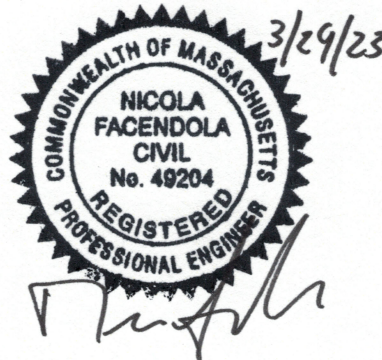


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STORMWATER REPORT
FOR
WEBSTER STREET MILL
RESIDENTIAL CONVERSION
ASSESSOR REF. MBL 27-032-02+2A
70 WEBSTER STREET
WORCESTER, MA



March 29, 2023

Prepared For:
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LDG Project No.: 1999.0

<u>Table of Contents</u>	<u>Section</u>
Hydrologic Summary	1.00
Methodology.....	1.10
Pre-Development Conditions	1.20
Post-Development Conditions	1.30
MADEP Stormwater Management Standards	2.00
Standard 1: Untreated Discharges	2.10
Standard 2: Peak Rate Control and Flood Prevention	2.20
Summary of Peak Stormwater Runoff	2.2.1
Standard 3: Recharge to Groundwater.....	2.30
Standard 4: Total Suspended Solids (TSS) Removal	2.40
Water Quality Volume Compliance Calculation.....	2.4.1
Standard 5: Higher Potential Pollutant Loads	2.50
Standard 6: Critical Areas.....	2.60
Standard 7: Redevelopment.....	2.70
Standard 8: Erosion and Sediment Control	2.80
Standard 9: Operation and Maintenance.....	2.90
Standard 10: Illicit Discharges	2.10
MADEP Stormwater Management Form	2.11
Site Mapping and Information	3.00
Mass GIS Mapping.....	3.10
On-Site Soils Mapping and Information	3.20
FEMA Flood Insurance Map.....	3.30
Supporting Information and Calculations	4.00
MADEP TSS Removal Calculation Sheets	4.10
Illicit Discharge Statement	4.20
HydroCAD Calculations	5.00
Existing Conditions Subcatchments Map.....	5.10
Existing Conditions Analysis for 2-, 10-, 25-, & 100-Year Storm Events	5.20
Proposed Conditions Subcatchments Map	5.30
Proposed Conditions Analysis for 2-, 10-, 25-, & 100-Year Storm Events	5.40
Stormwater Management System Operation and Maintenance Plan	6.00
Long Term Pollution Prevention Plan	7.00
Construction Period Pollution Prevention and Erosion & Sediment Control Plan	8.00

SECTION 1.00 - HYDROLOGIC SUMMARY

METHODOLOGY

The HydroCAD computer program (HydroCAD) was used to model the existing and proposed hydrology of the site and design a stormwater management system. HydroCAD generates flood hydrographs dependent upon the type of land use, vegetation, soil types, land slope, watershed areas and rainfall data. HydroCAD also takes into account the antecedent moisture condition of the soil. The peak rate of runoff and volume of runoff are projected for the input storm frequency events (design storms).

Rainfall data was obtained from the precipitation data for Worcester for storm frequencies of 2-, 10-, 25- and 100-year storm return from Extreme Precipitation Tables Northeast Regional Climate Center; these were then input into HydroCAD. Rainfall data is attached herein. A 24-hour type III rainfall distribution was used in the HydroCAD analysis as prescribed for New England by the USDA Soil Conservation Service (SCS).

PRE-DEVELOPMENT CONDITIONS

The development site is identified as Assessor Ref. MBL 27-032-02+2A and consists of a 1.0± Ac. The site is bound by Webster Street to the east, an existing commercial parcel / mill building to the south, a National Grid parcel containing a transformer station to the north, and Curtis Pond to the west. The parcel is fully developed and contains an existing 17,250±sf. footprint historic mill building with associated parking, loading, and utilities. There is no established on-site stormwater management system as all surface and rooftop runoff from 90% of the site draining west towards Curtis Pond with the remaining area draining towards Webster Street

The parcel is located in an MG-2.0 Zoning District and is also within an Adaptive Reuse Overlay District. The on-site wetland and resource area boundary which consists of the bank of Curtis Pond was flagged by has been flagged by Goddard Consulting, LLC in February of 2022. An Order of Conditions (OOC) for MADEP File # 349-1354 was issued by the demolition of approximately 5,000±sf. of the existing structure by City of Worcester Conservation Commission in March of 2023.

The on-site soils within the area of the limits of the development are classified by the Worcester County Soil Survey, Northern Part:

- 1 – Water
- 602 – Urban Land

See the SCS soils documentation included herein for additional on-site soil details.

Based on current MAGIS Mapping the development site is NOT located in any of the following environmentally sensitive areas:

- Natural Heritage and Endangered Species Program – Priority Habitats of Rare Species
- Natural Heritage and Endangered Species Program – Estimated Habitats of Rare Wildlife
- Natural Heritage and Endangered Species Program – Natural Communities
- Natural Heritage and Endangered Species Program – Certified Vernal Pools
- MADEP Wellhead Protection Areas – Zone 1 & Zone 2
- Surface Water Supply Protection Areas – Zone A, Zone B, & Zone C
- MADEP Surface Water Supply Watersheds

- MA DFW Coldwater Fisheries Resource Area
- Outstanding Resource Waters
- Subsurface Aquifer
- Mass Historic Commission Inventory Area or Point

A FEMA Flood Zone AE is identified on Flood Map Panel Number 205170802E For Worcester County with an effective dated of July 4, 2011 along the bank of Curtis Pond with a Flood Elevation of 475 – NAVD88.

The development site is located within a mapped Mass Historic Commission Inventory Area identified as WOR.BS and contains two identified historic points which are the two existing structures. The main mill building is identified as point WOR.3168 and is the former Wickwire – Spencer Steel Company Building. The second point is identified as WOR.3170 and is the former Wickwire – Spencer Steel Company Garage Building No.17. The City of Worcester Historic Commission and MassHistoric have been notified regarding the proposed redevelopment and adaptive reuse of the site.

POST-DEVELOPMENT CONDITIONS

The Applicant to redevelop the 17,250±sf. mill building as residential apartments. As detailed above, a 5,000±sf. single story section of the building will be demolished. The remaining existing three story 9,640±sf. footprint will be redeveloped and an additional two story addition is proposed to be built on-top of the remaining 2,524±sf single story footprint. The residential conversion will contain 8 two-bedroom units and 25 one-bedroom units. The building slab area of the demolished 5,000±sf. single story structure will be converted into a parking area and the remaining existing paved parking and loading area will be converted into a new residential parking lot. The residential parking lot will contain newly cutout directional island and landscaping.

Impervious coverage (building and paved parking) from the site will increase slight from 35,896±sf to 34,642±sf, a net increase of 1,254±sf. This minor increase in pavement is mitigated by conversion of 6,782±sf. of hard packed gravel currently used as additional parking area adjacent to Curtis Brook to cleaned and resorted landscaped area. New curbing is proposed within the parking area to collect and treat stormwater runoff. Two new proposed catch basins are proposed within the parking area which connect to a CDS Stormwater Treatment Unit for additional TSS removal prior to discharge. A new on-site discharge from the treatment system is proposed along the bank of Curtis Pond in an area which will be regraded to provide a level discharge area new faired end section and rip-rap pad.

Compliance with the 10 MADEP Stormwater Standards for the proposed site development and stormwater management system is detailed below.

SECTION 2.00 - MADEP STORMWATER MANAGEMENT STANDARDS

STANDARD 1: Untreated Discharges

Stormwater Management Standard 1 requires that, “No new stormwater conveyances (e.g. outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth”.

This standard is met by the proposed redevelopment not creating any new non-treated stormwater discharges. All surface runoff from redeveloped impervious areas draining to Curtis Pond is collected and treated for suspended solids removal prior to discharge.

STANDARD 2: Peak Rate Control and Flood Prevention

Stormwater Management Standard 2 requires that, “Stormwater management systems must be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates. This Standard may be waived for land subject to coastal storm flowage.”

This standard is met by the proposed development mitigating the post-development peak discharge rates at the designated control points for all design storm events. This is accomplished by the conversion of hard pack gravel areas into restored landscape area and with the installation of new landscaped parking island. The proposed redevelopment will reduce the peak rate of runoff at all the design control points and provide ample groundwater recharge.

SUMMARY OF PEAK STORMWATER RUNOFF (CFS)

A single control point was utilized to analyze the existing conditions runoff characteristics of the site. Control Point R1 was established at Curtis Pond which is the westerly property boundary and Control Point R2 is Webster Street where runoff from the front of the site drains to in the current existing condition.

Control Point – R1		
Storm	Pre-Dev. Flow	Post-Dev. Flow
2-yr	2.79 cfs	2.64 cfs
10-yr	4.40 cfs	4.26 cfs
25-yr	5.65 cfs	5.52 cfs
100-yr	8.18 cfs	8.08 cfs
Control Point – R2		
Storm	Pre-Dev. Flow	Post-Dev. Flow
2-yr	0.30 cfs	0.28 cfs
10-yr	0.45 cfs	0.44 cfs
25-yr	0.57 cfs	0.56 cfs
100-yr	0.81 cfs.	0.81 cfs.

The net peak discharge is controlled and does not increase at the control points for any of the evaluated design storms

STANDARD 3: Recharge to Groundwater

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

This standard is met to the maximum extent practicable as the existing site current does not provide any ground water recharge. Improvements to the site which include the installation of new pervious islands withing the existing paved parking area and conversion of existing hard pack gravel parking areas to restored landscaped area will improve the current on-site recharge characteristic of the site as a redevelopment project.

STANDARD 4: 80% TSS Removal

Stormwater Management Standard 4 requires that, “Stormwater management systems must be designed to remove 80% of the average annual post-construction of Total Suspended Solids (TSS). This standard is met when:

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

This standard is me to the maximum extent practicable by collecting all surface runoff draining to the west of the site in deep-sump and hooded catch basins. Flow from the two new proposed basins the receives additional treatment from CDS Stormwater Treatment Unit prior to discharge.

The volume of stormwater runoff to be treated for water quality is calculated as one-half inch times the total post-development impervious area of the site based on current MADEP Stormwater Management Standards for a development not producing higher potential pollutant loads as defined by MADEP Standard 5 and not located in a critical area as defined by MADEP Standard 6. The proposed site improvements provide 80% TSS removal Below is a summary of the proposed water quality treatment practices to be utilized at the development site. MADEP TSS Removal Calculation Sheets area provided in Section 4.0.

Summary of Proposed Water Quality Treatment Practices	
Best Management Practices	TSS Removal Efficiency
Deep Sump and Hooded Catch Basins	25%
CDS Stormwater Treatment Unit	74%

**TSS & TP removal efficiency taken from Massachusetts Stormwater Handbook - Structural BMPs - Volume 2 | Chapter 2*

Water Quality Volume Compliance Calculation:

Total Site Impervious Area (not including existing roof)= 21,410± s.f.
 0.5 inch x 1 foot/12 inches= 0.042 feet
 0.042 feet 21,440± s.f.= 899± cu.ft.

Total Volume to be treated for Water Quality= 899± cu.ft.

Required Water Quality Volume for each Treatment Train. CDS Stormwater Treatment units are sized using the Massachusetts Department of Environmental Protection Wetlands Program – Standard Method to Convert Required Water Quality Volume to a Discharge Rate for Sizing Flow Based Manufactured Proprietary Stormwater Treatment Practices.

Flow to Prop. CB 1 & 2 Treated by CDS Unit (CDS Model 2015-4)

Imperious Area =18,990± s.f.

0.5 inch x 1 inch/foot = 0.04219 feet

0.042 feet x 18,990 s.f. = 798 cu. ft.

Total Volume to be treated for Water Quality draining to CDS Unit= 798 cu.ft.

$Q_{0.5}=(qu)(A)(WQV)$

$qu=752$ csm/in for a T_c of 0.1 hours (taken from Figure 2 of the Massachusetts Department of Environmental Protection Wetlands program - Standard Method to Convert Required Water Quality Volume to a Discharge Rate)

$A=18,990±$ s.f.. (impervious area flowing to CBs 1-3) = 0.436 acres

$WQV=0.5$ inches

$Q_{0.5}=(752$ csm/in) (0.436acres) (0.0015625 sq. mi / acre) (0.5 inch)

$Q_{0.5}= 0.256$ cfs < CDS Model 2015 Inlet Unit with a Treatment Capacity = 0.70 cfs

The calculation above details that the required flow rate to provide the required treatment is required to be at a minimum of 0.256 cfs. The proposed CDS Unit, as sized, is capable of providing maximum treatment for flows less than 0.70 cfs which complies with the requirements of Standard 4.

STANDARD 5: Higher Potential Pollutant Loads

Stormwater Management Standard 5 requires that, “For land uses with higher potential pollutant loads, source control and pollution prevention shall be implemented in accordance with the Massachusetts Stormwater Handbook to eliminate or reduce the discharge of stormwater runoff from such land uses to the maximum extent practicable. If through source control and/or pollution prevention, all land uses with higher potential pollutant loads cannot be completely protected from exposure to rain, snow, snow melt and stormwater runoff, the proponent shall use the specific stormwater BMPs determined by the Department to be suitable for such use as provided in the Massachusetts Stormwater Handbook. Stormwater discharges from land uses with higher potential pollutant loads shall also comply with the requirements of the Massachusetts Clean Waters Act, M.G.L. c. 2, §26-53, and the regulations promulgated thereunder at 314 CMF 3.00, 314 CMR 4.00 and 314 CMR 5.00.”

The proposed redevelopment of the parcel is not classified as a use which will create a Higher Potential Pollutant Load.

STANDARD 6: Critical Areas

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

The development site is not located within a Critical Area as defined by the Massachusetts Stormwater Handbook.

STANDARD 7: Redevelopment and Other Projects Subject to the Standards only to the Maximum Extent Practicable

The definition of a Redevelopment Project under the definition provided in the MADEP Stormwater Handbook for Standard 7 is listed below:

“Development rehabilitation, expansion and phased projected on previously developed sites, provided that redevelopment results in no next increase in impervious area.”

The proposed development is classified as Redevelopment Project and fully complies with the requirements of the MADEP Stormwater Management Standards to the maximum extent partible.

STANDARD 8: Erosion and Sediment Control

Stormwater Management Standard 8 requires that, “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), must be developed and implemented.”

This standard is met by including erosion and sediment controls within the design plans. Access to the site will be from an existing paved driveway and will be monitored for tracking of construction debris onto Webster Street. Siltation control fence with straw wattle is proposed at the limits of all site related construction activities. Silt sacks are also proposed to be installed at all of the existing catch basins within the area of the proposed site disturbance. A Construction Period Pollution and Erosion & Sedimentation Control Plan has also been prepared for and is included as part of the Stormwater Report as the site disturbance of less than 1 acres does not require the implementation of a Stormwater Pollution Prevention Plan.

STANDARD 9: Operation and Maintenance

Stormwater Management Standard 9 requires that, “A long-term operation and maintenance plan must be developed and implemented to ensure that stormwater management systems function as designed”.

This standard is fully met with development and implementation of a new Site Operation and Maintenance Plan for the redeveloped site.

STANDARD 10: Illicit Discharges

Stormwater Management Standard 10 requires that, “All illicit discharges to the stormwater management system are prohibited”.

This standard is fully met with development and implementation of a new Long-Term Pollution Prevention for the redeveloped site. An Illicit Discharge statement has been prepared and is included herein.



Checklist for Stormwater Report

B. Stormwater Checklist and Certification

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

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

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

Registered Professional Engineer's Certification

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

Registered Professional Engineer Block and Signature



 3/29/23
Signature and Date

Checklist

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

- New development
- Redevelopment
- Mix of New Development and Redevelopment



Checklist for Stormwater Report

Checklist (continued)

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

- No disturbance to any Wetland Resource Areas
- Site Design Practices (e.g. clustered development, reduced frontage setbacks)
- Reduced Impervious Area (Redevelopment Only)
- Minimizing disturbance to existing trees and shrubs
- LID Site Design Credit Requested:
 - Credit 1
 - Credit 2
 - Credit 3
- Use of "country drainage" versus curb and gutter conveyance and pipe
- Bioretention Cells (includes Rain Gardens)
- Constructed Stormwater Wetlands (includes Gravel Wetlands designs)
- Treebox Filter
- Water Quality Swale
- Grass Channel
- Green Roof
- Other (describe): _____

Standard 1: No New Untreated Discharges

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



Checklist for Stormwater Report

Checklist (continued)

Standard 2: Peak Rate Attenuation

- Standard 2 waiver requested because the project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding.
- Evaluation provided to determine whether off-site flooding increases during the 100-year 24-hour storm.
- Calculations provided to show that post-development peak discharge rates do not exceed pre-development rates for the 2-year and 10-year 24-hour storms. If evaluation shows that off-site flooding increases during the 100-year 24-hour storm, calculations are also provided to show that post-development peak discharge rates do not exceed pre-development rates for the 100-year 24-hour storm.

Standard 3: Recharge

- Soil Analysis provided. Limited testing area, additional test pits to be provided prior to start of construction
- Required Recharge Volume calculation provided.
- Required Recharge volume reduced through use of the LID site Design Credits.
- Sizing the infiltration, BMPs is based on the following method: Check the method used.
 - Static
 - Simple Dynamic
 - Dynamic Field¹
- Runoff from all impervious areas at the site discharging to the infiltration BMP.
- Runoff from all impervious areas at the site is *not* discharging to the infiltration BMP and calculations are provided showing that the drainage area contributing runoff to the infiltration BMPs is sufficient to generate the required recharge volume.
- Recharge BMPs have been sized to infiltrate the Required Recharge Volume.
- Recharge BMPs have been sized to infiltrate the Required Recharge Volume *only* to the maximum extent practicable for the following reason:
 - Site is comprised solely of C and D soils and/or bedrock at the land surface
 - M.G.L. c. 21E sites pursuant to 310 CMR 40.0000
 - Solid Waste Landfill pursuant to 310 CMR 19.000
 - Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.
- Calculations showing that the infiltration BMPs will drain in 72 hours are provided.
- Property includes a M.G.L. c. 21E site or a solid waste landfill and a mounding analysis is included.

¹ 80% TSS removal is required prior to discharge to infiltration BMP if Dynamic Field method is used.



Checklist for Stormwater Report

Checklist (continued)

Standard 3: Recharge (continued)

- The infiltration BMP is used to attenuate peak flows during storms greater than or equal to the 10-year 24-hour storm and separation to seasonal high groundwater is less than 4 feet and a mounding analysis is provided.
- Documentation is provided showing that infiltration BMPs do not adversely impact nearby wetland resource areas.

Standard 4: Water Quality

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

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



Checklist for Stormwater Report

Checklist (continued)

Standard 4: Water Quality (continued)

- The BMP is sized (and calculations provided) based on:
 - The ½" or 1" Water Quality Volume or
 - The equivalent flow rate associated with the Water Quality Volume and documentation is provided showing that the BMP treats the required water quality volume.
- The applicant proposes to use proprietary BMPs, and documentation supporting use of proprietary BMP and proposed TSS removal rate is provided. This documentation may be in the form of the propriety BMP checklist found in Volume 2, Chapter 4 of the Massachusetts Stormwater Handbook and submitting copies of the TARP Report, STEP Report, and/or other third party studies verifying performance of the proprietary BMPs.
- A TMDL exists that indicates a need to reduce pollutants other than TSS and documentation showing that the BMPs selected are consistent with the TMDL is provided.

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

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

Standard 6: Critical Areas

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



Checklist for Stormwater Report

Checklist (continued)

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

- The project is subject to the Stormwater Management Standards only to the maximum Extent Practicable as a:
 - Limited Project
 - Small Residential Projects: 5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area.
 - Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area
 - Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff
 - Bike Path and/or Foot Path
 - Redevelopment Project
 - Redevelopment portion of mix of new and redevelopment.
- Certain standards are not fully met (Standard No. 1, 8, 9, and 10 must always be fully met) and an explanation of why these standards are not met is contained in the Stormwater Report.
- The project involves redevelopment and a description of all measures that have been taken to improve existing conditions is provided in the Stormwater Report. The redevelopment checklist found in Volume 2 Chapter 3 of the Massachusetts Stormwater Handbook may be used to document that the proposed stormwater management system (a) complies with Standards 2, 3 and the pretreatment and structural BMP requirements of Standards 4-6 to the maximum extent practicable and (b) improves existing conditions.

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

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

- Narrative;
 - Construction Period Operation and Maintenance Plan;
 - Names of Persons or Entity Responsible for Plan Compliance;
 - Construction Period Pollution Prevention Measures;
 - Erosion and Sedimentation Control Plan Drawings;
 - Detail drawings and specifications for erosion control BMPs, including sizing calculations;
 - Vegetation Planning;
 - Site Development Plan;
 - Construction Sequencing Plan;
 - Sequencing of Erosion and Sedimentation Controls;
 - Operation and Maintenance of Erosion and Sedimentation Controls;
 - Inspection Schedule;
 - Maintenance Schedule;
 - Inspection and Maintenance Log Form.
- A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan containing the information set forth above has been included in the Stormwater Report.



Checklist for Stormwater Report

Checklist (continued)

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

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

Standard 9: Operation and Maintenance Plan

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

Standard 10: Prohibition of Illicit Discharges

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

SECTION 3.00 – GIS AND REFERENCE MAPPING

4.10 – MAGIS Mapping

4.20 – On-Site Soils Mapping & Information

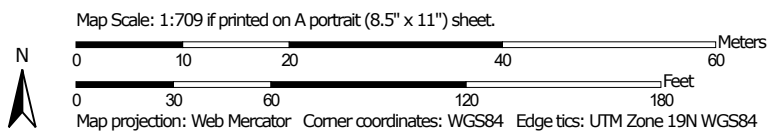
4.30 – FEMA Flood Insurance Map

70 Webster Street



- Areas of Critical Environmental Concern
- ACECs
- Sole Source Aquifers
- Outstanding Resource Waters
 - ACEC
 - Cape Cod National Seashore
 - Protected Shoreline
 - Public Water Supply Watershed
 - Retired Public Water Supply
 - Scenic/Protected River
 - Wildlife Refuge
- DFW Coldwater Fisheries Resources
- NHESP Certified Vernal Pools
- Potential Vernal Pools
- NHESP Priority Habitats of Rare Species
- NHESP Estimated Habitats of Rare Wildlife
- Zone IIs
- Zone Is
- IWPAs
- Zone C
- Zone B
- Zone A
- Property Tax Parcels

Soil Map—Worcester County, Massachusetts, Northeastern Part
(70 Webster Street Worcester MA)



MAP LEGEND

- Area of Interest (AOI)
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points
- Special Point Features**
 - Blowout
 - Borrow Pit
 - Clay Spot
 - Closed Depression
 - Gravel Pit
 - Gravelly Spot
 - Landfill
 - Lava Flow
 - Marsh or swamp
 - Mine or Quarry
 - Miscellaneous Water
 - Perennial Water
 - Rock Outcrop
 - Saline Spot
 - Sandy Spot
 - Severely Eroded Spot
 - Sinkhole
 - Slide or Slip
 - Sodic Spot
- Water Features**
 - Streams and Canals
- Transportation**
 - Rails
 - Interstate Highways
 - US Routes
 - Major Roads
 - Local Roads
- Background**
 - Aerial Photography
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Worcester County, Massachusetts, Northeastern Part
Survey Area Data: Version 17, Sep 9, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 22, 2022—Jun 5, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
1	Water	0.2	11.7%
602	Urban land	1.6	88.3%
Totals for Area of Interest		1.8	100.0%

National Flood Hazard Layer FIRMette

71°50'20"W 42°14'47"N



Legend

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

SPECIAL FLOOD HAZARD AREAS

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

OTHER AREAS OF FLOOD HAZARD

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

OTHER AREAS

- Area of Minimal Flood Hazard *Zone X*
- Effective LOMRMs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES

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

CROSS SECTIONS WITH 1% ANNUAL CHANCE WATER SURFACE ELEVATION

- 20.2
- 17.5
- 8
- 0.83

OTHER FEATURES

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

MAP PANELS

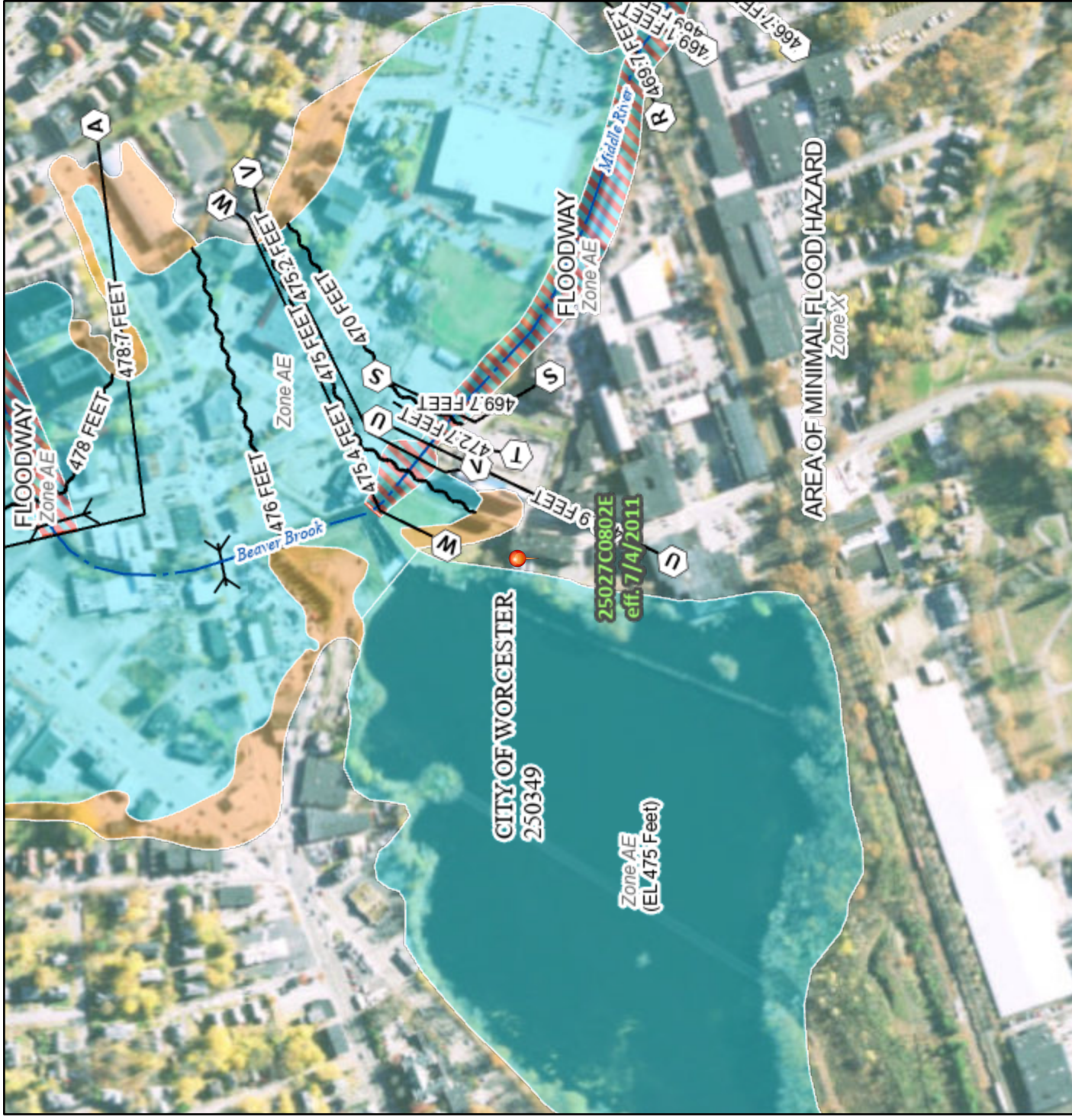
- Digital Data Available
- No Digital Data Available
- Unmapped

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

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

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on **3/29/2023 at 10:33 AM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

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



71°49'42"W 42°14'21"N

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

1:6,000

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

SECTION 4.00 – SUPPORTING INFORMATION AND CALCULATIONS

4.10 - MADEP TSS Removal Calculation Sheets

4.20 – Illicit Discharge Statement

INSTRUCTIONS:

Non-automated: Mar. 4, 2008

1. Sheet is nonautomated. Print sheet and complete using hand calculations. Column A and B: See MassDEP Structural BMP Table
2. The calculations must be completed using the Column Headings specified in Chart and Not the Excel Column Headings
3. To complete Chart Column D, multiple Column B value within Row x Column C value within Row
4. To complete Chart Column E value, subtract Column D value within Row from Column C within Row
5. Total TSS Removal = Sum All Values in Column D

Location:

	A	B	C	D	E
	BMP ¹	TSS Removal Rate ¹	Starting TSS Load*	Amount Removed (B*C)	Remaining Load (C-D)
TSS Removal Calculation Worksheet	Deep Sump & Hooded Catch Basin	0.25	1.00	0.25	0.75
	CDS Unit	0.74	0.75	0.55	0.20

Total TSS Removal =

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project:
 Prepared By:
 Date:

*Equals remaining load from previous BMP (E) which enters the BMP

Hydrodynamic Separation Product Calculator

Webster Street Mill Conversion

Parking Area

CDS 2015-4

Project Information

Project Name	Webster Street Mill Conversion			Option #	A
Country	UNITED_STATES	State	Massachusetts	City	Worcester

Contact Information

First Name	Nick	Last Name	Facendola		
Company	Level Design Group, LLC		Phone #	508-695-2221	
Email	nfacendola@leveldg.com				

Design Criteria

Site Designation	Parking Area			Sizing Method	Net Annual
Screening Required?	Yes	Drainage Area (ac)	0.48	Peak Flow (cfs)	2.80
Groundwater Depth (ft)	0 - 5	Pipe Invert Depth (ft)	0 - 5	Bedrock Depth (ft)	10 - 15
Multiple Inlets?	Yes	Grate Inlet Required?	No	Pipe Size (in)	12.00
Required Particle Size Distribution?	No	90° between two inlets?	No	180° between inlet and outlet?	No
Runoff Coefficient	0.96	Rainfall Station	71 - Birch Hill Dam, MA	TC (Min)	6

Treatment Selection

Treatment Unit	CDS	System Model	2015-4		
Target Removal	80%	Particle Size Distribution (PSD)	125	Predicted Net Annual Removal	96.30%

Hydrodynamic Separation Product Calculator

Webster Street Mill Conversion

Parking Area

CDS 2015-4

CDS ESTIMATED NET ANNUAL SOLIDS LOAD REDUCTION BASED ON THE RATIONAL RAINFALL METHOD								
Rainfall Intensity ¹ (in/hr)	% Rainfall Volume ¹	Cumulative Rainfall Volume	Rainfall Volume Treated	Total Flowrate (cfs)	Treated Flowrate (cfs)	Operating Rate (%)	Removal Efficiency (%)	Incremental Removal (%)
0.0800	37.59%	37.59%	37.59%	0.0369	0.0369	5.27%	100.00%	37.59%
0.1600	22.64%	60.23%	22.64%	0.0737	0.0737	10.53%	99.30%	22.48%
0.2400	11.89%	72.12%	11.89%	0.1106	0.1106	15.80%	98.25%	11.68%
0.3200	7.58%	79.70%	7.58%	0.1475	0.1475	21.07%	97.19%	7.37%
0.4000	4.35%	84.05%	4.35%	0.1843	0.1843	26.33%	96.14%	4.18%
0.4800	2.35%	86.40%	2.35%	0.2212	0.2212	31.60%	95.09%	2.23%
0.5600	1.79%	88.19%	1.79%	0.2580	0.2580	36.86%	94.03%	1.68%
0.6400	1.37%	89.56%	1.37%	0.2949	0.2949	42.13%	92.98%	1.27%
0.7200	0.87%	90.43%	0.87%	0.3318	0.3318	47.40%	91.93%	0.80%
0.8000	1.16%	91.59%	1.16%	0.3686	0.3686	52.66%	90.87%	1.05%
0.8800	1.49%	93.08%	1.49%	0.4055	0.4055	57.93%	89.82%	1.34%
0.9600	0.93%	94.01%	0.93%	0.4424	0.4424	63.20%	88.76%	0.83%
1.0400	0.38%	94.39%	0.38%	0.4792	0.4792	68.46%	87.71%	0.33%
1.1200	0.41%	94.80%	0.41%	0.5161	0.5161	73.73%	86.66%	0.36%
1.2000	0.58%	95.38%	0.58%	0.5530	0.5530	79.00%	85.60%	0.50%
1.2800	0.31%	95.69%	0.31%	0.5898	0.5898	84.26%	84.55%	0.26%
1.3600	0.17%	95.86%	0.17%	0.6267	0.6267	89.53%	83.50%	0.14%
1.4400	0.88%	96.74%	0.88%	0.6636	0.6636	94.80%	82.44%	0.73%
1.5200	0.55%	97.29%	0.55%	0.7004	0.7000	100.00%	81.35%	0.45%
1.6000	0.40%	97.69%	0.38%	0.7373	0.7000	100.00%	77.28%	0.31%
1.8000	0.20%	97.89%	0.17%	0.8294	0.7000	100.00%	68.70%	0.14%
2.0000	0.94%	98.83%	0.71%	0.9216	0.7000	100.00%	61.83%	0.58%
								96.30%
Removal Efficiency Adjustment ² =								
Predicted % Annual Rainfall Treated =								98.55%
Predicted Net Annual Load Removal Efficiency =								96.30%
1 - Based on 13 years of 15 minute precipitation data for Station 0666, Birch Hill Dam, Worcester County, MA								
2 - Reduction due to use of 60-minute data for a site that has a time of concentration less than 30-minutes.								

SECTION (____)
STORM WATER TREATMENT DEVICE

1.0 GENERAL

- 1.1 This item shall govern the furnishing and installation of the CDS® by Contech Engineered Solutions LLC, complete and operable as shown and as specified herein, in accordance with the requirements of the plans and contract documents.
- 1.2 The Contractor shall furnish all labor, equipment and materials necessary to install the storm water treatment device(s) (SWTD) and appurtenances specified in the Drawings and these specifications.
- 1.3 The manufacturer of the SWTD shall be one that is regularly engaged in the engineering design and production of systems deployed for the treatment of storm water runoff for at least five (5) years and which have a history of successful production, acceptable to the Engineer. In accordance with the Drawings, the SWTD(s) shall be a CDS® device manufactured by:

Contech Engineered Solutions LLC
9025 Centre Pointe Drive
West Chester, OH, 45069
Tel: 1 800 338 1122

1.4 Related Sections

- 1.4.1 Section 02240: Dewatering
- 1.4.2 Section 02260: Excavation Support and Protection
- 1.4.3 Section 02315: Excavation and Fill
- 1.4.4 Section 02340: Soil Stabilization

- 1.5 All components shall be subject to inspection by the engineer at the place of manufacture and/or installation. All components are subject to being rejected or identified for repair if the quality of materials and manufacturing do not comply with the requirements of this specification. Components which have been identified as defective may be subject for repair where final acceptance of the component is contingent on the discretion of the Engineer.
- 1.6 The manufacturer shall guarantee the SWTD components against all manufacturer originated defects in materials or workmanship for a period of twelve (12) months from the date the components are delivered to the owner for installation. The manufacturer shall upon its determination repair, correct or replace any manufacturer originated defects advised in writing to the manufacturer within the referenced warranty period. The use of SWTD components shall be limited to the application for which it was specifically designed.
- 1.7 The SWTD manufacturer shall submit to the Engineer of Record a “Manufacturer’s Performance Certification” certifying that each SWTD is capable of achieving the specified removal efficiencies listed in these specifications. The certification shall be supported by independent third-party research

1.8 No product substitutions shall be accepted unless submitted 10 days prior to project bid date, or as directed by the Engineer of Record. Submissions for substitutions require review and approval by the Engineer of Record, for hydraulic performance, impact to project designs, equivalent treatment performance, and any required project plan and report (hydrology/hydraulic, water quality, stormwater pollution) modifications that would be required by the approving jurisdictions/agencies. Contractor to coordinate with the Engineer of Record any applicable modifications to the project estimates of cost, bonding amount determinations, plan check fees for changes to approved documents, and/or any other regulatory requirements resulting from the product substitution.

2.0 MATERIALS

2.1 Housing unit of stormwater treatment device shall be constructed of pre-cast or cast-in-place concrete, no exceptions. Precast concrete components shall conform to applicable sections of ASTM C 478, ASTM C 857 and ASTM C 858 and the following:

- 2.1.1 Concrete shall achieve a minimum 28-day compressive strength of 4,000 pounds per square-inch (psi);
- 2.1.2 Unless otherwise noted, the precast concrete sections shall be designed to withstand lateral earth and AASHTO H-20 traffic loads;
- 2.1.3 Cement shall be Type III Portland Cement conforming to ASTM C 150;
- 2.1.4 Aggregates shall conform to ASTM C 33;
- 2.1.5 Reinforcing steel shall be deformed billet-steel bars, welded steel wire or deformed welded steel wire conforming to ASTM A 615, A 185, or A 497.
- 2.1.6 Joints shall be sealed with preformed joint sealing compound conforming to ASTM C 990.
- 2.1.7 Shipping of components shall not be initiated until a minimum compressive strength of 4,000 psi is attained or five (5) calendar days after fabrication has expired, whichever occurs first.

2.2 Internal Components and appurtenances shall conform to the following:

- 2.2.1 Screen and support structure shall be manufactured of Type 316 and 316L stainless steel conforming to ASTM F 1267-01;
- 2.2.2 Hardware shall be manufactured of Type 316 stainless steel conforming to ASTM A 320;
- 2.2.3 Fiberglass components shall conform to applicable sections of ASTM D-4097
- 2.2.4 Access system(s) conform to the following:
- 2.2.5 Manhole castings shall be designed to withstand AASHTO H-20 loadings and manufactured of cast-iron conforming to ASTM A 48 Class 30.

3.0 PERFORMANCE

3.1 The SWTD shall be sized to either achieve an 80 percent average annual reduction in the total suspended solid load with a particle size distribution having a mean particle size (d_{50}) of 125 microns unless otherwise stated.

3.2 The SWTD shall be capable of capturing and retaining 100 percent of pollutants greater than or equal to 2.4 millimeters (mm) regardless of the pollutant's specific gravity (i.e.: floatable and neutrally buoyant materials) for flows up to the device's rated-treatment capacity. The SWTD shall be designed to retain all previously captured pollutants addressed by this

subsection under all flow conditions. The SWTD shall be capable of capturing and retaining total petroleum hydrocarbons. The SWTD shall be capable of achieving a removal efficiency of 92 and 78 percent when the device is operating at 25 and 50 percent of its rated-treatment capacity. These removal efficiencies shall be based on independent third-party research for influent oil concentrations representative of storm water runoff (20 ± 5 mg/L). The SWTD shall be greater than 99 percent effective in controlling dry-weather accidental oil spills.

- 3.3 The SWTD shall be designed with a sump chamber for the storage of captured sediments and other negatively buoyant pollutants in between maintenance cycles. The minimum storage capacity provided by the sump chamber shall be in accordance with the volume listed in Table 1. The boundaries of the sump chamber shall be limited to that which do not degrade the SWTD's treatment efficiency as captured pollutants accumulate. The sump chamber shall be separate from the treatment processing portion(s) of the SWTD to minimize the probability of fine particle re-suspension. In order to not restrict the Owner's ability to maintain the SWTD, the minimum dimension providing access from the ground surface to the sump chamber shall be 16 inches in diameter.
- 3.4 The SWTD shall be designed to capture and retain Total Petroleum Hydrocarbons generated by wet-weather flow and dry-weather gross spills and have a capacity listed in Table 1 of the required unit.
- 3.5 The SWTD shall convey the flow from the peak storm event of the drainage network, in accordance with required hydraulic upstream conditions as defined by the Engineer. If a substitute SWTD is proposed, supporting documentation shall be submitted that demonstrates equal or better upstream hydraulic conditions compared to that specified herein. This documentation shall be signed and sealed by a Professional Engineer registered in the State of the work. All costs associated with preparing and certifying this documentation shall be born solely by the Contractor.
- 3.6 The SWTD shall have completed field tested following TARP Tier II protocol requirements

4.0 EXECUTION

- 4.1 The contractor shall exercise care in the storage and handling of the SWTD components prior to and during installation. Any repair or replacement costs associated with events occurring after delivery is accepted and unloading has commenced shall be borne by the contractor.
- 4.2 The SWTD shall be installed in accordance with the manufacturer's recommendations and related sections of the contract documents. The manufacturer shall provide the contractor installation instructions and offer on-site guidance during the important stages of the installation as identified by the manufacturer at no additional expense. A minimum of 72 hours notice shall be provided to the manufacturer prior to their performance of the services included under this subsection.
- 4.3 The contractor shall fill all voids associated with lifting provisions provided by the manufacturer. These voids shall be filled with non-shrinking grout providing a finished surface consistent with adjacent surfaces. The contractor shall trim all protruding lifting provisions flush with the adjacent concrete surface in a manner, which leaves no sharp points or edges.

4.4 The contractor shall removal all loose material and pooling water from the SWTD prior to the transfer of operational responsibility to the Owner.

**TABLE 1
Storm Water Treatment Device
Storage Capacities**

CDS Model	Minimum Sump Storage Capacity (yd ³)/(m ³)	Minimum Oil Storage Capacity (gal)/(L)
CDS2015-4	0.9(0.7)	61(232)
CDS2015-5	1.5(1.1)	83(313)
CDS2020-5	1.5(1.1)	99(376)
CDS2025-5	1.5(1.1)	116(439)
CDS3020-6	2.1 (1.6)	184(696)
CDS3025-6	2.1(1.6)	210(795)
CDS3030-6	2.1 (1.6)	236(895)
CDS3035-6	2.1 (1.6)	263(994)
CDS3535-7	2.9(2.2)	377(1426)
CDS4030-8	5.6(4.3)	426(1612)
CDS4040-8	5.6 (4.3)	520(1970)
CDS4045-8	5.6 (4.3)	568(2149)
CDS5640-10	8.7(6.7)	758(2869)
CDS5653-10	8.7(6.7)	965(3652)
CDS5668-10	8.7(6.7)	1172(4435)
CDS5678-10	8.7(6.7)	1309(4956)
CDS7070-DV	3.6(2.8)	914 (3459)
CDS10060-DV	5.0 (3.8)	792 (2997)
CDS10080-DV	5.0 (3.8)	1057 (4000)
CDS100100-DV	5.0 (3.8)	1320 (4996)

END OF SECTION

Illicit Discharge Statement

FOR:

WEBSTER STREET MILL RESIDENTIAL CONVERSION
70 WEBSTER STREET, WORCESTER, MA

DEVELOPED BY:

GOLD STAR BUILDERS, INC.
WORCESTER, MASSACHUSETTS

All illicit discharges to the Stormwater Management System are prohibited. The Stormwater Management System is the system for conveying, treating, and infiltrating stormwater. Illicit discharges to Stormwater Management Systems are discharges that are not entirely comprised of stormwater, but do not include discharges from the following activities or facilities:

- Firefighting
- Water Line Flushing
- Potable Water Sources
- Landscape Irrigation
- Potable Water Sources
- Uncontaminated Groundwater
- Air-conditioning Condensation
- Dechlorinated Water from Swimming Pools
- Water used for street washing
- Water used for clean residential buildings without detergents
- Foundation Drains

The site will be operated and maintained in accordance with the Operation and Maintenance Plan dated March 29, 2023 prepared by Level Design Group, LLC.

I, Tony Nguyen (*Applicant*) do hereby agree to comply with requirements set forth within the Illicit Discharge Statement and will not knowingly discharge illicit materials to the stormwater management system once it is brought online **upon** completion of construction.



Signature

3/28/23

Date

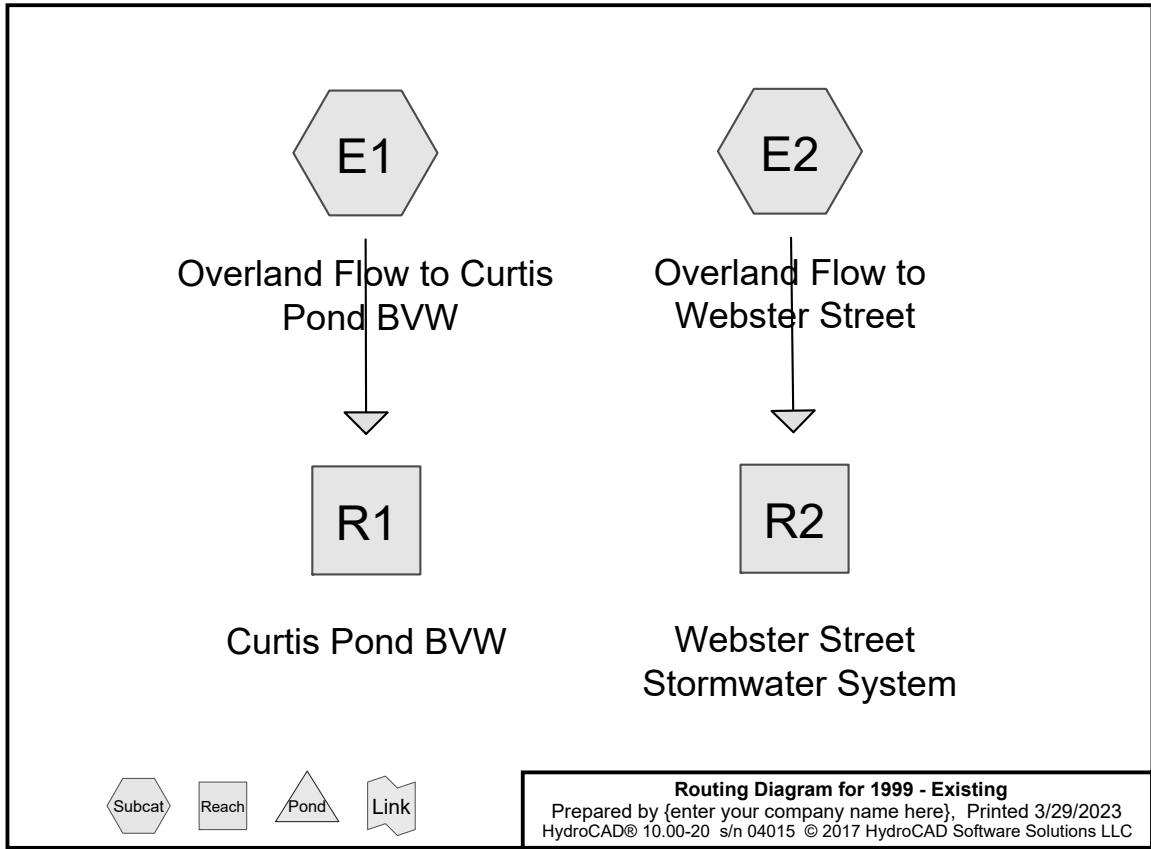
SECTION 5.00 – HydroCAD ANALYSIS

5.10 - Existing Conditions Subcatchments Map

5.20 - Existing Conditions Analysis for 2-, 10-, 25- & 100- Year Storm Events

5.30 - Proposed Conditions Subcatchments Map

5.40 - Proposed Conditions Analysis for 2-, 10-, 25- & 100- Year Storm Events



Existing Conditions - 2,10,25,100-Year Storms

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Page 2

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
6,782	96	Gravel surface, HSG C (E1)
15,010	98	Paved parking, HSG C (E1, E2)
17,232	98	Roof (Main Bldg), HSG C (E1)
2,400	98	Roof (Small Bldg), HSG C (E1, E2)
5,226	70	Woods, Good, HSG C (E1)
46,650	95	TOTAL AREA

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Page 3**Soil Listing (all nodes)**

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
0	HSG B	
46,650	HSG C	E1, E2
0	HSG D	
0	Other	
46,650	TOTAL AREA	

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Page 4**Ground Covers (all nodes)**

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Subcatchment Numbers
0	0	6,782	0	0	6,782	Gravel surface	E1
0	0	15,010	0	0	15,010	Paved parking	E1, E2
0	0	17,232	0	0	17,232	Roof (Main Bldg)	E1
0	0	2,400	0	0	2,400	Roof (Small Bldg)	E1, E2
0	0	5,226	0	0	5,226	Woods, Good	E1
0	0	46,650	0	0	46,650	TOTAL AREA	

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Existing Conditions - 2,10,25,100-Year Storms

Type III 24-hr 2-Year Rainfall=3.27"

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Page 5

Summary for Subcatchment E1: Overland Flow to Curtis Pond BVW

Runoff = 2.79 cfs @ 12.09 hrs, Volume= 8,739 cf, Depth> 2.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.27"

Area (sf)	CN	Description
12,043	98	Paved parking, HSG C
* 1,200	98	Roof (Small Bldg), HSG C
* 17,232	98	Roof (Main Bldg), HSG C
6,782	96	Gravel surface, HSG C
5,226	70	Woods, Good, HSG C
42,483	94	Weighted Average
12,008		28.27% Pervious Area
30,475		71.73% Impervious Area

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

1999 - Existing

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Existing Conditions - 2,10,25,100-Year Storms

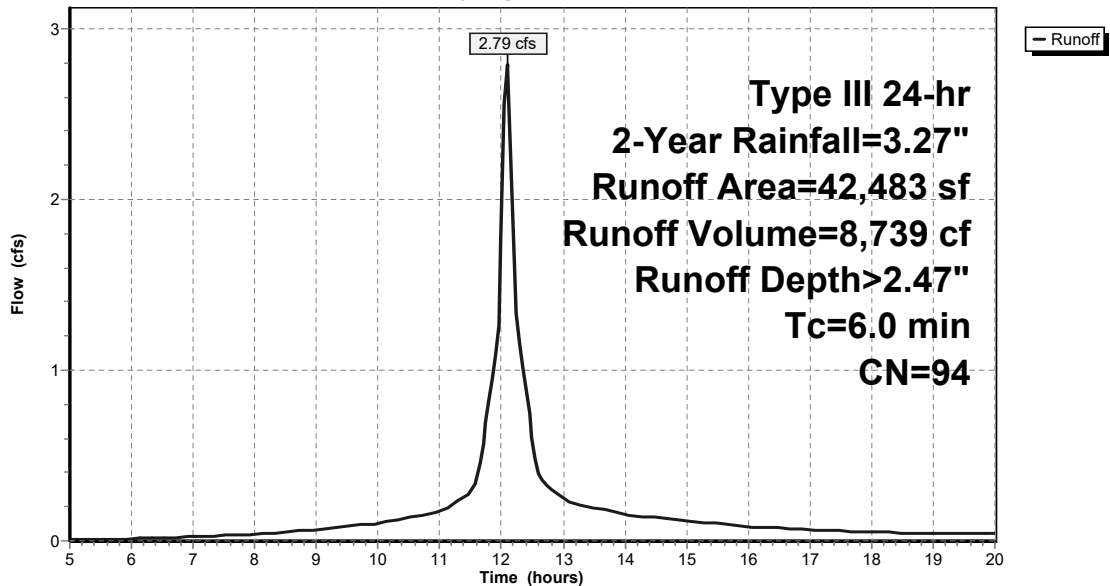
Type III 24-hr 2-Year Rainfall=3.27"

Printed 3/29/2023

Page 6

Subcatchment E1: Overland Flow to Curtis Pond BVW

Hydrograph



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Existing Conditions - 2,10,25,100-Year Storms

Type III 24-hr 2-Year Rainfall=3.27"

Printed 3/29/2023

Page 7

Summary for Subcatchment E2: Overland Flow to Webster Street

Runoff = 0.30 cfs @ 12.09 hrs, Volume= 985 cf, Depth> 2.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.27"

Area (sf)	CN	Description
2,967	98	Paved parking, HSG C
1,200	98	Roof (Small Bldg), HSG C
4,167	98	Weighted Average
4,167		100.00% Impervious Area

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

1999 - Existing

Prepared by {enter your company name here}
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Existing Conditions - 2,10,25,100-Year Storms

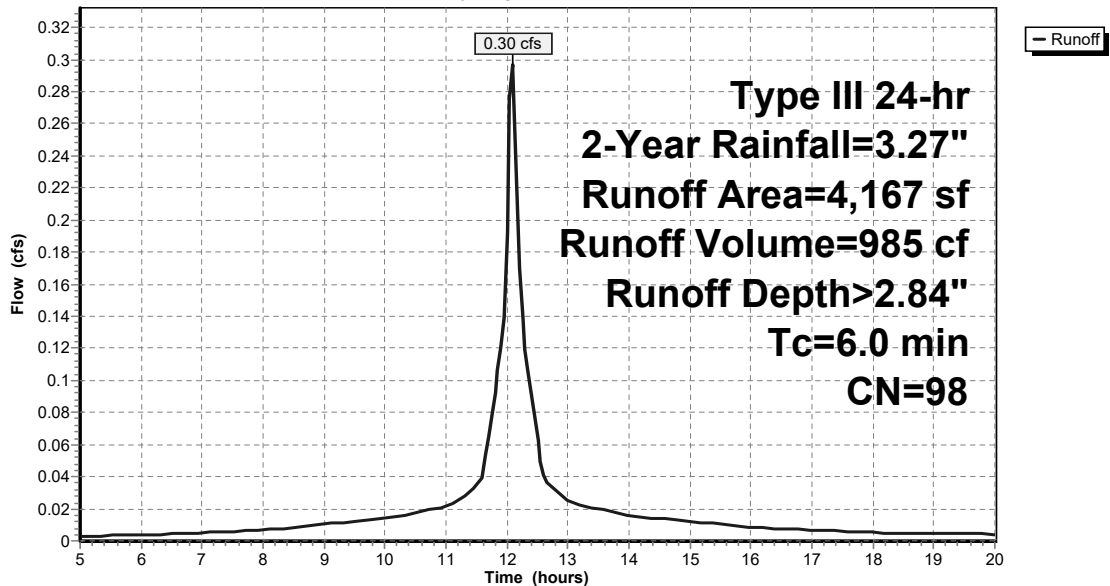
Type III 24-hr 2-Year Rainfall=3.27"

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Page 8

Subcatchment E2: Overland Flow to Webster Street

Hydrograph



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Type III 24-hr 2-Year Rainfall=3.27"

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Page 9

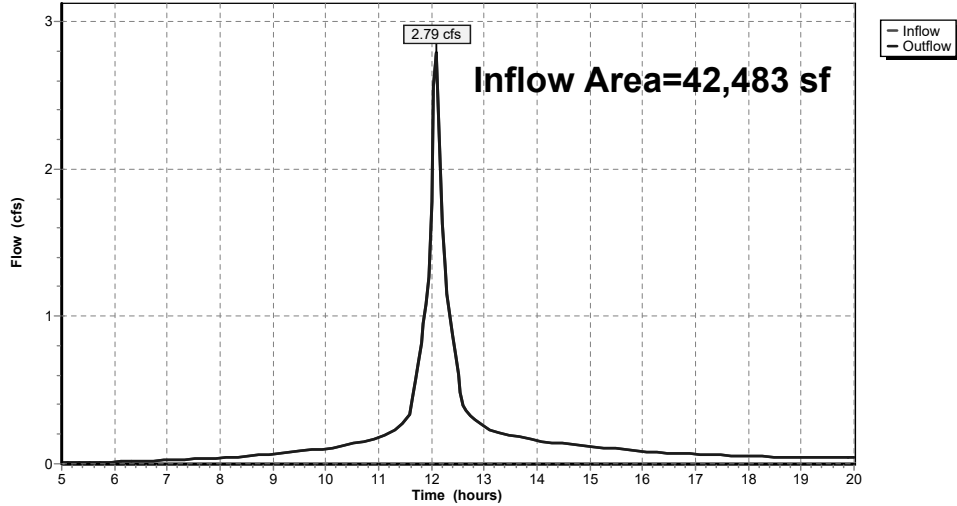
Summary for Reach R1: Curtis Pond BVW

Inflow Area = 42,483 sf, 71.73% Impervious, Inflow Depth > 2.47" for 2-Year event
Inflow = 2.79 cfs @ 12.09 hrs, Volume= 8,739 cf
Outflow = 2.79 cfs @ 12.09 hrs, Volume= 8,739 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach R1: Curtis Pond BVW

Hydrograph



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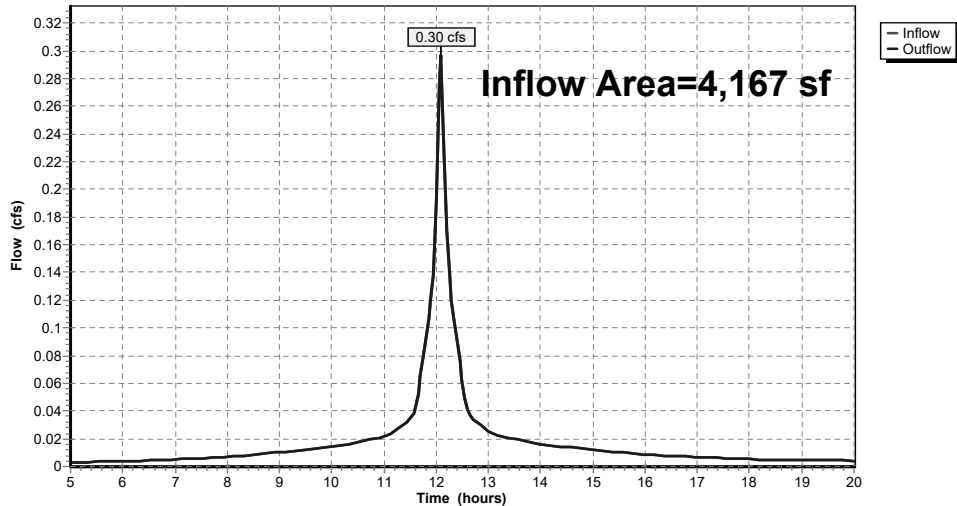
Summary for Reach R2: Webster Street Stormwater System

Inflow Area = 4,167 sf, 100.00% Impervious, Inflow Depth > 2.84" for 2-Year event
Inflow = 0.30 cfs @ 12.09 hrs, Volume= 985 cf
Outflow = 0.30 cfs @ 12.09 hrs, Volume= 985 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach R2: Webster Street Stormwater System

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Type III 24-hr 10-Year Rainfall=4.92"

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Page 11

Summary for Subcatchment E1: Overland Flow to Curtis Pond BVW

Runoff = 4.40 cfs @ 12.09 hrs, Volume= 14,126 cf, Depth> 3.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.92"

Area (sf)	CN	Description
12,043	98	Paved parking, HSG C
* 1,200	98	Roof (Small Bldg), HSG C
* 17,232	98	Roof (Main Bldg), HSG C
6,782	96	Gravel surface, HSG C
5,226	70	Woods, Good, HSG C
42,483	94	Weighted Average
12,008		28.27% Pervious Area
30,475		71.73% Impervious Area

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

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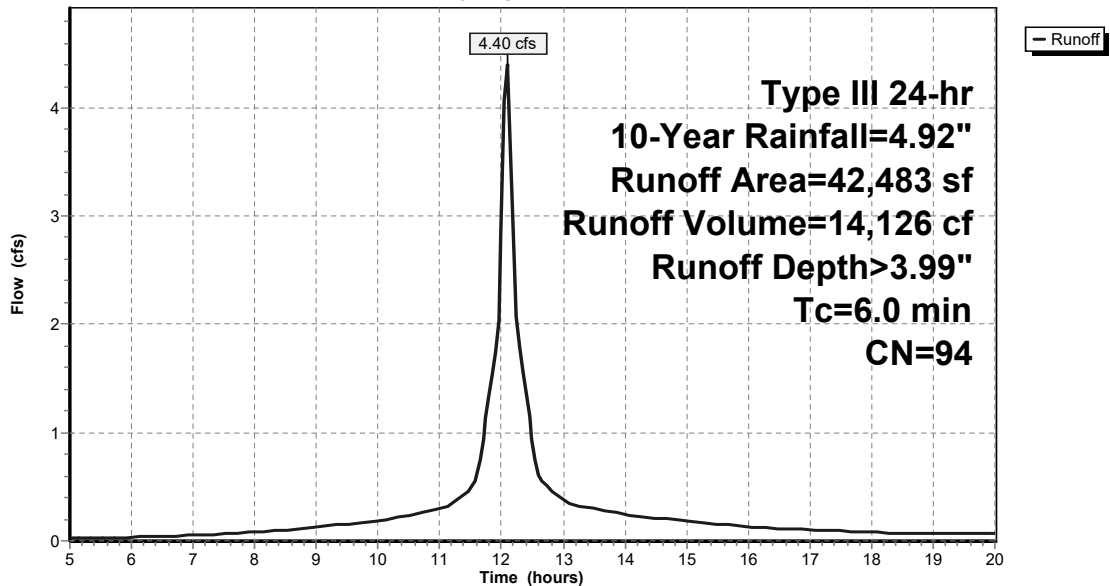
Type III 24-hr 10-Year Rainfall=4.92"

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Page 12

Subcatchment E1: Overland Flow to Curtis Pond BVW

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Type III 24-hr 10-Year Rainfall=4.92"

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Page 13

Summary for Subcatchment E2: Overland Flow to Webster Street

Runoff = 0.45 cfs @ 12.09 hrs, Volume= 1,509 cf, Depth> 4.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.92"

Area (sf)	CN	Description
2,967	98	Paved parking, HSG C
1,200	98	Roof (Small Bldg), HSG C
4,167	98	Weighted Average
4,167		100.00% Impervious Area

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

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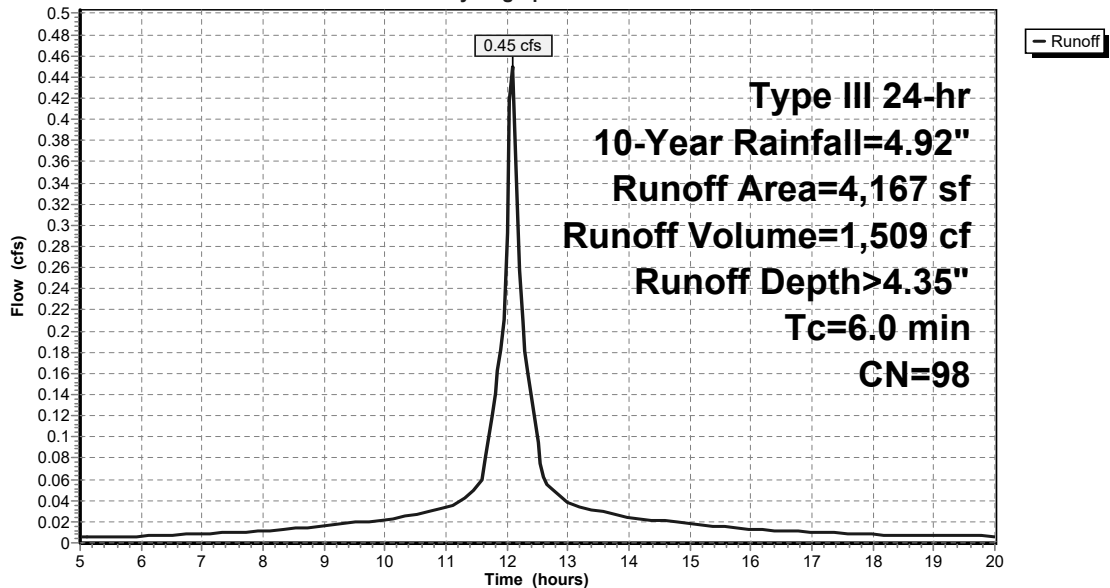
Type III 24-hr 10-Year Rainfall=4.92"

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Page 14

Subcatchment E2: Overland Flow to Webster Street

Hydrograph



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Existing Conditions - 2,10,25,100-Year Storms

Type III 24-hr 10-Year Rainfall=4.92"

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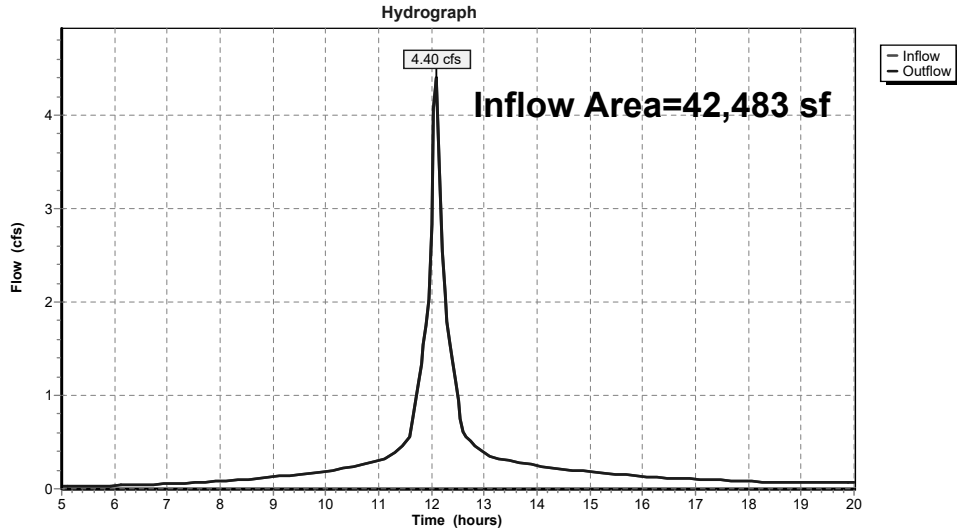
Page 15

Summary for Reach R1: Curtis Pond BVW

Inflow Area = 42,483 sf, 71.73% Impervious, Inflow Depth > 3.99" for 10-Year event
Inflow = 4.40 cfs @ 12.09 hrs, Volume= 14,126 cf
Outflow = 4.40 cfs @ 12.09 hrs, Volume= 14,126 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach R1: Curtis Pond BVW



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Type III 24-hr 10-Year Rainfall=4.92"

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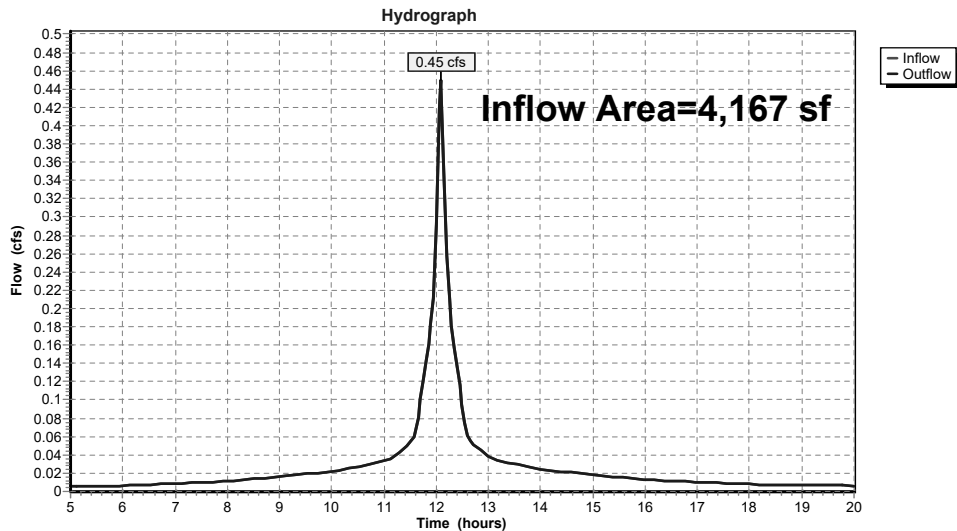
Page 16

Summary for Reach R2: Webster Street Stormwater System

Inflow Area = 4,167 sf, 100.00% Impervious, Inflow Depth > 4.35" for 10-Year event
Inflow = 0.45 cfs @ 12.09 hrs, Volume= 1,509 cf
Outflow = 0.45 cfs @ 12.09 hrs, Volume= 1,509 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach R2: Webster Street Stormwater System



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Summary for Subcatchment E1: Overland Flow to Curtis Pond BVW

Runoff = 5.65 cfs @ 12.09 hrs, Volume= 18,374 cf, Depth> 5.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.22"

Area (sf)	CN	Description
12,043	98	Paved parking, HSG C
* 1,200	98	Roof (Small Bldg), HSG C
* 17,232	98	Roof (Main Bldg), HSG C
6,782	96	Gravel surface, HSG C
5,226	70	Woods, Good, HSG C
42,483	94	Weighted Average
12,008		28.27% Pervious Area
30,475		71.73% Impervious Area

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

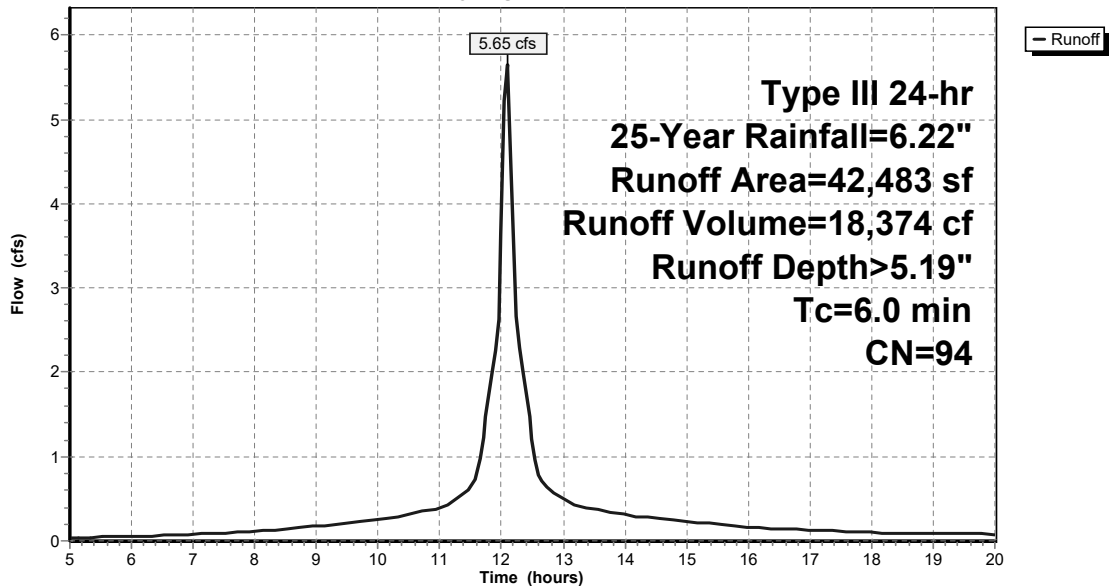
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Subcatchment E1: Overland Flow to Curtis Pond BVW

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Type III 24-hr 25-Year Rainfall=6.22"

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Page 19

Summary for Subcatchment E2: Overland Flow to Webster Street

Runoff = 0.57 cfs @ 12.09 hrs, Volume= 1,920 cf, Depth> 5.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.22"

Area (sf)	CN	Description
2,967	98	Paved parking, HSG C
* 1,200	98	Roof (Small Bldg), HSG C
4,167	98	Weighted Average
4,167		100.00% Impervious Area

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

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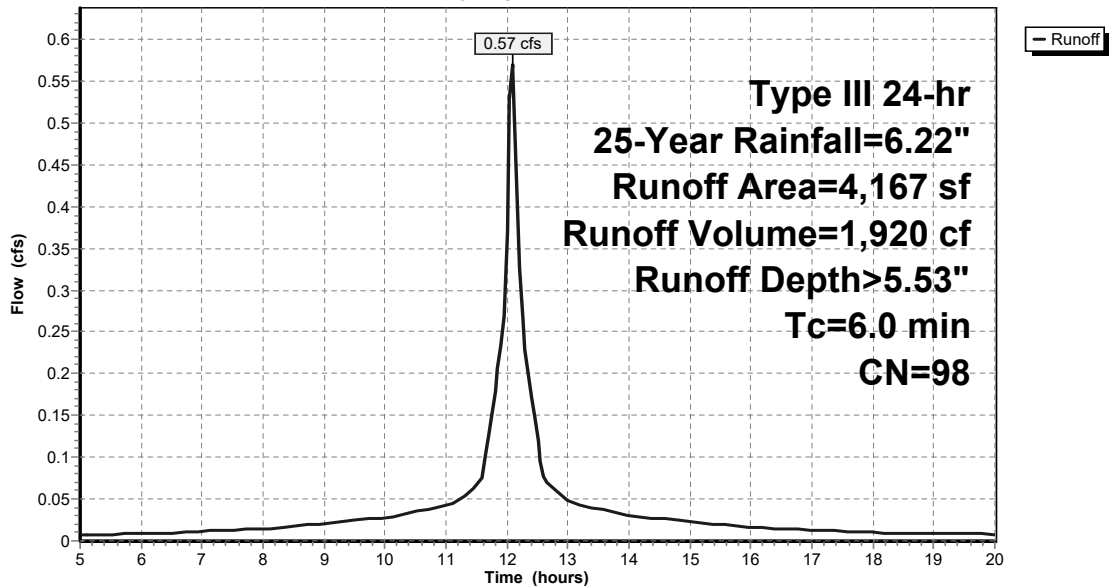
Type III 24-hr 25-Year Rainfall=6.22"

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Page 20

Subcatchment E2: Overland Flow to Webster Street

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Type III 24-hr 25-Year Rainfall=6.22"

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Page 21

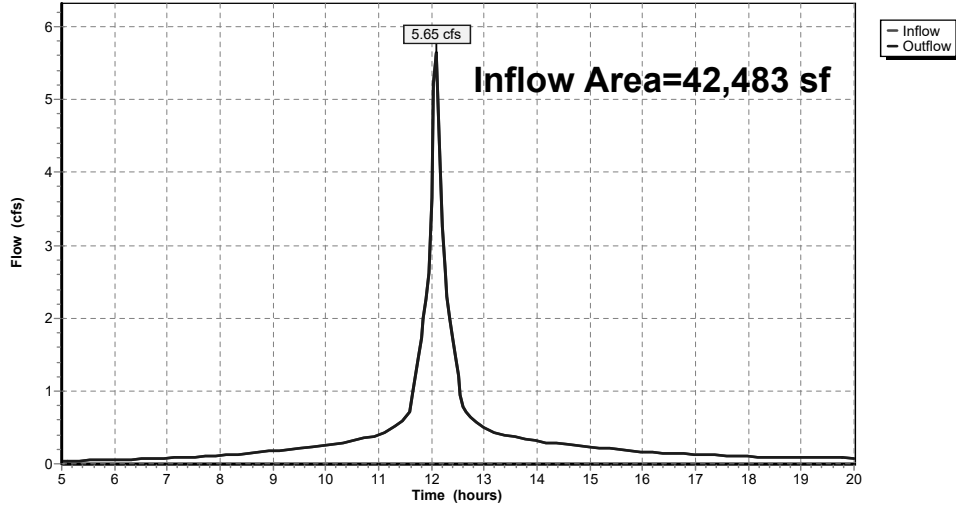
Summary for Reach R1: Curtis Pond BVW

Inflow Area = 42,483 sf, 71.73% Impervious, Inflow Depth > 5.19" for 25-Year event
Inflow = 5.65 cfs @ 12.09 hrs, Volume= 18,374 cf
Outflow = 5.65 cfs @ 12.09 hrs, Volume= 18,374 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach R1: Curtis Pond BVW

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Type III 24-hr 25-Year Rainfall=6.22"

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Page 22

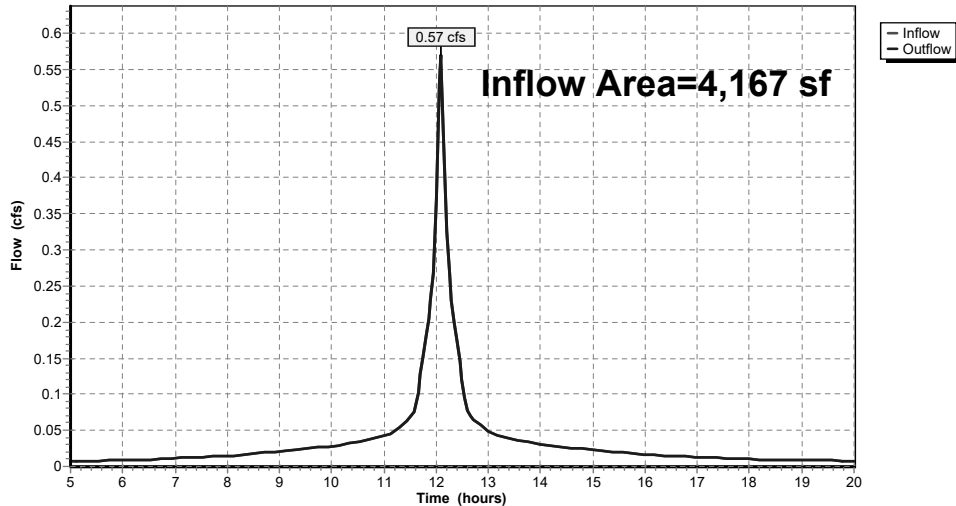
Summary for Reach R2: Webster Street Stormwater System

Inflow Area = 4,167 sf, 100.00% Impervious, Inflow Depth > 5.53" for 25-Year event
Inflow = 0.57 cfs @ 12.09 hrs, Volume= 1,920 cf
Outflow = 0.57 cfs @ 12.09 hrs, Volume= 1,920 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach R2: Webster Street Stormwater System

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Summary for Subcatchment E1: Overland Flow to Curtis Pond BVW

Runoff = 8.18 cfs @ 12.09 hrs, Volume= 27,044 cf, Depth> 7.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=8.88"

Area (sf)	CN	Description
12,043	98	Paved parking, HSG C
* 1,200	98	Roof (Small Bldg), HSG C
* 17,232	98	Roof (Main Bldg), HSG C
6,782	96	Gravel surface, HSG C
5,226	70	Woods, Good, HSG C
42,483	94	Weighted Average
12,008		28.27% Pervious Area
30,475		71.73% Impervious Area

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

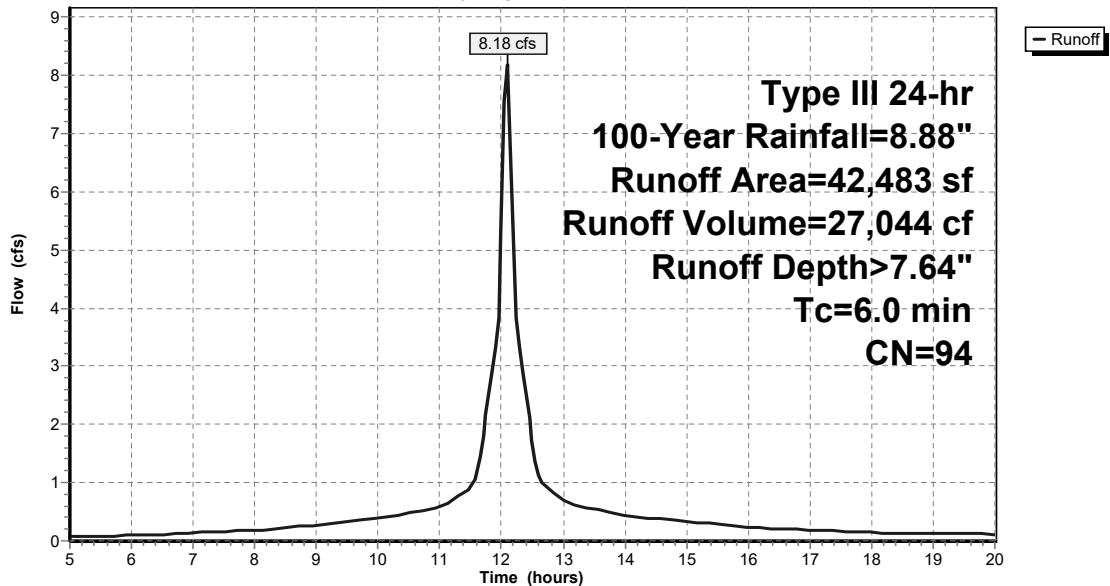
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Subcatchment E1: Overland Flow to Curtis Pond BVW

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Type III 24-hr 100-Year Rainfall=8.88"

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Page 25

Summary for Subcatchment E2: Overland Flow to Webster Street

Runoff = 0.81 cfs @ 12.09 hrs, Volume= 2,758 cf, Depth> 7.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=8.88"

Area (sf)	CN	Description
2,967	98	Paved parking, HSG C
1,200	98	Roof (Small Bldg), HSG C
4,167	98	Weighted Average
4,167		100.00% Impervious Area

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

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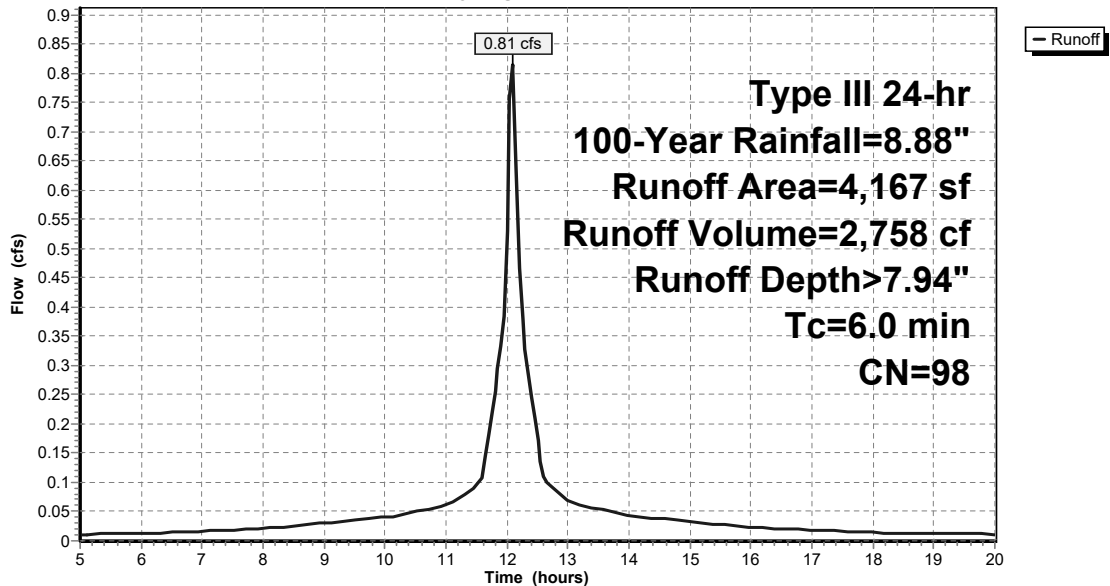
Type III 24-hr 100-Year Rainfall=8.88"

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Page 26

Subcatchment E2: Overland Flow to Webster Street

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Type III 24-hr 100-Year Rainfall=8.88"

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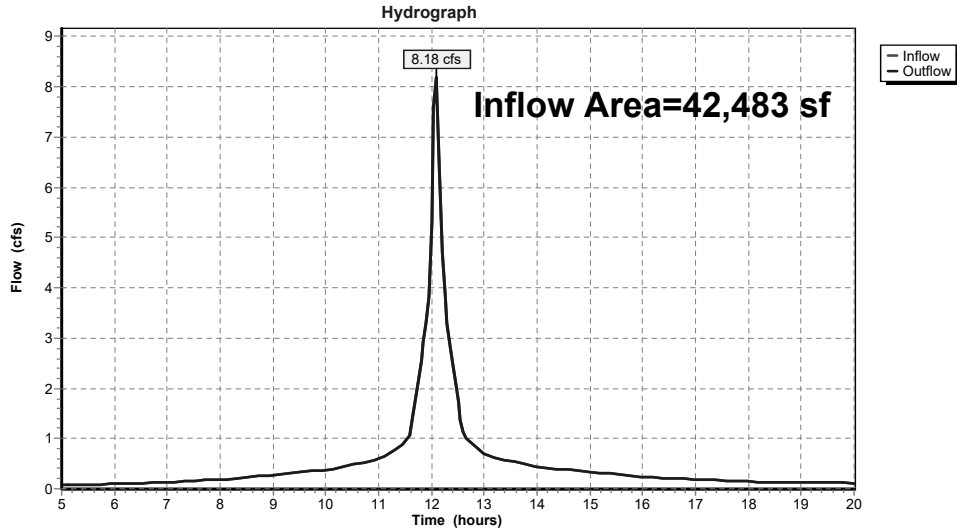
Page 27

Summary for Reach R1: Curtis Pond BVW

Inflow Area = 42,483 sf, 71.73% Impervious, Inflow Depth > 7.64" for 100-Year event
Inflow = 8.18 cfs @ 12.09 hrs, Volume= 27,044 cf
Outflow = 8.18 cfs @ 12.09 hrs, Volume= 27,044 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach R1: Curtis Pond BVW



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Type III 24-hr 100-Year Rainfall=8.88"

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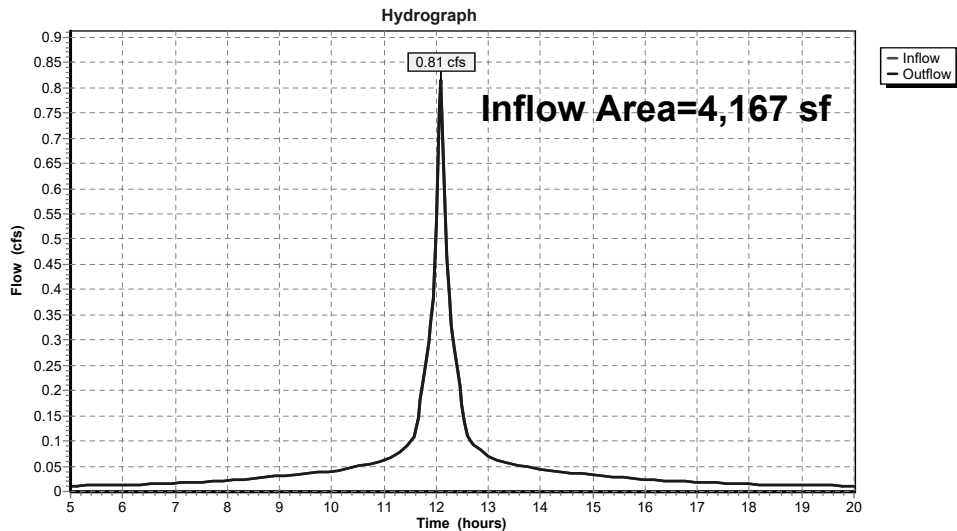
Page 28

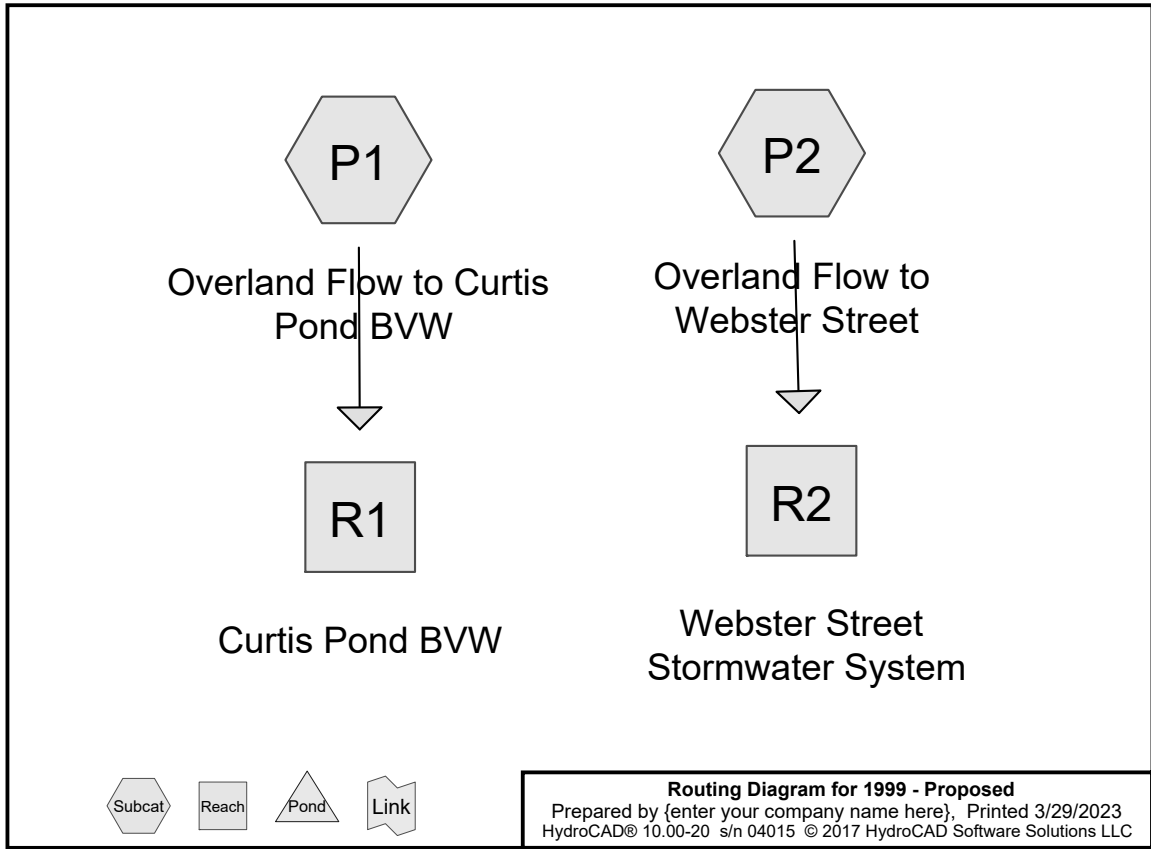
Summary for Reach R2: Webster Street Stormwater System

Inflow Area = 4,167 sf, 100.00% Impervious, Inflow Depth > 7.94" for 100-Year event
Inflow = 0.81 cfs @ 12.09 hrs, Volume= 2,758 cf
Outflow = 0.81 cfs @ 12.09 hrs, Volume= 2,758 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach R2: Webster Street Stormwater System





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Page 2

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
5,447	74	>75% Grass cover, Good, HSG C (P1, P2)
21,410	98	Paved parking, HSG C (P1, P2)
12,167	98	Roof (Main Bldg), HSG C (P1)
2,400	98	Roof (Small Bldg), HSG C (P1, P2)
5,226	70	Woods, Good, HSG C (P1)
46,650	92	TOTAL AREA

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Page 3**Soil Listing (all nodes)**

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
0	HSG B	
46,650	HSG C	P1, P2
0	HSG D	
0	Other	
46,650		TOTAL AREA

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Page 4**Ground Covers (all nodes)**

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Subcatchment Numbers
0	0	5,447	0	0	5,447	>75% Grass cover, Good	P1, P2
0	0	21,410	0	0	21,410	Paved parking	P1, P2
0	0	12,167	0	0	12,167	Roof (Main Bldg)	P1
0	0	2,400	0	0	2,400	Roof (Small Bldg)	P1, P2
0	0	5,226	0	0	5,226	Woods, Good	P1
0	0	46,650	0	0	46,650	TOTAL AREA	

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Page 5

Summary for Subcatchment P1: Overland Flow to Curtis Pond BVW

Runoff = 2.64 cfs @ 12.09 hrs, Volume= 8,075 cf, Depth> 2.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.27"

Area (sf)	CN	Description
18,990	98	Paved parking, HSG C
* 1,200	98	Roof (Small Bldg), HSG C
* 12,167	98	Roof (Main Bldg), HSG C
5,226	70	Woods, Good, HSG C
3,143	74	>75% Grass cover, Good, HSG C
1,757	74	>75% Grass cover, Good, HSG C
42,483	92	Weighted Average
10,126		23.84% Pervious Area
32,357		76.16% Impervious Area

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

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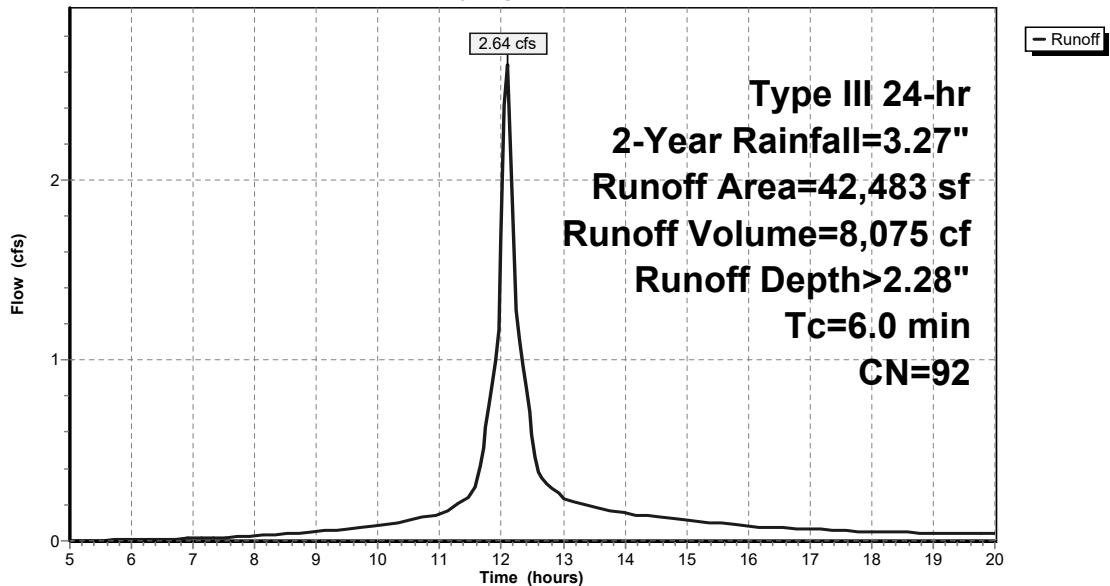
Type III 24-hr 2-Year Rainfall=3.27"

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Page 6

Subcatchment P1: Overland Flow to Curtis Pond BVW

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Type III 24-hr 2-Year Rainfall=3.27"

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Page 7

Summary for Subcatchment P2: Overland Flow to Webster Street

Runoff = 0.28 cfs @ 12.09 hrs, Volume= 890 cf, Depth> 2.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.27"

Area (sf)	CN	Description
2,420	98	Paved parking, HSG C
1,200	98	Roof (Small Bldg), HSG C
547	74	>75% Grass cover, Good, HSG C
4,167	95	Weighted Average
547		13.13% Pervious Area
3,620		86.87% Impervious Area

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

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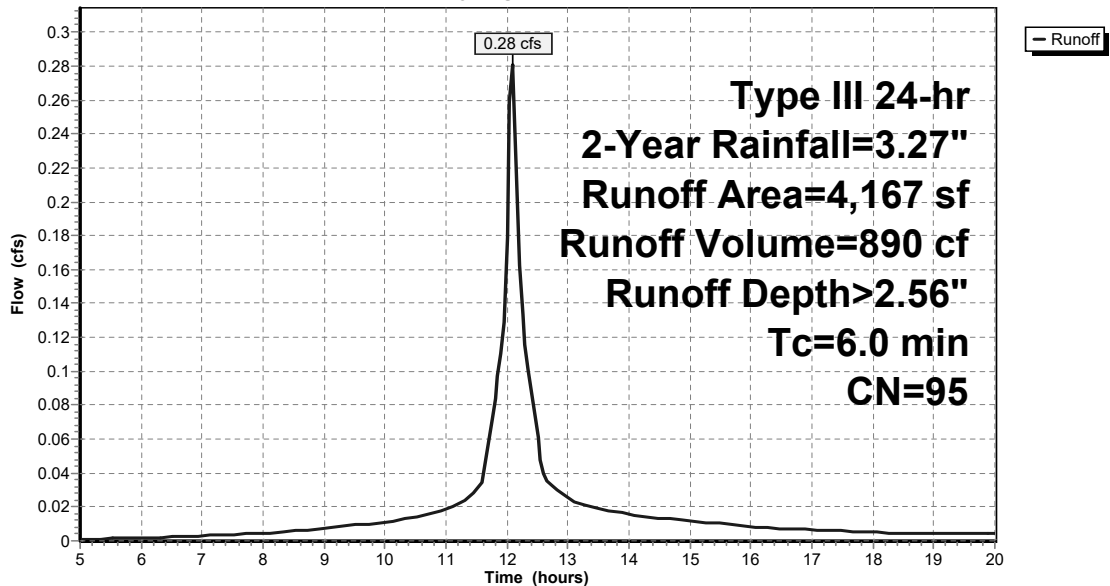
Type III 24-hr 2-Year Rainfall=3.27"

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Page 8

Subcatchment P2: Overland Flow to Webster Street

Hydrograph



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Proposed Conditions - 2,10,25,100-Year Storms

Type III 24-hr 2-Year Rainfall=3.27"

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Page 9

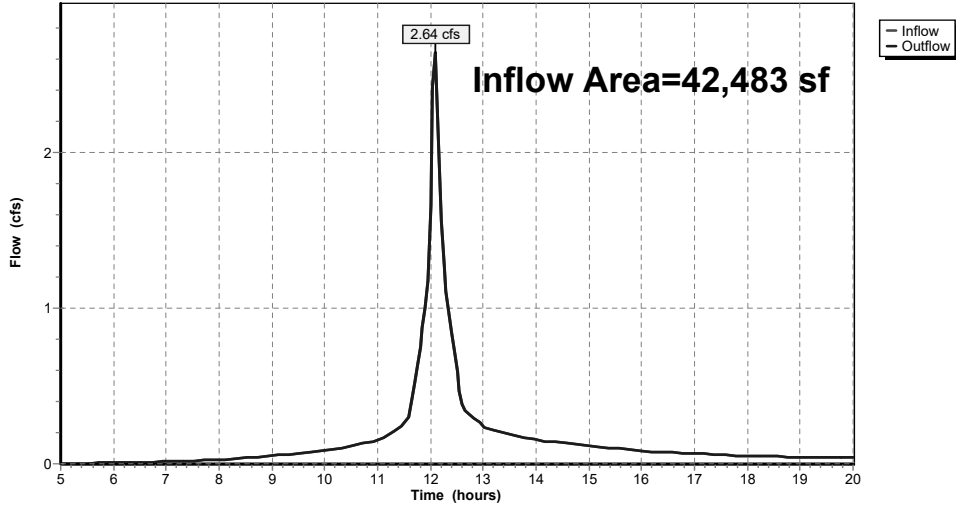
Summary for Reach R1: Curtis Pond BVW

Inflow Area = 42,483 sf, 76.16% Impervious, Inflow Depth > 2.28" for 2-Year event
Inflow = 2.64 cfs @ 12.09 hrs, Volume= 8,075 cf
Outflow = 2.64 cfs @ 12.09 hrs, Volume= 8,075 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach R1: Curtis Pond BVW

Hydrograph



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Proposed Conditions - 2,10,25,100-Year Storms

Type III 24-hr 2-Year Rainfall=3.27"

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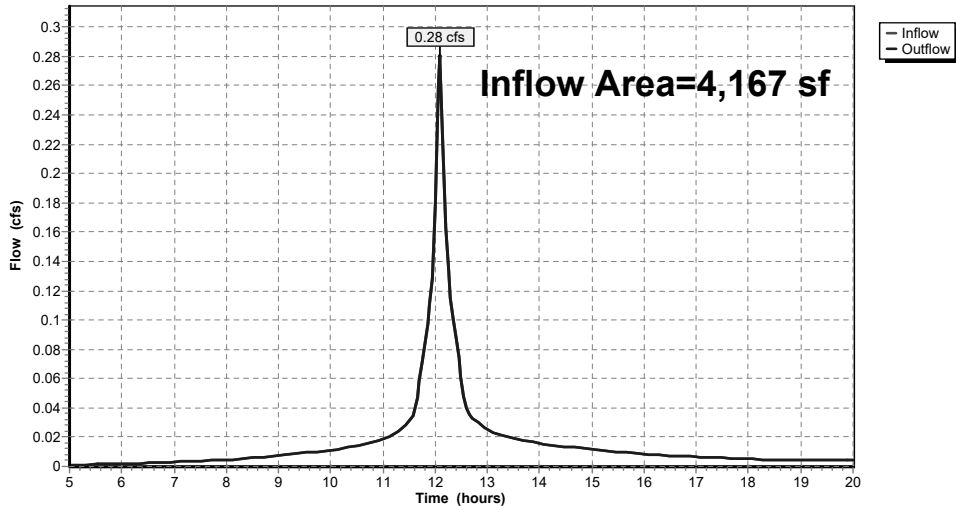
Summary for Reach R2: Webster Street Stormwater System

Inflow Area = 4,167 sf, 86.87% Impervious, Inflow Depth > 2.56" for 2-Year event
Inflow = 0.28 cfs @ 12.09 hrs, Volume= 890 cf
Outflow = 0.28 cfs @ 12.09 hrs, Volume= 890 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach R2: Webster Street Stormwater System

Hydrograph



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Proposed Conditions - 2,10,25,100-Year Storms

Type III 24-hr 10-Year Rainfall=4.92"

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Page 11

Summary for Subcatchment P1: Overland Flow to Curtis Pond BVW

Runoff = 4.26 cfs @ 12.09 hrs, Volume= 13,421 cf, Depth> 3.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.92"

Area (sf)	CN	Description
18,990	98	Paved parking, HSG C
* 1,200	98	Roof (Small Bldg), HSG C
* 12,167	98	Roof (Main Bldg), HSG C
5,226	70	Woods, Good, HSG C
3,143	74	>75% Grass cover, Good, HSG C
1,757	74	>75% Grass cover, Good, HSG C
42,483	92	Weighted Average
10,126		23.84% Pervious Area
32,357		76.16% Impervious Area

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

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Proposed Conditions - 2,10,25,100-Year Storms

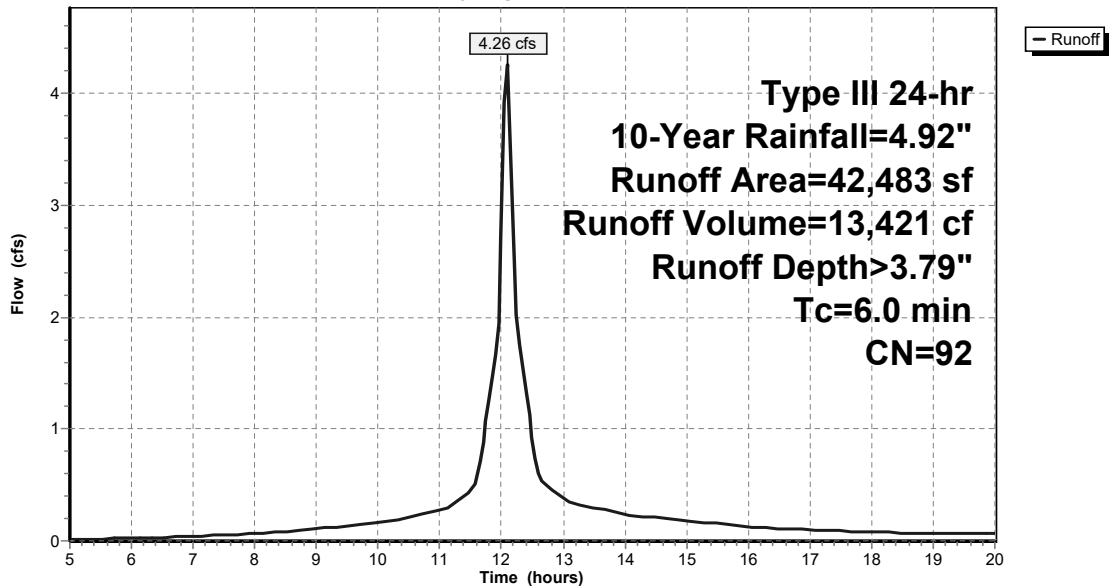
Type III 24-hr 10-Year Rainfall=4.92"

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Page 12

Subcatchment P1: Overland Flow to Curtis Pond BVW

Hydrograph



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Summary for Subcatchment P2: Overland Flow to Webster Street

Runoff = 0.44 cfs @ 12.09 hrs, Volume= 1,419 cf, Depth> 4.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.92"

Area (sf)	CN	Description
2,420	98	Paved parking, HSG C
1,200	98	Roof (Small Bldg), HSG C
547	74	>75% Grass cover, Good, HSG C
4,167	95	Weighted Average
547		13.13% Pervious Area
3,620		86.87% Impervious Area

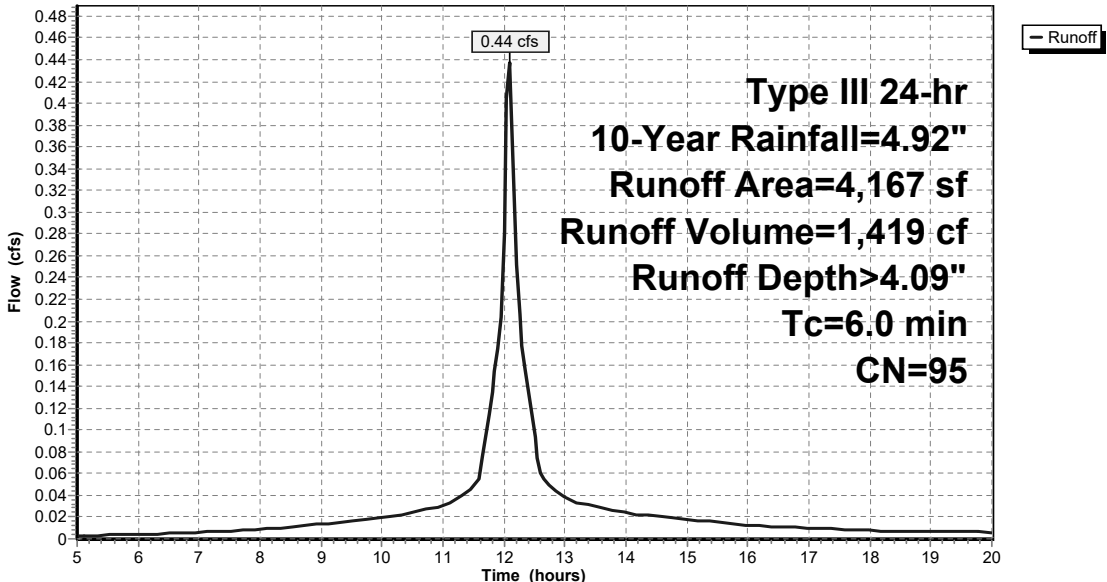
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Tc. Min

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Subcatchment P2: Overland Flow to Webster Street

Hydrograph



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Proposed Conditions - 2,10,25,100-Year Storms

Type III 24-hr 10-Year Rainfall=4.92"

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Page 15

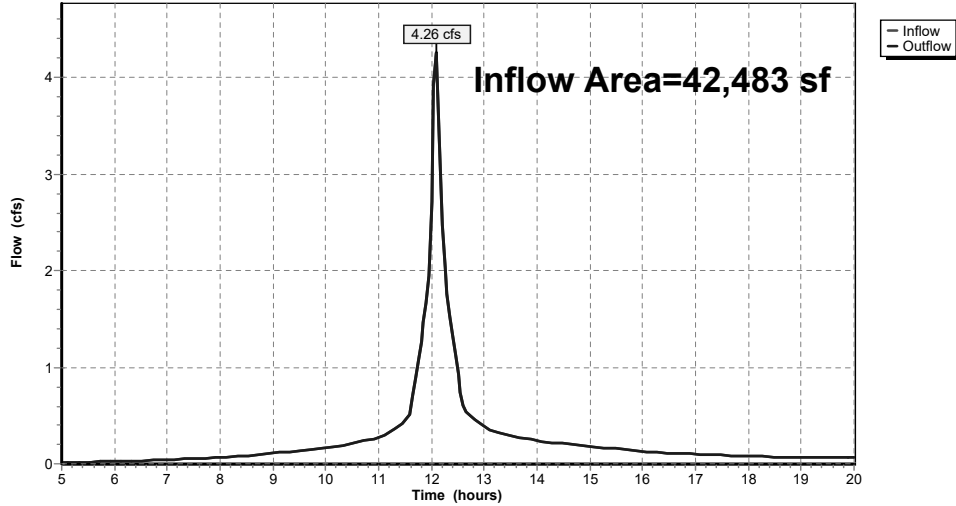
Summary for Reach R1: Curtis Pond BVW

Inflow Area = 42,483 sf, 76.16% Impervious, Inflow Depth > 3.79" for 10-Year event
Inflow = 4.26 cfs @ 12.09 hrs, Volume= 13,421 cf
Outflow = 4.26 cfs @ 12.09 hrs, Volume= 13,421 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach R1: Curtis Pond BVW

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Proposed Conditions - 2,10,25,100-Year Storms

Type III 24-hr 10-Year Rainfall=4.92"

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Page 16

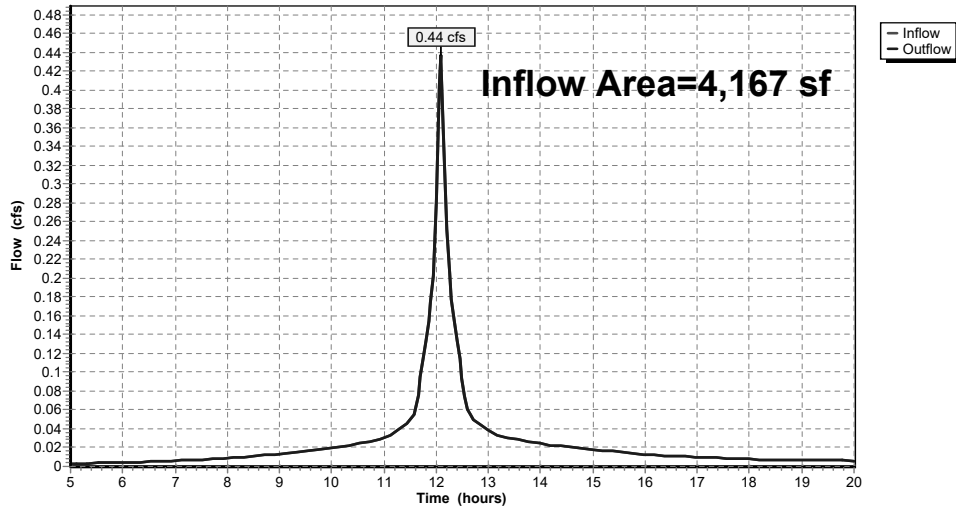
Summary for Reach R2: Webster Street Stormwater System

Inflow Area = 4,167 sf, 86.87% Impervious, Inflow Depth > 4.09" for 10-Year event
Inflow = 0.44 cfs @ 12.09 hrs, Volume= 1,419 cf
Outflow = 0.44 cfs @ 12.09 hrs, Volume= 1,419 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach R2: Webster Street Stormwater System

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Proposed Conditions - 2,10,25,100-Year Storms

Type III 24-hr 25-Year Rainfall=6.22"

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Page 17

Summary for Subcatchment P1: Overland Flow to Curtis Pond BVW

Runoff = 5.52 cfs @ 12.09 hrs, Volume= 17,666 cf, Depth> 4.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.22"

Area (sf)	CN	Description
18,990	98	Paved parking, HSG C
* 1,200	98	Roof (Small Bldg), HSG C
* 12,167	98	Roof (Main Bldg), HSG C
5,226	70	Woods, Good, HSG C
3,143	74	>75% Grass cover, Good, HSG C
1,757	74	>75% Grass cover, Good, HSG C
42,483	92	Weighted Average
10,126		23.84% Pervious Area
32,357		76.16% Impervious Area

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

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Proposed Conditions - 2,10,25,100-Year Storms

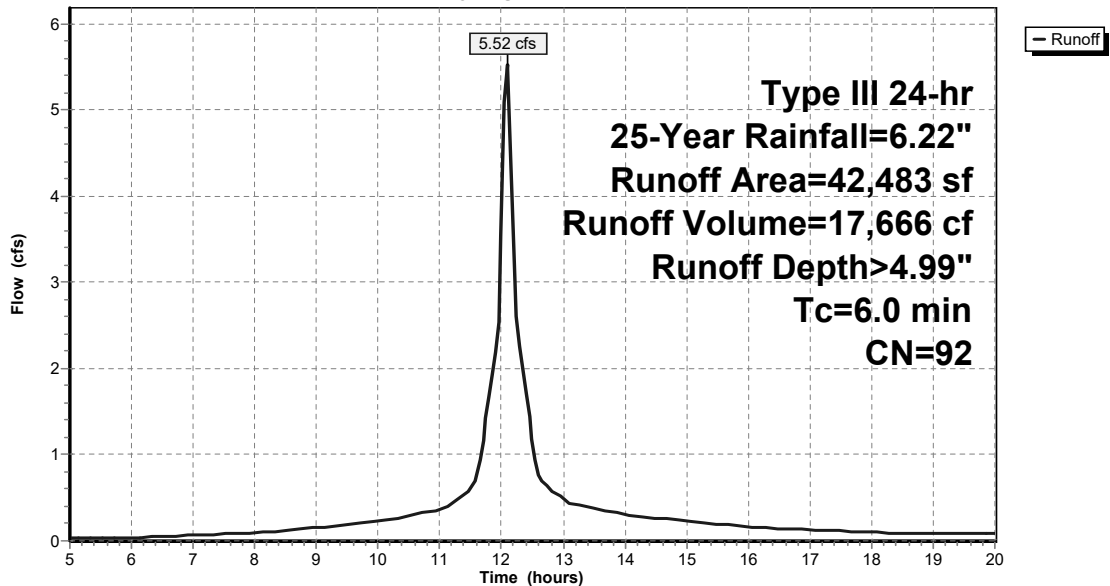
Type III 24-hr 25-Year Rainfall=6.22"

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Page 18

Subcatchment P1: Overland Flow to Curtis Pond BVW

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Proposed Conditions - 2,10,25,100-Year Storms

Type III 24-hr 25-Year Rainfall=6.22"

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Page 19

Summary for Subcatchment P2: Overland Flow to Webster Street

Runoff = 0.56 cfs @ 12.09 hrs, Volume= 1,835 cf, Depth> 5.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.22"

Area (sf)	CN	Description
2,420	98	Paved parking, HSG C
1,200	98	Roof (Small Bldg), HSG C
547	74	>75% Grass cover, Good, HSG C
4,167	95	Weighted Average
547		13.13% Pervious Area
3,620		86.87% Impervious Area

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

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Proposed Conditions - 2,10,25,100-Year Storms

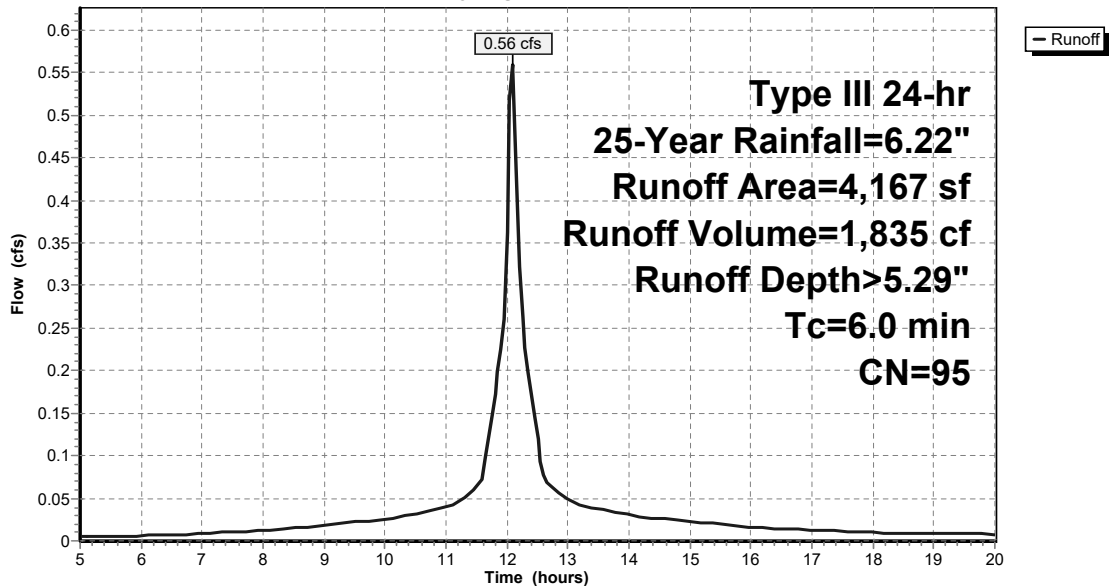
Type III 24-hr 25-Year Rainfall=6.22"

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Page 20

Subcatchment P2: Overland Flow to Webster Street

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Proposed Conditions - 2,10,25,100-Year Storms

Type III 24-hr 25-Year Rainfall=6.22"

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Page 21

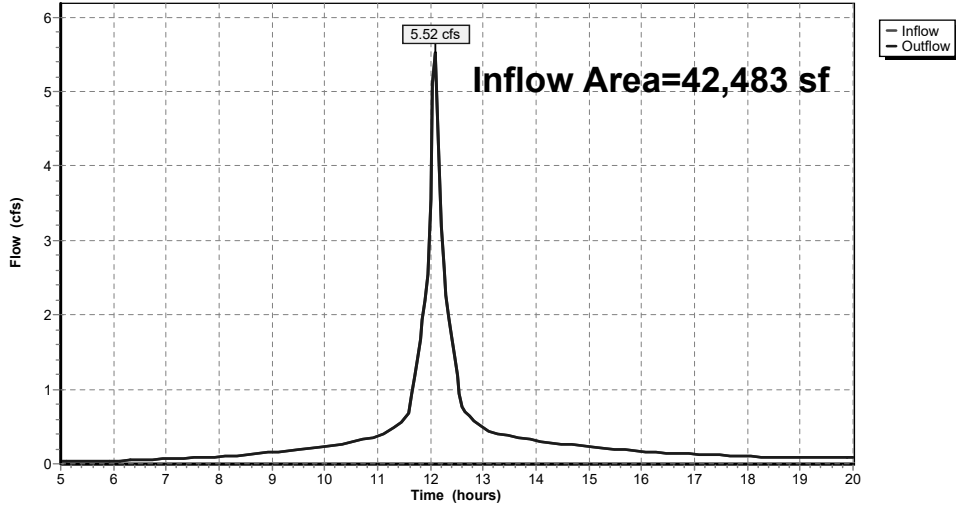
Summary for Reach R1: Curtis Pond BVW

Inflow Area = 42,483 sf, 76.16% Impervious, Inflow Depth > 4.99" for 25-Year event
Inflow = 5.52 cfs @ 12.09 hrs, Volume= 17,666 cf
Outflow = 5.52 cfs @ 12.09 hrs, Volume= 17,666 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach R1: Curtis Pond BVW

Hydrograph



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Proposed Conditions - 2,10,25,100-Year Storms

Type III 24-hr 25-Year Rainfall=6.22"

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Page 22

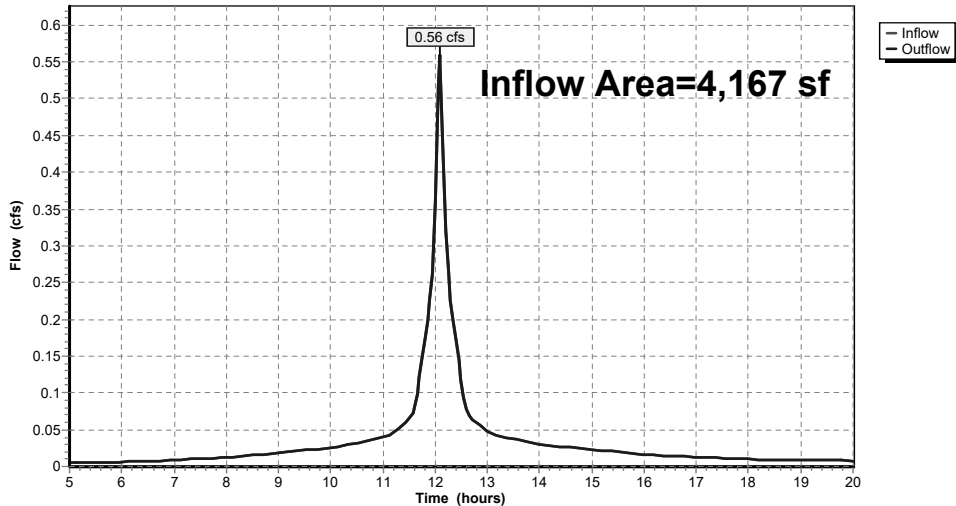
Summary for Reach R2: Webster Street Stormwater System

Inflow Area = 4,167 sf, 86.87% Impervious, Inflow Depth > 5.29" for 25-Year event
Inflow = 0.56 cfs @ 12.09 hrs, Volume= 1,835 cf
Outflow = 0.56 cfs @ 12.09 hrs, Volume= 1,835 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach R2: Webster Street Stormwater System

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Type III 24-hr 100-Year Rainfall=8.88"

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Page 23

Summary for Subcatchment P1: Overland Flow to Curtis Pond BVW

Runoff = 8.08 cfs @ 12.09 hrs, Volume= 26,358 cf, Depth> 7.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 100-Year Rainfall=8.88"

Area (sf)	CN	Description
18,990	98	Paved parking, HSG C
* 1,200	98	Roof (Small Bldg), HSG C
* 12,167	98	Roof (Main Bldg), HSG C
5,226	70	Woods, Good, HSG C
3,143	74	>75% Grass cover, Good, HSG C
1,757	74	>75% Grass cover, Good, HSG C
42,483	92	Weighted Average
10,126		23.84% Pervious Area
32,357		76.16% Impervious Area

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

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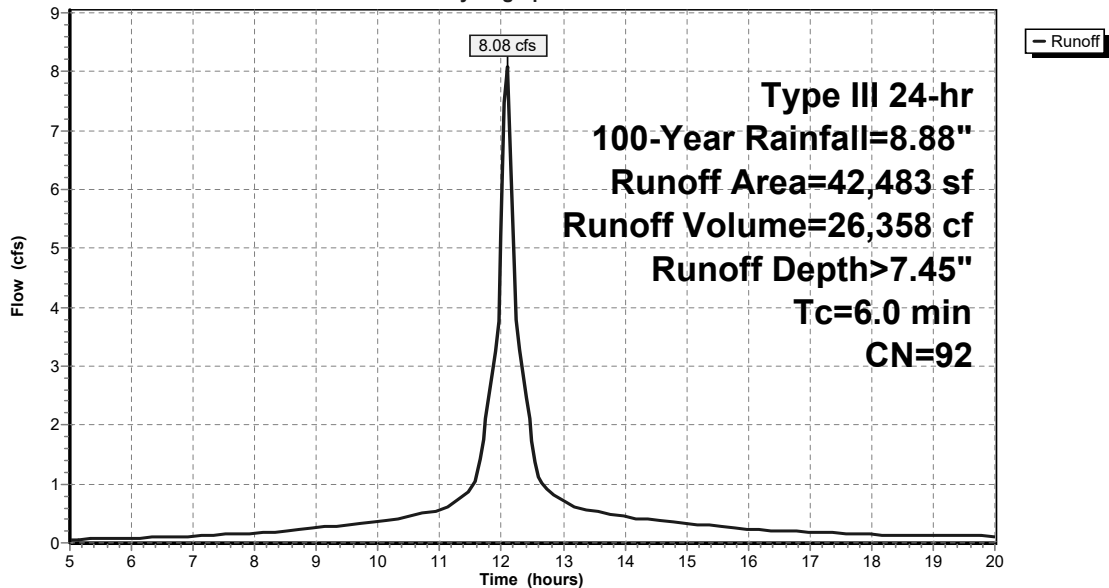
Type III 24-hr 100-Year Rainfall=8.88"

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Page 24

Subcatchment P1: Overland Flow to Curtis Pond BVW

Hydrograph



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Proposed Conditions - 2,10,25,100-Year Storms

Type III 24-hr 100-Year Rainfall=8.88"

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Page 25

Summary for Subcatchment P2: Overland Flow to Webster Street

Runoff = 0.81 cfs @ 12.09 hrs, Volume= 2,684 cf, Depth> 7.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=8.88"

Area (sf)	CN	Description
2,420	98	Paved parking, HSG C
1,200	98	Roof (Small Bldg), HSG C
547	74	>75% Grass cover, Good, HSG C
4,167	95	Weighted Average
547		13.13% Pervious Area
3,620		86.87% Impervious Area

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

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Proposed Conditions - 2,10,25,100-Year Storms

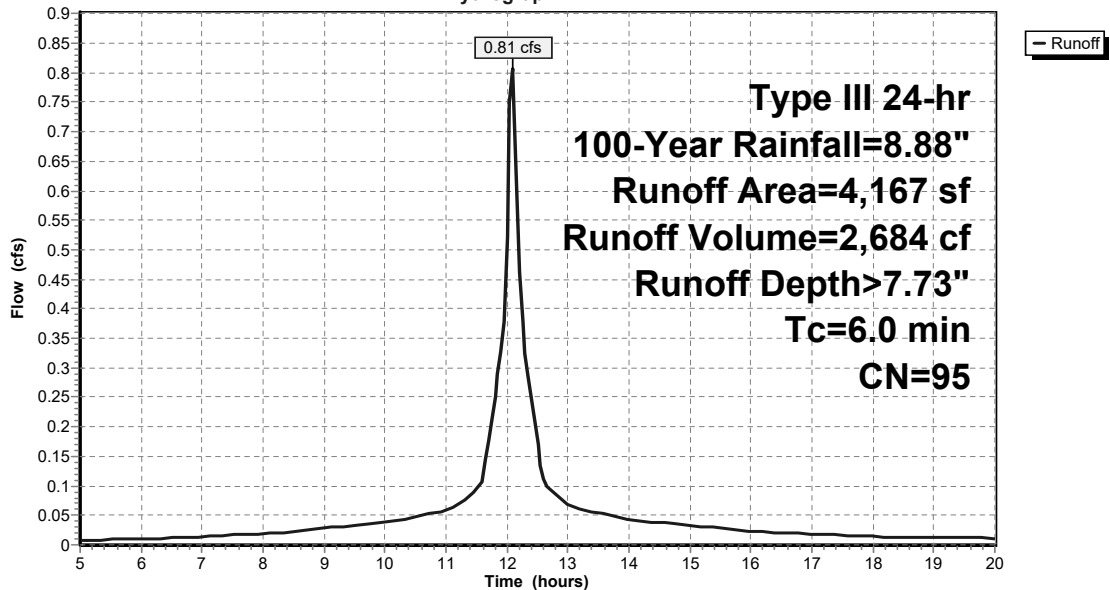
Type III 24-hr 100-Year Rainfall=8.88"

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Page 26

Subcatchment P2: Overland Flow to Webster Street

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Proposed Conditions - 2,10,25,100-Year Storms

Type III 24-hr 100-Year Rainfall=8.88"

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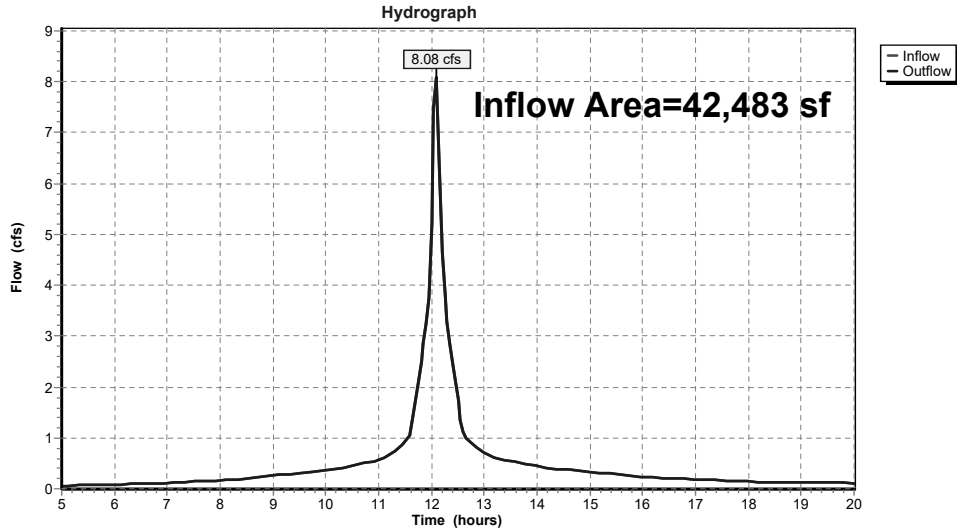
Page 27

Summary for Reach R1: Curtis Pond BVW

Inflow Area = 42,483 sf, 76.16% Impervious, Inflow Depth > 7.45" for 100-Year event
Inflow = 8.08 cfs @ 12.09 hrs, Volume= 26,358 cf
Outflow = 8.08 cfs @ 12.09 hrs, Volume= 26,358 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach R1: Curtis Pond BVW



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Proposed Conditions - 2,10,25,100-Year Storms

Type III 24-hr 100-Year Rainfall=8.88"

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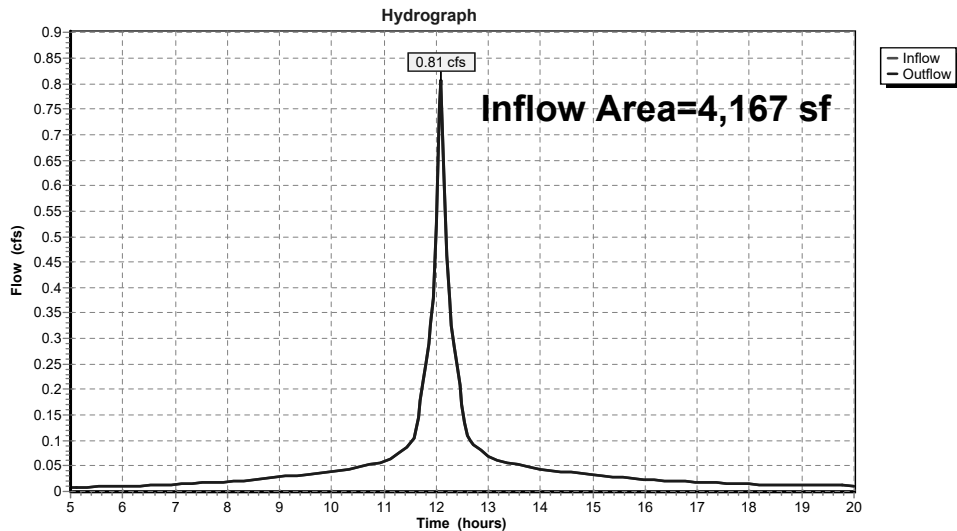
Page 28

Summary for Reach R2: Webster Street Stormwater System

Inflow Area = 4,167 sf, 86.87% Impervious, Inflow Depth > 7.73" for 100-Year event
Inflow = 0.81 cfs @ 12.09 hrs, Volume= 2,684 cf
Outflow = 0.81 cfs @ 12.09 hrs, Volume= 2,684 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach R2: Webster Street Stormwater System



SECTION 6.00 - STORMWATER MANGEMENT SYSTEM OPERATION AND MAINTENANCE PLAN

OPERATION AND MAINTENANCE PLAN
FOR
WEBSTER STREET MILL
RESIDENTIAL CONVERSION
ASSESSOR REF. MBL 27-032-02+2A
70 WEBSTER STREET
WORCESTER, MA

March 29, 2023

Prepared By:
Level Design Group, L.L.C.
249 South Street, Unit 1
Plainville, MA 02762

Prepared For:
WORCESTER AFFORDABLE HOUSING, LLC.
6 JACQUES STREET
WORCESTER, MA 01603

LDG Project No.: 1999.00

The proposed Stormwater Management System is designed to function properly provided that routine maintenance is performed. It is the responsibility during construction and until purchase of the units that the Owner and Developer, Gold Star Builders, Inc (or any other future Owner), shall be responsible for the long- term maintenance to provide the required maintenance outlined in this plan for the site infiltration system as well as the remainder of the on-site storm drainage system.

Upon completion of construction, maintenance of driveways, off-site catch basins, and the stormwater appurtenances are required to ensure that sedimentation and pollution is controlled. The system maintenance will be the responsibility of the developer / property owner. To ensure the proper functioning of these facilities the following maintenance practices will be used:

DRIVEWAYS & PARKING AREAS

Driveways and Parking Areas are to be swept monthly to remove sand which has accumulated. Sand shall be removed from the site and legally disposed of. Leaves and debris which accumulates within the Driveways and Parking Areas during the summer and fall months shall be collected and legally disposed of.

Winter Maintenance & Snow Removal

Snow removal within Driveways and Parking Area shall be stockpiled in the designated Snow Stockpile Areas outside of the traveled driveways. These areas should be located within or adjacent to the parking surface and should drain to the stormwater management system. Under no circumstances shall snow be directed onto abutting parcels or into the rain gardens.

Estimated Yearly Cost \$1,00.00 (not including cost for snow plowing)

CATCH BASINS

Catch basins shall be inspected and cleaned four times per year or when the sumps are 50% full. This procedure is comprised of removing the catch basin grate followed by removal of sediment trapped in the structure with a clamshell shovel. The outlet pipe from the catch basin shall be inspected and any obstructions are to be removed. The sediment and debris removed from the catch basin shall be legally disposed of.

Catch basin grates shall be cleared of leaves and debris during the fall season so they may function properly during the winter and early spring.

Estimated Yearly Cost \$1,000.00

STORMWATER TREATMENT UNIT

The Stormwater Treatment Units should be inspected at regular intervals and maintained when necessary to ensure optimum performance. The rate at which the system collects pollutants will depend more heavily on-site activities than the size of the unit, i.e., unstable soils or heavy winter sanding will cause the treatment chamber to fill more quickly, but regular sweeping will slow accumulation.

Inspection

Inspection is the key to effective maintenance and is easily performed. Pollutant deposition and transport may vary from year to year and regular inspections will help ensure that the system is cleaned out at the appropriate time. At a minimum, inspections should be performed twice per year (i.e. spring and fall) however more frequent inspections may be necessary in equipment washdown areas and in climates where winter sanding operations may lead to rapid accumulations of a large volume of sediment. It is useful and often required as part of a permit to keep a record of each inspection. A simple inspection and maintenance log form for doing so is available for download at www.ContechES.com/stormwater

The Stormwater Treatment Units should be cleaned when the sediment has accumulated to a depth of two feet in the treatment chamber. This determination can be made by taking two measurements with a stadia rod or similar measuring device; one measurement from the manhole opening to the top of the sediment pile and the other from the manhole opening to the water surface. If the difference between these measurements is less than the distance given in Table 2, the Stormwater Treatment Units should be maintained to ensure effective treatment.

Cleaning

Cleaning of the Stormwater Treatment Units should be done during dry weather conditions when no flow is entering the system. Cleanout of the Stormwater Treatment Units with a vacuum truck is generally the most effective and convenient method of excavating pollutants from the system. Simply remove the manhole cover and insert the vacuum hose into the sump. All pollutants can be removed from this one access point from the surface with no requirements for Confined Space Entry. In installations where the risk of petroleum spills is small, liquid contaminants may not accumulate as quickly as sediment. However, an oil or gasoline spill should be cleaned out immediately. Motor oil and other hydrocarbons that accumulate on a more routine basis should be removed when an appreciable layer has been captured. To remove these pollutants, it may be preferable to use adsorbent pads, which solidify the oils. These are usually much easier to remove from the unit individually, and less expensive to dispose than the oil/water emulsion that may be created by vacuuming the oily layer. Floating trash can be netted out if you wish to separate it from the other pollutants. Manhole covers should be securely seated following cleaning activities to prevent leakage of runoff into the system from above and also to ensure proper safety precautions. If anyone physically enters the unit, Confined Space Entry procedures need to be followed. Disposal of all material removed from the Stormwater Treatment Units should be done in accordance with local regulations. In many locations, disposal of evacuated sediments may be handled in the same manner as disposal of sediments removed from catch basins or deep sump manholes. Check your local regulations for specific requirements on disposal.

PUBLIC SAFETY FEATURES

Many of the Public Safety Features of the Stormwater Management System are incorporated into its design. The stormwater management features are located below the surface which provides a greater level of safety over surface basins.

Despite all the well-designed safety features within the Stormwater Management System all components of the system must be properly maintained to be effective. All maintenance procedures detailed above must be done on schedule and documented. Standing, stagnant water provides mosquito-breeding habitat and increases the potential for disease transmission. All stormwater systems. Routine monitoring for and management of mosquito-breeding conditions by qualified maintenance staff is required during the peak breeding season between April and September ensure that unforeseen conditions do not develop.

While risks can be mitigated through proper design and maintenance, it is impossible to entirely eliminate risk. Therefore, public education regarding stormwater management facilities and their inherent risks is valuable and should be a part of every community's activity. Residents of the units shall be given an overview of the Stormwater System and which areas to avoid. Public participation also increases the level of maintenance as community members can notify staff if a component of the stormwater system is not functioning properly.

STORMWATER MANAGEMENT OPERATION AND MAINTENANCE LOG

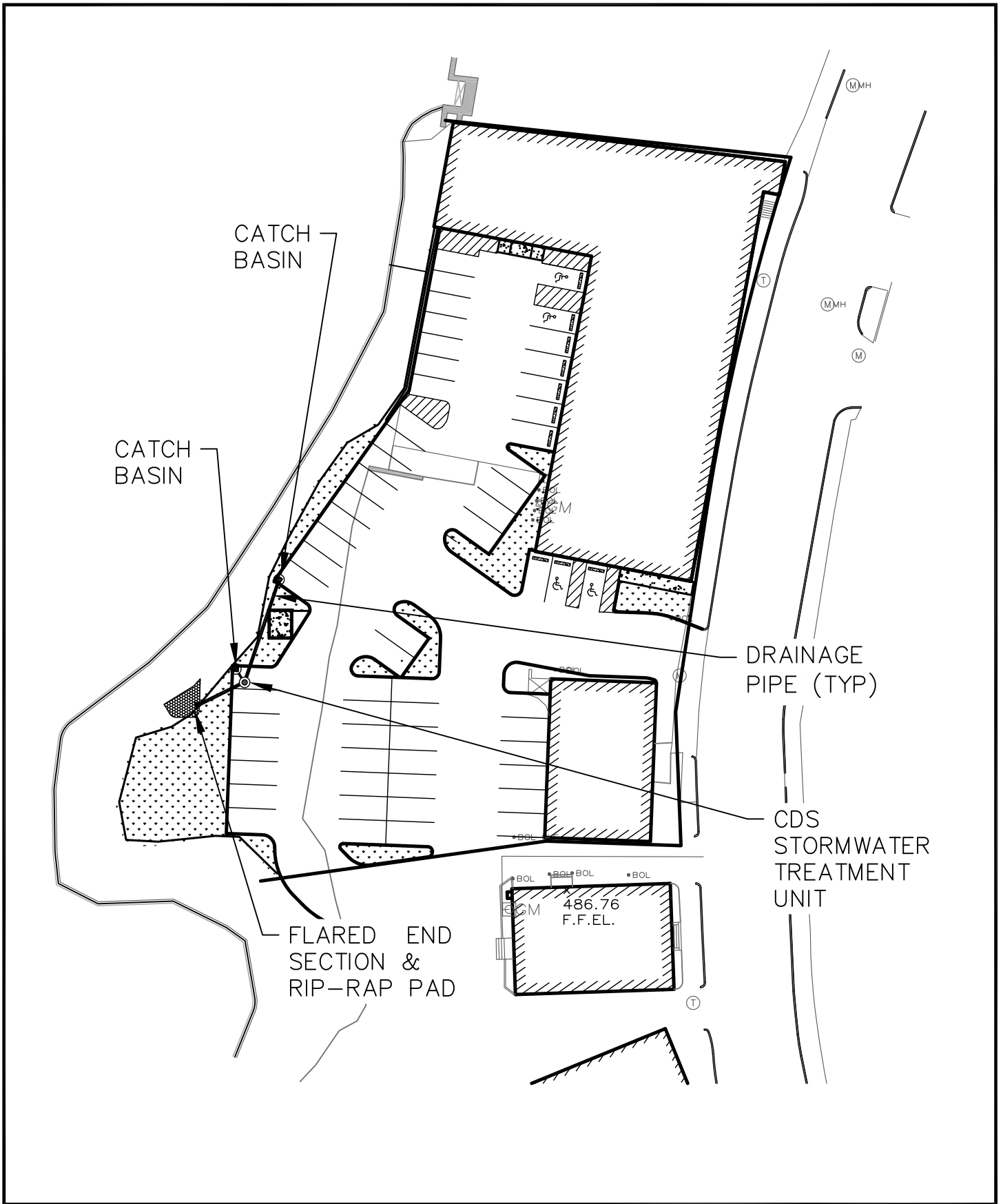
Stormwater Operation
 & Maintenance Plan
 70 Webster Street
 Worcester, MA



It is the responsibility of the developer / property owner to provide for maintenance of the parking areas and the storm drainage system. The log form below is a template and shall be reproduced as needed. Copies of all log forms shall be kept on file for a minimum of three years from the date of inspection.

Name of Inspector:
Date and Time of Inspection:
Weather Conditions:

Stormwater BMP	Observations	Action Required



STORMWATER MANAGEMENT OPERATION AND MAINTENANCE SITE PLAN

LEVEL DESIGN GROUP, LLC
 CIVIL ENGINEERS AND LAND SURVEYORS
 249 SOUTH STREET, UNIT 1
 PLAINVILLE, MA 02762
 508.695.2221 (F) 508.695.2219
 WWW.LEVELDG.COM

WEBSTER STREET MILL
 70 WEBSTER STREET
 WORCESTER, MA

PROJ NO.: 1999.00
 SCALE: 1" = 50'

SECTION 7.00 – LONG TERM POLLUTION PREVENTION PLAN

LONG TERM POLLUTION PREVENTION PLAN
FOR
WEBSTER STREET MILL
RESIDENTIAL CONVERSION
ASSESSOR REF. MBL 27-032-02+2A
70 WEBSTER STREET
WORCESTER, MA

March 29, 2023

Prepared By:
Level Design Group, L.L.C.
249 South Street, Unit 1
Plainville, MA 02762

Prepared For:
WORCESTER AFFORDABLE HOUSING, LLC
6 JACQUES STREET
WORCESTER, MA 01603

LDG Project No.: 1999.00

GOOD HOUSEKEEPING PRACTICES

It is the responsibility of the site operator Worcester Affordable Housing, LLC, to provide the required maintenance outlined in this plan. The Owner shall utilize good housekeeping practices as outlined in the Operation and Maintenance Plan required for the maintenance of the Stormwater Management System.

PROVISIONS FOR STORAGE OF MATERIALS AND WASTE PRODUCTS INSIDE OR UNDER COVER

The storage of hazardous materials and waste will not be allowed outdoors. All hazardous materials, such as waste oil, fuel, etc. shall be stored indoors and hauled by Massachusetts licensed haulers of the specified materials.

VEHICLE WASHING CONTROLS

Outdoor vehicle washing is not allowed at this site.

REQUIREMENTS FOR ROUTINE INSPECTION AND MAINTENANCE OF STORMWATER BMPs

The Owner / Operator shall keep Maintenance Log Sheets of scheduled tasks as outlined in the Stormwater Management System Operation and Maintenance Plan.

SPILL PREVENTION AND RESPONSE PLANS

The risk of significant spills requiring action at this site is limited and will most likely be associated with motor vehicle use or maintenance. A Spill Prevention, Control, and Countermeasure (SPCC) Plan for the site covering all potential pollution sources from the sales and maintenance of large trucks. All personnel working with potentially hazardous materials shall be educated on the requirements of the site SPCC Plan. In the event of a significant spill contact:

Massachusetts Department of Environmental Protection 24-hour emergency response notification line – (888) 304-1133

PROVISIONS FOR MAINTENANCE OF LAWNS, GARDENS, AND OTHER LANDSCAPED AREAS

The use of chemical fertilizers is to be limited to the maximum extent practicable. If chemical fertilizers are to be used, they must be worked into the soil to prevent washouts and stormwater contamination of fertilizers.

REQUIREMENTS FOR STORAGE AND USE OF FERTILIZERS, HERBICIDES, AND PESTICIDES

If fertilizers, herbicides, and pesticides are to be used and stored on site they are to be stored in their original containers and keep in a dry, safe area where children do not have access to.

PROVISIONS SOLID WASTE MANAGEMENT

Solid waste management systems shall be inspected and maintained in accordance with state, local, and federal solid waste management regulations

EMERGENCY AND REGULATORY CONTACTS

Worcester Fire Department:	911 / (508) 799-3473
Worcester Police Department:	911 / (508) 799-8466
Massachusetts Department of Environmental Protection - Southeast Regional Office:	(508) 946-2700
United State Environmental Protection Agency:	(617) 918-1111

**SECTION 8.00 – CONSTRUCTION PERIOD POLLUTION PREVENTION AND
EROSION & SEDIMENT CONTROL PLAN**

CONSTRUCTION PERIOD
POLLUTION PREVENTION AND
EROSION & SEDIMENT CONTROL PLAN
FOR
WEBSTER STREET MILL
RESIDENTIAL CONVERSION
70 WEBSTER STREET
WORCESTER, MASSACHUSETTS

March 29, 2023

Prepared By:
Level Design Group, L.L.C.
249 South Street, Unit 1
Plainville, MA 02762

Prepared For:
GOLDSTAR BUILDERS, INC.
6 JACQUES STREET
WORCESTER, MA 01603

LDG Project No.:
1999.00

TABLE OF CONTENTS

INTRODUCTION

SECTION 1 – SITE AND ACTIVITY DESCRIPTION

- 1.1 Project Site Operator
- 1.2 Site & Project Description
- 1.3 Construction Sequencing
- 1.4 Estimated Disturbance
- 1.5 Approved State or Local Plans

SECTION 2 - CONTROLS TO REDUCE POLLUTANTS

- 2.1 Pollution Control & Stabilization Measures
- 2.2 Construction Records
- 2.3 Structural Practices
- 2.4 Storm Water Management
- 2.5 Discharge of Solid Materials
- 2.6 Sediment Tracking and Dust Control
- 2.7 Construction Waste Storage
- 2.8 Pollutant Sources from Non-Construction Areas

SECTION 3 - MAINTENANCE OF CONTROLS

- 3.1 Standard Maintenance
- 3.2 Modifications or Additional BMPs

SECTION 4 - INSPECTIONS

SECTION 5 - NON-STORM WATER DISCHARGES

APPENDICES

- Appendix A - Note Pages for Project Documentation

INTRODUCTION

This Construction Period Pollution Prevention and Erosion & Sediment Control Plan (CPPPESCP) is prepared in accordance Massachusetts Department of Environmental Protection (MADEP) Stormwater Guidelines. The construction activities include development of a 4-unit single family attached dwelling. Construction activities associated with the proposed building include the site grading, utilities and storm water management system. This CPPPESCP must be retained on-site during construction and available for the viewing of permitting authorities as appropriate during construction, as specified in the CPPPESCP.

The total area to be disturbed for overall site development includes approximately 10,674± sf., including the new building, driveways, drainage, utilities, landscaping and associated grading.

SECTION 1 – SITE & ACTIVITY DESCRIPTION

1.1 PROJECT SITE OPERATOR

Gold Star Builders, Inc.
6 Jaques Street
Worcester, MA
goldstarbuilder@gmail.com

1.2 SITE AND PROJECT DESCRIPTION

PRE-DEVELOPMENT CONDITIONS

The development site is identified as Assessor Ref. MBL 27-032-02+2A and consists of a 1.0± Ac. The site is bound by Webster Street to the east, an existing commercial parcel / mill building to the south, a National Grid parcel containing a transformer station to the north, and Curtis Pond to the west. The parcel is fully developed and contains an existing 17,250±sf. footprint historic mill building with associated parking, loading, and utilities. There is no established on-site stormwater management system as all surface and rooftop runoff from 90% of the site draining west towards Curtis Pond with the remaining area draining towards Webster Street

The parcel is located in an MG-2.0 Zoning District and is also within an Adaptive Reuse Overlay District. The on-site wetland and resource area boundary which consists of the bank of Curtis Pond was flagged by has been flagged by Goddard Consulting, LLC in February of 2022. An Order of Conditions (OOC) for MADEP File # 349-1354 was issued by the demolition of approximately 5,000±sf. of the existing structure by City of Worcester Conservation Commission in March of 2023.

The on-site soils within the area of the limits of the development are classified by the Worcester County Soil Survey, Northern Part:

- 1 – Water
- 602 – Urban Land

See the SCS soils documentation included herein for additional on-site soil details.

RE-DEVELOPMENT CONDITIONS

The Applicant to redevelop the 17,250±sf. mill building as residential apartments. As detailed above, a 5,000±sf. single story section of the building will be demolished. The remaining existing three story 9,640±sf. footprint will be redeveloped and an additional two story addition is proposed to be built on-top of the remaining 2,524±sf single story footprint. The residential conversion will contain 8 two-bedroom units and 25 one-bedroom units. The building slab area of the demolished 5,000±sf. single story structure will be converted into a parking area and the remaining existing

paved parking and loading area will be converted into a new residential parking lot. The residential parking lot will contain newly cutout directional island and landscaping.

Impervious coverage (building and paved parking) from the site will increase slight from 35,896±sf to 34,642±sf, a net increase of 1,254±sf. This minor increase in pavement is mitigated by conversion of 6,782±sf. of hard packed gravel currently used as additional parking area adjacent to Curtis Brook to cleaned and resorted landscaped area.

1.3 CONSTRUCTION SEQUENCING

1. install erosion and sediment controls;
2. demo site existing site features which are not included in the redevelopment;
3. construct building foundation;
4. install stormwater management system and other new site utilities;
7. construct retaining wall;
7. construct redeveloped parking area and install binder coat pavement;
8. Install site landscaping;
9. Fine grade site and loam and seed all remaining disturbed areas;
10. Install top coat pavement and pavement striping;
11. Project close out.

1.4 ESTIMATED DISTURBANCE

The total area expected to be disturbed by excavation, grading, or other construction activities is approximately 0.70±Ac. The area includes required disturbance for building construction, utility installation, and site grading for the new parking areas and driveways.

1.5 APPROVED STATE OR LOCAL PLANS

The project requires Approval from the City of Worcester Planning Board, Conservation Commission, and Historical Commission. This CPPPESCP will be modified accordingly once all approvals are obtained.

SECTION 2 – CONTROLS TO REDUCE POLLUTANTS

2.1 POLLUTION CONTROL & STABILIZATION MEASURES

The area which will be disturbed during construction activities will hereafter be referred to as the ‘Site’. Areas where no earthwork is proposed shall be protected from disturbance with construction fencing, or other physical demarcation in the field to prevent unnecessary disturbance. Once Site earthwork begins, it should progress without delay until disturbed areas are stabilized. Soil shall be stockpiled outside of the resource areas and their associated buffer zone and be surrounded by staked or ballasted hay bales. If the stockpile will not be disturbed for 30 days or more, temporary seeding shall be spread over it within 7 days of the last disturbance.

The scope of the proposed project renders permanent stabilization more practical than temporary measures. Disturbed areas not proposed to be paved or occupied by the building shall be loamed and seeded upon completion of the subgrade and any utility excavation. Diversion swales shall be installed around the perimeter of the site, if necessary, to collect stormwater runoff during construction. The swales, if necessary, are to be constructed during the “rough grading” phase of the site work. The diversion swales are to be constructed in a manner where they do not intercept ground water and shall discharge to the on-site settling dewatering basin.

Completion driveway and parking area improvement shall be followed immediately by the placement of the pavement binder course (finished paving may be delayed to prevent damage during other activities). Stabilization must be in place within 14 days of a temporary or permanent stop of construction activity, unless precluded by snow cover or if work is scheduled to restart within 21 days.

2.2 CONSTRUCTION RECORDS

A record of the dates of key site activities shall be kept on the note pages provided in Appendix A of this document. The record shall include the following:

1. Dates when the site is cleared and grubbed.
2. Dates when major grading activities occur.
3. Dates when construction activities temporarily or permanently cease on a portion of the site.
4. Dates when stabilization measures are initiated.

2.3 STRUCTURAL PRACTICES

The erosion control plan details a 12” silt sock to be installed along the westerly edge of the parking area. The proposed outlet structure will contain a new rip-rap dispersion pad when each outlet is installed. The erosion control line is to be inspected by Level Design Group, LLC after installation and prior to site work commencing on site.

Installation of a silt-sac or similar sediment control devices are to be installed at all existing and proposed catch basins within the site and the Webster Street right-of-way, as shown on the attached Erosion Control Plan. The existing site is primarily paved and will remain paved during a majority of the site construction.

2.4 STORM WATER MANAGEMENT

New curbing is proposed within the parking area to collect and treat stormwater runoff. Two new proposed catch basins are proposed within the parking area which connect to a CDS Stormwater Treatment Unit for additional TSS removal prior to discharge. A new on-site discharge from the treatment system is proposed along the bank of Curtis Pond in an area which will be regraded to provide a level discharge area new faired end section and rip-rap pad.

2.5 DISCHARGE OF SOLID MATERIALS

A construction dumpster or other suitable receptacle shall be provided on-site for solid waste accumulation to preclude its entry into storm water systems.

Appropriate portable toilets shall be available at the site from the time when construction commences until the end of construction.

2.6 SEDIMENT TRACKING AND DUST CONTROL

Trucks are expected to arrive and leave the site with construction materials. The exit is to be established to control both dust and the tracking of soils onto public ways. This area will remain paved and the entry on to Webster Street will be monitor and swept as required. If sediment accumulation is evident truck will be required to be rinsed off prior to exiting the site. Dust shall be controlled with limited amounts of water; calcium chloride shall not be utilized.

2.7 CONSTRUCTION WASTE STORAGE

A construction dumpster will be available at all times on-site throughout the construction process. If the need to store construction waste arises during construction the Project Site Operator will notify the City of Worcester Building Inspector in writing as to what materials are to be stored and what controls will be put in place to minimize exposure of the materials to storm water.

2.8 POLLUTANT SOURCES FROM NON-CONSTRUCTION AREAS

There are no anticipated pollutant sources from areas other than the proposed construction.

2.9 CONSTRUCTION DEWATERING

Construction dewatering is not anticipated to be necessary due to the limited amount of excavation work. If constructed dewatering is required a dewatering a temporary dewatering back such as a Dirt Bag will be provided onsite. The discharge from the bag shall be monitored and directed to an area on-site which provides the longest possible vegetated pathway towards Curtis Pond.

SECTION 3 – MAINTENANCE OF CONTROLS

3.1 STANDARD MAINTENANCE

The Erosion and Sedimentation Controls, Storm Water Management Controls and Other Controls implemented as part of the work should be expected to require maintenance. The installed compost silt sacs may also require maintenance after significant storms or inadvertent disturbance by construction equipment.

If any of the perimeter controls are displaced from its intended location they shall be replaced and re-set to maintain a continuous barrier. At the completion of the project, all adjacent off-site catch basins shall be inspected for sediment in the sumps, and the sediment shall be removed, if present.

The control of dust will require frequent maintenance efforts to dampen disturbed areas as they are exposed or dry out.

Portable toilets shall be maintained according to applicable local state and federal regulations, and the recommendations of the service employed for the maintenance.

Loamed and seeded areas may require periodic irrigation depending upon weather conditions during the several weeks after planting. The site shall not be considered stabilized until the seeded areas are well established.

3.2 MODIFICATIONS OR ADDITIONAL BMPs

Any modifications to this CPPPESCP or additional required BMPs that appear to be necessary must be approved by the Design Engineer. Approved changes must be completed prior to the next storm event when practicable. If implementation before the next storm event is impracticable, the event must be recorded in the CPPPESCP and alternative BMPs must be implemented as soon as possible.

SECTION 4 - INSPECTIONS

Bi-weekly inspections, no more than 14 days apart, shall be performed on the pollution prevention controls, and the conditions of the site environs relating to erosion, dust, mud tracking, and materials storage. These inspections shall begin the first week of site construction and continue throughout the project until all areas are permanently stabilized, including seeded areas becoming well established. The EPA, MADEP and other state and local agencies may visit the site and ask to inspect these logs along with this CPPPESCP. Inspections are also required within 24 hours of a major storm event, producing a total rainfall greater than 0.5 inches. All inspection must be followed by a report made on the pages bound in Appendix A. This report is to be kept on the site.

Inspections are to be made by qualified personnel with a technical background in construction period pollution prevention.

Inspections shall include all of the specified Erosion and Sedimentation Controls, Storm Water Management Controls and Other Controls. The report shall describe the scope of the inspection, the name and qualifications of the person making the inspection and the date of the inspection. Notes shall be taken describing the condition of disturbed areas and areas recently stabilized to assess the adequacy of the controls and/or the success of the permanent stabilization measures. Comments shall be entered regarding any major rainfall events and the success or problems with the control measures. Records of repairs or improvements shall also be made.

Any problems identified during the inspection shall be rectified by maintaining or repairing the controls specified in this CPPPESCP. If the controls are in good repair, but failing to effectively control pollution, this CPPPESCP must be revised within seven days of an unsatisfactory inspection, and noted in the inspection report.

SECTION 5 - NON-STORM WATER DISCHARGES

This CPPPESCP does not provide for the discharge of any flows other than storm water, with the exception of firefighting water, which is excluded from the regulations.

The proponent and contractor shall develop a spill management plan for and hazardous materials that may be stored on-site or employed during work in or around the buffer adjacent to the wetlands. Specifically, the proponent should be prepared to effectively deal with spillage of fuel or hydraulic fluids from equipment. A quick-absorbent material, such as Speedy Dry® or equivalent, will be stored in a dry readily available area, and used in the event petroleum-based fluids are spilled or leaked. The spent material is then to be containerized and disposed of properly. An emergency fuel boom or absorbent pads shall be readily available in case any such spill threatens the wetlands or surrounding waterways

No storage of hazardous materials shall take place within 50-feet of any installed and active drainage structure. If such storage takes place on a temporary basis, oil and sediment rolls shall be placed around such structure to prevent the movement of such materials into the structure.

APPENDIX A

NOTE PAGES FOR PROJECT DOCUMENTATION