 25 89.90 41 29 90.00 43 33 90.10 44 38 90.20 44 42 90.30 44 55 90.60 44 66 90.70 44 64 90.80 44 68 90.90 44 73 91.10 44 82 91.20 44 86 91.30 44 95 91.50 44 95 91.60 44 104 91.70 44 108 91.80 44 112 91.90 44 117 92.00 44 121 92.10 44 126 92.20 41 130 92.30 38 134 92.40 34 137 92.50 31 141 92.60 28 143 92.70 25 146 92.80 21 148 92.90 18 150 93.30 15 152 93.10 125 159 93.20 235 177 93.30 344 206 93.40 454 246 93.50 564 297 93.60 873 369 93.70 1,181 471 93.80 1,490 605 93.90 1,798 769 94.00 2,107 965 94.10 2,279 1,184						
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92.90 18 150 93.00 15 152 93.10 125 159 93.20 235 177 93.30 344 206 93.40 454 246 93.50 564 297 93.60 873 369 93.70 1,181 471 93.80 1,490 605 93.90 1,798 769 94.00 2,107 965 94.10 2,279 1,184						
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93.20 235 177 93.30 344 206 93.40 454 246 93.50 564 297 93.60 873 369 93.70 1,181 471 93.80 1,490 605 93.90 1,798 769 94.00 2,107 965 94.10 2,279 1,184	93.00		152			
93.30 344 206 93.40 454 246 93.50 564 297 93.60 873 369 93.70 1,181 471 93.80 1,490 605 93.90 1,798 769 94.00 2,107 965 94.10 2,279 1,184						
93.40 454 246 93.50 564 297 93.60 873 369 93.70 1,181 471 93.80 1,490 605 93.90 1,798 769 94.00 2,107 965 94.10 2,279 1,184						
93.50 564 297 93.60 873 369 93.70 1,181 471 93.80 1,490 605 93.90 1,798 769 94.00 2,107 965 94.10 2,279 1,184						
93.60 873 369 93.70 1,181 471 93.80 1,490 605 93.90 1,798 769 94.00 2,107 965 94.10 2,279 1,184						
93.70 1,181 471 93.80 1,490 605 93.90 1,798 769 94.00 2,107 965 94.10 2,279 1,184						
93.80 1,490 605 93.90 1,798 769 94.00 2,107 965 94.10 2,279 1,184						
93.90 1,798 769 94.00 2,107 965 94.10 2,279 1,184						
94.00 2,107 965 94.10 2,279 1,184						
94.10 2,279 1,184						
94.20 2,451 1,420						
l l	94.20	2,451	1,420			

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

Inflow Area = 14,032 sf, 9.11% Impervious, Inflow Depth = 1.14" for 50-Year event

Inflow = 0.25 cfs @ 12.18 hrs, Volume= 1,329 cf

Outflow = 0.10 cfs @ 12.61 hrs, Volume= 1,329 cf, Atten= 59%, Lag= 25.9 min

Routed to Link AP : Analysis Point

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Peak Elev= 98.20' @ 12.61 hrs Surf.Area= 221 sf Storage= 298 cf

Plug-Flow detention time= 153.6 min calculated for 1,329 cf (100% of inflow)

Avail Otamana Otamana Daganintian

Center-of-Mass det. time= 153.6 min (1,066.5 - 912.9)

Volume	Invert Avail.	Storage Storag	ge Description	
#1	91.50'	2,064 cf Drywe	ell & Basin (Prism	atic) Listed below (Recalc)
		-	•	
Elevation	Surf.Area	Inc.Store	Cum.Store	
(feet)	(sq-ft)	(cubic-feet)	(cubic-feet)	
91.50	31	0	0	
92.50	44	38	38	
93.50	44	44	82	
94.50	44	44	126	
95.50	44	44	170	
96.50	44	44	214	
97.40	4	22	235	
98.00	97	30	265	
99.00	709	403	668	
99.06	1,117	55	723	
100.00	1,424	1,194	1,917	
100.10	1,505	146	2,064	
Device Rou	uting Inv	ert Outlet Devi	ces	

Device	Routing	IIIVEIL	Outlet Devices
#1	Discarded	91.50'	20.000 in/hr Exfiltration over Surface area
#2	Secondary	99.60'	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=0.10 cfs @ 12.61 hrs HW=98.20' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.10 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=91.50' (Free Discharge) 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
91.50	31	0	96.70	35	221
91.60	32	3	96.80	31	225
91.70	34	6	96.90	26	228
91.80	35	10	97.00	22	230
91.90	36	13	97.10	17	232
92.00	38	17	97.10	13	233
92.10	39	21	97.30	8	234
92.20	40	25	97.40	4	235
92.30	41	29	97.50	19	236
92.40	43	33	97.60	35	239
92.50	44	38	97.70	51	243
92.60	44	42	97.80	66	249
92.70	44	46	97.90	82	256
92.80	44	51	98.00	97	265
92.90	44	55	98.10	158	278
93.00	44	60	98.20	219	297
93.10	44	64	98.30	281	322
93.20	44	68	98.40	342	353
93.30	44	73	98.50	403	390
93.40	44	77	98.60	464	434
93.50	44	82	98.70	525	483
93.60	44	86	98.80	587	539
93.70	44	90	98.90	648	601
93.80	44	95	99.00	709	668
93.90	44	99	99.10	1,130	768
94.00	44	104	99.20	1,163	883
94.10	44	108	99.30	1,195	1,001
94.20	44	112	99.40	1,228	1,122
94.30	44	117	99.50	1,261	1,246
94.40	44	121	99.60	1,293	1,374
94.50	44	126	99.70	1,326	1,505
94.60	44	130	99.80	1,359	1,639
94.70	44	134	99.90	1,391	1,777
94.80	44	139	100.00	1,424	1,917
94.90	44	143	100.10	1,505	2,064
95.00	44	148			
95.10	44	152			
95.20	44	156			
95.30	44	161			
95.40	44	165			
95.50	44	170			
95.60	44	174			
95.70	44	178			
95.80	44	183			
95.90	44	187			
96.00	44	192			
96.10	44	196			
96.20	44	200			
96.30	44	205			
96.40	44	209			
96.50	44	214			
96.60	40	218			
			I		

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Type III 24-hr 50-Year Rainfall=7.53"

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Summary for Link AP: Analysis Point

Inflow Area = 116,436 sf, 44.27% Impervious, Inflow Depth = 0.80" for 50-Year event

Inflow = 2.23 cfs @ 12.37 hrs, Volume= 7,733 cf

Primary = 2.23 cfs @ 12.37 hrs, Volume= 7,733 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

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Time span=0.00-72.00 hrs, dt=0.02 hrs, 3601 points Runoff by SCS TR-20 method, UH=SCS, Weighted-CN Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment DA1A: DA1A Runoff Area=1.366 ac 10.54% Impervious Runoff Depth=1.71"

Flow Length=337' Tc=17.4 min CN=42 Runoff=1.57 cfs 8,502 cf

Subcatchment DA1B: DA1B Runoff Area=13,628 sf 16.84% Impervious Runoff Depth=2.26"

Tc=10.0 min CN=47 Runoff=0.65 cfs 2,568 cf

Subcatchment DA2A: DA2A Runoff Area=14,063 sf 100.00% Impervious Runoff Depth=8.32"

Tc=5.0 min CN=98 Runoff=2.80 cfs 9,750 cf

Subcatchment DA2B: DA2B Runoff Area=12,794 sf 0.00% Impervious Runoff Depth=1.30"

Flow Length=189' Tc=11.5 min CN=38 Runoff=0.25 cfs 1,384 cf

Subcatchment DA3: DA3 Runoff Area=14,032 sf 9.11% Impervious Runoff Depth=1.61"

Tc=10.0 min CN=41 Runoff=0.41 cfs 1,881 cf

Subcatchment DA4: DA4 Runoff Area=42,316 sf 86.93% Impervious Runoff Depth=7.36"

Tc=10.0 min CN=90 Runoff=6.83 cfs 25,944 cf

Subcatchment DA5: DA5 Runoff Area=1.085 ac 1.47% Impervious Runoff Depth=1.00"

Flow Length=332' Tc=11.4 min CN=35 Runoff=0.56 cfs 3,949 cf

Reach CD1: CURTAIN DRAIN Avg. Flow Depth=0.19' Max Vel=1.70 fps Inflow=0.65 cfs 2,568 cf

n=0.033 L=163.0' S=0.0166 '/' Capacity=45.63 cfs Outflow=0.64 cfs 2,568 cf

Pond SW-A: Stormtech MC-3500 (SWM-A) Peak Elev=89.19' Storage=5,196 cf Inflow=6.83 cfs 25,944 cf

Discarded=0.82 cfs 19,698 cf Primary=3.44 cfs 6,247 cf Outflow=4.26 cfs 25,944 cf

Pond SW-B: Bioretention Basin (SWM-B) Peak Elev=93.50' Storage=4,576 cf Inflow=2.90 cfs 11,134 cf

Discarded=0.12 cfs 9,318 cf Primary=0.82 cfs 1,817 cf Secondary=0.00 cfs 0 cf Outflow=0.94 cfs 11,134 cf

Pond SW-C: Drywell & Basin (SWM-C) Peak Elev=94.29' Storage=1,656 cf Inflow=2.08 cfs 11,069 cf

Discarded=1.21 cfs 11,069 cf Secondary=0.00 cfs 0 cf Outflow=1.21 cfs 11,069 cf

Pond SW-D: Drywell & Basin (SWM-D) Peak Elev=98.51' Storage=393 cf Inflow=0.41 cfs 1,881 cf

Discarded=0.19 cfs 1,881 cf Secondary=0.00 cfs 0 cf Outflow=0.19 cfs 1,881 cf

Link AP: Analysis Point Inflow=4.22 cfs 12,013 cf

Primary=4.22 cfs 12,013 cf

Total Runoff Area = 203,599 sf Runoff Volume = 53,978 cf Average Runoff Depth = 3.18" 69.85% Pervious = 142,206 sf 30.15% Impervious = 61,393 sf HydroCAD® 10.20-2g s/n 12772 © 2022 HydroCAD Software Solutions LLC

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Summary for Subcatchment DA1A: DA1A

Runoff = 1.57 cfs @ 12.29 hrs, Volume= 8,502 cf, Depth= 1.71"

Routed to Pond SW-C : Drywell & Basin (SWM-C)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Type III 24-hr 100-Year Rainfall=8.56"

Area	(ac) C	N Desc	cription						
0.	0.673 39 >75% Grass cover, Good, HSG A								
0	.549 3		ds, Good,						
0	.144 9	98 Pave	ed parking,	, HSG A					
1.	.366 4	l2 Weig	ghted Aver	age					
	.222		6% Pervio						
0.	.144	10.5	4% Imperv	∕ious Area					
_		01		0 :					
Tc	Length	Slope	Velocity	Capacity	Description				
<u>(min)</u>	(feet)	(ft/ft)	(ft/sec)	(cfs)					
1.7	24	0.0824	0.23		Sheet Flow, Sheetflow				
44 7	70	0.0405	0.44		Grass: Short n= 0.150 P2= 3.43"				
11.7	76	0.0485	0.11		Sheet Flow, Sheetflow				
0.6	25	0.0368	0.06		Woods: Light underbrush n= 0.400 P2= 3.43"				
0.0	35	0.0306	0.96		Shallow Concentrated Flow, Shallow Woodland Kv= 5.0 fps				
0.1	22	0.0345	3.77		Shallow Concentrated Flow, Shallow				
0.1	22	0.0343	3.77		Paved Kv= 20.3 fps				
1.5	61	0.0100	0.70		Shallow Concentrated Flow, Shallow				
1.0	01	0.0100	0.70		Short Grass Pasture Kv= 7.0 fps				
1.7	99	0.0394	0.99		Shallow Concentrated Flow, Shallow				
•••			0.00		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							

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Summary for Subcatchment DA1B: DA1B

Runoff = 0.65 cfs @ 12.16 hrs, Volume=

2,568 cf, Depth= 2.26"

Routed to Reach CD1: CURTAIN DRAIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Type III 24-hr 100-Year Rainfall=8.56"

400					Discot Fator Discot Fator				
(min)	(feet)	(ft/ft) (ft/sec)	(cfs)					
Tc	Length	Slope	e Velocity	Capacity	Description				
	_,		. 0.0 . 70	, c. ,	. 54				
	2,295		16.84% Imp	ervious Are	rea				
	11,333		83.16% Pervious Area						
	13,628	47	Weighted Average						
	2,295	98	Paved park	ing, HSG A	A				
	2,607	30	Woods, Go	od, HSG A	\mathcal{A}				
	8,726	39	>75% Grass	s cover, Go	lood, HSG A				
Ar	rea (sf)	CN	Description						

10.0

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Type III 24-hr 100-Year Rainfall=8.56"

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Summary for Subcatchment DA2A: DA2A

Runoff = 2.80 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= 0.02 hrs Type III 24-hr 100-Year Rainfall=8.56"

Aı	rea (sf)	CN E	Description		
	14,063	98 F	Roofs, HSG	Α	
	14,063	1	00.00% In	pervious A	rea
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Direct Entry

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Summary for Subcatchment DA2B: DA2B

Runoff = 0.25 cfs @ 12.21 hrs, Volume= 1,384 cf, Depth= 1.30" 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= 0.02 hrs Type III 24-hr 100-Year Rainfall=8.56"

	A	rea (sf)	CN	<u>Description</u>							
		11,225	39	39 >75% Grass cover, Good, HSG A							
		1,569	30	Woods, Go	od, HSG A						
		12,794	38	Weighted A	verage						
		12,794		100.00% Pe	ervious Are	a					
	Тс	Length	Slope	,	Capacity	Description					
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)						
	10.6	100	0.0150	0.16		Sheet Flow, Sheetflow					
						Grass: Short n= 0.150 P2= 3.43"					
	0.9	89	0.0550	1.64		Shallow Concentrated Flow, Shallow					
_						Short Grass Pasture Kv= 7.0 fps					
	11.5	189	Total								

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Summary for Subcatchment DA3: DA3

Runoff = 0.41 cfs @ 12.17 hrs, Volume=

1,881 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= 0.02 hrs Type III 24-hr 100-Year Rainfall=8.56"

400					Discot Finter Discot Finter			
(min)	(feet)	(ft/ft)) (ft/sec)	(cfs)				
Tc	Length	Slope	e Velocity	Capacity	Description			
	1,279		9.11% Impe	rvious Area	ea			
	12,753		90.89% Per	vious Area	a			
	14,032		Weighted Average					
	1,279	98	Paved parki	ng, HSG A	A			
	5,653	30	Woods, Go	od, HSG A	\mathcal{A}			
	7,100	39	>75% Grass	s cover, Go	lood, HSG A			
Ar	rea (sf)	CN	Description					

10.0

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Summary for Subcatchment DA4: DA4

Runoff = 6.83 cfs @ 12.13 hrs, Volume= 25,944 cf, Depth= 7.36" Routed to Pond SW-A: Stormtech MC-3500 (SWM-A)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Type III 24-hr 100-Year Rainfall=8.56"

	Area (sf)	CN	Description						
	5,530	39	>75% Gras	s cover, Go	ood, HSG A				
	36,786	98	Paved park	ing, HSG A					
	42,316	90	Weighted A	verage					
	5,530		13.07% Pervious Area						
	36,786		86.93% Imp	pervious Are	ea				
Tc	3	Slope	,	Capacity	Description				
(min)	(feet)	(ft/ft) (ft/sec)	(cfs)					
400					D: (E (E				

10.0

Direct Entry, Direct Entry

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Summary for Subcatchment DA5: DA5

Runoff = 0.56 cfs @ 12.27 hrs, Volume= 3,949 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= 0.02 hrs Type III 24-hr 100-Year Rainfall=8.56"

Area	(ac) C	N Desc	cription		
0	.427 3	39 >759	% Grass co	over, Good	, HSG A
0	.642 3	30 Woo	ds, Good,	HSG A	
0	.016 9	8 Pave	ed parking	, HSG A	
1	.085 3	35 Weig	ghted Aver	age	
1	.069	98.5	3% Pervio	us Area	
0	.016	1.47	% Impervi	ous Area	
Tc	Length	Slope	Velocity	Capacity	Description
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
1.1	18	0.1330	0.27		Sheet Flow, Sheetflow
					Grass: Short n= 0.150 P2= 3.43"
7.5	82	0.0240	0.18		Sheet Flow, Sheetflow
					Grass: Short n= 0.150 P2= 3.43"
1.9	118	0.0220	1.04		Shallow Concentrated Flow, Shallow
					Short Grass Pasture Kv= 7.0 fps
0.2	14	0.0500	1.12		Shallow Concentrated Flow, Shallow
0.0	00	0.4400	0.00		Woodland Kv= 5.0 fps
0.2	32	0.1400	2.62		Shallow Concentrated Flow, Shallow
0.5	00	0.0050	0.40		Short Grass Pasture Kv= 7.0 fps
0.5	68	0.2350	2.42		Shallow Concentrated Flow, Shallow
	000	T ()			Woodland Kv= 5.0 fps
11.4	332	Total			

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Summary for Reach CD1: CURTAIN DRAIN

Inflow Area = 13,628 sf, 16.84% Impervious, Inflow Depth = 2.26" for 100-Year event

Inflow = 0.65 cfs @ 12.16 hrs, Volume= 2,568 cf

Outflow = 0.64 cfs @ 12.17 hrs, Volume= 2,568 cf, Atten= 1%, Lag= 1.1 min

Routed to Pond SW-C : Drywell & Basin (SWM-C)

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Max. Velocity= 1.70 fps, Min. Travel Time= 1.6 min Avg. Velocity = 0.76 fps, Avg. Travel Time= 3.6 min

Peak Storage= 61 cf @ 12.17 hrs Average Depth at Peak Storage= 0.19', Surface Width= 2.00' Bank-Full Depth= 4.50' Flow Area= 9.0 sf, Capacity= 45.63 cfs

2.00' x 4.50' deep channel, n= 0.033 Riprap, 1-inch Length= 163.0' Slope= 0.0166 '/' Inlet Invert= 96.00', Outlet Invert= 93.30'

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Summary for Subcatchment DA1B: DA1B

Runoff = 0.45 cfs @ 12.16 hrs, Volume= 1,909 cf, Depth= 1.68"

Routed to Reach CD1: CURTAIN DRAIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Type III 24-hr 50-Year Rainfall=7.53"

400					Discot Fator Discot Fator				
(min)	(feet)	(ft/ft) (ft/sec)	(cfs)					
Tc	Length	Slope	e Velocity	Capacity	Description				
	_,		. 0.0 . 70	, c. ,	. 54				
	2,295		16.84% Imp	ervious Are	rea				
	11,333		83.16% Pervious Area						
	13,628	47	Weighted Average						
	2,295	98	Paved park	ing, HSG A	A				
	2,607	30	Woods, Go	od, HSG A	\mathcal{A}				
	8,726	39	>75% Grass	s cover, Go	lood, HSG A				
Ar	rea (sf)	CN	Description						

10.0

Direct Entry, Direct Entry

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Summary for Subcatchment DA2A: DA2A

Runoff = 2.46 cfs @ 12.07 hrs, Volume= 8,544 Routed to Pond SW-B : Bioretention Basin (SWM-B)

8,544 cf, Depth= 7.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Type III 24-hr 50-Year Rainfall=7.53"

Aı	rea (sf)	CN D	escription)						
	14,063	98 F	Roofs, HSG A						
	14,063	1	100.00% Impervious Area						
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description				
5.0					Direct Entry, Direct Entry				

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Summary for Subcatchment DA2B: DA2B

Runoff = 0.14 cfs @ 12.27 hrs, Volume=

943 cf, Depth= 0.88"

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= 0.02 hrs Type III 24-hr 50-Year Rainfall=7.53"

	A	rea (sf)	CN	Description					
		11,225	39 >75% Grass cover, Good, HSG A						
		1,569	30						
12,794 38 Weighted Average									
		12,794		100.00% Pe	ervious Are	a			
	Тс	Length	Slope	,	Capacity	Description			
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)				
	10.6	100	0.0150	0.16		Sheet Flow, Sheetflow			
						Grass: Short n= 0.150 P2= 3.43"			
	0.9	89	0.0550	1.64		Shallow Concentrated Flow, Shallow			
_						Short Grass Pasture Kv= 7.0 fps			
	11.5	189	Total						

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

Inflow Area = 26,857 sf, 52.36% Impervious, Inflow Depth = 4.24" for 50-Year event Inflow 2.49 cfs @ 12.07 hrs, Volume= 9.487 cf 0.30 cfs @ 12.77 hrs, Volume= Outflow = 9,487 cf, Atten= 88%, Lag= 42.1 min 8,865 cf Discarded = 0.12 cfs @ 12.77 hrs, Volume= 0.18 cfs @ 12.77 hrs, Volume= Primary = 622 cf Routed to Link AP: Analysis Point 0.00 cfs @ 0.00 hrs, Volume= 0 cf Secondary =

Routed to Link AP: Analysis Point

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Peak Elev= 93.43' @ 12.77 hrs Surf.Area= 2,642 sf Storage= 4,405 cf

Plug-Flow detention time= 358.3 min calculated for 9,484 cf (100% of inflow)

Center-of-Mass det. time= 358.4 min (1,118.3 - 760.0)

Volume	Invert	Avail.Sto	rage Storage	Description	
#1	91.00'	6,32	25 cf Custom	Stage Data (Pr	ismatic) Listed below (Recalc)
Elevation		rf.Area	Inc.Store	Cum.Store	
(fee	et)	(sq-ft)	(cubic-feet)	(cubic-feet)	
91.0	00	1,031	0	0	
92.0	00	1,649	1,340	1,340	
93.0	00	2,324	1,987	3,327	
94.0	00	3,055	2,690	6,016	
94.1	10	3,132	309	6,325	
Device	Routing	Invert	Outlet Device	S	
#1	Primary	90.00'	12.0" Round	Outlet Pipe	
	•		L= 125.0' CI	MP, square edge	headwall, Ke= 0.500
			Inlet / Outlet I	nvert= 90.00' / 8	7.00' S= 0.0240 '/' Cc= 0.900
			n= 0.010 PV	C, smooth interio	or, Flow Area= 0.79 sf
#2	Device 1	93.40'	24.0" x 24.0"	Horiz. Grate (C= 0.600
			Limited to we	ir flow at low hea	ads
#3	Secondary	93.60'	10.0' long x	3.0' breadth Bro	ad-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	h) 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
#4	Discarded	91.00'	2.000 in/hr E	xfiltration over	Surface area

Discarded OutFlow Max=0.12 cfs @ 12.77 hrs HW=93.43' (Free Discharge) **4=Exfiltration** (Exfiltration Controls 0.12 cfs)

Primary OutFlow Max=0.17 cfs @ 12.77 hrs HW=93.43' (Free Discharge)
1=Outlet Pipe (Passes 0.17 cfs of 6.48 cfs potential flow)
2=Grate (Weir Controls 0.17 cfs @ 0.61 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=91.00' (Free Discharge) 3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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

	J	· ·			•
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
91.00	1,031	0	93.60	2,763	4,852
91.05	1,062	52	93.65	2,799	4,992
91.10	1,093	106	93.70	2,836	5,132
91.15	1,124	162	93.75	2,872	5,275
91.20	1,155	219	93.80	2,909	5,420
91.25	1,186	277	93.85	2,945	5,566
91.30	1,216	337	93.90	2,982	5,714
91.35	1,247	399	93.95	3,018	5,864
91.40	1,278	462	94.00	3,055	6,016
91.45	1,309	527	94.05	3,093	6,170
91.50	1,340	593	94.10	3,132	6,325
91.55	1,371	661			
91.60	1,402	730			
91.65	1,433	801			
91.70	1,464	873			
91.75	1,495	947			
91.80	1,525	1,023			
91.85	1,556	1,100			
91.90	1,587	1,178			
91.95	1,618	1,258			
92.00	1,649	1,340			
92.05	1,683	1,423			
92.10	1,716	1,508			
92.15	1,750	1,595			
92.20	1,784	1,683			
92.25	1,818	1,773			
92.30	1,851	1,865			
92.35	1,885	1,958			
92.40	1,919	2,054			
92.45	1,953	2,150			
92.50	1,987	2,249			
92.55	2,020	2,349			
92.60	2,054	2,451			
92.65	2,088	2,554			
92.70	2,122	2,660			
92.75	2,155	2,767			
92.80	2,189	2,875			
92.85	2,223	2,985			
92.90	2,257	3,097			
92.95	2,290	3,211			
93.00	2,324	3,327			
93.05	2,361	3,444			
93.10	2,397	3,563			
93.15	2,434	3,683			
93.20	2,470	3,806			
93.25	2,507	3,930			
93.30	2,543	4,057			
93.35	2,543	4,037 4,185			
93.35 93.40	2,560 2,616	4,165 4,315			
93.45	2,653	4,446 4,580			
93.50	2,690	4,580 4,715			
93.55	2,726	4,715			

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

Inflow Area = 73,131 sf, 11.72% Impervious, Inflow Depth = 1.31" for 50-Year event

Inflow = 1.35 cfs @ 12.29 hrs, Volume= 7,977 cf

Outflow = 0.95 cfs @ 12.56 hrs, Volume= 7,977 cf, Atten= 29%, Lag= 16.4 min

Discarded = 0.95 cfs @ 12.56 hrs, Volume= 7,977 cf Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routed to Pond SW-A: Stormtech MC-3500 (SWM-A)

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Peak Elev= 93.99' @ 12.56 hrs Surf.Area= 2,061 sf Storage= 934 cf

Plug-Flow detention time= 23.4 min calculated for 7,975 cf (100% of inflow)

Center-of-Mass det. time= 23.5 min (932.9 - 909.4)

Volume	Invert	Avail.Sto	rage Storag	e Description	
#1	89.10'	3,21	14 cf Drywe	ell & Basin (Prism	atic) Listed below (Recalc)
Elevatio	_	ırf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	
89.1		31	(Cubic-leet) ()	(Cubic-leet)	
90.1		44	38	38	
91.1		44	44	82	
92.1		44	44	126	
93.0		15	27	152	
93.5		564	145	297	
94.0		2,107	668	965	
94.3		2,623	709	1,674	
94.8		3,537	1,540	3,214	
		,	,	,	
Device	Routing	Invert	Outlet Device	ces	
#1	Discarded	89.10'	20.000 in/hr	Exfiltration over	Surface area
#2	Secondary	94.30'	10.0' long	k 3.0' breadth Bro	ad-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	3.50 4.00 4.50	
			, ,	sh) 2.44 2.58 2.0	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

Discarded OutFlow Max=0.95 cfs @ 12.56 hrs HW=93.99' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.95 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=89.10' (Free Discharge) 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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

	010.907	ou otorugo ro		2.7	· · · · · · · · · · · · · · · · · · ·
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
89.10	31	0	94.30	2,623	1,674
89.20	32	3	94.40	2,806	1,945
89.30	34	6	94.50	2,989	2,235
89.40	35	10	94.60	3,171	2,543
89.50	36	13	94.70	3,354	2,869
89.60	38	17	94.80	3,537	3,214
89.70	39 40	21			
89.80 89.90	41	25 29			
90.00	43	33			
90.10	44	38			
90.20	44	42			
90.30	44	46			
90.40	44	51			
90.50	44	55			
90.60	44	60			
90.70	44	64			
90.80	44	68			
90.90	44	73			
91.00	44	77			
91.10	44	82			
91.20	44	86			
91.30	44 44	90			
91.40 91.50	44 44	95 99			
91.60	44	104			
91.70	44	108			
91.80	44	112			
91.90	44	117			
92.00	44	121			
92.10	44	126			
92.20	41	130			
92.30	38	134			
92.40	34	137			
92.50	31	141			
92.60	28	143			
92.70	25	146			
92.80	21 18	148 150			
92.90 93.00	15	152			
93.10	125	159			
93.20	235	177			
93.30	344	206			
93.40	454	246			
93.50	564	297			
93.60	873	369			
93.70	1,181	471			
93.80	1,490	605			
93.90	1,798	769			
94.00	2,107	965			
94.10	2,279	1,184			
94.20	2,451	1,420			

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

Inflow Area = 14,032 sf, 9.11% Impervious, Inflow Depth = 1.14" for 50-Year event

Inflow = 0.25 cfs @ 12.18 hrs, Volume= 1,329 cf

Outflow = 0.10 cfs @ 12.61 hrs, Volume= 1,329 cf, Atten= 59%, Lag= 25.9 min

Routed to Link AP : Analysis Point

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Peak Elev= 98.20' @ 12.61 hrs Surf.Area= 221 sf Storage= 298 cf

Plug-Flow detention time= 153.6 min calculated for 1,329 cf (100% of inflow)

Avail Otamana Otamana Daganintian

Center-of-Mass det. time= 153.6 min (1,066.5 - 912.9)

Volume	Invert Avail.	Storage Storag	ge Description	
#1	91.50'	2,064 cf Drywe	ell & Basin (Prism	atic) Listed below (Recalc)
		-	•	
Elevation	Surf.Area	Inc.Store	Cum.Store	
(feet)	(sq-ft)	(cubic-feet)	(cubic-feet)	
91.50	31	0	0	
92.50	44	38	38	
93.50	44	44	82	
94.50	44	44	126	
95.50	44	44	170	
96.50	44	44	214	
97.40	4	22	235	
98.00	97	30	265	
99.00	709	403	668	
99.06	1,117	55	723	
100.00	1,424	1,194	1,917	
100.10	1,505	146	2,064	
Device Rou	uting Inv	ert Outlet Devi	ces	

Device	Routing	IIIVEIL	Outlet Devices
#1	Discarded	91.50'	20.000 in/hr Exfiltration over Surface area
#2	Secondary	99.60'	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=0.10 cfs @ 12.61 hrs HW=98.20' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.10 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=91.50' (Free Discharge) 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
91.50	31	0	96.70	35	221
91.60	32	3	96.80	31	225
91.70	34	6	96.90	26	228
91.80	35	10	97.00	22	230
91.90	36	13	97.10	17	232
92.00	38	17	97.10	13	233
92.10	39	21	97.30	8	234
92.20	40	25	97.40	4	235
92.30	41	29	97.50	19	236
92.40	43	33	97.60	35	239
92.50	44	38	97.70	51	243
92.60	44	42	97.80	66	249
92.70	44	46	97.90	82	256
92.80	44	51	98.00	97	265
92.90	44	55	98.10	158	278
93.00	44	60	98.20	219	297
93.10	44	64	98.30	281	322
93.20	44	68	98.40	342	353
93.30	44	73	98.50	403	390
93.40	44	77	98.60	464	434
93.50	44	82	98.70	525	483
93.60	44	86	98.80	587	539
93.70	44	90	98.90	648	601
93.80	44	95	99.00	709	668
93.90	44	99	99.10	1,130	768
94.00	44	104	99.20	1,163	883
94.10	44	108	99.30	1,195	1,001
94.20	44	112	99.40	1,228	1,122
94.30	44	117	99.50	1,261	1,246
94.40	44	121	99.60	1,293	1,374
94.50	44	126	99.70	1,326	1,505
94.60	44	130	99.80	1,359	1,639
94.70	44	134	99.90	1,391	1,777
94.80	44	139	100.00	1,424	1,917
94.90	44	143	100.10	1,505	2,064
95.00	44	148			
95.10	44	152			
95.20	44	156			
95.30	44	161			
95.40	44	165			
95.50	44	170			
95.60	44	174			
95.70	44	178			
95.80	44	183			
95.90	44	187			
96.00	44	192			
96.10	44	196			
96.20	44	200			
96.30	44	205			
96.40	44	209			
96.50	44	214			
96.60	40	218			

post development

Type III 24-hr 50-Year Rainfall=7.53"

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Summary for Link AP: Analysis Point

Inflow Area = 116,436 sf, 44.27% Impervious, Inflow Depth = 0.80" for 50-Year event

Inflow = 2.23 cfs @ 12.37 hrs, Volume= 7,733 cf

Primary = 2.23 cfs @ 12.37 hrs, Volume= 7,733 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

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Time span=0.00-72.00 hrs, dt=0.02 hrs, 3601 points Runoff by SCS TR-20 method, UH=SCS, Weighted-CN Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment DA1A: DA1A Runoff Area=1.366 ac 10.54% Impervious Runoff Depth=1.71"

Flow Length=337' Tc=17.4 min CN=42 Runoff=1.57 cfs 8,502 cf

Subcatchment DA1B: DA1B Runoff Area=13,628 sf 16.84% Impervious Runoff Depth=2.26"

Tc=10.0 min CN=47 Runoff=0.65 cfs 2,568 cf

Subcatchment DA2A: DA2A Runoff Area=14,063 sf 100.00% Impervious Runoff Depth=8.32"

Tc=5.0 min CN=98 Runoff=2.80 cfs 9,750 cf

Subcatchment DA2B: DA2B Runoff Area=12,794 sf 0.00% Impervious Runoff Depth=1.30"

Flow Length=189' Tc=11.5 min CN=38 Runoff=0.25 cfs 1,384 cf

Subcatchment DA3: DA3 Runoff Area=14,032 sf 9.11% Impervious Runoff Depth=1.61"

Tc=10.0 min CN=41 Runoff=0.41 cfs 1,881 cf

Subcatchment DA4: DA4 Runoff Area=42,316 sf 86.93% Impervious Runoff Depth=7.36"

Tc=10.0 min CN=90 Runoff=6.83 cfs 25,944 cf

Subcatchment DA5: DA5 Runoff Area=1.085 ac 1.47% Impervious Runoff Depth=1.00"

Flow Length=332' Tc=11.4 min CN=35 Runoff=0.56 cfs 3,949 cf

Reach CD1: CURTAIN DRAIN Avg. Flow Depth=0.19' Max Vel=1.70 fps Inflow=0.65 cfs 2,568 cf

n=0.033 L=163.0' S=0.0166 '/' Capacity=45.63 cfs Outflow=0.64 cfs 2,568 cf

Pond SW-A: Stormtech MC-3500 (SWM-A) Peak Elev=89.19' Storage=5,196 cf Inflow=6.83 cfs 25,944 cf

Discarded=0.82 cfs 19,698 cf Primary=3.44 cfs 6,247 cf Outflow=4.26 cfs 25,944 cf

Pond SW-B: Bioretention Basin (SWM-B) Peak Elev=93.50' Storage=4,576 cf Inflow=2.90 cfs 11,134 cf

Discarded=0.12 cfs 9,318 cf Primary=0.82 cfs 1,817 cf Secondary=0.00 cfs 0 cf Outflow=0.94 cfs 11,134 cf

Pond SW-C: Drywell & Basin (SWM-C) Peak Elev=94.29' Storage=1,656 cf Inflow=2.08 cfs 11,069 cf

Discarded=1.21 cfs 11,069 cf Secondary=0.00 cfs 0 cf Outflow=1.21 cfs 11,069 cf

Pond SW-D: Drywell & Basin (SWM-D) Peak Elev=98.51' Storage=393 cf Inflow=0.41 cfs 1,881 cf

Discarded=0.19 cfs 1,881 cf Secondary=0.00 cfs 0 cf Outflow=0.19 cfs 1,881 cf

Link AP: Analysis Point Inflow=4.22 cfs 12,013 cf

Primary=4.22 cfs 12,013 cf

Total Runoff Area = 203,599 sf Runoff Volume = 53,978 cf Average Runoff Depth = 3.18" 69.85% Pervious = 142,206 sf 30.15% Impervious = 61,393 sf HydroCAD® 10.20-2g s/n 12772 © 2022 HydroCAD Software Solutions LLC

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Summary for Subcatchment DA1A: DA1A

Runoff = 1.57 cfs @ 12.29 hrs, Volume= 8,502 cf, Depth= 1.71"

Routed to Pond SW-C : Drywell & Basin (SWM-C)

Area	(ac) C	N Desc	cription		
0.	0.673 39 >75% Grass cover, Good,				, HSG A
0	.549 3		ds, Good,		
0	.144 9	98 Pave	ed parking,	, HSG A	
1.	.366 4	l2 Weig	ghted Aver	age	
	.222		6% Pervio		
0.	.144	10.5	4% Imperv	∕ious Area	
_		01		0 :	
Tc	Length	Slope	Velocity	Capacity	Description
<u>(min)</u>	(feet)	(ft/ft)	(ft/sec)	(cfs)	
1.7	24	0.0824	0.23		Sheet Flow, Sheetflow
44 7	70	0.0405	0.44		Grass: Short n= 0.150 P2= 3.43"
11.7	76	0.0485	0.11		Sheet Flow, Sheetflow
0.6	25	0.0368	0.06		Woods: Light underbrush n= 0.400 P2= 3.43"
0.0	35	0.0306	0.96		Shallow Concentrated Flow, Shallow Woodland Kv= 5.0 fps
0.1	22	0.0345	3.77		Shallow Concentrated Flow, Shallow
0.1	22	0.0343	3.77		Paved Kv= 20.3 fps
1.5	61	0.0100	0.70		Shallow Concentrated Flow, Shallow
1.0	01	0.0100	0.70		Short Grass Pasture Kv= 7.0 fps
1.7	99	0.0394	0.99		Shallow Concentrated Flow, Shallow
•••			0.00		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			

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Summary for Subcatchment DA1B: DA1B

Runoff = 0.65 cfs @ 12.16 hrs, Volume=

2,568 cf, Depth= 2.26"

Routed to Reach CD1: CURTAIN DRAIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Type III 24-hr 100-Year Rainfall=8.56"

	rea (sf)	CN	Description						
	8,726	39	>75% Grass	s cover, Go	od, HSG A				
	2,607	30	Woods, Go	od, HSG A					
	2,295	98	Paved parki	ng, HSG A	ı				
	13,628	47	Weighted Average						
	11,333		83.16% Per	vious Area					
	2,295		16.84% Imp	ervious Are	ea				
Tc	Length	Slop	,	Capacity	Description				
(min)	(feet)	(ft/f	t) (ft/sec)	(cfs)					
400									

10.0

Direct Entry, Direct Entry

Type III 24-hr 100-Year Rainfall=8.56"

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Summary for Subcatchment DA2A: DA2A

Runoff = 2.80 cfs @ 12.07 hrs, Volume=

9,750 cf, Depth= 8.32"

Routed to Pond SW-B: Bioretention Basin (SWM-B)

Aı	rea (sf)	CN E	Description					
	14,063	98 F	Roofs, HSG A					
	14,063	1	00.00% In	pervious A	rea			
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description			
5.0					Direct Entry, Direct Entry			

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Summary for Subcatchment DA2B: DA2B

Runoff = 0.25 cfs @ 12.21 hrs, Volume= 1,384 cf, Depth= 1.30" Routed to Pond SW-B : Bioretention Basin (SWM-B)

_	Α	rea (sf)	CN I	Description					
		11,225	39 :	>75% Gras	s cover, Go	ood, HSG A			
_		1,569	30 \	Noods, Go	od, HSG A				
		12,794	38 \	Neighted A	verage				
12,794 100.00% Pervious Area					ervious Are	a			
	Тс	Length	Slope	,	Capacity	Description			
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)				
	10.6	100	0.0150	0.16		Sheet Flow, Sheetflow			
						Grass: Short n= 0.150 P2= 3.43"			
	0.9	89	0.0550	1.64		Shallow Concentrated Flow, Shallow			
_						Short Grass Pasture Kv= 7.0 fps			
	11.5	189	Total						

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Summary for Subcatchment DA3: DA3

Runoff = 0.41 cfs @ 12.17 hrs, Volume=

1,881 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= 0.02 hrs Type III 24-hr 100-Year Rainfall=8.56"

	Area (sf)	CN	Description						
-	7,100	39	>75% Gras	s cover, Go	od, HSG A				
	5,653	30	Woods, Go	od, HSG A					
	1,279	98	Paved park	Paved parking, HSG A					
	14,032	41	Weighted Average						
	12,753		90.89% Pei	rvious Area					
	1,279		9.11% Impe	ervious Area	а				
	Tc Length	Slo	pe Velocity	Capacity	Description				
	(min) (feet)	(ft/	ft) (ft/sec)	(cfs)					
	40.0								

10.0

Direct Entry, Direct Entry

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Summary for Subcatchment DA4: DA4

Runoff = 6.83 cfs @ 12.13 hrs, Volume= 25,944 cf, Depth= 7.36" Routed to Pond SW-A: Stormtech MC-3500 (SWM-A)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Type III 24-hr 100-Year Rainfall=8.56"

Area	a (sf)	CN	Description						
5	5,530	39	>75% Grass cover, Good, HSG A						
36	5,786	98	Paved parking, HSG A						
42	2,316	90	Weighted Average						
5	5,530		13.07% Pervious Area						
36	5,786		86.93% Imp	ervious Ar	ea				
	ength	Slope	,	Capacity	Description				
(min)	(feet)	(ft/ft	(ft/sec)	(cfs)					
10.0					Direct Entry	Direct Entry			

10.0

Direct Entry, Direct Entry

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Summary for Subcatchment DA5: DA5

Runoff = 0.56 cfs @ 12.27 hrs, Volume= 3,949 cf, Depth= 1.00"

Routed to Link AP : Analysis Point

Area	(ac) C	N Desc	cription		
0.	.427 3	39 >759	% Grass co	over, Good	, HSG A
0.	.642	30 Woo	ds, Good,	HSG A	
0	.016	8 Pave	ed parking,	, HSG A	
1.	.085 3	35 Weig	ghted Aver	age	
1.	.069	98.5	3% Pervio	us Area	
0	.016	1.47	% Impervi	ous Area	
Tc	Length	Slope	Velocity	Capacity	Description
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
1.1	18	0.1330	0.27		Sheet Flow, Sheetflow
					Grass: Short n= 0.150 P2= 3.43"
7.5	82	0.0240	0.18		Sheet Flow, Sheetflow
					Grass: Short n= 0.150 P2= 3.43"
1.9	118	0.0220	1.04		Shallow Concentrated Flow, Shallow
0.0	4.4	0.0500	4.40		Short Grass Pasture Kv= 7.0 fps
0.2	14	0.0500	1.12		Shallow Concentrated Flow, Shallow
0.2	22	0.4400	2.62		Woodland Kv= 5.0 fps
0.2	32	0.1400	2.62		Shallow Concentrated Flow, Shallow
0.5	68	0.2350	2.42		Short Grass Pasture Kv= 7.0 fps Shallow Concentrated Flow, Shallow
0.5	00	0.2330	2.42		Woodland Kv= 5.0 fps
11 1	222	Total			vvooulariu IVV- 0.0 ips
11.4	332	Total			

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Summary for Reach CD1: CURTAIN DRAIN

Inflow Area = 13,628 sf, 16.84% Impervious, Inflow Depth = 2.26" for 100-Year event

Inflow = 0.65 cfs @ 12.16 hrs, Volume= 2,568 cf

Outflow = 0.64 cfs @ 12.17 hrs, Volume= 2,568 cf, Atten= 1%, Lag= 1.1 min

Routed to Pond SW-C : Drywell & Basin (SWM-C)

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Max. Velocity= 1.70 fps, Min. Travel Time= 1.6 min Avg. Velocity = 0.76 fps, Avg. Travel Time= 3.6 min

Peak Storage= 61 cf @ 12.17 hrs Average Depth at Peak Storage= 0.19', Surface Width= 2.00' Bank-Full Depth= 4.50' Flow Area= 9.0 sf, Capacity= 45.63 cfs

2.00' x 4.50' deep channel, n= 0.033 Riprap, 1-inch Length= 163.0' Slope= 0.0166 '/' Inlet Invert= 96.00', Outlet Invert= 93.30'



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Stage-Area-Storage for Reach CD1: CURTAIN DRAIN

			1		
Elevation		Storage		End-Area	Storage
(feet)	(sq-ft)	(cubic-feet)	(feet)	(sq-ft)	(cubic-feet)
96.00	0.0	0	98.60	5.2	848
96.05	0.1	16	98.65	5.3	864
96.10	0.2	33	98.70	5.4	880
96.15	0.3	49	98.75	5.5	897
96.20	0.4	65	98.80	5.6	913
96.25	0.5	82	98.85	5.7	929
96.30	0.6	98	98.90	5.8	945
96.35	0.7	114	98.95	5.9	962
96.40	0.7	130	99.00	6.0	978
96.45	0.0	147	99.05	6.1	994
96.50	1.0	163	99.10	6.2	1,011
96.55	1.1	179	99.15	6.3	1,027
96.60	1.2	196	99.20	6.4	1,043
96.65	1.3	212	99.25	6.5	1,060
96.70	1.4	228	99.30	6.6	1,076
96.75	1.5	245	99.35	6.7	1,092
96.80	1.6	261	99.40	6.8	1,108
96.85	1.7	277	99.45	6.9	1,125
96.90	1.8	293	99.50	7.0	1,141
96.95	1.9	310	99.55	7.1	1,157
97.00	2.0	326	99.60	7.2	1,174
97.05	2.1	342	99.65	7.3	1,190
97.10	2.2	359	99.70	7.4	1,206
97.15	2.3	375	99.75	7.5	1,223
97.20	2.4	391	99.80	7.6	1,239
97.25	2.5	408	99.85	7.7	1,255
97.30	2.6	424	99.90	7.8	1,271
97.35	2.7	440	99.95	7.9	1,288
97.40	2.7	456	100.00	8.0	1,304
	2.0				
97.45		473	100.05	8.1	1,320
97.50	3.0	489	100.10	8.2	1,337
97.55	3.1	505	100.15	8.3	1,353
97.60	3.2	522	100.20	8.4	1,369
97.65	3.3	538	100.25	8.5	1,386
97.70	3.4	554	100.30	8.6	1,402
97.75	3.5	571	100.35	8.7	1,418
97.80	3.6	587	100.40	8.8	1,434
97.85	3.7	603	100.45	8.9	1,451
97.90	3.8	619	100.50	9.0	1,467
97.95	3.9	636			
98.00	4.0	652			
98.05	4.1	668			
98.10	4.2	685			
98.15	4.3	701			
98.20	4.4	717			
98.25	4.5	734			
98.30	4.6	750			
98.35	4.7	766			
98.40	4.8	782			
98.45	4.9	799			
98.50	5.0	815			
98.55	5.0 5.1	831			
90.00	3 . I	031			

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

Inflow Area = 42,316 sf, 86.93% Impervious, Inflow Depth = 7.36" for 100-Year event Inflow = 6.83 cfs @ 12.13 hrs, Volume= 25,944 cf
Outflow = 4.26 cfs @ 12.28 hrs, Volume= 25,944 cf, Atten= 38%, Lag= 8.7 min
Discarded = 0.82 cfs @ 11.56 hrs, Volume= 19,698 cf
Primary = 3.44 cfs @ 12.28 hrs, Volume= 6,247 cf

Routed to Link AP : Analysis Point

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Peak Elev= 89.19' @ 12.28 hrs Surf.Area= 1,761 sf Storage= 5,196 cf

Plug-Flow detention time= 17.8 min calculated for 25,937 cf (100% of inflow)

Center-of-Mass det. time= 17.8 min (795.4 - 777.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	84.70'	2,519 cf	22.75'W x 77.40'L x 5.50'H Field A
			9,685 cf Overall - 3,388 cf Embedded = 6,297 cf x 40.0% Voids
#2A	85.45'	3,388 cf	ADS_StormTech MC-3500 d +Cap x 30 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
			30 Chambers in 3 Rows
			Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf
		5,907 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	84.70'	12.0" Round Outlet Pipe
			L= 44.0' CPP, end-section conforming to fill, Ke= 0.500
			Inlet / Outlet Invert= 84.70' / 84.10' S= 0.0136 '/' Cc= 0.900
			n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#2	Device 1	86.00'	4.0" Vert. Low Flow Orifice C= 0.600
			Limited to weir flow at low heads
#3	Device 1	87.80'	11.0" W x 4.0" H Vert. Upper Orifice C= 0.600
			Limited to weir flow at low heads
#4	Device 1	89.00'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#5	Discarded	84.70'	20.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.82 cfs @ 11.56 hrs HW=84.76' (Free Discharge) **5=Exfiltration** (Exfiltration Controls 0.82 cfs)

Primary OutFlow Max=3.44 cfs @ 12.28 hrs HW=89.19' (Free Discharge)

-1=Outlet Pipe (Passes 3.44 cfs of 7.55 cfs potential flow)

—2=Low Flow Orifice (Orifice Controls 0.73 cfs @ 8.37 fps) —3=Upper Orifice (Orifice Controls 1.63 cfs @ 5.32 fps)

-4=Sharp-Crested Rectangular Weir (Weir Controls 1.08 cfs @ 1.43 fps)

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Pond SW-A: Stormtech MC-3500 (SWM-A) - 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

10 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 75.40' Row Length +12.0" End Stone x 2 = 77.40' Base Length

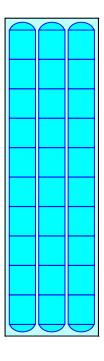
3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width 9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

30 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 3,388.0 cf Chamber Storage

9,684.7 cf Field - 3,388.0 cf Chambers = 6,296.7 cf Stone x 40.0% Voids = 2,518.7 cf Stone Storage

Chamber Storage + Stone Storage = 5,906.6 cf = 0.136 af Overall Storage Efficiency = 61.0% Overall System Size = 77.40' x 22.75' x 5.50'

30 Chambers 358.7 cy Field 233.2 cy Stone





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

- ·	0 (01	le	0 (0.1
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
84.70	1,761	0	89.90	1,761	5,695
84.80	1,761	70	90.00	1,761	5,766
84.90	1,761	141	90.10	1,761	5,836
85.00	1,761	211	90.20	1,761	5,907
85.10	1,761	282		,	•
85.20	1,761	352			
85.30	1,761	423			
85.40	1,761	493			
85.50	1,761	602			
85.60	1,761	750			
85.70	1,761	897			
85.80	1,761	1,044			
85.90	1,761	1,190			
86.00 86.10	1,761	1,335			
86.20	1,761 1,761	1,480 1,624			
86.30	1,761	1,768			
86.40	1,761	1,910			
86.50	1,761	2,052			
86.60	1,761	2,193			
86.70	1,761	2,333			
86.80	1,761	2,472			
86.90	1,761	2,610			
87.00	1,761	2,747			
87.10	1,761	2,882			
87.20	1,761	3,017			
87.30	1,761	3,150			
87.40	1,761	3,281			
87.50	1,761	3,411			
87.60 87.70	1,761	3,540			
87.70 87.80	1,761 1,761	3,667 3,791			
87.90	1,761	3,914			
88.00	1,761	4,035			
88.10	1,761	4,153			
88.20	1,761	4,269			
88.30	1,761	4,382			
88.40	1,761	4,492			
88.50	1,761	4,599			
88.60	1,761	4,702			
88.70	1,761	4,800			
88.80	1,761	4,892			
88.90	1,761	4,976			
89.00	1,761	5,055			
89.10	1,761	5,130 5,202			
89.20 89.30	1,761 1,761	5,202 5,273			
89.40	1,761	5,273 5,343			
89.50	1,761	5,414			
89.60	1,761	5,484			
89.70	1,761	5,554			
89.80	1,761	5,625			

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

Inflow Area = 26,857 sf, 52.36% Impervious, Inflow Depth = 4.97" for 100-Year event Inflow 2.90 cfs @ 12.07 hrs, Volume= 11.134 cf 0.94 cfs @ 12.41 hrs, Volume= Outflow = 11,134 cf, Atten= 67%, Lag= 20.2 min 9,318 cf 0.12 cfs @ 12.41 hrs, Volume= Discarded = 0.82 cfs @ 12.41 hrs, Volume= Primary = 1,817 cf Routed to Link AP: Analysis Point 0.00 cfs @ 0.00 hrs, Volume= 0 cf Secondary =

Routed to Link AP : Analysis Point

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Peak Elev= 93.50' @ 12.41 hrs Surf.Area= 2,689 sf Storage= 4,576 cf

Invest Aveil Otenson Otenson Description

Plug-Flow detention time= 326.5 min calculated for 11,131 cf (100% of inflow)

Center-of-Mass det. time= 326.6 min (1,087.8 - 761.2)

Volume	Invert	Avail.Stor	age Storage [Description	
#1	91.00'	6,32	5 cf Custom	Stage Data (Pris	matic) Listed below (Recalc)
Classatia	· · · · · · ·	mf Λ	In a Ctava	Cura Stara	
Elevation	_	rf.Area	Inc.Store	Cum.Store	
(fee	et)	(sq-ft)	(cubic-feet)	(cubic-feet)	
91.0	00	1,031	0	0	
92.0	00	1,649	1,340	1,340	
93.0	00	2,324	1,987	3,327	
94.0	00	3,055	2,690	6,016	
94.1	10	3,132	309	6,325	
Device	Routing	Invert	Outlet Devices	i	
#1	Primary	90.00'	12.0" Round (Outlet Pipe	
	•		L= 125.0' CM	P, square edge I	neadwall, Ke= 0.500
			Inlet / Outlet In	vert= 90.00' / 87	.00' S= 0.0240 '/' Cc= 0.900
			n= 0.010 PVC	, smooth interior	, Flow Area= 0.79 sf
#2	Device 1	93.40'	24.0" x 24.0" F	Horiz. Grate C=	= 0.600
			Limited to weir	flow at low head	S
#3	Secondary	93.60'	10.0' long x 3.	.0' breadth Broa	d-Crested Rectangular Weir
	•				80 1.00 1.20 1.40 1.60 1.80 2.00
			2.50 3.00 3.50		
					3 2.67 2.65 2.64 2.64 2.68 2.68
			, ,	2 2.97 3.07 3.3	
#4	Discarded	91.00'		filtration over Su	
	000.000	00			

Discarded OutFlow Max=0.12 cfs @ 12.41 hrs HW=93.50' (Free Discharge) **4=Exfiltration** (Exfiltration Controls 0.12 cfs)

Primary OutFlow Max=0.81 cfs @ 12.41 hrs HW=93.50' (Free Discharge)
1=Outlet Pipe (Passes 0.81 cfs of 6.55 cfs potential flow)
2=Grate (Weir Controls 0.81 cfs @ 1.03 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=91.00' (Free Discharge) 3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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

	•	· ·			,
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
91.00	1,031	0	93.60	2,763	4,852
91.05	1,062	52	93.65	2,799	4,992
91.10	1,093	106	93.70	2,836	5,132
91.15	1,124	162	93.75	2,872	5,275
91.20	1,155	219	93.80	2,909	5,420
91.25	1,186	277	93.85	2,945	5,566
91.30	1,216	337	93.90	2,982	5,714
91.35	1,247	399	93.95	3,018	5,864
91.40 91.45	1,278 1,309	462 527	94.00 94.05	3,055 3,093	6,016 6,170
91.50	1,340	593	94.03	3,093 3,132	6,325
91.55	1,371	661	34.10	3,132	0,020
91.60	1,402	730			
91.65	1,433	801			
91.70	1,464	873			
91.75	1,495	947			
91.80	1,525	1,023			
91.85	1,556	1,100			
91.90	1,587	1,178			
91.95 92.00	1,618 1,649	1,258 1,340			
92.05	1,683	1,423			
92.10	1,716	1,508			
92.15	1,750	1,595			
92.20	1,784	1,683			
92.25	1,818	1,773			
92.30	1,851	1,865			
92.35	1,885	1,958			
92.40	1,919	2,054			
92.45	1,953	2,150			
92.50 92.55	1,987 2,020	2,249 2,349			
92.60	2,054	2,451			
92.65	2,088	2,554			
92.70	2,122	2,660			
92.75	2,155	2,767			
92.80	2,189	2,875			
92.85	2,223	2,985			
92.90	2,257	3,097			
92.95	2,290	3,211			
93.00 93.05	2,324 2,361	3,327 3,444			
93.05	2,397	3,563			
93.15	2,434	3,683			
93.20	2,470	3,806			
93.25	2,507	3,930			
93.30	2,543	4,057			
93.35	2,580	4,185			
93.40	2,616	4,315			
93.45	2,653	4,446			
93.50	2,690	4,580 4,715			
93.55	2,726	4,715			

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

Inflow Area = 73,131 sf, 11.72% Impervious, Inflow Depth = 1.82" for 100-Year event

Inflow = 2.08 cfs @ 12.26 hrs, Volume= 11,069 cf

Outflow = 1.21 cfs @ 12.60 hrs, Volume= 11,069 cf, Atten= 42%, Lag= 20.2 min

Discarded = 1.21 cfs @ 12.60 hrs, Volume= 11,069 cf Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routed to Pond SW-A: Stormtech MC-3500 (SWM-A)

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs Peak Elev= 94.29' @ 12.60 hrs Surf.Area= 2,611 sf Storage= 1,656 cf

Plug-Flow detention time= 22.0 min calculated for 11,066 cf (100% of inflow)

Center-of-Mass det. time= 22.0 min (919.1 - 897.1)

Volume	Invert	Avail.Sto	rage	Storage	Description		
#1	89.10'	3,2	14 cf	Drywell	& Basin (Prism	natic) Listed below (Recalc)	
Elevation	on Su	ırf.Area	Inc.	.Store	Cum.Store		
(fee	et)	(sq-ft)	(cubic	c-feet)	(cubic-feet)		
89.1	10	31		0	0		
90.1	10	44		38	38		
91.1	10	44		44	82		
92.1	10	44		44	126		
93.0	00	15		27	152		
93.5	50	564		145	297		
94.0	00	2,107		668	965		
94.3	30	2,623		709	1,674		
94.8	30	3,537		1,540	3,214		
Device	Routing	Invert	Outle	et Device	es		
#1	Discarded	89.10'	20.00	00 in/hr l	Exfiltration over	Surface area	
#2	Secondary	94.30'	10.0' 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	. (Englis	h) 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

Discarded OutFlow Max=1.21 cfs @ 12.60 hrs HW=94.29' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 1.21 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=89.10' (Free Discharge) 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Storage (cubic-feet)

1,674

1,945

2,235 2,543

2,869

3,214

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

Surface

(sq-ft)

2,623

2,806

2,989

3,171

3,354

3,537

Elevation

(feet)

94.30

94.40

94.50

94.60

94.70

94.80

Elevation	Surface	Storage
(feet)	(sq-ft)	(cubic-feet)
89.10	31	0
89.20	32	3
89.30	34	6
89.40	35	10
89.50	36	13
89.60	38	17
89.70	39	21
89.80	40	25
89.90	41	29
90.00	43	33
90.10	44	38
90.20	44	42
90.30	44	46
90.40	44	51
90.50	44	55
90.60	44	60
90.70	44	64
90.80	44	68
90.90	44	73
91.00	44	77
91.10	44	82
91.20	44	86
91.30	44	90
91.40	44	95
91.50	44	99
91.60	44	104
91.70	44	108
91.80	44	112
91.90	44	117
92.00	44	121
92.10	44	126
92.10	41	130
92.30	38	134
92.40	34	137
92.50	31	141
92.60	28	143
92.70	25	146
92.80	21	148
92.90	18	150
93.00	15	152
93.10	125	159
93.20	235	177
93.30	344	206
93.40	454	246
93.50	564	297
93.60	873	369
93.70	1,181	471
93.80	1,490	605
93.90	1,798	769
94.00	2,107	965
94.10	2,279	1,184
94.20	2,451	1,420
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Summary for Pond SW-D: Drywell & Basin (SWM-D)

Inflow Area = 14,032 sf, 9.11% Impervious, Inflow Depth = 1.61" for 100-Year event

Inflow = 0.41 cfs @ 12.17 hrs, Volume= 1,881 cf

Outflow = 0.19 cfs @ 12.54 hrs, Volume= 1,881 cf, Atten= 54%, Lag= 22.3 min

Discarded = 0.19 cfs @ 12.54 hrs, Volume= 1,881 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= 0.02 hrs Peak Elev= 98.51' @ 12.54 hrs Surf.Area= 407 sf Storage= 393 cf

Plug-Flow detention time= 113.1 min calculated for 1,880 cf (100% of inflow)

Center-of-Mass det. time= 113.1 min (1,012.1 - 899.0)

Volume	Invert Avai	I.Storage Stora	age Description	
#1	91.50'	2,064 cf Dryw	vell & Basin (Prismatic) Listed below (Recalc)	_
Elevation	Surf.Area	Inc.Store	Cum.Store	
(feet)	(sq-ft)	(cubic-feet)		
91.50	31	0	0	
92.50	44	38	38	
93.50	44	44	82	
94.50	44	44	126	
95.50	44	44		
96.50	44	44		
97.40	4	22		
98.00	97	30		
99.00	709	403		
99.06	1,117	55		
100.00	1,424	1,194	,	
100.10	1,505	146	2,064	
Davisa Dav	ıtina İn	vert Outlet Day	dooo	

Device	Routing	Invert	Outlet Devices
#1	Discarded	91.50'	20.000 in/hr Exfiltration over Surface area
#2	Secondary	99.60'	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=0.19 cfs @ 12.54 hrs HW=98.51' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.19 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=91.50' (Free Discharge) 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
91.50	31	0	96.70	35	221
91.60	32	3	96.80	31	225
91.70	34	6	96.90	26	228
91.80	35	10	97.00	22	230
91.90	36	13	97.10	17	232
92.00	38	17	97.10	13	233
92.10	39	21	97.30	8	234
92.20	40	25	97.40	4	235
92.30	41	29	97.50	19	236
92.40	43	33	97.60	35	239
92.50	44	38	97.70	51	243
92.60	44	42	97.80	66	249
92.70	44	46	97.90	82	256
92.80	44	51	98.00	97	265
92.90	44	55	98.10	158	278
93.00	44	60	98.20	219	297
93.10	44	64	98.30	281	322
93.20	44	68	98.40	342	353
93.30	44	73	98.50	403	390
93.40	44	77	98.60	464	434
93.50	44	82	98.70	525	483
93.60	44	86	98.80	587	539
93.70	44	90	98.90	648	601
93.80	44	95	99.00	709	668
93.90	44	99	99.10	1,130	768
94.00	44	104	99.20	1,163	883
94.10	44	108	99.30	1,195	1,001
94.20	44	112	99.40	1,228	1,122
94.30	44	117	99.50	1,261	1,246
94.40	44	121	99.60	1,293	1,374
94.50	44	126	99.70	1,326	1,505
94.60	44	130	99.80	1,359	1,639
94.70	44	134	99.90	1,391	1,777
94.80	44	139	100.00	1,424	1,917
94.90	44	143	100.10	1,505	2,064
95.00	44	148			
95.10	44	152			
95.20	44	156			
95.30	44	161			
95.40	44	165			
95.50	44	170			
95.60	44	174			
95.70	44	178			
95.80	44	183			
95.90	44	187			
96.00	44	192			
96.10	44	196			
96.20	44	200			
96.30	44	205			
96.40	44	209			
96.50	44	214			
96.60	40	218			

Type III 24-hr 100-Year Rainfall=8.56"

Prepared by HH Engineering Assoc

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Summary for Link AP: Analysis Point

Inflow Area = 116,436 sf, 44.27% Impervious, Inflow Depth = 1.24" for 100-Year event

Inflow = 4.22 cfs @ 12.30 hrs, Volume= 12,013 cf

Primary = 4.22 cfs @ 12.30 hrs, Volume= 12,013 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

