

April 6, 2022 June 16, 2022

## STORMWATER REPORT

For

## EAST BEACH PARKING LOT GREEN INFRASTRUCTURE RERTOFIT New Bedford, Massachusetts

Prepared for:

# CITY OF NEW BEDFORD PARKS RECREATION & BEACHES

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## 1.0 INTRODUCTION

Nitsch Engineering has prepared this Stormwater Report to support the Notice of Intent (NOI) to the New Bedford Conservation Commission for the proposed East Beach Parking Lot Green Infrastructure Retrofit project within the East Beach parking lots, which are located within jurisdictional wetland resource areas (subsequently referred to as the "Project").

The Site consists of three (3) separate parking lots located along Rodney French Boulevard East. The improvements include reconstructing and greening the existing parking lot and providing water quality treatment through bioretention basins and subsurface infiltration systems.

The Project limit of work includes the following parcels:

- Parking Lot A: Map 4, Lot 100
- Parking Lot B: Map 4, Lot 101
- Parking Lot C: Map 4, Lot 102



Figure 1. Site Locus

The proposed stormwater improvements have been designed to comply with the requirements of the City of New Bedford Stormwater Management Rules & Regulations (New Bedford Stormwater Regulations) and the Massachusetts Department of Environmental Protection (DEP) Stormwater Management Standards. The Project has also been designed to meet the City of New Bedford Green Infrastructure Plan water quality volume goal, which exceeds the requirements put forth in the New Bedford Stormwater Regulations, per the direction of the Department of Public Infrastructure (DPI).

## 2.0 EXISTING CONDITIONS

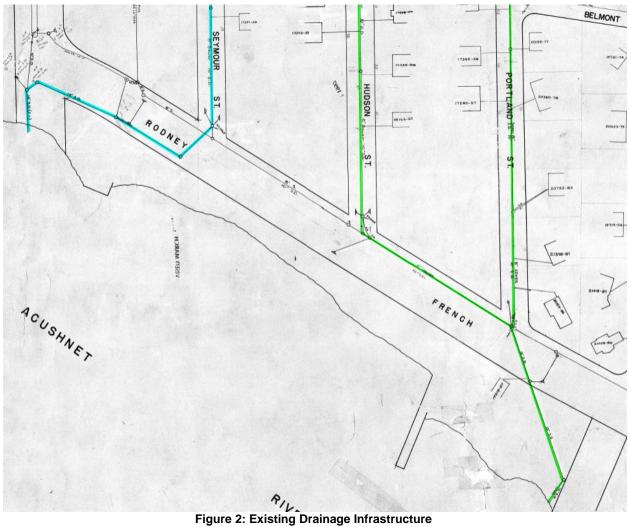
The Project site consists of three (3) existing parking lots along Rodney French Boulevard East. The existing parking lots are entirely paved and are in poor surface condition. (Figure 1 – USGS Locus Map and Figure 2 – Aerial Locus Map).

- Parking Lot A:
  - o 0.74 Acres
  - Bound by Rodney French Boulevard South to the south, Rodney French Boulevard East to the east, and Seymour Street to the north.
  - Flows to existing catch basins within Rodney French Boulevard South and Seymour Street.
- Parking Lot B:
  - 0.95 Acres
  - Bound by Seymour Street to the south, Rodney French Boulevard East to the east, and Hudson Street to the north.
  - Flows to existing catch basins within Seymour Street and Hudson Street.
- Parking Lot C:
  - o 1.05 Acres
  - Bound by Hudson Street to the south, Rodney French Boulevard East to the east, and Portland Street to the north.
  - Flows to existing catch basin within Hudson Street and Portland Street.

There is no existing stormwater collection or treatment systems within the parking lots. There is an existing drain pipe and sewer pipe that run through Parking Lot A; however the parking lot does not appear to discharge to either pipe. These existing pipes will be maintained as part of the Project.

Stormwater runoff in Seymour Street, Rodney French Boulevard South, and the adjacent portion of East Rodney French Boulevard East is collected by a series of catch basins that flow west in East Rodney French Boulevard and connect to an existing 14-inch drain main which flows and outlets to the harbor via an outfall.

Stormwater runoff from Hudson Street, Portland Street, and the northern portion of East Rodney French Boulevard is collected by a closed drainage system which flows north and connects to a 15-inch storm drain main which outfalls to the harbor.



#### 2.1 **NRCS Soil Designations**

The Soil Classification Summary (Table 1) outlines the Natural Resources Conservation Services (NRCS) designation of the soil series at the Site. The Site is located within urban land, which does not have a hydrologic soil rating (refer to the NRCS Soil Maps and Descriptions in Appendix E).

Soil Unit	Soil Series	Hydrologic Soil Group
602	Urban Land	-

#### 2.2 **On-Site Soil Investigations**

Nitsch Engineering, Inc. performed nine (9) test pits at the Site on 2/24/2022 and 3/3/2022.

Three (3) test pits were performed within each parking lot. The eastern test pits, along Rodney French Boulevard East, encountered evidence of groundwater at depths ranging from 58-inches to 83-inches below grade. The western test pits on the uphill side of the parking lots encountered groundwater

90"

85"

78"

depths ranging from 78-inches to 90-inches. Based on the test pits, Nitsch Engineering determined that infiltration is feasible at the up-hill portions of the parking lots (western), where a minimum of 2-ft groundwater separation can be achieved.

Based on the sandy loam conditions encountered at the approximately bottom of BMP elevations, the Project assumed a Rawls Rate of 1.02 inches/hour, associated with the texture class Sandy Loam.

Test Pit #	Soil Type	Groundwater Elevation
1 [Lot A]	Sandy Loam	58"
2 [Lot A]	Sandy Loam	72"
3 [Lot B]	Sandy Loam	64"
4 [Lot B]	Sandy Loam	64"
5 [Lot C]	Sandy Loam	56"
6 [Lot C]	Sandy Loam	83"

Sandy Loam

Sandy Loam

Sandy Loam

### Table 2. Test Pit Summary

7 [Lot A]

8 [Lot B]

9 [Lot C]



## Figure 3: Test Pit Locations

#### 2.3 Wetland Resource Areas

The Project site is bordered by residential parcels and public roadways and is located within Land Subject to Coastal Storm Flowage (LSCSF). The Project site is also located within the 100-foot Buffer Zone associated with the nearby coastal resource areas (i.e. the coastal beach). Refer to the Notice of Intent for additional information regarding the resource areas.

## 2.4 Total Maximum Daily Load (TMDL)

The sub-watershed has been identified as impaired/threatened per the Outer New Bedford Harbor, Category 5 (Impaired or threatened for one or more uses and requiring a TMDL). See Table 3 for a list of impairments.

### Table 3. List of Impairments for Outer New Bedford Harbor

Water Body	Classification	Impairment(s)
Outer New	Category 5: Impaired or threatened for one or	Metals
Bedford Harbor	more uses and requiring a TMDL.	Nonpriority organics
		Nutrients
(MA95-63_2008)		Organic enrichment/Low DO
		Pathogens
		Priority organics

The Site does not have stormwater treatment prior to discharge in the existing conditions. The proposed green infrastructure improvements are designed specifically to improve stormwater quality. The Project has been designed to reduce stormwater discharge and associated pathogen pollutants through filtration and infiltration to meet the intent of the TMDL.

## 3.0 NEW BEDFORD STORMWATER MANAGEMENT STANDARDS

The City of New Bedford requires stormwater management systems on redevelopment sites be designed to meet an average annual pollutant removal equivalent to:

- 80% of the average annual postconstruction load of Total Suspended Solids (TSS) related to the total postconstruction impervious area on the site, and
- 50% of the average annual load of Total Phosphorus (TP) related to the total postconstruction impervious surface area on the site.

This treatment shall be achieved by retaining the volume of runoff equivalent to, or greater than, 0.8 inch multiplied by the total post-construction impervious surface area on the redeveloped site or meeting a combination of retention and treatment that achieves the above standards.

## City of New Bedford Green Infrastructure Plan:

Nitsch Engineering understands that the City is in the process of developing and adopting a new citywide green infrastructure strategy (the Green Infrastructure Master Strategy and Implementation Roadmap). Per coordination with the DPI, DPI indicated that the Project should align with the goal of this new plan, which will have a water quality treatment goal of 1.7-inches over the impervious area. This goal significantly exceeds state and local stormwater standards.

## 4.0 **PROPOSED CONDITIONS**

## 4.1 **Project Description**

The Project consists of the construction of new Best Management Practices (BMPs) that have been designed in accordance with the MassDEP Stormwater Management Standards and the City of New Bedford Stormwater Management Regulations. The systems are designed to provide water quality treatment prior to discharge to the existing drainage system, improving the water quality discharging to the Outer New Bedford Harbor. A summary of these improvements is provided below.

The Project will result in a net reduction in impervious area of 0.29 acres of impervious area (Table 4).

Land Use	Existing (acres)	Proposed (acres)	Change
Impervious Area	2.74	2.45	- 0.29
Landscape/Gravel Area		0.29	+ 0.29
Total	2.74	2.74	

Table 4. Existing and proposed land cover

The Project includes the construction of bioretention basins designed to treat contributing impervious areas within the parking lot and the upstream residential parcels which flow overland into the parking lots. Where the bioretention basins cannot be sized to meet the full 1.7-inch water quality volume goal from the City of New Bedford Green Infrastructure Plan, the remaining runoff from the water quality volume will be directed to subgrade isolator rows to provide the remaining treatment prior to discharging to the City storm drain mains.

In addition, the Project will divert runoff from the adjacent Seymour Street, Hudson Street and Portland Street and direct runoff into the subsurface treatment and infiltration system located below the parking lots. The infiltration systems are sized to infiltrate the 1.7-inch water quality storm and bypass/overflow the larger storms.

The off-site contributing drainage areas are summarized below. See Figure DA-1 for a summary of the off-site contributing drainage areas.

### Table 5. Contributing Watershed Areas (acres)

Land Use	Area (acres)
Roadways (Hudson, Seymour, Portland St)	0.86
Residential Parcels (38% Impervious) <sup>A</sup>	4.94
Total Contributing Watershed Area	5.80 <sup>в</sup>

A) The % imperviousness of the residential portions is calculated based on the Curve Number associated with 1/4 acre residential lots - see HydroCAD methodology for more information on the Curve Number calculations.

B) Does not include the Parking Lots

Overflow from the new stormwater management systems will discharge to the new closed drainage systems within the parking lots, which will connect to the existing city storm drain mains in Rodney French Boulevard East, which are described in Section 2.0.

## 4.2 **Proposed Green Infrastructure Improvements**

The Project includes the installation of green infrastructure stormwater improvements that have been designed to meet the MassDEP Stormwater Management Standards and City of New Bedford Stormwater Management Rules & Regulations. The Project is focused on improving the existing stormwater system by implementing environmentally-sensitive site design and LID techniques. This design prevents the generation of stormwater and non-point source pollution by reducing impervious surfaces with landscaping and permeable materials, disconnecting flow paths, treating and infiltrating stormwater at its source, and protecting natural processes. Stormwater systems have been designed to model natural hydrologic features, including promoting infiltration throughout the sites.

The proposed stormwater management system for the Project includes bioretention basins, isolator rows and subsurface infiltration systems. These system components are described below. Overflow from the proposed improvements will reconnect to the existing stormwater system and associated outfalls.

#### Treatment Train A Infiltrating Bioretention Basin [BB#3A, BB#3B, BB#6B]

Parking Lot Runoff + Contributing Residential Parcels → Sediment Forebay → Bioretention Basin

#### Treatment Train B Lined Biofiltration Basin

[BB#2A, BB#4A, BB#4B, BB#5A, BB#6A, BB#7A, BB#7B, BB#8A, BB#8B] Parking Lot Runoff + Contributing Residential Parcels  $\rightarrow$  Biofiltration Basin

<u>Treatment Train C</u> <u>Bioretention Basin, overflow to Isolator Rows</u> [BB#1, BB#2B, BB#5B, BB#9]

Parking Lot Runoff + Contributing Residential Parcels  $\rightarrow$  Bioretention Basin  $\rightarrow$  Overflow to Isolator Row

<u>Treatment Train D</u> <u>Upstream Watershed to Infiltration System</u> [CB1, CB3, CB4, CB5]

Roadway and Residential Runoff  $\rightarrow$  Isolator Row  $\rightarrow$  Infiltration System

## Deep Sump and Hooded Catch Basins

Deep sump and hooded catch basins are proposed to provide pretreatment of the runoff from the roadways prior to discharging to the infiltration systems. Stormwater captured in the catch basins will be directed to additional pretreatment and then to the subsurface infiltration systems prior to discharge.

## Subsurface Infiltration/Detention Systems

Stormwater runoff from the adjacent roadways will be collected and infiltrated using a subsurface infiltration system in each parking lot. The upstream diversion manhole will direct stormwater runoff from approximately the 1.7-inch storm event to the subsurface infiltration systems and bypass the larger storm events to the maximum extent practicable. The Isolator Rows will treat for phosphorous

and TSS. The systems are designed to, at minimum, infiltrate the 1.7-inch storm event water quality volume, and because of the added storage volume will reduce peak runoff rates in the larger storms. The larger storm events will overflow to the new closed drainage systems within the parking lots.

Roadway runoff that is tributary to these systems will be pretreated using deep sump and hooded catch basins and isolator rows to meet the 44% TSS removal prior to infiltration.

Subsurface Infiltration System #1 is proposed to collect runoff from the southern portion of Seymour Street. The system consists of StormTech SC-310 chambers enveloped by crushed stone.

Subsurface Infiltration System #2 is proposed to collect runoff from Hudson Street. The system consists of StormTech SC-370 chambers enveloped by crushed stone.

Subsurface Infiltration System #3 is proposed to collect runoff from the southern portion of Portland Street. The system consists of StormTech SC-310 chambers enveloped by crushed stone.

## Infiltrating Bioretention Basins with Sediment Forebay

Bioretention basins are proposed to treat stormwater runoff from the parking lots and the residential areas from which runoff overland flows directly to the parking lots. Where groundwater separation can be achieved, the bioretention basins will be infiltrating (Bioretention Basins: BB#3A, BB#3B, BB#6B). Stormwater runoff will be treated as it flows through the bioretention soil media and the filter course layers, before reaching the crushed stone reservoir which will promote storage and infiltration into the subgrade.

The bioretention basins are sized to store and infiltrate the stormwater volume of 1.7-inches over the contributing impervious area. Overflow from larger storm events will be collected via overflow area drains within the basins that discharge to the new closed drainage system within the parking lots.

Pretreatment for the bioretention basin will be provided sediment forebays. The sediment forebays are designed in accordance with the MassDEP Stormwater Management Handbook to provide a water quality volume (WQV) equivalent to 0.1 inches per impervious acre.

### Lined Bioretention Basins

Where groundwater separation **cannot** be achieved, the bioretention basins will be designed to treat stormwater runoff as it flows through the bioretention soil media and the filter course layers, before reaching the underdrain within the crushed stone reservoir which will connect to the new closed drainage system within the parking lots.

The bioretention basins are sized to store and filter the stormwater volume of 1.7-inches over the contributing impervious area through the bioretention basin section. Overflow from larger storm events will be collected via overflow area drains within the basins that discharge to the new closed drainage system within the parking lots.

## Isolator Rows

The Isolator Rows consist of plastic chambers, wrapped in a geotextile fabric within a crushed stone reservoir. Runoff slowly passes from the chambers through a woven geotextile fabric and into the crushed stone reservoir below the system. The runoff passes through the fabric, leaving behind sediments and associated contaminants through the physical unit operations of filtration and sedimentation. As an organic filter cake develops over the fabric, phosphorus is also removed via the chemical process or sorption.

## Subsurface Infiltration System Pretreatment:

Isolator Rows are proposed to provide pretreatment of the stormwater runoff from roadway areas prior to discharging to the adjacent chambers within the subsurface infiltration systems. The use of Isolator Rows is preferred over other proprietary structures because they provide a higher level of pollutant removal based on research at the University of New Hampshire Stormwater Center.

## Non-Infiltrative Water Quality Treatment

Overflow from the 1.7-inch water quality volume storm within Bioretention Basins #1, #2B, #5B and #9 will be directed to a subsurface isolator row system wrapped in an impermeable liner with an underdrain. These systems are sized to treat the remainder of the water quality flow rate that could not be managed in these upstream bioretention basins due to space constraints. Stormwater will be treated by the isolator rows and then collected by the underdrains below the chambers, which will discharge to the new closed drainage system within the parking lots.

## 4.3 Peak Flow Rates

The proposed stormwater management system is expected to reduce the proposed peak runoff rates to at or below the existing rates for the follow design points:

- DP-1: Rodney French Boulevard South 14-inch Outfall
- DP-2: Portland Street 15-inch Outfall

Table 6 below summarize the existing and proposed hydrologic analyses for the site at each design point.

	Storm Event	1.7-Inch	2-year	10-year	25-year	100-year
DP-1	Existing	2.23	5.86	9.38	11.57	14.90
DE-1	Proposed	0.83	4.53	7.60	9.67	13.97
	Existing	6.88	18.76	30.51	37.90	49.10
DP-2	Proposed	3.50	16.44	27.81	34.44	44.68

Table 6 -	- Peak Rates	of Runoff in	Cubic Feet	per Second (	(cfs)
	i oun nuico		000101 000		(0.0)

## 4.4 Stormwater Management During Construction

The Site Contractor will be responsible for stormwater management of the active construction site and is required to provide construction period erosion and sediment controls as provided in the Project plans and specifications.

## 5.0 STORMWATER MANAGEMENT ANALYSIS

## 5.1 Methodology

Nitsch Engineering completed a hydrologic analysis of the existing project site utilizing Soil Conservation Service (SCS) Runoff Curve Number (CN) methodology. The SCS method calculates the rate at which the runoff reaches the design point considering several factors: the slope and flow lengths of the subcatchment area, the soil type of the subcatchment area, and the type of surface cover in the subcatchment area. HydroCAD Version 10.00 computer modeling software was used in conjunction with the SCS method to determine the peak runoff rates and runoff volumes for the 2-, 10-, 25-, and 100-year, 24-hour storm events. The proposed project site is being analyzed with the same methodology.

The Site was divided into multiple drainage areas, or subcatchments, which drain to the design points along the property boundary and within the site. For each subcatchment area, SCS Runoff Curve Numbers (CNs) were selected by using the cover type and hydrologic soil group of each area. The peak runoff rates and runoff volumes for the 2-, 10-, 25- and 100-year 24-hour storm events were then determined by inputting the drainage areas, CNs, and time of concentration ( $T_c$ ) paths into the HydroCAD model.

The National Oceanic and Atmospheric Administration Atlas 14 precipitation frequency estimates were used to calculate the 2-, 10-, 25-, and 100- year 24-hour storm events in HydroCAD. Refer to the HydroCAD calculations in Appendix B and C for rainfall information.

## 5.2 HydroCAD Version 10.00

The HydroCAD computer program uses SCS and TR-20 methods to model drainage systems. TR-20 (Technical Release 20) was developed by the Soil Conservation Service to estimate runoff and peak discharges in small watersheds. TR-20 is generally accepted by engineers and reviewing authorities as the standard method for estimating runoff and peak discharges.

HydroCAD Version 10.00 uses up to four types of components to analyze the hydrology of a given site: subcatchments, reaches, basins, and links. Subcatchments are areas of land that produce surface runoff. The area, weighted CN, and  $T_c$  characterize each individual subcatchment area. Reaches are generally uniform streams, channels, or pipes that convey water from one point to another. A basin is any impoundment that fills with water from one or more sources and empties via an outlet structure. Links are used to introduce hydrographs into a project from another source or to provide a junction for more than one hydrograph within a project. The time span for the model was set for 0-72 hours in order to prevent truncation of the hydrograph.

## 6.0 WATER QUALITY VOLUME CALCULATIONS

As described, the Project is designed to treat the first 1.7-inches of runoff from the parking lots and the adjacent roadway sections. The Project provides water quality treatment via infiltration of the 1.7-inch water quality volume where separation from groundwater is feasible. Where infiltration is not

feasible, the bioretention basins and the isolator rows are designed to treat the water quality volume via filtration.

The BMPs are designed to treat the 1.7-inch water quality storm to remove on average:

- 80% of the average annual postconstruction load of Total Suspended Solids (TSS) related to the total postconstruction impervious area of the contributing runoff;
- 50% of the average annual load of Total Phosphorus (TP) related to the total postconstruction impervious area of the contributing runoff.

## Treatment Train A: Bioretention Basins

TSS Removal	TP Removal
90% <sup>A</sup>	60% <sup>в</sup>

## Treatment Train B: Lined Bioretention Basin

TSS Removal	TP Removal
90% <sup>A</sup>	60 % <sup>B</sup>

## Treatment Train C: Bioretention Basin to Isolator Row

TSS Removal	TP Removal
81% <sup>A</sup>	60% <sup>B</sup>

## Treatment Train D: Subsurface Infiltration System with Isolator Row

TSS Removal	TP Removal			
80% <sup>A</sup>	99% <sup>B</sup>			
A) Or a TOO Dave avail M/a which a string A second dive A				

A) See TSS Removal Worksheet in Appendix A

B) See Phosphorous Removal Charts in Appendix A

See Appendix B: HydroCAD Calculations – Water Quality Storm (1.7-inches) for the analysis of the BMPs during the 1.7-inch rainfall event. As shown, each system is designed so that it fully infiltrates or treats the 1.7-inch rainfall event.

Bioretention Basins BB#1, BB#2B, BB#5B, BB#9 cannot feasibly treat the full 1.7-inch water quality volume due to space constraints; therefore, the systems include overflow grates that direct the remainder of the water quality volume to subsurface isolator row systems.

## 7.0 MassDEP Stormwater Management Standards

The Project is considered a *redevelopment* under the DEP Stormwater Management Standards. As such, the Project is required to meet Standards 2, 3, and the pretreatment and structural best management practice requirements of Standards 4, 5, and 6 only to the maximum extent practicable. Existing stormwater discharges need to comply with Standard 1 only to the maximum extent practicable. The Project will comply with all other Standards. The Site will be designed to meet or meet to the maximum extent practicable the MassDEP Stormwater Management Standards as summarized below:

## **Standard 1: No New Untreated Discharges**

The Project will not discharge any untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth. Stormwater from the Site will be collected and treated in accordance with the MassDEP Stormwater Management Standards and stormwater outfalls will be stabilized to prevent erosion.

## Standard 2: Peak Rate Attenuation

The proposed stormwater management system will be designed so that the post-development peak discharge rates do not exceed pre-development peak discharge rates. To prevent storm damage and downstream flooding, the proposed stormwater management practices will mitigate peak runoff rates for the 2-, 10-, 25- and 100-year, 24-hour storm events. Refer to Table 6 for a pre- and post-development peak runoff rate comparison.

## Standard 3: Groundwater Recharge

The Site was designed using environmentally sensitive site design, low impact development techniques, and green infrastructure stormwater treatment trains to increase annual recharge to groundwater. The annual recharge from the post-development site will approximate the annual recharge from pre-development conditions based on soil type using the guidelines provided in the MassDEP Stormwater Management Handbook.

Impervious Area in HSG A	= 2.4 Acres (Parking Lots)
Rv (Recharge Volume)	= 2.4 ac x 43,560 sf/ac x 0.6 in. / (12 inches/ft)
	= 5,227 cubic feet

The infiltration BMPs are sized to exceed the recharge volume required under the MassDEP Stormwater Management Standards (Table 5). The recharge volume shown in Table 7 represents the static storage below the outlet as provided in HydroCAD.

Infiltration BMP	Recharge Volume (cf) <sup>A</sup>
Subsurface Infiltration System #1	1,626
Subsurface Infiltration System #2	2,512
Subsurface Infiltration System #3	897
Bioretention Basin #1	270
Bioretention Basin #3A	281
Bioretention Basin #3B	141
Bioretention Basin #6B	223
TOTAL	5,950

## Table 7 – Proposed Recharge Volumes for Stormwater BMPs

a) The recharge volume is based on the static method analysis, which does not consider volume recharged via infiltration. The volume reflected is the storage volume below the outlet.

The HydroCAD reports provided in Appendix C indicate that all proposed infiltration BMPs will drain within 48 hours for the 2-, 10-, 25-, and 100-year storm events, meeting the 72-hour MassDEP drawdown requirement.

## Standard 4: Water Quality Treatment

As detailed in Section 3.3., the proposed green infrastructure stormwater improvements have been designed to remove greater than 80% of the average annual post-construction load of Total Suspended Solids (TSS). Structural stormwater BMPs including deep sump and hooded catch basins, Isolator Rows, bioretention areas, and subsurface infiltration systems are sized to capture the required water quality volume (1 inch over the project site) and remove a minimum of 80% of total suspended solids.

The proposed water quality treatment BMPs are subject to the 44% TSS removal pretreatment requirement and the 1-inch rule for calculating water quality volumes to the maximum extent practicable because the site discharges to a bathing beach. Pretreatment prior to infiltration will meet the 44% TSS removal requirement to the maximum extent practicable using deep sump and hooded catch basins, Isolator Rows, sediment forebays, and the filtration course of the bioretention basins.

TSS removal calculation spreadsheets are provided in Appendix A.

Source control and pollution prevention measures, such as vacuum cleaning, street sweeping, proper snow management, and stabilization of eroded surfaces, are included in the Long-Term Pollution Prevention Plan and Operation and Maintenance Plan (Appendix E).

## Standard 5: Land Uses with Higher Potential Pollutant Loads (LUHPPL)

The Project is not considered a LUHPPL and therefore, this standard is not applicable.

## Standard 6: Critical Areas

The Project is subject to Standard #6 as it discharges to a bathing beach. The proposed water quality treatment BMPs are subject to the 44% TSS removal pretreatment requirement and the 1-inch water quality volume.

The Project meets these standards to the maximum extent practicable.

## Standard 7: Redevelopments

Due to the overall reduction in impervious area, the Project is considered a redevelopment under the MassDEP Stormwater Management Standards. Therefore, the Project is required to meet Standard 2, Standard 3, and the pretreatment and structural stormwater BMP requirements of Standards 4, 5, and 6 to the maximum extent practicable. The Project should comply with all other requirements of the Stormwater Management Standards and improve existing conditions.

The Project meets this standard.

## Standard 8: Construction Period Pollution Prevention and Sedimentation Control

A plan to control construction-related impacts, including erosion, sedimentation, and other pollutant sources during construction and land disturbance activities (construction period erosion, sedimentation, and pollution prevention plan) will be developed and implemented during the Notice of Intent permitting process. The contractor will be required to implement construction-period erosion and sediment controls as documented in the Project plan and specifications. These requirements include erosion and sediment controls (stabilization practices and structural practices), temporary and permanent stormwater management measures, materials management, waste disposal, off-site vehicle tracking, and spill prevention and response.

## Standard 9: Operation and Maintenance Plan

A post-construction operation and maintenance plan has been prepared and will be implemented to ensure that stormwater management systems function as designed. Source control and stormwater BMP operation requirements for the site are summarized in the Long-Term Pollution Prevention Plan and Operation and Maintenance Plan provided in Appendix E.

## Standard 10: Prohibition of Illicit Discharges

There will be no illicit discharges to the stormwater management system associated with the Project. An Illicit Discharge Compliance Statement is provided in Appendix A.

## 8.0 CONCLUSION

In conclusion, the Project is providing significant improvements to stormwater being discharged to East Beach through the implementation of green infrastructure and water quality treatment BMPs including bioretention basins, increased vegetation, and infiltration. The proposed stormwater improvements will reduce peak runoff rates and volumes and improve the water quality of stormwater being discharged from the Site. The Project has been designed to meet and exceed the MassDEP Stormwater Management Standards and the City of New Bedford Stormwater Management Rules and Regulations. The Project was also designed to align the with the City of New Bedford Green Infrastructure Plan stormwater quality volume goals.

## FIGURES

DR-1A	Existing Watershed Areas (30 Scale)
DR-1B	Existing Watershed Areas (100 Scale)
DR-2A	Proposed Watershed Areas (30 Scale)
DR-2B	Proposed Watershed Areas (100 Scale)

## APPENDIX A

# Stormwater Management Standards Documentation

MassDEP Checklist for Stormwater Report Standard 4: TSS Removal Calculations Phosphorous Removal Calculations Standard 4: Isolator Row Sizing Calculations Standard 10: Illicit Discharge Compliance Statement



# **B. Stormwater Checklist and Certification**

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

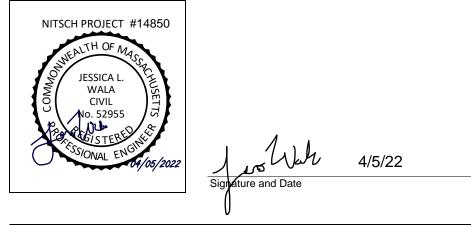
*Note:* Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that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

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

# **Registered Professional Engineer's Certification**

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

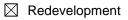
Registered Professional Engineer Block and Signature



Checklist

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

New development



Mix of New Development and Redevelopment



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

	No disturbance to any W	/etland Resource Areas
	Site Design Practices (e	.g. clustered development, reduced frontage setbacks)
$\square$	Reduced Impervious Are	ea (Redevelopment Only)
	Minimizing disturbance t	o existing trees and shrubs
	LID Site Design Credit R	Requested:
	Credit 1	
	Credit 2	
	Credit 3	
	Use of "country drainage	e" versus curb and gutter conveyance and pipe
$\boxtimes$	Bioretention Cells (inclue	des Rain Gardens)
	Constructed Stormwater	Wetlands (includes Gravel Wetlands designs)
	Treebox Filter	
	Water Quality Swale	
	Grass Channel	
	Green Roof	
$\boxtimes$	Other (describe):	Subsurface Infiltration System

## **Standard 1: No New Untreated Discharges**

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



## Standard 2: Peak Rate Attenuation

- Standard 2 waiver requested because the project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding.
- Evaluation provided to determine whether off-site flooding increases during the 100-year 24-hour storm.

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

## Standard 3: Recharge

Soil Analysis provided.

- Required Recharge Volume calculation provided.
- Required Recharge volume reduced through use of the LID site Design Credits.
- Sizing the infiltration, BMPs is based on the following method: Check the method used.

|--|

atic 🛛 🖾 Simple Dynamic

Dynamic Field<sup>1</sup>

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

$\ge$	Recharge	BMPs hav	e been si	zed to infiltra	ate the	Required	Recharge	Volume.
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- Recharge BMPs have been sized to infiltrate the Required Recharge Volume *only* to the maximum extent practicable for the following reason:
  - Site is comprised solely of C and D soils and/or bedrock at the land surface
  - M.G.L. c. 21E sites pursuant to 310 CMR 40.0000
  - Solid Waste Landfill pursuant to 310 CMR 19.000
  - Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.
- $\boxtimes$  Calculations showing that the infiltration BMPs will drain in 72 hours are provided.

🗌 Pr	operty ir	ncludes a	M.G.L. c	. 21E site c	r a solid	waste	landfill	and a	mounding	analysis	is included.
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<sup>&</sup>lt;sup>1</sup> 80% TSS removal is required prior to discharge to infiltration BMP if Dynamic Field method is used.



## Standard 3: Recharge (continued)

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

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

### **Standard 4: Water Quality**

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

- Good housekeeping practices;
- Provisions for storing materials and waste products inside or under cover;
- Vehicle washing controls;
- Requirements for routine inspections and maintenance of stormwater BMPs;
- Spill prevention and response plans;
- Provisions for maintenance of lawns, gardens, and other landscaped areas;
- Requirements for storage and use of fertilizers, herbicides, and pesticides;
- Pet waste management provisions;
- Provisions for operation and management of septic systems;
- Provisions for solid waste management;
- Snow disposal and plowing plans relative to Wetland Resource Areas;
- Winter Road Salt and/or Sand Use and Storage restrictions;
- Street sweeping schedules;
- Provisions for prevention of illicit discharges to the stormwater management system;
- Documentation that Stormwater BMPs are designed to provide for shutdown and containment in the event of a spill or discharges to or near critical areas or from LUHPPL;
- Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan;
- List of Emergency contacts for implementing Long-Term Pollution Prevention Plan.
- A Long-Term Pollution Prevention Plan is attached to Stormwater Report and is included as an attachment to the Wetlands Notice of Intent.
- Treatment BMPs subject to the 44% TSS removal pretreatment requirement and the one inch rule for calculating the water quality volume are included, and discharge:
  - is within the Zone II or Interim Wellhead Protection Area
  - $\boxtimes$  is near or to other critical areas
  - is within soils with a rapid infiltration rate (greater than 2.4 inches per hour)
  - involves runoff from land uses with higher potential pollutant loads.
- The Required Water Quality Volume is reduced through use of the LID site Design Credits.
- Calculations documenting that the treatment train meets the 80% TSS removal requirement and, if applicable, the 44% TSS removal pretreatment requirement, are provided.



Checklist (c	ontinued)
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## Standard 4: Water Quality (continued)

- The BMP is sized (and calculations provided) based on:
  - The 1/2" or 1" Water Quality Volume or
  - The equivalent flow rate associated with the Water Quality Volume and documentation is provided showing that the BMP treats the required water quality volume.
- The applicant proposes to use proprietary BMPs, and documentation supporting use of proprietary BMP and proposed TSS removal rate is provided. This documentation may be in the form of the propriety BMP checklist found in Volume 2, Chapter 4 of the Massachusetts Stormwater Handbook and submitting copies of the TARP Report, STEP Report, and/or other third party studies verifying performance of the proprietary BMPs.
- A TMDL exists that indicates a need to reduce pollutants other than TSS and documentation showing that the BMPs selected are consistent with the TMDL is provided.

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

- The NPDES Multi-Sector General Permit covers the land use and the Stormwater Pollution Prevention Plan (SWPPP) has been included with the Stormwater Report.
- The NPDES Multi-Sector General Permit covers the land use and the SWPPP will be submitted **prior to** the discharge of stormwater to the post-construction stormwater BMPs.
- The NPDES Multi-Sector General Permit does *not* cover the land use.
- LUHPPLs are located at the site and industry specific source control and pollution prevention measures have been proposed to reduce or eliminate the exposure of LUHPPLs to rain, snow, snow melt and runoff, and been included in the long term Pollution Prevention Plan.
- All exposure has been eliminated.
- All exposure has *not* been eliminated and all BMPs selected are on MassDEP LUHPPL list.
- The LUHPPL has the potential to generate runoff with moderate to higher concentrations of oil and grease (e.g. all parking lots with >1000 vehicle trips per day) and the treatment train includes an oil grit separator, a filtering bioretention area, a sand filter or equivalent.

## Standard 6: Critical Areas

- The discharge is near or to a critical area and the treatment train includes only BMPs that MassDEP has approved for stormwater discharges to or near that particular class of critical area.
- Critical areas and BMPs are identified in the Stormwater Report.



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

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

Small Residential Projects: 5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area.

Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area

- Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff
- Bike Path and/or Foot Path
- Redevelopment Project
- Redevelopment portion of mix of new and redevelopment.

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

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

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

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

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

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



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

- ☐ The project is highly complex and information is included in the Stormwater Report that explains why it is not possible to submit the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan with the application. A Construction Period Pollution Prevention and Erosion and Sedimentation Control has *not* been included in the Stormwater Report but will be submitted *before* land disturbance begins.
- The project is *not* covered by a NPDES Construction General Permit.
- The project is covered by a NPDES Construction General Permit and a copy of the SWPPP is in the Stormwater Report.
- The project is covered by a NPDES Construction General Permit but no SWPPP been submitted. The SWPPP will be submitted BEFORE land disturbance begins.

## **Standard 9: Operation and Maintenance Plan**

- The Post Construction Operation and Maintenance Plan is included in the Stormwater Report and includes the following information:
  - Name of the stormwater management system owners;
  - Party responsible for operation and maintenance;
  - Schedule for implementation of routine and non-routine maintenance tasks;
  - Plan showing the location of all stormwater BMPs maintenance access areas;
  - Description and delineation of public safety features;
  - Estimated operation and maintenance budget; and
  - Operation and Maintenance Log Form.
- The responsible party is **not** the owner of the parcel where the BMP is located and the Stormwater Report includes the following submissions:
  - A copy of the legal instrument (deed, homeowner's association, utility trust or other legal entity) that establishes the terms of and legal responsibility for the operation and maintenance of the project site stormwater BMPs;
  - A plan and easement deed that allows site access for the legal entity to operate and maintain BMP functions.

### Standard 10: Prohibition of Illicit Discharges

- The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges;
- An Illicit Discharge Compliance Statement is attached;
- NO Illicit Discharge Compliance Statement is attached but will be submitted *prior to* the discharge of any stormwater to post-construction BMPs.



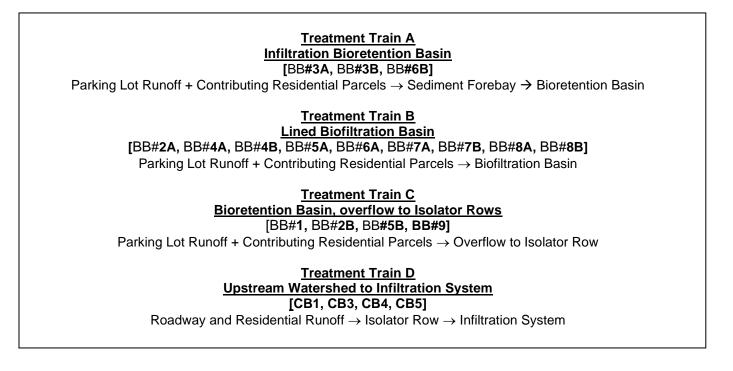
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## EAST BEACH, NEW BEDFORD, MA TSS REMOVAL – WATER QUALITY TREATMENT SUMMARY

Nitsch Engineering has prepared this Water Quality Treatment Summary for the proposed East Beach in New Bedford, MA. In compliance with MassDEP Stormwater Management Standard #4, the proposed stormwater management system is designed to remove at least 80% of the average annual post-construction load of TSS prior to discharge. The stormwater management system is designed to remove at least 44% of the average annual post-construction TSS load prior to discharge to the infiltration systems to the maximum extent practicable.

A summary of treatment trains proposed to provide water quantity control and water quality improvement at the proposed project site is provided below.



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## **Treatment Train A**

Parking Lot Runoff + Contributing Residential Parcels  $\rightarrow$  Sediment Forebay  $\rightarrow$  Bioretention Basin

## **Pretreatment Spreadsheet**

В	<b>C</b> TSS Removal	D Starting TSS	<b>E</b> Amount	<b>F</b> Remaining
BMP	Rate	Load	Removed (C*D)	Load (D-E)
Sediment Forebay	0.25	1.00	0.25	0.75
		Total TSS Removal =	25%	Project is a Redevelopment – Meets standard to maximum extent practicable
		Lotal 155 Removal =	23%	Dracticable

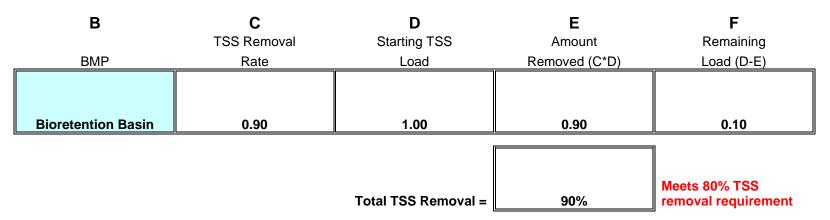
## **Treatment Spreadsheet**

	В	<b>C</b> TSS Removal	<b>D</b> Starting TSS	<b>E</b> Amount	<b>F</b> Remaining
-	BMP	Rate	Load	Removed (C*D)	Load (D-E)
	Bioretention Basin	0.90	1.00	0.90	0.10
			Total TSS Removal =	90%	Meets 80% TSS removal requirement

**Treatment Train B** 

Parking Lot Runoff + Contributing Residential Parcels  $\rightarrow$  Lined Biofiltration Basin

Treatment Spreadsheet

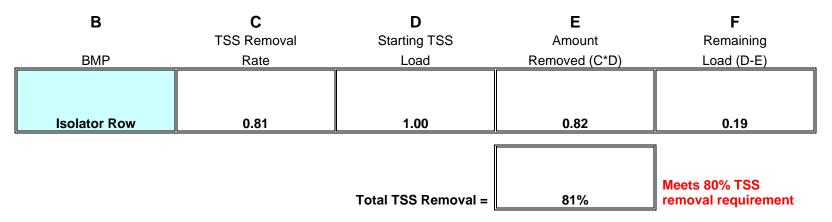




**Treatment Train C** 

Parking Lot Runoff + Contributing Residential Parcels  $\rightarrow$  Overflow to Isolator Row

## Treatment Spreadsheet







## Treatment Train D

Parking Lot Runoff + Contributing Residential Parcels  $\rightarrow$  Sediment Forebay  $\rightarrow$  Bioretention Basin

## Pretreatment Spreadsheet

В	С	D	E	F	
	TSS Removal	Starting TSS	Amount	Remaining	
BMP	Rate	Load	Removed (C*D)	Load (D-E)	
Deep Sump & Hooded Manhole	0.25	1.00	0.25	0.75	
Isolator Row	0.81	0.75	0.61	0.14	
		Total TSS Removal =	86%	Meets 44% TSS removal pretreatment requirement	

## Treatment Spreadsheet

В	С	D	E	F
	TSS Removal	Starting TSS	Amount	Remaining
BMP	Rate	Load	Removed (C*D)	Load (D-E)
Infiltration Oractory	0.00	4.00	0.00	0.00
Infiltration System	0.80	1.00	0.80	0.20
Inflitration System	0.80	1.00	0.80	<u> </u>
Inflitration System	0.80	<u> </u>	0.80	

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University of New Hampshire Stormwater Center



2009 BIANNUAL REPORT





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#### **About the Center**

The University of New Hampshire Stormwater Center (UNHSC) is dedicated to the protection of water resources through effective stormwater management.

Center researchers evaluate and enhance the ability of stormwater treatment systems to treat the pollution in stormwater runoff and reduce the flooding that it can cause. The Center provides information on performance, cost, design, and maintenance to people who select, review, permit, design, install, and maintain stormwater management systems. The research is integrated with an evolving outreach program that supports a wide range of stormwater managers and professionals who seek to build programs that protect water quality, preserve environmental values, and reduce the impact of stormwater runoff.

The Center receives its primary funding and program support from the Cooperative Institute for Coastal and Estuarine Environmental Technology (CICEET), a partnership of UNH and the National Oceanic and Atmospheric Administration (NOAA). It is housed within the University's Environmental Research Group, a division of the College of Engineering and Physical Sciences.

#### **Resources for Stormwater Managers**

The Center's research has served as the foundation for a range of outreach products—from best management practice (BMP) workshops geared to support municipal decision makers and stormwater engineers to peer-reviewed publications that explore the frontiers of stormwater science. Learn more about these resources at www.unh.edu/erg/cstev.

- <section-header><section-header><section-header><text><text><text><text><text><text>
- BMP Fact Sheets
- Data Reports
- Design Drawings
- Design Specs
- Journal Articles
- Web Resources

Workshop at UNHSC field site



# **Directors' Message**



UNH Stormwater Center field site

These economic times challenge all of us to make difficult choices about what we can and cannot afford. For state and local governments facing budget shortfalls, the University of New Hampshire Stormwater Center has some welcome news: when it comes to effective stormwater management, you do not have to choose between affordability and healthy waters.

People often tell us that they think they do have to choose, that even if Low Impact Development (LID) stormwater techniques do a better job of protecting water quality, they are too costly to install and maintain. Yet our research is demonstrating that this is not the case. Since 2004 we have monitored the ability of 23 stormwater systems to treat pollution and reduce the volume of runoff. We have worked with hundreds of municipal officials, regulators, engineers, contractors, and educators on dozens of stormwater demonstration and education projects.

In the process, we have found that projects that use LID approaches to managing stormwater runoff can be both more effective in treating pollution and in some instances less expensive to install than those that rely on curbs, pipes, and ponds. LID systems do require maintenance to function properly, but so do all of the commonly used systems that are believed to require little or no attention. In particular, our research has demonstrated that when retention ponds are not adequately maintained, they not only fail to remove pollutants from runoff; they can magnify the negative impact of polluted stormwater on receiving waters.

Using LID approaches for stormwater management involves decentralizing runoff and maximizing infiltration, which ultimately reduces the stress on urban stormwater infrastructure. Metropolitan areas like Portland, OR., are already seeing the economic benefits of using LID to reduce the runoff flowing through their combined sewers. These savings extend to residential and commercial development and redevelopment projects. Homeowners that use techniques like rain barrels, drought resistant rain gardens, and porous pavements can save on water utility bills and help prevent flooded basements.

By allowing for these less familiar but more effective techniques in stormwater ordinances, municipalities can help insure these benefits at every level. In so doing, they anticipate the inevitable. Federal laws requiring LID-style approaches to stormwater are already in place as part of Phase II of the Clean Water Act. It is only a matter of time before all municipalities will have to comply with mandates to clean up impaired waters, and our research is showing that in many case an LID approach to stormwater management is essential in meeting that goal.

A proactive response to federal regulations has the added benefit of preparing us for the impacts of climate change. Whether climate change has brought severe storms or drought to a community, LID stormwater techniques can help mitigate the flooding associated with impervious surfaces, can allow rainfall to replenish aquifers, and can be powerful tools for adaptive management.

This report is one of many tools we use to communicate our work in a way that we hope stormwater managers from many backgrounds will find useful. We welcome your comments and questions, about this report and all of the work we do.

Sincerely,

Robert Roseen Director

**Thomas Ballestero** Senior Scientist

Jamie Houle Program Manager and Outreach Coordinator

# StormTech Isolator Row



The StormTech Isolator Row is an effective filtration/infiltration system best suited to locations where space is at a premium and the system's relatively expensive installation cost can be offset by increasing available space for development.

## About the StormTech Isolator Row

The StormTech Isolator Row is a manufactured system designed to provide subsurface water quality treatment and easy access for maintenance. It is typically used to remove pollution from runoff before it flows into unlined infiltration chambers designed for detention and water quantity control. The Isolator Row consists of a series of StormTech chambers installed over a layer of woven geotextile, which sits on a crushed stone infiltration bed surrounded with filter fabric. The bed is directly connected to an upstream manhole for maintenance access and large storm bypass. At UNHSC, the Isolator Row has met a TSS median annual removal standard of 80 percent, and exhibited an enhanced capacity to remove phosphorus. The Isolator Row is well suited for urban environments where space is at a premium.

#### Implementation

The StormTech Isolator Row is part of a class of manufactured, subsurface filtration/infiltration systems that are being used more and more throughout the United States. In general, these systems are best suited to locations where above ground space is at a premium. They are often used in urban areas, where they are located beneath parking lots and other infrastructure. As with any infiltration system, care must be taken when locating these systems near pollution hotspots, or where seasonal high groundwater levels may lead to groundwater contamination. In such cases, if installed, the systems should be lined to prevent infiltration into groundwater, and outfitted with subdrains that discharge to the surface. Designs for the StormTech Isolator Row are available from the manufacturer.

## System Performance

#### **Cost & Maintenance**

While subsurface HDPE systems such as the Isolator Row tend to be more expensive than conventional stormwater treatments like retention ponds, the costs are ameliorated by the increase in available space for development. The cost to install a StormTech Isolator Row system large enough to treat runoff from one acre of impervious surface was \$34,000 in 2006.

In more than two years of operation, the system is at less than 50 percent of its recommended maintenance trigger point. Maintenance should be conducted when the sediment in the chambers reaches approximately three inches in depth according to recommendations from the manufacturer. Sediment accumulation can be monitored through inspection ports. When maintenance is needed, the entire row can be

CATEGORY / BMP TYPE Filtration, Infiltration, Manufactured

Treatment Device

Hydrologic (Flow Alteration) Water Quality: Physical (Sedimentation, Filtration) & Chemical (Sorption)

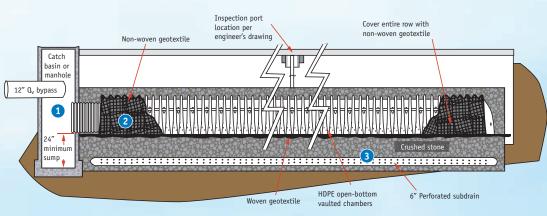
DESIGN SOURCE StormTech, LLC

BASIC DIMENSIONS Chamber: 51" wide X 30" high X 85.4" long SPECIFICATIONS Catchment Area: 1 acre Water Quality Flow: 1 cfs Water Quality Volume: 3,300 cf INSTALLATION COST \$34,000 per acre treated MAINTENANCE Maintenance Sensitivity: Low Inspections: High Sediment Removal: Moderate

## How the System Works

### WATER QUALITY TREATMENT PROCESS V

- 1. Runoff flows into the Isolator Row chambers from a catchbasin or pipe.
- 2. Runoff slowly passes from the chambers through a woven geotextile fabric and into the crushed stone reservoir below the system. The runoff passes through the fabric, leaving behind sediments and associated contaminants through the physical unit operations of filtration and sedimentation. As an organic filter cake develops over the fabric, phosphorus is also removed via the chemical process of sorption.
- 3. Filtered runoff collects in a perforated subdrain and returns to a storm drain system, infiltrates into the subgrade, or is discharged to the surface.



washed clean through an access manhole and by a hydro-jet with sediment removed by vactoring (vacuuming). Entry into the system is considered a confined space entry and requires trained personnel and equipment.

During two years of evaluation at UNHSC, the Isolator Row has accumulated, at most, one and one half inches of sediment in its chambers. As a result, researchers have not performed maintenance on the system. The Isolator Row presents an interesting opportunity to study the relationship between maintenance and performance. Researchers have observed enhanced phosphorus removal as the system develops an organic filter cake between the chambers and the woven geotextile fabric that lies beneath them. This enhancement is tempered by the likelihood that, as the filter cake continues to grow, hydraulic efficiency will decline and more runoff will bypass the system untreated until maintenance is performed. Analyses are underway to develop maintenance recommendations that balance and optimize the water guality and water quantity management abilities of this system.

#### **Cold Climate**

This system's water quality treatment and volume control capacity remained strong in all seasons, reinforcing the conclusion that filtration and infiltration systems perform well, even in cold climates.

#### Water Quality Treatment

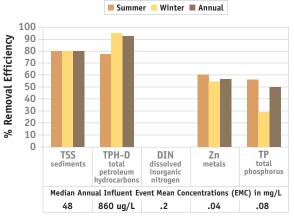
The StormTech Isolator Row system does a good job of reducing the concentration of common pollutants associated with stormwater performance assessment with the exception of nitrogen. It generally meets EPA's recommended level of removal for total suspended solids, and meets regional ambient water quality criteria for heavy metals and petroleum hydrocarbons. The system has a capacity to achieve modest levels of total phosphorus removal, which may be enhanced over time. (See Cost & Maintenance Section.) The lack of nitrogen treatment is typical for non-vegetated aerobic systems. Nutrient load reduction would be further increased through volume reduction by infiltration. Like all other systems monitored at UNHSC, it does not provide chloride removal.

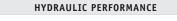
The chart at top right reflects the system's performance in removing total suspended solids, total petroleum hydrocarbons, dissolved inorganic nitrogen, total phosphorus, and zinc. Values represent results recorded over a two-year monitoring period, with the data further divided into summer and winter components.

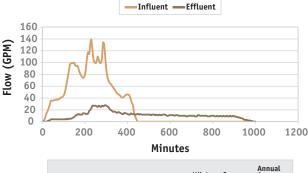
#### Water Quantity Control

Like other infiltration and filtration systems, the StormTech Isolator Row system exhibits the capacity to reduce peak flows and could be used to reduce runoff volume in appropriate soils, such as those belonging to groups "A" or "B." The figure at bottom right provides information on peak flow reduction and lag times for the system.

POLLUTANT REMOVAL: 2006-2008







	Winter	Summer	Annual Average	
Average Peak Flow Reduction	71%	81%	76%	
Average Lag Time (minutes)	358	190	274	

#### SYSTEM DESIGN 🔻

The StormTech Isolator Row is designed to provide subsurface water quality treatment for small storms. The manufacturer adapts the system's design in accordance with local watershed conditions and target treatment objectives.

Chamber units are made of high-density polyethylene (HDPE) pipe and are designed to bear loads consistent with those experienced by parking lots. The UNHSC chamber dimensions are 51 x 30 x 85.4 inches and can be linked together to form linear rows up to 200 feet long. The chambers are laid over woven geotextile, which rests on an infiltration base composed of one foot of three quarter inch crushed stone. The entire excavation is then wrapped in nonwoven geotextile to protect the system from the migration of fine particles from the surrounding soil.

A three- to five-foot separation from seasonal high groundwater table (as designated by regulations) is necessary to minimize the potential for groundwater contamination. Stormwater flows of up to one cubic foot per second (cfs) enter the system through an upstream manhole or other flow diverter. This is representative of flow-based sizing of a BMP common for devices that have limited detention or storage. Such devices are often better described by a maximum treatable flow rate as opposed to a treatment volume.

A bypass is incorporated in the StormTech system where flows exceeding the design rate are bypassed around the device and flow directly into adjacent chambers that can be sized to treat the  $CP_v$  and  $Q_p$ . Because of the bypass design, maintenance requirements are extremely important. A poorly maintained device would bypass prematurely into the unlined chamber systems and eventually clog subsurface soils resulting in system failure.

#### Table 3-18: Bio-filtration BMP Performance Table

Bio-filtration BMP Performance Table: Long-Term Phosphorus & Nitrogen Load Reduction								
BMP Capacity: Depth of Runoff from Impervious Area (inches)0.10.20.40.60.81.01.52.0								
Cumulative Phosphorus Load Reduction	14%	25%	37%	44%	48%	53%	58%	63%
Cumulative Nitrogen Load Reduction	9%	16%	23%	28%	31%	32%	37%	40%



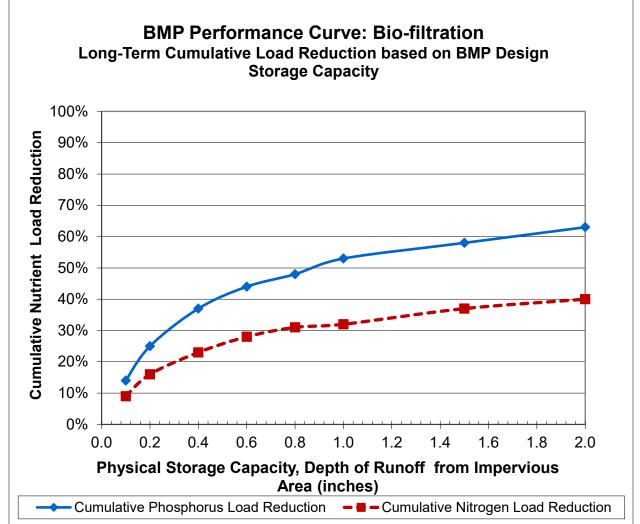
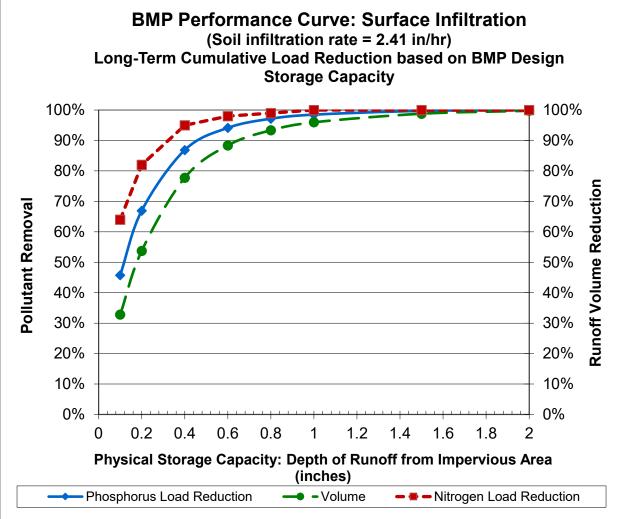


Table 3-16: Surface Infiltration	(2.41 in/hr	r) BMP Performance Tabl	e

Surface Infiltration (2.41 in/hr) BMP Performance Table: Long-Term Phosphorus Load Reduction								
BMP Capacity: Depth of Runoff from Impervious Area (inches)0.10.20.40.60.81.01.52.0								
Runoff Volume Reduction	32.8%	53.8%	77.8%	88.4%	93.4%	96.0%	98.8%	99.8%
Cumulative Phosphorus Load Reduction	46%	67%	87%	94%	97%	98%	100%	100%
Cumulative Nitrogen Load Reduction	64%	82%	95%	98%	99%	100%	100%	100%







Division of

STORMTECH ISOLATOR ROW SIZING CHART							
	SC-310	SC-740	DC-780	MC-3500	MC-4500		
Chamber Area (Sq.Ft.)	20	27.8	27.8	43.2	30.1		
Treated Flow Rate per chamber (CFS)	0.11	0.15	0.15	0.24	0.17		

**NOTE:** Testing of the Isolator Row completed by Tennesse Tech has been verified by NJCAT and it has shown to have a TSS removal efficiency of 84% for SIL-CO-SIL 250 NJCAT verified Treated Flow Rate (GPM / Sq.Ft.) 2.5

# NON-INFILTRATIVE ISOLATOR ROWS

# PARKING LOT A

BMP-1 OVERFLOW: 0.43 CFS 4 SC-310 CHAMBERS

BMP-2 OVERFLOW: 0.70 CFS 7 SC-310 CHAMBERS

TOTAL: 11 CHAMBERS

#### PARKING LOT B

BMP-5b OVERFLOW: 0.79 CFS 8 SC-310 CHAMBERS

# **PARKING LOT C**

BMP-9 OVERFLOW: 1.00 CFS 10 SC-310 CHAMBERS

# SUBSURFACE INFILTRATION SYSTEM ISOLATOR ROWS

#### SUBSURFACE INFILTRATION SYSTEM #1

1.7-inch WQF: 0.42 cfs 5 SC-310 Chambers

#### SUBSURFACE INFILTRATION SYSTEM #2

1.7-inch WQF: 2.62 18 SC-740 Chambers

#### SUBSURFACE INFILTRATION SYSTEM #3

1.7-inch WQF: 0.36 cfs 4 SC-310 Chambers



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#### STANDARD 10: Illicit Discharge Compliance Statement

Project Name: East Beach Green Infrastructure Project	Nitsch Project #: 14850
Location: New Bedford, MA	Checked by: JJ
Prepared by: JW	Sheet No. 1 of 1
Date: 4/5/22	

#### Standard 10 states: All illicit discharges to the stormwater management system are prohibited.

This is to verify:

- 1. Based on the information available there are no known or suspected illicit discharges to the stormwater management system at East Beach site in New Bedford, MA as defined in the MassDEP Stormwater Handbook.
- 2. The design of the stormwater system includes no proposed illicit discharges.

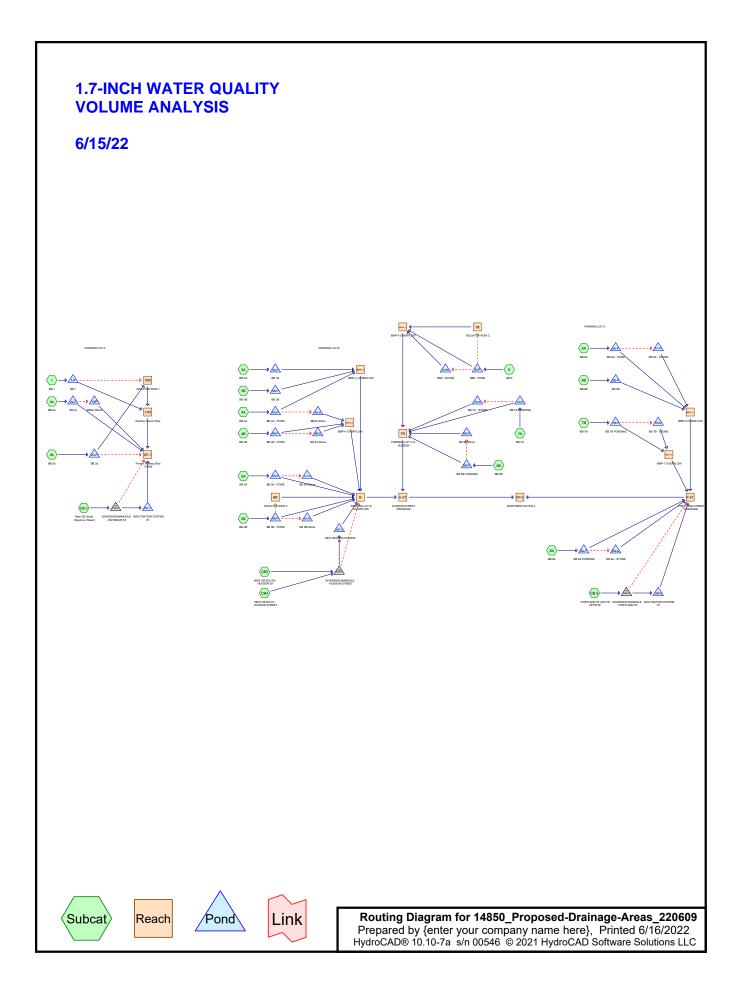
Jen Jake Jessica Wala, PE

4/5/22

Date

#### APPENDIX B

1.7-inch Water Quality Volume Analysis – HydroCAD Calculations



**14850\_Proposed-Drainage-Areas\_220609** Prepared by {enter your company name here} HydroCAD® 10.10-7a s/n 00546 © 2021 HydroCAD Software Solutions LLC

 Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)		Depth (inches)	AMC	
 1	1.7-in	NOAA 24-hr	С	Default	24.00	1	1.70	2	

#### Rainfall Events Listing (selected events)

<b>14850_Proposed-Drainage</b> Prepared by {enter your comp HydroCAD® 10.10-7a s/n 00546 @		ainfall=1.70" d 6/16/2022 Page 3						
Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points Runoff by SCS TR-20 method, UH=SCS, Weighted-CN Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method								
Pond 1-P: BB 1 Discarded=0.04 cfs 1,515 cf I	Peak Elev=9.90' Storage=630 cf Inflow=0.71 Primary=0.00 cfs 0 cf Secondary=0.23 cfs 521 cf Outflow=0.27							
Pond 2a-P: BB 2a	Peak Elev=8.95' Storage=107 cf Inflow=0. Primary=0.00 cfs 0 cf Secondary=0.02 cfs 334 cf Outflow=0.0							
Pond 2b-P: BB 2b	Peak Elev=8.14' Storage=52 cf Inflow=0.65 imary=0.63 cfs 1,868 cf Secondary=0.00 cfs 0 cf Outflow=0.63							
Pond 3A-P: BB 3A	Peak Elev=10.89' Storage=302 cf Inflow=0.2 Discarded=0.02 cfs 668 cf Primary=0.00 cfs 0 cf Outflow=0.0							
Pond 3B-P: BB 3B	Peak Elev=12.74' Storage=177 cf Inflow=0.7 Discarded=0.01 cfs 395 cf Primary=0.00 cfs 0 cf Outflow=0.0							
Pond 4A-P: BB 4A - POND	Peak Elev=9.91' Storage=151 cf Inflow=0.7 Primary=0.00 cfs 0 cf Secondary=0.03 cfs 484 cf Outflow=0.0							
Pond 4A-S: BB4A-Stone	Peak Elev=7.11' Storage=25 cf Inflow=0.0 Outflow=0.1	03 cfs  484 cf 03 cfs  467 cf						
Pond 4B-P: BB 4B - POND	Peak Elev=10.92' Storage=96 cf Inflow=0.7 Primary=0.00 cfs 0 cf Secondary=0.02 cfs 305 cf Outflow=0.0							
Pond 4B-S: BB 4A-Stone	Peak Elev=7.84' Storage=15 cf Inflow=0.0 Outflow=0.0	02 cfs  305 cf 02 cfs  294 cf						
Pond 5A-P: BB 5A - POND	Peak Elev=8.89' Storage=45 cf Inflow=0.0 Primary=0.00 cfs 0 cf Secondary=0.03 cfs 249 cf Outflow=0.0							
Pond 5A-PS: BB 5A-Stone	Peak Elev=5.91' Storage=52 cf Inflow=0.0 .0utflow=0	03 cfs 249 cf 03 cfs 213 cf						
Pond 5B-P: BB 5B - POND Primary=0.00 cfs 0 cf Seco	Peak Elev=8.85' Storage=506 cf Inflow=0.92 ndary=0.08 cfs 1,755 cf Tertiary=0.69 cfs 868 cf Outflow=0.76							
Pond 5B-PS: BB 5B-Stone	Peak Elev=5.44' Storage=90 cf Inflow=0.08 Outflow=0.07							
Pond 6A-P: BB 6A - POND	Peak Elev=10.72' Storage=242 cf Inflow=0.2 Primary=0.00 cfs 0 cf Secondary=0.04 cfs 736 cf Outflow=0.0							
Pond 6A-PS: BB 6A - STONE	Peak Elev=7.38' Storage=33 cf Inflow=0.0 Outflow=0.0	04 cfs 736 cf 04 cfs 714 cf						
Pond 6B-P: BB 6B	Peak Elev=11.90' Storage=269 cf Inflow=0.2 Discarded=0.02 cfs 564 cf Primary=0.00 cfs 0 cf Outflow=0.0							

**14850\_Proposed-Drainage-Areas\_220609**NOAA 2Prepared by {enter your company name here}HydroCAD® 10.10-7a s/n 00546 © 2021 HydroCAD Software Solutions LLC

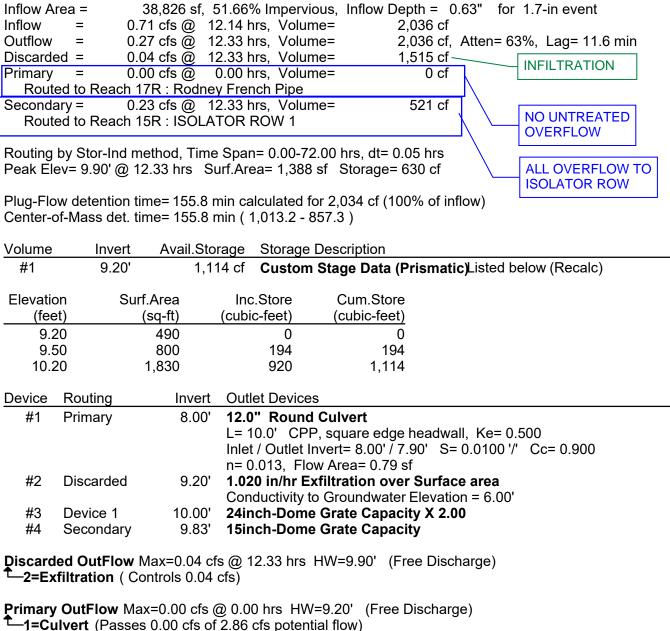
NOAA 24-hr C 1.7-in Rainfall=1.70" Printed 6/16/2022 Page 4

Pond 7A-P: BB 7A PONDING	Peak Elev=9.84' Storage=108 cf Inflow=0.11 cfs 316 cf Primary=0.00 cfs 0 cf Secondary=0.02 cfs 316 cf Outflow=0.02 cfs 316 cf
Pond 7A-S: BB 7A - STONE	Peak Elev=5.18' Storage=4 cf Inflow=0.02 cfs 316 cf Outflow=0.02 cfs 316 cf
Pond 7B-P: BB 7B PONDING	Peak Elev=10.47' Storage=162 cf Inflow=0.17 cfs 494 cf Primary=0.00 cfs 0 cf Secondary=0.03 cfs 494 cf Outflow=0.03 cfs 494 cf
Pond 7B-S: BB 7B - STONE	Peak Elev=7.61' Storage=16 cf Inflow=0.03 cfs 494 cf Outflow=0.03 cfs 483 cf
Pond 8a-P: BB 8A PONDING	Peak Elev=8.71' Storage=87 cf Inflow=0.12 cfs 346 cf Primary=0.00 cfs 0 cf Secondary=0.03 cfs 346 cf Outflow=0.03 cfs 346 cf
Pond 8a-s: BB 8A - STONE	Peak Elev=5.61' Storage=28 cf Inflow=0.03 cfs 346 cf Outflow=0.03 cfs 328 cf
Pond 8B-P: BB 8B-PONDING	Peak Elev=9.60' Storage=186 cf Inflow=0.19 cfs 559 cf Primary=0.00 cfs 0 cf Secondary=0.03 cfs 559 cf Outflow=0.03 cfs 559 cf
Pond 8B-S: BB 8B-Stone	Peak Elev=6.32' Storage=38 cf Inflow=0.03 cfs 559 cf Outflow=0.03 cfs 532 cf
Pond 9-P: BB9 - POND Primary=0.00 cfs 0 cf Secon	Peak Elev=8.66' Storage=253 cf Inflow=0.84 cfs 2,402 cf dary=0.04 cfs 1,207 cf Tertiary=0.77 cfs 1,195 cf Outflow=0.81 cfs 2,402 cf
Pond 9-PS: BB9 - STONE	Peak Elev=5.38' Storage=21 cf Inflow=0.04 cfs 1,207 cf Outflow=0.04 cfs 1,193 cf
Pond 14P: BB2A-Stone	Peak Elev=5.59' Storage=5 cf Inflow=0.02 cfs 334 cf Outflow=0.02 cfs 334 cf
Pond DMH1: DIVERSION MANH Prin	IOLE - SEYMOUR STPeak Elev=9.36'Inflow=0.42 cfs1,191 cfmary=0.31 cfs1,130 cfSecondary=0.11 cfs61 cfOutflow=0.42 cfs1,191 cf
	IOLE - HUDSON STREET         Peak Elev=11.81'         Inflow=2.62 cfs         7,514 cf           ry=0.93 cfs         6,224 cf         Secondary=1.70 cfs         1,290 cf         Outflow=2.62 cfs         7,514 cf
Pond DMH3: DIVERSION MANH Prin	IOLE - PORTLANDSTPeak Elev=11.31'Inflow=0.36 cfs1,035 cfmary=0.31 cfs1,012 cfSecondary=0.05 cfs23 cfOutflow=0.36 cfs1,035 cf
Pond INF-1: INFILTRATIONSYS	STEM#1         Peak Elev=8.33' Storage=364 cf         Inflow=0.31 cfs         1,130 cf           siscarded=0.05 cfs         1,130 cf         Primary=0.00 cfs         0 cf         Outflow=0.05 cfs         1,130 cf
Pond INF-2: INFILTRATIONSYS	STEM#2         Peak Elev=9.46'         Storage=2,921 cf         Inflow=0.93 cfs         6,224 cf           siscarded=0.11 cfs         6,224 cf         Primary=0.00 cfs         0 cf         Outflow=0.11 cfs         6,224 cf
Pond INF3: INFILTRATIONSYS	TEM#1         Peak Elev=8.82' Storage=385 cf         Inflow=0.31 cfs         1,012 cf           iscarded=0.04 cfs         1,012 cf         Primary=0.00 cfs         0 cf         Outflow=0.04 cfs         1,012 cf

#### 14850\_Proposed-Drainage-Areas\_220609

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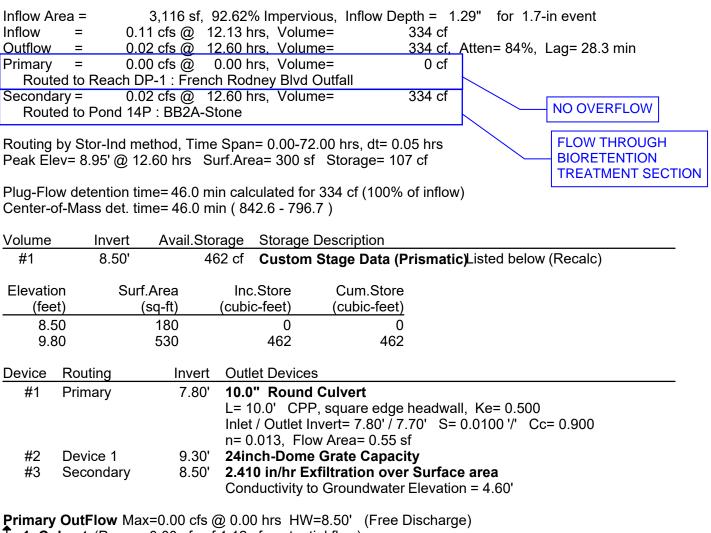
#### Summary for Pond 1-P: BB 1



**1**-3=24inch-Dome Grate Capacity (Controls 0.00 cfs)

Secondary OutFlow Max=0.23 cfs @ 12.33 hrs HW=9.90' (Free Discharge) 4=15inch-Dome Grate Capacity (Custom Controls 0.23 cfs)

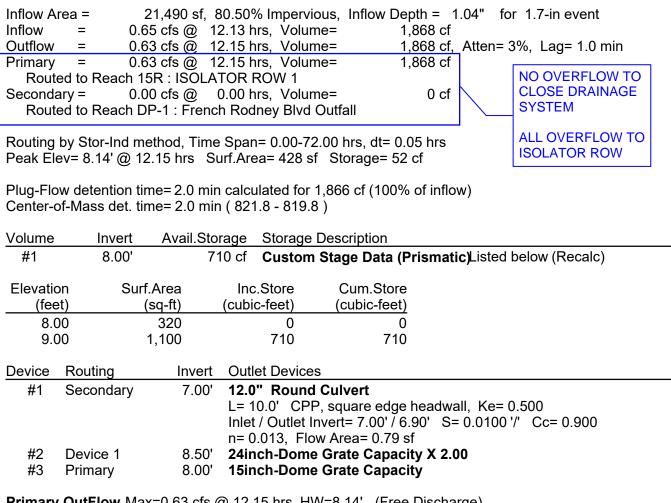
#### Summary for Pond 2a-P: BB 2a



1=Culvert (Passes 0.00 cfs of 1.12 cfs potential flow)
2=24inch-Dome Grate Capacity (Controls 0.00 cfs)

Secondary OutFlow Max=0.02 cfs @ 12.60 hrs HW=8.95' (Free Discharge) —3=Exfiltration (Controls 0.02 cfs)

#### Summary for Pond 2b-P: BB 2b



**Primary OutFlow** Max=0.63 cfs @ 12.15 hrs HW=8.14' (Free Discharge) **3=15inch-Dome Grate Capacity** (Custom Controls 0.63 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=8.00' (Free Discharge)

**1**–2=24inch-Dome Grate Capacity (Controls 0.00 cfs)

# Summary for Pond 3A-P: BB 3A

Inflow = 0.24 cfs Outflow = 0.02 cfs Discarded = 0.02 cfs Primary = 0.00 cfs Routed to Reach BMP_ Routing by Stor-Ind method	87 sf, 58.16% Impervious, s @ 12.13 hrs, Volume= s @ 13.36 hrs, Volume= s @ 13.36 hrs, Volume= s @ 0.00 hrs, Volume= 3 : BMP-3_OVERFLOW d, Time Span= 0.00-72.00 h 5 hrs, Surf.Area= 737 sf, S	668 cf 668 cf, Atten= 668 cf 0 cf hrs, dt= 0.05 hrs	for 1.7-in event = 92%, Lag= 73.4 min INFILTRATION NO OVERFLOW				
Peak Elev= 10.89' @ 13.36 hrs Surf.Area= 737 sf Storage= 302 cf Plug-Flow detention time= 183.8 min calculated for 668 cf (100% of inflow) Center-of-Mass det. time= 183.8 min ( 1,031.3 - 847.5 ) Volume Invert Avail.Storage Storage Description							
#1 10.25'	vv	ge Data (Prismatic)Listed	d below (Recalc)				
ElevationSurf.Area(feet)(sq-ft10.252710.4535011.251,050	a Inc.Store C t <u>) (cubic-feet) (c</u> 1 0 0 62	Cum.Store <u>cubic-feet)</u> 0 62 622					
Device Routing	Invert Outlet Devices						
#1 Primary							
#2 Discarded		ation over Surface area					
<b>,</b>	11.15' 5.0' long Sharp-C	Conductivity to Groundwater Elevation = 7.30' 5.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s) 24inch-Dome Grate Capacity					
<b>Discarded OutFlow</b> Max=0.02 cfs @ 13.36 hrs HW=10.89' (Free Discharge)							

**2=Exfiltration** (Controls 0.02 cfs) **Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=10.25' (Free Discharge)

-1=Culvert (Passes 0.00 cfs of 1.72 cfs potential flow) -1=Culvert (Passes 0.00 cfs of 1.72 cfs potential flow) -1=Culvert (Passes 0.00 cfs of 1.72 cfs potential flow)

-3=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

#### Summary for Pond 3B-P: BB 3B

Inflow A Inflow Outflow Discard Primary Rout	= 0 = 0 ed = 0 = 0	0.14 cfs @ 12 0.01 cfs @ 13 0.01 cfs @ 13 0.01 cfs @ 13	77.34% Impervious, 2.13 hrs, Volume= 3.11 hrs, Volume= <u>3.11 hrs, Volume=</u> 0.00 hrs, Volume= P-3_OVERFLOW	Inflow Depth = 1.04 395 cf 395 cf, At <u>395 cf</u> 0 cf	tten= 91%, Lag= 59.0 min INFILTRATION			
Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Peak Elev= 12.74' @ 13.11 hrs Surf.Area= 479 sf Storage= 177 cf								
	Plug-Flow detention time= 150.1 min calculated for 395 cf (100% of inflow) Center-of-Mass det. time= 150.1 min ( 969.8 - 819.8 )							
Volume	Invert	Avail.Stor	rage Storage Des	cription				
#1	12.20'	26	63 cf Custom Sta	ge Data (Prismatic)∟	isted below (Recalc)			
Elevatio	on Si	urf.Area	Inc.Store	Cum.Store				
(fee	et)	(sq-ft)	(cubic-feet) (	cubic-feet)				
12.2	20	180	0	0				
12.9	90	570	263	263				
Device	Routing	Invert	Outlet Devices					
#1	Primary	10.70'		uare edge headwall, t= 10.70' / 10.60' S=	Ke= 0.500 0.0100 '/' Cc= 0.900			
#2	Discarded	12.20'	1.020 in/hr Exfilt	ration over Surface a				
#3	Device 1	12.80'						
#4	Primary	12.85'			Weir 2 End Contraction(s)			

**Discarded OutFlow** Max=0.01 cfs @ 13.11 hrs HW=12.74' (Free Discharge) **1**-2=Exfiltration (Controls 0.01 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=12.20' (Free Discharge) 1=Culvert (Passes 0.00 cfs of 2.73 cfs potential flow) -3=24inch-Dome Grate Capacity (Controls 0.00 cfs)

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

# Summary for Pond 4A-P: BB 4A - POND

Secondary = Routed to Po Routing by Stor- Peak Elev= 9.91 Plug-Flow deten Center-of-Mass	0.16 cfs @ 12 0.03 cfs @ 12 0.00 cfs @ 0 ach BMP_3 : BM 0.03 cfs @ 12 nd 4A-S : BB4A-S Ind method, Time ' @ 12.58 hrs Su tion time= 40.5 m det. time= 40.5 m	e Span= 0.00-72.00 hrs, dt= 0.05 hrs urf.Area= 491 sf Storage= 151 cf in calculated for 484 cf (100% of inflow) in ( 845.9 - 805.4 )	484 cf 484 cf 484 cf 484 cf 484 cf hrs, dt= 0.05 hrs torage= 151 cf 4 cf (100% of inflow) 484 cf FLOW THROUGH BIORETENTION TREATMENT SECTION
		brage Storage Description	
#1 9	.50' 32	20 cf Custom Stage Data (Prismatic)Listed below (Recalc)	ge Data (Prismatic)Listed below (Recalc)
Elevation (feet) 9.50	Surf.Area (sq-ft) 250	Inc.StoreCum.Store(cubic-feet)(cubic-feet)00	<u>cubic-feet)</u> 0
10.20	664	320 320	320
Device Routing	g Invert	Outlet Devices	
#1 Primar		<b>12.0" Round Culvert</b> L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 8.00' / 7.90' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf	ןuare edge headwall,  Ke= 0.500 t= 8.00' / 7.90'  S= 0.0100 '/'  Cc= 0.900 rea= 0.79 sf
#2 Second	dary 9.50'	2.410 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 6.00'	
#3 Primar #4 Device		•	Crested Rectangular Weir 2 End Contraction(s)           ite Capacity           0.05         0.10         0.15         0.20         0.25         0.30         0.35         0.40         0.45           0.65         0.70         0.75         0.80         0.85         0.90         0.95         1.00         1.05           0         0.180         0.460         0.850         1.360         1.830         2.420         3.100           0         4.200         4.380         4.600         4.750         4.900         5.100         5.200
1=Culvert (F	w Max=0.00 cfs ( asses 0.00 cfs of Dome Grate Cap sted Rectangula		
	Flow Max=0.03 c n(Controls 0.03		

# Summary for Pond 4A-S: BB4A-Stone

Inflow = Outflow = Primary =	0.03 cfs 🥘	12.58 hrs, Volume 12.61 hrs, Volume 12.61 hrs, Volume	e= 467 cf,	Atten= 0%, Lag= 2.1 min				
Routed to	Reach BMP4_O : I	BMP-4 OVERFLO	N					
Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Peak Elev= 7.11' @ 12.61 hrs Surf.Area= 230 sf Storage= 25 cf								
	Plug-Flow detention time= 39.5 min calculated for 467 cf (96% of inflow) Center-of-Mass det. time= 19.6 min(865.4 - 845.9)							
Volume	Invert Avail.St	orage Storage D	escription					
#1	6.75'		tage Data (Prismati erall x 30.0% Voids	<b>c)</b> Listed below (Recalc)				
Elevation	Surf.Area	Inc.Store	Cum.Store					
(feet)	(sq-ft)	(cubic-feet)	(cubic-feet)					
6.75	230	0	0					
8.75	230	460	460					
Device Rou	ting Inver	Outlet Devices						
#1 Prim	nary 7.00	4.0" Vert. Orifi	<b>ce/Grate</b> C= 0.600	Limited to weir flow at low heads				
<b>Brimany OutElow</b> May-0.02 of $\alpha$ 12.61 hrs. $HW=7.11!$ (Erec Discharge)								

Primary OutFlow Max=0.03 cfs @ 12.61 hrs HW=7.11' (Free Discharge) 1=Orifice/Grate (Orifice Controls 0.03 cfs @ 1.14 fps)

# Summary for Pond 4B-P: BB 4B - POND

Inflow Area = 3,048 sf, 86.09% Impervious, Inflow Depth =	1.20" for 1.7-in event
Inflow = 0.10 cfs @ 12.13 hrs, Volume= 305	of
	cf,_Atten= 82%, Lag= 26.6 min
Primary = $0.00 \text{ cfs} (0.00 \text{ hrs}), \text{ Volume} = 0.00 \text{ cfs} (0.00 \text{ hrs})$	
Routed to Reach BMP4 O : BMP-4 OVERFLOW	
Secondary = $0.02 \text{ cfs} @ 12.57 \text{ hrs}, \text{ Volume}= 305$	NO OVERFLOW
Routed to Pond 4B-S : BB 4A-Stone	
Douting by Stor Ind method. Time Span- 0.00.72.00 bro. dt- 0.05 br	
Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hr	
Peak Elev= 10.92' @ 12.57 hrs Surf.Area= 312 sf Storage= 96 cf	BIORETENTION
Plug-Flow detention time= 41.2 min calculated for 305 cf (100% of inf	low)
Center-of-Mass det. time= 41.2 min(846.6 - 805.4)	
Volume Invert Avail.Storage Storage Description	
#1 10.50' 199 cf Custom Stage Data (Prism	atic)Listed below (Recalc)
	, , ,
Elevation Surf.Area Inc.Store Cum.Store	
(feet) (sq-ft) (cubic-feet) (cubic-feet)	
<u>10.50</u> 144 0 0	
11.20 424 199 199	
11.20 424 199 199	
Device Device Invest Outlet Devices	
Device Routing Invert Outlet Devices	
#1 Drimony 0.00' <b>12.0" Bound Culvert</b>	
#1 Primary 9.00' <b>12.0" Round Culvert</b>	
L= 10.0' CPP, square edge head	wall, Ke= 0.500
······································	
L= 10.0' CPP, square edge head Inlet / Outlet Invert= 9.00' / 8.90'	
L= 10.0' CPP, square edge head Inlet / Outlet Invert= 9.00' / 8.90' n= 0.013, Flow Area= 0.79 sf	S= 0.0100 '/' Cc= 0.900
L= 10.0' CPP, square edge head Inlet / Outlet Invert= 9.00' / 8.90' n= 0.013, Flow Area= 0.79 sf #2 Secondary 10.50' <b>2.410 in/hr Exfiltration over Sur</b>	S= 0.0100 '/' Cc= 0.900 face area
<ul> <li>L= 10.0' CPP, square edge head Inlet / Outlet Invert= 9.00' / 8.90' n= 0.013, Flow Area= 0.79 sf</li> <li>#2 Secondary 10.50' 2.410 in/hr Exfiltration over Sur Conductivity to Groundwater Eleve</li> </ul>	S= 0.0100 '/' Cc= 0.900 face area ation = 7.00'
<ul> <li>L= 10.0' CPP, square edge head Inlet / Outlet Invert= 9.00' / 8.90' n= 0.013, Flow Area= 0.79 sf</li> <li>#2 Secondary 10.50' 2.410 in/hr Exfiltration over Sur Conductivity to Groundwater Eleve</li> <li>#3 Primary 11.10' 5.0' long Sharp-Crested Rectan</li> </ul>	S= 0.0100 '/' Cc= 0.900 face area ation = 7.00'
<ul> <li>L= 10.0' CPP, square edge head Inlet / Outlet Invert= 9.00' / 8.90' n= 0.013, Flow Area= 0.79 sf</li> <li>#2 Secondary 10.50' 2.410 in/hr Exfiltration over Sur Conductivity to Groundwater Eleve</li> </ul>	S= 0.0100 '/' Cc= 0.900 face area ation = 7.00'
<ul> <li>L= 10.0' CPP, square edge head Inlet / Outlet Invert= 9.00' / 8.90' n= 0.013, Flow Area= 0.79 sf</li> <li>Secondary 10.50' 2.410 in/hr Exfiltration over Sur Conductivity to Groundwater Eleve #3 Primary 11.10' 5.0' long Sharp-Crested Rectan #4 Device 1 10.95' 24inch-Dome Grate Capacity</li> </ul>	S= 0.0100 '/' Cc= 0.900 face area ation = 7.00' gular Weir 2 End Contraction(s)
<ul> <li>L= 10.0' CPP, square edge head Inlet / Outlet Invert= 9.00' / 8.90' n= 0.013, Flow Area= 0.79 sf</li> <li>#2 Secondary 10.50' 2.410 in/hr Exfiltration over Sur Conductivity to Groundwater Eleve</li> <li>#3 Primary 11.10' 5.0' long Sharp-Crested Rectan</li> </ul>	S= 0.0100 '/' Cc= 0.900 face area ation = 7.00' gular Weir 2 End Contraction(s)

**1=Culvert** (Passes 0.00 cfs of 3.62 cfs potential flow) **4=24inch-Dome Grate Capacity**(Controls 0.00 cfs)

-3=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

Secondary OutFlow Max=0.02 cfs @ 12.57 hrs HW=10.92' (Free Discharge) 2=Exfiltration (Controls 0.02 cfs)

# Summary for Pond 4B-S: BB 4A-Stone

Inflow = Outflow = Primary =	0.02 cfs 🥘	12.57 hrs, Volum 12.60 hrs, Volum 12.60 hrs, Volum	e= 294 cf, Atten= 0%, Lag= 1.8 min
Routed to	Reach BMP4_O : E	3MP-4 OVERFLO	W
	or-Ind method, Tim 84' @ 12.60 hrs \$		00 hrs, dt= 0.05 hrs Storage= 15 cf
	C		5
	ention time= 37.5 r ss det. time= 18.0 r		293 cf (96% of inflow)
Center-or-max	s det. time- 10.01	1111 ( 804.0 - 840.0	)
Volume	Invert Avail.St	orage Storage D	Description
#1	7.50'		Stage Data (Prismatic)Listed below (Recalc)
		290 CI OV	erall x 30.0% Voids
Elevation	Surf.Area	Inc.Store	Cum.Store
(feet)	(sq-ft)	(cubic-feet)	(cubic-feet)
7.50	145	0	0
9.50	145	290	290
Device Rout	ing Invert	Outlet Devices	
#1 Prim	ary 7.75	4.0" Vert. Orif	ice/Grate C= 0.600 Limited to weir flow at low heads
			(-7.94) (Free Discharge)

Primary OutFlow Max=0.02 cfs @ 12.60 hrs HW=7.84' (Free Discharge) 1=Orifice/Grate (Orifice Controls 0.02 cfs @ 1.01 fps)

# Summary for Pond 5A-P: BB 5A - POND

Inflow Area = 3,072 sf, 73.44% Impervious, Inflow Depth = 0.97" for 1.7-in event	
Inflow = 0.09 cfs @ 12.13 hrs, Volume= 249 cf	
Outflow = 0.03 cfs @ 12.33 hrs, Volume= 249 cf, Atten= 66%, Lag= 12.1 min	
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf	
Routed to Reach B : PARKING LOT B OVERFLOW NO OVERFLOW	
Secondary = 0.03 cfs @ 12.33 hrs, Volume= 249 cf	
Routed to Pond 5A-PS : BB 5A-Stone	
Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs	
Peak Elev= 8.89' @ 12.33 hrs Surf.Area= 510 sf Storage= 45 cf BIORETENTION	
TREATMENT SECTION	N
Plug-Flow detention time= 10.7 min calculated for 249 cf (100% of inflow)	<u> </u>
Center-of-Mass det. time= 10.7 min ( 836.7 - 826.0 )	
0 - 10 - 10 - 10 - 10 - 10 - 10 - 10 -	
Volume Invert Avail.Storage Storage Description	
#1 8.80' 645 cf Custom Stage Data (Prismatic)Listed below (Recalc)	
Elevation Surf.Area Inc.Store Cum.Store	
(feet) (sq-ft) (cubic-feet) (cubic-feet)	
8.80 480 0 0	
9.80 810 645 645	
Device Routing Invert Outlet Devices	
#1 Primary 7.60' <b>12.0" Round Culvert</b>	
L= 10.0' CPP, square edge headwall, Ke= 0.500	
Inlet / Outlet Invert= 7.60' / 7.50' S= 0.0100 '/' Cc= 0.900	
n= 0.013, Flow Area= 0.79 sf	
#2 Secondary 8.80' 2.410 in/hr Exfiltration over Surface area	
Conductivity to Groundwater Elevation = 5.60'	
#3 Device 1 9.50' 24inch-Dome Grate Capacity	
Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=8.80' (Free Discharge)	
1=Culvert (Passes 0.00 cfs of 2.86 cfs potential flow)	

**1**-3=24inch-Dome Grate Capacity (Controls 0.00 cfs)

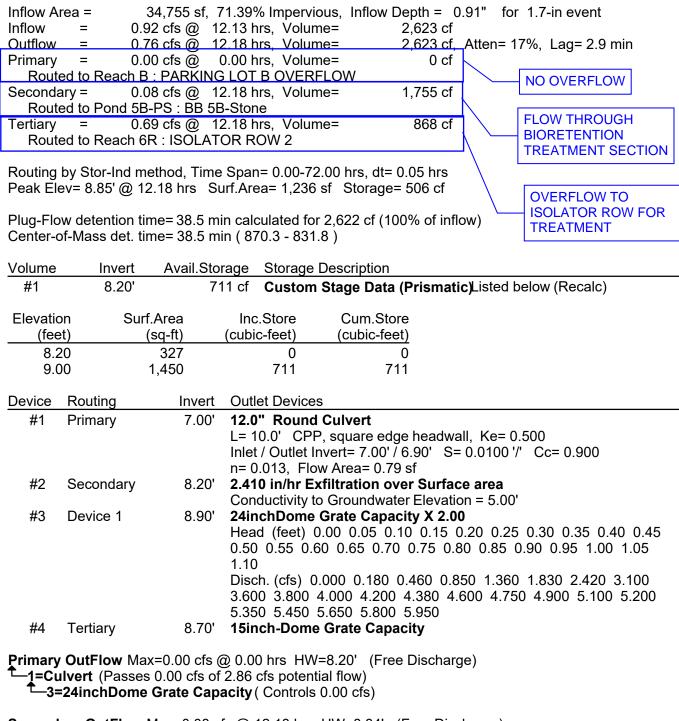
Secondary OutFlow Max=0.03 cfs @ 12.33 hrs HW=8.89' (Free Discharge) 2=Exfiltration (Controls 0.03 cfs)

# Summary for Pond 5A-PS: BB 5A-Stone

Inflow =		$\sim$	2.33 hrs, Volum		249 cf	
Outflow =		$\sim$	2.51 hrs, Volum			Atten= 1%, Lag= 10.8 min
Primary =		$\sim$	2.51 hrs, Volum		213 cf	
Routed to	Reach B : F	PARKING	LOT B OVERF	LOW		
			Span= 0.00-72.			
Peak Elev=	5.91' @ 12.5	1 hrs Su	urf.Area= 480 sf	Storage= 52	cf	
U U			nin calculated fo	· ·	of inflov	N)
Center-of-Ma	ass det. time	= 47.0 mi	in ( 883.7 - 836.1	7)		
Volume	Invert /	Avail.Stor	rage Storage [	Description		
#1	5.55'	28	38 cf Custom	Stage Data (P	Prismati	i <b>c)</b> Listed below (Recalc)
			960 cf Ov	/erall_x 30.0%	Voids	
Elevation	Surf.Ar	rea	Inc.Store	Cum.Store		
(feet)	(sq	-ft)	(cubic-feet)	(cubic-feet)		
5.55	4	80	0	0		
7.55	4	80	960	960		
Device Ro	uting	Invert	<b>Outlet Devices</b>			
#1 Pri	mary	5.80'	4.0" Vert. Orif	ice/Grate C=	0.600	Limited to weir flow at low heads
	5					

Primary OutFlow Max=0.03 cfs @ 12.51 hrs HW=5.91' (Free Discharge) 1=Orifice/Grate (Orifice Controls 0.03 cfs @ 1.14 fps)

#### Summary for Pond 5B-P: BB 5B - POND



Secondary OutFlow Max=0.08 cfs @ 12.18 hrs HW=8.84' (Free Discharge) —2=Exfiltration (Controls 0.08 cfs)

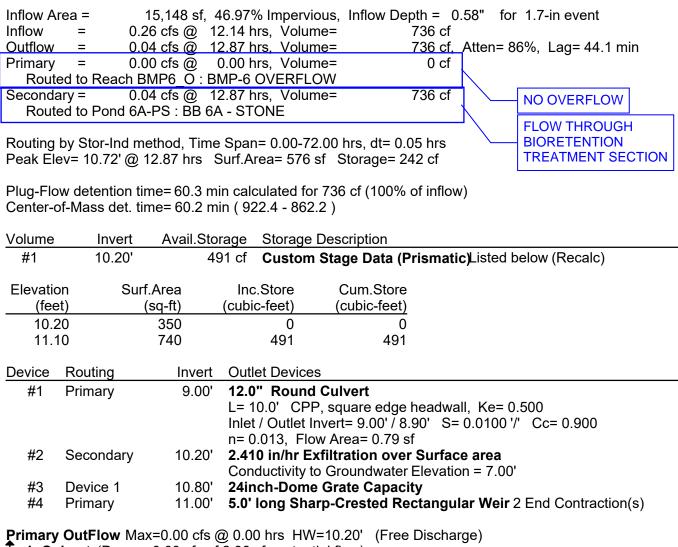
**Tertiary OutFlow** Max=0.67 cfs @ 12.18 hrs HW=8.84' (Free Discharge) **4=15inch-Dome Grate Capacity** (Custom Controls 0.67 cfs)

# Summary for Pond 5B-PS: BB 5B-Stone

Inflow =	<u> </u>	12.18 hrs, Volume		
Outflow =	<u> </u>	12.28 hrs, Volume		Atten= 4%, Lag= 5.7 min
Primary =	<u> </u>	12.28 hrs, Volum		
Routed to	Reach B : PARKIN	IG LOT B OVERF	LOW	
• •			00 hrs, dt= 0.05 hrs	
Peak Elev= 5	.44' @ 12.28 hrs	Surf.Area= 690 st	Storage= 90 cf	
Dlug Elow do	tontion timo- 26.0	min calculated for	1,703 cf (97% of inflo	
U U	ss det. time= $22.5$			W)
Center-or-Ind	55 det. time= 22.5	1111 ( 300.3 - 300	• )	
Volume	Invert Avail.S	torage Storage D	Description	
#1		<u> </u>		ic)Listed below (Recalc)
			Overall x 30.0% Void	
Elevation	Surf.Area	Inc.Store	Cum.Store	
(feet)	(sq-ft)	(cubic-feet)	(cubic-feet)	
5.00	690	0	0	
7.00	690	1,380	1,380	
<u>Device Rou</u>	ting Inver	t Outlet Devices		
#1 Prim	nary 5.25	4.0" Vert. Orifi	<b>ce/Grate</b> C= 0.600	Limited to weir flow at low heads
Drimary Outl	Elow May-0 07 of	$\sim \bigcirc 12.28$ hrs $\square M$	-5 11' (Eroo Discho	arge)

Primary OutFlow Max=0.07 cfs @ 12.28 hrs HW=5.44' (Free Discharge) —1=Orifice/Grate (Orifice Controls 0.07 cfs @ 1.47 fps)

#### Summary for Pond 6A-P: BB 6A - POND



-1=Culvert (Passes 0.00 cfs of 2.86 cfs potential flow)

**1**-3=24inch-Dome Grate Capacity (Controls 0.00 cfs)

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

Secondary OutFlow Max=0.04 cfs @ 12.87 hrs HW=10.72' (Free Discharge) —2=Exfiltration (Controls 0.04 cfs)

# Summary for Pond 6A-PS: BB 6A - STONE

Inflow = Outflow = Primary = Routed to	0.04 cf	s @ 12.92 s @ 12.92	hrs, Volume hrs, Volume hrs, Volume OVERFLO	e= 71 e= 71	6 cf 4 cf, Atten= 0%, Lag= 2 4 cf	2.8 min
				00 hrs, dt= 0.05 Storage= 33 cf	nrs	
Plug-Flow de Center-of-Ma				714 cf (97% of ir )	flow)	
Volume	Invert A	vail.Storage	Storage D	escription		
#1	7.00'	174 cf		Stage Data (Pris erall_x 30.0% Vo	<b>matic)</b> Listed below (Red ids	calc)
Elevation	Surf.Are	a In	c.Store	Cum.Store		
(feet)	(sq-1		oic-feet)	(cubic-feet)		
7.00	29	00	0	0		
9.00	29	0	580	580		
Device Rou	uting	Invert Ou	tlet Devices			
#1 Prin	nary	7.25' <b>4.0</b>	" Vert. Orifi	ce/Grate C= 0.	600 Limited to weir flow	v at low heads
Primary Out	Elow Max-0	04 cfc @ 12	02 brs $HM/$	-7.38' (Ereo Di	scharge)	

Primary OutFlow Max=0.04 cfs @ 12.92 hrs HW=7.38' (Free Discharge) —1=Orifice/Grate (Orifice Controls 0.04 cfs @ 1.21 fps)

# Summary for Pond 6B-P: BB 6B

Inflow Area = 6,495 sf, 77.45% Impervious, Inflow Depth = 1.04" for 1.7-in event	
Inflow = 0.20 cfs @ 12.13 hrs, Volume= 564 cf	
<u>Outflow = 0.02 cfs @ 13.26 hrs, Volume= 564 cf, Atten= 92%, Lag= 68.0 min</u>	
Discarded = 0.02 cfs @ 13.26 hrs, Volume= 564 cf INFILTRATION	
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf	
Routed to Reach BMP6 O : BMP-6 OVERFLOW	
Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs	
Peak Elev= 11.90' @ 13.26 hrs Surf.Area= 579 sf Storage= 269 cf	
Plug-Flow detention time= 194.1 min calculated for 564 cf (100% of inflow)	
Center-of-Mass det. time= 194.0 min ( 1,013.8 - 819.8 )	
Volume Invert Avail.Storage Storage Description	
#1 11.20' 394 cf Custom Stage Data (Prismatic)Listed below (Recalc)	
Elevation Surf.Area Inc.Store Cum.Store	
(feet) (sq-ft) (cubic-feet) (cubic-feet)	
11.20 185 0 0	
12.10 690 394 394	
Device Routing Invert Outlet Devices	
#1 Primary 10.10' <b>12.0" Round Culvert</b>	
L= 10.0' CPP, square edge headwall, Ke= 0.500	
Inlet / Outlet Invert= 10.10' / 10.00' S= 0.0100 '/' Cc= 0.900	
n= 0.013, Flow Area= 0.79 sf	
#2 Discarded 11.20' 1.020 in/hr Exfiltration over Surface area	
Conductivity to Groundwater Elevation = 8.10'	
#3 Device 1 11.95' 24inch-Dome Grate Capacity	
Discarded OutFlow Max=0.02 cfs @ 13.26 hrs HW=11.90' (Free Discharge) ←2=Exfiltration (Controls 0.02 cfs)	

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=11.20' (Free Discharge) 1=Culvert (Passes 0.00 cfs of 2.58 cfs potential flow) -3=24inch-Dome Grate Capacity (Controls 0.00 cfs)

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# Summary for Pond 7A-P: BB 7A PONDING

Inflow Area = 3,165 sf, 87.74% Impervious, Inflow Depth = 1.20" for 1.7-in event
Inflow Area = 3,165 sf, 87.74% Impervious, Inflow Depth = 1.20" for 1.7-in event Inflow = 0.11 cfs @ 12.13 hrs, Volume= 316 cf
Outflow = $0.02 \text{ cfs} @ 12.61 \text{ hrs}, \text{ Volume} = 316 \text{ cf}, \text{ Atten} = 84\%, \text{ Lag} = 28.7 \text{ min}$
Outliow $=$ $0.02$ cls ( $@$ $12.0$ rms, volume= $0.00$ cl, Atten= $0.4$ %, Lag= 20.7 mm         Primary $=$ $0.00$ cls ( $@$ $0.00$ hrs, Volume= $0$ cf
Routed to Reach 7R : PARKING LOT C to HUDSON
Secondary = $0.02 \text{ cfs} @ 12.61 \text{ hrs}, \text{ Volume} = 316 \text{ cf}$
Bouted to Dond ZA S BB ZA STONE
Rouled to Polid 7A-S . BB 7A - STONE NO UNTREATED OVERFLOW
Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 9.84' @ 12.61 hrs Surf.Area= 281 sf Storage= 108 cf BIORETENTION
TREATMENT SECTION
Plug-Flow detention time= 53.4 min calculated for 316 cf (100% of inflow)
Center-of-Mass det. time= 53.4 min ( 858.7 - 805.4 )
Volume Invert Avail.Storage Storage Description
#1 9.30' 227 cf Custom Stage Data (Prismatic)Listed below (Recalc)
Elevation Surf.Area Inc.Store Cum.Store
(feet) (sq-ft) (cubic-feet) (cubic-feet)
9.30 115 0 0
10.20 390 227 227
Device Routing Invert Outlet Devices
#1 Primary 8.10' <b>12.0'' Round Culvert</b>
L= 10.0' CPP, square edge headwall, Ke= 0.500
Inlet / Outlet Invert= 8.10' / 8.00' S= 0.0100 '/' Cc= 0.900
n= 0.013, Flow Area= 0.79 sf
#2 Secondary 9.30' 2.410 in/hr Exfiltration over Surface area
Conductivity to Groundwater Elevation = 6.10'
#3 Device 1 9.90' 24inch-Dome Grate Capacity
#4 Primary 10.10' 5.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=9.30' (Free Discharge)
<b>1=Culvert</b> (Passes 0.00 cfs of 2.86 cfs potential flow)
<sup>T</sup> —3=24inch-Dome Grate Capacity( Controls 0.00 cfs)

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

Secondary OutFlow Max=0.02 cfs @ 12.61 hrs HW=9.84' (Free Discharge) =2=Exfiltration (Controls 0.02 cfs) HydroCAD® 10.10-7a s/n 00546 © 2021 HydroCAD Software Solutions LLC

# Summary for Pond 7A-S: BB 7A - STONE

Inflow = Outflow = Primary =	0.02 cfs 🥘 🗹	12.61 hrs, Volume 12.64 hrs, Volume 12.64 hrs, Volume	e= 316 cf,	Atten= 0%, Lag= 2.0 min
Routed to F	Reach 7R : PARKII	NG LOT C to HUD	SON	
	r-Ind method, Tim I8' @ 12.64 hrs S		00 hrs, dt= 0.05 hrs Storage= 4 cf	
•	ention time= 5.7 mi s det. time= 5.7 mi		16 cf (100% of inflow)	
Volume	Invert Avail.Ste	orage Storage D	escription	
#1	5.10'		<b>Stage Data (Prismat</b> i erall x 30.0% Voids	<b>c)</b> Listed below (Recalc)
Elevation	Surf.Area	Inc.Store	Cum.Store	
(feet)	(sq-ft)	(cubic-feet)	(cubic-feet)	
5.10	150	0	0	
7.10	150	300	300	
Device Routi	ng Invert	Outlet Devices		
#1 Prima	ary 5.10'	4.0" Vert. Orifi	<b>ce/Grate</b> C= 0.600	Limited to weir flow at low heads
	In Max-0.00 afa		-E 19' (Erec Discho	

**Primary OutFlow** Max=0.02 cfs @ 12.64 hrs HW=5.18' (Free Discharge) **1=Orifice/Grate** (Orifice Controls 0.02 cfs @ 0.99 fps)

# Summary for Pond 7B-P: BB 7B PONDING

Inflow Area = 4.042 of	29.720/ Imponique Inflow Donth - 1.20" for 1.7 in event
	38.73% Impervious, Inflow Depth = 1.20" for 1.7-in event 2.13 hrs, Volume= 494 cf
	2.61 hrs, Volume= 494 cf, Atten= 84%, Lag= 28.9 min
	0.00 hrs, Volume= 0 cf
Routed to Reach BMP7_O : B	
	2.61 hrs, Volume= 494 cf
Routed to Pond 7B-S : BB 7B	- STONE NO UNTREATED OVERFLOW
	Span= 0.00-72.00 hrs, dt= 0.05 hrs FLOW THROUGH
Peak Elev= 10.47' @ 12.61 hrs	Surf.Area= 434 sf Storage= 162 cf BIORETENTION
	TREATMENT SECTION
	in calculated for 493 cf (100% of inflow)
Center-of-Mass det. time= 48.4 m	in(853.7 - 805.4)
Volume Invert Avail.Sto	rage Storage Description
#1 10.00' 3	24 cf Custom Stage Data (Prismatic)Listed below (Recalc)
Elevation Surf.Area	Inc.Store Cum.Store
(feet) (sq-ft)	(cubic-feet) (cubic-feet)
10.00 250	
10.80 560	324 324
10.00 000	
Device Routing Invert	Outlet Devices
#1 Primary 8.90'	12.0" Round Culvert
"·····································	L= 10.0' CPP, square edge headwall, Ke= 0.500
	Inlet / Outlet Invert= 8.90' / 8.80' S= 0.0100 '/' Cc= 0.900
	n= 0.013, Flow Area= 0.79 sf
#2 Secondary 10.00'	2.410 in/hr Exfiltration over Surface area
	Conductivity to Groundwater Elevation = 6.90'
#3 Device 1 10.60'	
#3 Device I 10.00	24inch-Dome Grate Capacity
Brimony OutElow Max-0.00 of	$\approx 0.00 \text{ bra}$ $HW=10.00'$ (Frag Disphares)
	@ 0.00 hrs HW=10.00' (Free Discharge)
☐_1=Culvert (Passes 0.00 cfs o ☐_3=24inch-Dome Grate Ca	
	DACITY ( CONTROLS U UU CIS)

**└──3=24inch-Dome Grate Capacity**( Controls 0.00 cfs)

Secondary OutFlow Max=0.03 cfs @ 12.61 hrs HW=10.47' (Free Discharge) 2=Exfiltration (Controls 0.03 cfs)

# Summary for Pond 7B-S: BB 7B - STONE

Inflow = Outflow = Primary = Routed to	0.03 cfs @ 1	2.61 hrs, Volume 2.64 hrs, Volume 2.64 hrs, Volume MP-7 OVERFLO	e= 483 cf, e= 483 cf	Atten= 0%, Lag= 1.9 min
•••	or-Ind method, Time .61' @ 12.64 hrs S	•		
<b>v</b>	tention time= 26.1 m ss det. time= 13.5 m		82 cf (98% of inflow )	)
Volume	Invert Avail.Sto	orage Storage D	escription	
#1	7.25'		tage Data (Prismat erall x 30.0% Voids	<b>ic)</b> Listed below (Recalc)
Elevation	Surf.Area	Inc.Store	Cum.Store	
(feet)	(sq-ft)	(cubic-feet)	(cubic-feet)	
7.25	150	0	0	
9.25	150	300	300	
Device Rou	ting Invert	Outlet Devices		
#1 Prim	nary 7.50'	4.0" Vert. Orific	<b>ce/Grate</b> C= 0.600	Limited to weir flow at low heads
Primary Out	Low Max-0.03 cfc	$\bigcirc$ 12.64 bra $\square M$	-7.61' (Eree Discha	urge)

**Primary OutFlow** Max=0.03 cfs @ 12.64 hrs HW=7.61' (Free Discharge) **1=Orifice/Grate** (Orifice Controls 0.03 cfs @ 1.11 fps)

# Summary for Pond 8a-P: BB 8A PONDING

Inflow Area = 3.978 sf.	70 000/ Impensious Inflow Denth = 1.04" for 1.7 in event
	79.99% Impervious, Inflow Depth = 1.04" for 1.7-in event 2.13 hrs, Volume= 346 cf
<b>U</b>	2.49 hrs, Volume= 346 cf, Atten= 78%, Lag= 21.9 min
	0.00  hrs, Volume = 0  cf
Routed to Reach P ST : PORT	
	2.49 hrs, Volume= 346 cf
Routed to Pond 8a-s : BB 8A -	
Rouleu lo Pollu oa-s . BB oA -	STONE NO UNTREATED OVERFLOW
Pouting by Stor Ind method. Time	Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 8.71' @ 12.49 hrs S	
Feak Elev - 0.71 @ 12.49 1115 3	TREATMENT SECTION
Dlug Flow dotontion time= 22.8 m	in calculated for 345 cf (100% of inflow)
Center-of-Mass det. time= 22.8 m	
Center-or-mass det. time- 22.0 m	III ( 042.0 - 019.0 )
Volume Invert Avail.Sto	rado Storado Docorintian
	rage Storage Description
#1 8.50' 5	75 cf Custom Stage Data (Prismatic)Listed below (Recalc)
Elevation Surf.Area	Inc.Store Cum.Store
(feet) (sq-ft)	(cubic-feet) (cubic-feet)
8.50 360	0 0
9.50 790	575 575
	Outlet Devices
#1 Primary 7.40'	12.0" Round Culvert
	L= 10.0' CPP, square edge headwall, Ke= 0.500
	Inlet / Outlet Invert= 7.40' / 7.30' S= 0.0100 '/' Cc= 0.900
	n= 0.013, Flow Area= 0.79 sf
#2 Secondary 8.50'	2.410 in/hr Exfiltration over Surface area
	Conductivity to Groundwater Elevation = 5.40'
#3 Device 1 9.00'	24inch-Dome Grate Capacity
#4 Primary 9.40'	5.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
,	
Primary OutFlow Max=0.00 cfs	@ 0.00 hrs HW=8.50' (Free Discharge)
1=Culvert (Passes 0.00 cfs of	
<sup>↑</sup> -3=24inch-Dome Grate Ca	pacity (Controls 0.00 cfs)

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

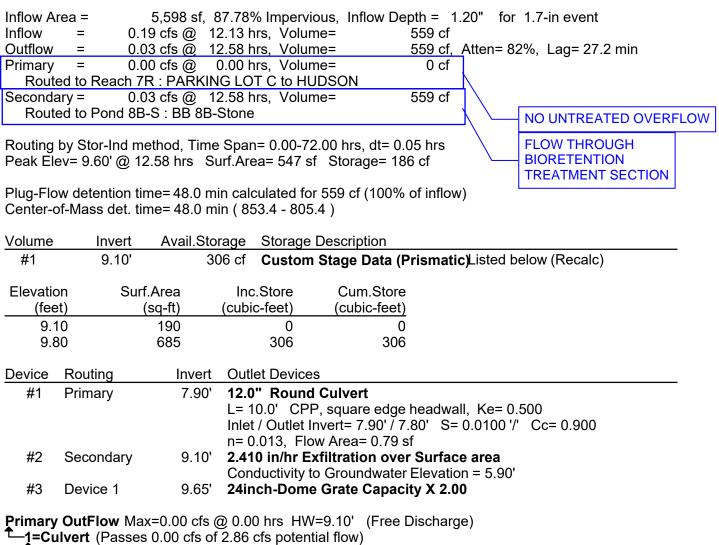
Secondary OutFlow Max=0.03 cfs @ 12.49 hrs HW=8.71' (Free Discharge) 2=Exfiltration (Controls 0.03 cfs)

# Summary for Pond 8a-s: BB 8A - STONE

Inflow = Outflow = Primary = Routed to F	0.03 cfs @ 1	2.49 hrs, Volume 2.55 hrs, Volume 2.55 hrs, Volume FLAND STREET	e= 328 e= 328	cf, Atten= 0%, Lag= 3.5 min				
Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Peak Elev= 5.61' @ 12.55 hrs Surf.Area= 300 sf Storage= 28 cf								
Plug-Flow detention time= 51.9 min calculated for 328 cf (95% of inflow) Center-of-Mass det. time= 23.5 min(866.1 - 842.6)								
Volume	Invert Avail.Sto	orage Storage D	escription					
#1	5.30' 1		Stage Data (Prisn erall x 30.0% Void	natic)Listed below (Recalc) ds				
Elevation	Surf.Area	Inc.Store	Cum.Store					
(feet)	(sq-ft)	(cubic-feet)	(cubic-feet)					
5.30	300	0	0					
7.30	300	600	600					
Device Routi	ng Invert	Outlet Devices						
#1 Prima	ary 5.50'	4.0" Vert. Orifi	ce/Grate C= 0.6	00 Limited to weir flow at low heads				
<b>Primary OutElow</b> Max-0.03 of $(0.1255 \text{ brs. HW}-5.61)$ (Free Discharge)								

Primary OutFlow Max=0.03 cfs @ 12.55 hrs HW=5.61' (Free Discharge) —1=Orifice/Grate (Orifice Controls 0.03 cfs @ 1.11 fps)

#### Summary for Pond 8B-P: BB 8B-PONDING



**1**-3=24inch-Dome Grate Capacity (Controls 0.00 cfs)

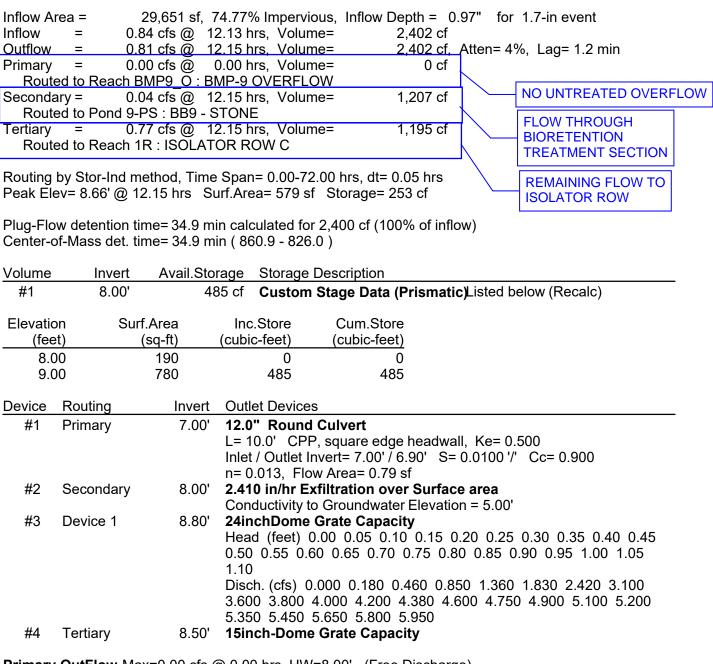
Secondary OutFlow Max=0.03 cfs @ 12.58 hrs HW=9.60' (Free Discharge) 2=Exfiltration (Controls 0.03 cfs)

# Summary for Pond 8B-S: BB 8B-Stone

Inflow = Outflow = Primary = Routed to F	0.03 cfs @ 1	2.58 hrs, Volume 2.63 hrs, Volume 2.63 hrs, Volume NG LOT C to HUD	= 532 cf, = 532 cf	Atten= 0%, Lag= 2.8 min			
Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Peak Elev= 6.32' @ 12.63 hrs Surf.Area= 300 sf Storage= 38 cf							
Plug-Flow detention time= 50.0 min calculated for 532 cf (95% of inflow) Center-of-Mass det. time= 24.8 min(878.2 - 853.4)							
Volume	Invert Avail.Sto	orage Storage D	escription				
#1	5.90' 1		tage Data (Prismat erall x 30.0% Voids	<b>ic)</b> Listed below (Recalc)			
Elevation	Surf.Area	Inc.Store	Cum.Store				
(feet)	(sq-ft)	(cubic-feet)	(cubic-feet)				
5.90	300	0	0				
7.90	300	600	600				
Device Routi	ng Invert	Outlet Devices					
#1 Prima	ary 6.20'	4.0" Vert. Orific	<b>ce/Grate</b> C= 0.600	Limited to weir flow at low heads			
<b>Primary OutFlow</b> Max=0.03 cfs @ 12.63 hrs. $HW=6.32'$ (Free Discharge)							

Primary OutFlow Max=0.03 cfs @ 12.63 hrs HW=6.32' (Free Discharge) —1=Orifice/Grate (Orifice Controls 0.03 cfs @ 1.18 fps)

# Summary for Pond 9-P: BB9 - POND



**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=8.00' (Free Discharge)

**1**−3=24inchDome Grate Capacity (Controls 0.00 cfs)

Secondary OutFlow Max=0.04 cfs @ 12.15 hrs HW=8.66' (Free Discharge) 2=Exfiltration (Controls 0.04 cfs)

**Tertiary OutFlow** Max=0.77 cfs @ 12.15 hrs HW=8.66' (Free Discharge) **4=15inch-Dome Grate Capacity** (Custom Controls 0.77 cfs)

# Summary for Pond 9-PS: BB9 - STONE

Inflow = Outflow = Primary = Routed to	= 0.04 = 0.04	cfs @ 12 cfs @ 12	2.15 hrs, Volu 2.18 hrs, Volu 2.18 hrs, Volu AP-9 OVERF	ıme= 1 ıme= 1	l,207 cf l,193 cf, l,193 cf	Atten= 1%, Lag= 1.8 min		
Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Peak Elev= 5.38' @ 12.18 hrs Surf.Area= 190 sf Storage= 21 cf								
Plug-Flow detention time= 16.2 min calculated for 1,193 cf (99% of inflow) Center-of-Mass det. time= 9.6 min(986.1 - 976.5)								
Volume	Invert	Avail.Stor	age Storag	e Description				
#1	5.00'	11		<b>n Stage Data (I</b> Overall x 30.0%		<b>c)</b> Listed below (Recalc)		
Elevation	Surf.	Area	Inc.Store	Cum.Store	;			
(feet)	(s	sq-ft)	(cubic-feet)	(cubic-feet)	)			
5.00		190	0	0	)			
7.00		190	380	380	)			
Device Ro	uting	Invert	Outlet Devic	es				
#1 Pri	mary	5.25'	4.0" Vert. O	rifice/Grate C=	= 0.600	Limited to weir flow at low heads		
Primary OutFlow May-0.04 of @ 12.19 hrs. LIM-E 291 (Free Discharge)								

Primary OutFlow Max=0.04 cfs @ 12.18 hrs HW=5.38' (Free Discharge)

# Summary for Pond 14P: BB2A-Stone

Inflow = Outflow = Primary = Routed to	0.02	2 cfs @ 1 2 cfs @ 1 2 cfs @ 1 2 cfs @ 1 2-1 : Frenc	2.64 hrs, 2.64 hrs,	Volume Volume	=	334 cf 334 cf, 334 cf	Atten= 0%,	Lag= 2.3 min
Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Peak Elev= 5.59' @ 12.64 hrs Surf.Area= 180 sf Storage= 5 cf								
Plug-Flow detention time= 6.8 min calculated for 334 cf (100% of inflow) Center-of-Mass det. time= 6.8 min(849.4-842.6)								
Volume	Invert	Avail.Sto	rage S	torage De	escription			
#1	5.50'	1(			tage Data (F erall_x 30.0%		<b>c)</b> Listed belo	w (Recalc)
Elevation	Surf.	Area	Inc.S	tore	Cum.Store			
(feet)	(s	sq-ft)	(cubic-f	eet)	(cubic-feet)			
5.50		180		0	0			
7.50		180		360	360			
Device Ro	uting	Invert	Outlet	Devices				
#1 Prii	mary	5.50'	4.0" Vo	ert. Orific	ce/Grate C=	= 0.600	Limited to w	eir flow at low heads
Primary OutFlow May-0.02 of @ 12.64 bra LIM-E 50' (Frag Discharge)								

**Primary OutFlow** Max=0.02 cfs @ 12.64 hrs HW=5.59' (Free Discharge) **1=Orifice/Grate** (Orifice Controls 0.02 cfs @ 1.00 fps)

## Summary for Pond DMH1: DIVERSION MANHOLE - SEYMOUR ST

[57] Hint: Peaked at 9.36' (Flood elevation advised)

Inflow Area =	19,582 sf, 58.17% Impervious, Inf	flow Depth = 0.73" for 1.7-in event
Inflow =	0.42 cfs @ 12.13 hrs, Volume=	1,191 cf
Outflow =	0.42 cfs @ 12.13 hrs, Volume=	1,191 cf, Atten= 0%, Lag= 0.0 min
Primary =	0.31 cfs @ 12.13 hrs, Volume=	1,130 cf
Routed to Po	nd INF-1 : INFILTRATION SYSTEM #1	
Secondary =	0.11 cfs @ 12.13 hrs, Volume=	61 cf
Routed to Re	ach DP-1 : French Rodney Blvd Outfall	

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Peak Elev= 9.36' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	9.00'	6.0" Vert. WATER QUALITY STORM DIVERSION C= 0.600
			Limited to weir flow at low heads
#2	Secondary	9.20'	<b>12.0" Vert. LARGE STORM OVEFLOW</b> C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.30 cfs @ 12.13 hrs HW=9.35' (Free Discharge) ←1=WATER QUALITY STORM DIVERSION(Orifice Controls 0.30 cfs @ 2.02 fps)

Secondary OutFlow Max=0.10 cfs @ 12.13 hrs HW=9.35' (Free Discharge) 2=LARGE STORM OVEFLOW (Orifice Controls 0.10 cfs @ 1.34 fps)

## Summary for Pond DMH2: DIVERSION MANHOLE - HUDSON STREET

[57] Hint: Peaked at 11.81' (Flood elevation advised)

Inflow Area =	143,309 sf, 49.69% Impervious, Infl	ow Depth = 0.63" for 1.7-in event
Inflow =	2.62 cfs @ 12.14 hrs, Volume=	7,514 cf
Outflow =	2.62 cfs @ 12.14 hrs, Volume=	7,514 cf, Atten= 0%, Lag= 0.0 min
Primary =	0.93 cfs @ 12.14 hrs, Volume=	6,224 cf
Routed to Pon	d INF-2 : INFILTRATION SYSTEM #2	
Secondary =	1.70 cfs @ 12.14 hrs, Volume=	1,290 cf
Routed to Rea	hch B : PARKING LOT B OVERFLOW	

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Peak Elev= 11.81' @ 12.14 hrs

Device R	Routing	Invert	Outlet Devices
#1 P	Primary	10.60'	6.0" Vert. WATER QUALITY STORM DIVERSION C= 0.600
			Limited to weir flow at low heads
#2 S	Secondary	11.10'	12.0" Vert. LARGE STORM OVERFLOW C= 0.600
			Limited to weir flow at low heads

**Primary OutFlow** Max=0.91 cfs @ 12.14 hrs HW=11.78' (Free Discharge) **1=WATER QUALITY STORM DIVERSION**(Orifice Controls 0.91 cfs @ 4.65 fps)

Secondary OutFlow Max=1.61 cfs @ 12.14 hrs HW=11.78' (Free Discharge) 2=LARGE STORM OVERFLOW (Orifice Controls 1.61 cfs @ 2.82 fps)

## Summary for Pond DMH3: DIVERSION MANHOLE - PORTLAND ST

[57] Hint: Peaked at 11.31' (Flood elevation advised)

Inflow Area = 19,743 sf, 50.83% Impervious, Inflow Depth = 0.63" for 1.7-in event Inflow = 0.36 cfs @ 12.14 hrs, Volume= 1.035 cf 0.36 cfs @ 12.14 hrs, Volume= Outflow 1,035 cf, Atten= 0%, Lag= 0.0 min = Primary = 0.31 cfs @ 12.14 hrs, Volume= 1,012 cf Routed to Pond INF3 : INFILTRATION SYSTEM #1 Secondary = 0.05 cfs @ 12.14 hrs, Volume= 23 cf Routed to Reach P ST : PORTLAND STREET DRAINAGE

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Peak Elev= 11.31' @ 12.14 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	11.00'	8.0" Vert. WATER QUALITY DIVERSION C= 0.600
#2	Secondary	11 20'	Limited to weir flow at low heads 10.0" Vert. LARGE STORM OVERFLOW C= 0.600
<i>""</i>	coolinairy	11.20	Limited to weir flow at low heads

Primary OutFlow Max=0.30 cfs @ 12.14 hrs HW=11.31' (Free Discharge) T=WATER QUALITY DIVERSION (Orifice Controls 0.30 cfs @ 1.89 fps)

Secondary OutFlow Max=0.05 cfs @ 12.14 hrs HW=11.31' (Free Discharge) 2=LARGE STORM OVERFLOW (Orifice Controls 0.05 cfs @ 1.13 fps)

## Summary for Pond INF-1: INFILTRATION SYSTEM #1

Inflow Area	a =	19,582 sf, 58.179	% Impervious, Inflow Depth = 0.69" for 1.7-in event
Inflow	= 0.3	31 cfs @ 12.13 h	nrs, Volume= 1,130 cf
Outflow	= 0.0	)5 cfs @ 12.92 h	nrs, Volume= 1,130 cf, Atten= 83%, Lag= 46.9 min
Discarded	= 0.0	05 cfs @ 12.92 h	nrs, Volume= 1,130 cf INFILTRATION
Primary	= 0.0	0 cfs @ 0.00 h	
Routed	to Reach D	P-1 : French Rod	Iney Blvd Outfall
Routing by	Stor-Ind me	ethod, Time Spar	n= 0.00-72.00 hrs, dt= 0.05 hrs NO OVERFLOW
			ea= 1,772 sf Storage= 364 cf
	U		
Plug-Flow	detention tir	me= 60.0 min calo	culated for 1,130 cf (100% of inflow)
U U		me= 59.9 min ( 9 <sup>-</sup>	
		, ,	,
Volume	Invert	Avail.Storage	Storage Description
#1A	7.80'	1,091 cf	21.50'W x 81.52'L x 2.33'H Field A
		,	4,090 cf Overall - 973 cf Embedded = 3,117 cf x 35.0% Voids
#2A	8.30'	973 cf	ADS StormTech SC-310 +Cap x 66 Inside #1
			Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf
			Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap
			66 Chambers in 6 Rows
#3	7.80'	137 cf	5.00'D x 7.00'H Vertical Cone/Cylinder
			Total Available Storage
		_,	
01	<b>^</b>		

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	7.80'	1.020 in/hr Exfiltration over Surface area
			Conductivity to Groundwater Elevation = 5.80'
#2	Primary	8.10'	10.0" Round Culvert
			L= 10.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 8.10' / 8.00' S= 0.0100 '/' Cc= 0.900
			n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.55 sf
#3	Device 2	9.40'	5.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

**Discarded OutFlow** Max=0.05 cfs @ 12.92 hrs HW=8.33' (Free Discharge) **1=Exfiltration** (Controls 0.05 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=7.80' (Free Discharge) -2=Culvert (Controls 0.00 cfs)

**1**-3=Sharp-Crested Rectangular Weir(Controls 0.00 cfs)

## Summary for Pond INF-2: INFILTRATION SYSTEM #2

Inflow Area	a = 14	43,309 sf, 49.699	% Impervious, Inflow Depth = 0.52" for 1.7-in event
Inflow	= 0.9	3 cfs @ 12.14 h	nrs, Volume= 6,224 cf
Outflow	= 0.1	1 cfs @ 15.09 h	nrs, Volume= 6,224 cf, Atten= 89%, Lag= 177 <u>.2 min</u>
Discarded	= 0.1	1 cfs @ 15.09 h	nrs, Volume= 6,224 cf INFILTRATION
Primary	= 0.0	0 cfs @ 0.00 h	
Routed	to Reach B	: PARKING LOT	BOVERFLOW
	<u>.</u>		
			n= 0.00-72.00 hrs, dt= 0.05 hrs NO OVERFLOW
Peak Elev=	= 9.46' @ 15	5.09 hrs Surf.Are	ea= 2,268 sf Storage= 2,921 cf
			1 = 1 = 1 = 1 = 0.000 of $(4000)/(1 = 1 = 1 = 1)$
•			lculated for 6,220 cf (100% of inflow)
Center-oi-r	viass det. tir	me= 339.0 min ( ′	1,222.8 - 883.8 )
Volume	Invert	Avail.Storage	Storage Description
#1A	7.50'	1.790 cf	25.25'W x 89.06'L x 3.50'H Field A
		.,	7,870 cf Overall - 2,756 cf Embedded = 5,114 cf x 35.0% Voids
#2A	8.00'	2.756 cf	ADS StormTech SC-740 +Cap x 60 Inside #1
		,	Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
			Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
			60 Chambers in 5 Rows
#3	7.50'	137 cf	
		4,684 cf	Total Available Storage
			-

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	7.50'	1.020 in/hr Exfiltration over Surface area
			Conductivity to Groundwater Elevation = 5.50'
#2	Primary	8.00'	10.0" Round Culvert
	·		L= 10.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 8.00' / 7.90' S= 0.0100 '/' Cc= 0.900
			n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.55 sf
#3	Device 2	9.50'	

**Discarded OutFlow** Max=0.11 cfs @ 15.09 hrs HW=9.46' (Free Discharge) **1=Exfiltration** (Controls 0.11 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=7.50' (Free Discharge) 2=Culvert (Controls 0.00 cfs) 3=Sharp-Crested Rectangular Weir(Controls 0.00 cfs)

## Summary for Pond INF3: INFILTRATION SYSTEM #1

Inflow Area	=	19,743 sf, 50.839	% Impervious, Inflow Depth = 0.62" for 1.7-in event
Inflow =	= 0.3	31 cfs @ 12.14 h	nrs, Volume= 1,012 cf
Outflow =	= 0.0	)4 cfs @ 13.22 h	nrs, Volume= 1,012 cf, Atten= 88%, Lag= 64.8 min
Discarded =	= 0.0	)4 cfs @ 13.22 h	nrs, Volume= 1,012 cf INFILTRATION
Primary =	= 0.0	)0 cfs @ 0.00 h	nrs, Volume= 0 cf
Routed t	o Reach P	ST : PORTLANE	D STREET DRAINAGE
• •		· ·	n= 0.00-72.00 hrs, dt= 0.05 hrs NO OVERFLOW
Peak Elev=	8.82' @ 13	3.22 hrs Surf.Are	ea= 1,113 sf Storage= 385 cf
			Iculated for 1,011 cf (100% of inflow)
Center-of-M	lass det. tii	me= 100.5 min ( 9	960.8 - 860.3 )
Volumo	Invort	Avail Storago	Storage Deparintion
Volume	Invert		Storage Description
#1A	8.10'	686 cf	18.17'W x 60.16'L x 2.33'H Field A
			2,550 cf Overall - 590 cf Embedded = 1,960 cf x 35.0% Voids
#2A	8.60'	590 cf	
			Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf
			Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap
			40 Chambers in 5 Rows
#3	8.10'	137 cf	5.00'D x 7.00'H Vertical Cone/Cylinder
		1,413 cf	Total Available Storage
-	- ·	reated with Cham	

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	8.10'	1.020 in/hr Exfiltration over Surface area
			Conductivity to Groundwater Elevation = 6.10'
#2	Primary	8.40'	10.0" Round Culvert
			L= 10.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 8.40' / 8.30' S= 0.0100 '/' Cc= 0.900
			n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.55 sf
#3	Device 2	9.50'	5.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

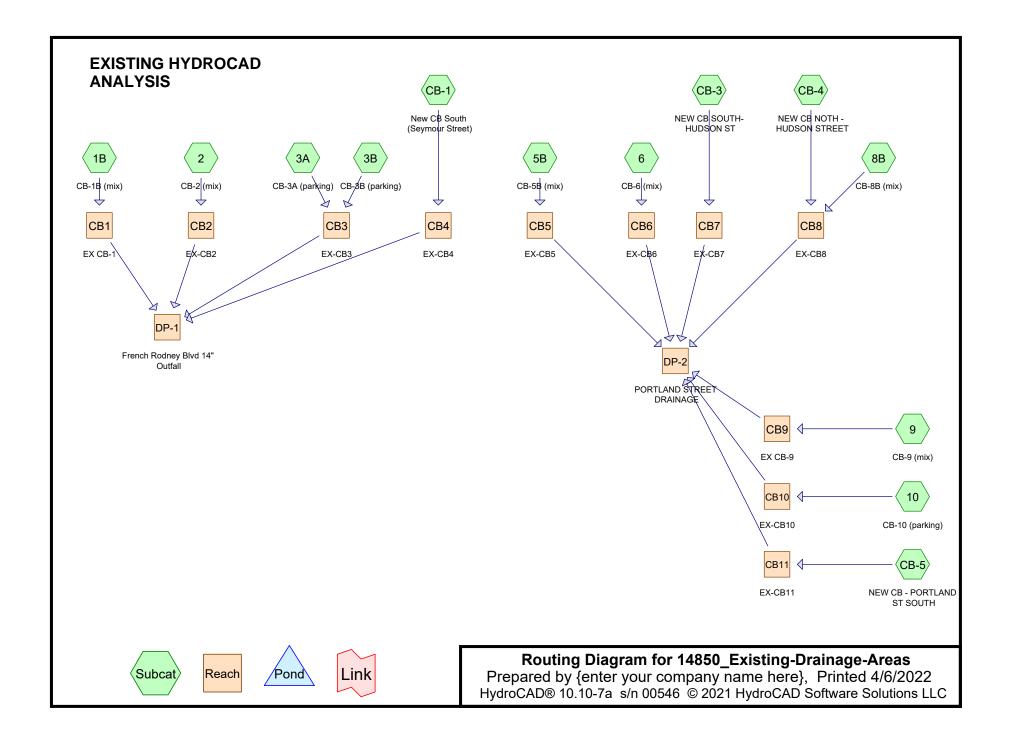
**Discarded OutFlow** Max=0.04 cfs @ 13.22 hrs HW=8.82' (Free Discharge) **1=Exfiltration** (Controls 0.04 cfs)

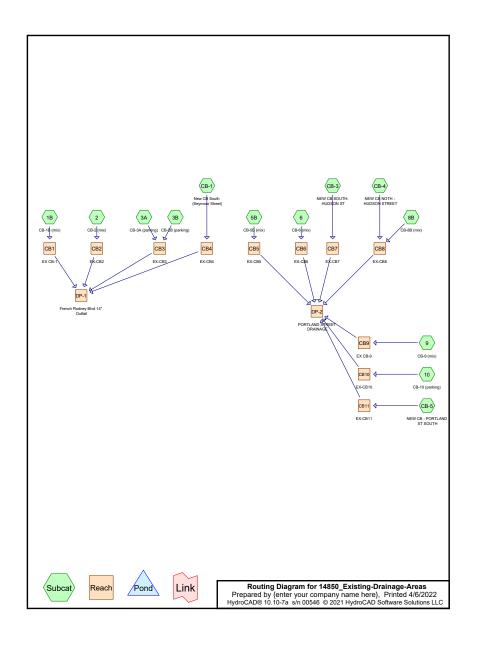
Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=8.10' (Free Discharge) -2=Culvert (Controls 0.00 cfs)

**1**-3=Sharp-Crested Rectangular Weir(Controls 0.00 cfs)

## APPENDIX C

Pre-Development Conditions – HydroCAD Calculations





14850_Existing-Drainage-Areas	
Prepared by {enter your company name here}	Printed 4/6/2022
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#### Rainfall Events Listing (selected events)

Eve	ent#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
	1	NOAA 10-yr	NOAA 24-hr	С	Default	24.00	1	5.02	2
	2	NOAA 100-yr	NOAA 24-hr	С	Default	24.00	1	7.59	2
	3	NOAA 2-yr	NOAA 24-hr	С	Default	24.00	1	3.40	2
	4	NOAA 25-yr	NOAA 24-hr	С	Default	24.00	1	6.04	2

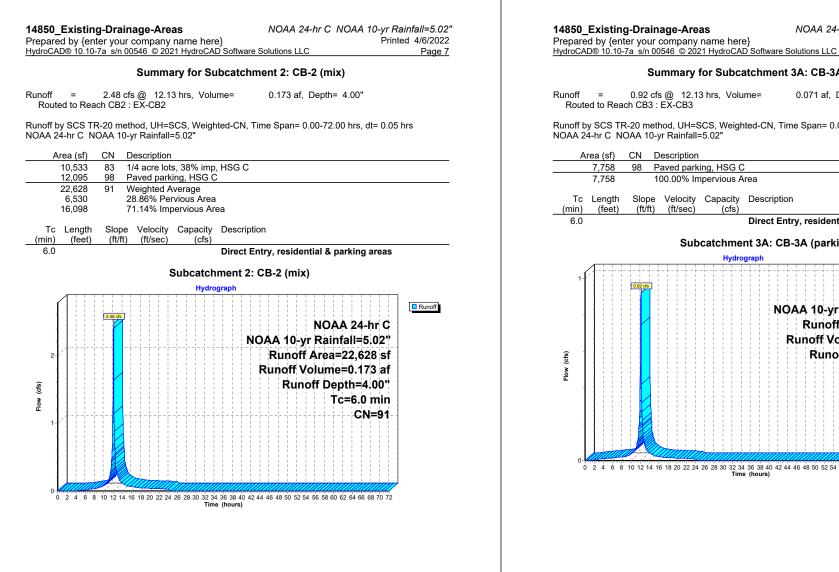
	er your	1 <b>age-Areas</b> company name here} 0546 © 2021 HydroCAD Software Solutions LLC	Printed 4/6/2022 Page <u>3</u>	<b>14850_Existing-Drainage-Areas</b> Prepared by {enter your company nar HydroCAD® 10.10-7a s/n 00546 © 2021 H	NOAA 24-hr C NOAA 10-yr Rainfall=5. ne here} Printed 4/6/20 ydroCAD Software Solutions LLC Page
Area	CN	Area Listing (all nodes)		Runoff by SCS	.00-72.00 hrs, dt=0.05 hrs, 1441 points TR-20 method, UH=SCS, Weighted-CN +Trans method - Pond routing by Stor-Ind method
(acres) 5.059	83	(subcatchment-numbers) 1/4 acre lots, 38% imp, HSG C (1B, 2, 5B, 6, 8B, 9, CB-	, CB-3, CB-4, CB-5)	Subcatchment1B: CB-1B (mix)	Runoff Area=33,097 sf 61.34% Impervious Runoff Depth=3.7 Tc=6.0 min CN=89 Runoff=3.50 cfs 0.240
771 861 <b>690</b>	98 98 <b>89</b>	Paved parking, HSG C (1B, 2, 3A, 3B, 5B, 6, 8B, 9, 10) Roadway (CB-1, CB-3, CB-4, CB-5) TOTAL AREA		Subcatchment2: CB-2 (mix)	Runoff Area=22,628 sf 71.14% Impervious Runoff Depth=4.0 Tc=6.0 min CN=91 Runoff=2.48 cfs 0.173
				Subcatchment3A: CB-3A (parking)	Runoff Area=7,758 sf 100.00% Impervious Runoff Depth=4.7 Tc=6.0 min CN=98 Runoff=0.92 cfs 0.071
				Subcatchment3B: CB-3B (parking)	Runoff Area=3,797 sf 100.00% Impervious Runoff Depth=4.7 Tc=6.0 min CN=98 Runoff=0.45 cfs 0.035
				Subcatchment5B: CB-5B (mix)	Runoff Area=22,974 sf 57.51% Impervious Runoff Depth=3.6 Tc=6.0 min CN=88 Runoff=2.38 cfs 0.162
				Subcatchment6: CB-6 (mix)	Runoff Area=34,524 sf 93.00% Impervious Runoff Depth=4. Tc=6.0 min CN=96 Runoff=4.05 cfs 0.301
				Subcatchment8B: CB-8B (mix)	Runoff Area=28,528 sf 54.52% Impervious Runoff Depth=3. Tc=6.0 min CN=87 Runoff=2.89 cfs 0.196
				Subcatchment9: CB-9 (mix)	Runoff Area=36,104 sf 94.03% Impervious Runoff Depth=4. Tc=6.0 min CN=97 Runoff=4.27 cfs 0.32
				Subcatchment10: CB-10 (parking)	Runoff Area=6,492 sf 100.00% Impervious Runoff Depth=4. Tc=6.0 min CN=98 Runoff=0.77 cfs 0.05
				SubcatchmentCB-1: New CB South	Runoff Area=19,582 sf 58.17% Impervious Runoff Depth=3. Flow Length=512' Tc=6.0 min CN=88 Runoff=2.03 cfs 0.13
				SubcatchmentCB-3: NEW CB SOUTH-	Runoff Area=25,183 sf 51.84% Impervious Runoff Depth=3. Flow Length=635' Tc=6.0 min CN=86 Runoff=2.49 cfs 0.16
				SubcatchmentCB-4: NEW CB NOTH -	Runoff Area=118,126 sf 49.24% Impervious Runoff Depth=3 Flow Length=822' Tc=6.0 min CN=86 Runoff=11.70 cfs 0.78
				SubcatchmentCB-5: NEW CB -	Runoff Area=19,743 sf 50.83% Impervious Runoff Depth=3. Flow Length=574' Tc=6.0 min CN=86 Runoff=1.96 cfs 0.13
				Reach CB1: EX CB-1	Inflow=3.50 cfs 0.24 Outflow=3.50 cfs 0.24
				Reach CB10: EX-CB10	Inflow=0.77 cfs 0.05 Outflow=0.77 cfs 0.05
				Reach CB11: EX-CB11	Inflow=1.96 cfs 0.13 Outflow=1.96 cfs 0.13

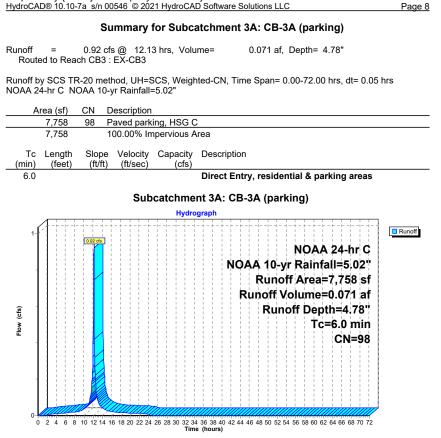
I4850_Existing-Drainage-Areas NO/ Prepared by {enter your company name here}	AA 24-hr C NOAA 10-yr Rainfall=5.02' Printed 4/6/2022
HydroCAD® 10.10-7a s/n 00546 © 2021 HydroCAD Software Solution	ns LLC Page 5
Reach CB2: EX-CB2	Inflow=2.48 cfs 0.173 af
	Outflow=2.48 cfs 0.173 af
Reach CB3: EX-CB3	Inflow=1.37 cfs_0.106 af
	Outflow=1.37 cfs 0.106 af
Reach CB4: EX-CB4	Inflow=2.03 cfs_0.138 af
	Outflow=2.03 cfs 0.138 af
Reach CB5: EX-CB5	Inflow=2.38 cfs 0.162 af
	Outflow=2.38 cfs 0.162 af
Reach CB6: EX-CB6	Inflow=4.05 cfs_0.301 af
	Outflow=4.05 cfs 0.301 af
each CB7: EX-CB7	Inflow=2.49 cfs 0.168 af
	Outflow=2.49 cfs 0.168 af
Reach CB8: EX-CB8	Inflow=14.59 cfs_0.983 af
	Outflow=14.59 cfs 0.983 af
Reach CB9: EX CB-9	Inflow=4.27 cfs 0.322 af
	Outflow=4.27 cfs 0.322 af
Reach DP-1: French Rodney Blvd 14" Outfall	Inflow=9.38 cfs 0.657 af
	Outflow=9.38 cfs 0.657 af
Reach DP-2: PORTLAND STREET DRAINAGE	Inflow=30.51 cfs 2.128 af
Ceach DF-2. FOR I LANDSTREET DRAINAGE	Outflow=30.51 cfs 2.128 af

 Total Runoff Area = 8.690 ac
 Runoff Volume = 2.785 af
 Average Runoff Depth = 3.85"

 36.09% Pervious = 3.136 ac
 63.91% Impervious = 5.554 ac

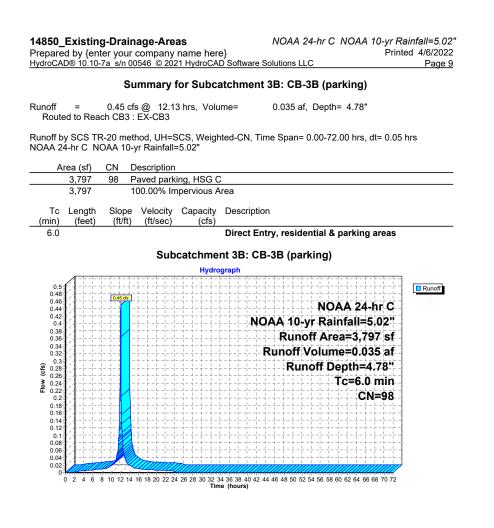
Prepared by {er HydroCAD® 10.10	Ing-Drainage-Areas NOAA 24-hr C NOAA 10-yr Rai enter your company name here} Printee 10-7a s/n 00546 © 2021 HydroCAD Software Solutions LLC	nfall=5.02' d 4/6/2022 Page 6
	Summary for Subcatchment 1B: CB-1B (mix)	
Runoff = Routed to Re	3.50 cfs @ 12.13 hrs, Volume= 0.240 af, Depth= 3.79" each CB1 : EX CB-1	
	TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 h NOAA 10-yr Rainfall=5.02"	rs
Area (sf)	CN Description	
20,636 12,461	98 Paved parking, HSG C	
33,097 12,794		
20,303		
,		
Tc Length (min) (feet)		
6.0	Direct Entry, residential & parking areas	
	Subcatchment 1B: CB-1B (mix)	
Lion (dg)	Subcatchment 1B: CB-1B (mix) Hydrograph NOAA 24-hr C NOAA 10-yr Rainfall=5:02" Runoff Area=33,097 sf Runoff Volume=0.240 af Runoff Depth=3:79" Tc=6.0 min CN=89	Runoff
Liow (ds)	Hydrograph NOAA 24-hr C NOAA 10-yr Rainfall=5.02" Runoff Area=33,097 sf Runoff Volume=0.240 af Runoff Depth=3.79" Tc=6.0 min	Runoff





NOAA 24-hr C NOAA 10-yr Rainfall=5.02"

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		ch CB5 : EX-C			
		-20 method, i DAA 10-yr Ra		hted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs	
		,			
	rea (sf) 15,743	CN Descri 83 1/4 ac	re lots, 38% im		
	7,231		parking, HSG		
	22,974		ted Average		
	9,761		% Pervious Area		
	13,213	57.519	% Impervious A	rea	
Тс	Length	Slope Velo	ocity Capacity	Description	
(min)	(feet)	(ft/ft) (ft/	'sec) (cfs)	•	
6.0				Direct Entry, residential & parking areas	
			Subcatch	ment 5B: CB-5B (mix)	
				rograph	
ſ	1				unofi
		2.38 cfs			
				NOAA 24-hr C	
	가락락락			NOAA 10-yr Rainfall=5.02"	
				Runoff Area=22,974 sf	
2-		:		Runoff Volume=0.162 af	
2-		- I I I I I I I I I I I I I I I I I I I			
				Runoff Depth=3.69"	
				Runoff Depth=3.69" Tc=6.0 min	
Flow (cfs)				Runoff Depth=3.69" Tc=6.0 min CN=88	

Summary for Subcatchment 5B: CB-5B (mix)

NOAA 24-hr C NOAA 10-yr Rainfall=5.02"

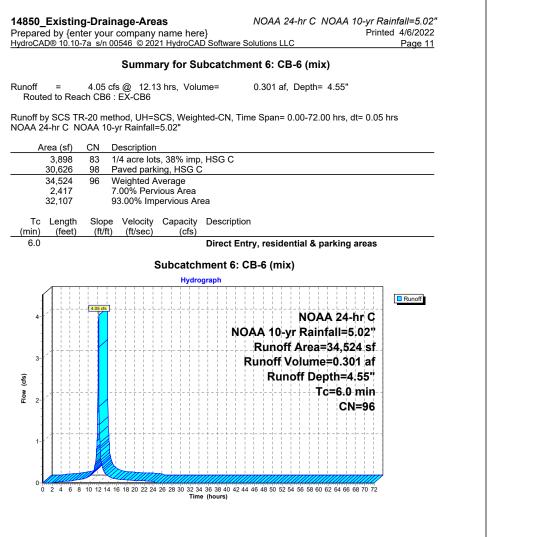
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Page 10

14850 Existing-Drainage-Areas

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> 0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72 Time (hours)



. <u>ju co</u> .	120 10						are Solutions L			Page 12
			Su	nmar	y for Su	ibcatch	ment 8B: C	B-8B (mix)		
Runoff Rou	= ted to F	2.89 Reach CB			3 hrs, Vo	lume=	0.196 a	f, Depth= 3.59	)"	
Runoff	by SCS	TR-20 n	hethod	<u> ПН=9</u>	SCS Wei	abted_CN	Time Span=	0.00-72.00 hrs	: dt= 0.05	hrs
		NOAA 1				9.1104 011	,	0.00 12.00 110	, ut 0.00	
	Area (si	/		ription						
	20,92		1/4 a Pave	icre lot ed park	s, 38% in ing, HSG	np, HSG ( C	2			
	28,52	8 87	Weig	hted A	verage					
	12,97 15,55				rvious Are pervious A					
Тс	Lend	th Slo	be V	elocity	Capacit	v Descri	iption			
(min)	(fee			t/sec)	(cfs	)				
6.0						Direct	Entry, resid	ential & parkir	ig areas	
				Sı	ubcatch	ment 8	B: CB-8B (r	nix)		
					Hyd	lrograph				
3	[∤⊹-	2.89 cf				+ - + - + - + - + - + - + - + - +				Runoff
0								NOAA 2		
								yr Rainfall:		
								ff Area=28, Volume=0.		
2 (s	ľ I I							noff Depth=		
Flow (cfs)									0 min	
FIG									CN=87	
1	].∤-¦-		- + - + -	· +		·				
0	<b>MILLION</b>	6 8 10 12	14 16 18	20 22 24	26 28 30 32	34 36 38 40	42 44 46 48 50 52	2 54 56 58 60 62 64	66 68 70 72	

			00546 © 2021 HydroCAD Software Solutions LLC     Page 13       Summary for Subcatchment 9: CB-9 (mix)	
noff Route	= ed to Rea		cfs @ 12.13 hrs, Volume= 0.322 af, Depth= 4.67" 9 : EX CB-9	
			ethod, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs 0-yr Rainfall=5.02"	
A	rea (sf)	CN	Description	
	3,474 32,630	83 98	1/4 acre lots, 38% imp, HSG C Paved parking, HSG C	
	32,030 36,104		Weighted Average	
	2,154		5.97% Pervious Area	
	33,950		94.03% Impervious Area	
	Length		e Velocity Capacity Description	
<u>min)</u> 6.0	(feet)	(ft/fl	t) (ft/sec) (cfs) Direct Entry, residential & parking areas	
0.0			Direct Litty, residential & parking areas	
			Subcatchment 9: CB-9 (mix)	
			Hydrograph	
ĺ	1		□ Runoff	
1		4.27 cfs	NOAA 24-hr C	
4-			NOAA 10-yr Rainfall=5.02"	
-			Runoff Area=36,104 sf	
-			Runoff Volume=0.322 af	
- <sup>3-</sup>			Runoff Depth=4.67"	
(cts)			Tc=6.0 min	
MOI	/		CN=97	
1			· · · · · · · · · · · · · · · · · · ·	
1				
1-				
-				
0- <b>4</b> 0	2468	10 12 14	4 16 18 20 22 24 26 28 30 3 <u>2</u> 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72	
			Time (hours)	

Prepared by	sting-Drainage-Areas {enter your company name here} 0.10-7a_s/n 00546 © 2021 HydroCAD Software :		ainfall=5.02" ed 4/6/2022 Page 14
	Summary for Subcatchmen	t 10: CB-10 (parking)	
Runoff = Routed to	0.77 cfs @ 12.13 hrs, Volume= Reach CB10 : EX-CB10	0.059 af, Depth= 4.78"	
	S TR-20 method, UH=SCS, Weighted-CN, Ti C NOAA 10-yr Rainfall=5.02"	me Span= 0.00-72.00 hrs, dt= 0.05	hrs
Area (	sf) CN Description		
6,4	92 98 Paved parking, HSG C		
6,4	92 100.00% Impervious Area		
Tc Len (min) (fe	ngth Slope Velocity Capacity Descriptio eet) (ft/ft) (ft/sec) (cfs)	on	
6.0	Direct Er	ntry, residential & parking areas	
0.85 0.85 0.75 0.75 0.65 0.65 0.65 0.55 0.45 0.45 0.45 0.35 0.3	┝╶┾╶┼╴┥	NOAA 24-hr C DAA 10-yr Rainfall=5.02" Runoff Area=6,492 sf Runoff Volume=0.059 af Runoff Depth=4.78" Tc=6.0 min CN=98	Runoff

14850_Existing-Drainage-Areas	NOAA 24-hr C NOAA 10-yr Rainfall=5.02"
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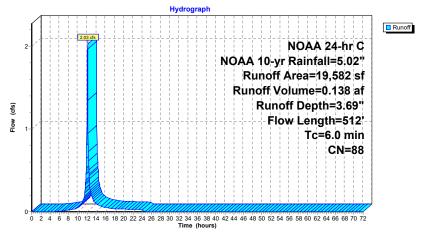
#### Summary for Subcatchment CB-1: New CB South (Seymour Street)

Runoff = 2.03 cfs @ 12.13 hrs, Volume= 0.138 af, Depth= 3.69" Routed to Reach CB4 : EX-CB4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs NOAA 24-hr C NOAA 10-yr Rainfall=5.02"

	Α	rea (sf)	CN	Description				
		13,211	83	1/4 acre lot	s, 38% imp	, HSG C		
*		6,371	98	Roadway	•	•		
		19,582	88	Weighted A	verage			
		8,191	41.83% Pervious Area					
		11,391		58.17% Im	pervious Ar	ea		
	т.	1	01		0	Description		
	Tc	Length	Slop		Capacity	Description		
	in)	(feet)	(ft/ft		(cfs)			
C	).6	50	0.030	0 1.45		Sheet Flow, A-B		
						Smooth surfaces n= 0.011 P2= 3.40"		
2	2.4	462	0.024	9 3.20		Shallow Concentrated Flow, Paved		
						Paved Kv= 20.3 fps		
3	3.0					Direct Entry, Direct entry to 6		
6	6.0	512	Total					

#### Subcatchment CB-1: New CB South (Seymour Street)



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Summary for Subcatchment CB-3: NEW CB SOUTH- HUDSON ST									
Runoff = 2.49 cfs @ 12.13 hrs, Volume= Routed to Reach CB7 : EX-CB7	0.168 af, Depth= 3.49"								
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time NOAA 24-hr C NOAA 10-yr Rainfall=5.02"	Span= 0.00-72.00 hrs, dt= 0.05 hrs								
Area (sf) CN Description									
19,562 83 1/4 acre lots, 38% imp, HSG C									
* 5,621 98 Roadway									
25,183 86 Weighted Average									
12,128 48.16% Pervious Area									
13,055 51.84% Impervious Area									
Tc Length Slope Velocity Capacity Description (min) (feet) (ft/ft) (ft/sec) (cfs)									
	A-B (sheet flow) aces n= 0.011 P2= 3.40"								

2.5 6.0 635 Total

585 0.0256

3.25

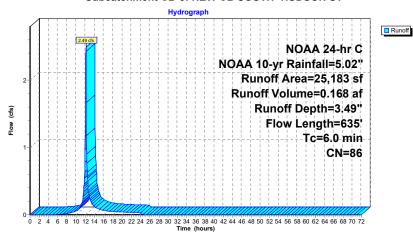
3.0

Subcatchment CB-3: NEW CB SOUTH- HUDSON ST

Shallow Concentrated Flow, B-C

Direct Entry, direct entry to 6

Paved Kv= 20.3 fps



14850_Existing-Drainage-Areas	NOAA 24-hr C NOAA 10-yr Rainfall=5.02"
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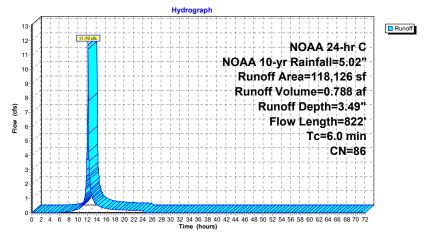
### Summary for Subcatchment CB-4: NEW CB NOTH - HUDSON STREET

Runoff = 11.70 cfs @ 12.13 hrs, Volume= 0.788 af, Depth= 3.49" Routed to Reach CB8 : EX-CB8

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs NOAA 24-hr C NOAA 10-yr Rainfall=5.02"

	A	rea (sf)	CN [	Description		
		96,716	83 1	1/4 acre lot	s, 38% imp	, HSG C
1	*	21,410	98 F	Roadway	-	
	1	18,126	86 V	Neighted A	verage	
		59,964	5	50.76% Pe	rvious Area	1
	58,162 49.24% Impervious Are			19.24% Imp	pervious Ar	ea
	_		-		<b>.</b> .	
	Tc	Length	Slope		Capacity	Description
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
	0.5	50	0.0500	1.78		Sheet Flow, A-B (sheet flow)
						Smooth surfaces n= 0.011 P2= 3.40"
	4.0	772	0.0245	3.18		Shallow Concentrated Flow, B-C (shallow concentrated
						Paved Kv= 20.3 fps
	1.5					Direct Entry, direct entry to 6
	6.0	822	Total			

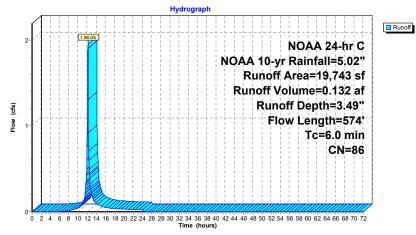
#### Subcatchment CB-4: NEW CB NOTH - HUDSON STREET



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Sum	Summary for Subcatchment CB-5: NEW CB - PORTLAND ST SOUTH						
Runoff = Routed to Rea	1.96 cfs @ 12.13 hrs, Volume= 0.132 af, Depth= 3.49" ch CB11 : EX-CB11						
	R-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs OAA 10-yr Rainfall=5.02" CN Description						
15.657	83 1/4 acre lots, 38% imp, HSG C						
* 4,086	98 Roadway						
19,743 9,707 10,036	<ul> <li>86 Weighted Average</li> <li>49.17% Pervious Area</li> <li>50.83% Impervious Area</li> </ul>						
Tc Length (min) (feet)	Slope Velocity Capacity Description (ft/ft) (ft/sec) (cfs)						

(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)
0.5	50	0.0500	1.78	Sheet Flow, A-B (sheet flow) Smooth surfaces n= 0.011 P2= 3.40"
2.3	524	0.0346	3.78	Shallow Concentrated Flow, B-C (shallow conc.) Paved Kv= 20.3 fps
3.2				Direct Entry, direct to 6
6.0	574	Total		

#### Subcatchment CB-5: NEW CB - PORTLAND ST SOUTH



 
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 NOAA 24 

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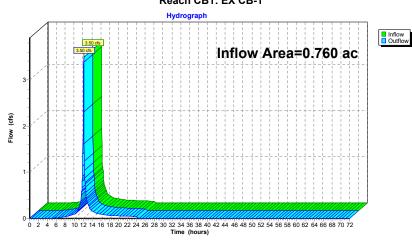
### Summary for Reach CB1: EX CB-1

Page 19

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	0.760 ac, 61.34% Impervious, Inflow D	epth = 3.79" for NOAA 10-yr event				
Inflow =	3.50 cfs @ 12.13 hrs, Volume=	0.240 af				
Outflow =	3.50 cfs @ 12.13 hrs, Volume=	0.240 af, Atten= 0%, Lag= 0.0 min				
Routed to Reach DP-1 : French Rodney Blvd 14" Outfall						

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs



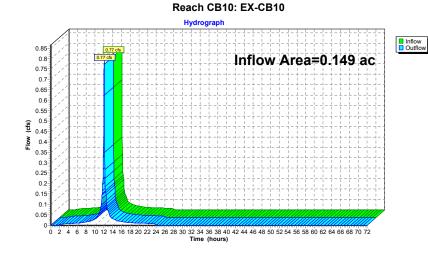
14850_Existing-Drainage-Areas	NOAA 24-hr C	NOAA 10-yr Rainfall=5.02"
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#### Summary for Reach CB10: EX-CB10

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =		0.149 ac,10	0.00% Impervious	, Inflow Depth =	4.78"	for NOAA 10-yr event
Inflow	=	0.77 cfs @	12.13 hrs, Volum	e= 0.059	af	-
Outflow	=	0.77 cfs @	12.13 hrs, Volum	e= 0.059	af, Atte	en= 0%, Lag= 0.0 min
Routed to Reach DP-2 : PORTLAND STREET DRAINAGE						

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs



#### Reach CB1: EX CB-1

 
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 NOAA 24 

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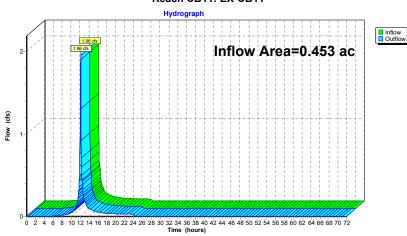
### Summary for Reach CB11: EX-CB11

Page 21

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	0.453 ac, 50.83% Impervious, Inflo	w Depth = 3.49" for NOAA 10-yr event			
Inflow =	1.96 cfs @ 12.13 hrs, Volume=	0.132 af			
Outflow =	1.96 cfs @ 12.13 hrs, Volume=	0.132 af, Atten= 0%, Lag= 0.0 min			
Routed to Reach DP-2 : PORTLAND STREET DRAINAGE					

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs



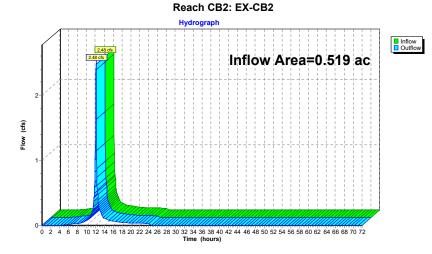
14850_Existing-Drainage-Areas	NOAA 24-hr C	NOAA 10-yr Rainfall=5.02"
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#### Summary for Reach CB2: EX-CB2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	0.519 ac, 71.14% Impervious, Inflow D	epth = 4.00" for NOAA 10-yr event				
Inflow =	2.48 cfs @ 12.13 hrs, Volume=	0.173 af				
Outflow =	2.48 cfs @ 12.13 hrs, Volume=	0.173 af, Atten= 0%, Lag= 0.0 min				
Routed to Reach DP-1 : French Rodney Blvd 14" Outfall						

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs



Reach CB11: EX-CB11

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#### Summary for Reach CB3: EX-CB3

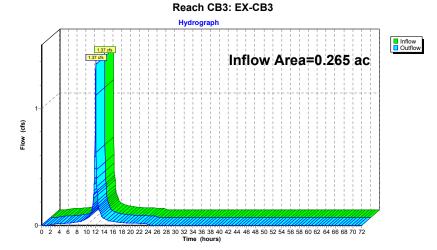
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Page 23

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	0.265 ac,100.00% Impervious, Inflow D	epth = 4.78" for NOAA 10-yr event			
Inflow =	1.37 cfs @ 12.13 hrs, Volume=	0.106 af			
Outflow =	1.37 cfs @ 12.13 hrs, Volume=	0.106 af, Atten= 0%, Lag= 0.0 min			
Routed to Reach DP-1 : French Rodney Blvd 14" Outfall					

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs



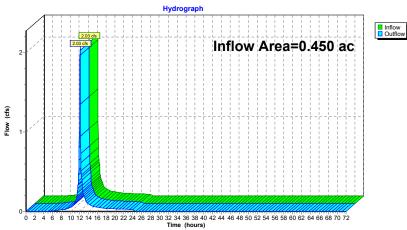
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#### Summary for Reach CB4: EX-CB4

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =		0.450 ac, 5	58.17% Impervious	, Inflow Depth =	3.69"	for NOAA 10-yr event
Inflow :	=	2.03 cfs @	12.13 hrs, Volum	ie= 0.138	af	-
Outflow :	=	2.03 cfs @	12.13 hrs, Volum	e= 0.138	af, Atte	en= 0%, Lag= 0.0 min
Routed to Reach DP-1 : French Rodney Blvd 14" Outfall						

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs



Reach CB4: EX-CB4

 
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 NOAA 24 

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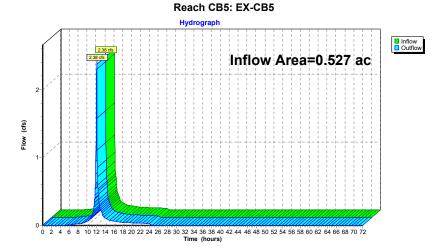
## Summary for Reach CB5: EX-CB5

Page 25

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	0.527 ac, 57.51% Impervious, Inflow	Depth = 3.69" for NOAA 10-yr event				
Inflow =	2.38 cfs @ 12.13 hrs, Volume=	0.162 af				
Outflow =	2.38 cfs @ 12.13 hrs, Volume=	0.162 af, Atten= 0%, Lag= 0.0 min				
Routed to Reach DP-2 : PORTLAND STREET DRAINAGE						

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs



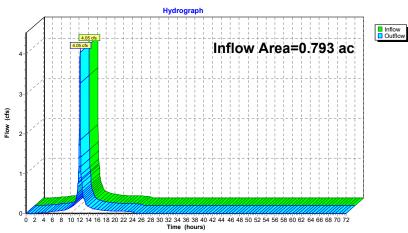
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#### Summary for Reach CB6: EX-CB6

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	0.793 ac, 93.00% Impervious, Infl	ow Depth = 4.55"	for NOAA 10-yr event
Inflow =	4.05 cfs @ 12.13 hrs, Volume=	0.301 af	-
Outflow =	4.05 cfs @ 12.13 hrs, Volume=	0.301 af, Atte	en= 0%, Lag= 0.0 min
Routed to Rea	ach DP-2 : PORTLAND STREET DRA	INAGE	-

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs



#### Reach CB6: EX-CB6

 
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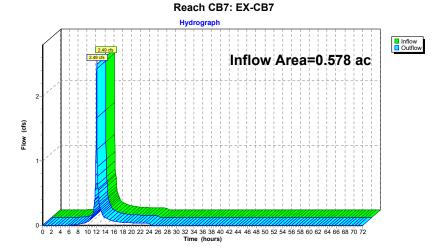
### Summary for Reach CB7: EX-CB7

Page 27

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	0.578 ac, 51.84% Impervious, Inflow	/ Depth = 3.49"	for NOAA 10-yr event
Inflow =	2.49 cfs @ 12.13 hrs, Volume=	0.168 af	-
Outflow =	2.49 cfs @ 12.13 hrs, Volume=	0.168 af, Atte	en= 0%, Lag= 0.0 min
Routed to Rea	ach DP-2 : PORTLAND STREET DRAIN	AGE	, C

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs



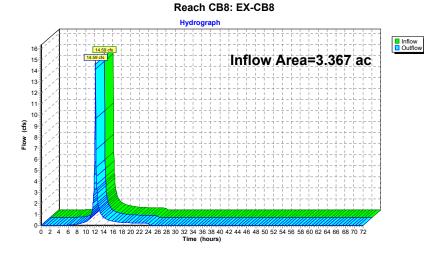
14850_Existing-Drainage-Areas	NOAA 24-hr C	NOAA 10-yr Rainfall=5.02"
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#### Summary for Reach CB8: EX-CB8

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	3.367 ac, 50.27% Impervious, Inflow	Depth = 3.51"	for NOAA 10-yr event
Inflow =	14.59 cfs @ 12.13 hrs, Volume=	0.983 af	
Outflow =	14.59 cfs @ 12.13 hrs, Volume=	0.983 af, Atte	en= 0%, Lag= 0.0 min
Routed to Re	each DP-2 : PORTLAND STREET DRAIN	AGE	-

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs



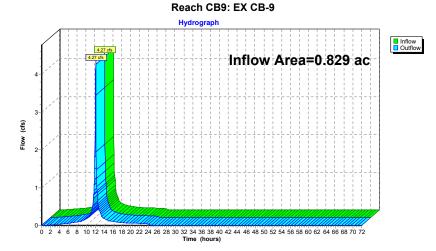
14850_Existing-Drainage-Areas	NOAA 24-hr C NOAA 10-yr Rainfall=5.02"
Prepared by {enter your company name here}	Printed 4/6/2022
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#### Summary for Reach CB9: EX CB-9

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	0.829 ac, 94.03% Impervious, Inflow	Depth = 4.67"	for NOAA 10-yr event
Inflow =	4.27 cfs @ 12.13 hrs, Volume=	0.322 af	-
Outflow =	4.27 cfs @ 12.13 hrs, Volume=	0.322 af, Atte	en= 0%, Lag= 0.0 min
Routed to Rea	ach DP-2 : PORTLAND STREET DRAIN	AGE	

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs



14850_Existing-Drainage-Areas	NOAA 24-hr C NOAA 10-yr Rainfall=5.02"	
Prepared by {enter your company name here}	Printed 4/6/2022	
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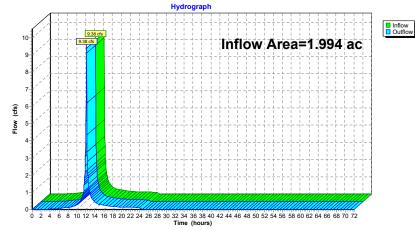
#### Summary for Reach DP-1: French Rodney Blvd 14" Outfall

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area	a =	1.994 ac, 68.32% Impervious, Inflow Depth = 3.95" for NOAA 10	-yr event
Inflow	=	9.38 cfs @ 12.13 hrs, Volume= 0.657 af	-
Outflow	=	9.38 cfs @ 12.13 hrs, Volume= 0.657 af, Atten= 0%, Lag=	0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

# Reach DP-1: French Rodney Blvd 14" Outfall



 
 14850\_Existing-Drainage-Areas
 NOAA 24 

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 NOAA 24-hr C NOAA 10-yr Rainfall=5.02"

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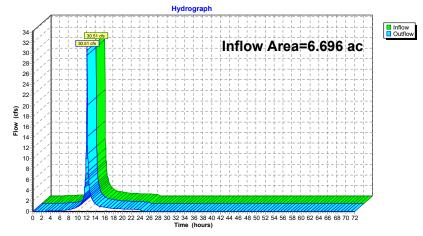
## Summary for Reach DP-2: PORTLAND STREET DRAINAGE

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	6.696 ac, 62.59% Impervious, Inflow Depth = 3.81" for NOAA 10-yr event
Inflow =	30.51 cfs @ 12.13 hrs, Volume= 2.128 af
Outflow =	30.51 cfs @ 12.13 hrs, Volume= 2.128 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

## Reach DP-2: PORTLAND STREET DRAINAGE



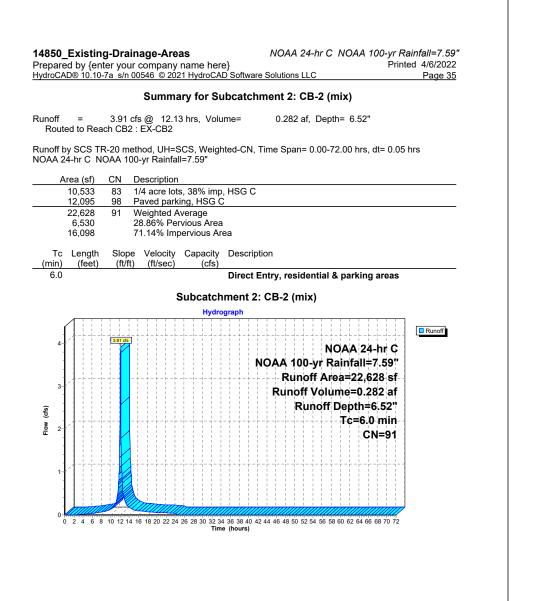
<b>14850_Existing-Drainage-Areas</b> Prepared by {enter your company nan HydroCAD® 10.10-7a s/n 00546 © 2021 Hy	
Runoff by SCS	00-72.00 hrs, dt=0.05 hrs, 1441 points TR-20 method, UH=SCS, Weighted-CN +Trans method - Pond routing by Stor-Ind method
Subcatchment1B: CB-1B (mix)	Runoff Area=33,097 sf 61.34% Impervious Runoff Depth=6.28" Tc=6.0 min CN=89 Runoff=5.61 cfs 0.398 af
Subcatchment2: CB-2 (mix)	Runoff Area=22,628 sf 71.14% Impervious Runoff Depth=6.52" Tc=6.0 min CN=91 Runoff=3.91 cfs 0.282 af
Subcatchment3A: CB-3A (parking)	Runoff Area=7,758 sf 100.00% Impervious Runoff Depth=7.35" Tc=6.0 min CN=98 Runoff=1.40 cfs 0.109 af
Subcatchment3B: CB-3B (parking)	Runoff Area=3,797 sf 100.00% Impervious Runoff Depth=7.35" Tc=6.0 min CN=98 Runoff=0.69 cfs 0.053 af
Subcatchment5B: CB-5B (mix)	Runoff Area=22,974 sf 57.51% Impervious Runoff Depth=6.17" Tc=6.0 min CN=88 Runoff=3.85 cfs 0.271 af
Subcatchment6: CB-6 (mix)	Runoff Area=34,524 sf 93.00% Impervious Runoff Depth=7.11" Tc=6.0 min CN=96 Runoff=6.18 cfs 0.470 af
Subcatchment8B: CB-8B (mix)	Runoff Area=28,528 sf 54.52% Impervious Runoff Depth=6.05" Tc=6.0 min CN=87 Runoff=4.73 cfs 0.330 af
Subcatchment9: CB-9 (mix)	Runoff Area=36,104 sf 94.03% Impervious Runoff Depth=7.23" Tc=6.0 min CN=97 Runoff=6.49 cfs 0.499 af
Subcatchment10: CB-10 (parking)	Runoff Area=6,492 sf 100.00% Impervious Runoff Depth=7.35" Tc=6.0 min CN=98 Runoff=1.17 cfs 0.091 af
SubcatchmentCB-1: New CB South	Runoff Area=19,582 sf 58.17% Impervious Runoff Depth=6.17" Flow Length=512' Tc=6.0 min CN=88 Runoff=3.28 cfs 0.231 af
SubcatchmentCB-3: NEW CB SOUTH-	Runoff Area=25,183 sf 51.84% Impervious Runoff Depth=5.93" Flow Length=635' Tc=6.0 min CN=86 Runoff=4.12 cfs 0.286 af
SubcatchmentCB-4: NEW CB NOTH -	Runoff Area=118,126 sf 49.24% Impervious Runoff Depth=5.93" Flow Length=822' Tc=6.0 min CN=86 Runoff=19.32 cfs 1.341 af
SubcatchmentCB-5: NEW CB -	Runoff Area=19,743 sf 50.83% Impervious Runoff Depth=5.93" Flow Length=574' Tc=6.0 min CN=86 Runoff=3.23 cfs 0.224 af
Reach CB1: EX CB-1	Inflow=5.61 cfs 0.398 af Outflow=5.61 cfs 0.398 af
Reach CB10: EX-CB10	Inflow=1.17 cfs 0.091 af Outflow=1.17 cfs 0.091 af
Reach CB11: EX-CB11	Inflow=3.23 cfs 0.224 af Outflow=3.23 cfs 0.224 af

<b>4850_Existing-Drainage-Areas</b> Prepared by {enter your company name here}	NOAA 24-hr C NOAA 100-yr Rainfall=7.5 Printed 4/6/202
lydroCAD® 10.10-7a s/n 00546 © 2021 HydroCAD Softwar	
	Inflow=3.91 cfs_0.282 a
Reach CB2: EX-CB2	Outflow=3.91 cfs 0.282 a
Reach CB3: EX-CB3	Inflow=2.08 cfs 0.162 a
	Outflow=2.08 cfs 0.162 a
Reach CB4: EX-CB4	Inflow=3.28 cfs 0.231 a
	Outflow=3.28 cfs 0.231 a
Reach CB5: EX-CB5	Inflow=3.85 cfs 0.271 a Outflow=3.85 cfs 0.271 a
	Oddiow-5.05 Cl3 0.271 2
Reach CB6: EX-CB6	Inflow=6.18 cfs 0.470 a
	Outflow=6.18 cfs 0.470 a
Reach CB7: EX-CB7	Inflow=4.12 cfs 0.286 a
	Outflow=4.12 cfs 0.286 a
Reach CB8: EX-CB8	Inflow=24.05 cfs 1.671 a
	Outflow=24.05 cfs 1.671 a
Reach CB9: EX CB-9	Inflow=6.49 cfs 0.499 a
	Outflow=6.49 cfs 0.499 a
Reach DP-1: French Rodney Blvd 14" Outfall	Inflow=14.90 cfs 1.074 a
	Outflow=14.90 cfs 1.074 a
Reach DP-2: PORTLAND STREET DRAINAGE	Inflow=49.10 cfs 3.513 a
	Outflow=49.10 cfs 3.513 a

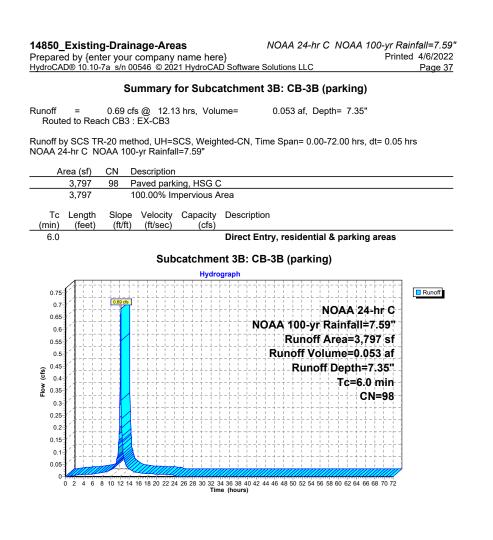
 Total Runoff Area = 8.690 ac
 Runoff Volume = 4.587 af
 Average Runoff Depth = 6.33"

 36.09% Pervious = 3.136 ac
 63.91% Impervious = 5.554 ac

HydroCAD® 10.10	)-7a s/n 0	0546 © 202	1 HydroCA	D Software S	olutions LLC	)		Page
		Summary	y for Sub	catchmer	nt 1B: CB	-1B (mix)		
Runoff = Routed to Re		fs @ 12.13 : EX CB-1	3 hrs, Volu	ime=	0.398 af,	Depth= 6.2	8"	
Runoff by SCS T NOAA 24-hr C				nted-CN, Tin	ne Span= 0	.00-72.00 hr	rs, dt= 0.05	hrs
Area (sf)		Description						
20,636 12,461		1/4 acre lots Paved parki						
33,097		Neighted Av						
12,794 20,303		38.66% Per 61.34% Imp						
,								
Tc Length (min) (feet)		Velocity		Description	า			
		(ft/coc)	(cfc)					
6.0	<u>(ft/ft)</u>	(ft/sec) Su		nent 1B: C		ntial & parki ix)	ng areas	
			ıbcatchm			•	ng areas	Runoff
6.0	(π/π)		ıbcatchm	nent 1B: C <sup>Igraph</sup>	B-1B (mi	ix) NOAA	24-hr C	Runoff
6.0			ıbcatchm	nent 1B: C <sup>Igraph</sup>	B-1B (mi	ix) NOAA yr Rainfal	24-hr C I=7.59"	Runoff
6.0			ıbcatchm	nent 1B: C <sup>Igraph</sup>	B-1B (mi AA 100- Runof	ix) NOAA yr Rainfal f Area=33	24-hr C I≢7.59" 9,097 sf	Runoff
6.0			ıbcatchm	nent 1B: C <sup>Igraph</sup>	B-1B (mi AA 100- Runof Runoff \	ix) NOAA yr Rainfal f Area=33 /olume=0	24-hr C I≢7.59" -,097 sf 398 af	Runoff
6.0			ıbcatchm	nent 1B: C <sup>Igraph</sup>	B-1B (mi AA 100- Runof Runoff \	ix) NOAA yr Rainfal f Area=33 /olume=0 noff Depth	24-hr C I=7.59" .097 sf .398 af i=6.28"	. Runoff
6.0			ıbcatchm	nent 1B: C <sup>Igraph</sup>	B-1B (mi AA 100- Runof Runoff \	ix) NOAA yr Rainfal f Area=33 /olume=0 noff Depth Tc=1	24-hr C I≢7.59" -,097 sf 398 af	Runoff
6.0			ıbcatchm	nent 1B: C <sup>Igraph</sup>	B-1B (mi AA 100- Runof Runoff \	ix) NOAA yr Rainfal f Area=33 /olume=0 noff Depth Tc=1	24-hr C I=7.59" .097 sf .398 af I=6.28" 3.0 min	Runoff



	Summary	for Subca	tchment 3A: CB-3A (parking)	
	1.40 cfs @ 12.1 ach CB3 : EX-CB3			
	R-20 method, UH= IOAA 100-yr Rainfa		ed-CN, Time Span= 0.00-72.00 hrs, o	dt= 0.05 hrs
Area (sf)	CN Description			
7,758		king, HSG C	22	
1,108	100.00% If	•		
Tc Length (min) (feet)	Slope Velocity (ft/ft) (ft/sec)	Capacity (cfs)	Description	
6.0		(===)	Direct Entry, residential & parking	areas
	Sub	catchmen Hydrog	t 3A: CB-3A (parking)	
				Runoff

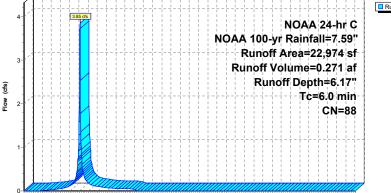


14850_Existing-Drainage-Areas	NOAA 24-hr C	NOAA 100-yr Rainfall=7.59"
Prepared by {enter your company name here}		Printed 4/6/2022
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Summary for Subcatchm	ent 5B: CB-5B	(mix)

Runoff	=	3.85 cfs @	12.13 hrs,	Volume=	0.271 af,	Depth=	6.17"
Routed	d to	Reach CB5 : EX-0	CB5				

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs NOAA 24-hr C NOAA 100-yr Rainfall=7.59"

Ar	ea (sf)	CN D	escription						
	15,743	83 1	/4 acre lots	s, 38% imp	o, HSG C				
	7,231	98 F	aved park	ing, HSG C					
	22,974	88 V	Weighted Average						
	9,761	-	42.49% Pervious Area						
	13,213	5	7.51% Imp	pervious Ar	rea				
Тс	Length	Slope	Velocity	Capacity	Description				
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)					
6.0					Direct Entry, residential & parking areas				
Subcatchment 5B: CB-5B (mix)									
			Su	ubcatchm	nent 5B: CB-5B (mix)				
			Su		nent 5B: CB-5B (mix) <sub>ograph</sub>				
ſ	1:::		Sı		ograph	noff			
4			Su		( )	inoff			
4-*		3.85 cfs	Sı		ograph	inoff			
4-*			Sı		ograph	inoff			
4-* - - -	,	3.85 cfs	Su		NOAA 24-hr C	inoff			



0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72 Time (hours)

			Summ	nary for S	Subcate	chment	6: CB-6	(mix)		
off oute	= ed to Rea		cfs @ 12. 6 : EX-CB6		lume=	0.4	70 af, D	epth= 7.11"		
			iethod, UH= 00-yr Rainf		ghted-CN	N, Time S	pan= 0.0	0-72.00 hrs,	dt= 0.05 I	hrs
A	rea (sf)	CN	Descriptio	n						
	3,898 30,626	83 98		ots, 38% im rking, HSG		С				
	34,524	96	Weighted	Average						
	2,417 32,107			rvious Area npervious A						
Тс	Length	Slop	be Velocity	, Capacit		ription				
in)	(feet)	(ft/f			)	·				
5.0					Direc	t Entry, ı	esidentia	al & parking	areas	
				Subcato	hment	6: CB-6	6 (mix)			
				Hyd	rograph					
1		6.18 cfs								Runoff
6-								NOAA 24		
1			-+-+-+-+					Rainfall=		
5-								Area=34,5 lume=0.4		
4-			-+-+-+			ĸu	!!!!	ff Depth=		
-								Tc=6.0		
3-								CI	N=96	
-	/							$= \frac{1}{1} = \frac{1}{1} = \frac{1}{1} = \frac{1}{1} = \frac{1}{1} = \frac{1}{1} = \frac{1}{1}$		
2-										
1-			+++++++++++++++++++++++++++++++++++++++		-+-+-+		+	-+-+	-    	
- 1										

				Summa	ary for Sul	bcatchm	ent 8B: C	B-8B (mi	x)	
Runof		= d to Rea		cfs @ 12 3 : EX-CB8	.13 hrs, Vol	ume=	0.330 a	f, Depth= (	6.05"	
						hted CNL		0 00 70 00	) hrs, dt= 0.05	h
				00-yr Rain		nieu-CN,	nine Span-	0.00-72.00	7 ms, at– 0.05	1115
		ea (sf)	CN	Descripti						
	2	20,925 7,603	83 98		ots, 38% imp arking, HSG					
		28,528 12,974	87	Weighted	Average Pervious Area					
		12,974			mpervious Ale					
		Length				Descript	ion			
(mir) 6		(feet)	(ft/f	t) (ft/seo	c) (cfs)	Direct F	ntry resid	ential & na	rking areas	
					0			•		
					Subcatchr	nent 88: ograph	CB-8B (r	nix)		
	1	1								Runoff
	5		4.73 cfs					NOA	A 24-hr C	La Kunon
	-					N	IOAA 100	1 1 1 - 1 1	fall=7.59"	
	4-*` -						Runo	off Area=	28,528 sf	
	-								=0.330 af	
Flow (cfs)	3-ŕ						RI		oth=6.05" =6.0 min	
Flow	-	J		-+-+-+-+					CN=87	
	2-(									
		,						+ - + - + - +		
	1-(									
	0-4	<u>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</u>	finding find	farafara fara fara fara fara fara fara	<u></u>	<u>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</u>		54 56 58 60 6		

			Summa	ary for Su	bcatchr	nent	9: CB-9	(mix)	
noff Rou	= ted to Rea			3 hrs, Volu	me=	0.4	99 af, De	pth= 7.23"	
	by SCS TF 24-hr C No				ted-CN, T	ime S	oan= 0.00	-72.00 hrs, dt= 0.05	hrs
A	Area (sf)		Description						
	3,474 32,630			s, 38% imp, king, HSG C					
	36,104	97 V	Veighted A	verage					
	2,154 33,950			/ious Area pervious Are	ea				
Тс	Length	Slope	Velocitv	Capacity	Descripti	ion			
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)					
6.0					Direct E	ntry, r	esidentia	I & parking areas	
			:	Subcatch	ment 9:	CB-9	(mix)		
				Hydro	graph				1
7-		6.49 cfs						NOAA 24-hr C	Runoff
6			T - T - T - C - C		N	ÓAA		Rainfall=7.59"	
-			+ - + - +		-+-+-+-+-	R	unoff A	rea=36,104 sf	
5						Ru		ume=0.499 af	
(SJ) 4							Runof	f Depth=7.23"	
4 (cts)	╡╷╽╷┆╷┆ ╎╷┟╍┝╺┾╴┽		i i i i i + - + - + - + - +		- <del>1</del> - <b>1</b>			Tc=6.0 min CN=97	
<b>-</b> 3-								CN-97	
			+ - + - + - + - +		- + - + - + - + - + -			· + - + -	
2	]		                   -   -						
2.									
2- 1-	Í								

Prepar	_Existing-Drainage-Areas       NOAA 24-hr C NOAA 100-yr Rain         ed by {enter your company name here}       Printed         AD® 10.10-7a s/n 00546 © 2021 HydroCAD Software Solutions LLC       Printed	nfall=7.59" 1 4/6/2022 Page 42
	Summary for Subcatchment 10: CB-10 (parking)	
Runoff Rout	= 1.17 cfs @ 12.13 hrs, Volume= 0.091 af, Depth= 7.35" ted to Reach CB10 : EX-CB10	
	by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hr 24-hr C NOAA 100-yr Rainfall=7.59"	ſS
A	Area (sf) CN Description	
	6,492 98 Paved parking, HSG C	
	6,492 100.00% Impervious Area	
Tc (min)	(feet) (ft/ft) (ft/sec) (cfs)	
6.0	Direct Entry, residential & parking areas	
-1 - - - - - - - - - - - - - - -	Bubcatchment 10: CB-10 (parking)         Hydrograph         MOAA 24-hr C         NOAA 24-hr C         NOAA 100-yr Rainfall=7.59"         Runoff Area=6,492 sf         Runoff Depth=7.35"         Tc=6.0 min         CN=98	Runoff

14850_Existing-Drainage-Areas	NOAA 24-hr C NOAA 100-yr Rainfall=7.59"
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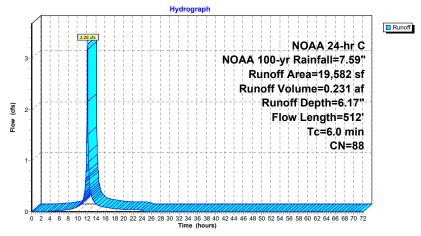
#### Summary for Subcatchment CB-1: New CB South (Seymour Street)

unoff = 3.28 cfs @ 12.13 hrs, Volume= Routed to Reach CB4 : EX-CB4 Runoff 0.231 af, Depth= 6.17"

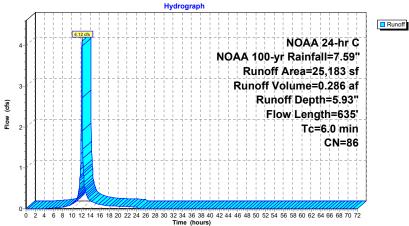
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs NOAA 24-hr C NOAA 100-yr Rainfall=7.59"

	A	rea (sf)	CN	Description						
		13,211	83	1/4 acre lots, 38% imp, HSG C						
*		6,371	98	Roadway						
		19,582	88	Weighted Average						
		8,191		41.83% Pervious Area						
	11,391 58.17% Impervious Area									
	Тс	Length	Slope	Velocity	Capacity	Description				
(n	nin)	(feet)	(ft/ft)		(cfs)	Description				
	0.6	50	0.0300	1.45		Sheet Flow, A-B				
						Smooth surfaces n= 0.011 P2= 3.40"				
	2.4	462	0.0249	3.20		Shallow Concentrated Flow, Paved				
						Paved Kv= 20.3 fps				
	3.0					Direct Entry, Direct entry to 6				
	6.0	512	Total							

#### Subcatchment CB-1: New CB South (Seymour Street)



			age-Are		NOAA 24-hr C NOAA 100-yr Rainfall=7.59"						
				name here							
HydroCA	D® 10.10	-7a s/n U	J546 © 204		D Software Solutions LLC Page 44						
	Summary for Subcatchment CB-3: NEW CB SOUTH- HUDSON ST										
Runoff = 4.12 cfs @ 12.13 hrs, Volume= 0.286 af, Depth= 5.93" Routed to Reach CB7 : EX-CB7											
	Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs NOAA 24-hr C NOAA 100-yr Rainfall=7.59"										
A	rea (sf)	CN E	escription								
*	19,562 5.621		/4 acre lot loadwav	s, 38% imp	, HSG C						
	25,183	86 V	Veighted A	verage							
	12,128			rvious Area							
	13,055	5	1.84% Im	pervious Ar	ea						
Тс	Length	Slope	Velocity	Capacity	Description						
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)							
0.5	50	0.0444	1.70		Sheet Flow, A-B (sheet flow)						
3.0	585	0.0256	3.25		Smooth surfaces n= 0.011 P2= 3.40" Shallow Concentrated Flow, B-C						
5.0	505	0.0230	0.20		Paved Kv= 20.3 fps						
2.5					Direct Entry, direct entry to 6						
6.0	635	Total									
	Subcatchment CB-3: NEW CB SOUTH- HUDSON ST										



14850_Existing-Drainage-Areas	NOAA 24-hr C NOAA 100-yr Rainfall=7.59"
Prepared by {enter your company name here}	Printed 4/6/2022
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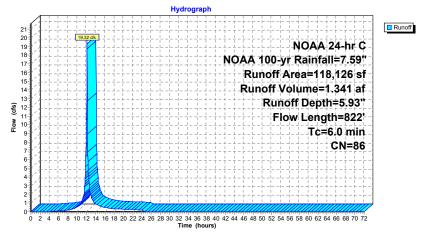
### Summary for Subcatchment CB-4: NEW CB NOTH - HUDSON STREET

Runoff = 19.32 cfs @ 12.13 hrs, Volume= 1.341 af, Depth= 5.93" Routed to Reach CB8 : EX-CB8

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs NOAA 24-hr C NOAA 100-yr Rainfall=7.59"

A	rea (sf)	CN [	Description		
	96,716	716 83 1/4 acre lots, 38% imp, HSG C			
*	21,410	98 F	Roadway	-	
118,126 86 Weighted Average			Veighted A	verage	
59,964 50.76% Pervious Area			50.76% Pe	rvious Area	i de la constante de la constan
	58,162	4	19.24% Imp	pervious Ar	ea
Tc	Length	Slope	Velocity	Capacity	Description
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
0.5	50	0.0500	1.78		Sheet Flow, A-B (sheet flow)
					Smooth surfaces n= 0.011 P2= 3.40"
4.0	772	0.0245	3.18		Shallow Concentrated Flow, B-C (shallow concentrated
					Paved Kv= 20.3 fps
1.5					Direct Entry, direct entry to 6
6.0	822	Total			

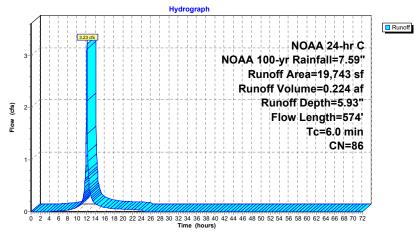
#### Subcatchment CB-4: NEW CB NOTH - HUDSON STREET



14850_Existing-Drainage-Areas       NOAA 24-hr C       NOAA 100-yr Rainfall=7.59'         Prepared by {enter your company name here}       Printed       4/6/2022         HydroCAD® 10.10-7a s/n 00546 © 2021 HydroCAD Software Solutions LLC       Page 46					
Summary for Subcatchment CB-5: NEW CB - PORTLAND ST SOUTH					
Runoff = 3.23 cfs @ 12.13 hrs, Volume= 0.224 af, Depth= 5.93" Routed to Reach CB11 : EX-CB11					
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs NOAA 24-hr C_NOAA 100-yr Rainfall=7.59"					
Area (sf) CN Description					
15,657 83 1/4 acre lots, 38% imp, HSG C * 4,086 98 Roadway					
19,743         86         Weighted Average           9,707         49.17% Pervious Area           10,036         50.83% Impervious Area					

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	50	0.0500	1.78		Sheet Flow, A-B (sheet flow)
					Smooth surfaces n= 0.011 P2= 3.40"
2.3	524	0.0346	3.78		Shallow Concentrated Flow, B-C (shallow conc.)
					Paved Kv= 20.3 fps
3.2					Direct Entry, direct to 6
6.0	574	Total			

#### Subcatchment CB-5: NEW CB - PORTLAND ST SOUTH



 
 14850\_Existing-Drainage-Areas
 NOAA 24-h

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 NOAA 24-hr C NOAA 100-yr Rainfall=7.59" Printed 4/6/2022

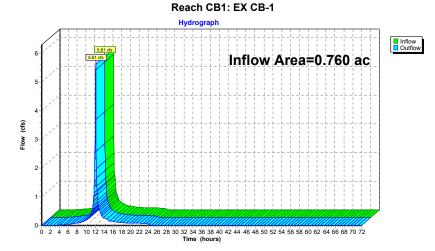
### Summary for Reach CB1: EX CB-1

Page 47

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	0.760 ac, 61.34% Impervious, Inflow D	epth = 6.28" for NOAA 100-yr event
Inflow =	5.61 cfs @ 12.13 hrs, Volume=	0.398 af
Outflow =	5.61 cfs @ 12.13 hrs, Volume=	0.398 af, Atten= 0%, Lag= 0.0 min
Routed to Rea	ch DP-1 : French Rodney Blvd 14" Outfall	

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs



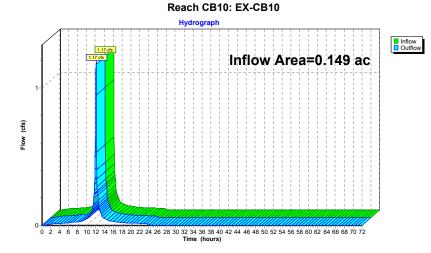
14850_Existing-Drainage-Areas	NOAA 24-hr C NOAA 100-yr R	ainfall=7.59"
Prepared by {enter your company name here}	Print	ed 4/6/2022
HydroCAD® 10.10-7a s/n 00546 © 2021 HydroCAD Software S	Solutions LLC	Page 48

#### Summary for Reach CB10: EX-CB10

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area	a =	0.149 ac,10	0.00% Impervious,	Inflow Depth = 7.3	35" for NOAA 100-yr event
Inflow	=	1.17 cfs @	12.13 hrs, Volume	= 0.091 af	-
Outflow	=	1.17 cfs @	12.13 hrs, Volume	= 0.091 af,	Atten= 0%, Lag= 0.0 min
Routed	to Read	ch DP-2 : PO	RTLAND STREET D	ORAINAGE	-

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs



 14850\_Existing-Drainage-Areas
 NOAA 24-hr C
 NOAA 100-yr Rainfall=7.59"

 Prepared by {enter your company name here}
 Printed
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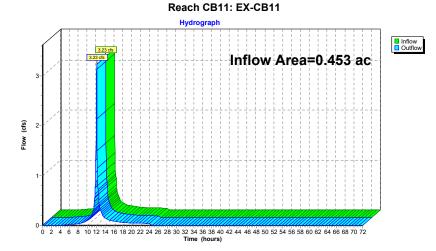
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### Summary for Reach CB11: EX-CB11

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	0.453 ac, 50.83% Impervious, Inflow	Depth = 5.93"	for NOAA 100-yr event	
Inflow =	3.23 cfs @ 12.13 hrs, Volume=	0.224 af	-	
Outflow =	3.23 cfs @ 12.13 hrs, Volume=	0.224 af, Atte	en= 0%, Lag= 0.0 min	
Routed to Reach DP-2 : PORTLAND STREET DRAINAGE				

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs



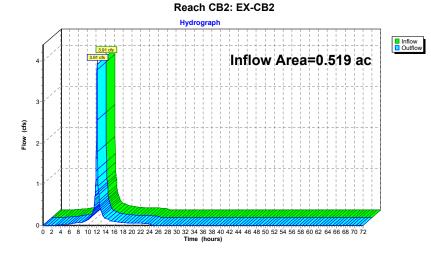
14850_Existing-Drainage-Areas	NOAA 24-hr C N	OAA 100-yr Rainfall=7.59"
Prepared by {enter your company name here}		Printed 4/6/2022
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#### Summary for Reach CB2: EX-CB2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	0.519 ac, 71.14% Impervious, Inflow E	Depth = 6.52" for NOAA 100-yr event
Inflow =	3.91 cfs @ 12.13 hrs, Volume=	0.282 af
Outflow =	3.91 cfs @ 12.13 hrs, Volume=	0.282 af, Atten= 0%, Lag= 0.0 min
Routed to Rea	ch DP-1 : French Rodney Blvd 14" Outfal	-

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs



 
 14850\_Existing-Drainage-Areas
 NOAA 24-h

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 NOAA 24-hr C NOAA 100-yr Rainfall=7.59" Printed 4/6/2022

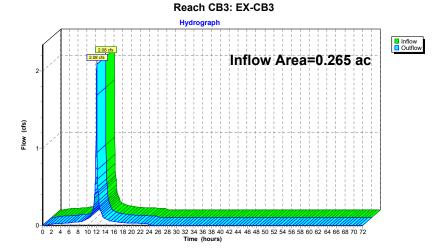
## Summary for Reach CB3: EX-CB3

Page 51

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	0.265 ac,100.00% Impervious, Inflow D	epth = 7.35" for NOAA 100-yr event
Inflow =	2.08 cfs @ 12.13 hrs, Volume=	0.162 af
Outflow =	2.08 cfs @ 12.13 hrs, Volume=	0.162 af, Atten= 0%, Lag= 0.0 min
Routed to Rea	ch DP-1 : French Rodney Blvd 14" Outfall	

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs



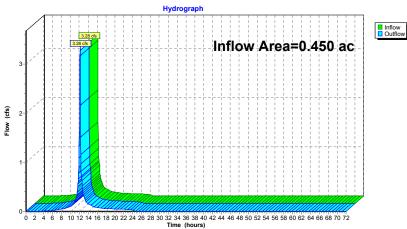
14850_Existing-Drainage-Areas	NOAA 24-hr C	IOAA 100-yr Rainfall=7.59"
Prepared by {enter your company name here}		Printed 4/6/2022
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#### Summary for Reach CB4: EX-CB4

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	0.450 ac, 58.17% Impervious, Inflow	v Depth = 6.17" for NOAA 100-yr ever	nt
Inflow =	3.28 cfs @ 12.13 hrs, Volume=	0.231 af	
Outflow =	3.28 cfs @ 12.13 hrs, Volume=	0.231 af, Atten= 0%, Lag= 0.0 min	
Routed to Re	ach DP-1 : French Rodney Blvd 14" Outfa	all	

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs



Reach CB4: EX-CB4

 14850\_Existing-Drainage-Areas
 NOAA 24-hr C
 NOAA 100-yr Rainfall=7.59"

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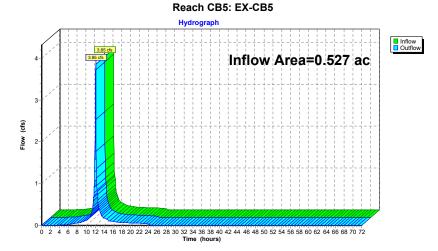
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### Summary for Reach CB5: EX-CB5

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	0.527 ac, 57.51% Impervious, Inflow	Depth = 6.17"	for NOAA 100-yr event
Inflow =	3.85 cfs @ 12.13 hrs, Volume=	0.271 af	-
Outflow =	3.85 cfs @ 12.13 hrs, Volume=	0.271 af, Atte	en= 0%, Lag= 0.0 min
Routed to Reach DP-2 : PORTLAND STREET DRAINAGE			

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs



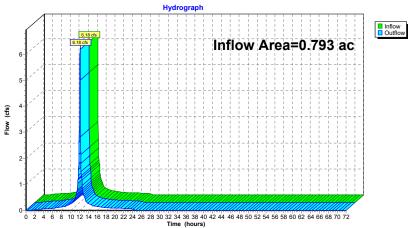
14850_Existing-Drainage-Areas N	IOAA 24-hr C NOAA 100-yr Rainfall=7.59"
Prepared by {enter your company name here}	Printed 4/6/2022
HydroCAD® 10.10-7a s/n 00546 © 2021 HydroCAD Software Sol	lutions LLC Page 54

#### Summary for Reach CB6: EX-CB6

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area	a =	0.793 ac, 9	3.00% Impervious	, Inflow Depth =	7.11"	for NOAA 100-yr event
Inflow	=	6.18 cfs @	12.13 hrs, Volum	e= 0.470	af	-
Outflow	=	6.18 cfs @	12.13 hrs, Volum	e= 0.470	af, Att	en= 0%, Lag= 0.0 min
Routed to Reach DP-2 : PORTLAND STREET DRAINAGE						

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs



## Reach CB6: EX-CB6

 14850\_Existing-Drainage-Areas
 NOAA 24-hr C
 NOAA 100-yr Rainfall=7.59"

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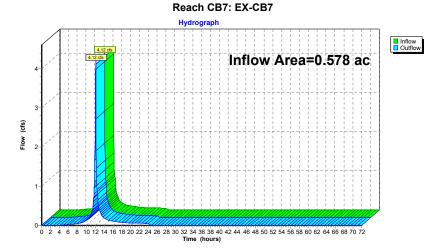
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## Summary for Reach CB7: EX-CB7

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	0.578 ac, 51.84% Impervious, Inflow	Depth = 5.93"	for NOAA 100-yr event
Inflow =	4.12 cfs @ 12.13 hrs, Volume=	0.286 af	-
Outflow =	4.12 cfs @ 12.13 hrs, Volume=	0.286 af, Atte	en= 0%, Lag= 0.0 min
Routed to Reach DP-2 : PORTLAND STREET DRAINAGE			

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs



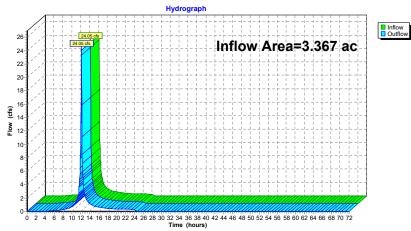
14850_Existing-Drainage-Areas	NOAA 24-hr C NOAA 100-yr	Rainfall=7.59"
Prepared by {enter your company name here}	Pri	inted 4/6/2022
HydroCAD® 10.10-7a s/n 00546 © 2021 HydroCAD Software	Solutions LLC	Page 56

#### Summary for Reach CB8: EX-CB8

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	3.367 ac, 50.27% Impervious, Inflow	/ Depth = 5.96"	for NOAA 100-yr event
Inflow =	24.05 cfs @ 12.13 hrs, Volume=	1.671 af	-
Outflow =	24.05 cfs @ 12.13 hrs, Volume=	1.671 af, Atte	en= 0%, Lag= 0.0 min
Routed to Reach DP-2 : PORTLAND STREET DRAINAGE			

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs



#### Reach CB8: EX-CB8

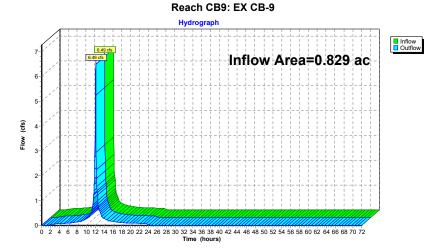
14850_Existing-Drainage-Areas	NOAA 24-hr C NOAA 100-yr Rainfall=7.59"	
Prepared by {enter your company name here}	Printed 4/6/2022	
HydroCAD® 10.10-7a s/n 00546 © 2021 HydroCAD Softwar	e Solutions LLC Page 57	

#### Summary for Reach CB9: EX CB-9

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	0.829 ac, 94.03% Impervious, Inflow	Depth = 7.23"	for NOAA 100-yr event
Inflow =	6.49 cfs @ 12.13 hrs, Volume=	0.499 af	-
Outflow =	6.49 cfs @ 12.13 hrs, Volume=	0.499 af, Atte	en= 0%, Lag= 0.0 min
Routed to Rea	ch DP-2 : PORTLAND STREET DRAIN	AGE	

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs



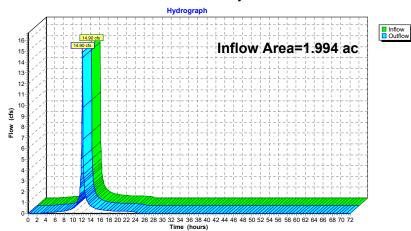
14850_Existing-Drainage-Areas	NOAA 24-hr C	VOAA 100-yr Rainfall=7.59"
Prepared by {enter your company name here}		Printed 4/6/2022
HydroCAD® 10.10-7a s/n 00546 © 2021 HydroCAD Software	Solutions LLC	Page 58

#### Summary for Reach DP-1: French Rodney Blvd 14" Outfall

[40] Hint: Not Described (Outflow=Inflow)

Inflow Are	a =	1.994 ac, 68.32% Impervious, Inflow Depth = 6.46" for NOAA 100-yr event
Inflow	=	14.90 cfs @ 12.13 hrs, Volume= 1.074 af
Outflow	=	14.90 cfs @ 12.13 hrs, Volume= 1.074 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs



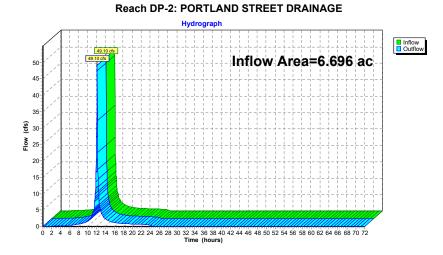
#### Reach DP-1: French Rodney Blvd 14" Outfall

#### Summary for Reach DP-2: PORTLAND STREET DRAINAGE

Printed 4/6/2022 Page 59

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	6.696 ac, 62.59% Impervious, Inflow	Depth = 6.30" for NOAA 100-yr event	
Inflow =	49.10 cfs @ 12.13 hrs, Volume=	3.513 af	
Outflow =	49.10 cfs @ 12.13 hrs, Volume=	3.513 af, Atten= 0%, Lag= 0.0 min	



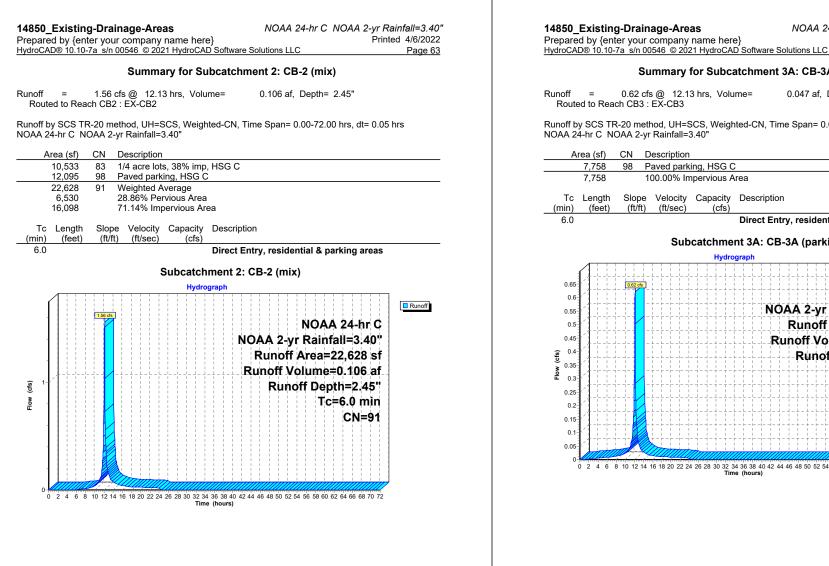
Prepared by {enter your company name HydroCAD® 10.10-7a s/n 00546 © 2021 Hyd	
Runoff by SCS T	00-72.00 hrs, dt=0.05 hrs, 1441 points TR-20 method, UH=SCS, Weighted-CN •Trans method - Pond routing by Stor-Ind method
Subcatchment1B: CB-1B (mix)	Runoff Area=33,097 sf 61.34% Impervious Runoff Depth=2.26" Tc=6.0 min CN=89 Runoff=2.15 cfs 0.143 at
Subcatchment2: CB-2 (mix)	Runoff Area=22,628 sf 71.14% Impervious Runoff Depth=2.45" Tc=6.0 min CN=91 Runoff=1.56 cfs 0.106 at
Subcatchment3A: CB-3A (parking)	Runoff Area=7,758 sf 100.00% Impervious Runoff Depth=3.17" Tc=6.0 min CN=98 Runoff=0.62 cfs 0.047 af
Subcatchment3B: CB-3B (parking)	Runoff Area=3,797 sf 100.00% Impervious Runoff Depth=3.17" Tc=6.0 min CN=98 Runoff=0.30 cfs 0.023 at
Subcatchment5B: CB-5B (mix)	Runoff Area=22,974 sf 57.51% Impervious Runoff Depth=2.18" Tc=6.0 min CN=88 Runoff=1.44 cfs 0.096 at
Subcatchment6: CB-6 (mix)	Runoff Area=34,524 sf 93.00% Impervious Runoff Depth=2.95" Tc=6.0 min CN=96 Runoff=2.69 cfs 0.195 at
Subcatchment8B: CB-8B (mix)	Runoff Area=28,528 sf 54.52% Impervious Runoff Depth=2.09" Tc=6.0 min CN=87 Runoff=1.73 cfs 0.114 at
Subcatchment9: CB-9 (mix)	Runoff Area=36,104 sf 94.03% Impervious Runoff Depth=3.06" Tc=6.0 min CN=97 Runoff=2.86 cfs 0.211 at
Subcatchment10: CB-10 (parking)	Runoff Area=6,492 sf 100.00% Impervious Runoff Depth=3.17" Tc=6.0 min CN=98 Runoff=0.52 cfs 0.039 at
SubcatchmentCB-1: New CB South	Runoff Area=19,582 sf 58.17% Impervious Runoff Depth=2.18" Flow Length=512' Tc=6.0 min CN=88 Runoff=1.23 cfs 0.082 af
SubcatchmentCB-3: NEW CB SOUTH-	Runoff Area=25,183 sf 51.84% Impervious Runoff Depth=2.01" Flow Length=635' Tc=6.0 min CN=86 Runoff=1.47 cfs 0.097 at
SubcatchmentCB-4: NEW CB NOTH -	Runoff Area=118,126 sf 49.24% Impervious Runoff Depth=2.01" Flow Length=822' Tc=6.0 min CN=86 Runoff=6.90 cfs 0.454 at
SubcatchmentCB-5: NEW CB -	Runoff Area=19,743 sf 50.83% Impervious Runoff Depth=2.01" Flow Length=574' Tc=6.0 min CN=86 Runoff=1.15 cfs 0.076 at
Reach CB1: EX CB-1	Inflow=2.15 cfs 0.143 a Outflow=2.15 cfs 0.143 a
Reach CB10: EX-CB10	Inflow=0.52 cfs 0.039 a Outflow=0.52 cfs 0.039 a
Reach CB11: EX-CB11	Inflow=1.15 cfs 0.076 a Outflow=1.15 cfs 0.076 a

<b>14850_Existing-Drainage-Areas</b> Prepared by {enter your company name here} HydroCAD® 10.10-7a s/n 00546 © 2021 HydroCAD Software Solut	NOAA 24-hr C NOAA 2-yr Rainfall=3.40" Printed 4/6/2022 tions LLC Page 61
	Tage 01
Reach CB2: EX-CB2	Inflow=1.56 cfs 0.106 af
Reach ODZ. EX-ODZ	Outflow=1.56 cfs_0.106 af
Reach CB3: EX-CB3	Inflow=0.93 cfs 0.070 af
	Outflow=0.93 cfs 0.070 af
Reach CB4: EX-CB4	Inflow=1.23 cfs 0.082 af
	Outflow=1.23 cfs 0.082 af
Reach CB5: EX-CB5	Inflow=1.44 cfs 0.096 af
	Outflow=1.44 cfs 0.096 af
Reach CB6: EX-CB6	Inflow=2.69 cfs 0.195 af
	Outflow=2.69 cfs 0.195 af
	Inflow=1.47 cfs_0.097 af
Reach CB7: EX-CB7	Outflow=1.47 cfs 0.097 af
	Outilow-1.47 cis 0.097 al
Reach CB8: EX-CB8	Inflow=8.63 cfs 0.568 af
	Outflow=8.63 cfs_0.568 af
Reach CB9: EX CB-9	Inflow=2.86 cfs 0.211 af
	Outflow=2.86 cfs 0.211 af
Reach DP-1: French Rodney Blvd 14" Outfall	Inflow=5.86 cfs 0.401 af
	Outflow=5.86 cfs 0.401 af
Reach DP-2: PORTLAND STREET DRAINAGE	Inflow=18.76 cfs 1.282 af
	Outflow=18.76 cfs 1.282 af

 Total Runoff Area = 8.690 ac
 Runoff Volume = 1.683 af
 Average Runoff Depth = 2.32"

 36.09% Pervious = 3.136 ac
 63.91% Impervious = 5.554 ac

<b>14850_Existing-Drainage-Areas</b> Prepared by {enter your company name here} <u>HydroCAD® 10.10-7a s/n 00546 © 2021 HydroCAD S</u>	NOAA 24-hr C NOAA 2-yr Rainfall=3.40" Printed 4/6/2022 Software Solutions LLC Page 62
Summary for Subca	atchment 1B: CB-1B (mix)
Runoff = 2.15 cfs @ 12.13 hrs, Volume Routed to Reach CB1 : EX CB-1	e= 0.143 af, Depth= 2.26"
Runoff by SCS TR-20 method, UH=SCS, Weighter NOAA 24-hr C NOAA 2-yr Rainfall=3.40"	d-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Area (sf) CN Description	
20,636 83 1/4 acre lots, 38% imp, H	SG C
12,461 98 Paved parking, HSG C 33,097 89 Weighted Average	
12,794 38.66% Pervious Area	
20,303 61.34% Impervious Area	
Tc Length Slope Velocity Capacity D (min) (feet) (ft/ft) (ft/sec) (cfs)	Description
6.0 D	Pirect Entry, residential & parking areas
Subcatchmo	nt 1B: CB-1B (mix)
Hydrogra	
2.15 ds	
2-4	NOAA-24-hr C
27	NOAA 2-yr Rainfall=3.40"
	Runoff Area=33,097 sf
	Runoff Volume=0.143 af
(gg)	Runoff Depth=2.26"
Flow (cfs)	
	CN=89
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36	
Time (h	iours)

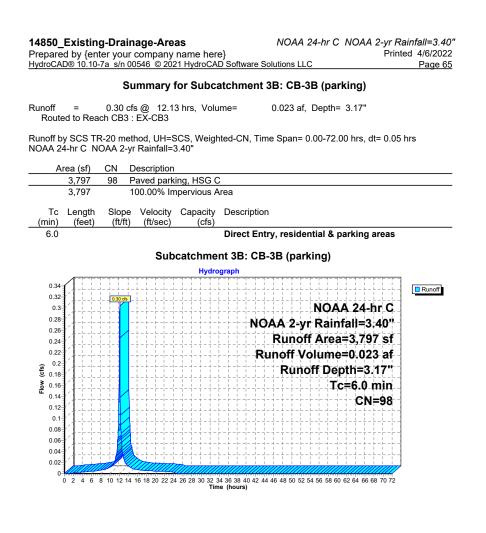


Roule	ed to Rea	ich CB3 :	EX-CB3						
			hod, UH=S r Rainfall=:		nted-CN,	Time Span	= 0.00-72.00	hrs, dt= 0.05	hrs
A	rea (sf)	CN E	Description						
	7,758			ing, HSG C					
	7,758	1	00.00% In	npervious A	Area				
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Descrip	tion			
6.0	(leet)	(1011)	(1/360)	(013)	Direct I	Entry, resid	lential & par	king areas	
								Ū	
			Sub			СВ-3А (ра	arking)		
				Hydro	ograph				
	[ }		· + - + - + - + - + - +	+ - +		  -  -  -  -  -  - 		- + - + - + - + - + - + - + - + - + - +	Runoff
0.65		0.62 cfs				  -   -   -   -   -   - 	NOAA	24-hr C	
0.55			+ - + - +		+ - + <b>-</b> -		yr Rainfa		
0.5	/		· + - + - + - + - +	+ - + -			off Area≓		
0.45			+ - + - + - + - +			i-i-i-i-i-	Volume≓		
o.4 🕤							off Dept		
(sj 0.4 0.35 0.35						<b>N</b> #1			
Ê 0.3							TC=	6.0 min	
0.25						1- 1- 1- 1- 1- 1- 1- 1- 1- 1 !- 1- 1- 1- 1-		CN=98	
0.2						, , , , , , , , , , , , , , , , , , , ,			
0.15	/       / -    -					               -+-+-+-		-+-+-+	
0.1			+-+			 		-+-+-+	
0.05									
0-	<u>And the second </u>	9 10 12 14	16 19 20 22 2	4 26 28 20 22 2	34 36 38 40 4	2 44 46 48 50	52 54 56 58 60 62	64 66 68 70 72	

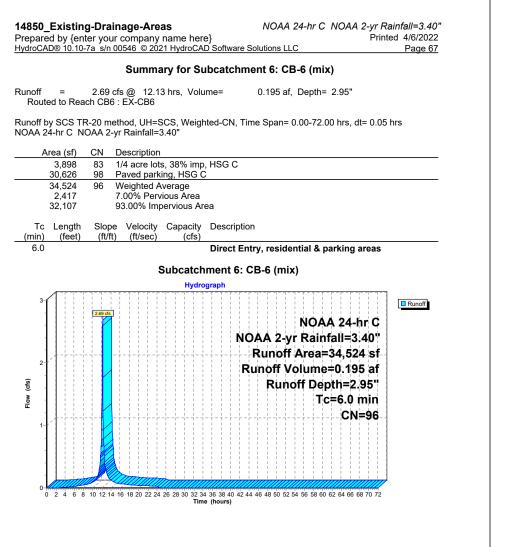
NOAA 24-hr C NOAA 2-yr Rainfall=3.40"

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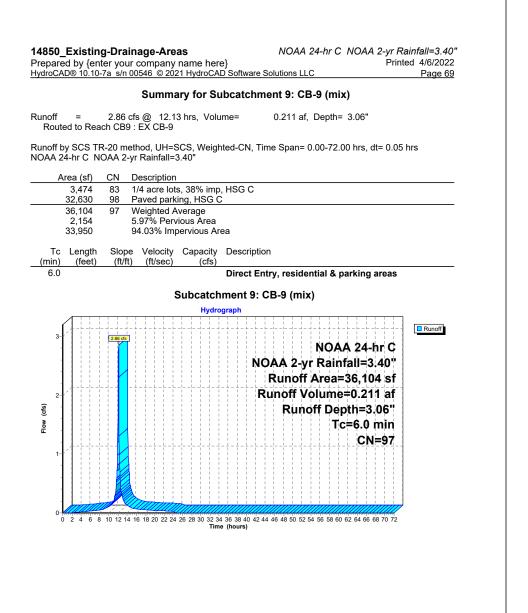
Dogo 64



HydroCA	D® 10.10-	7a s/n 0054	6 © 2021	HydroCA	) Software	Solutions LLC		Page 6
		Su	ımmary	for Sub	catchme	nt 5B: CB-5	B (mix)	
Runoff	=	1.44 cfs ( ch CB5 : E2	) 12.13	hrs, Volu	me=	0.096 af, D	epth= 2.18"	
		20 metho DAA 2-yr R			ted-CN, II	me Span= 0.00	0-72.00 hrs, dt= 0.05	o hrs
A	rea (sf)	CN Des	scription					
	15,743 7,231		acre lots, ed parkin					
	22,974	88 We	ighted Ave	erage				
	9,761 13,213		49% Pervi 51% Impe		ea			
Тс	Length	Slope \	/elocity (	Capacity	Descriptio	on		
<u>(min)</u> 6.0	(feet)	(ft/ft)	(ft/sec)	(cfs)	Direct Er	trv. residentia	al & parking areas	
			Ck	aatahm		•		
			Suc	Hydro		CB-5B (mix)		
- - 1⊸		1.44 cfs				DAA 2-yr F Runoff Ai unoff Voli	IOAA 24-hr C Rainfall=3.40" rea=22,974 sf ume=0.096 af	-
Flow (cfs						Кипоп	Depth=2.18" Tc=6.0 min CN=88	
0-	2468	10 12 14 16 1	8 20 22 24 26		36 38 40 42 4 (hours)	4 46 48 50 52 54 5	6 58 60 62 64 66 68 70 72	7



/droCA	D® 10.10	-7a s/n	00546 © 202	21 HydroCAI	D Software	Solutions LL	С		Page 68
			Summar	y for Sub	catchm	ent 8B: Cl	3-8B (mix)		
		ich CB	cfs @ 12.13 8 : EX-CB8				Depth= 2.0		has
			-yr Rainfall=3		iled-CN, I	ime Span=	0.00-72.00 hr	s, al= 0.05	nrs
A	rea (sf)	CN	Description						
	20,925 7,603	83 98	1/4 acre lots						
	28,528	<u>98</u> 87	Paved park Weighted A		,				
	12,974	0.	45.48% Per	vious Area					
	15,555		54.52% Imp	pervious Are	ea				
Тс	Length		e Velocity		Descript	ion			
(min) 6.0	(feet)	(ft/1	t) (ft/sec)	(cfs)	Direct E	ntru rooida	ntial & parki		
0.0					Direct	nuy, reside		ny areas	
			Su	ubcatchm	ent 8B:	CB-8B (m	ix)		
				Hydro	graph				
		1.73 cfs				Runoff Runoff V		=3.40" 528 sf 114 af	Runoff
- - 0-#	0 2 4 6 8	3 10 12 1	4 16 18 20 22 24		36 38 40 42 (hours)	44 46 48 50 52	54 56 58 60 62 64	66 68 70 72	



Routed to Reach CB10 : EX-CB10 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs	<b>14850_Existing-Drainage-Areas</b> Prepared by {enter your company name here} HydroCAD® 10.10-7a s/n 00546 © 2021 HydroCAD Softw	NOAA 24-hr C NOAA 2-yr Rainfall=3.40" Printed 4/6/2022 vare Solutions LLC Page 70
Routed to Reach CB10 : EX-CB10 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs IOAA 24-hr C NOAA 2-yr Rainfall=3.40" <u>Area (sf) CN Description</u> <u>6.492 100.00% Impervious Area</u> Tc Length Slope Velocity Capacity Description (min) (feet) (ft/ft) (ft/sec) (cfs) 6.0 Direct Entry, residential & parking areas Subcatchment 10: CB-10 (parking) Hydrograph NOAA 24-hr C NOAA 24-h	Summary for Subcatchr	nent 10: CB-10 (parking)
IOAA 24-hr C NOAA 2-yr Rainfall=3.40" Area (sf) CN Description 6,492 98 Paved parking, HSG C 6,492 100.00% Impervious Area Tc Length Slope Velocity Capacity Description (min) (feet) (ft/ft) (ft/sec) (cfs) 6.0 Direct Entry, residential & parking areas Subcatchment 10: CB-10 (parking) Hydrograph NOAA 24-hr C NOAA 24-hr C NOA 24-hr C NOAA 24-hr C NOA 24-		0.039 af, Depth= 3.17"
6,492 98 Paved parking, HSG C 6,492 100.00% Impervious Area Tc Length Slope Velocity Capacity Description (firit) (ft/sec) (cfs) 6.0 Direct Entry, residential & parking areas Subcatchment 10: CB-10 (parking) Hydrograph 0.55 0.45 0.	Runoff by SCS TR-20 method, UH=SCS, Weighted-C NOAA 24-hr C NOAA 2-yr Rainfall=3.40"	N, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
6,492 100.00% Impervious Area Tc Length Slope Velocity Capacity Description (min) (feet) (ft/ft) (ft/sec) (cfs) 6.0 Direct Entry, residential & parking areas Subcatchment 10: CB-10 (parking) Hydrograph 0.55 0.45 0.	Area (sf) CN Description	
Tc       Length (ft/ft)       Slope Velocity (cfs)       Description (cfs)         6.0       Direct Entry, residential & parking areas         Subcatchment 10: CB-10 (parking)         Image: Subcathment 10: CB-10 (parking)      <		
(min) (feet) (ti/t) (tt/sec) (cfs) 6.0 Direct Entry, residential & parking areas Subcatchment 10: CB-10 (parking) Hydrograph 0.55 0.5 0.5 0.5 0.5 0.5 0.5 0.	6,492 100.00% Impervious Area	
Subcatchment 10: CB-10 (parking) Hydrograph MOAA 24-hr C NOAA 2-yr Rainfall=3,40° Runoff Area=6,492 sf Runoff Area=6,492 sf Runoff Depth=3,17° Tc=6.0 min CN=98	(min) (feet) (ft/ft) (ft/sec) (cfs)	
Hydrograph NOAA 24-hr C NOAA	6.0 Direc	ct Entry, residential & parking areas
Hydrograph NOAA 24-hr C NOAA	Subcatchment 10	: CB-10 (parking)
0.55 0.45		· · · · · (pa
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72	0.55 0.55 0.45 0.45 0.45 0.45 0.45 0.45 0.35 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.3 0.25 0.45 0	NOAA 24-hr C NOAA 2-yr Rainfall=3.40" Runoff Area=6,492 sf Runoff Volume=0.039 af Runoff Depth=3.17" Tc=6.0 min
		40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72

14850_Existing-Drainage-Areas	NOAA 24-hr C NOAA 2-yr Rainfall=3.40"
Prepared by {enter your company name here}	Printed 4/6/2022
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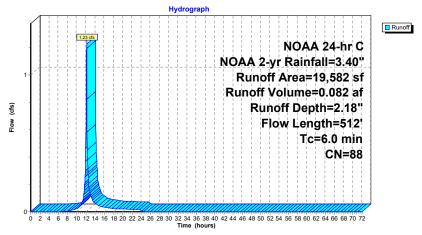
#### Summary for Subcatchment CB-1: New CB South (Seymour Street)

Runoff = 1.23 cfs @ 12.13 hrs, Volume= 0.082 af, Depth= 2.18" Routed to Reach CB4 : EX-CB4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs NOAA 24-hr C NOAA 2-yr Rainfall=3.40"

	A	vrea (sf)	CN	Description		
		13,211	83	1/4 acre lot	s, 38% imp	, HSG C
1	•	6,371	98	Roadway	•	
		19,582	88	Weighted A	verage	
		8,191		41.83% Pe	rvious Area	l l
		11,391	4	58.17% Imp	pervious Ar	ea
	Tc	5	Slope		Capacity	Description
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
	0.6	50	0.0300	1.45		Sheet Flow, A-B
	Smooth surfaces n= 0.011 P2= 3.40"					
	2.4	462	0.0249	3.20		Shallow Concentrated Flow, Paved
						Paved Kv= 20.3 fps
	3.0					Direct Entry, Direct entry to 6
	6.0	512	Total			

## Subcatchment CB-1: New CB South (Seymour Street)



repare	d by {en	ter your		name here	NOAA 24-hr C NOAA 2-yr F e} Prir D Software Solutions LLC	Rainfall=3.40 nted 4/6/2022 Page 72
	Su	mmary	for Subc	atchmen	t CB-3: NEW CB SOUTH- HUDSON	ST
unoff Route	= ed to Rea		s @ 12.1: EX-CB7	3 hrs, Volu	me= 0.097 af, Depth= 2.01"	
unoff by OAA 24	y SCS TF 1-hr C N	R-20 met OAA 2-yı	hod, UH=S Rainfall=3	SCS, Weigh 3.40"	ted-CN, Time Span= 0.00-72.00 hrs, dt= 0.0	5 hrs
	rea (sf)		Description			
	19,562 5,621		/4 acre lots Roadway	s, 38% imp	, HSG C	
	25.183		Veighted A	verage		
	12,128			vious Area		
	13,055	5	1.84% Imp	pervious Ar	ea	
Tc	Length	Slope	Velocity	Capacity	Description	
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	Description	
0.5	50	0.0444	1.70		Sheet Flow, A-B (sheet flow)	
~ ~	505	0 0050	0.05		Smooth surfaces n= 0.011 P2= 3.40"	
3.0	585	0.0256	3.25		Shallow Concentrated Flow, B-C Paved Kv= 20.3 fps	
2.5					Direct Entry, direct entry to 6	
6.0	635	Total				
		0.1				
		Sub	catchme	Hydro	NEW CB SOUTH- HUDSON ST	
1		1.47 cfs			NOAA 24-hr C NOAA 2-yr Rainfall=3.40" Runoff Area=25,183 sf	Runoff
1	/		+ - + - + - + - +	-    -	Runoff Volume=0.097 af	-
€ T					Runoff Depth=2.01"	
Flow (cfs)					Flow Length=635	
FIG					<u> </u>	
-					Tc=6.0 min	
					CN=86	
-	- <b>I</b> - I - I - I					1
				1 1 1 1 1		

0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72 Time (hours)

14850_Existing-Drainage-Areas	NOAA 24-hr C NOAA 2-yr Rainfall=3.40"
Prepared by {enter your company name here}	Printed 4/6/2022
HydroCAD® 10.10-7a s/n 00546 © 2021 HydroCAD Software Se	olutions LLC Page 73

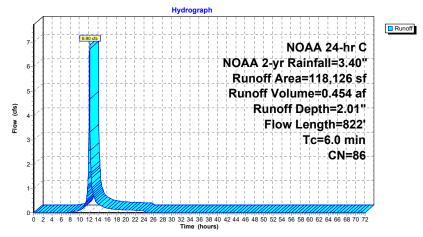
## Summary for Subcatchment CB-4: NEW CB NOTH - HUDSON STREET

unoff = 6.90 cfs @ 12.13 hrs, Volume= Routed to Reach CB8 : EX-CB8 0.454 af, Depth= 2.01" Runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs NOAA 24-hr C NOAA 2-yr Rainfall=3.40"

	A	rea (sf)	CN I	Description			
		96,716	83 <sup>-</sup>	1/4 acre lot	s, 38% imp	, HSG C	
1	ł	21,410	98 I	Roadway	-		
	1	18,126	86 \	Neighted A	verage		
	59,964 50.76% Pervious Area						
	58,162 49.24% Impervious Area						
	Тс	Length	Slope	Velocitv	Capacity	Description	
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)		
	0.5	50	0.0500	1.78		Sheet Flow, A-B (sheet flow)	
	4.0	772	0.0245	3.18		Smooth surfaces n= 0.011 P2= 3.40" Shallow Concentrated Flow, B-C (shallow concentrated Paved Kv= 20.3 fps	
	1.5					Direct Entry, direct entry to 6	
	6.0	822	Total				

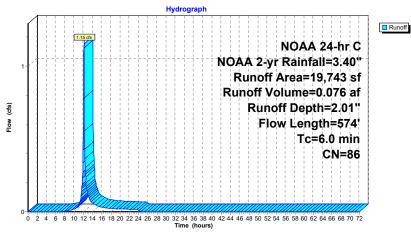
#### Subcatchment CB-4: NEW CB NOTH - HUDSON STREET



14850_Existing-Drainage-Areas         NOAA 24-hr C         NOAA 2-yr Rainfall=3.40"           Prepared by {enter your company name here}         Printed         4/6/2022           HydroCAD® 10.10-7a s/n 00546 © 2021 HydroCAD Software Solutions LLC         Page 74						
Summary for Subcatchment CB-5: NEW CB - PORTLAND ST SOUTH						
Runoff = 1.15 cfs @ 12.13 hrs, Volume= 0.076 af, Depth= 2.01" Routed to Reach CB11 : EX-CB11						
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs NOAA 24-hr C_NOAA 2-yr Rainfall=3.40"						
Area (sf) CN Description						
15,657 83 1/4 acre lots, 38% imp, HSG C						
<u>* 4,086 98 Roadway</u>						
19,743 86 Weighted Average 9,707 49,17% Pervious Area						
10,036 50.83% Impervious Area						
Tc Length Slope Velocity Capacity Description (min) (feet) (ft/ft) (ft/sec) (cfs)						

(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
0.5	50	0.0500	1.78	Sheet Flow, A-B (sheet flow) Smooth surfaces n= 0.011 P2= 3.40"	
2.3	524	0.0346	3.78	Shallow Concentrated Flow, B-C (shallow conc.) Paved Kv= 20.3 fps	
3.2				Direct Entry, direct to 6	
6.0	574	Total			

#### Subcatchment CB-5: NEW CB - PORTLAND ST SOUTH



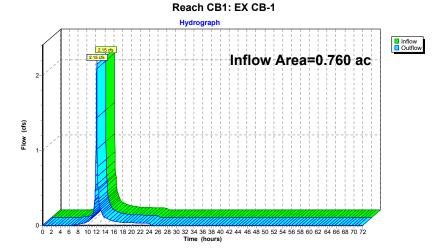
## Summary for Reach CB1: EX CB-1

Page 75

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	0.760 ac, 61.34% Impervious, Inflow De	epth = 2.26" for NOAA 2-yr event
Inflow =	2.15 cfs @ 12.13 hrs, Volume=	0.143 af
Outflow =	2.15 cfs @ 12.13 hrs, Volume=	0.143 af, Atten= 0%, Lag= 0.0 min
Routed to Rea	ach DP-1 : French Rodnev Blvd 14" Outfall	

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs



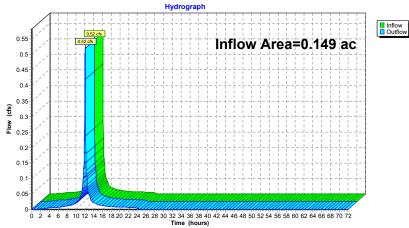
14850_Existing-Drainage-Areas	NOAA 24-hr C NOAA 2	-yr Rainfall=3.40"
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#### Summary for Reach CB10: EX-CB10

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	0.149 ac,100.00% Impervious, Inflow	Depth = 3.17"	for NOAA 2-yr event		
Inflow =	0.52 cfs @ 12.13 hrs, Volume=	0.039 af	2		
Outflow =	0.52 cfs @ 12.13 hrs, Volume=	0.039 af, Atte	en= 0%, Lag= 0.0 min		
Routed to Reach DP-2 : PORTLAND STREET DRAINAGE					

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs



# Reach CB10: EX-CB10

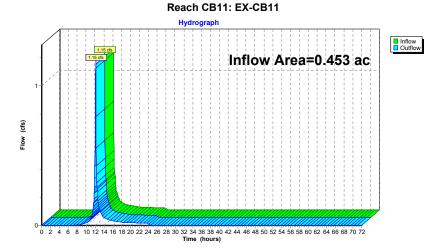
## Summary for Reach CB11: EX-CB11

Page 77

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	0.453 ac, 50.83% Impervious, Inflow	Depth = 2.01"	for NOAA 2-yr event		
Inflow =	1.15 cfs @ 12.13 hrs, Volume=	0.076 af			
Outflow =	1.15 cfs @ 12.13 hrs, Volume=	0.076 af, Atte	en= 0%, Lag= 0.0 min		
Routed to Reach DP-2 : PORTLAND STREET DRAINAGE					

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs



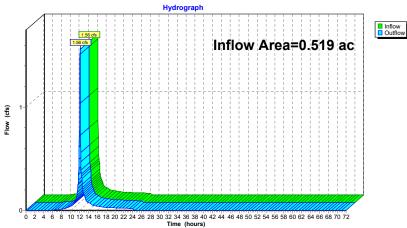
14850_Existing-Drainage-Areas	NOAA 24-hr C	NOAA 2-yr Rainfall=3.40"
Prepared by {enter your company name here}		Printed 4/6/2022
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#### Summary for Reach CB2: EX-CB2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	0.519 ac, 71.14% Impervious, Inflow D	epth = 2.45" for NOAA 2-yr event
Inflow =	1.56 cfs @ 12.13 hrs, Volume=	0.106 af
Outflow =	1.56 cfs @ 12.13 hrs, Volume=	0.106 af, Atten= 0%, Lag= 0.0 min
Routed to Rea	ch DP-1 : French Rodney Blvd 14" Outfall	-

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs



## Reach CB2: EX-CB2

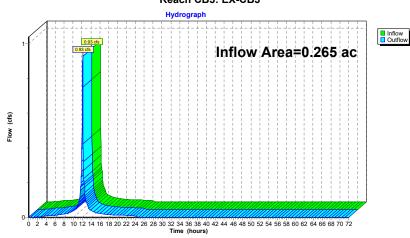
## Summary for Reach CB3: EX-CB3

Page 79

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	0.265 ac,100.00% Impervious, Inflow De	epth = 3.17" for NOAA 2-yr event
Inflow =	0.93 cfs @ 12.13 hrs, Volume=	0.070 af
Outflow =	0.93 cfs @ 12.13 hrs, Volume=	0.070 af, Atten= 0%, Lag= 0.0 min
Routed to Rea	ach DP-1 : French Rodnev Blvd 14" Outfall	-

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs



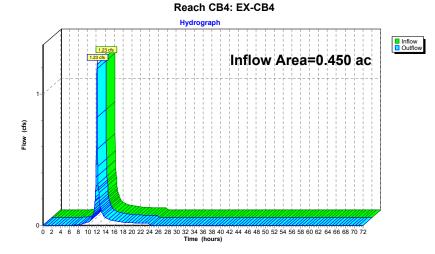
14850_Existing-Drainage-Areas	NOAA 24-hr C	IOAA 2-yr Rainfall=3.40"
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#### Summary for Reach CB4: EX-CB4

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	0.450 ac, 58.17% Impervious, Inflow I	Depth = 2.18" for NOAA 2-yr event
Inflow =	1.23 cfs @ 12.13 hrs, Volume=	0.082 af
Outflow =	1.23 cfs @ 12.13 hrs, Volume=	0.082 af, Atten= 0%, Lag= 0.0 min
Routed to Rea	ch DP-1 : French Rodney Blvd 14" Outfal	-

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs



Reach CB3: EX-CB3

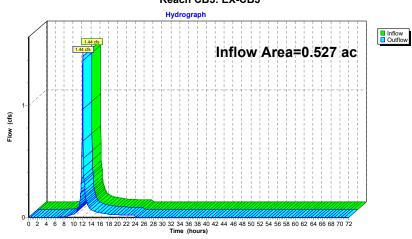
## Summary for Reach CB5: EX-CB5

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[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	0.527 ac, 57.51% Impervious, Inflow	Depth = 2.18" for NOAA 2-yr eve	ent
Inflow =	1.44 cfs @ 12.13 hrs, Volume=	0.096 af	
Outflow =	1.44 cfs @ 12.13 hrs, Volume=	0.096 af, Atten= 0%, Lag= 0.0 m	nin
Routed to Reach DP-2 : PORTLAND STREET DRAINAGE			

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs



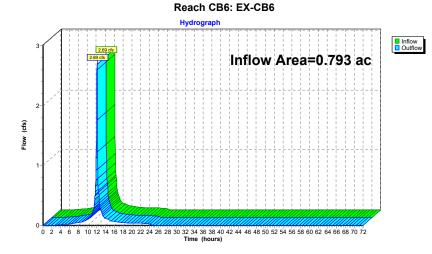
14850_Existing-Drainage-Areas	NOAA 24-hr C	IOAA 2-yr Rainfall=3.40"
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#### Summary for Reach CB6: EX-CB6

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	0.793 ac, 93.00% Impervious, Inflo	ow Depth = 2.95"	for NOAA 2-yr event
Inflow =	2.69 cfs @ 12.13 hrs, Volume=	0.195 af	-
Outflow =	2.69 cfs @ 12.13 hrs, Volume=	0.195 af, Att	en= 0%, Lag= 0.0 min
Routed to Reach DP-2 : PORTLAND STREET DRAINAGE			

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs



Reach CB5: EX-CB5

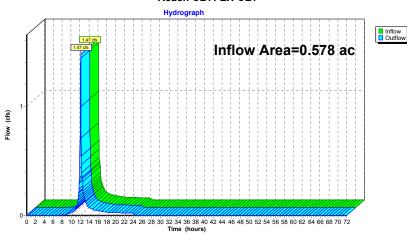
## Summary for Reach CB7: EX-CB7

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[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	0.578 ac, 51.84% Impervious, Inflow D	Depth = 2.01" for NOAA 2-yr event
Inflow =	1.47 cfs @ 12.13 hrs, Volume=	0.097 af
Outflow =	1.47 cfs @ 12.13 hrs, Volume=	0.097 af, Atten= 0%, Lag= 0.0 min
Routed to Reach DP-2 : PORTLAND STREET DRAINAGE		

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

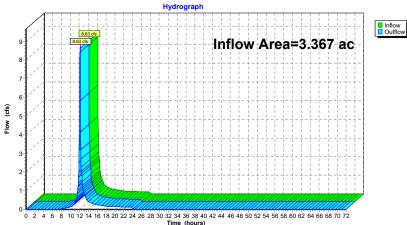


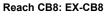
14850_Existing-Drainage-Areas	NOAA 24-hr C NOAA 2-yr Rainfall=3.40"
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#### Summary for Reach CB8: EX-CB8

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	3.367 ac, 50.27% Impervious, Inflow	/ Depth = 2.03"	for NOAA 2-yr event
Inflow =	8.63 cfs @ 12.13 hrs, Volume=	0.568 af	-
Outflow =	8.63 cfs @ 12.13 hrs, Volume=	0.568 af, Atte	en= 0%, Lag= 0.0 min
Routed to Reach DP-2 : PORTLAND STREET DRAINAGE			





 14850\_Existing-Drainage-Areas
 NOAA 24-hr C
 NOAA 2-yr Rainfall=3.40"

 Prepared by {enter your company name here}
 Printed
 4/6/2022

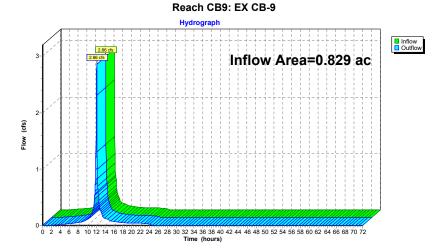
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 Page 85

## Summary for Reach CB9: EX CB-9

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	0.829 ac, 94.03% Impervious, Inflow Dept	h = 3.06" for NOAA 2-yr event
Inflow =	2.86 cfs @ 12.13 hrs, Volume= 0.	211 af
Outflow =	2.86 cfs @ 12.13 hrs, Volume= 0.	211 af, Atten= 0%, Lag= 0.0 min
Routed to Reach DP-2 : PORTLAND STREET DRAINAGE		

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

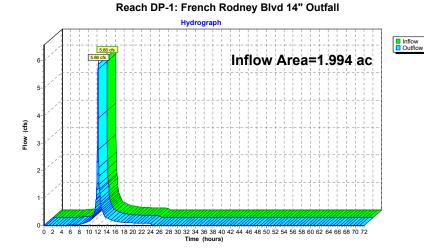


14850_Existing-Drainage-Areas	NOAA 24-hr C NOAA 2-yr Rainfall=3.40"	,
Prepared by {enter your company name here}	Printed 4/6/2022	
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#### Summary for Reach DP-1: French Rodney Blvd 14" Outfall

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area	a =	1.994 ac, 68.32% Impervious, Inflow Depth = 2.41" for	NOAA 2-yr event
Inflow	=	5.86 cfs @ 12.13 hrs, Volume= 0.401 af	-
Outflow	=	5.86 cfs @ 12.13 hrs, Volume= 0.401 af, Atten= 0	0%, Lag= 0.0 min



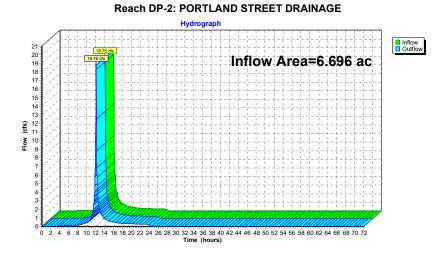
 14850\_Existing-Drainage-Areas
 NOAA 24-hr C No

 Prepared by {enter your company name here}
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#### Summary for Reach DP-2: PORTLAND STREET DRAINAGE

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	6.696 ac, 62.59% Impervious, Inflow Depth = 2.30" for NOAA 2-yr event
Inflow =	18.76 cfs @ 12.13 hrs, Volume= 1.282 af
Outflow =	18.76 cfs @ 12.13 hrs, Volume= 1.282 af, Atten= 0%, Lag= 0.0 min



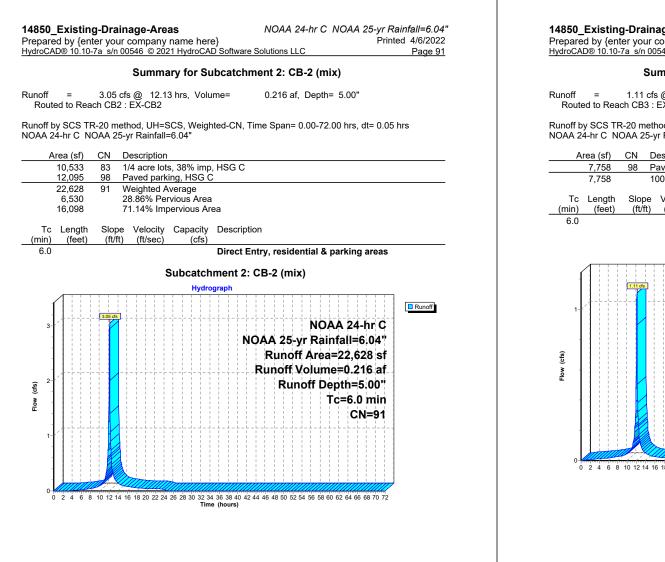
Prepared by {enter your company nam HydroCAD® 10.10-7a s/n 00546 © 2021 Hy	ne here}	Printed 4/6/202 Page 8
		1 age (
Runoff by SCS	00-72.00 hrs, dt=0.05 hrs, 1441 points TR-20 method, UH=SCS, Weighted-C ⊦Trans method - Pond routing by Sto	N
Subcatchment1B: CB-1B (mix)	Runoff Area=33,097 sf 61.34% Imp Tc=6.0 min CN=8	ervious Runoff Depth=4.77 39 Runoff=4.34 cfs 0.302
Subcatchment2: CB-2 (mix)	Runoff Area=22,628 sf 71.14% Imp Tc=6.0 min CN=9	ervious Runoff Depth=5.00 01 Runoff=3.05 cfs 0.216
Subcatchment3A: CB-3A (parking)	Runoff Area=7,758 sf 100.00% Imp Tc=6.0 min CN=9	ervious Runoff Depth=5.80 8 Runoff=1.11 cfs 0.086
Subcatchment3B: CB-3B (parking)	Runoff Area=3,797 sf 100.00% Imp Tc=6.0 min CN=9	ervious Runoff Depth=5.80 8 Runoff=0.54 cfs 0.042
Subcatchment5B: CB-5B (mix)	Runoff Area=22,974 sf 57.51% Imp Tc=6.0 min CN=8	ervious Runoff Depth=4.66 88 Runoff=2.97 cfs 0.205
Subcatchment6: CB-6 (mix)	Runoff Area=34,524 sf 93.00% Imp Tc=6.0 min CN=9	ervious Runoff Depth=5.57 96 Runoff=4.90 cfs 0.368
Subcatchment8B: CB-8B (mix)	Runoff Area=28,528 sf 54.52% Imp Tc=6.0 min CN=8	ervious Runoff Depth=4.56 87 Runoff=3.62 cfs 0.249
Subcatchment9: CB-9 (mix)	Runoff Area=36,104 sf 94.03% Imp Tc=6.0 min CN=9	ervious Runoff Depth=5.68 97 Runoff=5.15 cfs 0.393
Subcatchment10: CB-10 (parking)	Runoff Area=6,492 sf 100.00% Imp Tc=6.0 min CN=9	ervious Runoff Depth=5.80 8 Runoff=0.93 cfs 0.072
SubcatchmentCB-1: New CB South	Runoff Area=19,582 sf 58.17% Imp Flow Length=512' Tc=6.0 min CN=8	
SubcatchmentCB-3: NEW CB SOUTH-	Runoff Area=25,183 sf 51.84% Imp Flow Length=635' Tc=6.0 min CN=8	
SubcatchmentCB-4: NEW CB NOTH -	Runoff Area=118,126 sf 49.24% Imp Flow Length=822' Tc=6.0 min CN=86	
SubcatchmentCB-5: NEW CB -	Runoff Area=19,743 sf 50.83% Imp Flow Length=574' Tc=6.0 min CN=8	
Reach CB1: EX CB-1		Inflow=4.34 cfs 0.302 Outflow=4.34 cfs 0.302
Reach CB10: EX-CB10		Inflow=0.93 cfs 0.072 Outflow=0.93 cfs 0.072
Reach CB11: EX-CB11		Inflow=2.46 cfs 0.168 Outflow=2.46 cfs 0.168

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Reach CB2: EX-CB2	Inflow=3.05 cfs 0.216 af
	Outflow=3.05 cfs 0.216 af
	Inflow=1.66 cfs_0.128 af
Reach CB3: EX-CB3	Outflow=1.66 cfs 0.128 af
Reach CB4: EX-CB4	Inflow=2.53 cfs 0.175 af Outflow=2.53 cfs 0.175 af
	Outilow-2.55 cls 0.175 al
Reach CB5: EX-CB5	Inflow=2.97 cfs 0.205 af
	Outflow=2.97 cfs 0.205 af
Reach CB6: EX-CB6	Inflow=4.90 cfs 0.368 af
	Outflow=4.90 cfs 0.368 af
Reach CB7: EX-CB7	Inflow=3.14 cfs 0.214 af Outflow=3.14 cfs 0.214 af
	Outilow-3.14 Cis 0.214 al
Reach CB8: EX-CB8	Inflow=18.36 cfs 1.254 af
	Outflow=18.36 cfs 1.254 af
Reach CB9: EX CB-9	Inflow=5.15 cfs 0.393 af
	Outflow=5.15 cfs 0.393 af
Reach DP-1: French Rodney Blvd 14" Outfall	Inflow=11.57 cfs 0.822 af Outflow=11.57 cfs 0.822 af
	Outliow-11.57 CIS 0.622 al
Reach DP-2: PORTLAND STREET DRAINAGE	Inflow=37.90 cfs 2.673 af
	Outflow=37.90 cfs 2.673 af

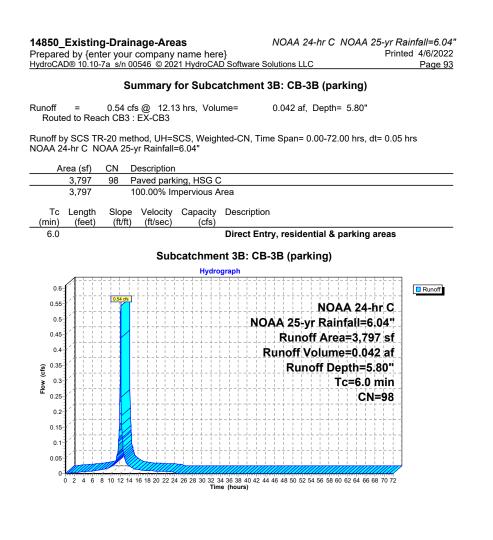
 Total Runoff Area = 8.690 ac
 Runoff Volume = 3.495 af
 Average Runoff Depth = 4.83"

 36.09% Pervious = 3.136 ac
 63.91% Impervious = 5.554 ac

14850_Existing-Drainage-Areas       NOAA 24-hr C NOAA 25-yr Rainfa         Prepared by {enter your company name here}       Printed 4         HydroCAD® 10.10-7a s/n 00546 © 2021 HydroCAD Software Solutions LLC       Printed 4										
Summary for Subcatchment 1B: CB-1B (mix)										
Runoff = 4.34 cfs @ 12.13 hrs, Volume= 0.302 af, Depth= 4.77" Routed to Reach CB1 : EX CB-1										
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs NOAA 24-hr C NOAA 25-yr Rainfall=6.04"										
Area (sf) CN Description										
20,636 83 1/4 acre lots, 38% imp, HSG C 12,461 98 Paved parking, HSG C										
33,097 89 Weighted Average										
12,794 38.66% Pervious Area 20,303 61.34% Impervious Area										
Tc Length Slope Velocity Capacity Description (min) (feet) (ft/ft) (ft/sec) (cfs)										
6.0 Direct Entry, residential & parking areas										
Subcatchment 1B: CB-1B (mix)										
	Runoff									
NOAA 24-hr C										
<sup>₄</sup>										
Runoff Area=33.097 sf										
3										
<sup>♥</sup> Tc=6.0 min										
<u> </u>										
Tc=6.0 min										
Tc=6.0 min										
Tc=6.0 min										
Tc=6.0 min CN=89										
Tc=6.0 min CN=89										



Summary for Subcatchment 3A: CB-3A (parking) tunoff = 1.11 cfs @ 12.13 hrs, Volume= 0.086 af, Depth= 5.80" Routed to Reach CB3 : EX-CB3 tunoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs OAA 24-hr C NOAA 25-yr Rainfall=6.04" <u>Area (sf) CN Description</u> <u>7,758 98 Paved parking, HSG C</u> 7,758 100.00% Impervious Area <u>Tc Length Slope Velocity Capacity Description</u> (min) (feet) (ft/ft) (ft/sec) (cfs) 6.0 Direct Entry, residential & parking areas Subcatchment 3A: CB-3A (parking) Hydrograph <u>NOAA 24-hr C</u> <u>NOAA 25-yr Rainfall=6.04"</u> <u>Runoff Area=7,758 sf</u> <u>Runoff Volume=0.086 af</u> <u>Runoff Depth=5.80"</u> <u>Tc=6.0 min</u> <u>CN=98</u>	r Rainfall=6 rinted 4/6/2 Page
Routed to Reach CB3 : EX-CB3 tunoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs OAA 24-hr C NOAA 25-yr Rainfall=6.04" Area (sf) CN Description 7,758 98 Paved parking, HSG C 7,758 100.00% Impervious Area Tc Length Slope Velocity Capacity Description (min) (feet) (ft/ft) (ft/sec) (cfs) 6.0 Direct Entry, residential & parking areas Subcatchment 3A: CB-3A (parking) Hydrograph NOAA 25-yr Rainfall=6.04" Runoff Area=7,758 sf Runoff Volume=0.086 af Runoff Depth=5.80" Tc=6.0 min	
OAA 24-hr C NOAA 25-yr Rainfall=6.04"         Area (sf)       CN       Description         7,758       98       Paved parking, HSG C         7,758       100.00% Impervious Area         Tc       Length       Slope         (feet)       (ft/ft)       Capacity       Description         (min)       (feet)       (ft/ft)       Capacity       Description         6.0       Direct Entry, residential & parking areas         Subcatchment 3A: CB-3A (parking)         Hydrograph         Image: NOAA 24-hr C         1       NOAA 25-yr Rainfall=6.04"         Runoff Area=7,758 sf       Runoff Volume=0.086 af         8       Runoff Depth=5.80"         7       Tc=6.0 min	
7,758       98       Paved parking, HSG C         7,758       100.00% Impervious Area         Tc       Length       Slope       Velocity       Capacity       Description         (min)       (feet)       (ft/ft)       (ft/sec)       (cfs)         6.0       Direct Entry, residential & parking areas         Subcatchment 3A: CB-3A (parking)         Hydrograph         Image: Subcatchment 3A: CB-3A (parking)	.05 hrs
7,758       100.00% Impervious Area         Tc       Length       Slope       Velocity       Capacity       Description         (min)       (feet)       (ft/ft)       (ft/sec)       (cfs)         6.0       Direct Entry, residential & parking areas         Subcatchment 3A: CB-3A (parking)         Hydrograph         1       1       NOAA 24-hr C         1       NOAA 25-yr Rainfall=6.04"       Runoff Area=7,758 sf         Runoff Volume=0.086 af       Runoff Depth=5.80"       Tc=6.0 min	
Tc Length (feet)       Slope Velocity (ft/sec)       Capacity (cfs)       Description         6.0       Direct Entry, residential & parking areas         Subcatchment 3A: CB-3A (parking)         Hydrograph         1       NOAA 24-hr C         NOAA 25-yr Rainfall=6.04"       Runoff Area=7,758 sf         Runoff Volume=0.086 af       Runoff Depth=5.80"         Tc=6.0 min       Tc=6.0 min	
(min) (feet) (ft/ft) (ft/sec) (cfs) 6.0 Direct Entry, residential & parking areas Subcatchment 3A: CB-3A (parking) Hydrograph NOAA 24-hr C NOAA 25-yr Rainfall=6.04" Runoff Area=7,758 sf Runoff Volume=0.086 af Runoff Depth=5.80" Tc=6.0 min	
Subcatchment 3A: CB-3A (parking) Hydrograph NOAA 24-hr C NOAA 25-yr Rainfall=6,04" Runoff Area=7,758 sf Runoff Volume=0.086 af Runoff Depth=5.80" Tc=6.0 min	
Hydrograph NOAA 24-hr C NOAA 25-yr Rainfall=6.04" Runoff Area=7,758 sf Runoff Volume=0.086 af Runoff Depth=5.80" Tc=6.0 min	s
NOAA 24-hr C NOAA 25-yr Rainfall=6.04" Runoff Area=7,758 sf Runoff Volume=0.086 af Runoff Depth=5.80" Tc=6.0 min	
Runoff Area=7,758 sf Runoff Volume=0.086 af Runoff Depth=5.80'' Tc=6.0 min	
Image: symplectic symple	1 1
الله الله الله الله الله الله الله الله	
Tc=6.0 min	f
Tc=6.0 min CN=98	•
ů CN=98	n l
	3
	<b>//</b>
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72 Time (hours)	12



		rea (sf) 15,743 7,231 22,974 9,761 13,213	83 98 88	Description 1/4 acre lots Paved park Weighted A 42.49% Per 57.51% Imp	s, 38% imp ing, HSG C verage rvious Area	
(m	Тс	Length (feet)	Slope (ft/ft)			Description Direct Entry, residential & parking areas
	.0			Sı	ubcatchm	nent 5B: CB-5B (mix)
						graph
Flow (cfs)	3-*		- 1297 ds			NOAA 24-hr C NOAA 25-yr Rainfall=6.04" Runoff Area=22,974 sf Runoff Volume=0.205 af Runoff Depth=4.66" Tc=6.0 min CN=88
	1-* - - 0-*	2 4 6 8	10 12 14	16 18 20 22 24		4 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72 e (hours)

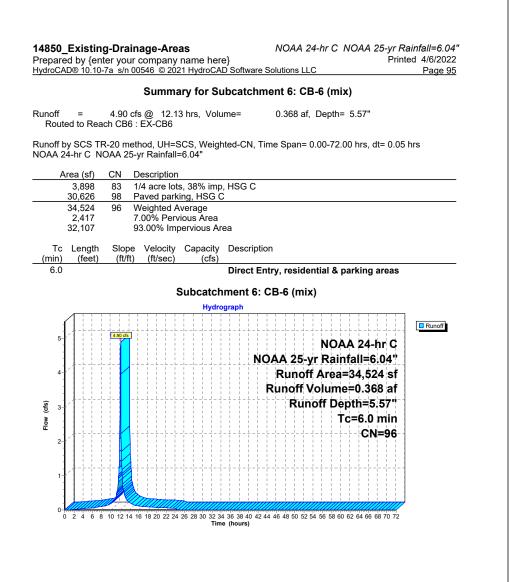
NOAA 24-hr C NOAA 25-yr Rainfall=6.04"

Printed 4/6/2022

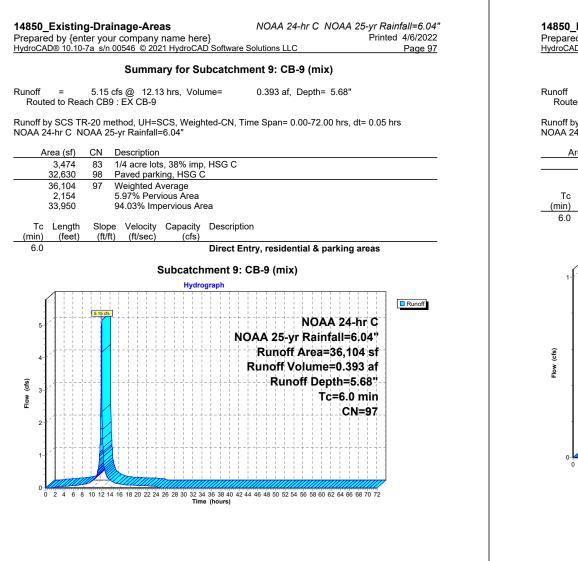
Page 94

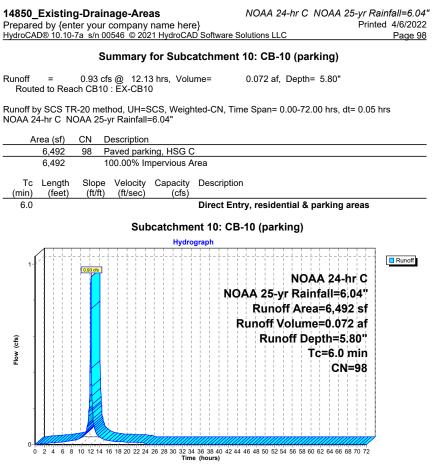
14850 Existing-Drainage-Areas

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			Sumr	nary f	or Sub	catchn	nent 8B	: CB-8B	(mix)		
unoff	_	3 62	cfs @	•				9 af, Dept	. ,		
	ed to Rea		8 : EX-CI		13, 1010	inc-	0.24		4.00		
						nted-CN,	Time Spa	an= 0.00-7	2.00 hrs, d	lt= 0.05	hrs
			25-yr Rair		J4 <sup></sup>						
ŀ	vrea (sf) 20,925	<u>CN</u> 83	Descrip 1/4 acre		38% imp	, HSG C					
	7,603	<u>98</u> 87	Paved p Weighte			;					
	12,974	07	45.48%	Pervic	us Area						
	15,555				vious Ar						
Tc (min)	Length (feet)	Slop (ft/	be Velo ft) (ft/s		apacity (cfs)	Descrip	otion				
6.0	/					Direct	Entry, res	sidential a	& parking	areas	
				Sub	catchn	nent 8B	: CB-8E	(mix)			
					Hydro	graph		. ,			
4-											Runoff
		3.62 cf					1 1 1 1 1 1 1 1 1 1 1 1	NC	DAA 24-I	hr C	
	,		- + - + - + -			_ <u>_</u> J			unfall=6		
3-									a=28,52		
â									ne=0.24 Depth=4		
Elow (cfs)						$-\frac{1}{1}-\frac{1}{1}-\frac{1}{1}$			Tc=6.0		
E .									CN	=87	
			- + - + - + -			-+-+-	                       -				
1-											
			10mm								





14850_Existing-Drainage-Areas	NOAA 24-hr C NOAA 25-yr Rainfall=6.04"
Prepared by {enter your company name here}	Printed 4/6/2022
HydroCAD® 10.10-7a s/n 00546 © 2021 HydroCAD Software So	lutions LLC Page 99

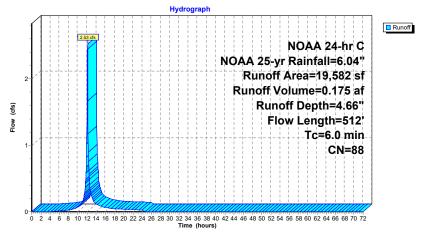
#### Summary for Subcatchment CB-1: New CB South (Seymour Street)

Runoff = 2.53 cfs @ 12.13 hrs, Volume= 0.175 af, Depth= 4.66" Routed to Reach CB4 : EX-CB4

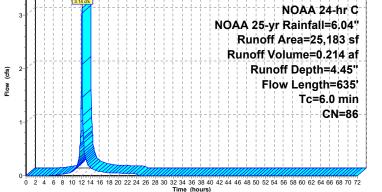
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs NOAA 24-hr C NOAA 25-yr Rainfall=6.04"

	Area (sf)	CN	Description							
	13,211	83	1/4 acre lots, 38% imp, HSG C							
*	6,371	98	Roadway							
	19,582	88	Weighted Average							
	8,191		41.83% Pe	rvious Area						
	11,391		58.17% Imp	pervious Ar	ea					
т	c Length	Slope	Velocity	Capacity	Description					
(mir		(ft/ft)		(cfs)	1					
0.	6 50	0.0300	1.45		Sheet Flow, A-B					
					Smooth surfaces n= 0.011 P2= 3.40"					
2.	4 462	0.0249	3.20		Shallow Concentrated Flow, Paved					
					Paved Kv= 20.3 fps					
3.	0				Direct Entry, Direct entry to 6					
6.	0 512	Total								

#### Subcatchment CB-1: New CB South (Seymour Street)



Prepare	d by {en	ter your		name here	NOAA 24-hr C NOAA 25-yr Rainfall=6.04" Printed 4/6/2022 D Software Solutions LLC Page 100					
Summary for Subcatchment CB-3: NEW CB SOUTH- HUDSON ST										
Runoff Route	= ed to Rea			3 hrs, Volu	me= 0.214 af, Depth= 4.45"					
	Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs NOAA 24-hr C NOAA 25-yr Rainfall=6.04"									
A	rea (sf)	CN E	Description							
*	19,562 5,621		/4 acre lots Roadway	s, 38% imp	, HSG C					
	25,183         86         Weighted Average           12,128         48.16% Pervious Area           13,055         51.84% Impervious Area									
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description					
0.5	50	0.0444	1.70		Sheet Flow, A-B (sheet flow)					
3.0	585	0.0256	3.25		Smooth surfaces n= 0.011 P2= 3.40" Shallow Concentrated Flow, B-C Paved Kv= 20.3 fps					
2.5					Direct Entry, direct entry to 6					
6.0	635	Total								
	Subcatchment CB-3: NEW CB SOUTH- HUDSON ST									
				Hydro	graph					
- - 3-		3.14 cfs			Runoff					



14850_Existing-Drainage-Areas	NOAA 24-hr C NOAA 25-yr Rainfall=6.04"
Prepared by {enter your company name here}	Printed 4/6/2022
HvdroCAD® 10.10-7a s/n 00546 © 2021 HvdroCAD Software So	lutions LLC Page 101

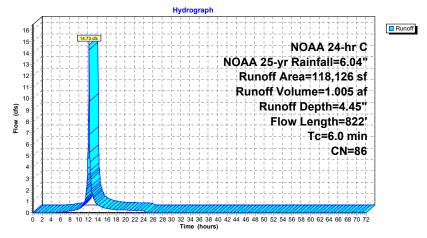
## Summary for Subcatchment CB-4: NEW CB NOTH - HUDSON STREET

unoff = 14.73 cfs @ 12.13 hrs, Volume= Routed to Reach CB8 : EX-CB8 1.005 af, Depth= 4.45" Runoff

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs NOAA 24-hr C NOAA 25-yr Rainfall=6.04"

	A	rea (sf)	CN [	Description		
		96,716	83 î	1/4 acre lot	s, 38% imp	, HSG C
1	k	21,410	98 F	Roadway	•	
	1	18,126	86 N	Neighted A	verage	
		59,964	5	50.76% Pe	rvious Area	i de la constante de la constan
		58,162	4	19.24% Imp	pervious Ar	ea
	Тс	Length	Slope	Velocity	Capacity	Description
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
	0.5	50	0.0500	1.78		Sheet Flow, A-B (sheet flow) Smooth surfaces n= 0.011 P2= 3.40"
	4.0	772	0.0245	3.18		Shallow Concentrated Flow, B-C (shallow concentrated Paved Kv= 20.3 fps
	1.5					Direct Entry, direct entry to 6
	6.0	822	Total			

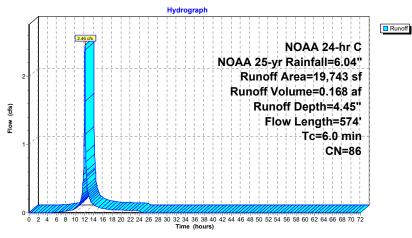
#### Subcatchment CB-4: NEW CB NOTH - HUDSON STREET



Prepared by {ent	<b>J-Drainage-Areas</b> er your company name here} ′a s/n 00546 © 2021 HydroCAD Sol	NOAA 24-hr C NOAA 25-yr Rainfall=6.04" Printed 4/6/2022 tware Solutions LLC Page 102					
Sumr	nary for Subcatchment CB-	5: NEW CB - PORTLAND ST SOUTH					
Runoff = Routed to Read	2.46 cfs @ 12.13 hrs, Volume= h CB11 : EX-CB11	0.168 af, Depth= 4.45"					
	Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs NOAA 24-hr C NOAA 25-yr Rainfall=6.04"						
Area (sf)	CN Description						
15,657	83 1/4 acre lots, 38% imp, HS	G C					
* 4,086	98 Roadway						
19,743 9,707	<ul><li>86 Weighted Average</li><li>49.17% Pervious Area</li></ul>						

	10,036	5	0.83% Imp	ervious Ar	ea
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	50	0.0500	1.78		Sheet Flow, A-B (sheet flow) Smooth surfaces n= 0.011 P2= 3.40"
2.3	524	0.0346	3.78		Shallow Concentrated Flow, B-C (shallow conc.) Paved Kv= 20.3 fps
3.2					Direct Entry, direct to 6
60	574	Total			

#### Subcatchment CB-5: NEW CB - PORTLAND ST SOUTH



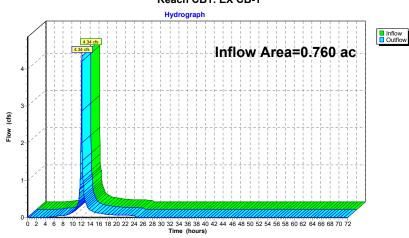
14850_Existing-Drainage-Areas	NOAA 24-hr C NOAA 25-yr Rainfall=6.04"
Prepared by {enter your company name here}	Printed 4/6/2022
HydroCAD® 10.10-7a s/n 00546 © 2021 HydroCAD Software	e Solutions LLC Page 103

## Summary for Reach CB1: EX CB-1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	0.760 ac, 61.34% Impervious, Inflow D	epth = 4.77" for NOAA 25-yr event
Inflow =	4.34 cfs @ 12.13 hrs, Volume=	0.302 af
Outflow =	4.34 cfs @ 12.13 hrs, Volume=	0.302 af, Atten= 0%, Lag= 0.0 min
Routed to Rea	ach DP-1 : French Rodnev Blvd 14" Outfall	-

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs



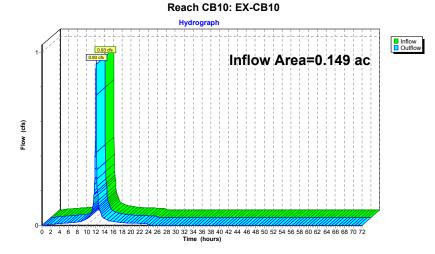
14850_Existing-Drainage-Areas	NOAA 24-hr C NOAA 25-yr Rainfall=6.04"	
Prepared by {enter your company name here}	Printed 4/6/2022	
HydroCAD® 10.10-7a s/n 00546 © 2021 HydroCAD Software Se	olutions LLC Page 104	

#### Summary for Reach CB10: EX-CB10

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area	=	0.149 ac,10	0.00% Impervious	Inflow Depth =	5.80"	for NOAA 25-yr event
Inflow =	=	0.93 cfs @	12.13 hrs, Volum	e= 0.072	af	-
Outflow =	=	0.93 cfs @	12.13 hrs, Volum	e= 0.072	af, Atte	en= 0%, Lag= 0.0 min
Routed to Reach DP-2 : PORTLAND STREET DRAINAGE						

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs



Reach CB1: EX CB-1

 14850\_Existing-Drainage-Areas
 NOAA 24-hr C NOAA 25-yr Rainfall=6.04"

 Prepared by {enter your company name here}
 Printed 4/6/2022

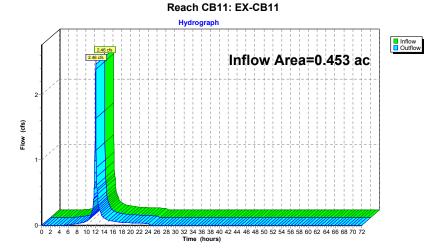
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## Summary for Reach CB11: EX-CB11

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	0.453 ac, 50.83% Impervious, Inflo	ow Depth = 4.45" for NOAA 25-yr event			
Inflow =	2.46 cfs @ 12.13 hrs, Volume=	0.168 af			
Outflow =	2.46 cfs @ 12.13 hrs, Volume=	0.168 af, Atten= 0%, Lag= 0.0 min			
Routed to Reach DP-2 : PORTLAND STREET DRAINAGE					

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs



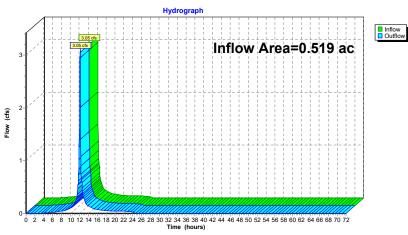
14850_Existing-Drainage-Areas	NOAA 24-hr C N	OAA 25-yr Rainfall=6.04"
Prepared by {enter your company name here}		Printed 4/6/2022
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#### Summary for Reach CB2: EX-CB2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	0.519 ac, 71.14% Impervious, Inflow D	epth = 5.00"	for NOAA 25-yr event
Inflow =	3.05 cfs @ 12.13 hrs, Volume=	0.216 af	-
Outflow =	3.05 cfs @ 12.13 hrs, Volume=	0.216 af, Atte	en= 0%, Lag= 0.0 min
Routed to Rea	ch DP-1 : French Rodney Blvd 14" Outfall		-

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs



#### Reach CB2: EX-CB2

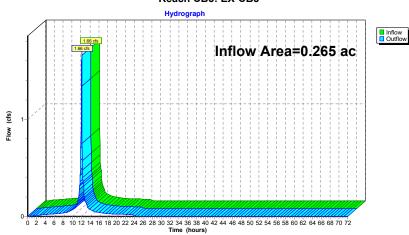
## Summary for Reach CB3: EX-CB3

Printed 4/6/2022 Page 107

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	0.265 ac,100.00% Impervious, Inflow D	Depth = 5.80" for NOAA 25-yr event
Inflow =	1.66 cfs @ 12.13 hrs, Volume=	0.128 af
Outflow =	1.66 cfs @ 12.13 hrs, Volume=	0.128 af, Atten= 0%, Lag= 0.0 min
Routed to Rea	ach DP-1 : French Rodnev Blvd 14" Outfall	_

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs



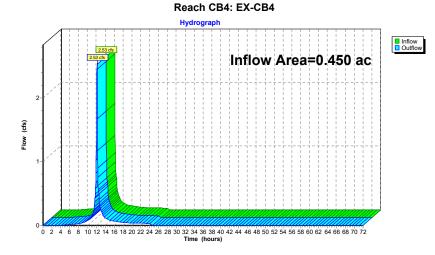
14850_Existing-Drainage-Areas	NOAA 24-hr C NOAA 25-yr Rainfall=6.04"
Prepared by {enter your company name here}	Printed 4/6/2022
HydroCAD® 10.10-7a s/n 00546 © 2021 HydroCAD Sof	ware Solutions LLC Page 108

## Summary for Reach CB4: EX-CB4

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	0.450 ac, 58.17% Impervious, Inflow E	Depth = 4.66" for NOAA 25-yr event
Inflow =	2.53 cfs @ 12.13 hrs, Volume=	0.175 af
Outflow =	2.53 cfs @ 12.13 hrs, Volume=	0.175 af, Atten= 0%, Lag= 0.0 min
Routed to Rea	ch DP-1 : French Rodney Blvd 14" Outfall	-

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs



Reach CB3: EX-CB3

 14850\_Existing-Drainage-Areas
 NOAA 24-hr C
 NOAA 25-yr Rainfall=6.04"

 Prepared by {enter your company name here}
 Printed 4/6/2022

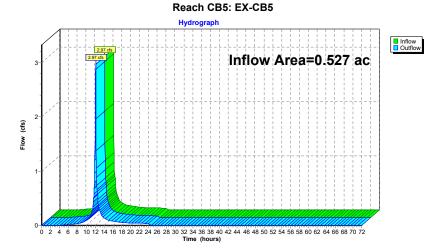
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## Summary for Reach CB5: EX-CB5

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	0.527 ac, 57.51% Impervious, Inflow E	Depth = 4.66" for NOAA 25-yr event
Inflow =	2.97 cfs @ 12.13 hrs, Volume=	0.205 af
Outflow =	2.97 cfs @ 12.13 hrs, Volume=	0.205 af, Atten= 0%, Lag= 0.0 min
Routed to Rea	ach DP-2 : PORTLAND STREET DRAINA	GE

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs



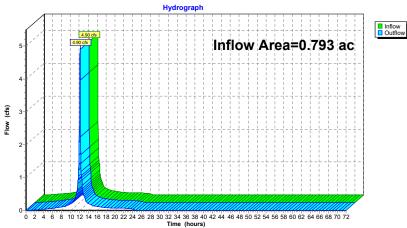
14850_Existing-Drainage-Areas	NOAA 24-hr C NOAA 25-yr F	Rainfall=6.04"
Prepared by {enter your company name here}	Prir	nted 4/6/2022
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#### Summary for Reach CB6: EX-CB6

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	0.793 ac, 93.00% Impervious, Inflo	w Depth = 5.57"	for NOAA 25-yr event
Inflow =	4.90 cfs @ 12.13 hrs, Volume=	0.368 af	-
Outflow =	4.90 cfs @ 12.13 hrs, Volume=	0.368 af, Atte	en= 0%, Lag= 0.0 min
Routed to Re	ach DP-2 : PORTLAND STREET DRAI	NAGE	

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs



## Reach CB6: EX-CB6

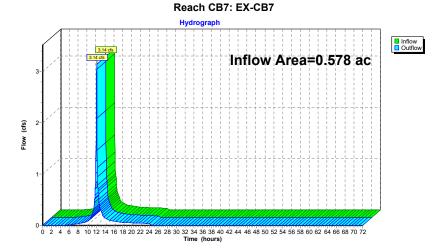
## Summary for Reach CB7: EX-CB7

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[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	0.578 ac, 51.84% Impervious, Inflow	Depth = 4.45" for NOAA 25-yr event
Inflow =	3.14 cfs @ 12.13 hrs, Volume=	0.214 af
Outflow =	3.14 cfs @ 12.13 hrs, Volume=	0.214 af, Atten= 0%, Lag= 0.0 min
Routed to Rea	ach DP-2 : PORTLAND STREET DRAINA	AGE

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs



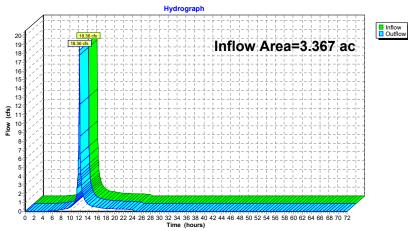
14850_Existing-Drainage-Areas	NOAA 24-hr C NOAA 25-yr Rainfall=6.04	"
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#### Summary for Reach CB8: EX-CB8

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area	a =	3.367 ac, 5	0.27% Impervic	us, Inflow Dept	h = 4.47"	for NOAA 25-yr event
Inflow	=	18.36 cfs @	12.13 hrs, Vol	ume= 1.	254 af	-
Outflow	=	18.36 cfs @	12.13 hrs, Vol	ume= 1.	254 af, Att	en= 0%, Lag= 0.0 min
Routed	to Rea	ach DP-2 : PO	RTLAND STRE	ET DRAINAGE		-

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs



Reach CB8: EX-CB8

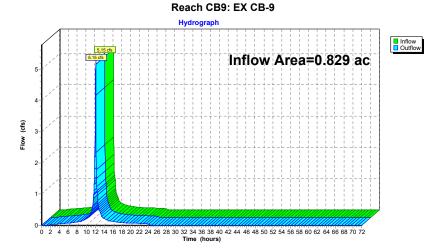
14850_Existing-Drainage-Areas	NOAA 24-hr C NOAA 25-yr Rainfall=6.04"
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#### Summary for Reach CB9: EX CB-9

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	0.829 ac, 94.03% Impervious, Inflow	Depth = 5.68" for NOAA 25-yr event
Inflow =	5.15 cfs @ 12.13 hrs, Volume=	0.393 af
Outflow =	5.15 cfs @ 12.13 hrs, Volume=	0.393 af, Atten= 0%, Lag= 0.0 min
Routed to Rea	ach DP-2 : PORTLAND STREET DRAINA	AGE

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs



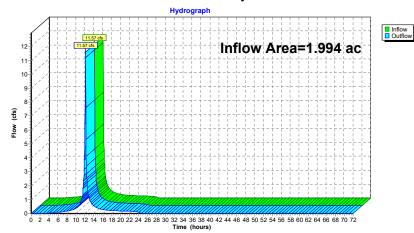
14850_Existing-Drainage-Areas	NOAA 24-hr C NOAA	25-yr Rainfall=6.04"
Prepared by {enter your company name here}		Printed 4/6/2022
HydroCAD® 10.10-7a s/n 00546 © 2021 HydroCAD Software	Solutions LLC	Page 114

#### Summary for Reach DP-1: French Rodney Blvd 14" Outfall

[40] Hint: Not Described (Outflow=Inflow)

Inflow Are	ea =	1.994 ac, 68.32% Impervious, Inflov	v Depth = 4.94"	for NOAA 25-yr event
Inflow	=	11.57 cfs @ 12.13 hrs, Volume=	0.822 af	-
Outflow	=	11.57 cfs @ 12.13 hrs, Volume=	0.822 af, Atte	en= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs



#### Reach DP-1: French Rodney Blvd 14" Outfall

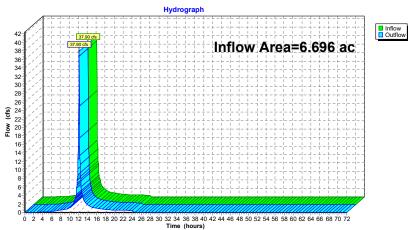
14850 Existing-Drainage-Areas	NOAA 24-hr C N	OAA 25-yr Rainfall=6.04"
Prepared by {enter your company name here}		Printed 4/6/2022
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## Summary for Reach DP-2: PORTLAND STREET DRAINAGE

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area =	6.696 ac, 62.59% Impervious, Inflow Depth = 4.79" for NOAA 25-yr event
Inflow =	37.90 cfs @ 12.13 hrs, Volume= 2.673 af
Outflow =	37.90 cfs @ 12.13 hrs, Volume= 2.673 af, Atten= 0%, Lag= 0.0 min

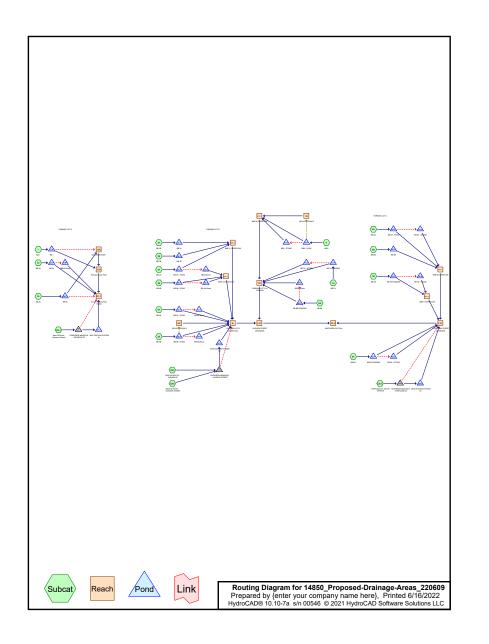
Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs



#### Reach DP-2: PORTLAND STREET DRAINAGE

# APPENDIX D

Post-Development Conditions – HydroCAD Calculations



14850_Proposed-Drainage-Areas_220609	
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#### Rainfall Events Listing (selected events)

E	vent#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
	1	NOAA 10-yr	NOAA 24-hr	С	Default	24.00	1	5.02	2
	2	NOAA 100-yr	NOAA 24-hr	С	Default	24.00	1	7.59	2
	3	NOAA 2-yr	NOAA 24-hr	С	Default	24.00	1	3.40	2
	4	NOAA 25-yr	NOAA 24-hr	С	Default	24.00	1	6.04	2

14850 Proposed-Drainage-Areas 2206
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#### Area Listing (selected nodes)

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Area (sq-ft)	CN	Description (subcatchment-numbers)
214,977	83	1/4 acre lots, 38% imp, HSG C (1, 2b, 3A, 5B, 6A, 6B, 9, CB-1, CB-5, CB3, CB4)
16,767	74	>75% Grass cover, Good, HSG C (1, 2a, 2b, 3A, 3B, 4A, 4B, 5A, 5B, 6A, 6B, 7A, 7B, 8A, 8B, 9)
107,061	98	Paved parking, HSG C  (1, 2a, 2b, 3A, 3B, 4A, 4B, 5A, 5B, 6A, 6B, 7A, 7B, 8A, 8B, 9)
37,488	98	Roadway (CB-1, CB-5, CB3, CB4)
070.000	~~	

376,293 88 TOTAL AREA

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points Runoff by SCS TR-20 method, UH=SCS, Weighted-CN Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind Pond 1-P: BB 1 Peak Elev=10.14' Storage=1,014 cf Inf Discarded=0.05 cfs 2,554 cf Primary=1.61 cfs 1,219 cf Secondary=2.06 cfs 7,505 cf Outfl	
Discarueu-0.05 cis 2,004 ci Pfilitary=1.01 cis 1,219 ci Secondary=2.06 cis 7,505 ci Outifi	
Pond 2a-P: BB 2a         Peak Elev=9.38' Storage=261 cf         In           Primary=0.33 cfs         310 cf         Secondary=0.03 cfs         873 cf         Out	
Pond 2b-P: BB 2b         Peak Elev=8.36' Storage=167 cf         In           Primary=2.30 cfs         7,553 cf         Secondary=0.00 cfs         0 cf         Out	
Pond 3A-P: BB 3A Peak Elev=11.07' Storage=449 cf In Discarded=0.02 cfs 1,314 cf Primary=1.07 cfs 2,063 cf Ou	
Pond 3B-P: BB 3B         Peak Elev=12.89' Storage=254 cf           Discarded=0.01 cfs         799 cf           Primary=0.49 cfs         798 cf	
Pond 4A-P: BB 4A - POND         Peak Elev=10.06' Storage=230 cf         In           Primary=0.51 cfs         683 cf         Secondary=0.04 cfs         1,108 cf         Out	
Pond 4A-S: BB4A-Stone Peak Elev=7.12' Storage=26 cf II	nflow=0.04 cfs 1,108 cf utflow=0.04 cfs 1,091 cf
Pond 4B-P: BB 4B - POND Peak Elev=11.03' Storage=131 cf II Primary=0.32 cfs 437 cf Secondary=0.02 cfs 690 cf Ou	
Pond 4B-S: BB 4A-Stone Peak Elev=7.85' Storage=15 cf	Inflow=0.02 cfs 690 cf Outflow=0.02 cfs 680 cf
Pond 5A-P: BB 5A - POND Peak Elev=9.43' Storage=369 cf II Primary=0.00 cfs 0 cf Secondary=0.04 cfs 1,052 cf Ou	
Pond 5A-PS: BB 5A-Stone Peak Elev=5.94' Storage=56 cf II	nflow=0.04 cfs 1,052 cf utflow=0.04 cfs 1,016 cf
Pond 5B-P: BB 5B - POND         Peak Elev=9.04'         Storage=711 cf         Inf           Primary=1.59 cfs         931 cf         Secondary=0.09 cfs         4,004 cf         Tertiary=2.23 cfs         6,654 cf         Outfil	
Pond 5B-PS: BB 5B-Stone Peak Elev=5.46' Storage=96 cf II	nflow=0.09 cfs 4,004 cf utflow=0.09 cfs 3,953 cf
Pond 6A-P: BB 6A - POND Peak Elev=11.00' Storage=420 cf In Primary=1.38 cfs 2,347 cf Secondary=0.05 cfs 1,928 cf Ou	
Pond 6A-PS: BB 6A - STONE Peak Elev=7.39' Storage=34 cf In Ou	nflow=0.05 cfs 1,928 cf utflow=0.05 cfs 1,906 cf
Pond 6B-P: BB 6B Peak Elev=12.08' Storage=380 cf In Discarded=0.02 cfs 1,071 cf Primary=0.69 cfs 1,212 cf Ou	

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Pond 7A-P: BB 7A PONDING Primary=0.34	Peak Elev=9.98' Storage=148 ct cfs 465 cf Secondary=0.02 cfs 706 cf	
Pond 7A-S: BB 7A - STONE	Peak Elev=5.19' Storage=4	cf Inflow=0.02 cfs 706 c Outflow=0.02 cfs 706 c
Pond 7B-P: BB 7B PONDING Primary=0.52 cl	Peak Elev=10.71' Storage=274 cl fs 676 cf Secondary=0.03 cfs 1,153 cf	
Pond 7B-S: BB 7B - STONE	Peak Elev=7.62' Storage=17 cl	f Inflow=0.03 cfs 1,153 c Outflow=0.03 cfs 1,141 c
Pond 8a-P: BB 8A PONDING Primary=0.38 cl	Peak Elev=9.09' Storage=285 cl fs 357 cf Secondary=0.04 cfs 1,041 cf	
Pond 8a-s: BB 8A - STONE	Peak Elev=5.63' Storage=30 cl	f Inflow=0.04 cfs 1,041 c Outflow=0.04 cfs 1,023 c
Pond 8B-P: BB 8B-PONDING Primary=0.60 cl	Peak Elev=9.72' Storage=255 cl fs 805 cf Secondary=0.04 cfs 1,266 cf	
Pond 8B-S: BB 8B-Stone	Peak Elev=6.33' Storage=39 cl	f Inflow=0.04 cfs 1,266 c Outflow=0.04 cfs 1,239 c
Pond 9-P: BB9 - POND Primary=0.67 cfs 245 cf Secondary=0.05 cf	Peak Elev=8.93' Storage=430 cf s 2,215 cf Tertiary=2.51 cfs 7,693 cf C	
Pond 9-PS: BB9 - STONE	Peak Elev=5.40' Storage=23 cl	f Inflow=0.05 cfs 2,215 c Outflow=0.05 cfs 2,200 c
Pond 14P: BB2A-Stone	Peak Elev=5.61' Storage=6	cf Inflow=0.03 cfs 873 c Outflow=0.03 cfs 873 c
Pond DMH1: DIVERSION MANHOLE - SE Primary=0.71 cfs	YMOUR ST Peak Elev=9.81 4,632 cf Secondary=1.32 cfs 1,386 cf	' Inflow=2.03 cfs 6,018 c Outflow=2.03 cfs 6,018 c
Pond DMH2: DIVERSION MANHOLE - HU Primary=2.93 cfs 23,55	DSON STREET Peak Elev=20.37 9 cf Secondary=11.27 cfs 18,068 cf Ou	Inflow=14.20 cfs 41,627 c utflow=14.20 cfs 41,627 c
Pond DMH3: DIVERSION MANHOLE - PO Primary=1.06 ct	RTLANDST Peak Elev=11.73 fs 4,862 cf Secondary=0.90 cfs 872 cf	' Inflow=1.96 cfs 5,735 c Outflow=1.96 cfs 5,735 c
Pond INF-1: INFILTRATIONSYSTEM#1 Discarded=0.04	Peak Elev=9.44' Storage=1,658 cf 8 cfs  4,195 cf  Primary=0.15 cfs  437 cf	
Pond INF-2: INFILTRATIONSYSTEM#2 Discarded=0.12 cfs	Peak Elev=9.80' Storage=3,428 cf 9,228 cf Primary=2.66 cfs 14,332 cf C	
Pond INF3: INFILTRATIONSYSTEM#1 Discarded=0.05 of	Peak Elev=9.66' Storage=991 cl cfs 2,902 cf Primary=1.00 cfs 1,960 cf	

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			Summary f	or Pond 1-P: BB 1	
Second	= 3 ed = 0 ted to Reach ary = 2	8.85 cfs @ 1 3.72 cfs @ 1 0.05 cfs @ 1 .61 cfs @ 1 17R : Rodne	2.13 hrs, Volun 2.15 hrs, Volun 2.15 hrs, Volun 2.15 hrs, Volun y French Pipe 2.15 hrs, Volun	e= 11,278 cf, Atter e= 2,554 cf e= 1,219 cf	for NOAA 10-yr event n= 3%, Lag= 1.1 min
Peak Ĕl	lev= 10.14'@	) 12.15 hrs 8	Surf.Area= 1,748	.00 hrs, dt= 0.05 hrs sf Storage= 1,014 cf	
			in calculated for in (860.5 - 807.	11,270 cf (100% of inflow) 1)	
Volume	Invert	Avail Sto	rage Storage	Description	
#1	9.20			Stage Data (Prismatic)List	ed below (Recalc)
Elevatio (fee		urf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	
9.2	20	490	0	0	
9.9 10.1	50 20	800 1,830	194 920	194 1,114	
Device	Routing	Invert			
#1 #2	Primary Discarded	8.00' 9.20'	Inlet / Outlet In n= 0.013, Flor <b>1.020 in/hr Ex</b>	Culvert , square edge headwall, Kv vert= 8.00' / 7.90' S= 0.01 v Area= 0.79 sf filtration over Surface are o Groundwater Elevation = 6	00 '/' Cc= 0.900
#3 #4	Device 1 Secondary	10.00' 9.83'	24inch-Dome	Grate Capacity X 2.00 Grate Capacity	
		Max=0.05 cf Controls 0.05		HW=10.14' (Free Discharg	je)
1=Ci	, ulvert (Pass	es 1.59 cfs of	4.85 cfs potent	/=10.14' (Free Discharge) al flow) Controls 1.59 cfs)	
Second	lary OutFlov 5inch-Dome	v Max=2.05 c Grate Capac	fs @ 12.15 hrs <b>ity</b> (Custom Cor	HW=10.14' (Free Dischar trols 2.05 cfs)	ge)

HydroCAD® 10.10-7a s/n 00546 © 2021 HydroCAD Software Solutions LLC Page 7	HydroCAD® 10.10-7a s/n 00546 © 2021 HydroCAD Software Solutions LLC P
Summary for Pond 2a-P: BB 2a	Summary for Pond 2b-P: BB 2b
Inflow Area = 3,116 sf, 92.62% Impervious, Inflow Depth = 4.55° for NOAA 10-yr event Inflow = 0.37 cfs @ 12.13 hrs, Volume= 1,182 cf Outflow = 0.36 cfs @ 12.15 hrs, Volume= 1,182 cf, Atten= 3%, Lag= 1.3 min Primary = 0.33 cfs @ 12.15 hrs, Volume= 310 cf Routed to Reach DP-1 : French Rodney Blvd Outfall Secondary = 0.03 cfs @ 12.15 hrs, Volume= 873 cf Routed to Pond 14P : BB2A-Stone Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Peak Elev= 9.38 @ 12.15 hrs Surf.Area= 416 sf Storage= 261 cf Plug-Flow detention time= 61.2 min calculated for 1,181 cf (100% of inflow) Center-of-Mass det. time= 61.2 min (824.9 - 763.7) Volume Invert Avail.Storage Storage Description #1 8.50° 462 cf Custom Stage Data (Prismatic)Listed below (Recalc) Elevation Surf.Area Inc.Store Cum.Store (feet) (sq.ft) (cubic-feet) 8.50 180 0 0 0 9.80 530 462 462 <u>Pvice Routing Invert Outle Tevices</u> #1 Primary 7.80° 10.0° Round Culvert L=10.0° CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 7.80° / 7.0° S= 0.0100 /7 Cc= 0.900 n= 0.013, Flow Area= 0.55 sf #2 Device 1 9.30° 24inch-Dome Grate Capacity #3 Secondary 8.50° 2.12.15 hrs HW=9.38' (Free Discharge) <u>-2=24inch-Dome Grate Capacity</u> (Custom Controls 0.33 cfs) Secondary OutFlow Max=0.03 cfs @ 12.15 hrs HW=9.38' (Free Discharge) <u>-3=Exflitration (Controls 0.03 cfs</u> )	Inflow Area = 21,490 sf, 80.50% Impervious, Inflow Depth = 4.22" for NOAA 10-yr event Inflow = 2.43 cfs @ 12.13 hrs, Volume= 7,553 cf Outflow = 2.30 cfs @ 12.15 hrs, Volume= 7,553 cf Routed to Reach 15R : ISOLATOR ROW 1 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf Routed to Reach DP-1 : French Rodney Blvd Outfall Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Peak Elev= 8.36' @ 12.15 hrs Surf.Area= 603 sf Storage= 167 cf Plug-Flow detention time= 1.7 min calculated for 7,553 cf (100% of inflow) Center-of-Mass det, time= 1.7 min calculated for 7,553 cf (100% of inflow) Center-of-Mass det, time= 1.7 min calculated for 7,553 cf (100% of inflow) Center-of-Mass det, time= 1.7 min (781.9 - 780.2) Volume Invert Avail.Storage Storage Description #1 8.00' 710 cf Custom Stage Data (Prismatic)_isted below (Recalc) Elevation Surf.Area Inc.Store Cum.Store (feet) (sq-ft) (cubic-feet) 8.00 320 0 0 0 9.00 1,100 710 710 Device Routing Invert Outlet Devices #1 Secondary 7.00' 12.0" Round Culvert L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert -7.00' fo.9 S= 0.0100'7 Cc= 0.900 n= 0.013, Flow Area= 0.79 sf #2 Device 1 8.50' 24inch-Dome Grate Capacity X 2.00 #3 Primary 0.80' 15inch-Dome Grate Capacity X 2.00 #3 Primary 0.80' 15inch-Dome Grate Capacity Primary OutFlow Max=2.29 cfs @ 12.15 hrs HW=8.36' (Free Discharge) -3-15inch-Dome Grate Capacity (Custom Controls 2.29 cfs) Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=8.36' (Free Discharge) -3-224inch-Dome Grate Capacity (Controls 0.00 cfs)

HydroCA	<u>D® 10.10-7a</u>	s/n 00546 ©:	2021 HydroCAD Softwa	e Solutions LLC	Page 9
			Summary for Pon	d 3A-P: BB 3A	
Routing Peak El Plug-Flc	= 1 = 1 ed = 0 = 1 ed to Reach by Stor-Ind n ev= 11.07' @ w detention of-Mass det. <u>Invert</u> 10.25' on Su et) 25 45	.14 cfs @ 12 .09 cfs @ 12 .02 cfs @ 12 .07 cfs @ 12 BMP_3 : BMF nethod, Time 12.15 hrs S time= 84.5 mi time= 84.7 mi Avail.Stor	2.13 hrs, Volume=           2.15 hrs, Volume=           Span=         0.00-72.00 hrs           urf.Area=         894 sf           1 n calculated for 3,374           n (885.1 - 800.4 )           age         Storage Descrip           12 cf         Custom Stage           Inc.Store         Cur	3,377 cf 3,377 cf, Atten 1,314 cf 2,063 cf , dt= 0.05 hrs age= 449 cf cf (100% of inflow) tion	for NOAA 10-yr event = 4%, Lag= 1.3 min ed below (Recalc)
	Routing	,	Outlet Devices	022	
#1	Primary	9.30'	<b>10.0" Round Culver</b> L= 10.0' CPP, squar Inlet / Outlet Invert= 9 n= 0.013, Flow Area	e edge headwall, Ke .30' / 9.20' S= 0.010	
#2	Discarded	10.25'	1.020 in/hr Exfiltrati Conductivity to Grour	on over Surface are	
#3 #4	Primary Device 1	11.15' 10.90'			eir 2 End Contraction(s)
t 2=Ex Primary 1=Cι 1=Cι	filtration(C OutFlow M Ivert(Passe =24inch-Don	Controls 0.02 ax=1.07 cfs ( es 1.07 cfs of ne Grate Cap	s @ 12.15 hrs HW=11 cfs) 2 12.15 hrs HW=11.0 3.06 cfs potential flow <b>acity</b> (Custom Control <b>r Weir</b> (Controls 0.00	7' (Free Discharge) s 1.07 cfs)	ə)

Discarded = 0.01 cfs @ 12.14 hrs, Volume= 799 cf Primary = 0.49 cfs @ 12.14 hrs, Volume= 798 cf Routed to Reach BMP_3 : BMP-3_OVERFLOW Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Peak Elev= 12.89' @ 12.14 hrs Surf.Area= 562 sf Storage= 254 cf Plug-Flow detention time= 96.8 min calculated for 1,597 cf (100% of inflow) Center-of-Mass det. time= 96.7 min ( 876.9 - 780.2 ) Volume Invert Avail.Storage Storage Description #1 12.20' 263 cf Custom Stage Data (Prismatic)Listed below (Recalc) Elevation Surf.Area Inc.Store Cum.Store (feet) (sq-ft) (cubic-feet) (cubic-feet) 12.20 180 0 0 12.90 570 263 263 Device Routing Invert Outlet Devices #1 Primary 10.70' 10.0'' Round Culvert L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 10.70' / 10.60' S= 0.0100 '/' Cc= 0.90 n= 0.013, Flow Area= 0.55 sf #2 Discarded 12.20' 24inch-Dome Grate Capacity #4 Primary 12.85' 5.0' long Sharp-Crested Rectangular Weir 2 End Contract Discarded OutFlow Max=0.01 cfs @ 12.14 hrs HW=12.88' (Free Discharge)		0.10-/a s	/n 00546 ©	2021 HydroCAD S	oftware Sol	utions LLC	Page
Inflow       =       0.51 cfs @       12.13 hrs, Volume=       1,597 cf         Outflow       =       0.51 cfs @       12.14 hrs, Volume=       1,597 cf, Atten=1%, Lag=1.0 m         Discarded       =       0.01 cfs @       12.14 hrs, Volume=       799 cf         Primary       =       0.49 cfs @       12.14 hrs, Volume=       799 cf         Routed to Reach BMP_3 : BMP-3_OVERFLOW       Routed to Reach BMP_3 : BMP-3_OVERFLOW       788 cf         Routing by Stor-Ind method, Time Span=       0.00-72.00 hrs, dt=       0.05 hrs         Peak Elev=       12.89' @       12.14 hrs, Volume=       798 cf         Routing by Stor-Ind method, Time Span=       0.00-72.00 hrs, dt=       0.05 hrs         Peak Elev=       12.89' @       12.14 hrs, Volume=       798 cf         Routing by Stor-Ind method, Time Span=       0.00-72.00 hrs, dt=       0.05 hrs         Peak Elev=       12.89' @       12.14 hrs, Volume=       507 cf         Volume       Invert       Avail.Storage       Storage 254 cf         Plug-Flow detention time=       96.8 min calculated for 1,597 cf (100% of inflow)       Center-of-Mass det. time=       96.7 min (876.9 - 780.2)         Volume       Invert       Avail.Storage       Storage Description       #1       12.20'263 cf       Custor Store				Summary for	Pond 3B	-P: BB 3B	
Outflow =       0.51 cfs @       12.14 hrs, Volume=       1,597 cf, Atten= 1%, Lag= 1.0 n         Discarded =       0.01 cfs @       12.14 hrs, Volume=       799 cf         Primary =       0.49 cfs @       12.14 hrs, Volume=       798 cf         Routed to Reach BMP_3 : BMP-3_OVERFLOW       Routed to Reach BMP_3 : BMP-3_OVERFLOW       798 cf         Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs       Peak Elev= 12.89' @ 12.14 hrs       Surf.Area= 562 sf       Storage= 254 cf         Plug-Flow detention time= 96.8 min calculated for 1,597 cf (100% of inflow)       Center-of-Mass det. time= 96.7 min (876.9 - 780.2)       Volume       Invert       Avail.Storage       Storage Description         #1       12.20'       263 cf       Custom Stage Data (Prismatic)Listed below (Recalc)         Elevation       Surf.Area       Inc.Store       Cum.Store         (feet)       (sq-ft)       (cubic-feet)       (cubic-feet)         12.90       570       263       263         Device       Routing       Invert       Outlet Devices         #1       Primary       10.0'       Round Culvert         L=       10.0'       CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 10.70' / 10.60'       S= 0.0100 '/ Cc= 0.90 n= 0.013, Flow Area= 0.55 sf         #2       Discarded <td< th=""><th></th><th></th><th></th><th></th><th></th><th></th><th>for NOAA 10-yr event</th></td<>							for NOAA 10-yr event
Discarded =       0.01 cfs @       12.14 hrs, Volume=       799 cf         Primary =       0.49 cfs @       12.14 hrs, Volume=       798 cf         Routed to Reach BMP_3 : BMP-3_OVERFLOW       Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs       798 cf         Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs       Peak Elev= 12.89'@ 12.14 hrs       Surf.Area= 562 sf       Storage= 254 cf         Plug-Flow detention time= 96.8 min calculated for 1,597 cf (100% of inflow)       Center-of-Mass det. time= 96.7 min (876.9 - 780.2 )       Volume       Invert       Avail.Storage       Storage Description         #1       12.20'       263 cf       Custom Stage Data (Prismatic)Listed below (Recalc)         Elevation       Surf.Area       Inc.Store       Cum.Store         (feet)       (sq-ft)       (cubic-feet)       (cubic-feet)         12.20       180       0       0         12.90       570       263       263         Device       Routing       Invert       Outlet Devices         #1       Primary       10.0'' Round Culvert       L= 10.0'' CPP, square edge headwall, Ke= 0.500         1.2.90       570       263       263         #1       Primary       10.20'' n/hr Exfiltration over Surface area         Conductivity to Groun							n = 10/1 or $n = 10$ min
Primary= $0.49 \text{ cfs}$ @ $12.14 \text{ hrs, Volume}$ $798 \text{ cf}$ Routed to Reach BMP_3 : BMP-3_OVERFLOW780 cfRouting by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrsPeak Elev= 12.89' @ $12.14 \text{ hrs Surf.Area} = 562 \text{ sf Storage} = 254 \text{ cf}$ Plug-Flow detention time= 96.8 min calculated for 1,597 cf (100% of inflow)Center-of-Mass det. time= 96.7 min (876.9 - 780.2 )VolumeInvertAvail.StorageStorage Description#112.20'263 cfCustom Stage Data (Prismatic)Listed below (Recalc)ElevationSurf.AreaInc.StoreCum.Store(feet)(sq-ft)(cubic-feet)(cubic-feet)12.90570263263DeviceRoutingInvertOutlet Devices#1Primary10.70'10.0" Round CulvertL= 10.0'CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 10.70' / 10.60' S= 0.0100 'r' Cc= 0.90 n= 0.013, Flow Area= 0.55 sf#2Discarded12.20'#3Device 112.80'#4Primary12.85'5.0' long Sharp-Crested Rectangular Weir 2 End ContractDiscarded OutFlow Max=0.01 cfs @12.14 hrs HW=12.88'(Free Discharge)							n- 170, Lag- 1.0 min
Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs         Peak Elev= 12.89'@ 12.14 hrs       Surf.Area= 562 sf       Storage= 254 cf         Plug-Flow detention time= 96.8 min calculated for 1,597 cf (100% of inflow)         Center-of-Mass det. time= 96.7 min (876.9 - 780.2 )         Volume       Invert       Avail.Storage       Storage Description         #1       12.20'       263 cf       Custom Stage Data (Prismatic)Listed below (Recalc)         Elevation       Surf.Area       Inc.Store       Cum.Store         (feet)       (sq-ft)       (cubic-feet)       0         12.20       180       0       0         12.90       570       263       263         Device       Routing       Invert       Outlet Devices         #1       Primary       10.0''       Round Culvert         L= 10.0'       CPP, square edge headwall, Ke= 0.500       Inlet / Outlet Invert= 10.70' / 10.60' S= 0.0100 '/' Cc= 0.90         m= 0.013, Flow Area=       0.55 sf       #2       Discarded       12.20'       1.020 in/hr Exfiltration over Surface area         Conductivity to Groundwater Elevation = 8.70'       12.80'       24inch-Dome Grate Capacity       #4       Primary       12.85'       5.0' long Sharp-Crested Rectangular Weir 2 End Contract         Øiscarded OutFlow Ma		0.4	9 cfs @ 12	2.14 hrs, Volume	=	798 cf	
Peak Elev= 12.89'@ 12.14 hrs       Surf.Area= 562 sf       Storage= 254 cf         Plug-Flow detention time= 96.8 min calculated for 1,597 cf (100% of inflow)         Center-of-Mass det. time= 96.7 min (876.9 - 780.2)         Volume       Invert       Avail.Storage       Storage Description         #1       12.20'       263 cf       Custom Stage Data (Prismatic)Listed below (Recalc)         Elevation       Surf.Area       Inc.Store       Cum.Store         (feet)       (sq-ft)       (cubic-feet)       (cubic-feet)         12.90       570       263       263         Device       Routing       Invert       Outlet Devices         #1       Primary       10.70'       10.0" Round Culvert         L= 10.0'       CPP, square edge headwall, Ke= 0.500       Inlet / Outlet Invert= 10.70' / 10.60' S= 0.0100 '/' Cc= 0.90         #2       Discarded       12.20'       1020 in/hr Exfiltration over Surface area         Conductivity to Groundwater Elevation = 8.70'       24inch-Dome Grate Capacity       #4         #4       Primary       12.80'       24inch-Dome Grate Capacity       #2 End Contract         Discarded OutFlow Max=0.01 cfs @ 12.14 hrs HW=12.88'       (Free Discharge)       12.90'	outed to	Reach B	MP_3 : BM	P-3_OVERFLOW			
Peak Elev= 12.89'@ 12.14 hrs       Surf.Area= 562 sf       Storage= 254 cf         Plug-Flow detention time= 96.8 min calculated for 1,597 cf (100% of inflow)         Center-of-Mass det. time= 96.7 min (876.9 - 780.2)         Volume       Invert       Avail.Storage       Storage Description         #1       12.20'       263 cf       Custom Stage Data (Prismatic)Listed below (Recalc)         Elevation       Surf.Area       Inc.Store       Cum.Store         (feet)       (sq-ft)       (cubic-feet)       (cubic-feet)         12.90       570       263       263         Device       Routing       Invert       Outlet Devices         #1       Primary       10.70'       10.0" Round Culvert         L= 10.0'       CPP, square edge headwall, Ke= 0.500       Inlet / Outlet Invert= 10.70' / 10.60' S= 0.0100 '/' Cc= 0.90         #2       Discarded       12.20'       1020 in/hr Exfiltration over Surface area         Conductivity to Groundwater Elevation = 8.70'       24inch-Dome Grate Capacity       #4         #4       Primary       12.80'       24inch-Dome Grate Capacity       #2 End Contract         Discarded OutFlow Max=0.01 cfs @ 12.14 hrs HW=12.88'       (Free Discharge)       12.90'	ina hy S	tor-Ind m	ethod Time	Span= 0 00-72 0	0 hrs dt=	0 05 hrs	
Center-of-Mass det. time=96.7 min (876.9 - 780.2 )         Volume       Invert       Avail.Storage       Storage Description         #1       12.20'       263 cf       Custom Stage Data (Prismatic)Listed below (Recalc)         Elevation       Surf.Area       Inc.Store       Cum.Store         (feet)       (sq-ft)       (cubic-feet)       (cubic-feet)         12.20       180       0       0         12.90       570       263       263         Device       Routing       Invert       Outlet Devices         #1       Primary       10.70'       10.0" Round Culvert       L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 10.70' / 10.60' S= 0.0100 '/' Cc= 0.90 n= 0.013, Flow Area= 0.55 sf         #2       Discarded       12.20'       12.80'       24inch-Dome Grate Capacity         #3       Device 1       12.80'       24inch-Dome Grate Capacity       #4'' Primary         #4       Primary       12.85'       5.0' long Sharp-Crested Rectangular Weir 2 End Contract         Discarded OutFlow Max=0.01 cfs @ 12.14 hrs HW=12.88' (Free Discharge)       12.14 hrs HW=12.88' (Free Discharge)							
Center-of-Mass det. time= 96.7 min (876.9 - 780.2)         Volume       Invert       Avail.Storage       Storage Description         #1       12.20'       263 cf       Custom Stage Data (Prismatic)Listed below (Recalc)         Elevation       Surf.Area       Inc.Store       Cum.Store         (feet)       (sq-ft)       (cubic-feet)       (cubic-feet)         12.20       180       0       0         12.90       570       263       263         Device       Routing       Invert       Outlet Devices         #1       Primary       10.70'       10.0" Round Culvert       L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 10.70' / 10.60' S = 0.0100 '/' Cc= 0.90 n = 0.013, Flow Area = 0.55 sf         #2       Discarded       12.20'       1.020 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 8.70'         #3       Device 1       12.80'       24inch-Dome Grate Capacity         #4       Primary       12.85'       5.0' long Sharp-Crested Rectangular Weir 2 End Contract         Discarded OutFlow Max=0.01 cfs @ 12.14 hrs HW=12.88' (Free Discharge)		Ŭ			Ű.		
Volume         Invert         Avail.Storage         Storage Description           #1         12.20'         263 cf         Custom Stage Data (Prismatic)Listed below (Recalc)           Elevation         Surf.Area         Inc.Store         Cum.Store           (feet)         (sq-ft)         (cubic-feet)         (cubic-feet)           12.20         180         0         0           12.90         570         263         263           Device         Routing         Invert         Outlet Devices           #1         Primary         10.70'         10.0'' Round Culvert           L= 10.0'         CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 10.70' / 10.60'' S= 0.0100 '/' Cc= 0.90 n= 0.013, Flow Area= 0.55 sf           #2         Discarded         12.20'         1.020 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 8.70'           #3         Device 1         12.80'         24inch-Dome Grate Capacity           #4         Primary         12.85'         5.0' long Sharp-Crested Rectangular Weir 2 End Contract           Discarded OutFlow Max=0.01 cfs @ 12.14 hrs HW=12.88' (Free Discharge)         12.14 hrs HW=12.88' (Free Discharge)						00% of inflow)	
#1         12.20'         263 cf         Custom Stage Data (Prismatic)Listed below (Recalc)           Elevation         Surf.Area (sq-ft)         Inc.Store (cubic-feet)         Cum.Store (cubic-feet)           12.20         180         0         0           12.90         570         263         263           Device         Routing         Invert         Outlet Devices           #1         Primary         10.70'         10.0" Round Culvert L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 10.70' / 10.60' S= 0.0100 '/' Cc= 0.90 n= 0.013, Flow Area= 0.55 sf           #2         Discarded         12.20'         1.020 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 8.70'           #3         Device 1         12.80'         24inch-Dome Grate Capacity           #4         Primary         12.85'         5.0' long Sharp-Crested Rectangular Weir 2 End Contract           Discarded OutFlow Max=0.01 cfs @ 12.14 hrs HW=12.88'         (Free Discharge)	er-or-ivia	iss det. II	ne- 90.7 m	11 ( 070.9 - 700.2	)		
Elevation (feet)         Surf.Area (sq-ft)         Inc.Store (cubic-feet)         Cum.Store (cubic-feet)           12.20         180         0         0           12.90         570         263         263           Device         Routing         Invert         Outlet Devices           #1         Primary         10.70'         10.0" Round Culvert L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 10.70' / 10.60' S= 0.0100 '/' Cc= 0.90 n= 0.013, Flow Area= 0.55 sf           #2         Discarded         12.20'         1.020 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 8.70'           #3         Device 1         12.80'         24inch-Dome Grate Capacity           #4         Primary         12.85'         5.0' long Sharp-Crested Rectangular Weir 2 End Contract           Discarded OutFlow Max=0.01 cfs @ 12.14 hrs HW=12.88'         (Free Discharge)	me	Invert	Avail.Sto	rage Storage D	escription		
(feet)         (sq-ft)         (cubic-feet)         (cubic-feet)           12.20         180         0         0         12.90           12.90         570         263         263           Device         Routing         Invert         Outlet Devices           #1         Primary         10.70'         10.0" Round Culvert L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 10.70' / 10.60' S= 0.0100 '/' Cc= 0.90 n= 0.013, Flow Area= 0.55 sf           #2         Discarded         12.20'         1.020 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 8.70'           #3         Device 1         12.80'         24inch-Dome Grate Capacity #4         Primary           12.85'         5.0' long Sharp-Crested Rectangular Weir 2 End Contract         Discarded OutFlow Max=0.01 cfs @ 12.14 hrs HW=12.88' (Free Discharge)		12.20'	26	63 cf Custom S	tage Data	(Prismatic)List	ed below (Recalc)
(feet)         (sq-ft)         (cubic-feet)         (cubic-feet)           12.20         180         0         0         12.90           12.90         570         263         263           Device         Routing         Invert         Outlet Devices           #1         Primary         10.70'         10.0" Round Culvert L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 10.70' / 10.60' S= 0.0100 '/' Cc= 0.90 n= 0.013, Flow Area= 0.55 sf           #2         Discarded         12.20'         1.020 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 8.70'           #3         Device 1         12.80'         24inch-Dome Grate Capacity           #4         Primary         12.85'         5.0' long Sharp-Crested Rectangular Weir 2 End Contract           Discarded OutFlow Max=0.01 cfs @ 12.14 hrs HW=12.88'         (Free Discharge)	otion	Surf	Aree	Ino Storo	Cum Sto	r0	
12.20         180         0         0           12.90         570         263         263           Device         Routing         Invert         Outlet Devices           #1         Primary         10.70'         10.0" Round Culvert L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 10.70' / 10.60' S= 0.0100 '/' Cc= 0.90 n= 0.013, Flow Area= 0.55 sf           #2         Discarded         12.20'         1.020 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 8.70'           #3         Device 1         12.80'         24inch-Dome Grate Capacity           #4         Primary         12.85'         5.0' long Sharp-Crested Rectangular Weir 2 End Contract           Discarded OutFlow Max=0.01 cfs @ 12.14 hrs HW=12.88'         (Free Discharge)							
Device     Routing     Invert     Outlet Devices       #1     Primary     10.70'     10.0" Round Culvert       L= 10.0'     CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 10.70' / 10.60'     S= 0.0100 '/' Cc= 0.90 n= 0.013, Flow Area= 0.55 sf       #2     Discarded     12.20'     1.020 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 8.70'       #3     Device 1     12.80'     24inch-Dome Grate Capacity       #4     Primary     12.85'     5.0' long Sharp-Crested Rectangular Weir 2 End Contract       Discarded OutFlow Max=0.01 cfs @ 12.14 hrs HW=12.88'     (Free Discharge)					(		
#1       Primary       10.70'       10.0" Round Culvert L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 10.70' / 10.60' S= 0.0100 '/' Cc= 0.90 n= 0.013, Flow Area= 0.55 sf         #2       Discarded       12.20'       1.020 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 8.70'         #3       Device 1       12.80'       24inch-Dome Grate Capacity #4       Primary         12.85'       5.0' long Sharp-Crested Rectangular Weir 2 End Contract         Discarded OutFlow Max=0.01 cfs @ 12.14 hrs HW=12.88'       (Free Discharge)	12.90		570	263	26	53	
L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 10.70' / 10.60' S= 0.0100 '/' Cc= 0.90 n= 0.013, Flow Area= 0.55 sf         #2       Discarded       12.20'         1.020       In/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 8.70'         #3       Device 1       12.80'         #4       Primary       12.85'         5.0' long Sharp-Crested Rectangular Weir 2 End Contract         Discarded OutFlow Max=0.01 cfs @ 12.14 hrs HW=12.88'	ce Roi	iting	Invert	Outlet Devices			
Inlet / Outlet Invert= 10.70 <sup>7</sup> / 10.60' S= 0.0100 '/ Cc= 0.90 n = 0.013, Flow Area= 0.55 sf         #2       Discarded       12.20' 1.020 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 8.70'         #3       Device 1       12.80' 24inch-Dome Grate Capacity         #4       Primary       12.85' 5.0' long Sharp-Crested Rectangular Weir 2 End Contract         Discarded OutFlow Max=0.01 cfs @ 12.14 hrs HW=12.88' (Free Discharge)	1 Prin	nary	10.70'				
#2       Discarded       n= 0.013, Flow Area= 0.55 sf         #2       Discarded       12.20'       1.020 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 8.70'         #3       Device 1       12.80'       24inch-Dome Grate Capacity         #4       Primary       12.85'       5.0' long Sharp-Crested Rectangular Weir 2 End Contract         Discarded OutFlow Max=0.01 cfs @ 12.14 hrs HW=12.88'       (Free Discharge)							
#2       Discarded       12.20'       1.020 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 8.70'         #3       Device 1       12.80'       24inch-Dome Grate Capacity         #4       Primary       12.85'       5.0' long Sharp-Crested Rectangular Weir 2 End Contract         Discarded OutFlow Max=0.01 cfs @ 12.14 hrs HW=12.88'       (Free Discharge)							0100 '/' Cc= 0.900
Conductivity to Groundwater Elevation = 8.70' #3 Device 1 12.80' <b>24inch-Dome Grate Capacity</b> #4 Primary 12.85' <b>5.0' Iong Sharp-Crested Rectangular Weir</b> 2 End Contract <b>Discarded OutFlow</b> Max=0.01 cfs @ 12.14 hrs HW=12.88' (Free Discharge)	2 Dis	carded	12.20'				20
#4 Primary 12.85' 5.0' long Sharp-Crested Rectangular Weir 2 End Contract Discarded OutFlow Max=0.01 cfs @ 12.14 hrs HW=12.88' (Free Discharge)							
Discarded OutFlow Max=0.01 cfs @ 12.14 hrs HW=12.88' (Free Discharge)							
	4 Prin	nary	12.85'	5.0' long Sharp	o-Crested	Rectangular W	leir 2 End Contraction(s)
	arded C	utFlow N	/lax=0.01.cf	s@ 12 14 hrs H	W=12 88'	(Free Dischard	ie)
						(Free Dissinally	<b>JO /</b>
Primary OutFlow Max=0.48 cfs @ 12.14 hrs HW=12.88' (Free Discharge)						ree Discharge)	
-3=24inch-Dome Grate Capacity (Custom Controls 0.37 cfs)						7 cfs)	
4=Sharp-Crested Rectangular Weir (Weir Controls 0.11 cfs @ 0.61 fps)							
,			-	-		,	

ydroCAD® 10.10-7a s/n 00546 © 2021 HydroCAD Software Solutions LLC Page 11	HydroCAD® 10.10-7a s/n 00546 © 2021 HydroCAD Software Solutions LLC Page					
Summary for Pond 4A-P: BB 4A - POND	Summary for Pond 4A-S: BB4A-Stone					
Inflow Area =       4,843 sf, 86.37% Impervious, Inflow Depth =       4.44" for NOAA 10-yr event         Inflow =       0.56 cfs @       12.13 hrs, Volume=       1,792 cf         Jutflow =       0.54 cfs @       12.15 hrs, Volume=       1,792 cf, Atten= 4%, Lag= 1.3 min         rimary =       0.51 cfs @       12.15 hrs, Volume=       683 cf         Routed to Reach BMP_3 : BMP-3_OVERFLOW       683 cf         iecondary =       0.04 cfs @       12.15 hrs, Volume=         Routed to Pond 4A-S : BB4A-Stone       1,108 cf         Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs       12.15 hrs         Yeak Elev=       10.06'@       12.15 hrs	Inflow       =       0.04 cfs @       12.15 hrs, Volume=       1,108 cf         Outflow       =       0.04 cfs @       12.18 hrs, Volume=       1,091 cf, Atten= 1%, Lag= 2.0 min         Primary       =       0.04 cfs @       12.18 hrs, Volume=       1,091 cf, Atten= 1%, Lag= 2.0 min         Primary       =       0.04 cfs @       12.18 hrs, Volume=       1,091 cf         Routed to Reach BMP4_O : BMP-4 OVERFLOW       Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs       Peak Elev= 7.12' @ 12.18 hrs         Surf.Area= 230 sf       Storage= 26 cf       Plug-Flow detention time= 25.0 min calculated for 1,091 cf (98% of inflow)         Center-of-Mass det. time=       15.4 min ( 856.2 - 840.7 )       15.10 min					
lug-Flow detention time= 30.6 min calculated for 1,790 cf (100% of inflow)	Volume Invert Avail.Storage Storage Description					
center-of-Mass det. time= 30.6 min ( 800.4 - 769.8 )	#1 6.75' 138 cf Custom Stage Data (Prismatic)Listed below (Recalc) 460 cf Overall x 30.0% Voids					
Volume         Invert         Avail.Storage         Storage Description           #1         9.50'         320 cf         Custom Stage Data (Prismatic)Listed below (Recalc)           Elevation         Surf.Area         Inc.Store         Cum.Store           (feet)         (sq-ft)         (cubic-feet)         (cubic-feet)           9.50         250         0         0           10.20         664         320         320	Elevation     Surf.Area     Inc.Store     Cum.Store       (feet)     (sq-ft)     (cubic-feet)     (cubic-feet)       6.75     230     0     0       8.75     230     460     460       Device     Routing     Invert     Outlet Devices					
10.20 004 520 520	#1 Primary 7.00' <b>4.0'' Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low hea					
#1       Primary       8.00'       12.0" Round Culvert L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 8.00' / 7.90' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf         #2       Secondary       9.50'       2.410 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 6.00'         #3       Primary       10.10'       5.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)         #4       Device 1       9.95'       24inchDome Grate Capacity Head (feet) 0.00 0.05 0.10 0.15 0.20 0.25 0.30 0.35 0.40 0.45 0.50 0.55 0.60 0.65 0.70 0.75 0.80 0.85 0.90 0.95 1.00 1.05 1.10         Disch. (cfs)       0.000 0.180 0.460 0.850 1.360 1.830 2.420 3.100 3.600 3.800 4.000 4.200 4.380 4.600 4.750 4.900 5.100 5.200 5.350 5.450 5.650 5.800 5.950         trimary OutFlow Max=0.50 cfs @ 12.15 hrs HW=10.06' (Free Discharge)	Primary OutFlow Max=0.04 cfs @ 12.18 hrs HW=7.12' (Free Discharge) └─1=Orifice/Grate (Orifice Controls 0.04 cfs @ 1.20 fps)					
-1=Culvert (Passes 0.50 cfs @ 12.15 hrs HW=10.06 (Free Discharge) -1=Culvert (Passes 0.50 cfs of 4.72 cfs potential flow) -1=calvert (Passes 0.50 cfs of 4.72 cfs potential flow) -3=Sharp-Crested Rectangular Weir (Controls 0.00 cfs) econdary OutFlow Max=0.04 cfs @ 12.15 hrs HW=10.06' (Free Discharge) -2=Exfiltration (Controls 0.04 cfs)						

		Sum	nary for Pond 4B-P: BB 4B - POND	
Second	= 0.35 cfs = 0.35 cfs = 0.32 cfs = 0.32 cfs red to Reach BMP4	s@ 12. s@ 12. s@ 12. s@ 12. _O:BM s@ 12.	14 hrs, Volume= 690 cf	Inflow = Outflow = Primary = Routed to Routing by St Peak Elev= 7.
			span= 0.00-72.00 hrs, dt= 0.05 hrs rf.Area= 354 sf Storage= 131 cf	Plug-Flow det Center-of-Mas
Plug-Flo	U U	29.9 min	calculated for 1,128 cf (100% of inflow)	Volume #1
Volume	Invert Av	/ail.Stora	ge Storage Description	
#1	10.50'	199	cf Custom Stage Data (Prismatic)Listed below (Recalc)	Elevation (feet)
Elevatio (fee			Inc.Store Cum.Store cubic-feet) (cubic-feet)	7.50
10. 11.			0 0 199 199	Device Rout #1 Prim
Device	Routing		Outlet Devices	
#1	Primary		<b>12.0" Round Culvert</b> = 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 9.00' / 8.90' S= 0.0100 '/' Cc= 0.900 = 0.013, Flow Area= 0.79 sf	Primary OutF 1=Orifice/
#2	Secondary	10.50'	2.410 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 7.00'	
#3 #4			5.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s) 24inch-Dome Grate Capacity	
1=Ci 1-4 3=Sh Second	ulvert (Passes 0.32 =24inch-Dome Gra narp-Crested Recta	2 cfs of 4 ate Capa angular =0.02 cfs	12.14 hrs HW=11.02' (Free Discharge) .67 cfs potential flow) city (Custom Controls 0.32 cfs) Weir (Controls 0.00 cfs) @ 12.14 hrs HW=11.02' (Free Discharge) s)	

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		s	Summary	/ for Po	ond 4B-S: B	B 4A-	Stone
Inflow = Outflow = Primary = Routed to	.0.0	2 cfs @ 2 cfs @	12.14 hrs 12.17 hrs 12.17 hrs BMP-4 O	, Volum , Volum	e= e=	690 cf 680 cf, 680 cf	Atten= 0%, Lag= 1.4 min
	tor Ind me	thed Ti	ma Snan-	0 00 72	00 hrs dt- 0 (	05 bro	
					Storage= 15		
Peak Elev= Plug-Flow de Center-of-M	7.85' @ 12 etention tin	2.17 hrs ne= 23.9 ne= 14.3	Surf.Area min calcul min ( 855	= 145 sf lated for .6 - 841.3	Storage= 15 680 cf (98% o	cf	)
Peak Elev= Plug-Flow de Center-of-M	7.85' @ 12 etention tin ass det. tin	2.17 hrs ne= 23.9 ne= 14.3	Surf.Area min calcul min ( 855 <u>Storage S</u> 87 cf <b>(</b>	= 145 sf lated for .6 - 841.3 Storage [ Custom 3	Storage= 15 680 cf (98% o 3 ) Description	cf f inflow Prismati	) i <b>c)</b> Listed below (Recalc)
Peak Elev= Plug-Flow d Center-of-M Volume	7.85' @ 12 etention tin ass det. tin <u>Invert</u> 7.50' Surf.	2.17 hrs ne= 23.9 ne= 14.3	Surf.Area min calcul min ( 855 <u>Storage S</u> 87 cf <b>(</b>	= 145 sf lated for .6 - 841.3 Storage [ Custom 3 290 cf Ov Store	Storage= 15 680 cf (98% o 3 ) Description Stage Data (P	cf f inflow Prismati	
Plug-Flow do Center-of-M Volume #1 Elevation	7.85' @ 12 etention tin ass det. tin <u>Invert</u> 7.50' Surf.	2.17 hrs ne= 23.9 ne= 14.3 <u>Avail.S</u> .Area	Surf.Area min calcul min ( 855 Storage S 87 cf C 2 Inc.S	= 145 sf lated for .6 - 841.3 Storage [ Custom 3 290 cf Ov Store	Storage= 15 680 cf (98% o 3 ) Description Stage Data (P verall x 30.0% Cum.Store	cf f inflow Prismati	

Primary OutFlow Max=0.02 cfs @ 12.17 hrs HW=7.85' (Free Discharge) -1=Orifice/Grate (Orifice Controls 0.02 cfs @ 1.05 fps)

14850_Proposed-Drainage-Areas_220609       NOAA 24-hr C       NOAA 10-yr Rainfall=5.02"         Prepared by {enter your company name here}       Printed 6/16/2022         HydroCAD® 10.10-7a s/n 00546 © 2021 HydroCAD Software Solutions LLC       Page 15	14850_Proposed-Drainage-Areas_220609 NOAA 24-h Prepared by {enter your company name here} HydroCAD® 10.10-7a s/n 00546 © 2021 HydroCAD Software Solutions LLC
Summary for Pond 5A-P: BB 5A - POND	Summary for Pond 5A-PS: BB 5A-S
Inflow Area =       3,072 sf, 73.44% Impervious, Inflow Depth = 4.11" for NOAA 10-yr event         Inflow =       0.34 cfs @       12.13 hrs, Volume=       1,052 cf         Outflow =       0.04 cfs @       12.69 hrs, Volume=       1,052 cf, Atten= 87%, Lag= 33.5 min         Primary =       0.00 cfs @       0.00 hrs, Volume=       0 cf         Routed to Reach B : PARKING LOT B OVERFLOW       Secondary =       0.04 cfs @       12.69 hrs, Volume=       1,052 cf         Routed to Pond 5A-PS : BB 5A-Stone       1,052 cf       1,052 cf       1,052 cf	Inflow = 0.04 cfs @ 12.69 hrs, Volume= 1,052 cf Outflow = 0.04 cfs @ 12.78 hrs, Volume= 1,016 cf, A Primary = 0.04 cfs @ 12.78 hrs, Volume= 1,016 cf Routed to Reach B : PARKING LOT B OVERFLOW Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Peak Elev= 5.94' @ 12.78 hrs Surf.Area= 480 sf Storage= 56 cf
Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Peak Elev= 9.43' @ 12.69 hrs Surf.Area= 688 sf Storage= 369 cf	Plug-Flow detention time= 46.0 min calculated for 1,016 cf (97% of inflow) Center-of-Mass det. time= 26.8 min(876.8 - 850.0)
Plug-Flow detention time= 65.3 min calculated for 1,052 cf (100% of inflow) Center-of-Mass det. time= 65.2 min ( 850.0 - 784.8 )	Volume         Invert         Avail.Storage         Storage Description           #1         5.55'         288 cf         Custom Stage Data (Prismatic)           960 cf Overall x 30.0% Voids
Volume         Invert         Avail.Storage         Storage Description           #1         8.80'         645 cf         Custom Stage Data (Prismatic)Listed below (Recalc)	Elevation Surf.Area Inc.Store Cum.Store
Elevation Surf.Area Inc.Store Cum.Store (feet) (sq-ft) (cubic-feet) (cubic-feet <u>)</u>	(feet)         (sq-ft)         (cubic-feet)         (cubic-feet)           5.55         480         0         0         0           7.55         480         960         960
8.80         480         0         0         0         9.80         810         645	Device Routing Invert Outlet Devices
Device Routing Invert Outlet Devices	#1 Primary 5.80' 4.0" Vert. Orifice/Grate C= 0.600 L
#1       Primary       7.60'       12.0" Round Culvert L = 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert = 7.60' / 7.50' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf         #2       Secondary       8.80'       2.410 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 5.60'         #3       Device 1       9.50'       24inch-Dome Grate Capacity         Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=8.80'       (Free Discharge)         -1=Culvert (Passes 0.00 cfs of 2.86 cfs potential flow)       -3=24inch-Dome Grate Capacity (Controls 0.00 cfs)	Primary OutFlow Max=0.04 cfs @ 12.78 hrs HW=5.94' (Free Discharg 1=Orifice/Grate (Orifice Controls 0.04 cfs @ 1.28 fps)
Secondary OutFlow Max=0.04 cfs @ 12.69 hrs HW=9.43' (Free Discharge)	

	S	ummary for Pon	d 5A-PS: BB 5A-	Stone
Inflow =		12.69 hrs, Volume		
Outflow =		12.78 hrs, Volume		Atten= 0%, Lag= 5.9 min
Primary = Routed to I		12.78 hrs, Volume NG LOT B OVERFL		
		me Span= 0.00-72.0		
Peak Elev= 5.	.94' @ 12.78 hrs	Surf.Area= 480 sf	Storage= 56 cf	
Plua-Flow det	ention time= 46.0	min calculated for 1	,016 cf (97% of inflow	v)
Center-of-Mas	ss det. time= 26.8	min ( 876.8 - 850.0	) `	,
		,	,	
	Invert Avail.	Storage Storage De	escription	Listed below (Recalc)
Volume		Storage Storage Do 288 cf Custom S	escription	, c)Listed below (Recalc)
Volume #1	Invert Avail.5 5.55'	Storage Storage Do 288 cf Custom S 960 cf Ove	éscription tage Data (Prismatio rall x 30.0% Voids	, c)Listed below (Recalc)
Volume #1 Elevation	Invert Avail.5 5.55' Surf.Area	Storage Storage Do 288 cf Custom S 960 cf Ove Inc.Store	éscription tage Data (Prismatio rall x 30.0% Voids Cum.Store	, c)Listed below (Recalc)
Volume #1	Invert Avail.5 5.55'	Storage Storage Do 288 cf Custom S 960 cf Ove	éscription tage Data (Prismatio rall x 30.0% Voids	, c)Listed below (Recalc)
Volume #1 Elevation (feet)	Invert Avail.5 5.55' Surf.Area (sq-ft)	Storage Storage Dr 288 cf Custom S 960 cf Ove Inc.Store (cubic-feet)	/ escription tage Data (Prismatic rall x 30.0% Voids Cum.Store (cubic-feet)	, c)Listed below (Recalc)
Volume #1 Elevation (feet) 5.55	Invert Avail.5 5.55' Surf.Area (sq-ft) 480 480	Storage Storage Di 288 cf Custom S 960 cf Ove Inc.Store (cubic-feet) 0 960	sscription tage Data (Prismation rall x 30.0% Voids Cum.Store (cubic-feet) 0	, ́cjListed below (Recalc)

NOAA 24-hr C NOAA 10-yr Rainfall=5.02" Printed 6/16/2022

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# Summary for Pond 5B-P: BB 5B - POND

[93] Warning: Storage range exceeded by 0.04' [88] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area =	34,755 sf	, 71.39% Impervious,	Inflow Depth = 4.00" for NOAA 10-yr event
Inflow =	3.81 cfs @	12.13 hrs, Volume=	11,589 cf
Outflow =	3.92 cfs @	12.14 hrs, Volume=	11,589 cf, Atten= 0%, Lag= 0.6 min
Primary =	1.59 cfs @	12.14 hrs, Volume=	931 cf
Routed to Rea	ch B : PARKI	NG LOT B OVERFLO	W
Secondary =	0.09 cfs @	12.13 hrs, Volume=	4,004 cf
Routed to Pon	d 5B-PS : BB	5B-Stone	
Tertiary =	2.23 cfs @	12.14 hrs, Volume=	6,654 cf
Routed to Rea	ch 6R : ISOL/	ATOR ROW 2	

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Peak Elev= 9.04' @ 12.14 hrs Surf.Area= 1,450 sf Storage= 711 cf

Plug-Flow detention time= 28.2 min calculated for 11,589 cf (100% of inflow) Center-of-Mass det. time= 28.2 min ( 817.2 - 789.0 )

Volume	Inver	Avail.Sto	rage St	orage De	escription		
#1	8.20	' 7 <sup>.</sup>	11 cf <b>C</b> u	ustom St	age Data (Pr	ismatic)Listed b	elow (Recalc)
Elevation (feet)	S	urf.Area (sq-ft)	Inc.St (cubic-fe		Cum.Store (cubic-feet)		
8.20 9.00		327 1,450	7	0 711	0 711		
-	outing	Invert	Outlet [	Devices			
#1 Pr	imary	7.00'	12.0" F	Round C	ulvert		

#1	Fiilialy	1.00	12.0 Round Culvert
			L= 10.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 7.00' / 6.90' S= 0.0100 '/' Cc= 0.900
			n= 0.013, Flow Area= 0.79 sf
#2	Secondary	8.20'	2.410 in/hr Exfiltration over Surface area
	,		Conductivity to Groundwater Elevation = 5.00'
#3	Device 1	8.90'	24inchDome Grate Capacity X 2.00
			Head (feet) 0.00 0.05 0.10 0.15 0.20 0.25 0.30 0.35 0.40 0.45
			0.50 0.55 0.60 0.65 0.70 0.75 0.80 0.85 0.90 0.95 1.00 1.05
			1.10
			Disch. (cfs) 0.000 0.180 0.460 0.850 1.360 1.830 2.420 3.100
			3.600 3.800 4.000 4.200 4.380 4.600 4.750 4.900 5.100 5.200
			5.350 5.450 5.650 5.800 5.950
#4	Tertiary	8.70'	15inch-Dome Grate Capacity
	rentary	0.70	Tomen-Dome Grate Capacity

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Primary OutFlow Max=1.49 cfs @ 12.14 hrs HW=9.04' (Free Discharge) 1=Culvert (Passes 1.49 cfs of 4.69 cfs potential flow) -3=24inchDome Grate Capacity (Custom Controls 1.49 cfs)

Secondary OutFlow Max=0.09 cfs @ 12.13 hrs HW=9.03' (Free Discharge)

Tertiary OutFlow Max=2.18 cfs @ 12.14 hrs HW=9.04' (Free Discharge) 4=15inch-Dome Grate Capacity (Custom Controls 2.18 cfs)

	Su	mmary for Po	nd 5B-PS: BB (	5B-Stone	
nflow =		2.13 hrs, Volum			
Outflow = Primary = Routed to F	0.09 cfs @ 1	2.20 hrs, Volum 2.20 hrs, Volum	e= 3,953 e= 3,953	cf, Atten= 3%, cf	Lag= 3.9 min
	r-Ind method, Tim 46' @ 12.20 hrs S			rs	
	ention time=27.1 m s det. time= 18.7 n			nflow)	
		orage Storage I			
#1	5.00' 4		Stage Data (Prisn Overall x 30.0% V		ow (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)		
5.00 7.00	690 690	0 1,380	0 1,380		
Device Routi	ng Invert	Outlet Devices			
#1 Prima	ary 5.25'	4.0" Vert. Orif	ice/Grate C= 0.6	00 Limited to v	veir flow at low heads
	low Max=0.09 cfs Grate (Orifice Cont			charge)	

		Sun	nmary for Por	nd 6A-P:	BB 6A - I	PONI	כ	
Second	= 1.4 = 1.4 = 1.3 ed to Reach E	47 cfs @ 12 43 cfs @ 12 38 cfs @ 12 3MP6_O : BI 05 cfs @ 12	6.97% Impervio 2.13 hrs, Volume 2.15 hrs, Volume 2.15 hrs, Volume MP-6 OVERFLO 2.15 hrs, Volume - STONE	e= e= e= W	4,275 cf			A 10-yr event g= 1.0 min
Routing Peak El	by Stor-Ind m ev= 11.00' @	ethod, Time 12.15 hrs S	Span= 0.00-72. Surf.Area= 698 st	00 hrs, dt= f Storage=	0.05 hrs 420 cf			
			n calculated for in ( 852.2 - 810.3		00% of inflo	ow)		
Volume	Invert	Avail.Sto	rade Storade D	escription				
#1	10.20'			Stage Data	(Prismati	c)Liste	d below (	Recalc)
<b>F</b> 1		£ A	la a Otana	-				
Elevatio (fee		f.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Sto (cubic-fee				
10.2	/	350	0	(00010100	0			
11.		740	491	49	-			
Device	Routing	Invert	Outlet Devices					
#1	Primary	9.00'	12.0" Round (					
	,		L= 10.0' CPP, Inlet / Outlet Inv n= 0.013, Flow	square edg / vert= 9.00'	8.90' S=			0.900
#2	Secondary	10.20'		iltration ov	er Surfac			
#3	Device 1	10.80'	24inch-Dome				~~	
#4	Primary	11.00'	5.0' long Shar	p-Crested I	Rectangul	ar We	ir 2 End (	Contraction(s)
1=Ci 1_3= 4=Sh	ulvert (Passe =24inch-Dom narp-Crested	s 1.36 cfs of e Grate Cap Rectangula Max=0.05 c	12.15 hrs HW 4.63 cfs potentia sacity (Custom C r Weir (Weir Cor fs @ 12.15 hrs H cfs)	al flow) controls 1.36 ntrols 0.00 c	6 cfs) fs @ 0.07	fps)	e)	

		Su	mmary	for Pon	d 6A-PS	: BB 6A -	STONE		
Inflow Outflow Primary Route	= = = d to Rea	0.05 cfs @ 0.05 cfs @ 0.05 cfs @ ch BMP6_O :	12.18 h 12.18 h	rs, Volum rs, Volum	ne= ne=	1,928 cf 1,906 cf, 1,906 cf	Atten= 1%,	Lag= 2.2 min	
		nd method, Ti							
Peak Elev	v= 7.39° (	@ 12.18 hrs	Surf.Are	a= 290 st	Storage	= 34 ct			
		on time= 17.9				99% of inflo	w)		
Center-of	-Mass de	et. time= 11.8	min ( 99	4.3 - 982.	.4)				
Volume	Inve	ert Avail.S	Storage	Storage	Descriptio	n			
#1	7.0	)0'	174 cf			<b>ta (Prismat</b> ).0% Voids	ic)Listed bel	ow (Recalc)	
Elevation (feet		Surf.Area (sq-ft)		Store -feet)	Cum.S (cubic-f				
7.00	/	290	(Cubic	0	(Cubic-i	0			
9.00		290		580		580			
Device	Routina	Inve	ort Outle	et Devices					
-	Primary		-			C= 0.600	Limited to	veir flow at low heads	
	· · - ·						,		
		Max=0.05 cl				-ree Discha	irge)		

			Summary for I	Pond 6B-P: BB 6B	
Inflow A Inflow Outflow Discard Primary Rout	= ( = ( ed = ( = (	0.73 cfs @ 12 0.71 cfs @ 12 0.02 cfs @ 12 0.69 cfs @ 12	7.45% Impervious 2.13 hrs, Volumes 2.15 hrs, Volumes 2.15 hrs, Volumes 2.15 hrs, Volumes MP-6 OVERFLOW	= 2,283 cf, Atte = 1,071 cf = 1,212 cf	for NOAA 10-yr event n= 4%, Lag= 1.3 min
				0 hrs, dt= 0.05 hrs	
Peak El	ev= 12.08'@	) 12.15 hrs S	Surf.Area= 678 sf	Storage= 380 cf	
Center- Volume #1		Avail.Sto	nin ( 890.5 - 780.2 rage Storage De	escription	
#1			A of Custom St	tago Data (Priematic) is	ted below (Recalc)
				tage Data (Prismatic)Lis	ted below (Recalc)
Elevati	on Si	urf.Area	Inc.Store	Cum.Store	ted below (Recalc)
Elevati (fee 11.: 12.	on Su et) 20			<b>u</b> ( )	ted below (Recalc)
(fee	on Su et) 20	urf.Area (sq-ft) 185 690	Inc.Store (cubic-feet) 0	Cum.Store (cubic-feet) 0	ted below (Recalc)
(fee 11.: 12.	on Su et) 20 10	urf.Area (sq-ft) 185 690 Invert	Inc.Store (cubic-feet) 0 394 Outlet Devices 12.0" Round C L= 10.0' CPP, s Inlet / Outlet Inve	Cum.Store (cubic-feet) 0 394 ulvert square edge headwall, K ert= 10.10' / 10.00' S= 0	e= 0.500
(fee 11.1 12. Device	on Su et) 20 10 Routing	urf.Area (sq-ft) 185 690 Invert	Inc.Store (cubic-feet) 0 394 Outlet Devices 12.0" Round C L= 10.0' CPP, s Inlet / Outlet Inve n= 0.013, Flow / 1.020 in/hr Extil	Cum.Store (cubic-feet) 0 394 ulvert square edge headwall, K ert= 10.10' / 10.00' S= 0 Area= 0.79 sf tiration over Surface are	e= 0.500 .0100 '/ Cc= 0.900 ea
(fee 11.: 12. Device #1	on Si et) 20 10 <u>Routing</u> Primary	urf.Area (sq-ft) 185 690 <u>Invert</u> 10.10'	Inc.Store (cubic-feet) 0 394 Outlet Devices 12.0" Round C L= 10.0' CPP, s Inlet / Outlet Inve n= 0.013, Flow A 1.020 in/hr Exfil Conductivity to C	Cum.Store (cubic-feet) 0 394 ulvert square edge headwall, K ert= 10.10' / 10.00' S= 0 Area= 0.79 sf tirtation over Surface are Groundwater Elevation = 1	e= 0.500 .0100 '/ Cc= 0.900 ea
(fer 11 12. <u>Device</u> #1 #2 #3 <b>Discarc</b>	on Si ot) 20 10 Primary Discarded Device 1 Ied OutFlow	urf.Area (sq-ft) 185 690 <u>Invert</u> 10.10' 11.20' 11.95'	Inc.Store (cubic-feet) 0 394 Outlet Devices 12.0" Round C L= 10.0' CPP, s Inlet / Outlet Inve n= 0.013, Flow / 1.020 in/hr Exfil Conductivity to C 24inch-Dome G s @ 12.15 hrs HW	Cum.Store (cubic-feet) 0 394 ulvert square edge headwall, K ert= 10.10' / 10.00' S= 0 Area= 0.79 sf tirtation over Surface are Groundwater Elevation = 1	e= 0.500 .0100 1/ Cc= 0.900 ea 3.10'

<b>14850_Proposed-Drainage-Areas_220609</b> NOAA 24-hr C       NOAA 10-yr Rainfall=5.02"         Prepared by {enter your company name here}       Printed       6/16/2022         HydroCAD® 10.10-7a s/n 00546 © 2021 HydroCAD Software Solutions LLC       Page 23	14850_Proposed-Drainage-Areas_220609       NOAA 24-hr C       NOAA 10-yr Rainfall=5.02         Prepared by {enter your company name here}       Printed 6/16/202         HydroCAD® 10.10-7a s/n 00546 © 2021 HydroCAD Software Solutions LLC       Page 2
Summary for Pond 7A-P: BB 7A PONDING	Summary for Pond 7A-S: BB 7A - STONE
Inflow Area =       3,165 sf, 87.74% Impervious, Inflow Depth =       4.44" for NOAA 10-yr event         Inflow =       0.37 cfs @       12.13 hrs, Volume=       1,171 cf         Outflow =       0.36 cfs @       12.14 hrs, Volume=       1,171 cf, Atten= 2%, Lag= 0.9 min         Primary =       0.34 cfs @       12.14 hrs, Volume=       465 cf         Routed to Reach 7R : PARKING LOT C to HUDSON       Secondary =       0.02 cfs @       12.14 hrs, Volume=         Secondary =       0.02 cfs @       12.14 hrs, Volume=       706 cf	Inflow       =       0.02 cfs @       12.14 hrs, Volume=       706 cf         Outflow       =       0.02 cfs @       12.17 hrs, Volume=       706 cf, Atten= 0%, Lag= 1.5 min         Primary       =       0.02 cfs @       12.17 hrs, Volume=       706 cf         Routed to Reach 7R : PARKING LOT C to HUDSON       Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs       Peak Elev= 5.19' @       12.17 hrs
Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Peak Elev= 9.98' @ 12.14 hrs Surf.Area= 322 sf Storage= 148 cf	Plug-Flow detention time= 4.8 min calculated for 706 cf (100% of inflow) Center-of-Mass det. time= 4.7 min ( 863.0 - 858.3 )
Plug-Flow detention time= 39.4 min calculated for 1,171 cf (100% of inflow) Center-of-Mass det. time= 39.4 min ( 809.1 - 769.8 ) Volume Invert Avail.Storage Storage Description	Volume         Invert         Avail.Storage         Storage Description           #1         5.10'         90 cf         Custom Stage Data (Prismatic)Listed below (Recalc) 300 cf Overall x 30.0% Voids
Volume     Invert     Avail.storage     Storage Description       #1     9.30'     227 cf     Custom Stage Data (Prismatic)Listed below (Recalc)       Elevation     Surf.Area     Inc.Store     Cum.Store       (feet)     (sq-ft)     (cubic-feet)     (cubic-feet)       9.30     115     0     0       10.20     390     227     227	Elevation     Surf.Area     Inc.Store     Cum.Store       (feet)     (sq-ft)     (cubic-feet)     (cubic-feet)       5.10     150     0     0       7.10     150     300     300       Device     Routing     Invert     Outlet Devices       #1     Primary     5.10'     4.0'' Vert. Orifice/Grate     C= 0.600     Limited to weir flow at low heads
Device       Routing       Invert       Outlet Devices         #1       Primary       8.10'       12.0"       Round Culvert         L= 10.0'       CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 8.10' / 8.00'       S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf         #2       Secondary       9.30'       2.410 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 6.10'         #3       Device 1       9.90'       24inch-Dome Grate Capacity         #4       Primary       10.10'       5.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)         Primary OutFlow Max=0.33 cfs @ 12.14 hrs HW=9.98' (Free Discharge)       -1=Culvert (Passes 0.33 cfs of 4.44 cfs potential flow)        3=24inch-Dome Grate Capacity (Custom Controls 0.33 cfs)       4=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)         Secondary OutFlow Max=0.02 cfs @ 12.14 hrs HW=9.98' (Free Discharge)       -2=Exfiltration ( Controls 0.02 cfs)	Primary OutFlow Max=0.02 cfs @ 12.17 hrs HW=5.19' (Free Discharge) -1=Orifice/Grate (Orifice Controls 0.02 cfs @ 1.03 fps)

Summary for Pond 7B-S: BB 7B - ST         Inflow       =       0.03 cfs @       12.15 hrs, Volume=       1,153 cf         Outflow       =       0.03 cfs @       12.17 hrs, Volume=       1,141 cf, At         Primary       =       0.03 cfs @       12.17 hrs, Volume=       1,141 cf, At         Primary       =       0.03 cfs @       12.17 hrs, Volume=       1,141 cf         Routed to Reach BMP7_O : BMP-7 OVERFLOW       Routing by Stor-Ind method, Time Span=       0.00-72.00 hrs, dt=       0.05 hrs         Peak Elev=       7.62' @       12.17 hrs       Surf.Area=       150 sf       Storage=       17 cf         Plug-Flow detention time=       16.0 min calculated for 1,141 cf       (99% of inflow)       Center-of-Mass det. time=       10.1 min (865.5 - 855.4 )         Volume       Invert       Avail.Storage       Storage Description         #1       7.25'       90 cf       Custom Stage Data (Prismatic)L         300 cf Overall x 30.0% Voids       Storage       Elevation       Surf.Area         Inc.Store       Cum.Store       (cubic-feet)       0       0         9.25       150       0       0       0       0         9.25       150       300       300       300         De
Outflow=0.03 cfs @12.17 hrs, Volume=1,141 cf, AtPrimary=0.03 cfs @12.17 hrs, Volume=1,141 cfRouted to Reach BMP7_O : BMP-7 OVERFLOWRouting by Stor-Ind method, Time Span=0.00-72.00 hrs, dt=0.05 hrsPeak Elev=7.62' @12.17 hrsSurf.Area=150 sfStorage=17 cfPlug-Flow detention time=16.0 min calculated for 1,141 cf (99% of inflow) Center-of-Mass det. time=10.1 min (865.5 - 855.4 )VolumeInvertAvail.StorageStorage Description#17.25'90 cfCustom Stage Data (Prismatic)L 300 cf Overall x 30.0% VoidsStorageElevationSurf.AreaElevationSurf.AreaInc.StoreCum.Store (cubic-feet)009.25150300300300DeviceRoutingInvertOutlet Devices100
Center-of-Mass det. time= 10.1 min ( 865.5 - 855.4 )         Volume       Invert       Avail.Storage       Storage Description         #1       7.25'       90 cf       Custom Stage Data (Prismatic)L 300 cf Overall x 30.0% Voids         Elevation       Surf.Area       Inc.Store       Cum.Store (feet)         7.25       150       0       0         9.25       150       300       300         Device       Routing       Invert       Outlet Devices
#1       7.25'       90 cf       Custom Stage Data (Prismatic)L 300 cf Overall x 30.0% Voids         Elevation       Surf.Area       Inc.Store       Cum.Store         (feet)       (sq-ft)       (cubic-feet)       (cubic-feet)         7.25       150       0       0         9.25       150       300       300         Device       Routing       Invert       Outlet Devices
(feet)         (sq-ft)         (cubic-feet)         (cubic-feet)           7.25         150         0         0           9.25         150         300         300           Device         Routing         Invert         Outlet Devices
7.25         150         0         0           9.25         150         300         300           Device         Routing         Invert         Outlet Devices
#1 Primary 7.50' <b>4.0" Vort Orifice/Grate</b> C=0.600 Liv
Primary OutFlow Max=0.03 cfs @ 12.17 hrs HW=7.62' (Free Discharge

		Su	mmary	for Po	nd 7B-S: B	B 7B - \$	STONE
Inflow Outflow Primary Routed	= (	0.03 cfs @ 0.03 cfs @ 0.03 cfs @ 0.03 cfs @ 0 BMP7_O :	12.17 h 12.17 h	rs, Volur rs, Volur	ne= ne=	1,153 cf 1,141 cf, 1,141 cf	Atten= 0%, Lag= 1.4 min
					2.00 hrs, dt=		
Peak Elev=	= 7.62 @	12.17 hrs	Surf.Are	a= 150 s	f Storage= 1	/ CT	
		time= 16.0 time= 10.1			r 1,141 cf (99 5.4)	% of inflo	w)
Volume	Invert	Avail.S	torage	Storage	Description		
#1	7.25	1	90 cf		<b>Stage Data</b> Overall x 30.0		<b>c)</b> Listed below (Recalc)
Elevation	S	urf.Area	Inc.	Store	Cum.Stor	е	
(feet)		(sq-ft)	(cubic	-feet)	(cubic-fee	t)	
7.25		150		0		0	
9.25		150		300	30	0	
Device R	louting	Inver	t Outle	et Device	s		
#1 P	rimary	7.50	)' 4.0"	Vert. Ori	fice/Grate	C= 0.600	Limited to weir flow at low heads

NOAA 24-hr C NOAA 10-yr Rainfall=5.02" Printed 6/16/2022

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rs HW=7.62' (Free Discharge) fs @ 1.18 fps)

14850_Proposed-Drainage-Areas_220609       NOAA 24-hr C       NOAA 10-yr Rainfall=5.02"         Prepared by {enter your company name here}       Printed 6/16/2022         HydroCAD® 10.10-7a s/n 00546 © 2021 HydroCAD Software Solutions LLC       Page 27	<b>14850_Proposed-D</b> Prepared by {enter you <u>HydroCAD® 10.10-7a s/n</u>
Summary for Pond 8a-P: BB 8A PONDING	
Inflow Area =       3,978 sf, 79.99% Impervious, Inflow Depth = 4.22" for NOAA 10-yr event         Inflow =       0.45 cfs @       12.13 hrs, Volume=       1,398 cf         Outflow =       0.42 cfs @       12.16 hrs, Volume=       1,398 cf, Atten= 6%, Lag= 2.0 min         Primary =       0.38 cfs @       12.16 hrs, Volume=       357 cf         Routed to Reach P ST : PORTLAND STREET DRAINAGE         Secondary =       0.04 cfs @       12.16 hrs, Volume=         1,041 cf         Routed to Pond 8a-s : BB 8A - STONE	Inflow = 0.04 Outflow = 0.04 Primary = 0.04 Routed to Reach P S Routing by Stor-Ind me Peak Elev= 5.63' @ 12.
Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Peak Elev= 9.09' @ 12.16 hrs Surf.Area= 612 sf Storage= 285 cf	Plug-Flow detention tim Center-of-Mass det. tim
Plug-Flow detention time= 39.7 min calculated for 1,398 cf (100% of inflow) Center-of-Mass det. time= 39.7 min ( 819.9 - 780.2 )	Volume Invert #1 5.30'
Volume         Invert         Avail.Storage         Storage Description           #1         8.50'         575 cf         Custom Stage Data (Prismatic)Listed below (Recalc)	Elevation Surf.
	(feet) (s
Elevation Surf.Area Inc.Store Cum.Store (feet) (sq-ft) (cubic-feet) (cubic-feet)	5.30 7.30
8.50 360 0 0 9.50 790 575 575	Device Routing
Device Routing Invert Outlet Devices	#1 Primary
#1     Primary     7.40'     12.0"     Round Culvert L= 10.0'     CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 7.40' / 7.30'     S= 0.0100 '/'     Cc= 0.900 n= 0.013, Flow Area= 0.79 sf       #2     Secondary     8.50'     2.410 in/hr Exfiltration over Surface area	Primary OutFlow Max
#3 Device 1 9.00' <b>24inch-Dome Grate Capacity</b>	
#4 Primary 9.40' <b>5.0' long Sharp-Crested Rectangular Weir</b> 2 End Contraction(s)	
Primary OutFlow Max=0.37 cfs @ 12.16 hrs HW=9.08' (Free Discharge) 1=Culvert (Passes 0.37 cfs of 4.11 cfs potential flow) -3=24inch-Dome Grate Capacity(Custom Controls 0.37 cfs) 4=Sharp-Crested Rectangular Weir( Controls 0.00 cfs)	
Secondary OutFlow Max=0.04 cfs @ 12.16 hrs HW=9.08' (Free Discharge)	

									-
		Sumn	nary for Po	nd 8a-s: B	B 8A - S	STON	E		
inflow = Outflow = Primary = Routed to	= 0.04 c = 0.04 c	cfs @ 12.2 cfs @ 12.2	16 hrs, Volum 22 hrs, Volum 22 hrs, Volum AND STREET	ie= ie=	1,041 cf 1,023 cf, 1,023 cf	Atten	= 1%,	Lag= 3.3	min
			pan= 0.00-72						
Peak Elev=	5.63' @ 12.2	z nis Sun	Area- 500 SI	Storage- 5					
	C			Ũ		w)			
Plug-Flow de	etention time	= 27.7 min	calculated for ( 865.0 - 848.	1,023 cf (98		w)			
Plug-Flow d Center-of-M	etention time ass det. time	= 27.7 min = 17.0 min	calculated for ( 865.0 - 848.	1,023 cf (98 0)		w)			
Plug-Flow de Center-of-M Volume	etention time ass det. time Invert	= 27.7 min = 17.0 min Avail.Stora	calculated for ( 865.0 - 848. ge Storage I	1,023 cf (98 0) Description	% of inflo	,	4 6 4 4 4		<u>,                                     </u>
Plug-Flow d Center-of-M	etention time ass det. time	= 27.7 min = 17.0 min Avail.Stora	calculated for ( 865.0 - 848. ge Storage I cf <b>Custom</b>	1,023 cf (98 0)	% of inflo	,	d belov	w (Recalc	;)
Plug-Flow de Center-of-M <u>Volume</u> #1	etention time: ass det. time: Invert / 5.30'	= 27.7 min = 17.0 min <u>Avail.Stora</u> 180	calculated for ( 865.0 - 848. ge Storage I cf Custom 600 cf O	1,023 cf (98 0 ) Description Stage Data verall x 30.0	% of inflo (Prismati % Voids	,	d belov	w (Recalc	;)
Plug-Flow do Center-of-M <u>Volume</u> #1 Elevation	etention time: ass det. time: <u>Invert</u> 5.30' Surf.Ar	= 27.7 min = 17.0 min <u>Avail.Stora</u> 180 rea	calculated for ( 865.0 - 848. ge Storage I of Custom 600 of Ov Inc.Store	1,023 cf (98 0) Description Stage Data verall x 30.0 Cum.Stor	% of inflo (Prismati % Voids re	,	d belov	w (Recalc	;)
Plug-Flow d Center-of-M <u>Volume</u> #1 Elevation (feet)	etention time ass det. time <u>Invert</u> 5.30' Surf.Ar (sq.	= 27.7 min = 17.0 min <u>Avail.Stora</u> 180 rea -ft) (c	calculated for (865.0 - 848. ge Storage I of Custom 600 of O Inc.Store cubic-feet)	1,023 cf (98' 0) Description Stage Data ( verall x 30.0' Cum.Stor (cubic-fee	% of inflo (Prismati % Voids re <u>:t1</u>	,	d belov	w (Recalc	:)
Plug-Flow do Center-of-M <u>Volume</u> #1 Elevation	etention time ass det. time 5.30' Surf.Ar (sq 3	= 27.7 min = 17.0 min <u>Avail.Stora</u> 180 rea	calculated for ( 865.0 - 848. ge Storage I of Custom 600 of Ov Inc.Store	1,023 cf (98' 0) Description Stage Data ( verall x 30.0' Cum.Stor (cubic-fee	% of inflo (Prismati % Voids re t <u>t)</u> 0	,	d belov	w (Recalc	:)
Plug-Flow de Center-of-M #1 Elevation (feet) 5.30 7.30	etention time: ass det. time: 5.30' Surf.Ar (sq 3 3	= 27.7 min = 17.0 min <u>Avail.Stora</u> 180 rea -ft) (c 300	calculated for (865.0 - 848. ge Storage I cf Custom 600 cf O Inc.Store <u>subic-feet</u> ) 0 600	1,023 cf (98 0) Description Stage Data verall x 30.0' Cum.Stor (cubic-fee 60	% of inflo (Prismati % Voids re t <u>t)</u> 0	,	d belov	w (Recalc	:)
Plug-Flow d Center-of-M <u>Volume</u> #1 Elevation (feet) 5.30 7.30 Device Ro	etention time ass det. time 5.30' Surf.Ar (sq 3	= 27.7 min = 17.0 min <u>Avail.Stora</u> 180 rea -ft) (c 300 300 Invert (	calculated for ( 865.0 - 848. ge Storage I cf Custom 600 cf O Inc.Store <u>cubic-feet</u> ) 0	1,023 cf (98 0) Description Stage Data verall x 30.0' Cum.Stor (cubic-fee 60	W of inflo (Prismati Voids Voids re 0 0	ic)Liste			

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	Summary for Pond 8B-P: BB 8B-PONDING	
Outflow = 0. Primary = 0. Routed to Reach Secondary = 0.	5,598 sf, 87.78% Impervious, Inflow Depth =       4.44" for NOAA 10-yr event         65 cfs @       12.13 hrs, Volume=       2,071 cf         64 cfs @       12.14 hrs, Volume=       2,071 cf, Atten= 2%, Lag= 0.9 min         60 cfs @       12.14 hrs, Volume=       805 cf         7R : PARKING LOT C to HUDSON       04 cfs @       12.14 hrs, Volume=         04 cfs @       12.14 hrs, Volume=       1,266 cf         3-S : BB 8B-Stone       1,266 cf	Inflow = 0.04 cfs ( Outflow = 0.04 cfs ( Primary = 0.04 cfs ( Routed to Reach 7R : PA Routing by Stor-Ind method, Peak Elev= 6.33' @ 12.18 hr
	nethod, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs 2.14 hrs Surf.Area= 629 sf Storage= 255 cf	Plug-Flow detention time= 32 Center-of-Mass det. time= 20
	ime= 35.5 min calculated for 2,071 cf (100% of inflow) ime= 35.5 min(805.2 - 769.8)	Volume Invert Ava #1 5.90'
Volume Invert	Avail.Storage Storage Description	
#1 9.10'	306 cf Custom Stage Data (Prismatic)Listed below (Recalc)	Elevation Surf.Area (feet) (sq-ft)
(feet)	f.Area Inc.Store Cum.Store (sq-ft) (cubic-feet) (cubic-feet)	5.90 300 7.90 300
9.10 9.80	190         0         0           685         306         306	Device Routing In #1 Primary 6
Device Routing	Invert Outlet Devices	
#1 Primary	7.90' <b>12.0" Round Culvert</b> L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 7.90' / 7.80' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf	Primary OutFlow Max=0.04
#2 Secondary #3 Device 1	<ul> <li>9.10' 2.410 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 5.90'</li> <li>9.65' 24inch-Dome Grate Capacity X 2.00</li> </ul>	
1=Culvert (Passe 3=24inch-Dom	ax=0.59 cfs @ 12.14 hrs HW=9.72' (Free Discharge) s 0.59 cfs of 4.34 cfs potential flow) e Grate Capacity (Custom Controls 0.59 cfs)	
2=Exfiltration (C	Max=0.04 cfs @ 12.14 hrs HW=9.72' (Free Discharge) ontrols 0.04 cfs)	

NOAA 24-hr C NOAA 10-yr Rainfall=5.02" Printed 6/16/2022 eas\_220609 name here} 1 HydroCAD Software Solutions LLC Page 30

## nary for Pond 8B-S: BB 8B-Stone

Inflow	=	0.04 cfs @	12.14 hrs, Volume=
Outflow	=	0.04 cfs @	12.18 hrs, Volume=
Primary	=	0.04 cfs @	12.18 hrs, Volume=
Routed	d to Rea	ach 7R : PARk	(ING LOT C to HUDSON

1,266 cf 1,239 cf, Atten= 1%, Lag= 2.2 min 1,239 cf

an= 0.00-72.00 hrs, dt= 0.05 hrs Area= 300 sf Storage= 39 cf

calculated for 1,239 cf (98% of inflow) 870.8 - 850.6 )

Volume	Inv	ert Avail.Sto	orage Stora	ge Description	1	
#1	5.9	90' 1		om Stage Dat f Overall x 30		ic)Listed below (Recalc)
Elevatio (fee		Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.St (cubic-fe		
5.9	90	300	0		0	
7.9	90	300	600	(	600	
Device	Routing	Invert	Outlet Dev	ices		
#1	Primary	6.20'	4.0" Vert.	Orifice/Grate	C= 0.600	Limited to weir flow at low heads

2.18 hrs HW=6.33' (Free Discharge) 0.04 cfs @ 1.23 fps)

 14850\_Proposed-Drainage-Areas\_220609
 NOAA 24-hr C
 NOAA 10-yr Rainfall=5.02"

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## Summary for Pond 9-P: BB9 - POND

Inflow Area =	29,651 sf, 74.77% Impervious,	Inflow Depth = 4.11" for NOAA 10-yr event
Inflow =	3.30 cfs @ 12.13 hrs, Volume=	10,153 cf
Outflow =	3.22 cfs @ 12.15 hrs, Volume=	10,153 cf, Atten= 2%, Lag= 1.1 min
Primary =	0.67 cfs @ 12.15 hrs, Volume=	245 cf
Routed to Rea	ch BMP9_0 : BMP-9 OVERFLOW	
Secondary =	0.05 cfs @ 12.15 hrs, Volume=	2,215 cf
Routed to Pon	d 9-PS : BB9 - STONE	
Tertiary =	2.51 cfs @ 12.15 hrs, Volume=	7,693 cf
Routed to Rea	ich 1R : ISOLATOR ROW C	

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Peak Elev= 8.93' @ 12.15 hrs Surf.Area= 737 sf Storage= 430 cf

Plug-Flow detention time= 19.4 min calculated for 10,153 cf (100% of inflow) Center-of-Mass det. time= 19.4 min ( 804.2 - 784.8 )

Volume	Invert	Avail.Stor	rage Stor	age Description
#1	8.00'	48	35 cf Cus	tom Stage Data (Prismatic)Listed below (Recalc)
Elevatio (fee 8.0	et) (s	Area sq-ft) 190	Inc.Stor (cubic-feet	
9.0	00	780	48	5 485
Device	Routing	Invert	Outlet De	vices
#1	Primary	7.00'		und Culvert
				CPP, square edge headwall, Ke= 0.500 let Invert= 7.00' / 6.90' S= 0.0100 '/' Cc= 0.900
				Flow Area= 0.79 sf
#2	Secondary	8.00'		nr Exfiltration over Surface area
#3	Device 1	8.80'		rity to Groundwater Elevation = 5.00' me Grate Capacity
	2011001	0.00	Head (fe	et) 0.00 0.05 0.10 0.15 0.20 0.25 0.30 0.35 0.40 0.45 0.60 0.65 0.70 0.75 0.80 0.85 0.90 0.95 1.00 1.05
			Disch. (cf	s) 0.000 0.180 0.460 0.850 1.360 1.830 2.420 3.100
				00 4.000 4.200 4.380 4.600 4.750 4.900 5.100 5.200
#4	Tertiarv	8.50'		50 5.650 5.800 5.950 ome Grate Capacity
	,			
1=Ci	Ilvert (Passes	0.64 cfs of	4.51 cfs po	s HW=8.92' (Free Discharge) tential flow) m Controls 0.64 cfs)
	ary OutFlow M filtration ( Con			hrs HW=8.92' (Free Discharge)

Tertiary OutFlow Max=2.49 cfs @ 12.15 hrs HW=8.92' (Free Discharge) 4=15inch-Dome Grate Capacity (Custom Controls 2.49 cfs)

#1       Primary       5.25'       4.0" Vert. Orifice/Grate       C= 0.600       Limited to weir flow at low heads         Primary OutFlow       Max=0.05 cfs @ 12.17 hrs       HW=5.40'       (Free Discharge)		⊎ 10.10-7a s	/n 00546 © 20	2 i HyaroCAD	Sollware So	IULIONS LLC			Page 32
Dutflow=0.05 cfs @12.17 hrs, Volume=2,200 cf, Atten= 2%, Lag= 1.5 minPrimary=0.05 cfs @12.17 hrs, Volume=2,200 cfPrimary=0.05 cfs @12.17 hrs, Volume=2,200 cfRouted to Reach BMP9_O : BMP-9 OVERFLOWRouting by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs2,200 cfRouted to Reach BMP9_O : BMP-9 OVERFLOWRouting by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs2,200 cfRouted to Reach BMP9_O : BMP-9 OVERFLOWRouting by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs2,200 cfPlug-Flow detention time= 12.7 min calculated for 2,200 cf (99% of inflow)2,200 cf2,200 cfDeter-of-Mass det. time= 8.3 min (949.2 - 940.9)9//olumeInvertAvail.StorageStorage Description#15.00'114 cfCustom Stage Data (Prismatic)Listed below (Recalc) 380 cf Overall x 30.0% VoidsElevationSurf.AreaInc.StoreCum.Store (cubic-feet)(feet)(sq-ft)(cubic-feet) (cubic-feet)5.00190007.001903802eviceRoutingInvert#1Primary5.25'4.0" Vert. Orifice/GrateC= 0.600CenterInvertPuter0.17 hrsHPrimary5.25'4.0" Vert. Orifice/GrateC= 0.600Limited to weir flow at low headsPrimary OutFlow Max=0.05 cfs @<			Sum	mary for Po	ond 9-PS:	BB9 - S	TONE		
Peak Elev= 5.40' @ 12.17 hrs       Surf.Area= 190 sf       Storage= 23 cf         Plug-Flow detention time= 12.7 min calculated for 2,200 cf (99% of inflow)         Center-of-Mass det. time= 8.3 min (949.2 - 940.9)         Volume       Invert       Avail.Storage       Storage Description         #1       5.00'       114 cf       Custom Stage Data (Prismatic)Listed below (Recalc) 380 cf Overall x 30.0% Voids         Elevation       Surf.Area       Inc.Store       Cum.Store         (feet)       (sq-ft)       (cubic-feet)       0         5.00       190       0       0         7.00       190       380       380         Device       Routing       Invert       Outlet Devices         #1       Primary       5.25'       4.0" Vert. Orifice/Grate       C= 0.600       Limited to weir flow at low heads	Outflow Primary	= 0.0 = 0.0	15 cfs @ 12.1 15 cfs @ 12.1	17 hrs, Volum 17 hrs, Volum	1e= 1e=	2,200 cf,	Atten= 2%,	Lag= 1.5 mi	n
Center-of-Mass det. time= 8.3 min ( 949.2 - 940.9 )         Volume       Invert       Avail.Storage       Storage Description         #1       5.00'       114 cf       Custom Stage Data (Prismatic)Listed below (Recalc) 380 cf Overall x 30.0% Voids         Elevation       Surf.Area       Inc.Store       Cum.Store         (feet)       (sq-ft)       (cubic-feet)       (cubic-feet)         5.00       190       0       0         7.00       190       380       380         Device       Routing       Invert       Outlet Devices         #1       Primary       5.25'       4.0" Vert. Orifice/Grate       C= 0.600       Limited to weir flow at low heads									
#1       5.00'       114 cf       Custom Stage Data (Prismatic)Listed below (Recalc) 380 cf Overall x 30.0% Voids         Elevation       Surf.Area       Inc.Store       Cum.Store         (feet)       (sq-ft)       (cubic-feet)       (cubic-feet)         5.00       190       0       0         7.00       190       380       380         Device       Routing       Invert       Outlet Devices         #1       Primary       5.25'       4.0" Vert. Orifice/Grate       C= 0.600       Limited to weir flow at low heads         Primary OutFlow       Max=0.05 cfs @ 12.17 hrs       HW=5.40'       (Free Discharge)						9% of inflo	w)		
380 cf Overall x 30.0% Voids         Elevation       Surf.Area       Inc.Store       Cum.Store         (feet)       (sq-ft)       (cubic-feet)       (cubic-feet)         5.00       190       0       0         7.00       190       380       380         Device       Routing       Invert       Outlet Devices         #1       Primary       5.25'       4.0" Vert. Orifice/Grate       C= 0.600       Limited to weir flow at low heads         Primary OutFlow       Max=0.05 cfs @ 12.17 hrs       HW=5.40'       (Free Discharge)	√olume	Invert	Avail.Storad	ge Storage	Description				
(feet)         (sq-ft)         (cubic-feet)           5.00         190         0         0           7.00         190         380         380           Device         Routing         Invert         Outlet Devices           #1         Primary         5.25'         4.0" Vert. Orifice/Grate         C= 0.600         Limited to weir flow at low heads           Primary OutFlow         Max=0.05 cfs @ 12.17 hrs         HW=5.40'         (Free Discharge)	#1	5.00'	114				ic)Listed below	w (Recalc)	
7.00   190   380   380     Device   Routing   Invert   Outlet Devices									
Device         Routing         Invert         Outlet Devices           #1         Primary         5.25'         4.0" Vert. Orifice/Grate         C= 0.600         Limited to weir flow at low heads           Primary OutFlow         Max=0.05 cfs @ 12.17 hrs         HW=5.40'         (Free Discharge)				0		0			
#1       Primary       5.25'       4.0" Vert. Orifice/Grate       C= 0.600       Limited to weir flow at low heads         Primary OutFlow       Max=0.05 cfs @ 12.17 hrs       HW=5.40'       (Free Discharge)	7.00					~ ~			
Primary OutFlow Max=0.05 cfs @ 12.17 hrs HW=5.40' (Free Discharge)			190	380	3	80			
						80			
	<u>Device F</u> #1 F Primary C	Routing Primary <b>DutFlow</b> Max	Invert 0 5.25' 4 x=0.05 cfs @	Dutlet Devices I.0" Vert. Orit 12.17 hrs HV	s fice/Grate V=5.40' (Fi	C= 0.600		eir flow at lov	w heads
	<u>Device F</u> #1 F <b>Primary C</b>	Routing Primary <b>DutFlow</b> Max	Invert 0 5.25' 4 x=0.05 cfs @	Dutlet Devices I.0" Vert. Orit 12.17 hrs HV	s fice/Grate V=5.40' (Fi	C= 0.600		eir flow at lo	w heads
	<u>Device F</u> #1 F Primary C	Routing Primary <b>DutFlow</b> Max	Invert 0 5.25' 4 x=0.05 cfs @	Dutlet Devices I.0" Vert. Orit 12.17 hrs HV	s fice/Grate V=5.40' (Fi	C= 0.600		eir flow at lo	w heads
	<u>Device F</u> #1 F <b>Primary C</b>	Routing Primary <b>DutFlow</b> Max	Invert 0 5.25' 4 x=0.05 cfs @	Dutlet Devices I.0" Vert. Orit 12.17 hrs HV	s fice/Grate V=5.40' (Fi	C= 0.600		eir flow at lo	w heads
	<u>Device F</u> #1 F Primary C	Routing Primary <b>DutFlow</b> Max	Invert 0 5.25' 4 x=0.05 cfs @	Dutlet Devices I.0" Vert. Orit 12.17 hrs HV	s fice/Grate V=5.40' (Fi	C= 0.600		eir flow at lo	w heads
	<u>Device F</u> #1 F <b>Primary C</b>	Routing Primary <b>DutFlow</b> Max	Invert 0 5.25' 4 x=0.05 cfs @	Dutlet Devices I.0" Vert. Orit 12.17 hrs HV	s fice/Grate V=5.40' (Fi	C= 0.600		eir flow at lor	w heads

					Software Solution	S LLU	Page 33			
		:	Summa	ary for P	ond 14P: BB	2A-S	tone			
Inflow Outflow Primary Routed	= 0.0	03 cfs @ 03 cfs @	12.19 h 12.19 h	rs, Volum rs, Volum rs, Volum ney Blvd (	ne= 87	73 cf 73 cf, 73 cf	Atten= 0%, Lag= 2.2 min			
					.00 hrs, dt= 0.05	hrs				
Peak Elev	= 5.61' @ 12	2.19 hrs	Surf.Are	ea= 180 sf	Storage= 6 cf	Peak Elev= 5.61' @ 12.19 hrs Surf.Area= 180 sf Storage= 6 cf				
Plug-Flow	detention ti	me= 5.1 r	nin calcu	lated for 8	372 cf (100% of i	nflow)				
	detention ti Mass det. ti					nflow)				
Center-of-l		me= 5.1 r	nin ( 860	.8 - 855.7		nflow)				
Center-of-l	Mass det. ti	me= 5.1 r	nin ( 860	.8 - 855.7 Storage I Custom	) Description <b>Stage Data (Pri</b>	smati	c)Listed below (Recalc)			
Center-of-l Volume	Mass det. ti Invert	me= 5.1 r	nin ( 860 Storage	.8 - 855.7 Storage I Custom	) Description	smati				
Center-of-l Volume	Mass det. ti Invert 5.50'	me= 5.1 r	nin ( 860 <u>Storage</u> 108 cf	.8 - 855.7 Storage I Custom	) Description <b>Stage Data (Pri</b>	smati				
Center-of-l <u>Volume</u> #1	Mass det. ti <u>Invert</u> 5.50' Sur	me= 5.1 r Avail.S	nin(860 <u>Storage</u> 108 cf Inc	8 - 855.7 Storage I Custom 360 cf O	) Description Stage Data (Pris verall x 30.0% V	smati				
Center-of-l <u>Volume</u> #1 Elevation	Mass det. ti <u>Invert</u> 5.50' Sur	me= 5.1 r <u>Avail.S</u> f.Area	nin(860 <u>Storage</u> 108 cf Inc	8 - 855.7 <u>Storage I</u> <b>Custom</b> 360 cf Ov .Store	) Description Stage Data (Pris verall x 30.0% V Cum.Store	smati				
Center-of-l <u>Volume</u> #1 Elevation (feet)	Mass det. ti <u>Invert</u> 5.50' Sur	me= 5.1 r <u>Avail.S</u> f.Area (sq-ft)	nin(860 <u>Storage</u> 108 cf Inc	0.8 - 855.7 <u>Storage I</u> Custom 360 cf Ov .Store feet)	) Description Stage Data (Prisverall x 30.0% V Cum.Store (cubic-feet)	smati				

Primary OutFlow Max=0.03 cfs @ 12.19 hrs HW=5.61' (Free Discharge) -1=Orifice/Grate (Orifice Controls 0.03 cfs @ 1.11 fps)

<b>14850_Proposed-Drainage-Areas_220609</b> NOAA 24-hr C       NOAA 10-yr Rainfall=5.02"         Prepared by {enter your company name here}       Printed 6/16/2022         HydroCAD® 10.10-7a s/n 00546 © 2021 HydroCAD Software Solutions LLC       Page 34					
Sur	nmary for Pond DMH1: DIVERS	ION MANHOLE - S	EYMOUR ST		
[57] Hint: Peaked	at 9.81' (Flood elevation advised)				
Inflow Area = Inflow =	19,582 sf, 58.17% Impervious, Infl 2.03 cfs @ 12.13 hrs, Volume=	ow Depth = 3.69" fo 6.018 cf	r NOAA 10-yr event		
Outflow = Primary =	2.03 cfs @ 12.13 hrs, Volume=	6,018 cf, Atten= ( 4.632 cf	0%, Lag= 0.0 min		
Routed to Pond INF-1 : INFILTRATION SYSTEM #1 Secondary = 1.32 cfs @ 12.13 hrs, Volume= 1,386 cf					
Routed to Reach DP-1 : French Rodney Blvd Outfall					

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Peak Elev=  $9.81'\,@~12.13$  hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	9.00'	6.0" Vert. WATER QUALITY STORM DIVERSION C= 0.600
			Limited to weir flow at low heads
#2	Secondary	9.20'	12.0" Vert. LARGE STORM OVEFLOW C= 0.600
			Limited to weir flow at low heads

Primary OutFlow Max=0.69 cfs @ 12.13 hrs HW=9.79' (Free Discharge) 1=WATER QUALITY STORM DIVERSION(Orifice Controls 0.69 cfs @ 3.53 fps)

Secondary OutFlow Max=1.25 cfs @ 12.13 hrs HW=9.79' (Free Discharge) 2=LARGE STORM OVEFLOW (Orifice Controls 1.25 cfs @ 2.61 fps)

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# Summary for Pond DMH2: DIVERSION MANHOLE - HUDSON STREET

[57] Hint: Peaked at 20.37' (Flood elevation advised)

Inflow Area =	143,309 sf, 49.69% Impervious, Infl	low Depth = 3.49" for NOAA 10-yr event
Inflow =	14.20 cfs @ 12.13 hrs, Volume=	41,627 cf
Outflow =	14.20 cfs @ 12.13 hrs, Volume=	41,627 cf, Atten= 0%, Lag= 0.0 min
Primary =	2.93 cfs @ 12.13 hrs, Volume=	23,559 cf
Routed to Por	nd INF-2 : INFILTRATION SYSTEM #2	
Secondary =	11.27 cfs @ 12.13 hrs, Volume=	18,068 cf
Routed to Rea	ach B : PARKING LOT B OVERFLOW	

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Peak Elev= 20.37' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	10.60'	6.0" Vert. WATER QUALITY STORM DIVERSION C= 0.600
	-		Limited to weir flow at low heads
#2	Secondary	11.10'	12.0" Vert. LARGE STORM OVERFLOW C= 0.600
			Limited to weir flow at low heads

Primary OutFlow Max=2.82 cfs @ 12.13 hrs HW=19.76' (Free Discharge) 1=WATER QUALITY STORM DIVERSION(Orifice Controls 2.82 cfs @ 14.37 fps)

Secondary OutFlow Max=10.80 cfs @ 12.13 hrs HW=19.76' (Free Discharge) -2=LARGE STORM OVERFLOW (Orifice Controls 10.80 cfs @ 13.76 fps)

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### Summary for Pond DMH3: DIVERSION MANHOLE - PORTLAND ST

[57] Hint: Peaked at 11.73' (Flood elevation advised)

Inflow Area =	19,743 sf, 50.83% Impervious, Inf	low Depth = 3.49" for NOAA 10-yr event
Inflow =	1.96 cfs @ 12.13 hrs, Volume=	5,735 cf
Outflow =	1.96 cfs @ 12.13 hrs, Volume=	5,735 cf, Atten= 0%, Lag= 0.0 min
	1.06 cfs @ 12.13 hrs, Volume=	4,862 cf
Routed to Pone	d INF3 : INFILTRATION SYSTEM #1	
Secondary =	0.90 cfs @ 12.13 hrs, Volume=	872 cf
Routed to Read	ch P ST : PORTLAND STREET DRAIN	IAGE

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Peak Elev= 11.73' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	11.00'	8.0" Vert. WATER QUALITY DIVERSION C= 0.600
			Limited to weir flow at low heads
#2	Secondary	11.20'	10.0" Vert. LARGE STORM OVERFLOW C= 0.600
	-		Limited to weir flow at low heads

Primary OutFlow Max=1.03 cfs @ 12.13 hrs HW=11.71' (Free Discharge) 1=WATER QUALITY DIVERSION(Orifice Controls 1.03 cfs @ 2.95 fps)

Secondary OutFlow Max=0.85 cfs @ 12.13 hrs HW=11.71' (Free Discharge) -2=LARGE STORM OVERFLOW (Orifice Controls 0.85 cfs @ 2.43 fps)

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### Summary for Pond INF-1: INFILTRATION SYSTEM #1

[81] Warning: Exceeded Pond DMH1 by 0.24' @ 14.90 hrs

Inflow Area =	19,582 sf, 58.17% Impervious,	Inflow Depth = 2.84" for NOAA 10-yr event
Inflow =	0.71 cfs @ 12.13 hrs, Volume=	4,632 cf
Outflow =	0.23 cfs @ 12.69 hrs, Volume=	4,632 cf, Atten= 67%, Lag= 33.4 min
Discarded =	0.08 cfs @ 12.69 hrs, Volume=	4,195 cf
Primary =	0.15 cfs @ 12.69 hrs, Volume=	437 cf
Routed to Rea	ach DP-1 : French Rodney Blvd Outfa	all

Routing by Stor-Ind method. Time Span= 0.00-72.00 hrs. dt= 0.05 hrs Peak Elev= 9.44' @ 12.69 hrs Surf.Area= 1,772 sf Storage= 1,658 cf

Plug-Flow detention time= 216.5 min calculated for 4.629 cf (100% of inflow) Center-of-Mass det. time= 216.5 min ( 1,038.5 - 822.0 )

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Volume	Invert	Avail.Storage	Storage Description
#1A	7.80'	1,091 cf	21.50'W x 81.52'L x 2.33'H Field A
			4,090 cf Overall - 973 cf Embedded = 3,117 cf x 35.0% Voids
#2A	8.30'	973 cf	
			Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf
			Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap
			66 Chambers in 6 Rows
#3	7.80'	137 cf	5.00'D x 7.00'H Vertical Cone/Cylinder
		2,201 cf	Total Available Storage

- ...

Storage Group A created with Chamber Wizard

. . . . . .

Device	Routing	Invert	Outlet Devices
#1	Discarded	7.80'	1.020 in/hr Exfiltration over Surface area
			Conductivity to Groundwater Elevation = 5.80'
#2	Primary	8.10'	10.0" Round Culvert
			L= 10.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 8.10' / 8.00' S= 0.0100 '/' Cc= 0.900
			n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.55 sf
#3	Device 2	9.40'	5.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#3	Device 2	9.40'	

Discarded OutFlow Max=0.08 cfs @ 12.69 hrs HW=9.44' (Free Discharge) 1=Exfiltration ( Controls 0.08 cfs)

Primary OutFlow Max=0.13 cfs @ 12.69 hrs HW=9.44' (Free Discharge) 2=Culvert (Passes 0.13 cfs of 2.51 cfs potential flow) -3=Sharp-Crested Rectangular Weir (Weir Controls 0.13 cfs @ 0.65 fps)

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### Pond INF-1: INFILTRATION SYSTEM #1 - Chamber Wizard Field A

Chamber Model = ADS\_StormTechSC-310 +Cap (ADS StormTech®SC-310 with cap length) Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap

34.0" Wide + 6.0" Spacing = 40.0" C-C Row Spacing

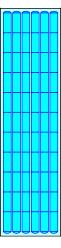
11 Chambers/Row x 7.12' Long +0.60' Cap Length x 2 = 79.52' Row Length +12.0" End Stone x 2 = 81.52' Base Length 6 Rows x 34.0" Wide + 6.0" Spacing x 5 + 12.0" Side Stone x 2 = 21.50' Base Width 6.0" Stone Base + 16.0" Chamber Height + 6.0" Stone Cover = 2.33' Field Height

66 Chambers x 14.7 cf = 973.0 cf Chamber Storage

4,089.6 cf Field - 973.0 cf Chambers = 3,116.6 cf Stone x 35.0% Voids = 1,090.8 cf Stone Storage

Chamber Storage + Stone Storage = 2,063.8 cf = 0.047 af Overall Storage Efficiency = 50.5% Overall System Size = 81.52' x 21.50' x 2.33'

66 Chambers 151.5 cy Field 115.4 cy Stone



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### Summary for Pond INF-2: INFILTRATION SYSTEM #2

Inflow Area =	143,309 sf, 49.69% Impervious,	nflow Depth = 1.97" for NOAA 10-yr event
Inflow =	2.93 cfs @ 12.13 hrs, Volume=	23,559 cf
Outflow =	2.77 cfs @ 12.15 hrs, Volume=	23,559 cf, Atten= 5%, Lag= 1.5 min
Discarded =	0.12 cfs @ 12.15 hrs, Volume=	9,228 cf
Primary =	2.66 cfs @ 12.15 hrs, Volume=	14,332 cf
Routed to Rea	ach B : PARKING LOT B OVERFLOW	1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Peak Elev= 9.80' @ 12.15 hrs Surf.Area= 2.268 sf Storage= 3.428 cf

Plug-Flow detention time= 144.9 min calculated for 23,559 cf (100% of inflow) Center-of-Mass det. time= 144.8 min (1,009.1 - 864.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	7.50'	1,790 cf	25.25'W x 89.06'L x 3.50'H Field A
			7,870 cf Overall - 2,756 cf Embedded = 5,114 cf x 35.0% Voids
#2A	8.00'	2,756 cf	ADS_StormTech SC-740 +Cap x 60 Inside #1
			Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
			Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
			60 Chambers in 5 Rows
#3	7.50'	137 cf	5.00'D x 7.00'H Vertical Cone/Cylinder
		4,684 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	7.50'	1.020 in/hr Exfiltration over Surface area
			Conductivity to Groundwater Elevation = 5.50'
#2	Primary	8.00'	10.0" Round Culvert
			L= 10.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 8.00' / 7.90' S= 0.0100 '/' Cc= 0.900
			n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.55 sf
#3	Device 2	9.50'	5.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Discarded OutFlow Max=0.12 cfs @ 12.15 hrs HW=9.80' (Free Discharge)

Primary OutFlow Max=2.62 cfs @ 12.15 hrs HW=9.80' (Free Discharge) □2=Culvert (Passes 2.62 cfs 0 3.09 cfs potential flow) □3=Sharp-Crested Rectangular Weir (Weir Controls 2.62 cfs @ 1.78 fps)

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## Pond INF-2: INFILTRATION SYSTEM #2 - Chamber Wizard Field A

Chamber Model = ADS\_StormTechSC-740 +Cap (ADS StormTech®SC-740 with cap length) Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

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

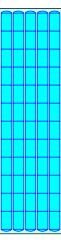
12 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 87.06' Row Length +12.0" End Stone x 2 = 89.06' Base Length 5 Rows x 51.0" Wide + 6.0" Spacing x 4 + 12.0" Side Stone x 2 = 25.25' Base Width 6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

60 Chambers x 45.9 cf = 2,756.4 cf Chamber Storage

7.870.4 cf Field - 2.756.4 cf Chambers = 5,114.0 cf Stone x 35.0% Voids = 1,789.9 cf Stone Storage

Chamber Storage + Stone Storage = 4,546.3 cf = 0.104 af Overall Storage Efficiency = 57.8% Overall System Size = 89.06' x 25.25' x 3.50'

60 Chambers 291.5 cy Field 189.4 cy Stone



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### Summary for Pond INF3: INFILTRATION SYSTEM #1

Inflow Area =	19,743 sf, 50.83% Impervious,	Inflow Depth = 2.96" for NOAA 10-yr event
Inflow =	1.06 cfs @ 12.13 hrs, Volume=	4,862 cf
Outflow =	1.05 cfs @ 12.14 hrs, Volume=	4,862 cf, Atten= 1%, Lag= 0.9 min
Discarded =	0.05 cfs @ 12.14 hrs, Volume=	2,902 cf
Primary =	1.00 cfs @ 12.14 hrs, Volume=	1,960 cf
Routed to Rea	ich P ST : PORTLAND STREET DR/	AINAGE

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Peak Elev= 9.66' @ 12.14 hrs Surf Area= 1.113 sf Storage= 991 cf

Plug-Flow detention time= 146.9 min calculated for 4,862 cf (100% of inflow) Center-of-Mass det. time= 146.7 min ( 968.0 - 821.3 )

Volume	Invert	Avail.Storage	Storage Description
#1A	8.10'	686 cf	18.17'W x 60.16'L x 2.33'H Field A
			2,550 cf Overall - 590 cf Embedded = 1,960 cf x 35.0% Voids
#2A	8.60'	590 cf	ADS_StormTech SC-310 +Cap x 40 Inside #1
			Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf
			Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap
			40 Chambers in 5 Rows
#3	8.10'	137 cf	5.00'D x 7.00'H Vertical Cone/Cylinder
		1,413 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Invert Outlet Devices Device Routing #1 Discarded 8.10' 1.020 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 6.10' #2 Primarv 8.40' 10.0" Round Culvert L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 8.40' / 8.30' S= 0.0100 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.55 sf #3 Device 2 9.50' 5.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Discarded OutFlow Max=0.05 cfs @ 12.14 hrs HW=9.65' (Free Discharge)

Primary OutFlow Max=0.98 cfs @ 12.14 hrs HW=9.65' (Free Discharge) Culvert (Passes 0.98 cfs of 2.33 cfs potential flow)
3=Sharp-Crested Rectangular Weir (Weir Controls 0.98 cfs @ 1.28 fps)

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### Pond INF3: INFILTRATION SYSTEM #1 - Chamber Wizard Field A

Chamber Model = ADS\_StormTechSC-310 +Cap (ADS StormTech®SC-310 with cap length) Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap

34.0" Wide + 6.0" Spacing = 40.0" C-C Row Spacing

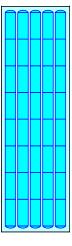
8 Chambers/Row x 7.12' Long +0.60' Cap Length x 2 = 58.16' Row Length +12.0" End Stone x 2 = 60.16' Base Length 5 Rows x 34.0" Wide + 6.0" Spacing x 4 + 12.0" Side Stone x 2 = 18.17' Base Width 6.0" Stone Base + 16.0" Chamber Height + 6.0" Stone Cover = 2.33' Field Height

40 Chambers x 14.7 cf = 589.7 cf Chamber Storage

2,550.1 cf Field - 589.7 cf Chambers = 1,960.4 cf Stone x 35.0% Voids = 686.2 cf Stone Storage

Chamber Storage + Stone Storage = 1,275.8 cf = 0.029 af Overall Storage Efficiency = 50.0%Overall System Size = 60.16' x 18.17' x 2.33'

40 Chambers 94.4 cy Field 72.6 cy Stone



 $\square \square \square \square \square \square$ 

ame here} Printed 6/16/2022	<b>14850_Proposed-Drainage-Area</b> Prepared by {enter your company na <u>HydroCAD® 10.10-7a s/n 00546 © 2021</u>	ame here} Printed 6/16/2022	14850_Proposed-Drainage-Are Prepared by {enter your company r HydroCAD® 10.10-7a s/n 00546 © 2021
Peak Elev=10.01' Storage=159 cf Inflow=0.56 cfs 1,844 cf 0.54 cfs 916 cf Secondary=0.02 cfs 928 cf Outflow=0.56 cfs 1,844 cf	Pond 7A-P: BB 7A PONDING Primary=(	0.00-72.00 hrs, dt=0.05 hrs, 1441 points S TR-20 method, UH=SCS, Weighted-CN id+Trans method - Pond routing by Stor-Ind method	Runoff by S
Peak Elev=5.19' Storage=4 cf Inflow=0.02 cfs 928 cf Outflow=0.02 cfs 928 cf	Pond 7A-S: BB 7A - STONE	Peak Elev=10.27' Storage=1,114 cf Inflow=6.35 cfs 19,201 cf s 3,321 cf Secondary=2.54 cfs 13,021 cf Outflow=6.64 cfs 19,201 cf	Pond 1-P: BB 1
Peak Elev=10.75' Storage=295 cf Inflow=0.88 cfs 2,880 cf	Pond 7B-P: BB 7B PONDING	Peak Elev=9.41' Storage=274 cf Inflow=0.56 cfs 1,847 cf	Pond 2a-P: BB 2a
2 cfs 1,369 cf Secondary=0.04 cfs 1,511 cf Outflow=0.86 cfs 2,880 cf	Primary=0.82	52 cfs 721 cf Secondary=0.03 cfs 1,126 cf Outflow=0.55 cfs 1,847 cf	Primary=0
Peak Elev=7.62' Storage=17 cf Inflow=0.04 cfs 1,511 cf	Pond 7B-S: BB 7B - STONE	Peak Elev=8.59' Storage=326 cf Inflow=3.78 cfs 12,099 cf	Pond 2b-P: BB 2b
Outflow=0.04 cfs 1,500 cf		cfs 11,892 cf Secondary=0.83 cfs 207 cf Outflow=3.77 cfs 12,099 cf	Primary=2.94
Peak Elev=9.12' Storage=308 cf Inflow=0.70 cfs 2,240 cf	Pond 8a-P: BB 8A PONDING	Peak Elev=11.14' Storage=511 cf Inflow=1.84 cfs 5,647 cf	Pond 3A-P: BB 3A
64 cfs 855 cf Secondary=0.04 cfs 1,385 cf Outflow=0.68 cfs 2,240 cf	Primary=0.6	.03 cfs 1,537 cf Primary=1.73 cfs 4,110 cf Outflow=1.75 cfs 5,647 cf	
Peak Elev=5.63' Storage=30 cf Inflow=0.04 cfs 1,385 cf	Pond 8a-s: BB 8A - STONE	Peak Elev=12.91' Storage=263 cf Inflow=0.80 cfs 2,559 cf	Pond 3B-P: BB 3B
Outflow=0.04 cfs 1,367 cf		=0.02 cfs 983 cf Primary=0.80 cfs 1,576 cf Outflow=0.82 cfs 2,559 cf	Discarded
Peak Elev=9.75' Storage=274 cf Inflow=1.00 cfs 3,262 cf	Pond 8B-P: BB 8B-PONDING	Peak Elev=10.09' Storage=253 cf Inflow=0.86 cfs 2,822 cf	Pond 4A-P: BB 4A - POND
4 cfs 1,582 cf Secondary=0.04 cfs 1,680 cf Outflow=0.98 cfs 3,262 cf	Primary=0.94	cfs 1,349 cf Secondary=0.04 cfs 1,473 cf Outflow=0.84 cfs 2,822 cf	
Peak Elev=6.33' Storage=39 cf Inflow=0.04 cfs 1,680 cf Outflow=0.04 cfs 1,653 cf	Pond 8B-S: BB 8B-Stone	Peak Elev=7.13' Storage=26 cf Inflow=0.04 cfs 1,473 cf Outflow=0.04 cfs 1,456 cf	Pond 4A-S: BB4A-Stone
Peak Elev=9.09' Storage=485 cf Inflow=5.18 cfs 16,401 cf	Pond 9-P: BB9 - POND	Peak Elev=11.06' Storage=142 cf Inflow=0.54 cfs 1,776 cf	Pond 4B-P: BB 4B - POND
5 cfs 2,475 cf Tertiary=2.93 cfs 12,777 cf Outflow=5.28 cfs 16,401 cf	Primary=2.30 cfs 1,149 cf Secondary=0.05	0.52 cfs 858 cf Secondary=0.02 cfs 919 cf Outflow=0.54 cfs 1,776 cf	Primary-
Peak Elev=5.40' Storage=23 cf Inflow=0.05 cfs 2,475 cf Outflow=0.05 cfs 2,461 cf	Pond 9-PS: BB9 - STONE	Peak Elev=7.85' Storage=15 cf Inflow=0.02 cfs 919 cf Outflow=0.02 cfs 908 cf	Pond 4B-S: BB 4A-Stone
Peak Elev=5.61' Storage=6 cf Inflow=0.03 cfs 1,126 cf	Pond 14P: BB2A-Stone	Peak Elev=9.58' Storage=472 cf Inflow=0.54 cfs 1,699 cf	Pond 5A-P: BB 5A - POND
Outflow=0.03 cfs 1,126 cf		32 cfs 278 cf Secondary=0.05 cfs 1,422 cf Outflow=0.37 cfs 1,699 cf	Primary=0
SEYMOUR ST         Peak Elev=10.10'         Inflow=3.28 cfs         10,065 cf           cfs         7,068 cf         Secondary=2.41 cfs         2,996 cf         Outflow=3.28 cfs         10,065 cf	Pond DMH1: DIVERSION MANHOLE - Primary=0.87	Peak Elev=5.95' Storage=57 cf Inflow=0.05 cfs 1,422 cf Outflow=0.05 cfs 1,386 cf	Pond 5A-PS: BB 5A-Stone
HUDSON STREET         Peak Elev=35.73'         Inflow=23.44 cfs         70,873 cf           5,221 cf         Secondary=18.70 cfs         35,651 cf         Outflow=23.44 cfs         70,873 cf	Pond DMH2: DIVERSION MANHOLE -	Peak Elev=9.15' Storage=711 cf Inflow=6.01 cfs 18,883 cf	Pond 5B-P: BB 5B - POND
	Primary=4.74 cfs 3	) cfs 4,817 cf Tertiary=2.58 cfs 11,504 cf Outflow=6.26 cfs 18,883 cf	Primary=3 58 cfs - 2 563 cf Secondary=0 1
PORTLAND ST         Peak Elev=12.07'         Inflow=3.23 cfs         9,764 cf           4 cfs         7,738 cf         Secondary=1.78 cfs         2,026 cf         Outflow=3.23 cfs         9,764 cf	Pond DMH3: DIVERSION MANHOLE - Primary=1.44	Peak Elev=5.47' Storage=96 cf Inflow=0.10 cfs 4,817 cf Outflow=0.09 cfs 4,765 cf	Pond 5B-PS: BB 5B-Stone
#1         Peak Elev=9.53' Storage=1,727 cf         Inflow=0.87 cfs         7,068 cf           0.08 cfs         5,184 cf         Primary=0.82 cfs         1,885 cf         Outflow=0.89 cfs         7,068 cf	Pond INF-1: INFILTRATIONSYSTEM#	Peak Elev=11.07' Storage=469 cf Inflow=2.44 cfs 7,345 cf	Pond 6A-P: BB 6A - POND
	Discarded=0	cfs 4,859 cf Secondary=0.05 cfs 2,486 cf Outflow=2.43 cfs 7,345 cf	Primary=2 3
#2         Peak Elev=10.13' Storage=3,861 cf         Inflow=4.74 cfs         35,221 cf           cfs         10,022 cf         Primary=3.44 cfs         25,199 cf         Outflow=3.57 cfs         35,221 cf	Pond INF-2: INFILTRATIONSYSTEM# Discarded=0.12	Peak Elev=7.40' Storage=34 cf Inflow=0.05 cfs 2,486 cf Outflow=0.05 cfs 2,464 cf	Pond 6A-PS: BB 6A - STONE
Peak Elev=9.69' Storage=1,012 cf Inflow=1.44 cfs 7,738 cf	Pond INF3: INFILTRATIONSYSTEM#	Peak Elev=12.13' Storage=394 cf Inflow=1.14 cfs 3,657 cf	Pond 6B-P: BB 6B
0.05 cfs 3,496 cf Primary=1.39 cfs 4,242 cf Outflow=1.43 cfs 7,738 cf	Discarded=0	.02 cfs 1,294 cf Primary=1.15 cfs 2,363 cf Outflow=1.17 cfs 3,657 cf	

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## Summary for Pond 1-P: BB 1

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[93] Warning: Storage range exceeded by 0.07' [88] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area =	38,826 sf	, 51.66% Impervious,	Inflow Depth = 5.93" for NOAA 100-yr event
Inflow =	6.35 cfs @	12.13 hrs, Volume=	19,201 cf
Outflow =	6.64 cfs @	12.14 hrs, Volume=	19,201 cf, Atten= 0%, Lag= 0.8 min
Discarded =	0.05 cfs @	12.13 hrs, Volume=	2,860 cf
Primary =	4.04 cfs @	12.14 hrs, Volume=	3,321 cf
Routed to Read			
Secondary =	2.54 cfs @	12.14 hrs, Volume=	13,021 cf
Routed to Read	ch 15R : ISOL	ATOR ROW 1	

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Peak Elev= 10.27' @ 12.14 hrs Surf.Area= 1,830 sf Storage= 1,114 cf

Plug-Flow detention time= 36.1 min calculated for 19,188 cf (100% of inflow) Center-of-Mass det. time= 36.4 min ( 828.3 - 792.0 )

Volume	Invert	Avail.Stor	rage	Storage D	escription		
#1	9.20'	1,11	l4 cf	Custom S	Stage Data (Pi	rismatic)Listed below (Recalc)	
Elevatio (fee		rf.Area (sq-ft)	Inc. (cubic	Store -feet)	Cum.Store (cubic-feet)		
9.2	20	490		0	0		
9.8	50	800		194	194		
10.2	20	1,830		920	1,114		
Device	Routing	Invert	Outle	et Devices			
#1	Primary	8.00'	12.0"	' Round O	Culvert		
	-		L= 10	).0' CPP,	square edge h	neadwall, Ke= 0.500	
			Inlet	/ Outlet Inv	/ert= 8.00' / 7.9	90' S= 0.0100 '/' Cc= 0.900	
			n= 0.	013, Flow	Area= 0.79 sf		
#2	Discarded	9.20'	1.020 in/hr Exfiltration over Surface area				
			Cond	Conductivity to Groundwater Elevation = 6.00'			
#3	Device 1	10.00'	24ind	24inch-Dome Grate Capacity X 2.00			
#4	Secondary	9.83'	15ind	ch-Dome (	Grate Capacit	У	

Discarded OutFlow Max=0.05 cfs @ 12.13 hrs HW=10.25' (Free Discharge) -2=Exfiltration ( Controls 0.05 cfs)

Primary OutFlow Max=3.81 cfs @ 12.14 hrs HW=10.26' (Free Discharge) 1=Culvert (Passes 3.81 cfs of 5.01 cfs potential flow) -3=24inch-Dome Grate Capacity (Custom Controls 3.81 cfs)

Secondary OutFlow Max=2.51 cfs @ 12.14 hrs HW=10.26' (Free Discharge) 4=15inch-Dome Grate Capacity (Custom Controls 2.51 cfs)

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			Summary fo	r Pond 2	a-P: BB 2a			
	= 0.5 = 0.5 = 0.5 ed to Reach D	6 cfs @ 12 5 cfs @ 12 2 cfs @ 12 P-1 : Frencl	2.62% Impervic 2.13 hrs, Volum 2.14 hrs, Volum 2.14 hrs, Volum n Rodney Blvd (	ie= ie= ie= Dutfall	1,847 cf 1,847 cf, A 721 cf			
Seconda Route	ed to Pond 14		2.14 hrs, Volum one	e=	1,126 cf			
			Span= 0.00-72 Irf.Area= 425 sf					
			n calculated for n ( 809.2 - 754.		00% of inflow	v)		
Volume	Invert	Avail.Stor	age Storage I	Description	l			
#1	8.50'	46	2 cf Custom	Stage Dat	a (Prismatic)	Listed b	pelow (R	ecalc)
Elevatio (fee		.Area sq-ft)	Inc.Store (cubic-feet)	Cum.St (cubic-fe				
8.5		180	0		0			
9.8	30	530	462	4	162			
Device	Routing	Invert	Outlet Devices	;				
#1	Primary	7.80'	<b>10.0" Round</b> L= 10.0' CPP Inlet / Outlet In n= 0.013, Flow	, square e vert= 7.80 v Area= 0.	' / 7.70' S= 0 55 sf			).900
#2 #3	Device 1 Secondary	9.30' 8.50'	24inch-Dome 2.410 in/hr Ex Conductivity to	filtration o	over Surface			
1=Ci	Ivert (Passes	0.51 cfs of	0 12.14 hrs HW 2.86 cfs potenti acity (Custom (	al flow) `	0	e)		
Second 3=Ex	ary OutFlow filtration(Co	Max=0.03 cl ntrols 0.03	fs @ 12.14 hrs cfs)	HW=9.41'	(Free Disch	arge)		

Summary for Pond 2b-P: BB 2b	Summary for Pond 3A-P: BB 3A
Summary for Pond 2b-P: BB 2bInflow Area =21,490 sf, 80.50% Impervious, Inflow Depth = 6.76" for NOAA 100-yr eventInflow =3.78 cfs @12.13 hrs, Volume=12,099 cfOutflow =3.77 cfs @12.15 hrs, Volume=12,099 cf, Atten= 0%, Lag= 1.4 minPrimary =2.94 cfs @12.15 hrs, Volume=Routed to Reach 15R : ISOLATOR ROW 1Secondary =0.83 cfs @12.15 hrs, Volume=207 cfRouted to Reach DP-1 : French Rodney Blvd OutfallRouted to Reach DP-1 : French Rodney Blvd OutfallRouted to Reach DP-1 : French Rodney Blvd OutfallRouted to Reach DP-1 : Trench Rodney Blvd OutfallRouted to Reach DP-1 : French Rodney Blvd OutfallRouted to Reach DP-1 : Trench Rodney Blvd OutfallRouted to Reach DP -1 : Trench Rodney Blvd OutfallRouted to Reach DP -1 : Trench Rodney Blvd OutfallRouted to Reach DP -1 : Contendey Couter Devel#18	Summary for Pond 3A-P: BB 3AInflow Area =10,987 sf, 58.16% Impervious, Inflow Depth =6.17" for NOAA 100-yr eveInflow =1.84 cfs @12.13 hrs, Volume=5,647 cfOutflow =1.75 cfs @12.15 hrs, Volume=5,647 cf, Atten= 5%, Lag= 1.3 minDiscarded =0.03 cfs @12.15 hrs, Volume=1,537 cfPrimary =1.73 cfs @12.15 hrs, Volume=4,110 cfRouting by Stor-Ind method, Time Span=0.00-72.00 hrs, dt=0.05 hrsPeak Elev=11.14' @12.15 hrsSurf.Area=Plug-Flow detention time=61.6 min calculated for 5,647 cf (100% of inflow)Center-of-Mass det. time=61.5 min (847.5 - 786.0 )VolumeInvertAvail.StorageStorage Data (Prismatic)_Listed below (Recalc)ElevationSurf.AreaIn.25271010.25271010.45350626211.251,050500622DeviceRouting#1Primary9.30'10.0" Round CulvertL= 10.0' CPP, square edge headwall, Ke=#2Discarded10.25'1.020 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 7.30'#3Primary11.15'43Primary11.05'50'24inch-Dome Grate Capacity
Secondary OutFlow Max=0.82 cfs @ 12.15 hrs HW=8.59' (Free Discharge) -1=Culvert (Passes 0.82 cfs of 3.89 cfs potential flow) -2=24inch-Dome Grate Capacity (Custom Controls 0.82 cfs)	Discarded OutFlow Max=0.03 cfs @ 12.15 hrs HW=11.14' (Free Discharge)         -2=Exfiltration (Controls 0.03 cfs)         Primary OutFlow Max=1.73 cfs @ 12.15 hrs HW=11.14' (Free Discharge)         -1=Culvert (Passes 1.73 cfs @ 12.15 hrs HW=11.14' (Free Discharge)         -4=24inch-Dome Grate Capacity (Custom Controls 1.73 cfs)         -3=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

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# Summary for Pond 3B-P: BB 3B

[93] Warning: Storage range exceeded by 0.01' [88] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area =	4,545 sf, 77.34% Impervious,	Inflow Depth = 6.76" for NOAA 100-yr event
Inflow =	0.80 cfs @ 12.13 hrs, Volume=	2,559 cf
Outflow =	0.82 cfs @ 12.14 hrs, Volume=	2,559 cf, Atten= 0%, Lag= 0.6 min
Discarded =	0.02 cfs @ 12.13 hrs, Volume=	983 cf
Primary =	0.80 cfs @ 12.14 hrs, Volume=	1,576 cf
Routed to Rea	ach BMP_3 : BMP-3_OVERFLOW	

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Peak Elev= 12.91' @ 12.14 hrs Surf.Area= 570 sf Storage= 263 cf

Plug-Flow detention time= 80.1 min calculated for 2,559 cf (100% of inflow) Center-of-Mass det. time= 80.1 min (848.3 - 768.3)

Volume	Inver	t Avail.Stor	age Storage I	Description	
#1	12.20	' 26	3 cf Custom	Stage Data (Pr	ismatic)Listed below (Recalc)
Elevatio (fee 12.2 12.9	20	Surf.Area (sq-ft) 180 570	Inc.Store (cubic-feet) 0 263	Cum.Store (cubic-feet) 0 263	
Device	Routing	Invert	Outlet Devices	6	
#1	Primary	10.70'	Inlet / Outlet In	, square edge h	neadwall, Ke= 0.500 0.60' S= 0.0100 '/' Cc= 0.900
#2	Discarded	12.20'		filtration over	
#3 #4	Device 1 Primary	12.80' 12.85'	24inch-Dome	Grate Capacit	Elevation = 8.70' y stangular Weir 2 End Contraction(s)

Discarded OutFlow Max=0.02 cfs @ 12.13 hrs HW=12.91' (Free Discharge)

Primary OutFlow Max=0.77 cfs @ 12.14 hrs HW=12.91	(Free Discharge)
-1=Culvert (Passes 0.53 cfs of 3.52 cfs potential flow)	
-3=24inch-Dome Grate Capacity (Custom Controls 0	53 cfs)

4=Sharp-Crested Rectangular Weir (Weir Controls 0.24 cfs @ 0.80 fps)

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### Summary for Pond 4A-P: BB 4A - POND

Outflow = Primary = Routed to Secondary =	0.86 0.84 0.80 Reach BMI 0.04	843 sf, 86.37 cfs @ 12.13 cfs @ 12.14 cfs @ 12.14 P_3 : BMP-3_ cfs @ 12.14 : BB4A-Stone	hrs, Volume hrs, Volume hrs, Volume OVERFLOV hrs, Volume	e= 2,8 e= 2,8 e= 1,3	822 cf	for NOAA 100-yr event n= 3%, Lag= 1.1 min	
				00 hrs, dt= 0.0 Storage= 25			
	Ũ			2,820 cf (100%			
		= 29.0  min ca = 29.0 min ( 7			o or innow)		
Volume	Invert	Avail.Storage	Storage D	escription			
#1	9.50'	320 cf	Custom S	Stage Data (Pr	rismatic)List	ed below (Recalc)	
Elevation	Surf.A	rea In	c.Store	Cum.Store			
(feet)	(so	-ft) (cub	ic-feet)	(cubic-feet)			
9.50	2	250	0	0			
10.20	6	64	320	320			

Device	Routing	Invert	Outlet Devices
#1	Primary	8.00'	12.0" Round Culvert
	-		L= 10.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 8.00' / 7.90' S= 0.0100 '/' Cc= 0.900
			n= 0.013, Flow Area= 0.79 sf
#2	Secondary	9.50'	2.410 in/hr Exfiltration over Surface area
			Conductivity to Groundwater Elevation = 6.00'
#3	Primary	10.10'	5.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#4	Device 1	9.95'	24inchDome Grate Capacity
			Head (feet) 0.00 0.05 0.10 0.15 0.20 0.25 0.30 0.35 0.40 0.45
			0.50 0.55 0.60 0.65 0.70 0.75 0.80 0.85 0.90 0.95 1.00 1.05
			1.10
			Disch. (cfs) 0.000 0.180 0.460 0.850 1.360 1.830 2.420 3.100
			3.600 3.800 4.000 4.200 4.380 4.600 4.750 4.900 5.100 5.200
			5.350 5.450 5.650 5.800 5.950

Primary OutFlow Max=0.79 cfs @ 12.14 hrs HW=10.09' (Free Discharge) 1=Culvert (Passes 0.79 cfs of 4.77 cfs potential flow) 4=24inchDome Grate Capacity (Custom Controls 0.79 cfs)

-3=Sharp-Crested Rectangular Weir( Controls 0.00 cfs)

Secondary OutFlow Max=0.04 cfs @ 12.14 hrs HW=10.09' (Free Discharge) -2=Exfiltration ( Controls 0.04 cfs)

Inflow = 0.04 cfs @ 12.14 hrs, Volume= 1,473 cf Outflow = 0.04 cfs @ 12.18 hrs, Volume= 1,456 cf, Atten= 1%, Lag= 2.0 min Primary = 0.04 cfs @ 12.18 hrs, Volume= 1,456 cf Routed to Reach BMP4_O : BMP-4 OVERFLOW Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Peak Elev= 7.13' @ 12.18 hrs Surf.Area= 230 sf Storage= 26 cf Plug-Flow detention time= 20.3 min calculated for 1,455 cf (99% of inflow) Center-of-Mass det. time= 13.3 min (851.7 - 838.5 ) Volume Invert Avail.Storage Storage Description #1 6.75' 138 cf Custom Stage Data (Prismatic)Listed below (Recalc) 460 cf Overall x 30.0% Voids Elevation Surf.Area Inc.Store Cum.Store (feet) (sq-ft) (cubic-feet) 6.75 230 460 460 Device Routing Invert Outlet Devices #1 Primary 7.00' 4.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads Primary OutFlow Max=0.04 cfs @ 12.18 hrs HW=7.13' (Free Discharge) 1-9 Orifice/Grate (Orifice Controls 0.04 cfs @ 1.21 fps)			Su	Immary for P	ond 4A-S:	BB4A-S	Stone		
Peak Elev= 7.13' @ 12.18 hrs       Surf.Area= 230 sf       Storage= 26 cf         Plug-Flow detention time= 20.3 min calculated for 1,455 cf (99% of inflow)         Center-of-Mass det. time= 13.3 min (851.7 - 838.5 )         Volume       Invert       Avail.Storage       Storage Description         #1       6.75'       138 of       Custom Stage Data (Prismatic)Listed below (Recalc)         460 cf Overall x 30.0% Voids         Elevation       Surf.Area       Inc.Store       Cum.Store         (feet)       (sq-ft)       (cubic-feet)       (cubic-feet)         6.75       230       0       0         8.75       230       460       460         Device       Routing       Invert       Outlet Devices         #1       Primary       7.00'       4.0" Vert. Orifice/Grate       C= 0.600       Limited to weir flow at low heads	Outflow Primary	= =	0.04 cfs @ 1 0.04 cfs @ 1	2.18 hrs, Volun 2.18 hrs, Volun	ne= ne=	1,456 cf,	Atten= 1%	,Lag= 2.0 min	
Plug-Flow detention time= 20.3 min calculated for 1,455 cf (99% of inflow)         Center-of-Mass det. time= 13.3 min (851.7 - 838.5)         Volume       Invert       Avail.Storage       Storage Description         #1       6.75'       138 cf       Custom Stage Data (Prismatic)Listed below (Recalc) 460 cf Overall x 30.0% Voids         Elevation       Surf.Area       Inc.Store       Cum.Store (cubic-feet)         6.75       230       0       0         8.75       230       460       460         Device       Routing       Invert       Outlet Devices         #1       Primary       7.00'       4.0" Vert. Orifice/Grate       C= 0.600         Limited to weir flow at low heads       Reimary OutFlow Max=0.04 cfs @ 12.18 hrs       HW=7.13'       (Free Discharge)									
Center-of-Mass det. time= 13.3 min (851.7 - 838.5 )         Volume       Invert       Avail.Storage       Storage Description         #1       6.75'       138 cf       Custom Stage Data (Prismatic)Listed below (Recalc) 460 cf Overall x 30.0% Voids         Elevation       Surf.Area       Inc.Store       Cum.Store         (feet)       (sq-ft)       (cubic-feet)       (cubic-feet)         6.75       230       0       0         8.75       230       460       460         Device       Routing       Invert       Outlet Devices         #1       Primary       7.00'       4.0" Vert. Orifice/Grate       C= 0.600       Limited to weir flow at low heads			0		0		w)		
#1       6.75'       138 cf       Custom Stage Data (Prismatic)Listed below (Recalc) 460 cf Overall x 30.0% Voids         Elevation       Surf.Area (sq-ft)       Inc.Store (cubic-feet)       Cum.Store (cubic-feet)         6.75       230       0       0         8.75       230       460       460         Device       Routing       Invert       Outlet Devices         #1       Primary       7.00'       4.0" Vert. Orifice/Grate       C= 0.600       Limited to weir flow at low heads         Primary OutFlow       Max=0.04 cfs @ 12.18 hrs       HW=7.13'       (Free Discharge)							•		
460 cf Overall x 30.0% Voids         Elevation       Surf.Area       Inc.Store       Cum.Store         (feet)       (sq-ft)       (cubic-feet)       (cubic-feet)         6.75       230       0       0         8.75       230       460       460         Device       Routing       Invert       Outlet Devices         #1       Primary       7.00'       4.0" Vert. Orifice/Grate       C= 0.600       Limited to weir flow at low heads         Primary OutFlow       Max=0.04 cfs @ 12.18 hrs       HW=7.13'       (Free Discharge)	Volume	Inv	ert Avail.Sto	orage Storage	Description				
(feet)         (sq-ft)         (cubic-feet)           6.75         230         0         0           8.75         230         460         460           Device         Routing         Invert         Outlet Devices           #1         Primary         7.00'         4.0" Vert. Orifice/Grate         C= 0.600         Limited to weir flow at low heads	#1	6.7	75' 1				i <b>c)</b> Listed bel	ow (Recalc)	
8.75     230     460     460       Device     Routing     Invert     Outlet Devices       #1     Primary     7.00'     4.0" Vert. Orifice/Grate     C= 0.600     Limited to weir flow at low heads       Primary OutFlow     Max=0.04 cfs @ 12.18 hrs     HW=7.13'     (Free Discharge)									
Device         Routing         Invert         Outlet Devices           #1         Primary         7.00'         4.0" Vert. Orifice/Grate         C= 0.600         Limited to weir flow at low heads           Primary         OutFlow         Max=0.04 cfs @ 12.18 hrs         HW=7.13'         (Free Discharge)									
#1 Primary 7.00' <b>4.0" Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads Primary OutFlow Max=0.04 cfs @ 12.18 hrs HW=7.13' (Free Discharge)	8.	75	230	460	46	30			
Primary OutFlow Max=0.04 cfs @ 12.18 hrs HW=7.13' (Free Discharge)	Device	Routing	Invert	Outlet Device	s				
	#1	Primary	7.00'	4.0" Vert. Ori	fice/Grate	C= 0.600	Limited to	weir flow at low hea	ads
						e Discha	rge)		

		•	
		Sun	mmary for Pond 4B-P: BB 4B - POND
Inflow A			86.09% Impervious, Inflow Depth = 6.99" for NOAA 100-yr eve
Inflow Outflow			I2.13 hrs, Volume= 1,776 cf I2.14 hrs, Volume= 1,776 cf, Atten= 1%, Lag= 1.0 min
Primary			12.14 hrs, Volume= 858 cf
			BMP-4 OVERFLOW
Second Rout	ary = 0.0 ted to Pond 4E		I2.14 hrs, Volume= 919 cf -Stone
			e Span= 0.00-72.00 hrs, dt= 0.05 hrs Surf.Area= 367 sf Storage= 142 cf
	0		U U
			nin calculated for 1,775 cf (100% of inflow) nin ( 787.9 - 759.4 )
			, ,
Volume			brage Storage Description
#1	10.50'	19	99 cf Custom Stage Data (Prismatic)Listed below (Recalc)
Elevati	on Sur	f.Area	Inc.Store Cum.Store
(fe	/	(sq-ft)	(cubic-feet) (cubic-feet)
10. 11.		144 424	0 0 199 199
		.2.1	
Device	Routing	Invert	
#1	Primary	9.00'	<b>12.0" Round Culvert</b> L= 10.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 9.00' / 8.90' S= 0.0100 '/' Cc= 0.900
#2	Secondary	10.50'	n= 0.013, Flow Area= 0.79 sf 2.410 in/hr Exfiltration over Surface area
#2	Secondary	10.50	Conductivity to Groundwater Elevation = 7.00'
#3	Primary	11.10'	
#4	Device 1	10.95'	24inch-Dome Grate Capacity
			@ 12.14 hrs HW=11.06' (Free Discharge)
<u></u> _1=C	ulvert (Passe	s 0.50 cfs of	f 4.72 cfs potential flow)
3=5	=24inch-Dom harp-Crested	e Grate Cap Rectangula	pacity (Custom Controls 0.50 cfs) ar Weir (Controls 0.00 cfs)
	•	Ū.	· · · ·
Second	tary OutFlow		cfs @ 12.14 hrs HW=11.06' (Free Discharge)
		DIDITOIS U U2	CISI

		Summary	for Pond 4B-	S: BB 4A-	Stone
Inflow Outflow Primary Routed	= 0.02 cf = 0.02 cf	s @ 12.14 hrs, s @ 12.16 hrs, s @ 12.16 hrs, 4_O : BMP-4 O\	, Volume= , Volume=	919 cf 908 cf, 908 cf	Atten= 1%, Lag= 1.4 min
			0.00-72.00 hrs, c = 145 sf Storage		
	1.00 (2.10	nis oun.Alea-		- 10 01	
			ated for 908 cf (9	9% of inflow	)
Center-of-N	/lass det. time=	12.3 min ( 851.	5 - 839.3 )		
Volume	Invert A	vail.Storage S	torage Descriptio	on	
#1	7.50'				<b>c)</b> Listed below (Recalc)
		2	90 cf Overall x 3	0.0% Voids	
Elevation	Surf.Are	a Inc.S	tore Cum.	Store	
(feet)	(sq-f	/	/ \		
7.50 9.50	14 14	-	0	0	
9.50	14	5	290	290	
	outing	Invert Outlet	Devices		
Device R	rimary	7.75' <b>4.0" V</b> e	ert. Orifice/Grat	e C= 0.600	Limited to weir flow at low heads
		02 of a @ 12 16	bro UM-7 95'		rao)
#1 P			1115 1119-1.00	(FIEE DISCITA	ige)
#1 P Primary O					
#1 P Primary O			cfs @ 1.06 fps)		
#1 P Primary O					

14850_	Proposed-Drainage-Areas_220609	NOAA 24-hr C	NOAA 100-yr Rainfall=7.59"	
Prepare	d by {enter your company name here}		Printed 6/16/2022	
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# Summary for Pond 5A-P: BB 5A - POND

Seconda Route	= 0.54 c = 0.37 c = 0.32 c d to Reach B : F ry = 0.05 c d to Pond 5A-PS	ofs @ 12 ofs @ 12 ofs @ 12 PARKING ofs @ 12 S : BB 5A	
			Span= 0.00-72.00 hrs, dt= 0.05 hrs Irf.Area= 736 sf Storage= 472 cf
			in calculated for 1,698 cf (100% of inflow) in ( 833.6 - 772.2 )
Volume	Invert	Avail.Stor	rage Storage Description
#1	8.80'		45 cf Custom Stage Data (Prismatic)Listed below (Recalc)
Elevation (feet 8.80 9.80	:) (sq 0 4		Inc.Store Cum.Store (cubic-feet) (cubic-feet) 0 0 645 645
Device	Routing	Invert	Outlet Devices
#1	Primary	7.60'	<b>12.0" Round Culvert</b> L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 7.60' / 7.50' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Secondary	8.80'	2.410 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 5.60'
#3	Device 1	9.50'	,
1=Cul 1=3=2 Şeconda	lvert (Passes 0. 24inch-Dome G	29 cfs of rate Cap x=0.05 cl	<ul> <li>12.22 hrs HW=9.57' (Free Discharge)</li> <li>4.58 cfs potential flow)</li> <li>acity (Custom Controls 0.29 cfs)</li> <li>fs @ 12.22 hrs HW=9.57' (Free Discharge)</li> <li>cfs)</li> </ul>

nflow				Fond SA-	PS: BB 5A	-Stone
Outflow Primary	= 0.05	cfs @ 12 cfs @ 12	2.22 hrs, Vo 2.34 hrs, Vo 2.34 hrs, Vo 2.34 hrs, Vo LOT B OV	olume= olume=	1,422 cf 1,386 cf, 1,386 cf	Atten= 2%, Lag= 7.5 min
Routing by	Stor-Ind met	thod, Time	Span= 0.00	)-72.00 hrs, o	dt= 0.05 hrs	
Peak Elev=	5.95' @ 12.	34 hrs Su	rf.Area= 48	0 sf Storage	e= 57 cf	
Volume #1	Invert 5.55'		8 cf Cust	ge Description om Stage D of Overall x 3	ata (Prismat	ic)Listed below (Recalc)
Elevation	Surf.A		Inc.Store			
(feet) 5.55	(S	q-ft) 480	(cubic-feet) 0		<u>-teet)</u> 0	
5.55 7.55		480	960		960	
	outing		Outlet Dev			
#1 Pr	imary	5.80'	4.0" Vert.	Orifice/Grat	e C= 0.600	Limited to weir flow at low he

Prepare		your compa	ny name here} 2021 HydroCAD S	Software Solutions LLC	Printed 6/16/ Pag	7.59 2022 <u>e 56</u>
		Sun	nmary for Por	nd 5B-P: BB 5B - P	OND	
			eded by 0.15' lire smaller dt or l	Finer Routing		
Seconda Rout Tertiary	= 6 = 6 = 3 ed to Reach 1 ary = 0 ed to Pond 5	01 cfs @ 12 26 cfs @ 12 58 cfs @ 12 3 : PARKING 10 cfs @ 12 3-PS : BB 5E 58 cfs @ 12	2.13 hrs, Volume 2.14 hrs, Volume 2.14 hrs, Volume 3 LOT B OVERFI 2.14 hrs, Volume 3-Stone 2.14 hrs, Volume	e= 18,883 cf e= 18,883 cf, A e= 2,563 cf LOW e= 4,817 cf	32" for NOAA 100-yr event htten= 0%, Lag= 0.6 min	
				00 hrs, dt= 0.05 hrs if Storage= 711 cf		
Center-o	of-Mass det. t	ime= 22.3 m	in calculated for in ( 798.2 - 775.9	18,883 cf (100% of inflc ))	ow)	
Center-o	of-Mass det. 1 Invert	ime= 22.3 m Avail.Sto	in calculated for in ( 798.2 - 775.9 rage Storage D	18,883 cf (100% of inflc ) ) Description		
Center-o Volume #1	of-Mass det. 1 Invert 8.20'	ime= 22.3 m Avail.Sto 71	in calculated for in ( 798.2 - 775.9 r <u>age Storage D</u> 11 cf <b>Custom S</b>	18,883 cf (100% of inflo ) ) Description Stage Data (Prismatic)		
Center-o <u>Volume</u> #1 Elevatio	of-Mass det. 1 <u>Invert</u> 8.20' on Su	ime= 22.3 m Avail.Sto 71 rf.Area	in calculated for in ( 798.2 - 775.9 rage Storage D 11 cf <b>Custom S</b> Inc.Store	18,883 cf (100% of inflo ) ) escription Stage Data (Prismatic) Cum.Store		
Center-o Volume #1 Elevatio (fee	of-Mass det. t <u>Invert</u> 8.20' on Su et)	ime= 22.3 m Avail.Sto 7' rf.Area (sq-ft)	in calculated for in ( 798.2 - 775.9 rage Storage D 11 cf <b>Custom S</b> Inc.Store (cubic-feet)	18,883 cf (100% of inflo ) ) Stage Data (Prismatic) Cum.Store (cubic-feet)		
Center-o <u>Volume</u> #1 Elevatio	of-Mass det. 1 <u>Invert</u> 8.20' on Su on Su ot)	ime= 22.3 m Avail.Sto 71 rf.Area	in calculated for in ( 798.2 - 775.9 rage Storage D 11 cf <b>Custom S</b> Inc.Store	18,883 cf (100% of inflo ) ) escription Stage Data (Prismatic) Cum.Store		
Center-o Volume #1 Elevatio (fee 8.2	of-Mass det. 1 <u>Invert</u> 8.20' on Su et) 20 00	ime= 22.3 m Avail.Sto 7 ff.Area (sq-ft) 327 1,450	in calculated for ' in ( 798.2 - 775.9 rage <u>Storage D</u> 11 cf <b>Custom S</b> Inc.Store (cubic-feet) 0	18,883 cf (100% of inflo ) ) Stage Data (Prismatic) Cum.Store (cubic-feet) 0		
Center-o Volume #1 Elevatio (fee 8.2 9.0	of-Mass det. 1 <u>Invert</u> 8.20' on Su et) 20 00	ime= 22.3 m Avail.Sto 7 ff.Area (sq-ft) 327 1,450	in calculated for ' in ( 798.2 - 775.9 rage Storage D 11 of <b>Custom S</b> Inc.Store (cubic-feet) 0 711 <u>Outlet Devices</u> <b>12.0" Round C</b> L= 10.0' CPP, Inlet / Outlet Inv	18,883 cf (100% of inflo )) Description Stage Data (Prismatic) Cum.Store (cubic-feet) 0 711 Culvert square edge headwall, vert= 7.00' / 6.90' S= 0	Listed below (Recalc)	
Center-o Volume #1 Elevatio (fee 8.2 9.0 Device	of-Mass det. 1 <u>Invert</u> 8.20' on Su 20 20 20 Routing	ime= 22.3 m Avail.Sto 7′ ff.Area (sq-ft) 327 1,450 Invert	in calculated for ' in (798.2 - 775.9 rage Storage D 11 cf Custom S Inc.Store (cubic-feet) 0 711 Outlet Devices 12.0" Round C L= 10.0' CPP, Inlet / Outlet Im n = 0.013, Flow 2.410 in/hr Exf	18,883 cf (100% of inflo )) Description Stage Data (Prismatic) Cum.Store (cubic-feet) 0 711 Culvert square edge headwall, vert= 7.00' / 6.90' S= 0 v Area= 0.79 sf illtration over Surface	Listed below (Recalc) Ke= 0.500 .0100 '/' Cc= 0.900 area	
Center-o Volume #1 Elevatio (fee 8.2 9.0 <u>Device</u> #1	of-Mass det. 1 <u>Invert</u> 8.20' on Su 20 20 20 Routing Primary	ime= 22.3 m <u>Avail.Sto</u> 7 <sup>-</sup> ff.Area (sq-ft) 327 1,450 <u>Invert</u> 7.00'	in calculated for ' in (798.2 - 775.9 rage Storage D 11 cf Custom S Inc.Store (cubic-feet) 0 711 Outlet Devices 12.0" Round C L= 10.0' CPP, Inlet / Outlet Inv n= 0.013, Flow 2.410 in/hr Exf Conductivity to 24inchDome C Head (feet) 0. 0.55 0.65 1.10 Disch. (cfs) 0.0 3.600 3.800 4	18,883 cf (100% of inflo ) ) ) ) ) ) ) ) ) ) ) ) )	Listed below (Recalc) Ke= 0.500 .0100 '/' Cc= 0.900 area	

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 NOAA 24-h

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Primary OutFlow Max=3.31 cfs @ 12.14 hrs HW=9.13' (Free Discharge) 1=Culvert (Passes 3.31 cfs of 4.83 cfs potential flow) -3=24inchDome Grate Capacity (Custom Controls 3.31 cfs)

Secondary OutFlow Max=0.10 cfs @ 12.14 hrs HW=9.13' (Free Discharge)

Tertiary OutFlow Max=2.53 cfs @ 12.14 hrs HW=9.13' (Free Discharge) 4=15inch-Dome Grate Capacity (Custom Controls 2.53 cfs)

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	-	

### Summary for Pond 5B-PS: BB 5B-Stone

 Inflow
 =
 0.10 cfs @
 12.14 hrs, Volume=

 Outflow
 =
 0.09 cfs @
 12.19 hrs, Volume=

 Primary
 =
 0.09 cfs @
 12.19 hrs, Volume=

 Routed to Reach B : PARKING LOT B OVERFLOW

4,817 cf 4,765 cf, Atten= 2%, Lag= 3.2 min 4,765 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Peak Elev= 5.47' @ 12.19 hrs Surf.Area= 690 sf Storage= 96 cf

Plug-Flow detention time= 24.3 min calculated for 4,762 cf (99% of inflow) Center-of-Mass det. time= 17.5 min (939.7 - 922.2)

Volume	Inve	ert Avail.S	Storage St	orage Description	1	
#1	5.0	)0'		ustom Stage Dat 380 cf Overall x 3		<b>ic)</b> Listed below (Recalc) s
Elevatio (fee		Surf.Area (sq-ft)	Inc.St (cubic-fe			
5.0	00	690		0	0	
7.0	00	690	1,3	380 1,	380	
Device #1	Routing Primary	Inve 5.2		Devices ert. Orifice/Grate	C= 0.600	Limited to weir flow at low heads

Primary OutFlow Max=0.09 cfs @ 12.19 hrs HW=5.47' (Free Discharge) -1=Orifice/Grate (Orifice Controls 0.09 cfs @ 1.58 fps)

			ny name here 2021 HydroCAD		are Solu	utions LLC		Prir		/16/2022 Page 59				y {enter 10.10-7a	
		Sun	nmary for Po	nd 6	A-P: 6	BB 6A - PC	OND								
Seconda	= 2.44 = 2.43 = 2.38 ed to Reach BM	cfs @ 12 cfs @ 12 cfs @ 12 cfs @ 12 IP6_O : BI cfs @ 12	46.97% Impervia 2.13 hrs, Volun 2.14 hrs, Volun 2.14 hrs, Volun MP-6 OVERFLO 2.14 hrs, Volun A - STONE	ne= ne= ne= DW		Depth = 5.82 7,345 cf 7,345 cf, At 4,859 cf 2,486 cf						Routing	/ = ted to g by S	: 0	metho
			Span= 0.00-72 Surf.Area= 727 :											etention ass det.	
Center-o	of-Mass det. tim	e= 35.3 m	in calculated for in ( 830.1 - 794	8)		0% of inflow	)					Volume #1	!	Invert 7.00'	A
Volume #1	Invert 10.20'		rage Storage 91 cf Custom			(Prismatic)	isted by	elow (Rec	alc)			Elevati	ion	SI	urf.Ar
#1	10.20	43	Gi Custom	Stage	Dala	(Frisinauc)	ISIEU D		aic)			(fe		30	un.Ai (sq-
Elevatio (fee	et) (s	q-ft)	Inc.Store (cubic-feet)		ım.Stor bic-fee	et)							.00 .00		2
10.2 11.1		350 740	0 491		49	0						Device	Ro	uting	
	10	740	431		43	71						#1		mary	
	Routing		Outlet Devices											,	
#1	Primary	9.00'	<b>12.0" Round</b> L= 10.0' CPF Inlet / Outlet In n= 0.013, Flo	, squa vert= w Area	are edg 9.00' / a= 0.79	8.90'S=0. 9sf	0100 '/'		00					tFlow M e/Grate(	
#2	Secondary	10.20'	2.410 in/hr Ex Conductivity to												
#3 #4	Device 1 Primary	10.80' 11.00'	24inch-Dome	Grate	e Capa	city			tractior	n(s)					
1=Ci 1_3= 4=Sh	Ilvert (Passes 24inch-Dome arp-Crested R	2.04 cfs of Grate Cap ectangula	① 12.14 hrs HV 4.73 cfs potent bacity (Custom of the Weir (Weir Cost fs ② 40.44 hrs.)	ial flow Contro ntrols	v) bls 2.04 0.29 c	4 cfs) fs @ 0.85 fp:	s)								
	filtration (Cor		fs @ 12.14 hrs cfs)		11.07	(FIGE DISCN	arge)								
											1				

NOAA 24-hr C NOAA 100-yr Rainfall=7.59" ge-Areas\_220609 pany name here} © 2021 HydroCAD Software Solutions LLC Printed 6/16/2022 Page 60

# mmary for Pond 6A-PS: BB 6A - STONE

12.14 hrs, Volume= 12.18 hrs, Volume= 12.18 hrs, Volume= : BMP-6 OVERFLOW

2,486 cf 2,464 cf, Atten= 1%, Lag= 2.1 min 2,464 cf

me Span= 0.00-72.00 hrs, dt= 0.05 hrs Surf.Area= 290 sf Storage= 34 cf

8 min calculated for 2,464 cf (99% of inflow) 2 min ( 998.0 - 986.8 )

Volume	In	vert	Avail.Sto	rage	Storage D	escriptior	า	
#1	7	'.00'	17	74 cf	Custom S 580 cf Ove			<b>tic)</b> Listed below (Recalc)
Elevatio (fee		Surf.	Area sq-ft)		.Store c-feet)	Cum.St (cubic-fe		
7.0	/	(	290	(ouble	0		0	
9.0	00		290		580	4	580	
Device	Routin	g	Invert	Outle	et Devices			
#1	Primar	у	7.25'	4.0"	Vert. Orific	ce/Grate	C= 0.600	Limited to weir flow at low heads

fs @ 12.18 hrs HW=7.40' (Free Discharge) ontrols 0.05 cfs @ 1.30 fps)

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# Summary for Pond 6B-P: BB 6B

[93] Warning: Storage range exceeded by 0.03' [88] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area =	6,495 sf, 77.45% Impervious,	Inflow Depth = 6.76" for NOAA 100-yr event
Inflow =	1.14 cfs @ 12.13 hrs, Volume=	3,657 cf
Outflow =	1.17 cfs @ 12.14 hrs, Volume=	3,657 cf, Atten= 0%, Lag= 0.6 min
Discarded =	0.02 cfs @ 12.13 hrs, Volume=	1,294 cf
Primary =	1.15 cfs @ 12.14 hrs, Volume=	2,363 cf
Routed to Rea	ach BMP6_O : BMP-6 OVERFLOW	

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Peak Elev= 12.13' @ 12.14 hrs Surf.Area= 690 sf Storage= 394 cf

Plug-Flow detention time= 88.5 min calculated for 3,654 cf (100% of inflow) Center-of-Mass det. time= 88.7 min ( 857.0 - 768.3 )

Volume	Inve	rt Avail.Sto	rage Storage	Description		
#1	11.2	0' 39	94 cf Custom	Stage Data	(Prismatic)List	ed below (Recalc)
Elevatio	on	Surf.Area	Inc.Store	Cum.Sto		
(fee	et)	(sq-ft)	(cubic-feet)	(cubic-fee	et)	
11.2	20	185	0		0	
12.1	10	690	394	39	94	
Device	Routing	Invert	Outlet Device	s		
#1	Primary	10.10'		P, square eden nvert= 10.10		e= 0.500 0100 '/'    Cc= 0.900
#2	Discarde	d 11.20'			ver Surface are ter Elevation = 8	
#3	Device 1	11.95'	24inch-Dome			
Discard	ed OutFlo	w Max=0.02 cf	s @ 12.13 hrs	HW=12.12'	(Free Discharg	le)

iye, 2=Exfiltration (Controls 0.02 cfs)

Primary OutFlow Max=1.10 cfs @ 12.14 hrs HW=12.12' (Free Discharge) 1=Culvert (Passes 1.10 cfs of 4.67 cfs potential flow) -3=24inch-Dome Grate Capacity (Custom Controls 1.10 cfs)

14850_Proposed-Drainage-Areas_220609	NOAA 24-hr C NOAA 100-yr Rainfall=7.59"
Prepared by {enter your company name here}	Printed 6/16/2022
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## Summary for Pond 7A-P: BB 7A PONDING

Inflow Outflow Primary Rout Seconda	Outflow       =       0.56 cfs @       12.14 hrs, Volume=       1,844 cf, Atten= 0%, Lag= 0.9 min         Primary       =       0.54 cfs @       12.14 hrs, Volume=       916 cf         Routed to Reach 7R : PARKING LOT C to HUDSON       Secondary =       0.02 cfs @       12.14 hrs, Volume=       928 cf         Routed to Pond 7A-S : BB 7A - STONE       FA - STONE       Secondary =       0.02 cfs @       12.14 hrs, Volume=						
Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Peak Elev= 10.01'@ 12.14 hrs Surf.Area= 332 sf Storage= 159 cf							
Plug-Flow detention time= 37.5 min calculated for 1,843 cf (100% of inflow) Center-of-Mass det. time= 37.5 min ( 796.9 - 759.4 )							
Volume	Invert	Avail.Stor	age Storage De	escription			
#1	9.30'	22	7 cf Custom St	tage Data (Pr	smatic)Liste	d below (Recalc)	
Elevatio	et)	<u>, , , , , , , , , , , , , , , , , , , </u>	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)			
9.3		115	0	0			
10.2	20	390	227	227			
Device	Routing		Outlet Devices				
#1	#1 Primary 8.10' <b>12.0" Round Culvert</b> L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 8.10' / 8.00' S= 0.0100 '/' Cc= 0.900 n= 0.013. Flow Area= 0.79 sf						
#2	Secondary	9.30'	2.410 in/hr Exfil Conductivity to C	Itration over			
#3	Device 1	9.90'					
#4	Primary	10.10'	5.0' long Sharp	-Crested Rec	angular We	ir 2 End Contraction(s)	
1=Ci	Primary OutFlow Max=0.53 cfs @ 12.14 hrs HW=10.01' (Free Discharge) 1=Culvert (Passes 0.53 cfs of 4.49 cfs potential flow) 2=3=24inch-Dome Grate Capacity(Custom Controls 0.53 cfs) 4=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)						
	Secondary OutFlow Max=0.02 cfs @ 12.14 hrs HW=10.01' (Free Discharge)						

		Su	mmary for Po	nd 7A-S: B	B 7A - :	STONE
Inflow Outflow Primary Route		0.02 cfs @ 0.02 cfs @	12.14 hrs, Volur 12.16 hrs, Volur 12.16 hrs, Volur ING LOT C to HU	ne= ne=	928 cf 928 cf, 928 cf	Atten= 1%, Lag= 1.5 min
			ne Span= 0.00-72 Surf.Area= 150 s			
	v- 0.15 (	<i>y</i> 12.101113	oun.Alea- 100 s	i otorage= 4	CI CI	
			nin calculated for nin ( 863.7 - 859.3		of inflow	)
Volume	Inve	ort Avail S	torage Storage	Description		
#1	5.1		0 0		Prismat	ic)Listed below (Recalc)
				verall x 30.09		,
Elevatio		Surf.Area	Inc.Store	Cum.Store		
(fee) 5.1	/	(sq-ft) 150	(cubic-feet) 0	(cubic-feet	<u> </u>	
5.1 7.1		150	300	( 30(		
Device #1	Routing Primary	5.10	t Outlet Device		= 0.600	Limited to weir flow at low heads
<i>#</i> 1	1 minary	0.10			- 0.000	
Primary			@ 12.16 hrs H		e Discha	arge)
• · ~	fice/Grat	e (Orifice Cor	trols 0.02 cfs @	1.04 fps)		
1=0r						
1=0r						

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		Sumr	mary for Por	nd 7B-P: B	B 7B POND	DING
Second	= 0.86 = 0.86 = 0.82 ed to Reach BM	8 cfs @ 12 6 cfs @ 12 2 cfs @ 12 4P7_0 : BM 4 cfs @ 12	2.13 hrs, Volur 2.14 hrs, Volur 2.14 hrs, Volur MP-7 OVERFL 2.14 hrs, Volur	ne= ne= ne= OW	2,880 cf	' for NOAA 100-yr even
	by Stor-Ind me ev= 10.75' @ 1					
	ow detention tim of-Mass det. tim Invert		n ( 798.3 - 759		00% of inflow)	
#1	10.00'	32	4 cf Custom	Stage Data	(Prismatic)Lis	sted below (Recalc)
Elevatio (fee			Inc.Store (cubic-feet)	Cum.Sto (cubic-fee		
10.		250	0		0	
10.8	50	560	324	34	24	
Device	Routing	Invert				
#1	Primary	8.90'	n= 0.013, Flo	P, square edg nvert= 8.90' / w Area= 0.79	8.80' S= 0.0 9 sf	100 '/' Cc= 0.900
#2	Secondary	10.00'	2.410 in/hr E Conductivity t			
#3	Device 1	10.60'				
f_1=Ci f_3: Şecond	• OutFlow Max Ilvert (Passes •24inch-Dome ary OutFlow M filtration ( Cor	0.81 cfs of <b>Grate Cap</b> lax=0.04 cf	4.39 cfs poten acity (Custom is @ 12.14 hrs	tial flow) Controls 0.8	1 cfs)	,

	Sur	nmary for Pon	d 7B-S: BB 7B	- STONE	
Inflow = Outflow = Primary = Routed to	0.04 cfs 🥘	12.14 hrs, Volum 12.16 hrs, Volum 12.16 hrs, Volum 18MP-7 OVERFLO	e= 1,500 c e= 1,500 c	of, Atten= 0%, I	_ag= 1.3 min
	or-Ind method, Tim 62' @ 12.16 hrs S		00 hrs, dt= 0.05 hrs Storage= 17 cf	3	
	ention time= 13.3 n ss det. time= 8.7 m		1,500 cf (99% of in )	flow)	
Volume	Invert Avail.St	orage Storage D	Description		
#1	7.25'		Stage Data (Prism rerall x 30.0% Void		v (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)		
7.25 9.25	150 150	0 300	0 300		
Device Rou	ting Invert	Outlet Devices			
	,	@ 12.16 hrs HW	/=7.62' (Free Disc		ir flow at low heads

<b>14850_Proposed-Drainage-Areas_220609</b> Prepared by {enter your company name here} HydroCAD® 10.10-7a s/n 00546 © 2021 HydroCAD Software 5	NOAA 24-hr C NOAA 100-yr Rainfall=7.59" Printed 6/16/2022 Solutions LLC Page 66	er your company name here} Printed 6/16/2022
Summary for Pond 8a-P:	<u> </u>	

Inflow Area =3,978 sf, 79.99% Impervious, Inflow Depth =6.76"for NOAA 100-yr eventInflow =0.70 cfs @12.13 hrs, Volume=2,240 cfOutflow =0.68 cfs @12.15 hrs, Volume=2,240 cf, Atten= 3%, Lag= 1.3 minPrimary =0.64 cfs @12.15 hrs, Volume=855 cfRouted to Reach P ST : PORTLAND STREET DRAINAGESecondary =0.04 cfs @Secondary =0.04 cfs @12.15 hrs, Volume=1,385 cfRouted to Pond 8a-s : BB 8A - STONE12.15 hrs, Volume=1,385 cf							
Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Peak Elev= 9.12' @ 12.15 hrs Surf.Area= 628 sf Storage= 308 cf							
	Plug-Flow detention time= 35.0 min calculated for 2,240 cf (100% of inflow) Center-of-Mass det. time= 35.0 min ( 803.3 - 768.3 )						
<u>volume</u> #1	Invert 8.50'		age Storage Descripti				
#1	8.50	57	5 cf Custom Stage D	ata (Prismatic)List	ed below (Recald)		
Elevatio	on Surf.A	rea	Inc.Store Cum.	Store			
(fee			cubic-feet) (cubic				
8.5		360	0	0			
9.5		790	575	575			
Device	Routing	Invert	Outlet Devices				
#1	Primary	7.40'	12.0" Round Culvert				
			L= 10.0' CPP, square				
			Inlet / Outlet Invert= 7.4		00 '/' Cc= 0.900		
			n= 0.013, Flow Area=				
#2	Secondary	8.50'	2.410 in/hr Exfiltration				
	<b>D</b> · · ·	0.001	Conductivity to Ground		».40'		
#3	Device 1	9.00'	24inch-Dome Grate C		air 2 Fred Contraction (a)		
#4	Primary	9.40'	5.0 long Sharp-Crest	ed Rectangular w	leir 2 End Contraction(s)		
1=Cu	Ivert (Passes 0 24inch-Dome 0	.63 cfs of a	) 12.15 hrs HW=9.12' 4.18 cfs potential flow) acity (Custom Controls Weir( Controls 0.00 cfs	0.63 cfs)			
	ary OutFlow Ma		s@ 12.15 hrs HW=9.12	2' (Free Discharge	e)		

2=Exfiltration (Controls 0.04 cfs)

		•	Software Solutions LLC	· · ·
	S	ummary for Pon	id 8a-s: BB 8A - S	STONE
Inflow = Outflow =		12.15 hrs, Volume 12.19 hrs, Volume		Atten= 1%, Lag= 2.4 min
Primary =		12.19 hrs, Volume		Aueri- 1%, Lag- 2.4 min
		RTLAND STREET		
Routina by S	tor-Ind method. Ti	me Span= 0.00-72.0	00 hrs. dt= 0.05 hrs	
		Surf.Area= 300 sf		
	tention times - 02 0	) min coloulated for :	1 267 of (000/ of inflo	
		min calculated for "	1,367 cf (99% of inflo 7)	w)
		,	,	
Volume		Storage Storage D		
#1	5.30'		Stage Data (Prismati erall_x 30.0% Voids	<b>c)</b> Listed below (Recalc)
Elevation	Surf.Area	Inc.Store	Cum.Store	
(feet) 5.30	<u>(sq-ft)</u> 300	(cubic-feet) 0	(cubic-feet) 0	
0.00	300	600	600	
7.30				
	utina Inve	ert Outlet Devices	aa/Crata C= 0.000	Limited to weir flow at low heads
Device Rou				Limited to well now at low neads
Device Rou	mary 5.5	0" 4.0" Vert. Orifi	<b>ce/Grate</b> C= 0.600	
Device Rou #1 Prir	mary 5.5		=5.63' (Free Discha	rge)
Device Rou #1 Prir Primary Out	mary 5.5 Flow Max=0.04 ct		=5.63' (Free Discha	rge)
Device Rou #1 Prir Primary Out	mary 5.5 Flow Max=0.04 ct	fs @ 12.19 hrs HW	=5.63' (Free Discha	rge)

		Sum	mary for Pond 8	3B-P: BB 8B-P	ONDI	NG
Inflow A	vrea =	5,598 sf, 8	7.78% Impervious	, Inflow Depth =	6.99"	for NOAA 100-yr event
Inflow			2.13 hrs, Volume=			
Outflow			2.14 hrs, Volume=			n= 1%, Lag= 0.9 min
Primary			2.14 hrs, Volume= G LOT C to HUDS			
Second		4 cfs @ 12	2.14 hrs, Volume=			
			Span= 0.00-72.00			
Peak El	lev= 9.75' @ 12	.14 hrs Su	rf.Area= 651 sf S	torage= 274 cf		
Diug Ek	ow dotontion tin	no= 24.0 mi	n calculated for 3,2	260 of (100% of in	flow)	
			in (793.4 - 759.4)		llow)	
Center-	or-mass det. un	10- 04.0 111	iii (735.4 - 753.4 )			
Volume	Invert	Avail.Sto	rage Storage Des	scription		
#1	9.10'	30	6 cf Custom Sta	ge Data (Prisma	tic)List	ed below (Recalc)
Elevati		Area		Cum.Store		
(fee	/	sq-ft)		(cubic-feet)		
	10 80	190 685	0 306	0		
9.	80	000	306	306		
Device	Routing	Invert	Outlet Devices			
#1	Primary	7.90'	12.0" Round Cu	lvert		
	,		L= 10.0' CPP, so	quare edge headw	all, Ke	e= 0.500
				rt= 7.90' / 7.80' S	= 0.01	00 '/' Cc= 0.900
			n= 0.013, Flow A	roa- 0 70 cf		
#2	Secondary	9.10'	2.410 in/hr Exfilt	ration over Surfa		
#2			2.410 in/hr Exfilt Conductivity to G	ration over Surfa	ion = 5	
	Secondary Device 1	9.10' 9.65'	2.410 in/hr Exfilt Conductivity to G	ration over Surfa	ion = 5	
#2 #3	Device 1	9.65'	2.410 in/hr Exfilt Conductivity to Gi 24inch-Dome Gr	ration over Surfa roundwater Elevat rate Capacity X 2	ion = 5 . <b>00</b>	
#2 #3 Primary	Device 1 y OutFlow Max	9.65' =0.92 cfs (	2.410 in/hr Exfilt Conductivity to G 24inch-Dome Gr 12.14 hrs HW=9	ration over Surfa roundwater Elevat rate Capacity X 2 0.75' (Free Disch	ion = 5 . <b>00</b>	
#2 #3 Primary 1=C	Device 1 y OutFlow Max ulvert (Passes	9.65' =0.92 cfs @ 0.92 cfs of	2.410 in/hr Exfilt Conductivity to Gi 24inch-Dome Gr	ration over Surfa roundwater Elevat rate Capacity X 2 9.75' (Free Disch flow)	ion = 5 . <b>00</b>	
#2 #3 Primary 1=Ci 1=3:	Device 1 y OutFlow Max ulvert (Passes =24inch-Dome	9.65' =0.92 cfs ( 0.92 cfs of <b>Grate Cap</b>	2.410 in/hr Exfilt Conductivity to G 24inch-Dome Gr 12.14 hrs HW=9 4.39 cfs potential f acity (Custom Cor	ration over Surfa roundwater Elevat rate Capacity X 2 9.75' (Free Disch flow) ntrols 0.92 cfs)	ion = 5 <b>.00</b> arge)	3.90'
#2 #3 Primary 1=Ci 1=3: Second	Device 1 y OutFlow Max ulvert (Passes =24inch-Dome lary OutFlow N	9.65' =0.92 cfs @ 0.92 cfs of <b>Grate Cap</b> //ax=0.04 c	2.410 in/hr Exfilt Conductivity to G 24inch-Dome Gr 12.14 hrs HW=9 4.39 cfs potential f acity (Custom Cor fs @ 12.14 hrs HW	ration over Surfa roundwater Elevat rate Capacity X 2 9.75' (Free Disch flow) ntrols 0.92 cfs)	ion = 5 <b>.00</b> arge)	3.90'
#2 #3 Primary 1=Ci 1=3: Second	Device 1 y OutFlow Max ulvert (Passes =24inch-Dome	9.65' =0.92 cfs @ 0.92 cfs of <b>Grate Cap</b> //ax=0.04 c	2.410 in/hr Exfilt Conductivity to G 24inch-Dome Gr 12.14 hrs HW=9 4.39 cfs potential f acity (Custom Cor fs @ 12.14 hrs HW	ration over Surfa roundwater Elevat rate Capacity X 2 9.75' (Free Disch flow) ntrols 0.92 cfs)	ion = 5 <b>.00</b> arge)	3.90'

		Summary for Po	ond 8B-S: BB 8B-	Stone
Inflow		① 12.14 hrs, Volum		
Outflow		12.18 hrs, Volum		Atten= 1%, Lag= 2.2 min
Primary		① 12.18 hrs, Volum RKING LOT C to HU		
rtouleu				
Routing by	Stor-Ind method.	Time Span= 0.00-72	.00 hrs. dt= 0.05 hrs	
		s Surf.Area= 300 sf		
	0			
Plug-Flow	letention time= 27	.3 min calculated for	1,653 cf (98% of inflo	ow)
Center-of-	lass det_time=17	'.5 min ( 867.9 - 850.	5)	
			• /	
Volumo		,	,	
Volume #1	Invert Avai	I.Storage Storage I	Description	ial istad balaw (Pasala)
<u>Volume</u> #1		il.Storage Storage I 180 cf <b>Custom</b>	Description Stage Data (Prismat	i <b>c)</b> Listed below (Recalc)
	Invert Avai	il.Storage Storage I 180 cf <b>Custom</b>	Description	ic)Listed below (Recalc)
	Invert Avai	il.Storage Storage I 180 cf <b>Custom</b>	Description Stage Data (Prismat	ic)Listed below (Recalc)
#1	Invert Avai 5.90'	I.Storage Storage I 180 cf Custom 600 cf Ov	Description Stage Data (Prismat verall x 30.0% Voids	ic)Listed below (Recalc)
#1 Elevation	Invert Avai 5.90' Surf.Area	I.Storage Storage I 180 cf Custom 600 cf Ov Inc.Store	Description Stage Data (Prismat verall x 30.0% Voids Cum.Store	ic)Listed below (Recalc)
#1 Elevation (feet)	Invert Avai 5.90' Surf.Area (sq-ft)	I.Storage Storage I 180 cf Custom 600 cf Ov Inc.Store (cubic-feet)	Description Stage Data (Prismat verall x 30.0% Voids Cum.Store (cubic-feet)	ic)Listed below (Recalc)
#1 Elevation (feet) 5.90 7.90	Invert         Avail           5.90'         Surf.Area           (sq-ft)         300           300         300	I.Storage Storage I 180 cf Custom 600 cf Ov Inc.Store (cubic-feet) 0 600	Description Stage Data (Prismat verall x 30.0% Voids Cum.Store (cubic-feet) 0 600	ic)Listed below (Recalc)
#1 Elevation (feet) 5.90 7.90 Device R	Invert Avai 5.90' Surf.Area (sq-ft) 300 300 buting In	I.Storage Storage I 180 cf Custom 600 cf Ov Inc.Store (cubic-feet) 0 600 vert Outlet Devices	Description Stage Data (Prismat verall x 30.0% Voids Cum.Store (cubic-feet) 0 600	
#1 Elevation (feet) 5.90 7.90 Device R	Invert Avai 5.90' Surf.Area (sq-ft) 300 300 buting In	I.Storage Storage I 180 cf Custom 600 cf Ov Inc.Store (cubic-feet) 0 600 vert Outlet Devices	Description Stage Data (Prismat verall x 30.0% Voids Cum.Store (cubic-feet) 0 600	ic)Listed below (Recalc)

Prepare	<b>Proposed</b> - ed by {enter y D® 10.10-7a s	/our compa s/n 00546 ©	ny name nere} 2021 HydroCAD S	oftware Solutions LLC	Page 70
		Sı	ummary for Po	ond 9-P: BB9 - PO	ND
	rning: Storage rning: Qout>Q		eded by 0.09' ire smaller dt or F	Finer Routing	
Second Rout Tertiary	= 5. = 5. = 2. ed to Reach E ary = 0.0 ed to Pond 9-	18 cfs @ 12 28 cfs @ 12 30 cfs @ 12 30 MP9_O : BM 05 cfs @ 12 PS : BB9 - S 33 cfs @ 12	2.13 hrs, Volume 2.14 hrs, Volume 2.14 hrs, Volume MP-9 OVERFLOV 2.13 hrs, Volume TONE 2.14 hrs, Volume	e= 16,401 cf, <i>J</i> e= 1,149 cf <i>N</i> e= 2,475 cf	64" for NOAA 100-yr event Atten= 0%, Lag= 0.6 min
Peak ĔĬ Plug-Flo	ev= 9.09' @ 1	2.13 hrs Su	urf.Area= 780 sf	0	
		me= 14.1 mi	in ( 786.3 - 772.2		ow)
Volume	Invert	me= 14.1 mi Avail.Stor	in ( 786.3 - 772.2 rage Storage D	escription	
<u>Volume</u> #1	Invert 8.00'	me= 14.1 mi Avail.Stor 48	in(786.3-772.2 rage Storage D 35 cf <b>Custom S</b>	) escription stage Data (Prismatic	ow) )Listed below (Recalc)
<u>Volume</u> #1 Elevatio	Invert 8.00' on Sur	me= 14.1 mi <u>Avail.Stor</u> 48 f.Area	in ( 786.3 - 772.2 rage <u>Storage D</u> 35 cf <b>Custom S</b> Inc.Store	) escription stage Data (Prismatic Cum.Store	
<u>Volume</u> #1	Invert 8.00' on Sur et)	me= 14.1 mi Avail.Stor 48	in(786.3-772.2 rage Storage D 35 cf <b>Custom S</b>	) escription stage Data (Prismatic	
Volume #1 Elevatio (fee	Invert 8.00' on Sur et) 00	me= 14.1 mi <u>Avail.Stor</u> 48 f.Area (sq-ft)	in ( 786.3 - 772.2 rage <u>Storage D</u> 35 cf <b>Custom S</b> Inc.Store (cubic-feet)	) escription itage Data (Prismatic Cum.Store (cubic-feet)	
Volume #1 Elevatio (fee 8.0	Invert 8.00' on Sur ot) 00 00	me= 14.1 mi <u>Avail.Stor</u> 48 f.Area (sq-ft) 190 780	in ( 786.3 - 772.2 rage <u>Storage D</u> 35 cf <b>Custom S</b> Inc.Store (cubic-feet) 0	) escription tage Data (Prismatic Cum.Store (cubic-feet) 0	
Volume #1 Elevatio (fee 8.0 9.0	Invert 8.00' on Sur et) 00 00	me= 14.1 mi <u>Avail.Stor</u> 48 f.Area (sq-ft) 190 780	in ( 786.3 - 772.2 rage Storage D 35 cf Custom S Inc.Store (cubic-feet) 0 485 Outlet Devices 12.0" Round C L= 10.0' CPP,	) escription tage Data (Prismatic Cum.Store (cubic-feet) 0 485 Culvert square edge headwall rert= 7.00' / 6.90' S=	)Listed below (Recalc)
Volume #1 Elevatio (fee 8.0 9.0 Device	Invert 8.00' on Sur et) 00 00 Routing	me= 14.1 mi Avail.Stor 48 f.Area (sq-ft) 190 780 Invert	in ( 786.3 - 772.2 rage Storage D 35 cf Custom S Inc.Store (cubic-feet) 0 485 Outlet Devices 12.0" Round C L= 10.0' CPP, Inlet / Outlet Iny n= 0.013, Flow 2.410 in/hr Exfi	) escription tage Data (Prismatic Cum.Store (cubic-feet) 0 485 Culvert square edge headwall ret= 7.00' / 6.90' S= 1 Area= 0.79 sf litration over Surface	)Listed below (Recalc) ), Ke= 0.500 0.0100 <sup>1/</sup> Cc= 0.900 e area
Volume #1 Elevatid (fee 8.0 9.0 9.0 <u>Device</u> #1	Invert 8.00' on Sur tt) 00 Routing Primary	me= 14.1 mi Avail.Stor f.Area (sq-ft) 190 780 Invert 7.00'	in ( 786.3 - 772.2 rage Storage D 35 cf Custom S Inc.Store (cubic-feet) 0 485 Outlet Devices 12.0" Round C L= 10.0' CPP, Inlet / Outlet Inv n= 0.013, Flow 2.410 in/hr Exfl Conductivity to ( 24inchDome G Head (feet) 0.0 0.55 0.60 1.10 Disch. (cfs) 0.0	) escription tage Data (Prismatic Cum.Store (cubic-feet) 0 485 Culvert square edge headwall rert= 7.00' / 6.90' S= 0 Area= 0.79 sf litration over Surface Groundwater Elevation irate Capacity 00 0.05 0.10 0.15 0.4 0.65 0.70 0.75 0.80 00 0.180 0.460 0.85	Listed below (Recalc) k Ke= 0.500 0.0100 '/' Cc= 0.900 area n = 5.00' 20 0.25 0.30 0.35 0.40 0.45 0 0.85 0.90 0.95 1.00 1.05 0 1.360 1.830 2.420 3.100
Volume #1 Elevatio (fee 9.0 <u>Device</u> #1 #2	Invert 8.00' on Sur ti) 00 Routing Primary Secondary	me= 14.1 mi Avail.Stor 48 f.Area (sq-ft) 190 780 Invert 7.00' 8.00'	in ( 786.3 - 772.2 rage Storage D 35 cf Custom S Inc.Store (cubic-feet) 0 485 Outlet Devices 12.0" Round C L= 10.0' CPP, Inlet / Outlet Inv a= 0.013, Flow 2.410 in/hr Exfi Conductivity to 0 24inchDome G Head (feet) 0.0 0.50 0.55 0.60 1.10 Disch. (cfs) 0.0 3.600 3.800 4.	) escription tage Data (Prismatic Cum.Store (cubic-feet) 0 485 Culvert square edge headwall rert= 7.00' / 6.90' S= / Area= 0.79 sf litration over Surface Groundwater Elevation irate Capacity 00 0.05 0.10 0.15 0.8 000 0.180 0.460 0.85 000 4.200 4.380 4.6 655 5.800 5.950	)Listed below (Recalc) 1, Ke= 0.500 0.0100 '/' Cc= 0.900 9 area n = 5.00' 20 0.25 0.30 0.35 0.40 0.45 0 0.85 0.90 0.95 1.00 1.05

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 NOAA 24-h.

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Primary OutFlow Max=2.12 cfs @ 12.14 hrs HW=9.07' (Free Discharge) 1=Culvert (Passes 2.12 cfs of 4.75 cfs potential flow) -3=24inchDome Grate Capacity (Custom Controls 2.12 cfs)

Secondary OutFlow Max=0.05 cfs @ 12.13 hrs HW=9.07' (Free Discharge) -2=Exfiltration ( Controls 0.05 cfs)

Tertiary OutFlow Max=2.89 cfs @ 12.14 hrs HW=9.08' (Free Discharge) 4=15inch-Dome Grate Capacity (Custom Controls 2.89 cfs)

		Si	ummarv	for Po	nd 9-PS:	BB9 - S	TONE	<u>.</u>
			-					
Inflow Outflow		0.05 cfs @ 0.05 cfs @				2,475 cf		%, Lag= 1.5 min
Primary		0.05 cfs @				2,461 cf		70, Lag- 1.5 min
Route	d to Reach	h BMP9_Ö : I	BMP-9 OV	ERFLO	W			
Routina b	y Stor-Ind	method, Tim	ne Span= (	0.00-72.0	00 hrs, dt=	0.05 hrs		
		) 12.16 hrs						
	u dotontior	n time= 11.8 ı	min coloul	atod for '	2 450 of (00	0% of infl		
		time= 7.8 m				70 OI IIIII	Jvv)	
Volume	Inver		torage S	0		<i>(</i> <b>)</b> ·	• 11 :- 41 1-	
#1	5.00	Γ.			erall x 30.0		(IC)LISTED D	elow (Recalc)
			0.					
Elevation		Surf.Area	Inc.St		Cum.Sto			
(feet	)	(sq-ft)	Inc.St (cubic-fe	eet)	Cum.Sto (cubic-fee	et)		
	)		(cubic-fe		(cubic-fee			
(feet 5.00 7.00	) ) )	(sq-ft) 190 190	(cubic-fe	0 380	(cubic-fee	<u>et)</u> 0		
(feet 5.00 7.00 Device	) ) ) Routing	(sq-ft) 190 190 Inver	(cubic-fe	0 380 Devices	(cubic-fee 38	0 30	imited to	a wair flow at low boo
(feet 5.00 7.00 Device	) ) )	(sq-ft) 190 190	(cubic-fe	0 380 Devices	(cubic-fee 38	0 30	Limited to	o weir flow at low hea
(feet 5.00 7.00 <u>Device</u> #1 <b>Primary</b> (	) ) Routing Primary OutFlow I	(sq-ft) 190 190 Inver	(cubic-fe	o 0 380 Devices ert. Orifi hrs HW	(cubic-fee 38 ce/Grate ( =5.40' (Fr	$\frac{2t}{0}{30}$ C= 0.600		o weir flow at low hea
(feet 5.00 7.00 <u>Device</u> #1 <b>Primary</b> (	) ) Routing Primary OutFlow I	(sq-ft) 190 190 Inver 5.25 Max=0.05 cfs	(cubic-fe	o 0 380 Devices ert. Orifi hrs HW	(cubic-fee 38 ce/Grate ( =5.40' (Fr	$\frac{2t}{0}{30}$ C= 0.600		o weir flow at low hea

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		Summary for	Pond 14P: BB2	A-Stone	
nflow = Dutflow = Primary = Routed to	0.03 cfs @	12.14 hrs, Volu 12.17 hrs, Volu 12.17 hrs, Volu 2.17 hrs, Volu ench Rodney Blvo	ume= 1,12 ume= 1,12	6 cf 6 cf, Atten= 0%, Lag= 1.6 mi 6 cf	'n
			72.00 hrs, dt= 0.05	hrs	
Peak Ĕlev= 5	.61' @ 12.17 hrs	Surf.Area= 180	sf Storage= 6 cf		
Peak Ĕlev= 5 Plug-Flow de	.61' @ 12.17 hrs tention time= 4.7 r	Surf.Area= 180	sf Storage= 6 cf r 1,125 cf (100% of		
Peak Elev= 5 Plug-Flow de Center-of-Ma	.61' @ 12.17 hrs tention time= 4.7 r ss det. time= 4.7 r	Surf.Area= 180 min calculated for min ( 860.8 - 856	sf Storage= 6 cf r 1,125 cf (100% of 5.1 )		
Peak Elev= 5 Plug-Flow de Center-of-Ma Volume	.61' @ 12.17 hrs tention time= 4.7 r ss det. time= 4.7 r Invert Avail.5	Surf.Area= 180	sf Storage= 6 cf r 1,125 cf (100% of 5.1 )		
Peak Elev= 5 Plug-Flow de Center-of-Ma	.61' @ 12.17 hrs tention time= 4.7 r ss det. time= 4.7 r	Surf.Area= 180 min calculated for min ( 860.8 - 856 Storage Storage 108 cf <b>Custor</b>	sf Storage= 6 cf r 1,125 cf (100% of .1 ) e Description	inflow) matic/Listed below (Recalc)	
Peak Elev= 5 Plug-Flow de Center-of-Ma Volume	.61' @ 12.17 hrs tention time= 4.7 r ss det. time= 4.7 r Invert Avail.5	Surf.Area= 180 min calculated for min ( 860.8 - 856 Storage Storage 108 cf <b>Custor</b>	sf Storage= 6 cf r 1,125 cf (100% of i.1 ) e Description <b>m Stage Data (Pris</b>	inflow) matic/Listed below (Recalc)	
Peak Elev= 5 Plug-Flow de Center-of-Ma Volume #1	.61' @ 12.17 hrs tention time= 4.7 r ss det. time= 4.7 r <u>Invert Avail.5</u> 5.50'	Surf.Area= 180 min calculated for min ( 860.8 - 856 <u>Storage Storage</u> 108 cf <b>Custor</b> 360 cf (	sf Storage= 6 cf r 1,125 cf (100% of .1) <u>e Description</u> <b>m Stage Data (Pris</b> Overall x 30.0% V	inflow) matic/Listed below (Recalc)	
Peak Ĕlev= 5 Plug-Flow de Center-of-Ma <u>Volume</u> #1 Elevation	.61' @ 12.17 hrs tention time= 4.7 r ss det. time= 4.7 r <u>Invert</u> <u>Avail.</u> 5.50' Surf.Area	Surf Area= 180 min calculated for min ( 860.8 - 856 Storage Storage 108 cf Custor 360 cf 0 Inc.Store	sf Storage= 6 cf r 1,125 cf (100% of .1) <u>e Description</u> <b>m Stage Data (Pri</b> s Overall x 30.0% V Cum.Store	inflow) matic/Listed below (Recalc)	
Peak Ĕlev= 5 Plug-Flow de Center-of-Ma <u>Volume</u> #1 Elevation (feet)	.61' @ 12.17 hrs tention time= 4.7 r ss det. time= 4.7 r Invert Avail.5 5.50' Surf.Area (sq-ft)	Surf Area= 180 min calculated for min ( 860.8 - 856 Storage Storage 108 cf Custor 360 cf ( Inc.Store (cubic-feet)	sf Storage= 6 cf r 1,125 cf (100% of .1) <u>e Description</u> m Stage Data (Pris Overall x 30.0% V Cum.Store (cubic-feet)	inflow) matic/Listed below (Recalc)	

Primary OutFlow Max=0.03 cfs @ 12.17 hrs HW=5.61' (Free Discharge) 1=Orifice/Grate (Orifice Controls 0.03 cfs @ 1.12 fps)

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# Summary for Pond DMH1: DIVERSION MANHOLE - SEYMOUR ST

[57] Hint: Peaked at 10.10' (Flood elevation advised)

Inflow Area	a =	19,582 sf	, 58.17% Impervious,	Inflow Depth = 6.17" for NOAA 100-yr event
Inflow	=	3.28 cfs @	12.13 hrs, Volume=	10,065 cf
Outflow	=	3.28 cfs @	12.13 hrs, Volume=	10,065 cf, Atten= 0%, Lag= 0.0 min
			12.13 hrs, Volume=	
Routed	to Pond	I INF-1 : INFI	LTRATION SYSTEM	#1
Secondary	/ =	2.41 cfs @	12.13 hrs, Volume=	2,996 cf
Routed	to Read	h DP-1 : Fre	nch Rodney Blvd Out	fall

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Peak Elev= 10.10' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	9.00'	6.0" Vert. WATER QUALITY STORM DIVERSION C= 0.600
			Limited to weir flow at low heads
#2	Secondary	9.20'	12.0" Vert. LARGE STORM OVEFLOW C= 0.600
	-		Limited to weir flow at low heads

Primary OutFlow Max=0.86 cfs @ 12.13 hrs HW=10.07' (Free Discharge) —1=WATER QUALITY STORM DIVERSION(Orifice Controls 0.86 cfs @ 4.35 fps)

Secondary OutFlow Max=2.30 cfs @ 12.13 hrs HW=10.07' (Free Discharge) 2=LARGE STORM OVEFLOW (Orifice Controls 2.30 cfs @ 3.17 fps) 

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 NOAA 24-hr C
 NOAA 100-yr Rainfall=7.59"

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# Summary for Pond DMH2: DIVERSION MANHOLE - HUDSON STREET

[57] Hint: Peaked at 35.73' (Flood elevation advised)

Inflow Area =	143,309 sf, 49.69% Impervious, Inflo	w Depth = 5.93" for NOAA 100-yr event
Inflow =	23.44 cfs @ 12.13 hrs, Volume=	70,873 cf
Outflow =	23.44 cfs @ 12.13 hrs, Volume=	70,873 cf, Atten= 0%, Lag= 0.0 min
Primary =	4.74 cfs @ 12.13 hrs, Volume=	35,221 cf
Routed to Por	nd INF-2 : INFILTRATION SYSTEM #2	
Secondary =	18.70 cfs @ 12.13 hrs, Volume=	35,651 cf
Routed to Re	ach B : PARKING LOT B OVERFLOW	

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Peak Elev= 35.73' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	10.60'	6.0" Vert. WATER QUALITY STORM DIVERSION C= 0.600
	-		Limited to weir flow at low heads
#2	Secondary	11.10'	12.0" Vert. LARGE STORM OVERFLOW C= 0.600
			Limited to weir flow at low heads

Primary OutFlow Max=4.56 cfs @ 12.13 hrs HW=34.10' (Free Discharge) 1=WATER QUALITY STORM DIVERSION(Orifice Controls 4.56 cfs @ 23.22 fps)

Secondary OutFlow Max=17.94 cfs @ 12.13 hrs HW=34.10' (Free Discharge) -2=LARGE STORM OVERFLOW (Orifice Controls 17.94 cfs @ 22.84 fps)

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### Summary for Pond DMH3: DIVERSION MANHOLE - PORTLAND ST

[57] Hint: Peaked at 12.07' (Flood elevation advised)

Inflow Area =	19,743 sf, 50.83% Impervious, Inflo	ow Depth = 5.93" for NOAA 100-yr event			
Inflow =	3.23 cfs @ 12.13 hrs, Volume=	9,764 cf			
Outflow =	3.23 cfs @ 12.13 hrs, Volume=	9,764 cf, Atten= 0%, Lag= 0.0 min			
Primary =	1.44 cfs @ 12.13 hrs, Volume=	7,738 cf			
Routed to Pon	d INF3 : INFILTRATION SYSTEM #1				
Secondary =	1.78 cfs @ 12.13 hrs, Volume=	2,026 cf			
Routed to Reach P ST : PORTLAND STREET DRAINAGE					

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Peak Elev= 12.07' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	11.00'	8.0" Vert. WATER QUALITY DIVERSION C= 0.600
			Limited to weir flow at low heads
#2	Secondary	11.20'	10.0" Vert. LARGE STORM OVERFLOW C= 0.600
			Limited to weir flow at low heads

Primary OutFlow Max=1.40 cfs @ 12.13 hrs HW=12.03' (Free Discharge) 1=WATER QUALITY DIVERSION(Orifice Controls 1.40 cfs @ 4.02 fps)

Secondary OutFlow Max=1.69 cfs @ 12.13 hrs HW=12.03' (Free Discharge) 2=LARGE STORM OVERFLOW (Orifice Controls 1.69 cfs @ 3.10 fps)

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# Summary for Pond INF-1: INFILTRATION SYSTEM #1

[88] Warning: Qout>Qin may require smaller dt or Finer Routing [81] Warning: Exceeded Pond DMH1 by 0.24' @ 16.80 hrs

Inflow Area =	19,582 sf, 58.17% Impervious,	Inflow Depth = 4.33" for NOAA 100-yr event			
Inflow =	0.87 cfs @ 12.13 hrs, Volume=	7,068 cf			
Outflow =	0.89 cfs @ 12.17 hrs, Volume=	7,068 cf, Atten= 0%, Lag= 2.5 min			
Discarded =	0.08 cfs @ 12.17 hrs, Volume=	5,184 cf			
Primary =	0.82 cfs @ 12.17 hrs, Volume=	1,885 cf			
Routed to Reach DP-1 : French Rodney Blvd Outfall					

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Peak Elev= 9.53'@ 12.17 hrs Surf.Area= 1,772 sf Storage= 1,727 cf

Plug-Flow detention time= 185.9 min calculated for 7,068 cf (100% of inflow) Center-of-Mass det. time= 185.8 min ( 996.2 - 810.4 )

Volume	Invert	Avail.Storage	Storage Description
#1A	7.80'	1,091 cf	21.50'W x 81.52'L x 2.33'H Field A
			4,090 cf Overall - 973 cf Embedded = 3,117 cf x 35.0% Voids
#2A	8.30'	973 cf	ADS_StormTech SC-310 +Cap x 66 Inside #1
			Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf
			Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap
			66 Chambers in 6 Rows
#3	7.80'	137 cf	5.00'D x 7.00'H Vertical Cone/Cylinder
		2,201 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	7.80'	1.020 in/hr Exfiltration over Surface area
			Conductivity to Groundwater Elevation = 5.80'
#2	Primary	8.10'	10.0" Round Culvert
			L= 10.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 8.10' / 8.00' S= 0.0100 '/' Cc= 0.900
			n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.55 sf
#3	Device 2	9.40'	5.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Discarded OutFlow Max=0.08 cfs @ 12.17 hrs HW=9.53' (Free Discharge) 1=Exfiltration ( Controls 0.08 cfs)

Primary OutFlow Max=0.74 cfs @ 12.17 hrs HW=9.53' (Free Discharge) 2=Culvert (Passes 0.74 cfs of 2.64 cfs potential flow) -3=Sharp-Crested Rectangular Weir (Weir Controls 0.74 cfs @ 1.17 fps)

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Pond INF-1: INFILTR	ATION SYST	EM #1 - Chamber Wiz	zard Field A
Chamber Model = ADS_StormTechSC Effective Size= 28.9"W x 16.0"H => 2.0 Overall Size= 34.0"W x 16.0"H x 7.56'L	7 sf x 7.12'L = 1	4.7 cf	th cap length)
34.0" Wide + 6.0" Spacing = 40.0" C-C I	Row Spacing		
11 Chambers/Row x 7.12' Long +0.60' C Base Length 6 Rows x 34.0" Wide + 6.0" Spacing x 5 6.0" Stone Base + 16.0" Chamber Heigh	5 + 12.0" Side St	one x 2 = 21.50' Base Wid	
66 Chambers x 14.7 cf = 973.0 cf Cham	iber Storage		
4,089.6 cf Field - 973.0 cf Chambers = 3	3,116.6 cf Stone	x 35.0% Voids = 1,090.8	cf Stone Storage
Chamber Storage + Stone Storage = 2,0 Overall Storage Efficiency = 50.5% Overall System Size = 81.52' x 21.50' x 66 Chambers 151.5 cy Field		af	
115.4 cy Stone			

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### Summary for Pond INF-2: INFILTRATION SYSTEM #2

Inflow Area =	143,309 sf, 49.69% Impervious,	Inflow Depth = 2.95" for NOAA 100-yr event
Inflow =	4.74 cfs @ 12.13 hrs, Volume=	35,221 cf
Outflow =	3.57 cfs @ 12.19 hrs, Volume=	35,221 cf, Atten= 25%, Lag= 3.8 min
Discarded =	0.12 cfs @ 12.19 hrs, Volume=	10,022 cf
Primary =	3.44 cfs @ 12.19 hrs, Volume=	25,199 cf
Routed to Rea	ach B : PARKING LOT B OVERFLO	N

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Peak Elev= 10.13' @ 12.19 hrs Surf.Area= 2.268 sf Storage= 3.861 cf

Plug-Flow detention time= 107.8 min calculated for 35,221 cf (100% of inflow) Center-of-Mass det. time= 107.7 min ( 957.5 - 849.8 )

Volume	Invert	Avail.Storage	Storage Description
#1A	7.50'	1,790 cf	25.25'W x 89.06'L x 3.50'H Field A
			7,870 cf Overall - 2,756 cf Embedded = 5,114 cf x 35.0% Voids
#2A	8.00'	2,756 cf	ADS_StormTech SC-740 +Cap x 60 Inside #1
			Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
			Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
			60 Chambers in 5 Rows
#3	7.50'	137 cf	5.00'D x 7.00'H Vertical Cone/Cylinder
		4,684 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	7.50'	1.020 in/hr Exfiltration over Surface area
			Conductivity to Groundwater Elevation = 5.50'
#2	Primary	8.00'	10.0" Round Culvert
			L= 10.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 8.00' / 7.90' S= 0.0100 '/' Cc= 0.900
			n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.55 sf
#3	Device 2	9.50'	5.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Discarded OutFlow Max=0.12 cfs @ 12.19 hrs HW=10.12' (Free Discharge)

Primary OutFlow Max=3.43 cfs @ 12.19 hrs HW=10.12' (Free Discharge)

□2=Culvert (Inite Controls 3.43 cfs @ 6.29 fps) □3=Sharp-Crested Rectangular Weir(Passes 3.43 cfs of 7.81 cfs potential flow)

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### Pond INF-2: INFILTRATION SYSTEM #2 - Chamber Wizard Field A

Chamber Model = ADS\_StormTechSC-740 +Cap (ADS StormTech®SC-740 with cap length) Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

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

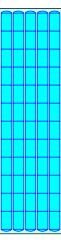
12 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 87.06' Row Length +12.0" End Stone x 2 = 89.06' Base Length 5 Rows x 51.0" Wide + 6.0" Spacing x 4 + 12.0" Side Stone x 2 = 25.25' Base Width 6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

60 Chambers x 45.9 cf = 2,756.4 cf Chamber Storage

7.870.4 cf Field - 2.756.4 cf Chambers = 5,114.0 cf Stone x 35.0% Voids = 1,789.9 cf Stone Storage

Chamber Storage + Stone Storage = 4,546.3 cf = 0.104 af Overall Storage Efficiency = 57.8% Overall System Size = 89.06' x 25.25' x 3.50'

60 Chambers 291.5 cy Field 189.4 cy Stone



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### Summary for Pond INF3: INFILTRATION SYSTEM #1

19,743 sf, 50.83% Impervious,	Inflow Depth = 4.70" for NOAA 100-yr event
1.44 cfs @ 12.13 hrs, Volume=	7,738 cf
1.43 cfs @ 12.14 hrs, Volume=	7,738 cf, Atten= 1%, Lag= 0.9 min
0.05 cfs @ 12.14 hrs, Volume=	3,496 cf
1.39 cfs @ 12.14 hrs, Volume=	4,242 cf
P ST : PORTLAND STREET DR/	AINAGE
(	1.44 cfs @         12.13 hrs, Volume=           1.43 cfs @         12.14 hrs, Volume=           0.05 cfs @         12.14 hrs, Volume=           1.39 cfs @         12.14 hrs, Volume=

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Peak Elev= 9.69' @ 12.14 hrs Surf.Area= 1.113 sf Storage= 1.012 cf

Plug-Flow detention time= 116.2 min calculated for 7,732 cf (100% of inflow) Center-of-Mass det. time= 116.4 min ( 925.1 - 808.6 )

Volume	Invert	Avail.Storage	Storage Description
#1A	8.10'	686 cf	18.17'W x 60.16'L x 2.33'H Field A
			2,550 cf Overall - 590 cf Embedded = 1,960 cf x 35.0% Voids
#2A	8.60'	590 cf	ADS_StormTech SC-310 +Cap x 40 Inside #1
			Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf
			Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap
			40 Chambers in 5 Rows
#3	8.10'	137 cf	5.00'D x 7.00'H Vertical Cone/Cylinder
		1,413 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Dev	ice	Routing	Invert	Outlet Devices
#	¥1	Discarded	8.10'	1.020 in/hr Exfiltration over Surface area
				Conductivity to Groundwater Elevation = 6.10'
#	¥2	Primary	8.40'	10.0" Round Culvert
				L= 10.0' CPP, square edge headwall, Ke= 0.500
				Inlet / Outlet Invert= 8.40' / 8.30' S= 0.0100 '/' Cc= 0.900
				n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.55 sf
#	¥3	Device 2	9.50'	5.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Discarded OutFlow Max=0.05 cfs @ 12.14 hrs HW=9.69' (Free Discharge)

Primary OutFlow Max=1.36 cfs @ 12.14 hrs HW=9.69' (Free Discharge) □2=Culvert (Passes 1.36 cfs @ 1.41 cfs potential flow) □3=Sharp-Crested Rectangular Weir (Weir Controls 1.36 cfs @ 1.43 fps)

14850 Proposed-Drainage-Areas 220609 NOAA 24-hr C NOAA 100-yr Rainfall=7.59" Prepared by {enter your company name here} HydroCAD® 10.10-7a s/n 00546 © 2021 HydroCAD Software Solutions LLC Printed 6/16/2022 Page 82

### Pond INF3: INFILTRATION SYSTEM #1 - Chamber Wizard Field A

Chamber Model = ADS\_StormTechSC-310 +Cap (ADS StormTech®SC-310 with cap length) Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap

34.0" Wide + 6.0" Spacing = 40.0" C-C Row Spacing

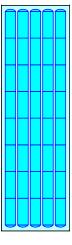
8 Chambers/Row x 7.12' Long +0.60' Cap Length x 2 = 58.16' Row Length +12.0" End Stone x 2 = 60.16' Base Length 5 Rows x 34.0" Wide + 6.0" Spacing x 4 + 12.0" Side Stone x 2 = 18.17' Base Width 6.0" Stone Base + 16.0" Chamber Height + 6.0" Stone Cover = 2.33' Field Height

40 Chambers x 14.7 cf = 589.7 cf Chamber Storage

2,550.1 cf Field - 589.7 cf Chambers = 1,960.4 cf Stone x 35.0% Voids = 686.2 cf Stone Storage

Chamber Storage + Stone Storage = 1,275.8 cf = 0.029 af Overall Storage Efficiency = 50.0% Overall System Size = 60.16' x 18.17' x 2.33'

40 Chambers 94.4 cy Field 72.6 cy Stone



 $\square \square \square \square \square \square$ 

14850_Proposed-Drainage-A Prepared by {enter your company HydroCAD® 10.10-7a s/n 00546 © 20	/ name here} Printed 6/16/2022	<b>14850_Proposed-Drainage-Areas</b> Prepared by {enter your company nar HydroCAD® 10.10-7a s/n 00546 © 2021 H	me here} Printed 6/16/2022
Runoff by	an=0.00-72.00 hrs, dt=0.05 hrs, 1441 points SCS TR-20 method, UH=SCS, Weighted-CN r-Ind+Trans method - Pond routing by Stor-Ind method	Pond 7A-P: BB 7A PONDING Primary=	Peak Elev=9.96' Storage=141 cf Inflow=0.24 cfs 749 cf 0.22 cfs 210 cf Secondary=0.02 cfs 539 cf Outflow=0.24 cfs 749 cf
Pond 1-P: BB 1 Discarded=0.05 cfs 2,289 cf Primary=	Peak Elev=10.08' Storage=900 cf Inflow=2.27 cfs 6,504 cf =0.66 cfs 362 cf Secondary=1.47 cfs 3,853 cf Outflow=2.18 cfs 6,504 cf	Pond 7A-S: BB 7A - STONE	Peak Elev=5.19' Storage=4 cf Inflow=0.02 cfs 539 cf Outflow=0.02 cfs 539 cf
Pond 2a-P: BB 2a Pri	Peak Elev=9.33' Storage=242 cf Inflow=0.24 cfs 765 cf mary=0.10 cfs 76 cf Secondary=0.03 cfs 689 cf Outflow=0.13 cfs 765 cf	Pond 7B-P: BB 7B PONDING Primary=0.	Peak Elev=10.68' Storage=258 cf Inflow=0.38 cfs 1,170 cf 33 cfs 283 cf Secondary=0.03 cfs 887 cf Outflow=0.37 cfs 1,170 cf
Pond 2b-P: BB 2b Prima	Peak Elev=8.25' Storage=106 cf Inflow=1.57 cfs 4,725 cf ry=1.54 cfs 4,725 cf Secondary=0.00 cfs 0 cf Outflow=1.54 cfs 4,725 cf	Pond 7B-S: BB 7B - STONE	Peak Elev=7.62' Storage=17 cf Inflow=0.03 cfs 887 cf Outflow=0.03 cfs 875 cf
ond 3A-P: BB 3A	Peak Elev=11.02' Storage=405 cf Inflow=0.69 cfs 1,994 cf ed=0.02 cfs 1,062 cf Primary=0.63 cfs 932 cf Outflow=0.65 cfs 1,994 cf	Pond 8a-P: BB 8A PONDING Primary	Peak Elev=9.03' Storage=250 cf Inflow=0.29 cfs 875 cf =0.10 cfs 79 cf Secondary=0.04 cfs 795 cf Outflow=0.14 cfs 875 cf
Pond 3B-P: BB 3B	Peak Elev=12.87' Storage=244 cf Inflow=0.33 cfs 999 cf carded=0.01 cfs 642 cf Primary=0.31 cfs 358 cf Outflow=0.33 cfs 999 cf	Pond 8a-s: BB 8A - STONE	Peak Elev=5.63' Storage=29 cf Inflow=0.04 cfs 795 cf Outflow=0.04 cfs 777 cf
Pond 4A-P: BB 4A - POND	Peak Elev=10.02' Storage=212 cf Inflow=0.37 cfs 1,147 cf ry=0.32 cfs 307 cf Secondary=0.03 cfs 839 cf Outflow=0.35 cfs 1,147 cf	Pond 8B-P: BB 8B-PONDING Primary=0.	Peak Elev=9.70' Storage=242 cf Inflow=0.43 cfs 1,325 cf 38 cfs 364 cf Secondary=0.04 cfs 962 cf Outflow=0.41 cfs 1,325 cf
ond 4A-S: BB4A-Stone	Peak Elev=7.12' Storage=26 cf Inflow=0.03 cfs 839 cf Outflow=0.03 cfs 822 cf	Pond 8B-S: BB 8B-Stone	Peak Elev=6.33' Storage=39 cf Inflow=0.04 cfs 962 cf Outflow=0.04 cfs 935 cf
Pond 4B-P: BB 4B - POND	Peak Elev=11.00' Storage=124 cf Inflow=0.03 cfs 722 cf ary=0.21 cfs 199 cf Secondary=0.02 cfs 522 cf Outflow=0.23 cfs 722 cf	Pond 9-P: BB9 - POND Primary=0.01 cfs 2 cf Secondary=0.0	Peak Elev=8.80' Storage=343 cf Inflow=2.10 cfs 6,279 cf 4 cfs 1,929 cf Tertiary=2.00 cfs 4,348 cf Outflow=2.05 cfs 6,279 cf
Pond 4B-S: BB 4A-Stone	Peak Elev=7.84' Storage=15 cf Inflow=0.02 cfs 522 cf Outflow=0.02 cfs 522 cf Outflow=0.02 cfs 512 cf	Pond 9-PS: BB9 - STONE	Peak Elev=5.39' Storage=22 cf Inflow=0.04 cfs 1,929 cf Outflow=0.04 cfs 1,915 cf
Pond 5A-P: BB 5A - POND	Peak Elev=9.16' Storage=195 cf Inflow=0.22 cfs 651 cf	Pond 14P: BB2A-Stone	Peak Elev=5.60' Storage=6 cf Inflow=0.03 cfs 689 cf Outflow=0.03 cfs 689 cf
Pond 5A-PS: BB 5A-Stone	rimary=0.00 cfs 0 cf Secondary=0.04 cfs 651 cf Outflow=0.04 cfs 651 cf Peak Elev=5.93' Storage=54 cf Inflow=0.04 cfs 651 cf Outflow=0.04 cfs 615 cf	Pond DMH1: DIVERSION MANHOLE - S Primary=0.57	EYMOUR STPeak Elev=9.61'Inflow=1.23 cfs3,554 cf' cfs2,974 cfSecondary=0.66 cfs580 cfOutflow=1.23 cfs3,554 cf
Pond 5B-P: BB 5B - POND	Peak Elev=8.97' Storage=667 cf Inflow=2.40 cfs 7,086 cf /=0.09 cfs 3,100 cf Tertiary=1.68 cfs 3,719 cf Outflow=2.35 cfs 7,086 cf	Pond DMH2: DIVERSION MANHOLE - F Primary=1.83 cfs	IUDSON STREET         Peak Elev=14.56'         Inflow=8.38 cfs         24,005 cf           15,418 cf         Secondary=6.55 cfs         8,588 cf         Outflow=8.38 cfs         24,005 cf
Pond 5B-PS: BB 5B-Stone	Peak Elev=5.45' Storage=94 cf Inflow=0.09 cfs 3,100 cf Outflow=0.09 cfs 3,100 cf	Pond DMH3: DIVERSION MANHOLE - P Primary=0.75	PORTLANDST Peak Elev=11.54' Inflow=1.15 cfs 3,307 cf 5 cfs 2,972 cf Secondary=0.40 cfs 335 cf Outflow=1.15 cfs 3,307 cf
Pond 6A-P: BB 6A - POND	Peak Elev=10.94' Storage=378 cf Inflow=0.85 cfs 2,436 cf =0.77 cfs 996 cf Secondary=0.04 cfs 1,440 cf Outflow=0.82 cfs 2,436 cf	Pond INF-1: INFILTRATIONSYSTEM#1 Discarded	Peak Elev=9.01' Storage=1,232 cf Inflow=0.57 cfs 2,974 cf =0.07 cfs 2,974 cf Primary=0.00 cfs 0 cf Outflow=0.07 cfs 2,974 cf
Pond 6A-PS: BB 6A - STONE	Peak Elev=7.39' Storage=34 cf Inflow=0.04 cfs 1,440 cf Outflow=0.04 cfs 1,440 cf Outflow=0.04 cfs 1,418 cf	Pond INF-2: INFILTRATIONSYSTEM#2 Discarded=0.11	Peak Elev=9.70' Storage=3,280 cf Inflow=1.83 cfs 15,418 cf cfs 8,554 cf Primary=1.42 cfs 6,864 cf Outflow=1.53 cfs 15,418 cf
Pond 6B-P: BB 6B Disca	Outflow=0.04 cfs 1,418 cf Peak Elev=12.04' Storage=356 cf Inflow=0.47 cfs 1,428 cf rded=0.02 cfs 871 cf Primary=0.43 cfs 557 cf Outflow=0.44 cfs 1,428 cf	Pond INF3: INFILTRATIONSYSTEM#1 Discarded=0	Peak Elev=9.57' Storage=944 cf Inflow=0.75 cfs 2,972 cf .05 cfs 2,339 cf Primary=0.33 cfs 633 cf Outflow=0.38 cfs 2,972 cf

NOAA 24-hr C NOAA 2-yr Rainfall=3.40" 14850\_Proposed-Drainage-Areas\_220609 Prepared by {enter your company name here} HydroCAD® 10.10-7a s/n 00546 © 2021 HydroCAD Software Solutions LLC Printed 6/16/2022

# Summary for Pond 1-P: BB 1

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Inflow Area =	38,826 sf	, 51.66% Impervious,	Inflow Depth = 2.01"	for NOAA 2-yr event
Inflow =	2.27 cfs @	12.13 hrs, Volume=	6,504 cf	-
Outflow =	2.18 cfs @	12.15 hrs, Volume=	6,504 cf, Atte	n= 4%, Lag= 1.3 min
Discarded =	0.05 cfs @	12.15 hrs, Volume=	2,289 cf	
Primary =	0.66 cfs @	12.15 hrs, Volume=	362 cf	
Routed to Rea	ach 17R : Rodi	ney French Pipe		
Secondary =	1.47 cfs @	12.15 hrs, Volume=	3,853 cf	
Routed to Rea	ach 15R : ISOL	ATOR ROW 1		

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Peak Elev= 10.08' @ 12.15 hrs Surf.Area= 1,649 sf Storage= 900 cf

Plug-Flow detention time= 81.1 min calculated for 6,499 cf (100% of inflow) Center-of-Mass det. time= 81.4 min ( 904.5 - 823.1 )

Volume	Inver	t Avail.Sto	rage Stora	age Description		
#1	9.20	' 1,1'	14 cf Cust	om Stage Data	(Prismatic)Liste	ed below (Recalc)
Elevatio		urf.Area	Inc.Store			
(fee	/	(sq-ft)	(cubic-feet)	· · · · ·		
9.2		490	0		0	
9.5		800	194		94	
10.2	20	1,830	920	1,1	14	
Device	Routing	Invert	Outlet Dev	vices		
#1	Primary	8.00'		und Culvert	qe headwall, Ke	= 0.500
			Inlet / Out	et Invert= 8.00'	7.90' S= 0.010	
#2	Discarded	9.20'	,	Flow Area= 0.7 r Exfiltration o	ver Surface area	a
					ter Elevation = 6.	00'
#3	Device 1	10.00'	24inch-Do	ome Grate Cap	acity X 2.00	
#4	Secondary	/ 9.83'	15inch-Do	ome Grate Cap	acity	
Discard		<b>v</b> Max=0.05 cf	e @ 12 15 k	ors HW=10.08'	(Free Discharge	)

Discarded OutFlow Max=0.05 cfs @ 12.15 hrs HW=10.08' (Free Discharge)

Primary OutFlow Max=0.65 cfs @ 12.15 hrs HW=10.08'	(Free Discharge)
<b>1=Culvert</b> (Passes 0.65 cfs of 4.75 cfs potential flow)	

**3=24inch-Dome Grate Capacity** (Custom Controls 0.65 cfs)

Secondary OutFlow Max=1.47 cfs @ 12.15 hrs HW=10.08' (Free Discharge) 4=15inch-Dome Grate Capacity (Custom Controls 1.47 cfs)

-iyuroo,	AD® 10.10-7a	<u>s/n 00546</u> © 2	021 HydroCAD S	oftware Sol	utions LLC	Page 8
		;	Summary for	Pond 2a	-P: BB 2a	
Second	= 0	.24 cfs @ 12 .13 cfs @ 12 .10 cfs @ 12 DP-1 : French	.13 hrs, Volume .26 hrs, Volume .26 hrs, Volume Rodney Blvd O .26 hrs, Volume	e= e= utfall	765 cf	r NOAA 2-yr event
			Span= 0.00-72.0 rf.Area= 403 sf			
			n calculated for 7 n ( 846.6 - 774.1		% of inflow)	
Volume #1	lnvert 8.50'		age Storage D		(Prismatic)Listed	polow (Pocolo)
				-	. ,	Jelow (Recalc)
Elevati (fe		ırf.Area (sq-ft) (	Inc.Store (cubic-feet)	Cum.Sto (cubic-fee		
	50	180	0		0	
9.	80	530	462	4	62	
Device	Routing		Outlet Devices			
#1 #2 #3	Primary Device 1 Secondary	7.80' 9.30' 8.50'	Inlet / Outlet Inv n= 0.013, Flow 24inch-Dome ( 2.410 in/hr Exf	square ed ert= 7.80' Area= 0.5 Grate Capa iltration or		/' Cc= 0.900
#3						
Primarı 1−1=C	ulvert (Passe	es 0.09 cfs of 2	) 12.26 hrs HW: 2.77 cfs potentia <b>acity</b> (Custom C	l flow)	• /	
Primary	ulvert (Passe =24inch-Don dary OutFlow	es 0.09 cfs of 2 ne Grate Capa	2.77 cfs potentia acity (Custom C s @ 12.26 hrs +	l flow) ontrols 0.0	• /	
Primary	ulvert (Passe =24inch-Don dary OutFlow	es 0.09 cfs of 2 ne Grate Capa / Max=0.03 cfs	2.77 cfs potentia acity (Custom C s @ 12.26 hrs +	l flow) ontrols 0.0	9 cfs)	
Primary	ulvert (Passe =24inch-Don dary OutFlow	es 0.09 cfs of 2 ne Grate Capa / Max=0.03 cfs	2.77 cfs potentia acity (Custom C s @ 12.26 hrs +	l flow) ontrols 0.0	9 cfs)	
Primary	ulvert (Passe =24inch-Don dary OutFlow	es 0.09 cfs of 2 ne Grate Capa / Max=0.03 cfs	2.77 cfs potentia acity (Custom C s @ 12.26 hrs +	l flow) ontrols 0.0	9 cfs)	
Primary	ulvert (Passe =24inch-Don dary OutFlow	es 0.09 cfs of 2 ne Grate Capa / Max=0.03 cfs	2.77 cfs potentia acity (Custom C s @ 12.26 hrs +	l flow) ontrols 0.0	9 cfs)	

14850_Proposed-Drainage-Areas_220609       NOAA 24-hr C       NOAA 2-yr Rainfall=3.40"         Prepared by {enter your company name here}       Printed 6/16/2022         HydroCAD® 10.10-7a s/n 00546 © 2021 HydroCAD Software Solutions LLC       Page 87	14850_Proposed-Drainage-Areas_220609       NOAA 24-hr C NOAA 2-yr Rainfall=3.         Prepared by {enter your company name here}       Printed 6/16/20         HydroCAD® 10.10-7a s/n 00546 © 2021 HydroCAD Software Solutions LLC       Page
Summary for Pond 2b-P: BB 2b	Summary for Pond 3A-P: BB 3A
Inflow Area = 21,490 sf, 80.50% Impervious, Inflow Depth = 2.64" for NOAA 2-yr event Inflow = 1.57 cfs @ 12.13 hrs, Volume= 4,725 cf Notifow = 1.54 cfs @ 12.13 hrs, Volume= 4,725 cf Routed to Reach 15R : ISOLATOR ROW 1 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf Routed to Reach DP-1 : French Rodney Blvd Outfall Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Peak Elev= 8.25'@ 12.14 hrs Surf.Area= 518 sf Storage= 106 cf Plug-Flow detention time= 1.8 min calculated for 4,722 cf (100% of inflow) Center-of-Mass det. time= 1.8 min (794.9 - 793.1) Volume Invert Avail.Storage Storage Description #1 8.00' 710 cf Custom Stage Data (Prismatic)Listed below (Recalc) Elevation Surf.Area Inc.Store Cum.Store (feet) (sq-ft) (cubic-feet) (cubic-feet) 8.00 320 0 0 0 9.00 1,100 710 710 710 Device Routing Invert Outlet Devices #1 Secondary 7.00' 12.0" Round Culvert L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert 7.00' f.90' S= 0.0100 'r' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf #2 Device 1 8.50' 24inch-Dome Grate Capacity X 2.00 #3 Primary 8.00' 15inch-Dome Grate Capacity	Continuity for Fond over FDD over         Inflow Area =       10,987 sf, 58.16% Impervious, Inflow Depth = 2.18" for NOAA 2-yr event         Inflow =       0.69 cfs @       12.13 hrs, Volume=       1,994 cf         Outflow =       0.65 cfs @       12.16 hrs, Volume=       1,994 cf         Discarded =       0.02 cfs @       12.16 hrs, Volume=       1,994 cf         Primary =       0.63 cfs @       12.16 hrs, Volume=       932 cf         Routed to Reach BMP_3 : BMP-3_OVERFLOW       Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs         Peak Elev= 11.02' @ 12.16 hrs       Surf.Area= 850 sf       Storage= 405 cf         Plug-Flow detention time= 110.1 min calculated for 1,992 cf (100% of inflow)       Center-of-Mass det. time= 110.2 min (925.8 - 815.6 )         Volume       Invert       Avail.Storage       Storage Description         #1       10.25'       622 cf       Custom Stage Data (Prismatic)Listed below (Recalc)         Elevation       Surf.Area       Inc.Store       Cum.Store         (feet)       (sq-ft)       (cubic-feet)       (cubic-feet)         10.25       2711       0       0         10.45       350       622       62         11.25       1,050       560       622         #1       Primary
T=3=15inch-Dome Grate Capacity (Custom Controls 1.51 cfs)     Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=8.00' (Free Discharge)     1=Culvert (Passes 0.00 cfs of 2.27 cfs potential flow)     2=24inch-Dome Grate Capacity (Controls 0.00 cfs)	Discarded OutFlow Max=0.02 cfs @ 12.16 hrs HW=11.02' (Free Discharge) -2=Exfiltration ( Controls 0.02 cfs) Primary OutFlow Max=0.61 cfs @ 12.16 hrs HW=11.02' (Free Discharge) -1=Culvert (Passes 0.61 cfs of 3.00 cfs potential flow) -4=24inch-Dome Grate Capacity(Custom Controls 0.61 cfs) -3=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

NOAA 24-hr C NOAA 2-yr Rainfall=3.40"

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HydroCA			2021 HydroCAD Softwar		Page 89
			Summary for Pone	d 3B-P: BB 3B	
	= 0.3 = 0.3 ed = 0.0 = 0.3 ed to Reach B	33 cfs @ 11 33 cfs @ 12 31 cfs @ 12 31 cfs @ 12 31 cfs @ 12 MP_3 : BMI	7.34% Impervious, Inf 2.13 hrs, Volume= 2.15 hrs, Volume= 2.15 hrs, Volume= 2.15 hrs, Volume= P-3_OVERFLOW	999 cf 999 cf, Atten 642 cf 358 cf	for NOAA 2-yr event = 1%, Lag= 1.4 min
			Span= 0.00-72.00 hrs Surf.Area= 552 sf Stor		
			nin calculated for 999 c nin ( 909.1 - 793.1 )	xf (100% of inflow)	
Volume	Invert	Avail.Sto	rage Storage Descrip	tion	
#1	12.20'	26	63 cf Custom Stage	Data (Prismatic)Liste	d below (Recalc)
Elevati (fee		f.Area (sq-ft)		n.Store ic-feet)	
12.: 12.:		180 570	0 263	0 263	
Device	Routing	Invert	Outlet Devices		
#1	Primary	10.70'	<b>10.0" Round Culver</b> L= 10.0' CPP, squar Inlet / Outlet Invert= 1 n= 0.013, Flow Areas	re edge headwall, Ke 10.70' / 10.60' S= 0.0	
#2	Discarded	12.20'		on over Surface area adwater Elevation = 8.	
#3	Device 1	12.80'	24inch-Dome Grate	Capacity	
	Primary led OutFlow M cfiltration ( Co		s @ 12.15 hrs HW=12	-	ir 2 End Contraction(s)
Driman			① 12.15 hrs HW=12.8 3.47 cfs potential flow)		

			Iny name here}     Printed 6/16/2022       2021 HydroCAD Software Solutions LLC     Page 90
		Sun	nmary for Pond 4A-P: BB 4A - POND
Seconda	= 0. = 0. = 0. ed to Reach E	37 cfs @ 12 35 cfs @ 12 32 cfs @ 12 3MP_3 : BM 03 cfs @ 12	36.37% Impervious, Inflow Depth = 2.84" for NOAA 2-yr event         2.13 hrs, Volume=       1,147 cf         2.15 hrs, Volume=       1,147 cf, Atten= 5%, Lag= 1.7 min         2.15 hrs, Volume=       307 cf         P-3_OVERFLOW       2.15 hrs, Volume=         839 cf       Stone
			e Span= 0.00-72.00 hrs, dt= 0.05 hrs Surf.Area= 560 sf Storage= 212 cf
		ime= 34.0 m Avail.Sto	in calculated for 1,147 cf (100% of inflow) in ( 815.2 - 781.2 ) rage Storage Description 20 cf <b>Custom Stage Data (Prismatic)</b> isted below (Recalc)
Elevatio (fee		rf.Area (sq-ft)	Inc.Store Cum.Store (cubic-feet) (cubic-feet)
9.5		250	0 0
10.2	20	664	320 320
Device	Routing	Invert	
#1 #2	Primary Secondary	8.00' 9.50'	
#3	Primary	10.10'	Conductivity to Groundwater Elevation = 6.00' 5.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#3 #4	Device 1	9.95'	Join of gramp-created rectangular went 2 End contraction(s)           PainchDome Grate Capacity           Head (feet) 0.00 0.05 0.10 0.15 0.20 0.25 0.30 0.35 0.40 0.45           0.50 0.55 0.60 0.65 0.70 0.75 0.80 0.85 0.90 0.95 1.00 1.05           1.10           Disch. (cfs) 0.000 0.180 0.460 0.850 1.360 1.830 2.420 3.100           3.600 3.800 4.000 4.200 4.380 4.600 4.750 4.900 5.100 5.200           5.350 5.450 5.650 5.800 5.950
1=Cu 4= 3=Sh	Ivert (Passe 24inchDome arp-Crested	s 0.31 cfs of e Grate Cap Rectangula	<ul> <li> <i>Q</i> 12.15 hrs HW=10.02' (Free Discharge)      </li> <li>             4.67 cfs potential flow)         </li> <li>             acity (Custom Controls 0.31 cfs)         </li> <li>             ar Weir (Controls 0.00 cfs)      </li> </ul>
	filtration (C		rfs @ 12.15 hrs HW=10.02' (Free Discharge) cfs)

	9	Summary for F	ond 4A-S' BE	84A-Stone		
Inflow Outflow		12.15 hrs, Volur 12.20 hrs, Volur		39 cf 22 cf Atten=	= 1%, Lag= 2.5 min	
Primary		12.20 hrs, Volur	me= 8	22 cf		
	Stor-Ind method, Ti 7.12' @ 12.20 hrs					
Plua-Flow	detention time= 29.1	min calculated fo	r 821 cf (98% of	inflow)		
	lass det. time= 17.3			,		
Volume	Invert Avail.S	Storage Storage	Description			
#1	6.75'	138 cf Custom	Stage Data (Pr		d below (Recalc)	
		460 cf C	0verall x 30.0% \	/oids		
Elevation	Surf.Area	Inc.Store	Cum.Store			
(feet)	(sq-ft)	(cubic-feet)	(cubic-feet)			
6.75 8.75	230 230	0 460	0 460			
0.75	250	400	400			
	outing Inve					
#1 P	rimary 7.0	0' 4.0" Vert. Or	ifice/Grate C= (	0.600 Limite	d to weir flow at low he	ads
Primarv O	utFlow Max=0.03 cl	fs @ 12.20 hrs H	W=7.12' (Free D	)ischarge)		
-1=Orific	e/Grate (Orifice Co	ntrols 0.03 cfs @	1.19 fps) `	57		

		•	( F			10	-
		Sun	nmary for Pon	d 4B-P: B	B 4B - POI	ND	
Second	= 0.2 = 0.2 = 0.2 ed to Reach B	23 cfs @ 12 23 cfs @ 12 21 cfs @ 12 3MP4_O : BI 02 cfs @ 12	36.09% Imperviou 2.13 hrs, Volume 2.15 hrs, Volume 2.15 hrs, Volume MP-4 OVERFLOV 2.15 hrs, Volume Stone	= = = V	722 cf	for NOAA 2-yr n= 2%, Lag= 1.2	
Peak El	ev= 11.00'@	12.15 hrs S	Span= 0.00-72.0 Surf.Area= 346 sf	Storage= 1	24 cf		
			in ( 814.4 - 781.2				
Volume	Invert	Avail.Sto	rage Storage D	escription			
#1	10.50'		<u> </u>		Prismatic)Lis	ted below (Recal	c)
Elevatio (fee		f.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store			
10.	/	144	0	(	-		
11.2	20	424	199	199	)		
Device	Routing	Invert	Outlet Devices				
#1	Primary	9.00'	L= 10.0' CPP,	square edge ert= 9.00' / 8	8.90' S= 0.0'	e= 0.500 100 '/'    Cc= 0.900	)
#2	Secondary	10.50'		Itration ove	r Surface ar		
#3 #4	Primary Device 1	11.10' 10.95'				leir 2 End Contra	action(s)
1=Ci 1_4= 3=Sh	ulvert (Passes =24inch-Dom narp-Crested ary OutFlow	s 0.20 cfs of e Grate Cap Rectangula	12.15 hrs HW= 4.64 cfs potentia pacity (Custom Co r Weir (Controls fs @ 12.15 hrs H	flow) ontrols 0.20 0.00 cfs)	cfs)		

		S	ummary for Po	ond 4B-S: B	B 4A-Ston	e
Inflow Outflow Primary Routed	= =	0.02 cfs @ 0.02 cfs @	12.15 hrs, Volum 12.17 hrs, Volum 12.17 hrs, Volum BMP-4 OVERFLC	e= e=	522 cf 512 cf, Atte 512 cf	n= 0%, Lag= 1.6 min
			ne Span= 0.00-72			
Peak Elev	/= 7.84' @	) 12.17 hrs	Surf.Area= 145 sf	Storage= 15	cf	
		. time= 16.2	min calculated for min(860.8 - 844. torage Storage [	6)	inflow)	
#1	7.50		87 cf Custom	Stage Data (P		ted below (Recalc)
			290 cf O\	verall x 30.0%	Voids	
Elevation	. 5	Surf.Area	Inc.Store	Cum.Store		
(feet)		(sq-ft)	(cubic-feet)	(cubic-feet)		
7.50 9.50		145 145	0 290	0 290		
Device		Invo	t Outlet Devices			
	Primary		-		0.600 Limi	ted to weir flow at low heads
	,					
			a@ 12.17 hrs HW trols 0.02 cfs @ 1		Discharge)	
		(0		.0.1.190)		
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		Sun	nmary for Po	nd 5A-P: BB	5A - PO	ND	
Second	= ( = ( = ( ted to Reach ary = (	0.22 cfs @ 12 0.04 cfs @ 12 0.00 cfs @ ( B : PARKING	2.13 hrs, <sup>`</sup> Volum 2.59 hrs, Volum 0.00 hrs, Volum 6 LOT B OVERF 2.59 hrs, Volum	ie= 65 ie= ELOW	1 cf		A 2-yr event ag= 27.8 min
				.00 hrs, dt= 0.05			
Peak El	ev= 9.16 @	12.59 nrs St	IIT.Area= 599 st	Storage= 195 c	T		
			in calculated for in ( 836.6 - 798.	650 cf (100% of	inflow)		
				,			
Volume			rage Storage				D l - )
#1	8.80'	64	45 cf Custom	Stage Data (Pris	smatic)Li	sted below (	Recaic)
Elevatio		urf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)			
	80	480	0	0			
9.8	80	810	645	645			
Device	Routing	Invert	Outlet Devices	5			
#1	Primary	7.60'	Inlet / Outlet In n= 0.013, Flow	, square edge he wert= 7.60' / 7.50 w Area= 0.79 sf	' S= 0.0	100 '/' Cc=	0.900
#2 Secondary 8.80'		8.80'	2.410 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 5.60'				
	Device 1	9.50'					
#3	Device 1						

NOAA 24-hr C NOAA 2-yr Rainfall=3.40"

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						olutions LL(	,		Page 95
		Sum	nmary fo	r Pon	d 5A-P	S: BB 5A	-Stone		
Inflow Outflow Primary Routed	= 0.0 = 0.0	04 cfs @ 12 04 cfs @ 12 04 cfs @ 12 04 cfs @ 12 3 : PARKING	2.67 hrs, \ 2.67 hrs, \	/olume /olume	=	651 cf 615 cf 615 cf	, Atten= 0%	, Lag= 5.0	min
		ethod, Time 2.67 hrs Su							
		me= 61.8 mi me= 31.8 mi				% of inflov	/)		
Volume	Invert	Avail.Stor	age Sto	rage De	escriptior	ı			
#1	5.55'	28				a (Prisma .0% Voids	tic)Listed be	low (Recald	;)
Elevation (feet)		f.Area (sq-ft)	Inc.Stor (cubic-fee		Cum.S (cubic-fe				
5.55		480	00	0		0			
7.55		480	96	0		960			
	Routing Primary	Invert 5.80'	Outlet De				Limited to		
└──1=Orifi	ce/Grate (C	Drifice Contro	bls 0.04 cf	s @ 1.2	21 fps)				

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		Sun	nmary for Po	nd 5B-P:	BB 5B - P	OND		
Second Rout Tertiary	= 2.4 = 2.3 = 0.5 ted to Reach B ary = 0.0 ted to Pond 5B	0 cfs @ 1 5 cfs @ 1 7 cfs @ 1 : PARKING 9 cfs @ 1 .PS : BB 5E 8 cfs @ 1	2.15 hrs, Volum	ie= ie= ie= LOW ie=	7,086 cf		IOAA 2-yr e Lag= 1.2 r	
			Span= 0.00-72 urf.Area= 1,407					
Center-	of-Mass det. tir Invert	ne= 32.0 m Avail.Sto	in calculated for in ( 835.0 - 803. rage Storage I	0 ) Description		,	(D	
#1	8.20'	7	11 cf Custom	Stage Data	(Prismatic	Listed bei	ow (Recalc)	
Elevatio (fee		.Area sq-ft)	Inc.Store (cubic-feet)	Cum.Sto (cubic-fee				
	20	327 1,450	0 711	7	0 11			
Device	Routing	Invert	Outlet Devices	;				
#1	Primary	7.00'	<b>12.0" Round</b> L= 10.0' CPP Inlet / Outlet In n= 0.013, Flow	, square ed vert= 7.00'	(6.90' S=			
#2	Secondary	8.20'	2.410 in/hr Ex Conductivity to					
#3	Device 1 Tertiary	8.90' 8.70'	24inchDome Head (feet) 0 0.50 0.55 0.6 1.10 Disch. (cfs) 0. 3.600 3.800 4 5.350 5.450 5	Grate Capa .00 0.05 0. 0 0.65 0.70 000 0.180 4.000 4.200 5.650 5.800	city X 2.00 10 0.15 0. 0 0.75 0.80 0.460 0.85 4.380 4.6 5.950	20 0.25 0 0 0.85 0.9 0 1.360 1	0 0.95 1.0 .830 2.420	0 1.05 3.100
Primary	/ OutFlow Max ulvert (Passes	(=0.57 cfs ( 0.57 cfs of	<ul> <li>D 12.15 hrs HV</li> <li>4.58 cfs potenti</li> <li>acity (Custom C</li> </ul>	/=8.97' (Fr al flow)	ee Discharg	je)		
	lary OutFlow I cfiltration ( Co		fs @ 12.15 hrs cfs)	HW=8.97'	(Free Disch	arge)		
			12.15 hrs HW     ity (Custom Cor			le)		

		Sumr	nary for Po	nd 5B-PS	: BB 5B-Sto	one	
Inflow Outflow Primary Rout	= 0. = 0.	09 cfs @ 12. 09 cfs @ 12. 09 cfs @ 12. B : PARKING I	21 hrs, Volum 21 hrs, Volum	าe= าe=	3,100 cf 3,048 cf, Att 3,048 cf	en= 3%, Lag= 3.	8 min
		nethod, Time S I2.21 hrs Surf					
		ime= 28.7 min ime= 20.1 min			3% of inflow)		
Volume	Invert	Avail.Stora	ge Storage	Description			
#1	5.00'	414		Stage Data Overall x 30		sted below (Reca	lc)
Elevatio (fee		rf.Area (sq-ft) (d	Inc.Store cubic-feet)	Cum.Sto (cubic-fee			
5.0		690	0		0		
7.0	00	690	1,380	1,3	80		
Device	Routing	Invert	Outlet Devices	6			
		ax=0.09 cfs @ Orifice Control	12.21 hrs HV	V=5.45' (Fr		nited to weir flow a	

<u></u>	ND® 10.10-7a	5/11 00 00 40 @	2021 HydroCAD	SUITWARE SOIL	LUOIIS LLC	Pag
		Sun	nmary for Po	nd 6A-P: I	BB 6A - PON	ND
Second	= 0. = 0. = 0. ed to Reach I	85 cfs @ 12 82 cfs @ 12 77 cfs @ 12 3MP6_O : Bl 04 cfs @ 12	2.13 hrs, Volum 2.15 hrs, Volum 2.15 hrs, Volum MP-6 OVERFLC 2.15 hrs, Volum	e= e= e= W	2,436 cf	for NOAA 2-yr event n= 4%, Lag= 1.3 min
			Span= 0.00-72 Surf.Area= 671 s			
		ime= 47.4 m	in calculated for in ( 874.1 - 826.		0% of inflow)	
Volume		Avail.Sto	<u> </u>	Description		
#1	10.20'	49	91 cf Custom	Stage Data	(Prismatic)Lis	ted below (Recalc)
Elevatio (fee		rf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Stor (cubic-fee		
10.2	20	350	0		0	
11.	10	740	491	49	)1	
Device	Routing	Invert	Outlet Devices			
#1	Primary	9.00'	L= 10.0' CPP	, square edg vert= 9.00' /	8.90' S= 0.01	e= 0.500 100 '/' Cc= 0.900
#2	Secondary	10.20'	,	filtration ov	er Surface are	
#3	Device 1	10.80'	24inch-Dome	Grate Capa	city	
#4	Primary	11.00'	5.0' long Shai	p-Crested F	Rectangular W	leir 2 End Contraction(s)
1=Ci 1_3: 4=St	ulvert (Passe =24inch-Dom narp-Crested lary OutFlow	s 0.77 cfs of e Grate Cap Rectangula	12.15 hrs HW 4.54 cfs potenti bacity (Custom C ir Weir (Control: fs @ 12.15 hrs	al flow) Controls 0.77 s 0.00 cfs)	′ cfs)	
*						

	Su	mmary for Po	nd 6A-PS: BB	6A - STONE	
Inflow = Outflow = Primary = Routed to	0.04 cfs @	12.15 hrs, Volu 12.20 hrs, Volu 12.20 hrs, Volu BMP-6 OVERFL	ne= 1,4 ne= 1,4	40 cf 18 cf, Atten= 1% 18 cf	b, Lag= 2.6 min
	or-Ind method, Ti 39' @ 12.20 hrs				
Volume #1 Elevation	7.00' Surf.Area	580 cf 0 Inc.Store	<b>Stage Data (Pr</b> overall x 30.0% \ Cum.Store		elow (Recalc)
(feet) 7.00	(sq-ft) 290	(cubic-feet) 0	(cubic-feet) 0		
9.00	290	580	580		
Device Rou	ting Inve	rt Outlet Device	S		
#1 Prim		5' 4.0" Vert. Or	ifice/Grate C= (	0.600 Limited to	weir flow at low heads
	Flow Max=0.04 cf Grate (Orifice Co			Discharge)	

14850_Proposed-Drainage-Areas_220609	NOAA 24-hr C NOA	A 2-yr Rainfall=3.40"
Prepared by {enter your company name here}		Printed 6/16/2022
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# Summary for Pond 6B-P: BB 6B

Inflow Area =	6,495 sf, 77.45% Impervious,	Inflow Depth = 2.64" for NOAA 2-yr event
Inflow =	0.47 cfs @ 12.13 hrs, Volume=	1,428 cf
Outflow =	0.44 cfs @ 12.15 hrs, Volume=	1,428 cf, Atten= 6%, Lag= 1.6 min
Discarded =	0.02 cfs @ 12.15 hrs, Volume=	871 cf
Primary =	0.43 cfs @ 12.15 hrs, Volume=	557 cf
Routed to Rea	ach BMP6_O : BMP-6 OVERFLOW	

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Peak Elev= 12.04' @ 12.15 hrs Surf.Area= 658 sf Storage= 356 cf

Plug-Flow detention time= 135.2 min calculated for 1,427 cf (100% of inflow) Center-of-Mass det. time= 135.3 min ( 928.4 - 793.1 )

Volume	Invert	Avail.Stora	age Storage Description	
#1	11.20'	394	4 cf Custom Stage Data (Prismatic)Listed below (Recalc)	
Elevatio (fee 11.2 12.1	20	urf.Area <u>(sq-ft) (c</u> 185 690	Inc.Store Cum.Store <u>cubic-feet)</u> 0 0 394 394	
Device	Routing	Invert (	Outlet Devices	
#1	Primary	L	<b>12.0"</b> Round Culvert L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 10.10' / 10.00' S= 0.0100 '/ Cc= 0.900 n= 0.013. Flow Area= 0.79 sf	
#2	Discarded		1.020 in/hr Exfiltration over Surface area	
#3	Device 1		Conductivity to Groundwater Elevation = 8.10' 24inch-Dome Grate Capacity	

**Discarded OutFlow** Max=0.02 cfs @ 12.15 hrs HW=12.04' (Free Discharge) **2=Exfiltration** ( Controls 0.02 cfs)

Primary OutFlow Max=0.42 cfs @ 12.15 hrs HW=12.04' (Free Discharge) 1=Culvert (Passes 0.42 cfs of 4.54 cfs potential flow) -3=24inch-Dome Grate Capacity (Custom Controls 0.42 cfs)

14850_Proposed-Drainage-Areas_220609       NOAA 24-hr C NOAA 2-yr Rainfall=3.40"         Prepared by {enter your company name here}       Printed 6/16/2022         HydroCAD® 10.10-7a s/n 00546 © 2021 HydroCAD Software Solutions LLC       Page 101	14850_Proposed-Drainage-Areas_220609       NOAA 24-hr C       NOAA 2-yr Rainfall=3.40         Prepared by {enter your company name here}       Printed 6/16/2022         HydroCAD® 10.10-7a s/n 00546 © 2021 HydroCAD Software Solutions LLC       Page 102
Summary for Pond 7A-P: BB 7A PONDING	Summary for Pond 7A-S: BB 7A - STONE
nflow Area = 3,165 sf, 87.74% Impervious, Inflow Depth = 2.84" for NOAA 2-yr event nflow = 0.24 cfs @ 12.13 hrs, Volume= 749 cf Dutflow = 0.24 cfs @ 12.15 hrs, Volume= 749 cf, Atten= 1%, Lag= 1.1 min Primary = 0.22 cfs @ 12.15 hrs, Volume= 210 cf Routed to Reach 7R : PARKING LOT C to HUDSON Secondary = 0.02 cfs @ 12.14 hrs, Volume= 539 cf Routed to Pond 7A-S : BB 7A - STONE Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Dark 50 POIC	Inflow = 0.02 cfs @ 12.14 hrs, Volume= 539 cf Outflow = 0.02 cfs @ 12.18 hrs, Volume= 539 cf, Atten= 0%, Lag= 1.9 min Primary = 0.02 cfs @ 12.18 hrs, Volume= 539 cf Routed to Reach 7R : PARKING LOT C to HUDSON Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Peak Elev= 5.19'@ 12.18 hrs Surf.Area= 150 sf Storage= 4 cf Plug-Flow detention time= 5.1 min calculated for 539 cf (100% of inflow) Contract Marca for the former 5.1 min calculated for 539 cf (100% of inflow)
Peak Elev= 9.96' @ 12.14 hrs Surf.Area= 316 sf Storage= 141 cf	Center-of-Mass det. time= 5.1 min (864.8 - 859.7)
Plug-Flow detention time= 43.9 min calculated for 749 cf (100% of inflow) Center-of-Mass det. time= 43.9 min(825.1 - 781.2) /olume Invert Avail.Storage Storage Description	Volume         Invert         Avail.Storage         Storage Description           #1         5.10'         90 cf         Custom Stage Data (Prismatic)Listed below (Recalc) 300 cf Overall x 30.0% Voids
#1 9.30' 227 cf Custom Stage Data (Prismatic)Listed below (Recalc)	Elevation Surf.Area Inc.Store Cum.Store (feet) (sq-ft) (cubic-feet) (cubic-feet)
Elevation Surf.Area Inc.Store Cum.Store (feet) (sq-ft) (cubic-feet) (cubic-feet)	(feet)         (sq-ft)         (cubic-feet)           5.10         150         0         0           7.10         150         300         300
9.30 115 0 0 10.20 390 227 227	Device         Routing         Invert         Outlet Devices           #1         Primary         5.10'         4.0" Vert. Orifice/Grate         C= 0.600         Limited to weir flow at low heads
Device     Routing     Invert     Outlet Devices       #1     Primary     8.10'     12.0" Round Culvert L = 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 8.10' / 8.00' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf       #2     Secondary     9.30'     2.410 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 6.10'       #3     Device 1     9.90'     24inch-Dome Grate Capacity       #4     Primary     10.10'     5.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)	Primary OutFlow Max=0.02 cfs @ 12.18 hrs HW=5.19' (Free Discharge)
<b>Primary OutFlow</b> Max=0.22 cfs @ 12.15 hrs HW=9.96' (Free Discharge) —1=Culvert (Passes 0.22 cfs of 4.40 cfs potential flow) <b>C−3=24inch-Dome Grate Capacity</b> (Custom Controls 0.22 cfs) —4=Sharp-Crested Rectangular Weir( Controls 0.00 cfs)	
Secondary OutFlow Max=0.02 cfs @ 12.14 hrs HW=9.96' (Free Discharge) —2=Exfiltration(Controls 0.02 cfs)	

I4850_Proposed-Drainage-Areas_220609       NOAA 24-hr C       NOAA 2-yr Rainfall=3.40"         Prepared by {enter your company name here}       Printed       6/16/2022         HydroCAD® 10.10-7a s/n 00546 © 2021 HydroCAD Software Solutions LLC       Page 103	14850_Proposed-Drainage-Areas_220609         NOAA 24-           Prepared by {enter your company name here}         HydroCAD® 10.10-7a s/n 00546 © 2021 HydroCAD Software Solutions LLC
Summary for Pond 7B-P: BB 7B PONDING	Summary for Pond 7B-S: BB 7B - S
nflow Area =       4,942 sf, 88.73% Impervious, Inflow Depth =       2.84" for NOAA 2-yr event         nflow =       0.38 cfs @       12.13 hrs, Volume=       1,170 cf         Dutflow =       0.37 cfs @       12.16 hrs, Volume=       1,170 cf, Atten= 3%, Lag= 2.1 min         Primary =       0.33 cfs @       12.16 hrs, Volume=       283 cf         Routed to Reach BMP7_O :       BMP-7 OVERFLOW         Secondary =       0.03 cfs @       12.16 hrs, Volume=         Routed to Pond 7B-S :       BB 7B - STONE	Inflow         =         0.03 cfs @         12.16 hrs, Volume=         887 cf           Outflow         =         0.03 cfs @         12.19 hrs, Volume=         875 cf, A           Primary         =         0.03 cfs @         12.19 hrs, Volume=         875 cf           Routed to Reach BMP7_O :         BMP-7 OVERFLOW         800-72.00 hrs, dt=         0.05 hrs           Peak Elev=         7.62' @         12.19 hrs         Surf.Area=         150 sf         Storage=         17 cf
Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Peak Elev= 10.68' @ 12.16 hrs Surf.Area= 512 sf Storage= 258 cf	Plug-Flow detention time= 18.8 min calculated for 875 cf (99% of inflow) Center-of-Mass det. time= 11.3 min ( 868.7 - 857.4 )
Plug-Flow detention time= 47.2 min calculated for 1,170 cf (100% of inflow) Center-of-Mass det. time= 47.2 min(828.4 - 781.2)	Volume         Invert         Avail.Storage         Storage Description           #1         7.25'         90 cf         Custom Stage Data (Prismatic)           300 cf         Verall x 30.0% Voids
/olume         Invert         Avail.Storage         Storage Description           #1         10.00'         324 cf         Custom Stage Data (Prismatic)Listed below (Recalc)	Elevation Surf.Area Inc.Store Cum.Store
Elevation Surf.Area Inc.Store Cum.Store (feet) (sq-ft) (cubic-feet) (cubic-feet)	(feet)         (sq-ft)         (cubic-feet)         (cubic-feet)           7.25         150         0         0           9.25         150         300         300
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Device Routing Invert Outlet Devices
Device Routing Invert Outlet Devices	#1 Primary 7.50' <b>4.0" Vert. Orifice/Grate</b> C= 0.600 L
#1       Primary       8.90'       12.0" Round Culvert L = 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 8.90' / 8.80' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf         #2       Secondary       10.00'       2.410 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 6.90'         #3       Device 1       10.60'       24inch-Dome Grate Capacity         Primary OutFlow Max=0.31 cfs @ 12.16 hrs HW=10.67'       (Free Discharge) -1=Culvert (Passes 0.31 cfs of 4.27 cfs potential flow)        3=24inch-Dome Grate Capacity (Custom Controls 0.31 cfs)	Primary OutFlow Max=0.03 cfs @ 12.19 hrs HW=7.62' (Free Discharg
Secondary OutFlow Max=0.03 cfs @ 12.16 hrs HW=10.67' (Free Discharge) 2=Exfiltration ( Controls 0.03 cfs)	

for Pond 7B-S: BB 7B - STONE s, Volume= 887 cf rs, Volume= rs, Volume= OVERFLOW 875 cf, Atten= 1%, Lag= 1.9 min 875 cf = 0.00-72.00 hrs, dt= 0.05 hrs a= 150 sf Storage= 17 cf lated for 875 cf (99% of inflow) .7 - 857.4 ) Storage Description Custom Stage Data (Prismatic)Listed below (Recalc) 300 cf Overall x 30.0% Voids Cum.Store Store feet) (cubic-feet) 0 0 300 300 Devices /ert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

NOAA 24-hr C NOAA 2-yr Rainfall=3.40"

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Summary for Pond 8a-P: BB 8A PONDING	Summary for Pond 8a-s: BB 8A - ST
Inflow Area =3,978 sf, 79.99% Impervious, Inflow Depth =2.64" for NOAA 2-yr eventInflow =0.29 cfs @12.13 hrs, Volume=875 cfOutflow =0.14 cfs @12.27 hrs, Volume=875 cf, Atten= 52%, Lag= 8.5 minPrimary =0.10 cfs @12.27 hrs, Volume=79 cfRouted to Reach P ST : PORTLAND STREET DRAINAGESecondary =0.04 cfs @Secondary =0.04 cfs @12.27 hrs, Volume=795 cfRouted to Pond 8a-s : BB 8A - STONE795 cf	Inflow         =         0.04 cfs @         12.27 hrs, Volume=         795 cf           Outflow         =         0.04 cfs @         12.35 hrs, Volume=         777 cf, A           Primary         =         0.04 cfs @         12.35 hrs, Volume=         777 cf           Routed to Reach P ST : PORTLAND STREET DRAINAGE         FORTLAND STREET DRAINAGE         Routing by Stor-Ind method, Time Span=         0.00-72.00 hrs, dt=         0.05 hrs           Peak Elev=         5.63' @         12.35 hrs         Surf.Area=         300 sf         Storage=         29 cf
Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Peak Elev= 9.03' @ 12.27 hrs Surf.Area= 587 sf Storage= 250 cf	Plug-Flow detention time= 30.8 min calculated for 777 cf (98% of inflow) Center-of-Mass det. time= 18.1 min(868.3 - 850.2)
Plug-Flow detention time= 47.4 min calculated for 874 cf (100% of inflow) Center-of-Mass det. time= 47.3 min ( 840.4 - 793.1 )	Volume         Invert         Avail.Storage         Storage Description           #1         5.30'         180 cf         Custom Stage Data (Prismatic)           600 cf         Overall x 30.0% Voids
Volume         Invert         Avail.Storage         Storage Description           #1         8.50'         575 cf         Custom Stage Data (Prismatic)Listed below (Recalc)	Elevation Surf.Area Inc.Store Cum.Store
Elevation Surf.Area Inc.Store Cum.Store (feet) (sq-ft) (cubic-feet) (cubic-feet)	5.30 300 0 0
<u>8.50 360 0 0</u>	7.30 300 600 600
9.50 790 575 575	Device Routing Invert Outlet Devices
Device Routing Invert Outlet Devices	#1 Primary 5.50' <b>4.0" Vert. Orifice/Grate</b> C= 0.600 Li
#1       Primary       7.40'       12.0" Round Culvert L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 7.40' / 7.30' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf         #2       Secondary       8.50'       2.410 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 5.40'         #3       Device 1       9.00'       24inch-Dome Grate Capacity 9.40'       5.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)	<b>Primary OutFlow</b> Max=0.04 cfs @ 12.35 hrs HW=5.63' (Free Discharge <b>1=Orifice/Grate</b> (Orifice Controls 0.04 cfs @ 1.21 fps)
Primary OutFlow Max=0.09 cfs @ 12.27 hrs HW=9.03' (Free Discharge) 1=Culvert (Passes 0.09 cfs of 3.99 cfs potential flow) -3=24inch-Dome Grate Capacity (Custom Controls 0.09 cfs) -4=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)	
Secondary OutFlow Max=0.04 cfs @ 12.27 hrs HW=9.03' (Free Discharge)	

5.50' 4.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Summary for Pond 8a-s: BB 8A - STONE

180 cf Custom Stage Data (Prismatic)Listed below (Recalc)

NOAA 24-hr C NOAA 2-yr Rainfall=3.40"

777 cf, Atten= 1%, Lag= 5.1 min

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Summary for Pond 8B-S: BB 8B-StoneInflow=0.04 cfs @12.15 hrs, Volume=962 cfOutflow=0.04 cfs @12.20 hrs, Volume=935 cf, Atten= 1%, Lag= 3.0 minPrimary=0.04 cfs @12.20 hrs, Volume=935 cfRouted to Reach 7R : PARKING LOT C to HUDSONRouting by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs935 cfRouting by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrsPeak Elev= 6.33' @ 12.20 hrsSurf.Area= 300 sfStorage Flag12.20 hrsSurf.Area= 300 sfStorage= 39 cfPlug-Flow detention time= 38.5 min calculated for 935 cf (97% of inflow) Center-of-Mass det. time= 22.5 min (875.4 - 852.9 )Pice InvertVolumeInvertAvail.StorageStorage Description#15.90'180 cfCustom Stage Data (Prismatic)Listed below (Recalc) 600 cf Overall x 30.0% VoidsElevationSurf.AreaInc.StoreCum.Store (cubic-feet)5.90300007.90300600600
Outflow=0.04 cfs @12.20 hrs, Volume=935 cf, Atten= 1%, Lag= 3.0 minPrimary=0.04 cfs @12.20 hrs, Volume=935 cfRouted to Reach 7R : PARKING LOT C to HUDSON935 cfRouting by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs935 cfPeak Elev= 6.33' @12.20 hrsSurf.Area= 300 sfStorage= 39 cfPlug-Flow detention time= 38.5 min calculated for 935 cf (97% of inflow) Center-of-Mass det. time= 22.5 min ( 875.4 - 852.9 )VolumeInvertAvail.StorageStorage Description#15.90'180 cfCustom Stage Data (Prismatic)Listed below (Recalc) 600 cf Overall x 30.0% VoidsElevationSurf.AreaInc.Store (cubic-feet)(feet)(sq-ft)(cubic-feet) 05.9030000
Center-of-Mass det. time= 22.5 min ( 875.4 - 852.9 )         Volume       Invert       Avail.Storage       Storage Description         #1       5.90'       180 cf       Custom Stage Data (Prismatic)Listed below (Recalc) 600 cf Overall x 30.0% Voids         Elevation       Surf.Area       Inc.Store       Cum.Store         (feet)       (sq-ft)       (cubic-feet)       0         5.90       300       0       0
#1       5.90'       180 cf       Custom Stage Data (Prismatic)Listed below (Recalc) 600 cf Overall x 30.0% Voids         Elevation       Surf.Area       Inc.Store       Cum.Store         (feet)       (sq-ft)       (cubic-feet)       (cubic-feet)         5.90       300       0       0
(feet) (sq-ft) (cubic-feet) (cubic-feet) 5.90 300 0 0
5.90 300 0 0
Device         Routing         Invert         Outlet Devices           #1         Primary         6.20'         4.0" Vert. Orifice/Grate         C= 0.600         Limited to weir flow at low heads
Primary OutFlow Max=0.04 cfs @ 12.20 hrs HW=6.33' (Free Discharge) 1=Orifice/Grate (Orifice Controls 0.04 cfs @ 1.22 fps)

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# Summary for Pond 9-P: BB9 - POND

Inflow Area =	29,651 sf, 74.77% Impervious,	Inflow Depth = 2.54" for NOAA 2-yr event
Inflow =	2.10 cfs @ 12.13 hrs, Volume=	6,279 cf
Outflow =	2.05 cfs @ 12.15 hrs, Volume=	6,279 cf, Atten= 3%, Lag= 1.1 min
	0.01 cfs @ 12.15 hrs, Volume=	2 cf
Routed to Rea	ach BMP9_O : BMP-9 OVERFLOW	
	0.04 cfs @ 12.15 hrs, Volume=	1,929 cf
	nd 9-PS : BB9 - STONE	
Tertiary =	2.00 cfs @ 12.15 hrs, Volume=	4,348 cf
Routed to Rea	ach 1R : ISOLATOR ROW C	

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Peak Elev= 8.80' @ 12.15 hrs Surf.Area= 664 sf Storage= 343 cf

Plug-Flow detention time= 26.2 min calculated for 6,275 cf (100% of inflow) Center-of-Mass det. time= 26.2 min ( 824.4 - 798.2 )

Volume	Invert	Avail.Stor	rage Storage Description	
#1	8.00'	48	85 cf Custom Stage Data (Prismatic)Listed below (Recalc)	
Elevatio (fee 8.0	et)	Area (sq-ft) 190	Inc.Store Cum.Store (cubic-feet) (cubic-feet) 0 0	
9.0	00	780	485 485	
Device	Routing	Invert	Outlet Devices	
#1	Primary	7.00'	<b>12.0" Round Culvert</b> L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 7.00' / 6.90' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf	
#2	Secondary	8.00'	2.410 in/hr Exfiltration over Surface area	
#3	Device 1	8.80'	Head (feet) 0.00 0.05 0.10 0.15 0.20 0.25 0.30 0.35 0.40 0.45 0.50 0.55 0.60 0.65 0.70 0.75 0.80 0.85 0.90 0.95 1.00 1.05 1.10 Disch. (cfs) 0.000 0.180 0.460 0.850 1.360 1.830 2.420 3.100	
#4	Tertiary	8.50'	3.600 3.800 4.000 4.200 4.380 4.600 4.750 4.900 5.100 5.200 5.350 5.450 5.650 5.800 5.950 15inch-Dome Grate Capacity	
Primary OutFlow Max=0.01 cfs @ 12.15 hrs HW=8.80' (Free Discharge)         1=Culvert (Passes 0.01 cfs of 4.32 cfs potential flow)         -3=24inchDome Grate Capacity (Custom Controls 0.01 cfs)				
	ary OutFlow		ofs @ 12.15 hrs HW=8.80' (Free Discharge) cfs)	

Tertiary OutFlow Max=1.98 cfs @ 12.15 hrs HW=8.80' (Free Discharge) 4=15inch-Dome Grate Capacity (Custom Controls 1.98 cfs)

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	Su	Immary for Pol	nd 9-PS: BB9 - S	TONE
nflow = Dutflow = Primary = Routed to R	0.04 cfs @ 1 0.04 cfs @ 1	12.15 hrs, Volume 12.17 hrs, Volume 12.17 hrs, Volume 18MP-9 OVERFLO	e= 1,915 cf, e= 1,915 cf	Atten= 1%, Lag= 1.5 min
		e Span= 0.00-72.0 Surf.Area= 190 sf	00 hrs, dt= 0.05 hrs Storage= 22 cf	
		nin calculated for 7 in ( 993.3 - 984.5 )	1,915 cf (99% of inflo )	w)
/olume I	nvert Avail.Sto	orage Storage D	escription	
		14 cf Custom S		ic)Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	
5.00	190	0	0	
7.00	190	380	380	
Device Routin	ng Invert	Outlet Devices		
	ng Invert	Outlet Devices		Limited to weir flow at low heads
Device Routir #1 Prima	ng Invert ry 5.25'	Outlet Devices 4.0" Vert. Orifi		
Device Routin #1 Prima Primary OutFl	ng Invert ry 5.25' <b>ow</b> Max=0.04 cfs	Outlet Devices 4.0" Vert. Orifi	ce/Grate C= 0.600 =5.39' (Free Discha	
Device Routin #1 Prima Primary OutFl	ng Invert ry 5.25' <b>ow</b> Max=0.04 cfs	Outlet Devices 4.0" Vert. Orifi @ 12.17 hrs HW	ce/Grate C= 0.600 =5.39' (Free Discha	
Device Routin #1 Prima Primary OutFl	ng Invert ry 5.25' <b>ow</b> Max=0.04 cfs	Outlet Devices 4.0" Vert. Orifi @ 12.17 hrs HW	ce/Grate C= 0.600 =5.39' (Free Discha	
Device Routin #1 Prima Primary OutFI	ng Invert ry 5.25' <b>ow</b> Max=0.04 cfs	Outlet Devices 4.0" Vert. Orifi @ 12.17 hrs HW	ce/Grate C= 0.600 =5.39' (Free Discha	
Device Routin #1 Prima Primary OutFI	ng Invert ry 5.25' <b>ow</b> Max=0.04 cfs	Outlet Devices 4.0" Vert. Orifi @ 12.17 hrs HW	ce/Grate C= 0.600 =5.39' (Free Discha	
Device Routin #1 Prima Primary OutFI	ng Invert ry 5.25' <b>ow</b> Max=0.04 cfs	Outlet Devices 4.0" Vert. Orifi @ 12.17 hrs HW	ce/Grate C= 0.600 =5.39' (Free Discha	
Device Routin #1 Prima Primary OutFl	ng Invert ry 5.25' <b>ow</b> Max=0.04 cfs	Outlet Devices 4.0" Vert. Orifi @ 12.17 hrs HW	ce/Grate C= 0.600 =5.39' (Free Discha	
Device Routin #1 Prima Primary OutFl	ng Invert ry 5.25' <b>ow</b> Max=0.04 cfs	Outlet Devices 4.0" Vert. Orifi @ 12.17 hrs HW	ce/Grate C= 0.600 =5.39' (Free Discha	
<u>Device Routir</u> #1 Prima <b>Primary OutFl</b>	ng Invert ry 5.25' <b>ow</b> Max=0.04 cfs	Outlet Devices 4.0" Vert. Orifi @ 12.17 hrs HW	ce/Grate C= 0.600 =5.39' (Free Discha	
Device Routin #1 Prima Primary OutFl	ng Invert ry 5.25' <b>ow</b> Max=0.04 cfs	Outlet Devices 4.0" Vert. Orifi @ 12.17 hrs HW	ce/Grate C= 0.600 =5.39' (Free Discha	
Device Routin #1 Prima Primary OutFl	ng Invert ry 5.25' <b>ow</b> Max=0.04 cfs	Outlet Devices 4.0" Vert. Orifi @ 12.17 hrs HW	ce/Grate C= 0.600 =5.39' (Free Discha	

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			Summ	ary for F	ond 14P: BB2	A-Stone	
Outflow = Primary =	= 0.0	03 cfs @ 03 cfs @	12.31 h 12.31 h	nrs, Volum nrs, Volum nrs, Volum Iney Blvd (	ne= 689 ne= 689	9 cf 9 cf, Atten 9 cf	= 0%, Lag= 3.0 min
Routing by	Stor Ind m	othod Ti		0 00 70	00 hrs dt 0.05 k		
					.00 hrs, dt= 0.05 h	hrs	
					Storage= 6 cf	hrs	
Peak Elev= Plug-Flow d	5.60' @ 1	2.31 hrs ime= 5.3 r	Surf.Are	ea= 180 sf ulated for 6	Storage= 6 cf 689 cf (100% of in		
Peak Elev=	5.60' @ 1	2.31 hrs ime= 5.3 r	Surf.Are	ea= 180 sf ulated for 6	Storage= 6 cf 689 cf (100% of in		
Peak Elev= Plug-Flow d Center-of-M Volume	5.60' @ 1 letention ti lass det. ti Invert	2.31 hrs ime= 5.3 r ime= 5.4 r	Surf.Are min calcu min ( 863	ea= 180 sf ulated for 6 3.4 - 858.1	Storage= 6 cf 689 cf (100% of in		
Peak Elev= Plug-Flow d Center-of-M	5.60' @ 1 letention ti lass det. ti	2.31 hrs ime= 5.3 r ime= 5.4 r	Surf.Are min calcu min ( 863	ea= 180 sf ulated for 6 3.4 - 858.1 <u>Storage</u> Custom	Storage= 6 cf 589 cf (100% of in ) Description Stage Data (Pris	iflow) :matic)Liste	ed below (Recalc)
Peak Elev= Plug-Flow d Center-of-M Volume	5.60' @ 1 letention ti lass det. ti Invert	2.31 hrs ime= 5.3 r ime= 5.4 r	Surf.Are min calcu min ( 863 Storage	ea= 180 sf ulated for 6 3.4 - 858.1 <u>Storage</u> Custom	Storage= 6 cf 689 cf (100% of in ) Description	iflow) :matic)Liste	ed below (Recalc)
Peak Elev= Plug-Flow d Center-of-M Volume	5.60' @ 1. letention ti lass det. ti <u>Invert</u> 5.50'	2.31 hrs ime= 5.3 r ime= 5.4 r	Surf.Are min calcu min ( 863 <u>Storage</u> 108 cf	ea= 180 sf ulated for 6 3.4 - 858.1 <u>Storage</u> Custom	Storage= 6 cf 589 cf (100% of in ) Description Stage Data (Pris	iflow) matic)Liste	ed below (Recalc)
Peak Elev= Plug-Flow d Center-of-M <u>Volume</u> #1	5.60' @ 1 letention ti lass det. ti <u>Invert</u> 5.50' Sur	2.31 hrs ime= 5.3 r ime= 5.4 r Avail.5	Surf.Are min calcu min ( 863 <u>Storage</u> 108 cf Inc	ea= 180 sf ulated for ( 3.4 - 858.1 <u>Storage</u> Custom 360 cf O	Storage= 6 cf 589 cf (100% of in ) Description Stage Data (Pris verall x 30.0% Vo	iflow) matic)Liste	ed below (Recalc)
Peak Elev= Plug-Flow d Center-of-M <u>Volume</u> #1 Elevation	5.60' @ 1 letention ti lass det. ti <u>Invert</u> 5.50' Sur	2.31 hrs ime= 5.3 r ime= 5.4 r Avail.5	Surf.Are min calcu min ( 863 <u>Storage</u> 108 cf Inc	ea= 180 sf ulated for ( 3.4 - 858.1 <u>Storage</u> Custom 360 cf O S.Store	Storage= 6 cf 589 cf (100% of in ) <u>Description</u> <b>Stage Data (Pris</b> verall x 30.0% Vo Cum.Store	iflow) matic)Liste	ed below (Recalc)
Peak Elev= Plug-Flow d Center-of-M <u>Volume</u> #1 Elevation (feet)	5.60' @ 1 letention ti lass det. ti <u>Invert</u> 5.50' Sur	2.31 hrs ime= 5.3 r ime= 5.4 r Avail.5 f.Area (sq-ft)	Surf.Are min calcu min ( 863 <u>Storage</u> 108 cf Inc	ea= 180 sf ulated for ( 3.4 - 858.1 <u>Storage</u> Custom 360 cf O c.Store c-feet)	Storage= 6 cf 589 cf (100% of in ) Description Stage Data (Pris verall x 30.0% Vo Cum.Store (cubic-feet)	iflow) matic)Liste	ed below (Recalc)
Peak Elev= Plug-Flow d Center-of-M <u>Volume</u> #1 Elevation (feet) 5.50 7.50	5.60' @ 1 letention ti lass det. ti <u>Invert</u> 5.50' Sur	2.31 hrs ime= 5.3 r ime= 5.4 r Avail.5 f.Area (sq-ft) 180	Surf.Are min calcu min ( 863 <u>Storage</u> 108 cf Inc (cubi	ea= 180 sf Jated for ( 3.4 - 858.1 <u>Storage</u> <b>Custom</b> 360 cf O c.Store <u>c-feet)</u> 0	Storage= 6 cf 589 cf (100% of in ) Description Stage Data (Pris verall x 30.0% Vo Cum.Store (cubic-feet) 0 360	iflow) matic)Liste	ed below (Recalc)

Primary OutFlow Max=0.03 cfs @ 12.31 hrs HW=5.60' (Free Discharge) -1=Orifice/Grate (Orifice Controls 0.03 cfs @ 1.10 fps)

	Summa	ry for Po	ond DMH1: DIVERSION MANHOLE - SEYMOUR ST
[57] Hin	t: Peaked at 9.6	1' (Flood e	elevation advised)
Inflow A	.rea = 19	9,582 sf, 5	58.17% Impervious, Inflow Depth = 2.18" for NOAA 2-yr event
Inflow			2.13 hrs, Volume= 3,554 cf
Outflow			2.13 hrs, Volume= 3,554 cf, Atten= 0%, Lag= 0.0 min
Primary			2.13 hrs, Volume= 2,974 cf
			RATION SYSTEM #1
			2.13 hrs, Volume= 580 cf
Rout	ed to Reach DF	P-1 : Frenc	h Rodney Blvd Outfall
Peak Ĕl	by Stor-Ind mei ev= 9.61' @ 12. Routing	13 hrs	Span= 0.00-72.00 hrs, dt= 0.05 hrs Outlet Devices
#1	Primary	9.00'	6.0" Vert. WATER QUALITY STORM DIVERSION C= 0.600
			Limited to weir flow at low heads
#2	Secondary	9.20'	12.0" Vert. LARGE STORM OVEFLOW C= 0.600 Limited to weir flow at low heads
<i></i>			

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# Summary for Pond DMH2: DIVERSION MANHOLE - HUDSON STREET

[57] Hint: Peaked at 14.56' (Flood elevation advised)

Inflow Area =	143,309 sf, 49.69% Impervious, Inflo	ow Depth = 2.01" for NOAA 2-yr event
Inflow =	8.38 cfs @ 12.13 hrs, Volume=	24,005 cf
Outflow =	8.38 cfs @ 12.13 hrs, Volume=	24,005 cf, Atten= 0%, Lag= 0.0 min
Primary =	1.83 cfs @ 12.13 hrs, Volume=	15,418 cf
Routed to Pon	Id INF-2 : INFILTRATION SYSTEM #2	
Secondary =	6.55 cfs @ 12.13 hrs, Volume=	8,588 cf
Routed to Rea	ach B : PARKING LOT B OVERFLOW	

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Peak Elev= 14.56' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	10.60'	6.0" Vert. WATER QUALITY STORM DIVERSION C= 0.600
	-		Limited to weir flow at low heads
#2	Secondary	11.10'	12.0" Vert. LARGE STORM OVERFLOW C= 0.600
			Limited to weir flow at low heads

Primary OutFlow Max=1.77 cfs @ 12.13 hrs HW=14.35' (Free Discharge) —1=WATER QUALITY STORM DIVERSION(Orifice Controls 1.77 cfs @ 9.01 fps)

Secondary OutFlow Max=6.27 cfs @ 12.13 hrs HW=14.35' (Free Discharge) -2=LARGE STORM OVERFLOW (Orifice Controls 6.27 cfs @ 7.99 fps)

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#### Summary for Pond DMH3: DIVERSION MANHOLE - PORTLAND ST

[57] Hint: Peaked at 11.54' (Flood elevation advised)

Inflow Area =	19,743 sf, 50.83% Imp	ervious, Inflow Depth = 2.01"	for NOAA 2-yr event
Inflow =	1.15 cfs @ 12.13 hrs, V	olume= 3,307 cf	-
Outflow =	1.15 cfs @ 12.13 hrs, Vo	olume= 3,307 cf, Atte	n= 0%, Lag= 0.0 min
Primary =	0.75 cfs @ 12.13 hrs, Ve	olume= 2,972 cf	
Routed to Pond	I INF3 : INFILTRATION SY	/STEM #1	
Secondary =	0.40 cfs @ 12.13 hrs, Ve	olume= 335 cf	
Routed to Read	ch P ST : PORTLAND STR	EET DRAINAGE	

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Peak Elev= 11.54' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	11.00'	8.0" Vert. WATER QUALITY DIVERSION C= 0.600
			Limited to weir flow at low heads
#2	Secondary	11.20'	10.0" Vert. LARGE STORM OVERFLOW C= 0.600
			Limited to weir flow at low heads

Primary OutFlow Max=0.73 cfs @ 12.13 hrs HW=11.52' (Free Discharge) 1=WATER QUALITY DIVERSION(Orifice Controls 0.73 cfs @ 2.47 fps)

Secondary OutFlow Max=0.38 cfs @ 12.13 hrs HW=11.52' (Free Discharge) -2=LARGE STORM OVERFLOW (Orifice Controls 0.38 cfs @ 1.94 fps)

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#### Summary for Pond INF-1: INFILTRATION SYSTEM #1

[79] Warning: Submerged Pond DMH1 Primary device # 1 by 0.01'

Inflow Area =	19,582 sf, 58.17% Impervious,	Inflow Depth = 1.82" for NOAA 2-yr event
Inflow =	0.57 cfs @ 12.13 hrs, Volume=	2,974 cf
Outflow =	0.07 cfs @ 13.69 hrs, Volume=	2,974 cf, Atten= 88%, Lag= 93.8 min
Discarded =	0.07 cfs @ 13.69 hrs, Volume=	2,974 cf
Primary =	0.00 cfs @ 0.00 hrs, Volume=	0 cf
Routed to Rea	ach DP-1 : French Rodney Blvd Outfa	all

Routing by Stor-Ind method. Time Span= 0.00-72.00 hrs. dt= 0.05 hrs Peak Elev= 9.01'@ 13.69 hrs Surf.Area= 1,772 sf Storage= 1,232 cf

Plug-Flow detention time= 185.7 min calculated for 2.972 cf (100% of inflow) Center-of-Mass det. time= 185.6 min ( 1,018.3 - 832.7 )

~

Volume	Invert	Avail.Storage	Storage Description
#1A	7.80'	1,091 cf	21.50'W x 81.52'L x 2.33'H Field A
			4,090 cf Overall - 973 cf Embedded = 3,117 cf x 35.0% Voids
#2A	8.30'	973 cf	ADS_StormTech SC-310 +Cap x 66 Inside #1
			Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf
			Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap
			66 Chambers in 6 Rows
#3	7.80'	137 cf	5.00'D x 7.00'H Vertical Cone/Cylinder
		2,201 cf	Total Available Storage

- ...

Storage Group A created with Chamber Wizard

. . . . .

evice)	Routing	Invert	Outlet Devices
#1	Discarded	7.80'	1.020 in/hr Exfiltration over Surface area
			Conductivity to Groundwater Elevation = 5.80'
#2	Primary	8.10'	10.0" Round Culvert
			L= 10.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 8.10' / 8.00' S= 0.0100 '/' Cc= 0.900
			n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.55 sf
#3	Device 2	9.40'	5.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

**Discarded OutFlow** Max=0.07 cfs @ 13.69 hrs HW=9.01' (Free Discharge) **1=Exfiltration** (Controls 0.07 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=7.80' (Free Discharge)

Lage Culvert (Controls 0.00 cfs)
 Lage Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

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## Pond INF-1: INFILTRATION SYSTEM #1 - Chamber Wizard Field A

Chamber Model = ADS\_StormTechSC-310 +Cap (ADS StormTech®SC-310 with cap length) Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap

34.0" Wide + 6.0" Spacing = 40.0" C-C Row Spacing

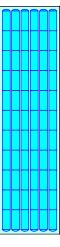
11 Chambers/Row x 7.12' Long +0.60' Cap Length x 2 = 79.52' Row Length +12.0" End Stone x 2 = 81.52' Base Length 6 Rows x 34.0" Wide + 6.0" Spacing x 5 + 12.0" Side Stone x 2 = 21.50' Base Width 6.0" Stone Base + 16.0" Chamber Height + 6.0" Stone Cover = 2.33' Field Height

66 Chambers x 14.7 cf = 973.0 cf Chamber Storage

4,089.6 cf Field - 973.0 cf Chambers = 3,116.6 cf Stone x 35.0% Voids = 1,090.8 cf Stone Storage

Chamber Storage + Stone Storage = 2,063.8 cf = 0.047 af Overall Storage Efficiency = 50.5% Overall System Size = 81.52' x 21.50' x 2.33'

66 Chambers 151.5 cy Field 115.4 cy Stone



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#### Summary for Pond INF-2: INFILTRATION SYSTEM #2

Inflow Area =	143,309 sf, 49.69% Impervious,	Inflow Depth = 1.29" for NOAA 2-yr event				
Inflow =	1.83 cfs @ 12.13 hrs, Volume=	15,418 cf				
Outflow =	1.53 cfs @ 12.20 hrs, Volume=	15,418 cf, Atten= 16%, Lag= 3.8 min				
Discarded =	0.11 cfs @ 12.20 hrs, Volume=	8,554 cf				
Primary =	1.42 cfs @ 12.20 hrs, Volume=	6,864 cf				
Routed to Reach B : PARKING LOT B OVERFLOW						

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Peak Elev= 9.70' @ 12.20 hrs Surf.Area= 2.268 sf Storage= 3.280 cf

Plug-Flow detention time= 204.5 min calculated for 15,407 cf (100% of inflow) Center-of-Mass det. time= 204.8 min (1,079.0 - 874.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	7.50'	1,790 cf	25.25'W x 89.06'L x 3.50'H Field A
			7,870 cf Overall - 2,756 cf Embedded = 5,114 cf x 35.0% Voids
#2A	8.00'	2,756 cf	ADS_StormTech SC-740 +Cap x 60 Inside #1
			Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
			Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
			60 Chambers in 5 Rows
#3	7.50'	137 cf	5.00'D x 7.00'H Vertical Cone/Cylinder
		4,684 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	7.50'	1.020 in/hr Exfiltration over Surface area
			Conductivity to Groundwater Elevation = 5.50'
#2	Primary	8.00'	10.0" Round Culvert
			L= 10.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 8.00' / 7.90' S= 0.0100 '/' Cc= 0.900
			n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.55 sf
#3	Device 2	9.50'	5.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Discarded OutFlow Max=0.11 cfs @ 12.20 hrs HW=9.69' (Free Discharge)

Primary OutFlow Max=1.39 cfs @ 12.20 hrs HW=9.69' (Free Discharge) □2=Culvert (Passes 1.39 cfs of 2.97 cfs potential flow) □3=Sharp-Crested Rectangular Weir (Weir Controls 1.39 cfs @ 1.44 fps)

14850_Proposed-Drainage-Areas_220609	NOAA 24-hr C NOAA 2-yr R	ainfall=3.40"
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# Pond INF-2: INFILTRATION SYSTEM #2 - Chamber Wizard Field A

Chamber Model = ADS\_StormTechSC-740 +Cap (ADS StormTech®SC-740 with cap length) Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

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

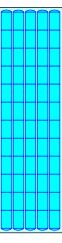
12 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 87.06' Row Length +12.0" End Stone x 2 = 89.06' Base Length 5 Rows x 51.0" Wide + 6.0" Spacing x 4 + 12.0" Side Stone x 2 = 25.25' Base Width 6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

60 Chambers x 45.9 cf = 2,756.4 cf Chamber Storage

7.870.4 cf Field - 2.756.4 cf Chambers = 5,114.0 cf Stone x 35.0% Voids = 1,789.9 cf Stone Storage

Chamber Storage + Stone Storage = 4,546.3 cf = 0.104 af Overall Storage Efficiency = 57.8% Overall System Size = 89.06' x 25.25' x 3.50'

60 Chambers 291.5 cy Field 189.4 cy Stone



14850_Proposed-Drainage-Areas_220609	NOAA 24-hr C NOAA 2-yr Rainfall=3.40"
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#### Summary for Pond INF3: INFILTRATION SYSTEM #1

Inflow Area =	19,743 sf, 50.83% Impervious, Inflow Dep	th = 1.81" for NOAA 2-yr event				
Inflow =	0.75 cfs @ 12.13 hrs, Volume= 2,9	972 cf				
Outflow =	0.38 cfs @ 12.32 hrs, Volume= 2,9	972 cf, Atten= 50%, Lag= 11.1 min				
Discarded =	0.05 cfs @ 12.32 hrs, Volume= 2,3	339 cf				
Primary =		633 cf				
Routed to Reach P ST : PORTLAND STREET DRAINAGE						

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Peak Elev= 9.57' @ 12.32 hrs Surf Area= 1.113 sf Storage= 944 cf

Plug-Flow detention time= 182.2 min calculated for 2,970 cf (100% of inflow) Center-of-Mass det. time= 182.2 min ( 1,016.0 - 833.8 )

Volume	Invert	Avail.Storage	Storage Description
#1A	8.10'	686 cf	18.17'W x 60.16'L x 2.33'H Field A
			2,550 cf Overall - 590 cf Embedded = 1,960 cf x 35.0% Voids
#2A	8.60'	590 cf	ADS_StormTech SC-310 +Cap x 40 Inside #1
			Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf
			Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap
			40 Chambers in 5 Rows
#3	8.10'	137 cf	5.00'D x 7.00'H Vertical Cone/Cylinder
		1,413 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	8.10'	1.020 in/hr Exfiltration over Surface area
			Conductivity to Groundwater Elevation = 6.10'
#2	Primary	8.40'	10.0" Round Culvert
			L= 10.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 8.40' / 8.30' S= 0.0100 '/' Cc= 0.900
			n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.55 sf
#3	Device 2	9.50'	5.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Discarded OutFlow Max=0.05 cfs @ 12.32 hrs HW=9.57' (Free Discharge)

Primary OutFlow Max=0.31 cfs @ 12.32 hrs HW=9.57' (Free Discharge) □2=Culvert (Passes 0.31 cfs of 2.13 cfs potential flow) □3=Sharp-Crested Rectangular Weir (Weir Controls 0.31 cfs @ 0.87 fps)

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#### Pond INF3: INFILTRATION SYSTEM #1 - Chamber Wizard Field A

Chamber Model = ADS\_StormTechSC-310 +Cap (ADS StormTech®SC-310 with cap length) Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap

34.0" Wide + 6.0" Spacing = 40.0" C-C Row Spacing

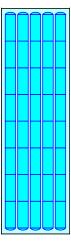
8 Chambers/Row x 7.12' Long +0.60' Cap Length x 2 = 58.16' Row Length +12.0" End Stone x 2 = 60.16' Base Length 5 Rows x 34.0" Wide + 6.0" Spacing x 4 + 12.0" Side Stone x 2 = 18.17' Base Width 6.0" Stone Base + 16.0" Chamber Height + 6.0" Stone Cover = 2.33' Field Height

40 Chambers x 14.7 cf = 589.7 cf Chamber Storage

2,550.1 cf Field - 589.7 cf Chambers = 1,960.4 cf Stone x 35.0% Voids = 686.2 cf Stone Storage

Chamber Storage + Stone Storage = 1,275.8 cf = 0.029 af Overall Storage Efficiency = 50.0% Overall System Size = 60.16' x 18.17' x 2.33'

40 Chambers 94.4 cy Field 72.6 cy Stone



pany name here}	850_Proposed-Drainage-Areas_220609       NOAA 24-hr C NOAA 25-yr F         spared by {enter your company name here}       Printe         IroCAD® 10.10-7a s/n 00546 © 2021 HydroCAD Software Solutions LLC       Printe	C NOAA 25-yr Rainfall=6.04" Printed 6/16/2022 Page 121		4850_Proposed-Drainage- repared by {enter your compai ydroCAD® 10.10-7a s/n 00546 © .
	nd 7A-P: BB 7A PONDING Peak Elev=9.99' Storage=153 cf Inflow=0.4 Primary=0.42 cfs 638 cf Secondary=0.02 cfs 800 cf Outflow=0.44	ed-CN	e span=0.00-72.00 hrs, dt=0.05 hrs, 1441 po ff by SCS TR-20 method, UH=SCS, Weighted y Stor-Ind+Trans method - Pond routing by i	Runoff b
Peak Elev=5.19' Storage=4 c	nd 7A-S: BB 7A - STONE Peak Elev=5.19' Storage=4 cf Inflow=0 Outflow=0	085 cf Inflow=4.84 cfs 14,390 cf	,	ond 1-P: BB 1
	nd 7B-P: BB 7B PONDING Primary=0.65 cfs 940 cf Secondary=0.03 cfs 1,305 cf Outflow=0.64	=267 cf Inflow=0.44 cfs 1,446 cf		ond 2a-P: BB 2a
	nd 7B-S: BB 7B - STONE Peak Elev=7.62' Storage=17 cf Inflow=0.0 Outflow=0.0	=245 cf Inflow=2.97 cfs 9,352 cf	, , ,	ond 2b-P: BB 2b
	nd 8a-P: BB 8A PONDING Primary=0.48 cfs 547 cf Secondary=0.04 cfs 1,184 cf Outflow=0.52	=472 cf Inflow=1.42 cfs 4,271 cf		ond 3A-P: BB 3A
	nd 8a-s: BB 8A - STONE Peak Elev=5.63' Storage=30 cf Inflow=0.0 Outflow=0.0	=260 cf Inflow=0.63 cfs 1,978 cf	•	ond 3B-P: BB 3B
	nd 8B-P: BB 8B-PONDING Peak Elev=9.73' Storage=262 cf Inflow=0.7 Primary=0.74 cfs 1,102 cf Secondary=0.04 cfs 1,441 cf Outflow=0.74	=239 cf Inflow=0.68 cfs 2,200 cf	•	ond 4A-P: BB 4A - POND
	nd 8B-S: BB 8B-Stone Peak Elev=6.33' Storage=39 cf Inflow=0.0 Outflow=0.0	e=26 cf Inflow=0.04 cfs 1,263 cf		ond 4A-S: BB4A-Stone
	nd 9-P: BB9 - POND Peak Elev=8.99' Storage=476 cf Inflow=4.05 imary=1.24 cfs 542 cf Secondary=0.05 cfs 2,332 cf Tertiary=2.68 cfs 9,749 cf Outflow=3.97	Outflow=0.04 cfs 1,246 cf		ond 4B-P: BB 4B - POND
	nd 9-PS: BB9 - STONE Peak Elev=5.40' Storage=23 cf Inflow=0.0 Outflow=0.0	ge=15 cf Inflow=0.02 cfs 787 cf	rimary=0.40 cfs 597 cf Secondary=0.02 cfs 78 Peak Elev=7.85' Storag	ond 4B-S: BB 4A-Stone
Peak Elev=5.61' Storage=6 c	nd 14P: BB2A-Stone Peak Elev=5.61' Storage=6 cf Inflow=0 Outflow=0	Outflow=0.02 cfs 776 cf =431 cf Inflow=0.42 cfs 1,308 cf	Peak Elev=9.52' Storage= rimary=0.07 cfs 72 cf Secondary=0.05 cfs 1,23	ond 5A-P: BB 5A - POND
	nd DMH1: DIVERSION MANHOLE - SEYMOUR ST Peak Elev=9.92' Inflow=2.5 Primary=0.78 cfs 5,625 cf Secondary=1.75 cfs 1,987 cf Outflow=2.53	e=57 cf Inflow=0.05 cfs 1,236 cf		ond 5A-PS: BB 5A-Stone
	nd DMH2: DIVERSION MANHOLE - HUDSON STREET Peak Elev=25.58' Inflow=17.88 Primary=3.65 cfs 28,364 cf Secondary=14.23 cfs 24,749 cf Outflow=17.88	Outflow=0.05 cfs 1,200 cf 711 cf Inflow=4.69 cfs 14,471 cf		ond 5B-P: BB 5B - POND
	nd DMH3: DIVERSION MANHOLE - PORTLAND ST Peak Elev=11.85' Inflow=2.4 Primary=1.21 cfs 6,020 cf Secondary=1.25 cfs 1,297 cf Outflow=2.44	e=96 cf Inflow=0.09 cfs 4,416 cf	dary=0.09 cfs 4,416 cf Tertiary=2.36 cfs 8,549 Peak Elev=5.46' Storage	ond 5B-PS: BB 5B-Stone
	nd INF-1: INFILTRATIONSYSTEM#1 Peak Elev=9.48' Storage=1,689 cf Inflow=0.7 Discarded=0.08 cfs 4,624 cf Primary=0.37 cfs 1,001 cf Outflow=0.45	Outflow=0.09 cfs 4,364 cf		ond 6A-P: BB 6A - POND
	nd INF-2: INFILTRATIONSYSTEM#2 Peak Elev=9.87' Storage=3,518 cf Inflow=3.65 Discarded=0.12 cfs 9,579 cf Primary=3.18 cfs 18,785 cf Outflow=3.30	e=34 cf Inflow=0.05 cfs 2,174 cf	ary=1.78 cfs 3,305 cf Secondary=0.05 cfs 2,17 Peak Elev=7.39' Storage	Primary ond 6A-PS: BB 6A - STONE
	nd INF3: INFILTRATIONSYSTEM#1 Peak Elev=9.67' Storage=1,000 cf Inflow=1.2 Discarded=0.05 cfs 3,178 cf Primary=1.15 cfs 2,842 cf Outflow=1.20	Outflow=0.05 cfs 2,152 cf =393 cf Inflow=0.90 cfs 2,826 cf	Peak Elev=12.10' Storage= arded=0.02 cfs 1.170 cf Primary=0.84 cfs 1.65	ond 6B-P: BB 6B

Prepared by {enter your company name here}     Printed 6/16/2022       ydroCAD® 10.10-7a s/n 00546 © 2021 HydroCAD Software Solutions LLC     Page 123	14850_Proposed-Drainage-Areas_220609       NOAA 24-hr         Prepared by {enter your company name here}       HydroCAD® 10.10-7a s/n 00546 © 2021 HydroCAD Software Solutions LLC
Summary for Pond 1-P: BB 1	Summary for Pond 2a-P: BB 2a
Inflow Area =       38,826 sf, 51.66% Impervious, Inflow Depth = 4.45" for NOAA 25-yr event         Inflow =       4.84 cfs @       12.13 hrs, Volume=       14,390 cf         Putflow =       4.72 cfs @       12.15 hrs, Volume=       14,390 cf         Ibiscarded =       0.05 cfs @       12.15 hrs, Volume=       14,390 cf         Primary =       2.39 cfs @       12.15 hrs, Volume=       14,390 cf         Routed to Reach 17R : Rodney French Pipe       1,961 cf       1,961 cf         Routed to Reach 15R : ISOLATOR ROW 1       9,742 cf       12.15 hrs, Volume=	Inflow Area = 3,116 sf, 92.62% Impervious, Inflow Depth = 5.57 Inflow = 0.44 cfs @ 12.13 hrs, Volume= 1,446 cf Outflow = 0.43 cfs @ 12.14 hrs, Volume= 1,446 cf, At Primary = 0.40 cfs @ 12.14 hrs, Volume= 468 cf Routed to Reach DP-1 : French Rodney Blvd Outfall Secondary = 0.03 cfs @ 12.14 hrs, Volume= 978 cf Routed to Pond 14P : BB2A-Stone Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
touting by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs leak Elev= 10.18'@ 12.15 hrs Surf.Area= 1,807 sf Storage= 1,085 cf	Peak Elev= 9.39' @ 12.14 hrs Surf.Area= 420 sf Storage= 267 cf
Plug-Flow detention time= 44.4 min calculated for 14,380 cf (100% of inflow) Elug-Flow detention time= 44.6 min ( 844.8 - 800.1 )	Plug-Flow detention time= 57.6 min calculated for 1,445 cf (100% of inflow) Center-of-Mass det. time= 57.6 min ( 816.9 - 759.3 )
olume Invert Avail.Storage Storage Description	Volume Invert Avail.Storage Storage Description
#1 9.20' 1,114 cf Custom Stage Data (Prismatic)Listed below (Recalc)	#1 8.50' 462 cf Custom Stage Data (Prismatic)
Elevation Surf.Area Inc.Store Cum.Store	Elevation Surf.Area Inc.Store Cum.Store (feet) (sq-ft) (cubic-feet) (cubic-feet)
(feet) (sq-ft) (cubic-feet) (cubic-feet)	$\frac{(1000)}{8.50} \frac{(3000)}{180} \frac{(0000)}{0} \frac{(0000)}{0}$
9.20 490 0 0	9.80 530 462 462
9.50 800 194 194 10.20 1,830 920 1,114	Device Routing Invert Outlet Devices
10.20       1,830       920       1,114         bevice       Routing       Invert       Outlet Devices         #1       Primary       8.00'       12.0" Round Culvert L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 8.00' / 7.90' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf         #2       Discarded       9.20'       1.020 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 6.00'         #3       Device 1       10.00'       24inch-Dome Grate Capacity X 2.00         #4       Secondary       9.83'       15inch-Dome Grate Capacity         Viscarded OutFlow Max=0.05 cfs @ 12.15 hrs HW=10.18' (Free Discharge)       -2=Exfiltration (Controls 0.05 cfs)         rrimary OutFlow Max=2.36 cfs @ 12.15 hrs HW=10.18' (Free Discharge)       -1=Culvert (Passes 2.36 cfs of 4.90 cfs potential flow)        3=24inch-Dome Grate Capacity(Custom Controls 2.36 cfs)       as 2.27 cfs @ 12.15 hrs HW=10.18' (Free Discharge)	Device       Routing       Invert       Outlet Devices         #1       Primary       7.80'       10.0" Round Culvert L= 10.0' CPP, square edge headwall, Inlet / Outlet Invert= 7.80' / 7.70' S= 0. n= 0.013, Flow Area = 0.55 sf         #2       Device 1       9.30'       24inch-Dome Grate Capacity         #3       Secondary       8.50'       2.410 in/hr Exfittration over Surface a Conductivity to Groundwater Elevation =         Primary OutFlow Max=0.40 cfs @ 12.14 hrs HW=9.39'       (Free Discharge L=2e24inch-Dome Grate Capacity (Custom Controls 0.40 cfs)         Secondary OutFlow Max=0.03 cfs @ 12.14 hrs HW=9.39'       (Free Discharge L=3=Exfiltration ( Controls 0.03 cfs)

Summary for Pond 2a-P: BB 2a							
Inflow Area = 3,116 sf, 92.62% Impervious, Inflow Depth = 5.57" for NOAA 25-yr event Inflow = 0.44 cfs @ 12.13 hrs, Volume= 1,446 cf Outflow = 0.43 cfs @ 12.14 hrs, Volume= 1,446 cf, Atten= 3%, Lag= 1.1 min Primary = 0.40 cfs @ 12.14 hrs, Volume= 468 cf Routed to Reach DP-1 : French Rodney Blvd Outfall Secondary = 0.03 cfs @ 12.14 hrs, Volume= 978 cf Routed to Pond 14P : BB2A-Stone Routing by Stor-Ind method. Time Span= 0.00-72.00 brs. dt= 0.05 brs.							
Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs							
Peak Elev= 9.39' @ 12.14 hrs Surf.Area= 420 sf Storage= 267 cf							
Plug-Flow detention time= 57.6 min calculated for 1,445 cf (100% of inflow) Center-of-Mass det. time= 57.6 min ( 816.9 - 759.3 )							
Volume Invert Avail.Storage Storage Description							
#1 8.50' 462 cf Custom Stage Data (Prismatic)Listed below (Recalc)							
Elevation         Surf.Area         Inc.Store         Cum.Store           (feet)         (sq-ft)         (cubic-feet)         (cubic-feet)							
8.50 180 0 0							
9.80 530 462 462							
Device Routing Invert Outlet Devices							
#1 Primary 7.80' <b>10.0'' Round Culvert</b> L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 7.80' / 7.70' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.55 sf							
#2 Device 1 9.30' 24inch-Dome Grate Capacity							
#3 Secondary 8.50 2.410 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 4.60							
Primary OutFlow Max=0.40 cfs @ 12.14 hrs HW=9.39' (Free Discharge)							

NOAA 24-hr C NOAA 25-yr Rainfall=6.04"

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ary OutFlow Max=0.03 cfs @ 12.14 hrs HW=9.39' (Free Discharge) filtration ( Controls 0.03 cfs)

14850_Proposed-Drainage-Areas_220609       NOAA 24-hr C       NOAA 25-yr Rainfall=6.04"         Prepared by {enter your company name here}       Printed 6/16/2022         HydroCAD® 10.10-7a s/n 00546 © 2021 HydroCAD Software Solutions LLC       Page 125	14850_Proposed-Drainage-Areas_220609       NOAA 24-hr C NOAA 25-yr Rainfall=6.         Prepared by {enter your company name here}       Printed 6/16/20         HydroCAD® 10.10-7a s/n 00546 © 2021 HydroCAD Software Solutions LLC       Page 20
Summary for Pond 2b-P: BB 2b	Summary for Pond 3A-P: BB 3A
Inflow Area = 21,490 sf, 80,50% Impervious, Inflow Depth = 5.22" for NOAA 25-yr event Inflow = 2.67 cfs @ 12.13 hrs, Volume= 9,352 cf Primary = 2.67 cfs @ 12.16 hrs, Volume= 9,352 cf Routed to Reach 15R: ISOLATOR ROW 1 Secondary = 0.00 cfs @ 1.20 hrs, Volume= 0 of Routed to Reach DP-1 : French Rodney Blvd Outfall Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Peak Elev= 8.48' @ 12.16 hrs Surf.Area= 699 sf Storage= 245 cf Plug-Flow detention time= 1.7 min calculated for 9,345 cf (100% of inflow) Center-of-Mass det. time= 1.7 min (776.4 - 774.6 ) Volume Invert Avail.Storage Storage Description #1 8.00' 710 cf Custom Stage Data (Prismatic)Listed below (Recalc) Elevation Surf.Area Inc.Store Cum.Store (feet) (sq.ft) (cubic-feet) 8.00 320 0 0 9.00 1,100 710 710 Device Routing Invert Outlet Devices #1 Secondary 7.00' 12.0" Round Culvert L = 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert - 7.00' /6.90' S= 0.0100 // Cc= 0.900 n= 0.013, Flow Area= 0.79 sf #2 Device 1 8.50' 24inch-Dome Grate Capacity X 2.00 #3 Primary 8.00' 15inch-Dome Grate Capacity Primary 0utFlow Max=2.64 cfs @ 12.16 hrs HW=8.47' (Free Discharge) -3=15inch-Dome Grate Capacity (Controls 0.00 cfs) Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=8.00' (Free Discharge) -2=24inch-Dome Grate Capacity (Controls 0.00 cfs)	Inflow Area = 10.987 sf, 58.16% Impervious, Inflow Depth = 4.66" for NOAA 25-yr event Inflow = 1.42 cfs @ 12.13 hrs, Volume= 4.271 cf Outflow = 1.36 cfs @ 12.15 hrs, Volume= 4.271 cf Outflow = 1.36 cfs @ 12.15 hrs, Volume= 4.221 cf Primary = 1.34 cfs @ 12.15 hrs, Volume= 2.842 cf Routed to Reach BMP_3: BMP-3_OVERFLOW Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Peak Elev= 11.10' @ 12.15 hrs Surf.Area= 917 sf Storage= 472 cf Plug-Flow detention time= 74.1 min calculated for 4.268 cf (100% of inflow) Center-of-Mass det. time= 74.4 min (868.1 - 793.7) Volume Invert Avail.Storage Storage Description #1 10.25' 622 cf Custom Stage Data (Prismatic)_isted below (Recalc) Elevation Surf.Area Inc.Store Cum.Store (feet) (sq.ft) (cubic-feet) (cubic-feet) 10.25 271 0 0 0 10.45 350 62 62 11.25 1,050 560 622 Device Routing Invert Outlet Devices #1 Primary 9.30' 10.0" Round Culvert L = 10.0" CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 9.30' / 9.20" S= 0.0100 '/ Cc= 0.900 n= 0.013, Flow Area= 0.55 sf #2 Discarded 10.25' 1.020 in/hr Exfittration over Surface area Conductivity to Groundwater Elevation = 7.30' #3 Primary 11.15' 50' long Sharp-Crested Rectangular Weir 2 End Contraction(s) #4 Device 1 10.90' 24inch-Dome Grate Capacity Discarded OutFlow Max=0.33 cfs @ 12.15 hrs HW=11.10' (Free Discharge) -2=Exfiltration (Controls 0.03 cfs) Primary OutFlow Max=1.33 cfs @ 12.15 hrs HW=11.10' (Free Discharge) -4=24inch-Dome Grate Capacity (Custom Controls 1.33 cfs) -3=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

				B 1 6 -				
		:	Summary for	Pond 3E	3-P: BB 3B			
Inflow A Inflow Outflow Discard Primary Rout	= 0.6 = 0.6 = 0.6 = 0.6	33 cfs @       12         52 cfs @       12         52 cfs @       12         50 cfs @       12         50 cfs @       12	7.34% Imperviou .13 hrs, Volume .14 hrs, Volume .14 hrs, Volume .14 hrs, Volume 2-3_OVERFLOW	)= )= )= )=	Depth = 5.22' 1,978 cf 1,978 cf, Atte 880 cf 1,098 cf		-	
			Span= 0.00-72.0 urf.Area= 568 sf					
			n calculated for 7 n ( 863.6 - 774.6		00% of inflow)			
Volume	Invert		age Storage D		(B · · · ) · ·		·	
#1	12.20'	26	3 cf Custom S	tage Data	(Prismatic)Lis	sted below	(Recalc)	
Elevatio (fee		f.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Sto (cubic-fe				
12.2	/	180		(cubic-le	0			
12.9		570	263	2	63			
Device	Routing	Invert	Outlet Devices					
#1	Primary	10.70'	<b>10.0" Round C</b> L= 10.0' CPP, Inlet / Outlet Inv n= 0.013. Flow	square ed ert= 10.70	v/10.60' S= 0		Cc= 0.900	
#2	Discarded	12.20'	1.020 in/hr Exf Conductivity to	iltration o	ver Surface a			
#3	Device 1	12.80'	24inch-Dome (			0.70		
#4	Primary	12.85'	5.0' long Sharp	-Crested	Rectangular \	Neir 2 End	Contraction	n(s)
Discard 2=Ex	ed OutFlow M filtration(Co	Max=0.02 cfs ontrols 0.02 c	a@ 12.14 hrs H fs)	W=12.90'	(Free Discha	rge)		
1=Ci	Ivert (Passes 24inch-Dome	0.43 cfs of Grate Cap	0 12.14 hrs HW 3.50 cfs potentia acity (Custom C Weir (Weir Con	l flow) ontrols 0.4	3 cfs)	,		

Prepare	ed by {enter y	our compa	Areas_220609 ny name here} 2021 HydroCAD Softwa		NOAA 25-yr Rainfall=6.04 Printed 6/16/2022 Page 128
		Sun	mary for Pond 4	A-P: BB 4A - PON	ID
Seconda	= 0.6 = 0.6 = 0.6 ed to Reach B	58 cfs @ 12 56 cfs @ 12 53 cfs @ 12 53 cfs @ 12 54 MP_3 : BMF 54 cfs @ 12	2.13 hrs, Volume= 2.15 hrs, Volume= 2.15 hrs, Volume= P-3_OVERFLOW 2.15 hrs, Volume=	2,200 cf	for NOAA 25-yr event n= 3%, Lag= 1.2 min
Peak Ĕle Plug-Flo	ev= 10.07' @ w detention ti	12.15 hrs S me= 29.7 mi	Span= 0.00-72.00 hr surf.Area= 588 sf Sto	orage= 239 cf	
Volume	or-Mass det. ti Invert		n(794.6-764.9) ·age Storage Descri	intion	
#1	9.50'			e Data (Prismatic)List	ed below (Recalc)
Elevatio (fee 9.5	et)	f.Area (sq-ft) 250		ım.Store <u>bic-feet)</u> 0	
9.6		250 664	320	320	
Device	Routing	Invert	Outlet Devices		
#1	Primary	8.00'		are edge headwall, Ke 8.00' / 7.90' S= 0.01	
#2	Secondary	9.50'	2.410 in/hr Exfiltrat	tion over Surface are indwater Elevation = 6	
#3 #4	Primary Device 1	10.10' 9.95'	5.0' long Sharp-Cre 24inchDome Grate Head (feet) 0.00 0 0.50 0.55 0.60 0.6 1.10 Disch. (cfs) 0.000 0	Sected Rectangular W           Capacity           .05         0.10         0.15         0.20         0           5         0.70         0.75         0.80         0.4           0.180         0.460         0.850         1           4.200         4.380         4.600         4	eir 2 End Contraction(s) 0.25 0.30 0.35 0.40 0.45 35 0.90 0.95 1.00 1.05 .360 1.830 2.420 3.100 4.750 4.900 5.100 5.200
1=Ci 1-4= 3=Sh	Ilvert (Passes 24inchDome arp-Crested	s 0.62 cfs of Grate Capa Rectangula	4.74 cfs potential flov acity (Custom Control r Weir( Controls 0.00	s 0.62 cfs)	

Outflow       =       0.04 cfs @       12.18 hrs, Volume=       1,246 cf, Atten= 1%, Lag= 2.0 min         Primary       =       0.04 cfs @       12.18 hrs, Volume=       1,246 cf         Routed to Reach BMP4_O : BMP-4 OVERFLOW       1,246 cf       1,246 cf         Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs       12.18 hrs       Surf.Area= 230 sf         Peak Elev= 7.13' @       12.18 hrs       Surf.Area= 230 sf       Storage= 26 cf         Plug-Flow detention time= 23.0 min calculated for 1,246 cf (99% of inflow)       Center-of-Mass det. time= 14.4 min (853.9 - 839.4 )		D® 10.10-7	a s/n 00546 ©	2021 HydroCAD	Software Solu	LIIONS LLC		Page 129
Dutflow =       0.04 cfs @       12.18 hrs, Volume=       1,246 cf, Atten= 1%, Lag= 2.0 min         Primary =       0.04 cfs @       12.18 hrs, Volume=       1,246 cf         Routed to Reach BMP4_O : BMP-4 OVERFLOW       1,246 cf       1,246 cf         Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs       Peak Elev= 7.13' @ 12.18 hrs       Surf.Area= 230 sf         Plug-Flow detention time= 23.0 min calculated for 1,246 cf (99% of inflow)       Center-of-Mass det. time= 14.4 min (853.9 - 839.4 )         Volume       Invert       Avail.Storage       Storage Description         #1       6.75'       138 cf       Custom Stage Data (Prismatic)Listed below (Recalc) 460 cf Overall x 30.0% Voids         Elevation       Surf.Area       Inc.Store       Cum.Store         (feet)       (sq-ft)       (cubic-feet)       (cubic-feet)         6.75       230       0       0         8.75       230       460       460         Device       Routing       Invert       Outlet Devices         #1       Primary       7.00'       4.0'' Vert. Orifice/Grate       C= 0.600       Limited to weir flow at low heads			Su	mmary for P	ond 4A-S:	BB4A-S	Stone	
Peak Elev= 7.13' @ 12.18 hrs Surf.Area= 230 sf Storage= 26 cf Plug-Flow detention time= 23.0 min calculated for 1,246 cf (99% of inflow) Center-of-Mass det. time= 14.4 min ( 853.9 - 839.4 ) <u>Volume Invert Avail.Storage Storage Description</u> #1 6.75' 138 cf Custom Stage Data (Prismatic)Listed below (Recalc) 460 cf Overall x 30.0% Voids Elevation Surf.Area Inc.Store Cum.Store (feet) (sq-ft) (cubic-feet) (cubic-feet) 6.75 230 0 0 0 8.75 230 460 460 <u>Device Routing Invert Outlet Devices</u> #1 Primary 7.00' 4.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads Primary OutFlow Max=0.04 cfs @ 12.18 hrs HW=7.13' (Free Discharge)		= =	0.04 cfs @ 1 0.04 cfs @ 1	2.18 hrs, Volum 2.18 hrs, Volum	າe= າe=	1,246 cf,	Atten= 1%,	, Lag= 2.0 min
Center-of-Mass det. time= 14.4 min (853.9 - 839.4 )         Volume       Invert       Avail.Storage       Storage Description         #1       6.75'       138 cf       Custom Stage Data (Prismatic)Listed below (Recalc) 460 cf Overall x 30.0% Voids         Elevation       Surf.Area       Inc.Store       Cum.Store         (feet)       (sq-ft)       (cubic-feet)       (cubic-feet)         6.75       230       0       0         8.75       230       460       460         Device       Routing       Invert       Outlet Devices         #1       Primary       7.00'       4.0" Vert. Orifice/Grate       C= 0.600         Limited to weir flow at low heads       Primary OutFlow       Max=0.04 cfs @ 12.18 hrs       HW=7.13'								
#1       6.75'       138 cf       Custom Stage Data (Prismatic) Listed below (Recalc) 460 cf Overall x 30.0% Voids         Elevation       Surf.Area       Inc.Store       Cum.Store (cubic-feet)         6.75       230       0       0         8.75       230       460       460         Device       Routing       Invert       Outlet Devices         #1       Primary       7.00'       4.0" Vert. Orifice/Grate       C= 0.600       Limited to weir flow at low heads         Primary OutFlow       Max=0.04 cfs @ 12.18 hrs       HW=7.13'       (Free Discharge)						% of inflo	w)	
460 cf Overall x 30.0% Voids         Elevation       Surf.Area         Inc.Store       Cum.Store         (feet)       (sq-ft)         6.75       230         8.75       230         460 cf Overall x 30.0% Voids         6.75       230         8.75       230         460 df0         Device       Routing         #1       Primary         7.00'       4.0" Vert. Orifice/Grate         C= 0.600       Limited to weir flow at low heads         Primary OutFlow       Max=0.04 cfs @ 12.18 hrs         HW=7.13'       (Free Discharge)	Volume	Inver	t Avail.Sto	rage Storage	Description			
(feet)         (sq-ft)         (cubic-feet)         (cubic-feet)           6.75         230         0         0         0           8.75         230         460         460           Device         Routing         Invert         Outlet Devices           #1         Primary         7.00'         4.0" Vert. Orifice/Grate         C= 0.600         Limited to weir flow at low heads	#1	6.75	' 1				<b>c)</b> Listed bel	ow (Recalc)
8.75     230     460     460       Device     Routing     Invert     Outlet Devices       #1     Primary     7.00'     4.0" Vert. Orifice/Grate     C= 0.600     Limited to weir flow at low heads       Primary     Out Flow     Max=0.04 cfs @ 12.18 hrs     HW=7.13'     (Free Discharge)	(fee	et)						
Device         Routing         Invert         Outlet Devices           #1         Primary         7.00'         4.0" Vert. Orifice/Grate         C= 0.600         Limited to weir flow at low heads           Primary OutFlow         Max=0.04 cfs @ 12.18 hrs         HW=7.13'         (Free Discharge)				-				
#1 Primary 7.00' <b>4.0" Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads Primary OutFlow Max=0.04 cfs @ 12.18 hrs HW=7.13' (Free Discharge)	0.1	5	230	460	40	0		
Primary OutFlow Max=0.04 cfs @ 12.18 hrs HW=7.13' (Free Discharge)		U						
		OutFlow				e Discha	rge)	

		Sum	nmary for Pond	d 4B-P: BB 4B - F	POND			
Inflow A					45" for NOAA 25-yr event			
Inflow Outflow			2.13 hrs, Volume= 2.14 hrs, Volume=		Atten= 2%, Lag= 1.0 min			
Primary	= 0.4	l0 cfs @ 12	2.14 hrs, Volume=	= 597 cf	Aug - 1.0 min			
	Routed to Reach BMP4_O : BMP-4 OVERFLOW Secondary = 0.02 cfs @ 12.14 hrs, Volume= 787 cf							
	ed to Pond 4B							
				0 hrs, dt= 0.05 hrs				
Peak El	ev= 11.04' @ 1	12.14 hrs S	Surf.Area= 360 sf	Storage= 136 cf				
Plug-Flo	ow detention til	ne= 29.1 mi	in calculated for 1.	,384 cf (100% of inflo	w)			
			in ( 794.0 - 764.9		1			
Volume	Invert	Avail.Stor	rage Storage De	escription				
#1	10.50'		<u> </u>		Listed below (Recalc)			
Elevati	on Sud	f.Area	Inc.Store	Cum.Store				
cievau (fee		(sq-ft)	(cubic-feet)	(cubic-feet)				
10.	50	144	0	0				
11.	20	424	199	199				
Device	Routing	Invert	Outlet Devices					
#1	Primary	9.00'	12.0" Round Cu					
				square edge headwal	I, Ke= 0.500 0.0100 '/' Cc= 0.900			
			n= 0.013, Flow A		0.01007 00 0.000			
#2	Secondary	10.50'		Itration over Surface Groundwater Elevatio				
#2								
#2	Primary	11.10'			ar Weir 2 End Contraction(s)			

Hydroch	10.10-1 10.10-1	ra s/n 00546	© 2021 HydroCAD	Software Solutions LL	.C Page 131
		S	ummary for Po	ond 4B-S: BB 4A	-Stone
Inflow Outflow Primary Rout	=	0.02 cfs @ 0.02 cfs @	12.14 hrs, Volum 12.17 hrs, Volum 12.17 hrs, Volum BMP-4 OVERFLO	ne= 776 c ne= 776 c	f, Atten= 1%, Lag= 1.4 min
				2.00 hrs, dt= 0.05 hrs	
Peak El	ev= 7.85' (	12.17 hrs	Surf.Area= 145 sf	Storage= 15 cf	
			min calculated for min ( 853.5 - 840.	<sup>-</sup> 776 cf (99% of inflo .1)	w)
Volume	Inve		torage Storage		
#1	7.5	0'		verall x 30.0% Void	a <b>tic)</b> Listed below (Recalc) s
Elevatio (fee		Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	
7.5		145	0	0	
9.8	50	145	290	290	
Device	Routing	Inve	rt Outlet Devices		
#1	Primary	7.75	5' 4.0" Vert. Ori	fice/Grate C= 0.60	D Limited to weir flow at low heads
Primary	OutFlow	Max=0.02 cf	s@12.17 hrs HV	V=7.85' (Free Disch	narge)
t_1=0r	ifice/Grate	e (Orifice Cor	ntrols 0.02 cfs @ 1	1.05 fps)	

14850_Proposed-Drainage-Areas_220609	NOAA 24-hr C NOAA 25-yr Rainfall=6.04"
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# Summary for Pond 5A-P: BB 5A - POND

Outflow = Primary = Routed to Secondary =	0.42 cfs @ 0.12 cfs @ 0.07 cfs @ Reach B : PARKIN	12.13 hrs, Volum 12.37 hrs, Volum 12.37 hrs, Volum IG LOT B OVERF 12.37 hrs, Volum	ne= 1,308 c ne= 1,308 c ne= 72 c FLOW	f, Atten= 71%, Lag= 14.6 mi f	
Peak Elev= 9 Plug-Flow det	.52' @ 12.37 hrs	Surf.Area= 718 sf min calculated for	1,307 cf (100% of ir		
Volume	Invert Avail.St	torage Storage	Description		
#1	8.80'	645 cf Custom	Stage Data (Prisma	atic)Listed below (Recalc)	
Elevation (feet) 8.80 9.80	Surf.Area (sq-ft) 480 810	Inc.Store (cubic-feet) 0 645	Cum.Store (cubic-feet) 0 645		

Device	Routing	Invert	Outlet Devices
#1	Primary	7.60'	12.0" Round Culvert
			L= 10.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 7.60' / 7.50' S= 0.0100 '/' Cc= 0.900
			n= 0.013, Flow Area= 0.79 sf
#2	Secondary	8.80'	2.410 in/hr Exfiltration over Surface area
	-		Conductivity to Groundwater Elevation = 5.60'
#3	Device 1	9.50'	24inch-Dome Grate Capacity

Primary OutFlow Max=0.07 cfs @ 12.37 hrs HW=9.52' (Free Discharge) =Culvert (Passes 0.07 cfs of 4.50 cfs potential flow) -3=24inch-Dome Grate Capacity (Custom Controls 0.07 cfs)

Secondary OutFlow Max=0.05 cfs @ 12.37 hrs HW=9.52' (Free Discharge) -2=Exfiltration ( Controls 0.05 cfs)

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		s	ummary fo	or Pond	5A-PS: BB 5A	A-Stone		
Inflow Outflow Primary Routed	= = = d to Rea	0.05 cfs @ 0.05 cfs @	12.37 hrs, 1 12.52 hrs, 1 12.52 hrs, 1 NG LOT B O	Volume= Volume=	1,200 c	f, Atten= 09	%, Lag= 9.0 mii	n
					nrs, dt= 0.05 hrs			
Center-of	detentio	on time= 42.2 et. time= 25.5	5 min ( 878.9	- 853.4 )	00 cf (97% of infl cription	ow)		
Plug-Flow Center-of	/ detentio -Mass de	on time= 42.2 et. time= 25.5 ert Avail.9	5 min ( 878.9 <u>Storage Sto</u> 288 cf <b>Cu</b>	- 853.4 ) rage Desc stom Stag	Υ.	tic)Listed b	elow (Recalc)	
Plug-Flow Center-of Volume	v detentio -Mass de Inve 5.5	on time= 42.2 et. time= 25.5 ert Avail.9	5 min ( 878.9 <u>Storage Sto</u> 288 cf <b>Cu</b>	- 853.4) <u>rrage Desc</u> stom Stag ) cf Overal re C	cription ge Data (Prisma	tic)Listed b	elow (Recalc)	
Plug-Flow Center-of <u>Volume</u> #1 Elevatior	v detentio -Mass de Inve 5.5	on time= 42.2 et. time= 25.5 ert Avail.3 55' Surf.Area	5 min ( 878.9 <u>Storage Sto</u> 288 cf <b>Cu</b> 960 Inc.Sto	- 853.4) <u>rrage Desc</u> stom Stag ) cf Overal re C	cription ge Data (Prisma II x 30.0% Voids Cum.Store	tic)Listed b	elow (Recalc)	
Plug-Flow Center-of <u>Volume</u> #1 Elevatior (feet	v detentio -Mass de Inve 5.5	on time= 42.2 et. time= 25.5 ert <u>Avail.3</u> 55' Surf.Area (sq-ft)	5 min ( 878.9 <u>Storage Sto</u> 288 cf <b>Cu</b> 960 Inc.Sto (cubic-fee	- 853.4 ) prage Desc stom Stag ) cf Overal re C et) (c	cription ge Data (Prisma II x 30.0% Voids Cum.Store cubic-feet)	tic)Listed b	elow (Recalc)	
Plug-Flow Center-of <u>Volume</u> #1 Elevatior (feet) 5.55 7.55	v detentio -Mass de Inve 5.5	on time= 42.2 et. time= 25.5 ett Avail.3 55 Surf.Area (sq-ft) 480 480	5 min ( 878.9 <u>Storage Sto</u> 288 cf <b>Cu</b> 960 Inc.Sto (cubic-fee	- 853.4) <u>rrage Desc</u> stom Stag ) cf Overal re C et) (c 0 50	cription ge Data (Prisma II x 30.0% Voids Cum.Store cubic-feet) 0	tic)Listed b	elow (Recalc)	

HydroCA	D® 10.10-7a	s/n 00546 ©	2021 HydroCAD S	Software Solutions LLC	Page 13
		Sum	nmary for Por	nd 5B-P: BB 5B - P	OND
			eded by 0.08' iire smaller dt or	Finer Routing	
Seconda Rout Tertiary	= 4 = 4 = 2 ed to Reach ary = 0 ed to Pond 5	.69 cfs @ 12 .78 cfs @ 12 .32 cfs @ 12 B : PARKING .09 cfs @ 12 B-PS : BB 5E .36 cfs @ 12	2.13 hrs, Volume 2.12 hrs, Volume 2.11 hrs, Volume 3 LOT B OVERFI 2.12 hrs, Volume 3-Stone 2.12 hrs, Volume	e= 14,471 cf e= 14,471 cf, A e= 1,506 cf LOW e= 4,416 cf	00" for NOAA 25-yr event Atten= 0%, Lag= 0.0 min
Peak Ĕl				00 hrs, dt= 0.05 hrs f Storage= 711 cf	
Center-	of-Mass det.	time= 25.8 mi	in ( 808.8 - 783.0	,	w)
Center-o	of-Mass det. t Invert	time= 25.8 mi Avail.Stor	in ( 808.8 - 783.0 rage Storage D	)) Description	
Center-o <u>Volume</u> #1	of-Mass det. t Invert 8.20'	time= 25.8 mi Avail.Stor 71	in(808.8-783.0 <u>rage Storage D</u> 11 cf <b>Custom S</b>	) ) Description Stage Data (Prismatic	
Center-o <u>Volume</u> #1 Elevatio	of-Mass det. t Invert 8.20' on Su	time= 25.8 mi <u>Avail.Stor</u> 71 rf.Area	in ( 808.8 - 783.0 <u>rage Storage D</u> 11 cf <b>Custom S</b> Inc.Store	)) Description Stage Data (Prismatic Cum.Store	
Center-o <u>Volume</u> #1 Elevatio (fee	of-Mass det. f <u>Invert</u> 8.20' on Su et)	time= 25.8 mi Avail.Stor 71 rf.Area (sq-ft)	in ( 808.8 - 783.0 rage Storage D 11 cf <b>Custom S</b> Inc.Store (cubic-feet)	))) Description Stage Data (Prismatic Cum.Store (cubic-feet)	
Center-o <u>Volume</u> #1 Elevatio	of-Mass det. 1 <u>Invert</u> 8.20' on Su on Su ot)	time= 25.8 mi <u>Avail.Stor</u> 71 rf.Area	in ( 808.8 - 783.0 <u>rage Storage D</u> 11 cf <b>Custom S</b> Inc.Store	)) Description Stage Data (Prismatic Cum.Store	
Center-o Volume #1 Elevatio (fee 8.2 9.0	of-Mass det. 1 <u>Invert</u> 8.20' on Su on Su et) 20 00	time= 25.8 mi Avail.Stor 71 rf.Area (sq-ft) 327 1,450	in ( 808.8 - 783.0 rage Storage E 11 cf <b>Custom S</b> Inc.Store (cubic-feet) 0 711	))) Description Stage Data (Prismatic Cum.Store (cubic-feet) 0 711	
Center-o Volume #1 Elevatio (fee 8.2	of-Mass det. 1 <u>Invert</u> 8.20' on Su et) 20 00	time= 25.8 mi Avail.Stor 71 rf.Area (sq-ft) 327 1,450	in ( 808.8 - 783.0 rage Storage E 11 cf Custom S Inc.Store (cubic-feet) 0 711 Outlet Devices 12.0" Round ( L= 10.0' CPP, Inlet / Outlet Im	)) Description Stage Data (Prismatic Cum.Store (cubic-feet) 0 711 Culvert square edge headwall vert= 7.00' / 6.90' S= 0	Listed below (Recalc)
Center-o Volume #1 Elevatio (fee 8.2 9.0 Device	of-Mass det. : <u>Invert</u> 8.20' on Su ot) 20 00 Routing	time= 25.8 mi Avail.Stor 71 rf.Area (sq-ft) 327 1,450 Invert	in ( 808.8 - 783.0 rage Storage E 11 cf Custom S Inc.Store (cubic-feet) 0 711 Outlet Devices 12.0" Round ( L= 10.0' CPP, Inlet / Outlet Im n = 0.013, Flow 2.410 in/hr Ext	)) Description Stage Data (Prismatic Cum.Store (cubic-feet) 0 711 Culvert square edge headwall vert= 7.00' / 6.90' S= ( v Area = 0.79 sf iltration over Surface	Listed below (Recalc) , Ke= 0.500 .0100 '/' Cc= 0.900 area
Center-G Volume #1 Elevatio (fee 8.2 9.0 <u>Device</u> #1	of-Mass det. 1 <u>Invert</u> 8.20' on Su 20 20 20 Routing Primary	time= 25.8 mi Avail.Stor rf.Area (sq-ft) 327 1,450 Invert 7.00'	in ( 808.8 - 783.0 rage Storage E 11 cf Custom S Inc.Store (cubic-feet) 0 711 Outlet Devices 12.0° Round ( L= 10.0° CPP, Inlet / Outlet Im n= 0.013, Flow 2.410 in/hr Ext Conductivity to 24inchDome C Head (feet) 0. 0.50 0.55 0.60 1.10 Disch. (cfs) 0.( 3.600 3.800 4	Description           Stage Data (Prismatic           Cum.Store           (cubic-feet)           0           711             Culvert           square edge headwall           yert= 7.00' / 6.90' S= 0           / Area= 0.79 sf           filtration over Surface           Groundwater Elevation           Groundwater Elevation           00 0.05 0.10 0.15 0.30           00 0.05 0.70 0.75 0.80           000 0.180 0.460 0.855	Listed below (Recalc) , Ke= 0.500 .0100 '/' Cc= 0.900 area

 14850\_Proposed-Drainage-Areas\_220609
 NOAA 24 

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Primary OutFlow Max=2.16 cfs @ 12.11 hrs HW=9.07' (Free Discharge) 1=Culvert (Passes 2.16 cfs of 4.74 cfs potential flow) -3=24inchDome Grate Capacity (Custom Controls 2.16 cfs)

Secondary OutFlow Max=0.09 cfs @ 12.12 hrs HW=9.07' (Free Discharge) -2=Exfiltration ( Controls 0.09 cfs)

Tertiary OutFlow Max=2.32 cfs @ 12.12 hrs HW=9.07' (Free Discharge) 4=15inch-Dome Grate Capacity (Custom Controls 2.32 cfs)

		Su	mmary for Po	nd 5B-PS: BB 5	B-Stone	
Inflow Outflow Primary Rout	=	0.09 cfs @ 0.09 cfs @	12.12 hrs, Volum 12.20 hrs, Volum 12.20 hrs, Volum G LOT B OVERF	e= 4,364 e= 4,364	cf, Atten= 2%,	Lag= 4.8 min
			e Span= 0.00-72 Surf.Area= 690 sf	.00 hrs, dt= 0.05 hr Storage= 96 cf	S	
Center-o	of-Mass de Inve	et. time= 18.1 r ert Avail.St	nin ( 961.9 - 943. orage Storage I	Description		
#1	5.0	)0' 4		Stage Data (Prism Overall x 30.0% Vo		ow (Recalc)
Elevatio		Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)		
5.0 7.0		690 690	0 1,380	0 1,380		
Device	Routing	Invert	Outlet Devices			
#1	Primary	5.25	4.0" Vert. Orif	ice/Grate C= 0.60	0 Limited to v	veir flow at low head
			@ 12.20 hrs HW rols 0.09 cfs @ 1	/=5.46' (Free Disc .57 fps)	harge)	

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Summary for Pond 6A-P: BB 6A - POND	S
Inflow Area =       15,148 sf, 46.97% Impervious, Inflow Depth =       4.34" for NOAA 25-yr event         Inflow =       1.85 cfs @       12.13 hrs, Volume=       5,479 cf         Outflow =       1.83 cfs @       12.14 hrs, Volume=       5,479 cf         Primary =       1.78 cfs @       12.14 hrs, Volume=       3,305 cf         Routed to Reach BMP6_O: BMP-6 OVERFLOW       3,305 cf       8         Secondary =       0.05 cfs @       12.14 hrs, Volume=       2,174 cf         Routed to Pond 6A-PS : BB 6A - STONE       2,174 cf       1	Inflow = 0.05 cfs @ Outflow = 0.05 cfs @ Primary = 0.05 cfs @ Routed to Reach BMP6_C Routing by Stor-Ind method, Peak Elev= 7.39' @ 12.18 hrs
Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Peak Elev= 11.03' @ 12.14 hrs Surf.Area= 711 sf Storage= 443 cf	Plug-Flow detention time= 17 Center-of-Mass det. time= 11
Plug-Flow detention time= 38.9 min calculated for 5,475 cf (100% of inflow) Center-of-Mass det. time= 39.0 min(842.1 - 803.1)	Volume Invert Avail #1 7.00'
Volume Invert Avail.Storage Storage Description	
#1     10.20'     491 cf     Custom Stage Data (Prismatic)Listed below (Recalc)	Elevation Surf.Area (feet) (sq-ft)
Elevation         Surf.Area         Inc.Store         Cum.Store           (feet)         (sq-ft)         (cubic-feet)         (cubic-feet)	7.00 290 9.00 290
10.20         350         0         0           11.10         740         491         491	Device Routing Inv #1 Primary 7
Device     Routing     Invert     Outlet Devices       #1     Primary     9.00' <b>12.0" Round Culvert</b> L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 9.00' / 8.90' S= 0.0100 '/ Cc= 0.900 n= 0.013, Flow Area= 0.79 sf	Primary OutFlow Max=0.05
#2 Secondary 10.20' <b>2.410 in/hr Exfiltration over Surface area</b> Conductivity to Groundwater Elevation = 7.00'	
#3       Device 1       10.80'       24inch-Dome Grate Capacity         #4       Primary       11.00'       5.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)	
Primary OutFlow Max=1.75 cfs @ 12.14 hrs HW=11.03' (Free Discharge) 1=Culvert (Passes 1.66 cfs of 4.68 cfs potential flow) 3=24inch-Dome Grate Capacity (Custom Controls 1.66 cfs) 4=Sharp-Crested Rectangular Weir (Weir Controls 0.09 cfs @ 0.58 fps)	
Secondary OutFlow Max=0.05 cfs @ 12.14 hrs HW=11.03' (Free Discharge) 2=Exfiltration (Controls 0.05 cfs)	

NOAA 24-hr C NOAA 25-yr Rainfall=6.04" eas\_220609 name here} 21 HydroCAD Software Solutions LLC Printed 6/16/2022 Page 138

# ry for Pond 6A-PS: BB 6A - STONE

4 hrs, Volume= 8 hrs, Volume= 8 hrs, Volume= -6 OVERFLOW

2,174 cf 2,152 cf, Atten= 1%, Lag= 2.1 min 2,152 cf

oan= 0.00-72.00 hrs, dt= 0.05 hrs Area= 290 sf Storage= 34 cf

calculated for 2,152 cf (99% of inflow) 997.7 - 986.1 )

Volume	Inv	ert Avail.Sto	orage S	Storage Des	cription	1	
#1	7.0	00' 1		Sustom Sta			ic)Listed below (Recalc)
Elevatio (fee		Surf.Area (sq-ft)	Inc.S (cubic-f		Cum.St cubic-fe		
7.0	0	290		0		0	
9.0	0	290		580	:	580	
Device #1	Routing Primary	Invert 7.25'		Devices ert. Orifice	/Grate	C= 0.600	Limited to weir flow at low heads

12.18 hrs HW=7.39' (Free Discharge) 0.05 cfs @ 1.29 fps)

			Summary for Pond 6B-P: BB 6B
Inflow A Inflow Outflow Discard Primary Rout	= 0.1 = 0.1 ed = 0.1 = 0.1	90 cfs @ 12 86 cfs @ 12 02 cfs @ 12 84 cfs @ 12	7.45% Impervious, Inflow Depth = 5.22" for NOAA 25-yr event         2.13 hrs, Volume=       2,826 cf         2.15 hrs, Volume=       2,826 cf, Atten= 4%, Lag= 1.2 min         2.15 hrs, Volume=       1,170 cf         2.15 hrs, Volume=       1,657 cf         MP-6 OVERFLOW       1,657 cf
			Span= 0.00-72.00 hrs, dt= 0.05 hrs surf.Area= 690 sf Storage= 393 cf
			n calculated for 2,824 cf (100% of inflow) nin(874.8 - 774.6)
Volume			rage Storage Description
#1	11.20'	39	4 cf Custom Stage Data (Prismatic)Listed below (Recalc)
Elevati (fe		f.Area (sq-ft)	Inc.Store Cum.Store (cubic-feet) (cubic-feet)
11. 12.		185 690	0 0 394 394
Device	Routing	Invert	Outlet Devices
#1	Primary	10.10'	<b>12.0" Round Culvert</b> L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 10.10' / 10.00' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Discarded	11.20'	1.020 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 8.10'
#3	Device 1	11.95'	24inch-Dome Grate Capacity
Ê—2=E:	cfiltration ( Co	ontrols 0.02	
<b>1</b> =Ci	ulvert (Passe	s 0.84 cfs of	D 12.15 hrs HW=12.10' (Free Discharge) 4.63 cfs potential flow) acity (Custom Controls 0.84 cfs)

14850_Proposed-Drainage-Areas_220609	NOAA 24-hr C NOAA 25-yr Rainfall=6.04"
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Summary for Pond 7A-P	: BB 7A PONDING

Inflow Area =	3,165 sf, 87.74% Impe	ervious, Inflow Depth = 5.45"	for NOAA 25-yr event
Inflow =	0.45 cfs @ 12.13 hrs, Vo	lume= 1,438 cf	-
Outflow =	0.44 cfs @ 12.14 hrs, Vo	lume= 1,438 cf, Atte	n= 2%, Lag= 0.9 min
Primary =	0.42 cfs @ 12.14 hrs, Vo	lume= 638 cf	
	ch 7R : PARKING LOT C to		
	0.02 cfs @ 12.14 hrs, Vo	lume= 800 cf	
Routed to Pon	d 7A-S : BB 7A - STONE		

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Peak Elev= 9.99' @ 12.14 hrs Surf.Area= 327 sf Storage= 153 cf

Plug-Flow detention time= 38.3 min calculated for 1,437 cf (100% of inflow) Center-of-Mass det. time= 38.3 min ( 803.2 - 764.9 )

Volume	Invert	Avail.Sto	rage Storage	Description	
#1	9.30'	22	27 cf Custom	Stage Data (P	rismatic)Listed below (Recalc)
Elevatio		rf.Area	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	
(fee	/	(sq-ft)			
9.3		115	0	0	
10.2	20	390	227	227	
Device	Routing	Invert	Outlet Devices	3	
#1	Primary	8.10'	Inlet / Outlet Ir	, square edge	headwall, Ke= 0.500 00' S= 0.0100 '/' Cc= 0.900 f
#2	Secondary	9.30'		filtration over	Surface area Elevation = 6.10'
#3	Device 1	9.90'	24inch-Dome	Grate Capacit	tv
#4	Primary	10.10'	5.0' Iong Sha	rp-Crested Re	ctangular Weir 2 End Contraction(s)
Primary		ax=0.41 cfs (		r <b>p-Crested Re</b> V=9.99' (Free	ctangular Weir 2 End Contraction(s)

Secondary OutFlow Max=0.02 cfs @ 12.14 hrs HW=9.99' (Free Discharge) -2=Exfiltration ( Controls 0.02 cfs)

		Su	ımmarv fo	r Pond	7A-S: BB	74 - 9	STONE		
							DIGITE		
Inflow Outflow	=	0.02 cfs @ 0.02 cfs @				800 cf	Atten= 1%	Lag= 1.5 m	nin
Primary	=	0.02 cfs @				800 cf	7	Lug 1.0 h	
Route	d to Reac	h 7R : PARK	ING LOT C	to HUDS	SON				
Routina b	v Stor-Inc	l method, Tir	ne Span= 0	.00-72.00	) hrs. dt= 0.0	5 hrs			
		) 12.17 hrs							
				-l f 000	- 6 (4000) - 4	· ·			
		n time= 4.6 n t. time= 4.5 n			) CT (100% O	Inflow	)		
Ochici-oi	11111135 00	. unic- 4.0 ii	1111 ( 000.0 -	000.4 )					
Volume	Inve		0	orage De					
#1	5.10	)'			age Data (P all x 30.0%		c)Listed bel	ow (Recalc)	
			30	o ci Ovei	ali x 30.0%	volus			
Elevation		Surf.Area	Inc.Sto		Cum.Store				
(feet)		(sq-ft)	(cubic-fe	_	(cubic-feet)				
5.10 7.10		150 150	3	0 00	0 300				
7.10	,	150	5	00	500				
	Routing	Inve							
#1	Primary	5.10	0' 4.0" Vei	t. Orifice	e/Grate C=	0.600	Limited to v	weir flow at le	ow heads
Drimonul	OutFlow	Max=0.02 cf	c @ 12 17 h	re U\//-/	5 10' (Eroo	Discho	rao)		
		Orifice Cor				Discila	ige)		
		<b>(</b> -		0	1 /				

14850_Proposed-Drainage-Areas_220609	NOAA 24-hr C NOAA 25-yr Rainfall=6.04"
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# Summary for Pond 7B-P: BB 7B PONDING

Inflow Area =	4,942 sf, 88.73	% Impervious, Inf	low Depth = 5.45"	for NOAA 25-yr event				
Inflow =	0.70 cfs @ 12.13	hrs, Volume=	2,245 cf					
Outflow =	0.68 cfs @ 12.14	hrs, Volume=	2,245 cf, Atter	n= 2%, Lag= 1.1 min				
Primary =	0.65 cfs @ 12.14	hrs, Volume=	940 cf	-				
Routed to Re	ach BMP7_O : BMP-7	OVERFLOW						
Secondary =	0.03 cfs @ 12.14	hrs, Volume=	1,305 cf					
Routed to Po	nd 7B-S : BB 7B - STC	ONE						
	Ind method, Time Spa							
Peak Elev= 10.7	2' @ 12.14 hrs Surf.A	rea= 530 sf Stor	age= 282 cf					
	tion time= 40.1 min cal		of (100% of inflow)					
Center-of-Mass	det. time= 40.0 min ( 8	04.9 - 764.9 )						
Volume In	vert Avail.Storage	Storage Descrip	tion					
#1 10	.00' 324 cf	Custom Stage	Data (Prismatic)List	ed below (Recalc)				
Elevation	Surf Area In	c Store Cun	Store					

Elevatio (fee		Surr.Area (sq-ft)	(cubic-feet)	(cubic-feet)		
10.0	/	250	0	0		
10.0		560	324	324		
Device	Routing	Invert	Outlet Devices			
#1	Primary	8.90'	Inlet / Outlet Inv	square edge he ert= 8.90' / 8.80	eadwall, Ke= 0.500 0' S= 0.0100 '/' Cc	= 0.900
#2	Seconda	ıry 10.00'	n= 0.013, Flow 2.410 in/hr Exfi Conductivity to 0	iltration over S		

10.60' 24inch-Dome Grate Capacity

Primary OutFlow Max=0.63 cfs @ 12.14 hrs HW=10.72' (Free Discharge) 1=Culvert (Passes 0.63 cfs of 4.35 cfs potential flow) -3=24inch-Dome Grate Capacity (Custom Controls 0.63 cfs)

#3 Device 1

Secondary OutFlow Max=0.03 cfs @ 12.14 hrs HW=10.72' (Free Discharge) 2=Exfiltration ( Controls 0.03 cfs)

	Sum	mary for Por	nd 7B-S: BB 7B	- STONE	
Inflow = Outflow = Primary = Routed to R	0.03 cfs @ 12	2.14 hrs, Volum 2.17 hrs, Volum 2.17 hrs, Volum MP-7 OVERFLC	ne= 1,294 ne= 1,294	cf, Atten= 0%,	Lag= 1.3 min
	-Ind method, Time 2' @ 12.17 hrs Sเ		.00 hrs, dt= 0.05 hr Storage= 17 cf	s	
Center-of-Mass	det. time= 9.5 min		,	nflow)	
#1	7.25' 9		Stage Data (Prisn verall x 30.0% Void		v (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)		
7.25 9.25	150 150	0 300	0 300		
Device Routir	ng Invert	Outlet Devices	5		
#1 Prima	ry 7.50'	4.0" Vert. Orif	ice/Grate C= 0.60	00 Limited to w	eir flow at low heads
	ow Max=0.03 cfs ( rate (Orifice Contro		V=7.62' (Free Disc	charge)	
-1-Office/G	rate (Onice Contro		.19 (ps)		

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# Summary for Pond 8a-P: BB 8A PONDING

Second Rout Routing Peak El Plug-Flo	= 0.5 $= 0.4$ ed to Reach P ary = 0.0 ed to Pond 8a- by Stor-Ind me ev = 9.10' @ 12 by detention tin	5 cfs @ 1. 2 cfs @ 1. 8 cfs @ 1. ST : PORT 4 cfs @ 1. s : BB 8A - ethod, Time .15 hrs Si he= 37.1 m	e Span= 0.00-72.00 hrs, dt= 0.05 hrs surf.Area= 619 sf Storage= 295 cf nin calculated for 1,730 cf (100% of inflow)
			nin ( 811.7 - 774.6 )
Volume			prage Storage Description
#1	8.50'	5	i75 cf Custom Stage Data (Prismatic)Listed below (Recalc)
Elevati	on Surf.	Area	Inc.Store Cum.Store
(fee	et) (*	sq-ft)	(cubic-feet) (cubic-feet)
8.		360	0 0
9.	50	790	575 575
Device	Routing	Invert	Outlet Devices
#1	Primary	7.40'	<b>12.0" Round Culvert</b> L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 7.40' / 7.30' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Secondary	8.50'	2.410 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 5.40'
#3	Device 1	9.00'	
#4	Primary	9.40'	
f=1=Ci f=3: 4=St Second	ulvert (Passes =24inch-Dome narp-Crested F	0.48 cfs of Grate Cap Rectangula Max=0.04 c	@ 12.15 hrs HW=9.10' (Free Discharge) f 4.15 cfs potential flow) <b>pacity</b> (Custom Controls 0.48 cfs) <b>ar Weir</b> ( Controls 0.00 cfs) cfs @ 12.15 hrs HW=9.10' (Free Discharge) • cfs)

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	S	ummary for Po	nd 8a-s: BB 8A - \$	STONE
Inflow Outflow Primary Routed	= 0.04 cfs @	12.15 hrs, Volum 12.20 hrs, Volum 12.20 hrs, Volum RTLAND STREET	ne= 1,166 cf, ne= 1,166 cf	Atten= 1%, Lag= 2.7 min
Peak Elev=	5.63' @ 12.20 hrs	Surf.Area= 300 sf	.00 hrs, dt= 0.05 hrs Storage= 30 cf 1,165 cf (98% of inflo	
	Aass det. time= 16.2			w)
Volume	Invert Avail.	Storage Storage	Description	
#1	5.30'		Stage Data (Prismat verall x 30.0% Voids	ic)Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	
5.30 7.30	300 300	0 600	0 600	
	outing Inv	ert Outlet Devices		
#1 P	rimary 5.8	50' 4.0" Vert. Ori	fice/Grate C= 0.600	Limited to weir flow at low heads
			V=5.63' (Free Discha	arge)
└─1=Orific	ce/Grate (Orifice Co	ontrols 0.04 cfs @ 1	.23 fps)	

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		Sumr	mary for Pond	8B-P: B	B 8B-PONDI	NG
Secondar	= 0.79 = 0.74 = 0.74 d to Reach 7F	9 cfs @ 12 8 cfs @ 12 4 cfs @ 12 R : PARKIN 4 cfs @ 12	2.13 hrs, Volume 2.14 hrs, Volume 2.14 hrs, Volume IG LOT C to HUD 2.14 hrs, Volume	= = = SON	2,543 cf	for NOAA 25-yr event n= 2%, Lag= 0.9 min
			Span= 0.00-72.0 urf.Area= 638 sf			
			in calculated for 2 in ( 799.6 - 764.9		00% of inflow)	
Volume #1	Invert 9.10'	Avail.Stor			(Priomotic) ist	ed below (Recalc)
# I Elevation		Area.	06 cf Custom S Inc.Store	Cum.Sto	,	
(feet)		sq-ft)	(cubic-feet)	(cubic-fee		
9.10		190	0		0	
9.80	)	685	306	30	06	
Device I	Routing	Invert	Outlet Devices			
#1 I	Primary	7.90'	L= 10.0' CPP, s	square edo ert= 7.90' /	7.80' S= 0.01	e= 0.500 00 '/'   Cc= 0.900
#2 \$	Secondary	9.10'	2.410 in/hr Exfi Conductivity to 0			
#3 I	Device 1	9.65'	24inch-Dome G	Frate Capa	city X 2 00	

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		Su	Immary for I	Pond 8B-S:	BB 8B-9	Stone		
Outflow Primary	= 0.0 = 0.0	4 cfs @ ´ 4 cfs @ ´	12.14 hrs, Volu 12.18 hrs, Volu 12.18 hrs, Volu NG LOT C to H	ime= ime=	1,441 cf 1,414 cf, 1,414 cf	Atten= 1%,	, Lag= 2.2 mi	n
			e Span= 0.00-7 Surf.Area= 300					
			nin calculated f nin ( 869.3 - 85		% of inflo	w)		
Volume	Invert	Avail.Sto	orage Storage	e Description				
#1	5.90'		80 cf Custor	<b>n Stage Data</b> Overall x 30.0		i <b>c)</b> Listed bel	ow (Recalc)	
Elevation (feet)		.Area sq-ft)	Inc.Store (cubic-feet)	Cum.Sto (cubic-fee	et)			
5.90		300	0		0			
7.90		300	600	60	00			
Device R	outing	Invert	Outlet Devic	es				
Device R #1 P	rimary	Invert 6.20'	Outlet Devic 4.0" Vert. O	es rifice/Grate	C= 0.600		weir flow at lo	w heads
Device R #1 P	rimary utFlow Max	Invert 6.20' k=0.04 cfs	Outlet Devic	es rifice/Grate ( IW=6.33' (Fr	C= 0.600		weir flow at lo	w heads
Device R #1 P	rimary utFlow Max	Invert 6.20' k=0.04 cfs	Outlet Devic 4.0" Vert. O @ 12.18 hrs H	es rifice/Grate ( IW=6.33' (Fr	C= 0.600		weir flow at lo	w heads
Device R #1 P	rimary utFlow Max	Invert 6.20' k=0.04 cfs	Outlet Devic 4.0" Vert. O @ 12.18 hrs H	es rifice/Grate ( IW=6.33' (Fr	C= 0.600		weir flow at lo	w heads
Device R #1 P	rimary utFlow Max	Invert 6.20' k=0.04 cfs	Outlet Devic 4.0" Vert. O @ 12.18 hrs H	es rifice/Grate ( IW=6.33' (Fr	C= 0.600		weir flow at lo	w heads
Device R #1 P	rimary utFlow Max	Invert 6.20' k=0.04 cfs	Outlet Devic 4.0" Vert. O @ 12.18 hrs H	es rifice/Grate ( IW=6.33' (Fr	C= 0.600		weir flow at lo	w heads
Device R #1 P	rimary utFlow Max	Invert 6.20' k=0.04 cfs	Outlet Devic 4.0" Vert. O @ 12.18 hrs H	es rifice/Grate ( IW=6.33' (Fr	C= 0.600		weir flow at lo	w heads

Inflow A Inflow Outflow Primary Rout	= 4.0 = 3.9 = 1.2 ted to Reach B	29,651 sf, 74.77 05 cfs @ 12.13 07 cfs @ 12.14 24 cfs @ 12.15 MP9_O : BMP-9	% Imperviou hrs, Volume hrs, Volume hrs, Volume OVERFLOV	e= 12,623 cf, Atten= 2%, Lag= 1.0 min e= 542 cf N
Tertiary	ted to Pond 9-I = 2.6	)5 cfs @ 12.14 PS : BB9 - STON 88 cfs @ 12.14	IE hrs, Volume	
		R : ISOLATOR F		
				00 hrs, dt= 0.05 hrs Storage= 476 cf
		me= 16.7 min ca me= 16.8 min ( 7		12,615 cf (100% of inflow) )
Volume	Invert	Avail.Storage	Storage D	escription
#1	8.00'	485 cf	Custom S	tage Data (Prismatic)Listed below (Recalc)
Elevati	on Sur	f.Area In	c.Store	Cum.Store
(fe	/		vic-feet)	(cubic-feet)
	00	190	0	0
9.	00	780	485	485
Device	Routing	Invert Ou	tlet Devices	
#1	Primary	L= Inle	et / Outlet Inv	Culvert square edge headwall, Ke= 0.500 rert= 7.00' / 6.90' S= 0.0100 '/' Cc= 0.900 Area= 0.79 sf
#2	Secondary			iltration over Surface area
#3	Device 1	8.80' <b>24i</b> Hea 0.5 1.1	nchDome G ad (feet) 0.0 0 0.55 0.60 0	Groundwater Elevation = 5.00' irate Capacity 00 0.05 0.10 0.15 0.20 0.25 0.30 0.35 0.40 0.45 0.65 0.70 0.75 0.80 0.85 0.90 0.95 1.00 1.05 100 0.180 0.460 0.850 1.360 1.830 2.420 3.100
				000 4.200 4.380 4.600 4.750 4.900 5.100 5.200
#4	Tertiary			650 5.800 5.950 Grate Capacity
Primary 1=Ci 1=3	y OutFlow Ma ulvert (Passes =24inchDome	x=1.19 cfs @ 12 1.19 cfs of 4.61 <b>Grate Capacity</b> Max=0.05 cfs @ ontrols 0.05 cfs)	.15 hrs HW cfs potentia r(Custom Cc 12.14 hrs H	=8.98' (Free Discharge) I flow)

NOAA 24-hr C NOAA 25-yr Rainfall=6.04" Printed 6/16/2022 Solutions LLC Page 148

 14850\_Proposed-Drainage-Areas\_220609
 NOAA 24-I

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		r your com a s/n 00546			Software Solutions LLC		Printed 6 F	/16/2022 Page 149
		5	Summary	/ for Po	nd 9-PS: BB9 - ST	ONE		
nflow Dutflow Primary Routed	= =	0.05 cfs @ 0.05 cfs @ 0.05 cfs @ 1 BMP9_0	12.17 hrs 12.17 hrs	s, Volume s, Volume	e= 2,318 cf, e= 2,318 cf	Atten= 2%,	Lag= 1.5 min	
					00 hrs, dt= 0.05 hrs Storage= 23 cf			
Peak Elev Plug-Flow Center-of-	v detentior Mass det	12.17 hrs time= 12.5 time= 8.1	Surf.Area min calcu min ( 924.3	= 190 sf lated for 2 3 - 916.2 )	Storage= 23 cf 2,318 cf (99% of inflov )	v)		
Peak Elev Plug-Flow Center-of-	v = 5.40' @	12.17 hrs time= 12.5 time= 8.1 t Avail.5	Surf.Area min calcu min ( 924.3 Storage 3 114 cf 0	= 190 sf llated for 2 3 - 916.2 <u>)</u> Storage D <b>Custom S</b>	Storage= 23 cf 2,318 cf (99% of inflov	,	v (Recalc)	
Peak Elev Plug-Flow Center-of- <u>/olume</u> #1	v detentior Mass det <u>Inver</u> 5.00	12.17 hrs time= 12.5 time= 8.1 t Avail.5	Surf Area min calcu min ( 924.3 <u>Storage</u> 114 cf	= 190 sf lated for 2 3 - 916.2 <u>)</u> Storage D Custom S 380 cf Ove Store	Storage= 23 cf 2,318 cf (99% of inflov ) Description Stage Data (Prismatic	,	v (Recalc)	
Peak Ĕlev Plug-Flow	v detentior Mass det	12.17 hrs time= 12.5 time= 8.1	Surf.Area min calcu min ( 924.3	= 190 sf lated for 2 3 - 916.2 )	Storage= 23 cf 2,318 cf (99% of inflov )	v)		
Peak Elev Plug-Flow Center-of- <u>Volume</u> #1 Elevation	v detentior Mass det <u>Inver</u> 5.00	12.17 hrs time= 12.5 time= 8.1 t Avail.( urf.Area	Surf Area i min calcu min ( 924.3 <u>Storage 3</u> 114 cf 6	= 190 sf lated for 2 3 - 916.2 <u>)</u> Storage D Custom S 380 cf Ove Store	Storage= 23 cf 2,318 cf (99% of inflov ) <u>Description</u> Stage Data (Prismatic erall x 30.0% Voids Cum.Store	,	v (Recalc)	

Primary OutFlow Max=0.05 cfs @ 12.17 hrs HW=5.40' (Free Discharge) -1=Orifice/Grate (Orifice Controls 0.05 cfs @ 1.32 fps)

		ter your com -7a_s/n 00546			oftware Solutio	ons LLC			Page 1
		:	Summar	y for Po	ond 14P: BE	32A-S	tone		
Inflow	=	0.03 cfs @	12.14 hrs	, Volume	=	978 cf			
Outflow	=	0.03 cfs @				978 cf,	Atten= 0%	, Lag= 1.7	min
Primary	=	0.03 cfs @	12.17 hrs	, Volume	:=	978 cf			
Route	ed to Rea	ich DP-1 : Fre	nch Rodne	ey Blvd O	utfall				
Plug-Flov	w detenti	on time= 5.0 n	nin calcula	= 180 sf ited for 97		f			
Plug-Flov	w detenti	on time= 5.0 n et. time= 4.9 r	nin calcula nin ( 860.1	= 180 sf ited for 97 - 855.2 )	Storage= 6 c 78 cf (100% of	f			
Plug-Flov Center-o	w detenti f-Mass d Inv	on time= 5.0 n et. time= 4.9 r	nin calcula nin ( 860.1 <u>Storage S</u> 108 cf <b>(</b>	= 180 sf ited for 97 - 855.2 ) Storage D Custom S	Storage= 6 c 78 cf (100% of	f f inflow) rismati		low (Recalc	)
Plug-Flov Center-o Volume	w detenti f-Mass d Inv 5.	on time= 5.0 n et. time= 4.9 r <u>ert Avail.S</u>	nin calcula nin ( 860.1 <u>Storage S</u> 108 cf <b>(</b>	= 180 sf ted for 97 - 855.2 ) Storage D Custom S 560 cf Ove	Storage= 6 cl 78 cf (100% of escription tage Data (P	f f inflow) rismati		low (Recalc	)
Plug-Flov Center-o <u>Volume</u> #1	w detenti f-Mass d Inv 5. n	on time= 5.0 n et. time= 4.9 r ert Avail.S 50'	nin calcula nin ( 860.1 Storage <u>8</u> 108 cf <b>(</b> 3	= 180 sf .ted for 97 - 855.2 ) Storage <u>D</u> Custom S 160 cf Ove tore	Storage= 6 cf 78 cf (100% of escription itage Data (P erall x 30.0%	f f inflow) rismati		low (Recalc	)
Plug-Flor Center-o <u>Volume</u> #1 Elevatio	w detenti f-Mass d Inv 5. n t)	on time= 5.0 n et. time= 4.9 r ert Avail.S 50' Surf.Area	nin calcula nin ( 860.1 Storage <u>S</u> 108 cf <b>C</b> 3 Inc.S	= 180 sf .ted for 97 - 855.2 ) Storage <u>D</u> Custom S 160 cf Ove tore	Storage= 6 cf 78 cf (100% of escription itage Data (P erall x 30.0% Cum.Store	f f inflow) rismati		low (Recalc	)
Plug-Flov Center-o <u>Volume</u> #1 Elevatio (feet	w detenti f-Mass d Inv 5. 5. n t) 0	on time= 5.0 n et. time= 4.9 r ert Avail.S 50' Surf.Area (sq-ft)	nin calcula nin ( 860.1 Storage <u>S</u> 108 cf <b>C</b> 3 Inc.S	= 180 sf ted for 97 - 855.2 ) Storage D Custom S 60 cf Ove tore reet)	Storage= 6 ct 78 cf (100% of escription tage Data (P erall x 30.0% Cum.Store (cubic-feet)	f f inflow) rismati		low (Recalc	)

Primary OutFlow Max=0.03 cfs @ 12.17 hrs HW=5.61' (Free Discharge) -1=Orifice/Grate (Orifice Controls 0.03 cfs @ 1.11 fps)

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# Summary for Pond DMH1: DIVERSION MANHOLE - SEYMOUR ST

[57] Hint: Peaked at 9.92' (Flood elevation advised)

Inflow Area =	19,582 sf, 58.17% Impervious, Inflo	w Depth = 4.66" for NOAA 25-yr event
Inflow =	2.53 cfs @ 12.13 hrs, Volume=	7,612 cf
Outflow =	2.53 cfs @ 12.13 hrs, Volume=	7,612 cf, Atten= 0%, Lag= 0.0 min
Primary =	0.78 cfs @ 12.13 hrs, Volume=	5,625 cf
Routed to Pon	d INF-1 : INFILTRATION SYSTEM #1	
Secondary =	1.75 cfs @ 12.13 hrs, Volume=	1,987 cf
Routed to Rea	ch DP-1 : French Rodney Blvd Outfall	

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Peak Elev= 9.92' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	9.00'	6.0" Vert. WATER QUALITY STORM DIVERSION C= 0.600
	-		Limited to weir flow at low heads
#2	Secondary	9.20'	12.0" Vert. LARGE STORM OVEFLOW C= 0.600
			Limited to weir flow at low heads

Primary OutFlow Max=0.76 cfs @ 12.13 hrs HW=9.90' (Free Discharge) 1=WATER QUALITY STORM DIVERSION(Orifice Controls 0.76 cfs @ 3.88 fps)

Secondary OutFlow Max=1.66 cfs @ 12.13 hrs HW=9.90' (Free Discharge) -2=LARGE STORM OVEFLOW (Orifice Controls 1.66 cfs @ 2.84 fps)

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# Summary for Pond DMH2: DIVERSION MANHOLE - HUDSON STREET

[57] Hint: Peaked at 25.58' (Flood elevation advised)

Inflow Area =	143,309 sf, 49.69% Impervious, Infle	ow Depth = 4.45" for NOAA 25-yr event
Inflow =	17.88 cfs @ 12.13 hrs, Volume=	53,113 cf
Outflow =	17.88 cfs @ 12.13 hrs, Volume=	53,113 cf, Atten= 0%, Lag= 0.0 min
Primary =	3.65 cfs @ 12.13 hrs, Volume=	28,364 cf
Routed to Por	nd INF-2 : INFILTRATION SYSTEM #2	
Secondary =	14.23 cfs @ 12.13 hrs, Volume=	24,749 cf
Routed to Rea	ach B : PARKING LOT B OVERFLOW	

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Peak Elev= 25.58' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	10.60'	6.0" Vert. WATER QUALITY STORM DIVERSION C= 0.600
			Limited to weir flow at low heads
#2	Secondary	11.10'	12.0" Vert. LARGE STORM OVERFLOW C= 0.600
			Limited to weir flow at low heads

Primary OutFlow Max=3.51 cfs @ 12.13 hrs HW=24.62' (Free Discharge) 1=WATER QUALITY STORM DIVERSION(Orifice Controls 3.51 cfs @ 17.87 fps)

Secondary OutFlow Max=13.65 cfs @ 12.13 hrs HW=24.62' (Free Discharge) -2=LARGE STORM OVERFLOW (Orifice Controls 13.65 cfs @ 17.38 fps)

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# Summary for Pond DMH3: DIVERSION MANHOLE - PORTLAND ST

[57] Hint: Peaked at 11.85' (Flood elevation advised)

Inflow Area =	19,743 sf, 50.83% Impervious, Inflow Depth = 4.45" for NOAA 25-yr even	t
Inflow =	2.46 cfs @ 12.13 hrs, Volume= 7,317 cf	
Outflow =	2.46 cfs @ 12.13 hrs, Volume= 7,317 cf, Atten= 0%, Lag= 0.0 min	
Primary =	1.21 cfs @ 12.13 hrs, Volume= 6,020 cf	
Routed to Pon	Id INF3 : INFILTRATION SYSTEM #1	
Secondary =	1.25 cfs @ 12.13 hrs, Volume= 1,297 cf	
Routed to Rea	ACH P ST : PORTLAND STREET DRAINAGE	

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Peak Elev= 11.85' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	11.00'	8.0" Vert. WATER QUALITY DIVERSION C= 0.600
	-		Limited to weir flow at low heads
#2	Secondary	11.20'	10.0" Vert. LARGE STORM OVERFLOW C= 0.600
			Limited to weir flow at low heads
	,		Limited to weir flow at low heads 10.0" Vert. LARGE STORM OVERFLOW C= 0.600

Primary OutFlow Max=1.18 cfs @ 12.13 hrs HW=11.83' (Free Discharge) —1=WATER QUALITY DIVERSION(Orifice Controls 1.18 cfs @ 3.38 fps)

Secondary OutFlow Max=1.18 cfs @ 12.13 hrs HW=11.83' (Free Discharge) -2=LARGE STORM OVERFLOW (Orifice Controls 1.18 cfs @ 2.69 fps)

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#### Summary for Pond INF-1: INFILTRATION SYSTEM #1

[81] Warning: Exceeded Pond DMH1 by 0.24' @ 15.20 hrs

Inflow Are Inflow Outflow Discarded Primary Routed	= 0.7 = 0.4 d = 0.0 = 0.3	8 cfs @ 12.13 l 5 cfs @ 12.37 l 8 cfs @ 12.37 l 7 cfs @ 12.37 l	nrs, Volume= 5,625 cf, Atten= 42%, Lag= 14.5 min nrs, Volume= 4,624 cf	
	Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Peak Elev= 9.48' @ 12.37 hrs Surf.Area= 1,772 sf Storage= 1,689 cf			
			alculated for 5,621 cf (100% of inflow) 1,018.7 - 816.9)	
Volume	Invert	Avail.Storage	Storage Description	
#1A	7.80'	1,091 cf	21.50'W x 81.52'L x 2.33'H Field A	
			4,090 cf Overall - 973 cf Embedded = 3,117 cf x 35.0% Voids	
			ADD Otame Table OO 040 + Oser V CC Incide #1	
#2A	8.30'	973 cf		
#2A	8.30'	973 cf	Effective Size= $28.9$ "W x $16.0$ "H => $2.07$ sf x $7.12$ 'L = $14.7$ cf	
#2A	8.30'	973 cf		
	8.30'	973 cf	Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 66 Chambers in 6 Rows	
#2A #3	8.30' 7.80'	973 cf 137 cf	Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 66 Chambers in 6 Rows	
		137 cf	Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 66 Chambers in 6 Rows	
 Storag	7.80' le Group A cr	137 cf 2,201 cf reated with Charr	Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 66 Chambers in 6 Rows 5.00'D x 7.00'H Vertical Cone/Cylinder Total Available Storage aber Wizard	
#3 Storag Device I	7.80' le Group A cr Routing	<u>137 cf</u> 2,201 cf reated with Chan Invert Out	Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 66 Chambers in 6 Rows 5.00'D x 7.00'H Vertical Cone/Cylinder Total Available Storage wher Wizard let Devices	
#3 Storag Device I	7.80' le Group A cr	<u>137 cf</u> 2,201 cf reated with Chan <u>Invert</u> Out 7.80' <b>1.0</b> 2	Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 66 Chambers in 6 Rows 5.00'D x 7.00'H Vertical Cone/Cylinder Total Available Storage aber Wizard	

			Conductivity to Groundwater Elevation = 5.80'
#2	Primary	8.10'	10.0" Round Culvert
			L= 10.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 8.10' / 8.00' S= 0.0100 '/' Cc= 0.900
			n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.55 sf
#3	Device 2	9.40'	5.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

**Discarded OutFlow** Max=0.08 cfs @ 12.37 hrs HW=9.48' (Free Discharge) **1=Exfiltration** (Controls 0.08 cfs)

Primary OutFlow Max=0.36 cfs @ 12.37 hrs HW=9.48' (Free Discharge) 2=Culvert (Passes 0.36 cfs of 2.58 cfs potential flow) 3=Sharp-Crested Rectangular Weir (Weir Controls 0.36 cfs @ 0.92 fps)

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#### Pond INF-1: INFILTRATION SYSTEM #1 - Chamber Wizard Field A

Chamber Model = ADS\_StormTechSC-310 +Cap (ADS StormTech®SC-310 with cap length) Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap

34.0" Wide + 6.0" Spacing = 40.0" C-C Row Spacing

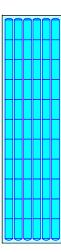
11 Chambers/Row x 7.12' Long +0.60' Cap Length x 2 = 79.52' Row Length +12.0" End Stone x 2 = 81.52' Base Length 6 Rows x 34.0" Wide + 6.0" Spacing x 5 + 12.0" Side Stone x 2 = 21.50' Base Width 6.0" Stone Base + 16.0" Chamber Height + 6.0" Stone Cover = 2.33' Field Height

66 Chambers x 14.7 cf = 973.0 cf Chamber Storage

4,089.6 cf Field - 973.0 cf Chambers = 3,116.6 cf Stone x 35.0% Voids = 1,090.8 cf Stone Storage

Chamber Storage + Stone Storage = 2,063.8 cf = 0.047 af Overall Storage Efficiency = 50.5% Overall System Size = 81.52' x 21.50' x 2.33'

66 Chambers 151.5 cy Field 115.4 cy Stone



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#### Summary for Pond INF-2: INFILTRATION SYSTEM #2

Inflow Area	a =	143,309 sf,	49.69% Impervious,	Inflow Depth = 2.38"	for NOAA 25-yr event
Inflow	=	3.65 cfs @	12.13 hrs, Volume=	28,364 cf	-
Outflow	=	3.30 cfs @	12.17 hrs, Volume=	28,364 cf, Atte	en= 10%, Lag= 2.4 min
Discarded	=	0.12 cfs @	12.16 hrs, Volume=	9,579 cf	-
Primary	=	3.18 cfs @	12.17 hrs, Volume=	18,785 cf	
Routed	to Reac	h B : PARKIN	IG LOT B OVERFLO	V	

G LOT B OVERFLOW

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Peak Elev= 9.87' @ 12.16 hrs Surf Area= 2.268 sf Storage= 3.518 cf

Plug-Flow detention time= 125.5 min calculated for 28,344 cf (100% of inflow) Center-of-Mass det. time= 125.9 min ( 984.2 - 858.3 )

Volume	Invert	Avail.Storage	Storage Description
#1A	7.50'	1,790 cf	25.25'W x 89.06'L x 3.50'H Field A
			7,870 cf Overall - 2,756 cf Embedded = 5,114 cf x 35.0% Voids
#2A	8.00'	2,756 cf	ADS_StormTech SC-740 +Cap x 60 Inside #1
			Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
			Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
			60 Chambers in 5 Rows
#3	7.50'	137 cf	5.00'D x 7.00'H Vertical Cone/Cylinder
		4,684 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	7.50'	1.020 in/hr Exfiltration over Surface area
			Conductivity to Groundwater Elevation = 5.50'
#2	Primary	8.00'	10.0" Round Culvert
			L= 10.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 8.00' / 7.90' S= 0.0100 '/' Cc= 0.900
			n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.55 sf
#3	Device 2	9.50'	5.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

**Discarded OutFlow** Max=0.12 cfs @ 12.16 hrs HW=9.86' (Free Discharge) **1=Exfiltration** (Controls 0.12 cfs)

Primary OutFlow Max=3.15 cfs @ 12.17 hrs HW=9.85' (Free Discharge) 

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#### Pond INF-2: INFILTRATION SYSTEM #2 - Chamber Wizard Field A

Chamber Model = ADS\_StormTechSC-740 +Cap (ADS StormTech®SC-740 with cap length) Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

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

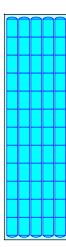
12 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 87.06' Row Length +12.0" End Stone x 2 = 89.06' Base Length 5 Rows x 51.0" Wide + 6.0" Spacing x 4 + 12.0" Side Stone x 2 = 25.25' Base Width 6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

60 Chambers x 45.9 cf = 2,756.4 cf Chamber Storage

7,870.4 cf Field - 2,756.4 cf Chambers = 5,114.0 cf Stone x 35.0% Voids = 1,789.9 cf Stone Storage

Chamber Storage + Stone Storage = 4,546.3 cf = 0.104 af Overall Storage Efficiency = 57.8% Overall System Size = 89.06' x 25.25' x 3.50'

60 Chambers 291.5 cy Field 189.4 cy Stone



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#### Summary for Pond INF3: INFILTRATION SYSTEM #1

Inflow Area =	19,743 sf, 50.83% Impervious,	Inflow Depth = 3.66" for NOAA 25-yr event
Inflow =	1.21 cfs @ 12.13 hrs, Volume=	6,020 cf
Outflow =	1.20 cfs @ 12.14 hrs, Volume=	6,020 cf, Atten= 1%, Lag= 0.9 min
Discarded =	0.05 cfs @ 12.14 hrs, Volume=	3,178 cf
Primary =	1.15 cfs @ 12.14 hrs, Volume=	2,842 cf
Routed to Rea	ch P ST : PORTLAND STREET DR	AINAGE

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs Peak Elev= 9.67' @ 12.14 hrs Surf Area= 1.113 sf Storage= 1.000 cf

Plug-Flow detention time= 132.5 min calculated for 6,016 cf (100% of inflow) Center-of-Mass det. time= 132.7 min ( 948.3 - 815.6 )

1	/olume	Invert	Avail.Storage	Storage Description
	#1A	8.10'	686 cf	18.17'W x 60.16'L x 2.33'H Field A
				2,550 cf Overall - 590 cf Embedded = 1,960 cf x 35.0% Voids
	#2A	8.60'	590 cf	ADS_StormTech SC-310 +Cap x 40 Inside #1
				Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf
				Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap
				40 Chambers in 5 Rows
	#3	8.10'	137 cf	5.00'D x 7.00'H Vertical Cone/Cylinder
			1,413 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	8.10'	1.020 in/hr Exfiltration over Surface area
			Conductivity to Groundwater Elevation = 6.10'
#2	Primary	8.40'	10.0" Round Culvert
			L= 10.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 8.40' / 8.30' S= 0.0100 '/' Cc= 0.900
			n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.55 sf
#3	Device 2	9.50'	5.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Discarded OutFlow Max=0.05 cfs @ 12.14 hrs HW=9.67' (Free Discharge)

Primary OutFlow Max=1.13 cfs @ 12.14 hrs HW=9.67' (Free Discharge) 

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Pond INF3: INFILTRATION SYSTE		
Pond INF3: INFILTRATION SYSTE	EM #1 - Chamber Wiz	ard Field A
	EM #1 - Chamber Wiz S StormTech®SC-310 wit	ard Field A

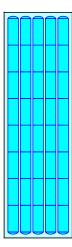
8 Chambers/Row x 7.12' Long +0.60' Cap Length x 2 = 58.16' Row Length +12.0" End Stone x 2 = 60.16' Base Length 5 Rows x 34.0" Wide + 6.0" Spacing x 4 + 12.0" Side Stone x 2 = 18.17' Base Width 6.0" Stone Base + 16.0" Chamber Height + 6.0" Stone Cover = 2.33' Field Height

40 Chambers x 14.7 cf = 589.7 cf Chamber Storage

2,550.1 cf Field - 589.7 cf Chambers = 1,960.4 cf Stone x 35.0% Voids = 686.2 cf Stone Storage

Chamber Storage + Stone Storage = 1,275.8 cf = 0.029 af Overall Storage Efficiency = 50.0%Overall System Size =  $60.16' \times 18.17' \times 2.33'$ 

40 Chambers 94.4 cy Field 72.6 cy Stone



 $\square \square \square \square \square \square$ 

#### APPENDIX E

Long-Term Pollution Prevention and Stormwater Operation and Maintenance Plan



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## LONG-TERM POLLUTION PREVENTION PLAN AND STORMWATER OPERATION AND MAINTENANCE PLAN

East Beach, New Bedford, MA

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Subo		
	surface Infiltration Structures	4
	surface Infiltration Structures4	4 4
Bior	surface Infiltration Structures	4 4 5

#### ATTACHMENT A - ISOLATOR ROW MAINTENANCE MANUAL

#### 1.0 INTRODUCTION

The purpose of this document is to specify the pollution prevention measures and stormwater management system operation and maintenance for the East Beach site. The Responsible Party indicated below shall implement the management practices outlined in this document and proactively conduct operations at the project site in an environmentally responsible manner. Compliance with this Manual does not in any way dismiss the responsible party, owner, property manager, or occupants from compliance with other applicable federal, state or local laws.

Responsible Party: City of New Bedford

This Document has been prepared in compliance with Standards 4 and 9 of the 2008 Massachusetts Department of Environmental Protection (MassDEP) Stormwater Management Standards, which state:

#### Standard 4:

The Long Term Pollution Prevention Plan shall include the proper procedures for the following:

- Good housekeeping
- Storing materials and waste products inside or under cover
- Vehicle washing
- Routine inspections of stormwater best management practices
- Spill prevention and response
- Maintenance of lawns, gardens, and other landscaped areas
- Storage and use of slow-release phosphorous free fertilizer
- Prohibition of herbicides, fungicides and pesticides
- Pet waste management
- Operation and management of septic systems
- Proper management of deicing chemicals and snow

#### Standard 9:

The Long-Term Operation and Maintenance Plan shall at a minimum include:

- Stormwater management system(s) owner(s)
- The party or parties responsible for operation and maintenance, including how future property owners shall be notified of the presence of the stormwater management system and the requirement for operation and maintenance
- The routine and non-routine maintenance tasks to be undertaken after construction is complete and a schedule for implementing those tasks
- A plan that is drawn to scale and shows the location of all stormwater BMPs in each treatment train along with the discharge point
- A description and delineation of public safety features
- An estimated operations and maintenance budget

#### 2.0 LONG-TERM POLLUTION PREVENTION PLAN

The Responsible Party shall implement the following good housekeeping procedures at the project site to reduce the possibility of accidental releases and to reduce safety hazards.

#### 2.1 Storage of Hazardous Materials

To prevent leaks and spills, keep hazardous materials and waste products under cover or inside. Use drip pans or spill containment systems to prevent chemicals from entering the drainage system. Inspect storage areas for materials and waste products at least once per year to determine amount and type of the material on site, and if the material requires disposal.

Securely store liquid petroleum products and other liquid chemicals in federally- and state-approved containers. Restrict access to maintenance personnel and administrators.

#### 2.2 Storage of Waste Products

Collect and store all waste materials in securely lidded dumpster(s) or other secure containers as applicable to the material. Keep dumpster lids closed and the areas around them clean. Do not fill the dumpsters with liquid waste or hose them out. Sweep areas around the dumpster regularly and put the debris in the garbage, instead of sweeping or hosing it into the parking lot. Legally dispose of collected waste on a regular basis.

Segregate liquid wastes from solid waste and recycle through hazardous waste disposal companies, whenever possible. Contact a hazardous waste hauler for proper disposal to a hazardous waste collection center.

#### 2.3 Spill Prevention and Response

Implement spill response procedures for releases of significant materials such as fuels, oils, or chemical materials onto the ground or other area that could reasonably be expected to discharge to surface or groundwater.

- For minor spills, keep fifty (50) gallon spill control kits and Speedy Dry at all shop and work areas.
- Immediately contact applicable Federal, State, and local agencies for reportable quantities as required by law.
- Immediately perform applicable containment and cleanup procedures following a spill release.
- Promptly remove and dispose of all material collected during the response in accordance with Federal, State and local requirements. A licensed emergency response contractor may be required to assist in cleanup of releases depending on the amount of the release, and the ability of the Contractor to perform the required response.
- Reportable quantities of chemicals, fuels, or oils are established under the Clean Water Act and enforced through Massachusetts Department of Environmental Protection (DEP).

#### 2.4 Minimize Soil Erosion

Soil erosion facilitates mechanical transport of nutrients, pathogens, and organic matter to surface water bodies. Repair all areas where erosion is occurring throughout the project site. Stabilize bare soil with riprap, seed, mulch, or vegetation.

#### 2.5 Maintenance of Lawns, Gardens, and other Landscaped Areas

Pesticides, herbicide and fungicide shall not be used in the landscaped areas associated with the

East Beach Green Infrastructure Retrofit Project Long Term Pollution Prevention Plan & Stormwater Notice of Intent April 12, 2022

project site and shall not be stored on-site. Slow-release, phosphorus free fertilizer is allowed. Dumping of lawn wastes, brush or leaves or other materials or debris is not permitted in any Resource Area. Grass clippings pruned branches and any other landscaped waste should be disposed of or composted in an appropriate location. No irrigation shall be used in the landscaped areas for this project.

#### 2.6 Management of Deicing Chemicals and Snow

The qualified contractor selected for snow plowing and deicing shall be made fully aware of the requirements of this section.

No road salt (sodium chloride) shall be stored on-site. The use of magnesium chloride de-icing product with a 0.5 to 1.0 percent sodium chloride mix for snow and ice treatment is permitted. The product shall be stored in a locked room inside the building and shall be used at exterior stairs and walkways. The snow plow contractor shall adhere to these magnesium chloride use and storage requirements.

Snow shall not be stockpiled in the riverfront area or the 100-foot Buffer Zone, catch basins, or area drains. In severe conditions where snow cannot be stockpiled on site, the snow shall be removed from the site and properly disposed of in accordance with DEP Guideline BRP601-01.

Before winter begins, the property owner and the contractor shall review snow plowing, deicing, and stockpiling procedures. Areas designated for stockpiling should be cleaned of any debris. Street and parking lot sweeping should be followed in accordance with the Operation and Maintenance Plan.

#### 2.7 Coordination with other Permits and Requirements

Certain conditions of other approvals affecting the long term management of the property shall be considered part of this Long Term Pollution Prevention Plan. The Owner shall become familiar with those documents and comply with the guidelines set forth in those documents.

#### 3.0 STORMWATER MANAGEMENT SYSTEM OPERATION AND MAINTENANCE PLAN

#### 3.1 Introduction

This Operation and Maintenance Plan (O&M Plan) for East Beach site is required under Standard 9 of the 2008 MassDEP Stormwater Handbook to provide best management practices for implementing maintenance activities for the stormwater management system in a manner that minimizes impacts to wetland resource areas.

The Owner shall implement this O&M Plan and proactively conduct operations at the site in an environmentally responsible manner. Compliance with this O&M Plan does not in any way dismiss the Owner from compliance with other applicable Federal, State or local laws.

Routine maintenance during construction and post-development phases of the project, as defined in the Operation and Maintenance Plan, shall be permitted without amendment to the Order of Conditions. A continuing condition in the Certificate of Compliance shall ensure that maintenance can be performed without triggering further filings under the Wetlands Protection Act.

All stormwater best management practices (BMPs) shall be operated and maintained in accordance with the design plans and the Operation and Maintenance Plan approved by the issuing authority. The Owner shall:

a. Maintain an operation and maintenance log for the last three years, including inspections, repairs, replacement and disposal (for disposal the log shall indicate the type of material and

the disposal location). This is a rolling log in which the responsible party records all operation and maintenance activities for the past three years.

- b. Make this log available to MassDEP and the Conservation Commission upon request; and
- c. Allow members and agents of the MassDEP and the Conservation Commission to enter and inspect the premises to evaluate and ensure that the Owner complies with the Operation and Maintenance requirements for each BMP.

#### 3.2 Stormwater Operation and Maintenance Requirements

Inspect and maintain the stormwater management system as directed below. Refer to the Stormwater Management System Location Map (Figure 1) for the location of each component of the system. Repairs to any component of the system shall be made as soon as possible to prevent any potential pollutants (including silt) from entering the resource areas.

#### Deep Sump and Hooded Catch Basins

Inspect or clean catch basins four times per year and at the end of foliage and snow-removal seasons. Other inspection and maintenance requirements include:

- Remove organic material, sediment and hydrocarbons four times per year or whenever the depth of deposits is greater than or equal to one half the depth from the bottom of the invert of the lowest pipe in the basin.
- Always clean out catch basins after street sweeping. If any evidence of hydrocarbons is found during inspection, immediately remove the material using absorbent pads or other suitable measures and dispose of legally. Remove other accumulated debris as necessary.
- If handling runoff from land uses with higher potential pollutant loads or discharging runoff near or to a critical area, more frequent cleaning may be necessary.
- Transport and disposal of accumulated sediment off-site shall be in accordance with applicable local, state and federal guidelines and regulations.

#### Area Drains

Inspect area drains at least once per month and remove debris from the grate. Clean out accumulated sediments at least once per year and more frequently as necessary.

#### Isolator Row

Maintain water quality units according the recommendations set forth by the manufacturer. Refer to the Isolator Row O&M Manual, provided as Attachment A.

#### Subsurface Infiltration Structures

Inspect subsurface detention/infiltration structures twice per year. Inspect the inlets and observation ports to determine if there is accumulated sediment within the system. Remove all debris and accumulated sediment that may clog the system.

#### **Bioretention Areas**

Perform annual maintenance of all components of the bioretention area, including plants, soil, and mulch. Table 1, below, outlines recommended maintenance activities.

Location	Description	Frequency	Time of Year
Surface	Inspect and remove trash	Monthly	Year round
Soil	Inspect and repair erosion	Monthly	Year round
Organic Layer	Remulch void areas	Annually	Spring
	Remove previous mulch layer before applying new layer (optional)	Annually	Spring
	Water vegetation at end of day for 14 consecutive days after planting	Immediately after planting	As needed
	Fertilize	Annually	Spring
Plants	Mow grass	2 to 12 times per year	As needed
	Remove and replace all dead and diseased vegetation that cannot be treated	Annually	Spring
	Treat all diseased trees and shrubs	As needed	Variable

During and after storm events, record the length of time standing water remains in the bioretention areas. If the time is greater than 72 hours, thoroughly inspect the basins for signs of clogging and develop a corrective action plan. The corrective action plan, prepared by a qualified professional, will outline procedures to restore infiltrative function. The owner of the site shall take immediate action to implement these corrective measures. Inspect pretreatment devices and bioretention cells regularly for sediment build-up, structural damage, and standing water. Never store snow in bioretention areas.

#### 3.3 Repair of the Stormwater Management System

The stormwater management system shall be maintained. The repair of any component of the system shall be made as soon as possible to prevent any potential pollutants including silt from entering the resource areas or the existing closed drainage system.

#### 3.4 Reporting

The City shall maintain a record of drainage system inspections and maintenance (per this Plan) and submit a yearly report to the New Bedford Conservation Commission.

#### STORMWATER MANAGEMENT SYSTEM INSPECTION FORM

East Beach New Bedford, MA		Inspected by: Date:
Component	Status/Inspection	Action Taken
Deep Sump Catch Basins, Area Drains and Drain Manholes		
Subsurface Infiltration System		
Bioretention Basins		
Isolator Row		
General site conditions – evidence of erosion, etc.		

SUBMIT COPIES OF STORMWATER MANAGEMENT SYSTEM INSPECTION FORM TO THE NEW BEDFORD CONSERVATION COMMISSION WITH THE YEARLY REPORT

# Isolator<sup>®</sup> Row Plus O&M Manual





## The Isolator® Row Plus

#### Introduction

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

#### The Isolator Row Plus

The Isolator Row Plus is a row of StormTech chambers, either SC-160, SC-310, SC-310-3, SC-740, DC-780, MC-3500 or MC-7200 models, that is surrounded with filter fabric and connected to a closely located manhole for easy access. The fabric-wrapped chambers provide for sediment settling and filtration as stormwater rises in the Isolator Row Plus and passes through the filter fabric. The open bottom chambers and perforated sidewalls (SC-310, SC-310-3 and SC-740 models) allow stormwater to flow both vertically and horizontally out of the chambers. Sediments are captured in the Isolator Row Plus protecting the adjacent stone and chambers storage areas from sediment accumulation.

ADS geotextile fabric is placed between the stone and the Isolator Row Plus chambers. The woven geotextile provides a media for stormwater filtration, a durable surface for maintenance, prevents scour of the underlying stone and remains intact during high pressure jetting. A non-woven fabric is placed over the chambers to provide a filter media for flows passing through the chamber's sidewall. The non-woven fabric is not required over the SC-160, DC-780, MC-3500 or MC-7200 models as these chambers do not have perforated side walls.

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

The Isolator Row FLAMP<sup>™</sup> (patent pending) is a flared end ramp apparatus attached to the inlet pipe on the inside of the chamber end cap. The FLAMP provides a smooth transition from pipe invert to fabric bottom. It is configured to improve chamber function performance by enhancing outflow of solid debris that would otherwise collect at the chamber's end. It also serves to improve the fluid and solid flow into the access pipe during maintenance and cleaning and to guide cleaning and inspection equipment back into the inlet pipe when complete.

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

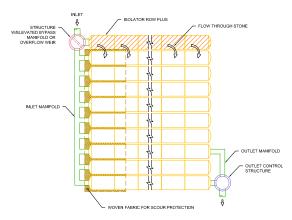
**Note:** See the StormTech Design Manual for detailed information on designing inlets for a StormTech system, including the Isolator Row Plus.



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



#### StormTech Isolator Row PLUS with Overflow Spillway (not to scale)



## **Isolator Row Plus Inspection/Maintenance**

#### Inspection

The frequency of inspection and maintenance varies by location. A routine inspection schedule needs to be established for each individual location based upon site specific variables. The type of land use (i.e. industrial, commercial, residential), anticipated pollutant load, percent imperviousness, climate, etc. all play a critical role in determining the actual frequency of inspection and maintenance practices.

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

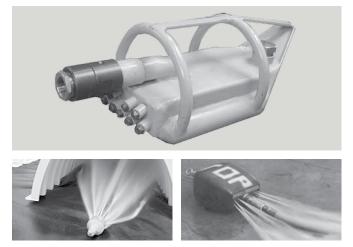
The Isolator Row Plus incorporates a combination of standard manhole(s) and strategically located inspection ports (as needed). The inspection ports allow for easy access to the system from the surface, eliminating the need to perform a confined space entry for inspection purposes.

If upon visual inspection it is found that sediment has accumulated, a stadia rod should be inserted to determine the depth of sediment. When the average depth of sediment exceeds 3 inches throughout the length of the Isolator Row Plus, clean-out should be performed.

#### Maintenance

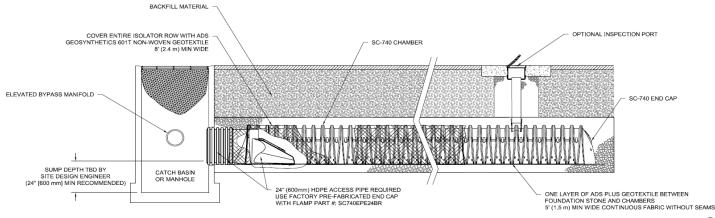
The Isolator Row Plus was designed to reduce the cost of periodic maintenance. By "isolating" sediments to just one row, costs are dramatically reduced by eliminating the need to clean out each row of the entire storage bed. If inspection indicates the potential need for maintenance, access is provided via a manhole(s) located on the end(s) of the row for cleanout. If entry into the manhole is required, please follow local and OSHA rules for a confined space entries.

Maintenance is accomplished with the JetVac process. The JetVac process utilizes a high pressure water nozzle to propel itself down the Isolator Row Plus while scouring and suspending sediments. As the nozzle is retrieved, the captured pollutants are flushed back into the manhole for vacuuming. Most sewer and pipe maintenance companies have vacuum/JetVac combination vehicles. Selection of an appropriate JetVac nozzle will improve maintenance efficiency. Fixed nozzles designed for culverts or large diameter pipe cleaning are preferable. Rear facing jets with an effective spread of at least 45" are best. StormTech recommends a maximum nozzle pressure of 2000 psi be utilized during cleaning. JetVac reels can vary in length. For ease of maintenance, ADS recommends Isolator Row Plus lengths up to 200' (61 m). The JetVac process shall only be performed on StormTech Isolator Row Plus that have ADS Plus Fabric (as specified by StormTech) over their angular base stone.



#### StormTech Isolator Row PLUS (not to scale)

**Note:** Non-woven fabric is only required over the inlet pipe connection into the end cap for SC-160LP, DC-780, MC-3500 and MC-7200 chamber models and is not required over the entire Isolator Row PLUS.



## **Isolator Row Plus Step By Step Maintenance Procedures**

#### Step 1

Inspect Isolator Row Plus for sediment.

A) Inspection ports (if present)

- i. Remove lid from floor box frame
- ii. Remove cap from inspection riser
- iii. Using a flashlight and stadia rod, measure depth of sediment and record results on maintenance log.
- iv. If sediment is at or above 3 inch depth, proceed to Step 2. If not, proceed to Step 3.

#### B) All Isolator Row Plus

- i. Remove cover from manhole at upstream end of Isolator Row Plus
- ii. Using a flashlight, inspect down Isolator Row Plus through outlet pipe
  - 1. Mirrors on poles or cameras may be used to avoid a confined space entry
  - 2. Follow OSHA regulations for confined space entry if entering manhole
- iii. If sediment is at or above the lower row of sidewall holes (approximately 3 inches), proceed to Step 2.

If not, proceed to Step 3.

#### Step 2

Clean out Isolator Row Plus using the JetVac process.

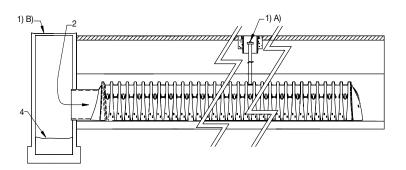
- A) A fixed floor cleaning nozzle with rear facing nozzle spread of 45 inches or more is preferable
- B) Apply multiple passes of JetVac until backflush water is clean
- C) Vacuum manhole sump as required

#### Step 3

Replace all caps, lids and covers, record observations and actions.

#### Step 4

Inspect & clean catch basins and manholes upstream of the StormTech system.



#### Sample Maintenance Log

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

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#### APPENDIX F

Soil Investigations NRCS Soil Maps and Descriptions Soil Test Pit Logs

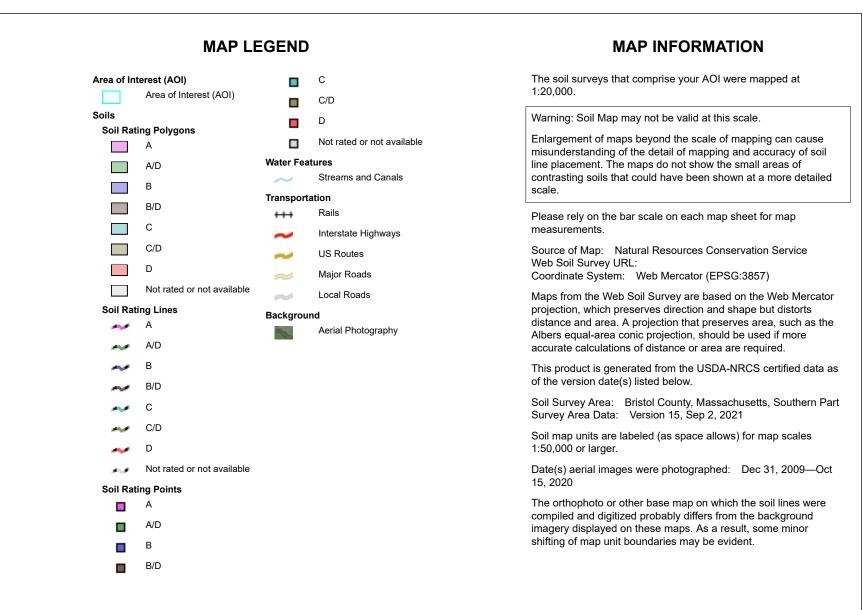
Hydrologic Soil Group-Bristol County, Massachusetts, Southern Part



National Cooperative Soil Survey

**Conservation Service** 

Page 1 of 4



Hydrologic Soil Group-Bristol County, Massachusetts, Southern Part

## Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
305B	Paxton fine sandy loam, 3 to 8 percent slopes	С	4.1	10.5%
310B	Woodbridge fine sandy loam, 3 to 8 percent slopes	C/D	2.4	6.2%
602	Urban land		14.1	35.8%
608	Water, ocean		13.7	34.7%
610	Beaches, sand		4.9	12.4%
656	Udorthents - Urban land complex		0.2	0.4%
Totals for Area of Inter	est		39.4	100.0%



## Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

### **C. On-Site Review** (*minimum of two holes required at every proposed primary and reserve disposal area*)

Deep	Observatior	Hole Numb	er: <u>1</u>	2/24/20	)22	9:15		30/clou	dy			
		king Lot	Hole #	Date	_	Time		Weather		Latitude	Longitude: 2-5%	
1. Land	Use (e.g., wo	odland, agriculti	ural field, vacant lot, e	tc.)	Vegetation			Surface Stone	s (e.g., cobbles,	stones, boulders		
Des	scription of Lo	cation S	outhern parking lo	ot					- (g.,,	,,	-, (///	
2. Soil P	arent Materia	l:				-				(011 011 50	F0 T0)	
	-	-		150'		_andform _			tion on Landscap			
3. Distar	nces from:	Oper	n Water Body	fee	t	D	rainage W	/ay			ilands feet	
			Property Line _	- fee	t	Drinking	g Water W	/ell	feet	(	Other <u>-</u> feet	
4. Unsuita	able Materials	s Present:	] Yes 🗌 No 🛛 I	If Yes:	] Disturbed	I Soil 🗌 I	Fill Material	· 🗆 ۱	Weathered/Fra	ctured Rock	Bedrock	
E Crour	ductor Obaa	muadu 🗖 Vaa			lf v	~~						
5. Grour	ndwater Obse		s 📙 No		пуе			ping from Pit	-	Depth St	tanding Water in Hole	
						Soil Log			T	[]		
	Soil Horizon			Redoximorphic		eatures		Fragments Volume		Soil	• "	
Depth (in)	/Layer	(USDA	Moist (Munsell)	Depth	Color	Percent	Gravel	Cobbles & Stones	Soil Structure	(Moist)	Other	
0-4	Pavement	-	-	-	-	-	-	-	-	-	-	
4-19	Fill	Loamy Sand	10 YR 5/6	-	-	-	30%	-				
19-30	Fill	Sandy Loam	10 YR 4/1	-	-	-	15%	-				
30-36	Ab	Sandy Loam	10 YR 2/1	-	-	-	-					
36-96	C1	Sandy Loam	10 YR 5/1	-	-	-	10%					



## Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

### **C. On-Site Review** (*minimum of two holes required at every proposed primary and reserve disposal area*)

Deep	Observatior	Hole Numb	er: 2	2/24/20	)22	10:15		30/clou	ıdy		
			Hole #	Date		Time		Weather		Latitude	Longitude: 2-5%
1. Land	Use (e.g. w	king Lot	ural field, vacant lot, e	tc)	- Vegetation			- Surface Stone	s (e.g., cobbles,	stones boulder	
			outhern parking lo		vegetation				a (e.g., cobbles,	stories, boulder	s, etc.) Slope (78)
Des	scription of LC		g								
2. Soil P	arent Materia	d: <mark>-</mark>				-		-			
					L	.andform			tion on Landscap		
3. Distar	nces from:	Oper	n Water Body	150' fee	ət	D	rainage W	/ay	feet	Wet	tlands feet
		I	Property Line	- fee	et	Drinking	g Water W	/ell -	feet	(	Other feet
4. Unsuita	ble Material	s Present:	Yes 🗌 No 🛛	If Yes:	Disturbed	Soil 🗌 I	- Fill Material				
				_	_	_		_			_
5. Grour	ndwater Obse	erved: 🗌 Yes	s 🗌 No		lf ye	es:	Depth Wee	ping from Pit	_	Depth St	tanding Water in Hole
						Soil Log					
Soil Having Soil Metrix Color Redoximorphic Features Coarse Fragments Soil										0.1	
Depth (in)	/Layer	(USDA	Moist (Munsell)	Depth	Color	Percent	Gravel	Cobbles & Stones	Soil Structure	(Moist)	Other
0-4	Pavement	-	-	-	-	-	-	-	-	-	-
4-25	Fill	Loamy Sand	10 YR 5/6	-	-	-	30%	-	Massive	Friable	
25-35	Ab	Sandy Loam	10 YR 2/1	-	-	-	-	-	Massive	Friable	
35-96	C1	Sandy Loam	10 YR 4/1	-	-	-	10%		Massive	Friable	



## Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

### **C. On-Site Review** (*minimum of two holes required at every proposed primary and reserve disposal area*)

Deep	Observatior	n Hole Numb	er: <u>3</u>	2/24/20	)22	1:15		30/clou	dy		
-		king Lot	Hole #	Date	_	Time		Weather		Latitude	Longitude:
1. Land	Use (e.g., wo	odland, agricult	ural field, vacant lot, e	tc.)	Vegetation			Surface Stone	es (e.g., cobbles,	stones, boulders	
Des	scription of Lo	ocation: M	iddle parking lot								
						-		_			
2. 301 F		u			<u> </u>	andform		Posi	tion on Landscap	e (SU, SH, BS,	FS, TS)
3. Distar	nces from:	Oper	n Water Body	150' <sub>fee</sub>	et	D	rainage W	/ay -	feet	Wet	lands feet
			Property Line							C	
4. Unsuita	able Materials		] Yes				-				
5. Grour	ndwater Obse	erved: 📋 Yes	s 🗌 No		lf ye			ping from Pit	-	Depth St	anding Water in Hole
		1				Soil Log				,	
Donth (in)	Soil Horizon		Soil Matrix: Color-	Redo	oximorphic Fo			Fragments Volume	- Soil Structure	Soil	Other
Depth (in)	/Layer	(USDA	Moist (Munsell)	Depth	Color	Percent	Gravel	Cobbles & Stones	Son Structure	(Moist)	Other
0-4	Pavement	-	-	-	-	-	-	-	-	-	-
4-24	Fill	Loamy Sand	10 YR 5/6	-	-	-	30%	0%	Massive	Friable	
24-33	Ab	Sandy Loam	10 YR 2/1	-	-	-		10%	Massive	Friable	
33-70	C1	Sandy Loam	10 YR 4/1	-	-	-	0%		Massive	Friable	
							0%				



## Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

### **C. On-Site Review** (*minimum of two holes required at every proposed primary and reserve disposal area*)

Deep	Observatior	Hole Numb	er: <u>4</u>	2/24/20	)22	1:55		30/clou	dy		
-	Par	king Lot	Hole #	Date	_	Time		Weather		Latitude	Longitude: 2-5%
1. Land Des	Use (e.g., wo	odland, agricult	ural field, vacant lot, e <mark>iddle parking lot</mark>	tc.)	Vegetation			Surface Stone	es (e.g., cobbles,	stones, boulders	
						-		-			
					L	andform		Posi	tion on Landscap	e (SU, SH, BS,	FS, TS)
3. Distar	nces from:	Oper	n Water Body	150' fee	et	D	rainage W	/ay	feet	Wet	lands feet
		1	Property Line	- fee	t	Drinking	g Water W	/ell <u>-</u>	feet	C	Other feet
4. Unsuita	ble Materials	s Present: 📕	Yes 🗌 No 🛛	If Yes:	] Disturbed	Soil 🗌 I	Fill Material	· 🗆 ۱	Weathered/Fra	ctured Rock	Bedrock
5. Grour	ndwater Obse	rved: 🗌 Yes	s 🗌 No		lf ye	es:	Depth Wee	ping from Pit	_	Depth St	anding Water in Hole
						Soil Log	ļ				
Soil Horizon Soil Toytura Soil Matrix: Colora Redoximorphic Features % by Volume S										Soil	Other
Depth (in)	/Layer	(USDA	Moist (Munsell)	Depth	Color	Percent	Gravel	Cobbles & Stones	Son Structure	(Moist)	Other
0-4	Pavement	-	-	-	-	-	-	-	-	-	-
4-19	Fill	Loamy Sand	10 YR 5/6	-	-	-	30%	0%	Massive	Friable	
19-30		Sandy Loam	10 YR 4/1	-	-	-		10%	Massive	Friable	
30-36	Ab	Sandy Loam	10 YR 2/1	-	-	-	10%		Massive	Friable	
	Bw						20%				



## Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

### **C. On-Site Review** (*minimum of two holes required at every proposed primary and reserve disposal area*)

Deep	Observatior	Hole Numb	er: <u>5</u>	2/24/20	)22	11:00		30/clou	ıdy		
		king Lot	Hole #	Date	-	Time		Weather		Latitude	Longitude: 2-5%
1. Land	Use (e.g., wo	odland, agricult	ural field, vacant lot, e	tc.)	Vegetation			Surface Stone	s (e.g., cobbles,	stones, boulders	
Des	scription of Lo	ocation: <u>N</u>	orth parking lot								
						-		-			
2. 0011					L	andform		Posi	tion on Landscap	e (SU, SH, BS,	FS, TS)
3. Distar	nces from:	Oper	n Water Body	150' fee	t	D	rainage W	′ay	feet	Wet	tlands feet
			Property Line								Other feet
4. Unsuita	ble Materials	s Present: 📕	Yes 🗌 No 🛛	If Yes:	] Disturbed	Soil 📕 I	Fill Material	· 🗆 ۱	Weathered/Fra	ctured Rock	Bedrock
E Oracur		m vo du 📕 V o a			ا <b>ل</b> ا ، ب					56"	
5. Groun	ndwater Obse	rvea: res	s 🗌 No		пуе			ping from Pit	-	Depth St	tanding Water in Hole
II			1			Soil Log		Fragments		[]	
Depth (in)	Soil Horizon		Soil Matrix: Color-	Redoximorphic I		eatures		Volume	Soil Structure	Soil Consistence	Other
Deptil (ill)	/Layer	(USDA	Moist (Munsell)	Depth	Color	Percent	Gravel	Cobbles & Stones		(Moist)	other
0-4	Pavement	-	-	-	-	-	-	-	-	-	-
4-12	Fill	Loamy Sand	10 YR 5/6	-	-	-	30%	-	Massive	Friable	
12-44		Sandy Loam	10 YR 3/3	-	-	-		15%	Massive	Friable	
44-64	C2		10 YR 6/4	-	-	-	0%		Massive	Friable	



## Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

### **C. On-Site Review** (*minimum of two holes required at every proposed primary and reserve disposal area*)

Deep	Observation	Hole Numb	er: <u>6</u>	2/24/2022		12:30			30/cloudy		-
-	Dor	king Lot	Hole #	Date		Time		Weather		Latitude	Longitude:
1. Land	Use (e.g. wo	king Lot	ural field, vacant lot, e	tc)	- Vegetation			- Surface Stone	s (e.g., cobbles,	stones houlder	
			orth parking lot		vegetation				.s (c.g., cobbics,		3, etc.) Olope (70)
Des			<u> </u>								
2. Soil P	arent Materia	d: <u>-</u>				-		-			
				4 5 0 1		_andform			tion on Landscap		
3. Distar	nces from:	Oper	n Water Body	150' fee	et	D	rainage W	/ay	feet	Wet	lands feet
		I	Property Line	- fee	t	Drinking	g Water W	/ell <u>-</u>	feet	(	Other <u>-</u> feet
4. Unsuita	ble Materials	s Present: 📕	Yes 🗌 No 🛛	If Yes:	] Disturbed	l Soil 🛛 🗧 I	Fill Material	I 🗆 '	Weathered/Fra	ctured Rock	Bedrock
		. 💻	<b>—</b>							00"	
5. Groundwater Observed: Yes No If yes: 83" Depth Weeping from Pit 93" Depth Standing Water in Hole											
						Soil Log	l				
	Soil Horizon	Soil Texture	Soil Matrix: Color-	Redo	oximorphic Fo			Fragments Volume		Soil	
Depth (in)	/Layer	(USDA	Moist (Munsell)	Depth	Color	Percent	Gravel	Cobbles & Stones	Soil Structure	Consistence (Moist)	Other
0-4	Pavement	-	-	-	-	-	-	-	-	-	-
4-17	Fill	Loamy Sand	10 YR 5/6	-	-	-	30%		Massive	Friable	-
17-25	Ab	Sandy Loam	10 YR 2/1	-	-	-	10%		Massive	Friable	-
25-36				-	-	-		0%	Massive	Friable	Large stones
	C1		10 YR 6/2				20%	10%			



## Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

### **C. On-Site Review** (*minimum of two holes required at every proposed primary and reserve disposal area*)

Deep	Observatior	Hole Numb	er: <u>7</u>	3/3/202	22	9:00		38/sunr	ny			
		king Lot	Hole #	Date		Time		Weather		Latitude	Longitude: 2-5%	
1. Land	Use (e.g. wo	odland agricult	ural field, vacant lot, e	tc)				Surface Stone	s (e.g., cobbles,	stones boulder		
Dee	(C.g., We		outh parking lot		vegetation				.s (c.g., cobbics,	stories, boulder	3, ctc.) Clope (70)	
Des	scription of LC		earrig ier									
2. Soil P	arent Materia	d: -				-		-				
					La	andform		Posi	tion on Landscap	oe (SU, SH, BS,	FS, TS)	
3. Distar	nces from:	Oper	n Water Body	200' fee	et	D	rainage W	/ay	feet	Wet	lands feet	
		1	Property Line	- fee	et	Drinking	g Water W	/ell -	feet	(	Other feet	
4. Unsuita	ble Materials		] Yes □ No □				•					
5. Grour	ndwater Obse	rved: 🗌 Yes	s 🗌 No		lf ye	es:	Depth Wee	ping from Pit	_	Depth St	anding Water in Hole	
						Soil Log						
				Red	oximorphic Fe		Coarse l	Fragments		Soil		
Depth (in)	Soil Horizon /Layer	Soil Texture (USDA	Soil Matrix: Color- Moist (Munsell)		-		-	Volume Cobbles &	Soil Structure	Consistence	Other	
	/Layer	(03DA	Moist (Mulisell)	Depth	Color	Percent	Gravel	Stones		(Moist)		
0-4	Pavement	-	-	-	-	-	-	-	-	-	-	
4-22	Fill	Sand	10 YR 5/4	-	-	-	25%		Massive	Friable		
22-35	Ab	Sandy Loam	10 YR 2/1	-	-	-			Massive	Friable		
35-65			10 YR 4/6	-	-	-	15%		Massive	Friable		
								10%				



## Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

### **C. On-Site Review** (*minimum of two holes required at every proposed primary and reserve disposal area*)

Deep	Observation	Hole Numb	er: <u>8</u>	3/3/202	22	10:30		38/sun	ny			
-	Dee	litere Last	Hole #	Date		Time		Weather		Latitude		Longitude: 2-5%
1 Land	Use	king Lot	ural field, vacant lot, e	1	-			-	. (	at a second state of		
n Lana	(e.g., wo	odiand, agriculti	ural field, vacant lot, e	etC.)	vegetation			Surface Stone	es (e.g., cobbles,	stones, boulder	s, etc.)	Slope (%)
Des	scription of Lo	cation:	iddle parking lot									
2. Soil P	arent Materia	d: -				-		-				
					L	andform.		Posi	tion on Landscap	be (SU, SH, BS,	FS, TS)	
3. Distar	nces from:	Oper	n Water Body	200' <sub>fee</sub>	et	D	rainage W	′ay <mark>-</mark>	feet	We	tlands	- feet
		-	Property Line							(		
4 Unsuita	ble Materials		] Yes 🗌 No									
5. Grour	ndwater Obse	rved: 🗌 Yes	s 🗌 No		lf ye	es:	Depth Wee	ping from Pit	_	Depth S	tanding W	ater in Hole
						Soil Log			_			
				Red	oximorphic Fe		Coarse F	ragments		Soil		
Depth (in)	Soil Horizon /Layer	Soil Texture (USDA	Soil Matrix: Color- Moist (Munsell)				% by `	Volume Cobbles &	Soil Structure			Other
	/Layer	(USDA	Moist (Munsell)	Depth	Color	Percent	Gravel	Stones		(Moist)		
0-4	Pavement	-	-	-	-	-	-	-	-	-		-
4-23	Fill	Sand	10 YR 5/4	-	-	-	25%		Massive			
23-33	Ab	Sandy Loam	10 YR 2/1	-	-	-			Massive			
33-55			10 YR 4/6	-	-	-	10%		Massive			
								10%				



## Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

### **C. On-Site Review** (*minimum of two holes required at every proposed primary and reserve disposal area*)

Deep	Observation	n Hole Numb	er: <u>9</u>	3/3/2022		12:30						-	
		king Lot	Hole #	Date		Time		Weather		Latitude		Longitude: 2-5%	
1. Land	Use (e.g., wo	odland, agricult	ural field, vacant lot, e	tc.)	Vegetation			- Surface Stone	s (e.g., cobbles,	stones, boulder	s. etc.)	2-3 % Slope (%)	
Des	cription of Lo	ncation: N	orth parking lot	,	, egolalion				.e (eigi, eessiee,	otorioo, sourdor	0, 0101)		
2. Soil P	arent Materia	al: <u>-</u>				-		- <u>-</u>	tion on Landscap				
		0		200'									
3. Distar	ices from:		n Water Body										
			Property Line _				-			(			
4. Unsuita	ble Materials	s Present:	Yes 🗌 No 🛛	If Yes:	Disturbed :	Soil 📕 I	Fill Material		Weathered/Fra	ctured Rock	🗌 Beo	drock	
5. Groun	ndwater Obse	erved: 📕 Yes	s 🗌 No		lf ve	s: 78"		ning from Pit	_	Dopth St	tanding M	lator in Holo	
o. oroan								ping nom Pit	-	Deptil S	tanung w		
						Soil Log		Fragments					
Depth (in)	Soil Horizon	Soil Texture	Soil Matrix: Color-	Redoximorphic F		atures		/olume	Soil Structure	Soil Consistence	Other	Other	
	/Layer	(USDA	Moist (Munsell)	Depth	Color	Percent	Gravel	Cobbles & Stones		(Moist)			
0-4	Pavement	-	-	-	-	-	-	-	-	-		-	
4-13	Fill	Sandy Loam	10 YR 4/1	-	-	-	20%		Massive	Friable			
13-27	Bw	Loamy Sand	10 YR 4/6	-	-	-			Massive	Friable		-	
27-84			10 YR 5/3	-	-	-	20%	15%	Massive	Friable			