CONNECTICUT DEPARTMENT OF TRANSPORTATION

Annual Report for MS4 Permit Year 5

July 1, 2023 – June 30, 2024

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MS4 General Permit
Connecticut Department of Transportation Municipal Separate Storm Sewer (MS4) Annual Report
New MS4 Permittee
Permit Number GSM DEEP-WPED-GP-22
[July 1, 2023– June 30, 2024]

This report documents the Connecticut Department of Transportation's (CTDOT) efforts to comply with the conditions of the General Permit for the Discharge of Stormwater from Department of Transportation Separate Storm Sewer Systems (CTDOT MS4 General Permit or permit) to the maximum extent practicable (MEP) from July 1, 2023, to June 30, 2024.

Part I: Summary of Minimum Control Measure Activities

1. Public Education and Outreach (Section 6 (a)(1) / page 19)

Now in Year 5 since the permit has been issued, the focus of this reporting year was again to keep the CTDOT website updated with the most current information and educate internal personnel on MS4 requirements. The CTDOT's primary means of providing knowledge of CTDOT's MS4 and Stormwater information remain the dedicated CTDOT MS4 website. Public outreach and educational material on CTDOT's MS4 Program can be found on the CTDOT MS4 website: https://portal.ct.gov/dot/pp_envir/water_natural_resources/ctdot-ms4?language=en_US.

CTDOT maintains a dedicated email address, DOT.MS4@ct.gov, for the general public to submit questions or concerns regarding the CTDOT MS4 program including, but not limited, observed drainage problems, suspected illicit discharges, and CTDOT stormwater infrastructure.

One of the most common questions received by CTDOT is the status of mapping within a certain location. A public facing ESRI Web Map was created for individuals to see what CTDOT has mapped to date. This map has proven to be a useful tool for interested parties. Included in this mapping are highlighted interconnection points (where CTDOT's drainage is interconnected to that of other municipalities or private entities) that allow users to easily identify where drainage system ownership changes. Mapping these interconnection locations is a requirement for all MS4 Permit holders. The Web Map as of July 1, 2024, has 6,304 views and can be found via this link: https://ctdot.maps.arcgis.com/apps/webappviewer/index.html?id=5f28d298a4ef41d9bc6339a66dee764e

The GIS technology that CTDOT uses to create and share its stormwater mapping continues to evolve, increasing the functionality of the web maps and improving the user interface experience. However, to incorporate these improvements to the CTDOT's publicly available mapping, CTDOT anticipates having to establish a new URL address during the next reporting year. At a minimum, the new URL address will be updated on the CTDOT MS4 webpage and distributed to those on the Connecticut MS4 List Serve as soon as the link becomes available.

1.1 BMP Summary

BMP	Status	Activities in current reporting period	Measurable goal	Department / Person Responsible	Due	Date completed or projected completion date	Additional details
1.1 Implement public education program	Complete	Provided education on CTDOT's MS4 program to staff and consultants. Public educational material on CTDOT's MS4 program available on CTDOT MS4 webpage. Participated in ad-hoc committee on the update to CTDEEP's Stormwater Quality Manual	Educate the Public on Stormwater	Environmental Planning	June 30, 2020	Apr 9, 2019	These resources are published on CTDOT MS4 Website https://portal.ct.gov/DOT/PP_Envir/Water_Natural_Resources/CTDOT-MS4
1.2 Track CTDOT public meetings where non-point source educational material was distributed	Ongoing	Distribute resources to Designers for Public Project Scoping Meetings throughout Municipalities statewide	Get informational resources to designers for distribution at public events	Engineering Bureau, Environmental Planning	June 30, 2020	Ongoing	Incorporation of project specific stormwater issues are provided for incorporation into designer PowerPoint presentations
1.3 Develop Dedicated MS4 Webpage on CTDOT Website	Complete	Maintain a CTDOT MS4 dedicated Website	Create MS4 dedicated Website	Environmental Planning, Environmental Compliance	June 30, 2020	Mar 1, 2019	https://portal.ct.gov/DOT/PP_Envir/Water_Natural_Resources/CTDOT-MS4
1.4 Collaborate with MS4 stakeholder groups outside of CTDOT	Ongoing	Coordinated with MS4's and public health organizations for correspondence regarding Illicit Discharges. Participated in ad-hoc committee on the update to CTDEEP's Stormwater Quality Manual	Work with other MS4 entities cooperatively	Environmental Compliance, Environmental Planning	June 30, 2020	Ongoing	A website displaying CTDOT mapped MS4 infrastructure is publicly available: https://ctdot.maps.arcgis.com/apps/webappviewer/index.html?id=5f28d298a4ef41d9bc6339a66dee764e
1.5 Educate CTDOT Employees on the MS4 Program	Ongoing	Provided MS4 training for design engineers to review MS4 design standards and changes to the SWQM. Incorporated MS4 guidance for CTDOT construction personnel trainings	Provide workshops for employees Department wide to inform them of MS4 requirements	Environmental Compliance, Environmental Planning	June 30, 2020	Ongoing	Refer to Section 6.3 for additional trainings regarding the IDDE program for CTDOT Employees
1.6 River and Stream Signs	Complete	All construction projects that involve crossing a named watercourse receive signage	CTDOT Standard Policy created prior to permit issuance	Engineering Bureau, Environmental Planning	Jul 1, 2020	Completed Prior to Permit issuance	Refer to CTDOT Sign Catalog for sign specifications https://portal.ct.gov/-/media/DOT/documents/dtra

BMP	Status	Activities in current reporting period	Measurable goal	Department / Person Responsible	Due	Date completed or projected completion date	Additional details
							fficdesign/SignCatalogpdf.pdf ?la=en

1.2 Describe any Public Education and Outreach activities planned for the next year, if applicable.

CTDOT staff will continue to be educated regarding the MS4 permit by attending trainings provided by CTDOT's Training Center, District Environmental Trainers, Office of Environmental Planning and/or the Office of Environmental Compliance.

Continuous improvement of the public facing ESRI Web Map is also expected with the goals of:

- Adding more areas of the state as the amount of mapped infrastructure is increased,
- Creating hyperlinks to respective on-line municipal GIS mapping (where available) at points where the CTDOT system interconnects with other systems,
- Improving overall usability, and
- And allowing users to be able to download data.

CTDOT plans to utilize its Bureau of Policy & Planning's regularly scheduled meetings with the Council of Governments and Regional Planning Offices as a means of coordinating with regional and municipal officials on ways to improve water quality through the respective MS4 programs.

1.3 Details of activities implemented to educate the community on stormwater

Trainings this permit term (July 2023 – June 2024) focused on internal CTDOT personnel and consultants working for CTDOT. Primarily, because of the updated Stormwater Quality Manual (SWQM), the CTDOT Office of Environmental Compliance provided training updates and engineering resources to CTDOT design staff and supervisors on how to use retrofit curves for disconnection credit for various Best Management Practices (BMPs), how to fill out the new MS4 Designer's worksheet using updated instructions, and the new requirement to meet pollutant reduction targets if the project does not retain and/or treat the entire Water Quality Volume(WQV). CTDOT construction engineers will receive fundamental awareness training on recognizing illicit discharges when encountered during excavations and utility work. This training will be enhanced in the next permit year. Highway Operations general supervisors, crew leaders, and district trainers receive annual stormwater training that includes pollution prevention and proper debris management during storm preparations.

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2. Public Involvement/Participation (Section 6(a)(2) / page 21)

2.1 BMP Summary

BMP	Status	Activities in current reporting period	Measurable goal	Department / Person Responsible	Due	Date completed or projected completion date	Additional details
2.1 Public notice for the Stormwater Management Plan	Complete	N/A	Notify Public	Environmental Planning, Environmental Compliance	Jun 1, 2019	June 1, 2019	Posted on CTDOT MS4 Website https://portal.ct.gov/DOT/PP_Envir/Water_Natural_Resources/CTDOT-MS4
2.2 Public notices for Annual Reports	Complete	Notified Public of Annual Report	Notify Public	Environmental Planning, Environmental Compliance	Sep 1, 2024	Draft Report published on Aug. 15, 2024 Final Report to be published on September 30, 2024	Posted on CTDOT MS4 Website https://portal.ct.gov/DOT/PP_Envir/Water_Natural_Resources/CTDOT-MS4 and announcement post to CTMS4-L@LISTSERV@UCONN.EDU

2.2 Describe any Public Involvement/Participation activities planned for the next year, if applicable.

CTDOT is solely responsible for permit compliance. CTDOT openly solicits feedback on its Stormwater Management Plan (SWMP) and annual reports during the respective comment periods when the drafts are published. All concerns the Public has regarding its Annual Report and SWMP will be considered. Public feedback on CTDOT's MS4 program, SWMP or Annual Reports can be sent to DOT.MS4@ct.gov. To date, no concerns have necessitated any changes to the SWMP or annual reports.

2.3 Public Involvement/Participation reporting metrics

Metrics	Implemented	Date	Posted
Availability of the Stormwater Management Plan announced to public	Yes	April 3, 2019	CTDOT Website, Email sent to MS4 Listserv
Availability of Annual Report announced to public	Yes	Draft Report published on Aug. 15, 2024 Final Report to be published on September 30, 2024	MS4 CTDOT Website and Email sent to MS4 Listserv

3. Illicit Discharge Detection and Elimination (IDDE) (Section 6(*a*)(3) and Appendix B / page 22)

3.1 BMP Summary

BMP	Status	Activities in current reporting period	Measurable goal	Department / Person Responsible	Due	Date completed or projected completion date	Additional details
3.1 Develop legal authority to prohibit illicit discharges	Completed	Legal authority previously established through existing State statutes and regulations	Legal authority developed	Environmental Compliance	June 30, 2021	June 30, 2022	Unpermitted non-stormwater discharges are prohibited under CGS 22a-430. Discovery of such discharges to the CTDOT MS4 that cannot be otherwise remedied are referred to CT DEEP, which possesses the State's enforcement authority in these cases.
3.2 Develop written IDDE program	Completed	IDDE Written Plan revised this reporting period to update catchment priorities and catchment investigation procedures	Written IDDE plan completed	Environmental Compliance	June 30, 2021	June 5, 2020	Updates to catchment priority definitions and investigation procedures were updated as a result. See additional IDDE program details in Part III of this report.
3.3 Develop program for citizen reporting of illicit discharges /Include citizen reports in annual report	Completed	Citizen IDDE reporting program previously established	Illicit Discharge Program Developed and Reports Documented	Environmental Compliance	June 30, 2021	July 1, 2019	Call 860-594-2560 or email DOTMS4@ct.gov
3.4 Develop tracking system for illicit discharge Investigation and Abatement activities	Completed	IDDE tracking system previously established	Illicit Discharge Tracking system developed	Environmental Compliance	July 1, 2019	July 1, 2019	Investigations are tracked both within the GIS database and manually outside the database
3.5 Identify all known locations of SSO's into CTDOT's MS4 over previous 5 years	Completed	Previously identified	SSO's within previous 5 years identified	Environmental Compliance	November 1, 2019	November 1, 2019	No historic SSO's identified that require CTDOT follow up actions. Locations identified are in the appendix of the IDDE written report which is

BMP	Status	Activities in current reporting period	Measurable goal	Department / Person Responsible	Due	Date completed or projected completion date	Additional details
							available on the CTDOT MS4 webpage
3.6 Identify and Map 50% of CTDOT's MS4 in Priority Areas	Completed	This year CTDOT completed mapping stormwater assets in 14 additional MS4 municipalities	50% of mapping of CTDOT assets within the 120 MS4 municipalities completed by Year 5.	Environmental Planning, Environmental Compliance, Maintenance, Public Transit	June 30, 2024	June 30, 2024	See Section 3.7
3.7 Screen and Sample all mapped outfalls and key interconnection points	In progress	See Section 3.7	Mapped outfalls and interconnections screened and/or sampled	Environmental Compliance	June 30, 2024	June 30, 2024	See Section 3.7
3.8 Provide Annual IDDE Training to Employees	In progress	Refer to Section 6	Annual Bureau trainings completed	Bureau Chief(s)-Engineering and Construction, Policy and Planning, Maintenance, Public Transit	June 30, 2021 & Annually	Annual	Training provided to District Construction Personnel and District Maintenance Personnel

3.2 Describe any IDDE activities planned for the next year, if applicable.

CTDOT's IDDE program activities that will continue next year include the mapping of CTDOT stormwater assets in MS4 municipalities, dry weather screening and sampling of non-excluded discharge locations in areas where the mapping has been finalized, and catchment investigations.

Catchment investigations for all discharge points with suspect illicit inputs will be prioritized primarily based on screening and sampling activities first followed by catchment investigations in other catchment areas categorized as high priority.

IDDE information in relevant CTDOT trainings will also be provided throughout the year.

3.3 List of citizen reports of suspected illicit discharges received during this reporting period.

Location / suspected source	Response taken
No suspected illicit discharges were reported to CTDOT during Permit Year 5	

3.4 Record of illicit discharges occurring during the reporting period and SSOs occurring from July 2023 through end of reporting period.

Location / suspected source	Response taken
270 Main Street, Monroe – Septic System	Septic leachate infiltrating into Route 25 drainage system. Flow was observed in nearby catch basin and a septic odor was identified at the time of inspection. CTDOT coordinated with the Town of Monroe to research the septic system serving the adjacent property. Based on information collected to date, the septic system may be operating properly and changes to the drainage system may be required. A new drainage design concept has been developed to inform a CTDOT stormwater retrofit project that would eliminate the issue.
14/16 Putnam Park Road, Bethel – Septic System	A CTDOT maintenance crew was investigating an icing problem on the road and noticed a septic/sewage smell coming from a catch basin in the vicinity of the properties. CTDOT reached out to the Bethel Health Department who is conducting an investigation. The Health Department will reach out once the issue is resolved or to coordinate further.
Infield behind 176 Columbus Boulevard, New Britain – Sanitary Waste	Sanitary waste was being deposited in a catch basin outside a transient community encampment. The area's cleanup was coordinated with municipal outreach officials to assist in relocating the inhabitants. A metal plate was tack welded over the catch basin grate to prevent any further deposits. The catch basin and drainage system were cleaned on 05/24/2024.
525 Boston Post Road, Milford – Potential Septic System	A consultant was screening a key junction manhole and recorded visual/olfactory evidence of an illicit discharge coming into the CTDOT drainage system from an interconnected municipal pipe. CTDOT reached out to the Milford Town Engineer and an investigation is underway.

Note, that potential illicit discharges based solely on analytical results (no olfactory or visual evidence) are not included below but are included in IDDE metrics at the end of this MCM 3 IDDE section.

3.5 Briefly describe the method used to track illicit discharge reports, responses to those reports, and who was responsible for tracking this information.

The CTDOT receives information regarding illicit discharges from multiple sources:

- The public may notify the CTDOT regarding potential illicit discharge by sending an email to DOT.MS4@ct.gov
- The public can report any transportation issues including potential illicit discharges by calling the CTDOT Customer Care Center at 860-594-2560 or using the CTDOT Customer Care Center's Webform.
- Illicit discharges are also reported to the CTDOT MS4 Team from other Department personnel and from consultants who are performing screening and sampling activities on behalf of the CTDOT.

Once an illicit discharge is reported, the CTDOT MS4 Team records the issue in the database and reaches out to the local municipality, local health department and/or other stakeholders to coordinate research and a response. Activities and communications, including corrective actions taken to eliminate illicit discharges are documented both within and outside the database.

3.6 Provide a summary of actions taken to address septic failures using the table below.

Location and nature of structure with failing septic systems	Actions taken to respond to and address the failures	Impacted waterbody or watershed, if known
No septic failures were identified this permit term	N/A	N/A

3.7 IDDE reporting metrics

See Figure 1 below titled "CTDOT MS4 Mapping Status as of July 1st, 2024". All total infrastructure numbers are estimates based upon mapping completed to date. The symbology of Figure 1 is as follows:

- Blue - Municipality has been mapped 100% complete.
- Red - 75% of the municipality is mapped- required field work to be completed.
- Purple - Municipalities in which current mapping has commenced and is considered at least 5% complete.
- Yellow - No mapping has been performed yet.

During the permit term, the CTDOT is required to map half of its drainage infrastructure within the 120 MS4 Municipalities. Complete system mapping to at least within all designated MS4 Municipalities will be complete by 2029.

Figure 2 illustrates CTDOT mapped municipalities overlaid with the MS4 priority areas which include urbanized areas, local watershed impervious cover of > 11% and impaired waterbodies.

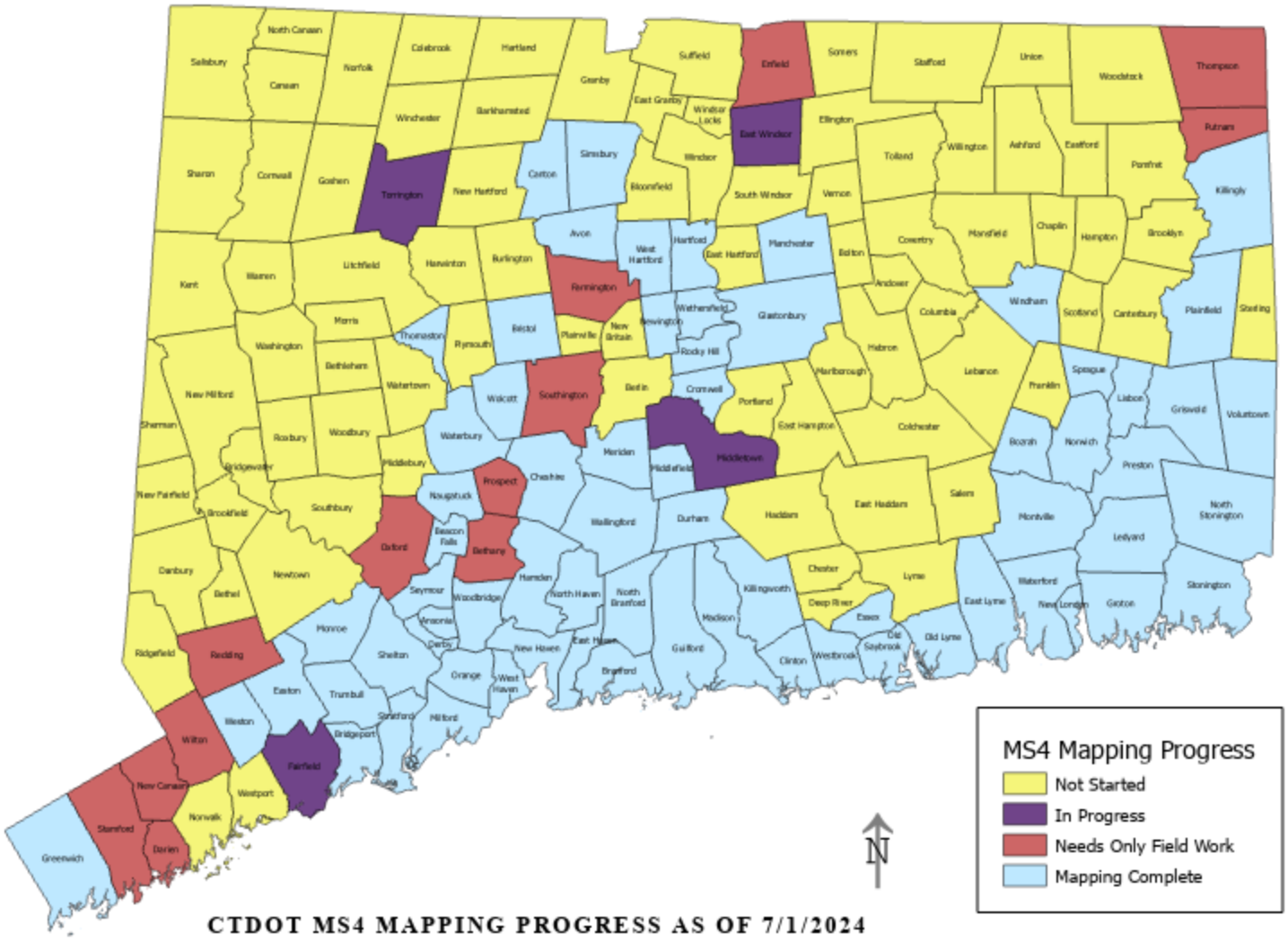

Figure 1: CTDOT MS4 Mapping Status as of July 1st, 2024

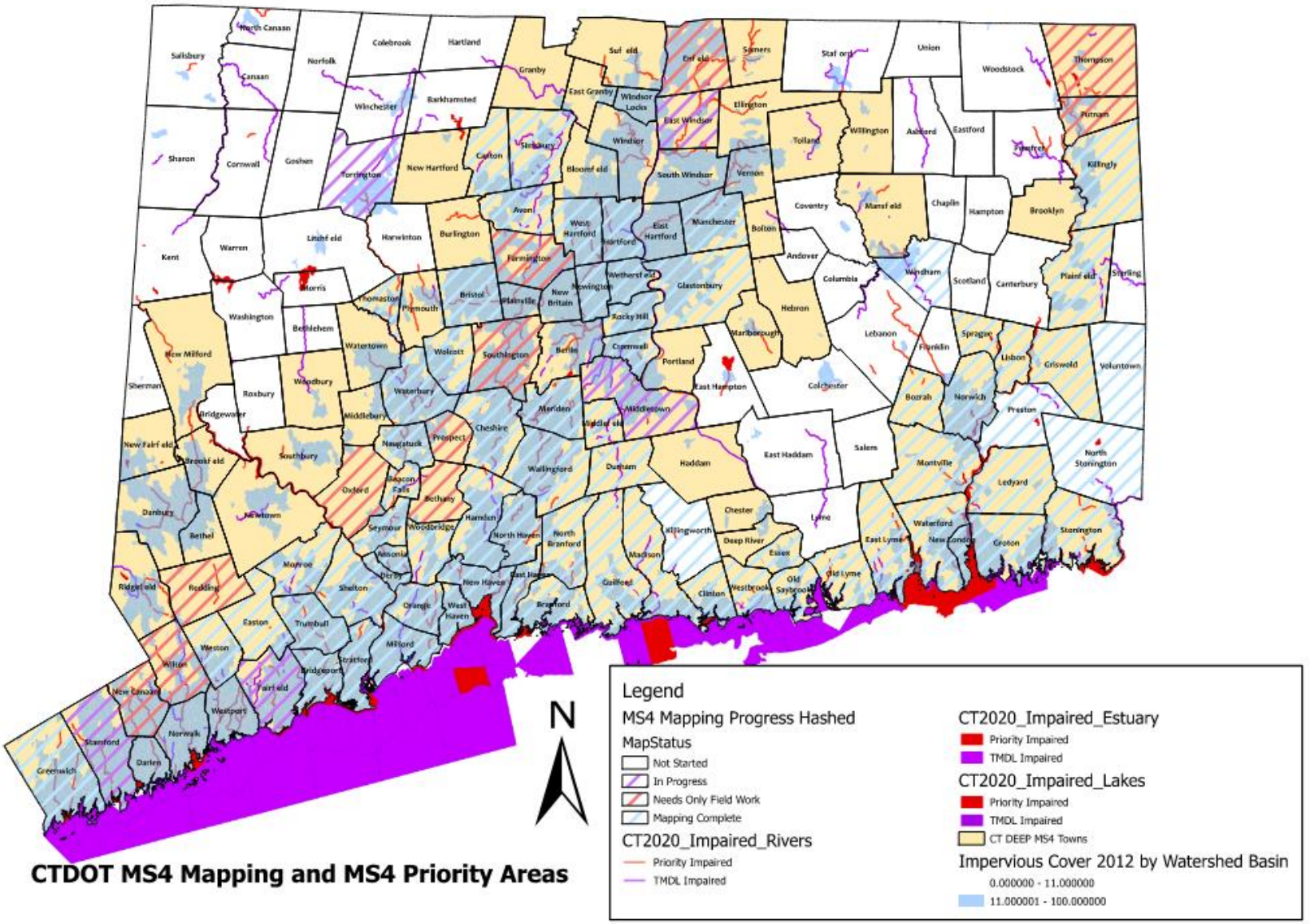

Figure 2: CTDOT MS4 Mapping and MS4 Priority Areas

IDDE Reporting Metrics	
Number of discharge locations from the CTDOT Stormwater Drainage System (outfalls + outgoing interconnection points): mapped to date total	 14,687 TBD by 2029
MS4 outfalls (not including interconnections, including directly connected and disconnected) mapped to date total # of MS4 outfalls estimated completion %	 13,556 TBD by 2029 (est. 25,500) 53%
Outgoing MS4 Interconnection Points (e.g., DOT MS4 drains into other non-DOT MS4): mapped to date estimated total estimated completion %	 1,075 TBD by 2029 Unknown
System-wide mapping complete (detailed MS4 infrastructure)	63 MS4 municipalities mapped completely. Portions of 13 other MS4 municipalities mapped. 59% of 120 MS4 municipalities 47% of 169 statewide municipalities
Number of mapped discharge points that are "Excluded" as of 6/30/2024	9,245
Dry weather screening and sampling of High or Low Priority Outfalls this permit year total to date	 537 3,011
Number of catchment area investigations completed	1,029 (Total to date)
Estimated Percentage of Mapped, Non-Excluded MS4 catchment areas investigated in Completed Towns	36% (1,029 out of 2885)

3.8 Briefly describe the IDDE training for employees involved in carrying out IDDE tasks including what type of training is provided and how often is it given (minimum once per year).

A training and "lessons learned" meeting hosted by CTDOT Environmental Compliance office was held with each of the three consulting firms that perform the IDDE screening and sampling work on behalf of CTDOT. Refer to section 6.3 that documents when the meetings were held. Additionally, CTDOT maintenance staff receive refresher training on illicit discharge basics annually from District Environmental Trainers as part of a broader training.

4. Construction Site Runoff Control (Section 6(a)(4) / page 25)

4.1 BMP Summary

BMP	Status	Activities in current reporting period	Measurable goal	Department / Person Responsible	Due	Date completed or projected completion date	Additional details
4.1 Establish bylaw, regulation, standard conditions of approval, construction requirements or other legal authority that meet the requirements of the CTDOT MS4 permit	Completed	All CTDOT projects are reviewed by staff to implement appropriate construction site runoff control. Major Traffic Generators must comply with Office of the State Traffic Administration's approval terms.	Standard Language Updated	Office of the State Traffic Administration Environmental Planning, Office of Construction, Districts	June 30, 2022	June 30, 2022	CTDOT administers all its own projects. Construction site run-off control is a condition of CTDOT's standard specifications.
4.2 Ensure all CTDOT manuals are consistent with the construction measures in DEEP's E&S Manual, Stormwater Quality Manual and the Construction Stormwater General Permit requirements	Completed	Revised CTDOT MS4 Worksheet and Instructions to be consistent with the updated CTDEEP Stormwater Quality Manual and the updated CTDEEP E&S Manual	Publish Engineering Directive	Bureau Chief – Engineering and Construction	June 30, 2020	Completed on June 26, 2019.	CTDOT participated in the ad-hoc committee on the update to CTDEEP's Stormwater Quality Manual and the CTDEEP E&S Manual.
4.3 Develop and implement a plan outlining how all internal CTDOT departments with jurisdiction over the review, permitting or approval of land disturbance and development projects within the CTDOT MS4 will coordinate their functions with one another	Process in Place	N/A	Process in Place and it is working	Environmental Compliance and Environmental Planning	July 1, 2019	July 1, 2019	A coordination plan between internal Bureau's was previously documented in an Engineering Directive
4.4 Conduct a site plan review or confirm that a site plan review was completed by the appropriate authority. The review should verify that consideration of stormwater controls or management practices were considered	Process in Place	All development and redevelopment projects are reviewed by MS4 Team. Designers use CTDOT MS4 Designer Worksheet to document stormwater quality considerations	All projects reviewed for water quality impacts	Environmental Compliance and Environmental Planning	July 1, 2019	July 1, 2019	The MS4 Designer Worksheet can be viewed on the CTDOT MS4 Webpage.

BMP	Status	Activities in current reporting period	Measurable goal	Department / Person Responsible	Due	Date completed or projected completion date	Additional details
4.5 Conduct or confirm that a site inspection(s) and enforcement was completed to assess the adequacy of the installation, maintenance, operation and repair of construction and post construction control measures	Program in Place	Oversight of construction projects for erosion control measures were conducted.	Ensure all projects have environmental oversight	Environmental Planning, Environmental Compliance, District Maintenance	July 1, 2019	In Place Prior to Permit Issuance	
4.6 Implement procedure to notify developers conducting projects that will connect to the CTDOT MS4 system of the obligation to comply with the requirements of DEEP's Construction Stormwater General Permit	Process in Place	Project Managers are made aware of the Construction Stormwater General Permit requirement at the beginning of a project by OEP via the Permit Need Determination Form (PNDF)	Ensure all Projects that require a Construction Stormwater General Permit are identified within the 30, 60, 90% design reviews	Environmental Planning	July 1, 2019	July 1, 2019	OSTA Application Forms were updated to require projects to certify that development conforms to local MS4 authority requirements
4.7 Include tracking information as part of each annual report	Completed	Plans reviewed and inspections completed have been tracked	Number of plans tracked and inspected	Environmental Compliance and Environmental Planning	June 30, 2020	July 1, 2019	

Construction Site Runoff Control Metrics During Permit Year	
Number of DOT Project E&SC Plans Reviewed	66
Number of DOT Project Site Inspections Completed	462

4.2 Describe any Construction Site Runoff Control activities planned for the next year, if applicable.

CTDOT will continue to review all projects for construction stormwater compliance and adherence to the SWQM. All project's erosion and sedimentation control plans are reviewed by CTDOT's Office of Environmental Planning's Environmental Resource Compliance Unit. Third party Qualified Professional Engineers are hired to review all construction stormwater pollution prevention plans prepared by state forces.

5. Post-construction Stormwater Management (Section 6(*a*)(5) / page 27)

5.1 BMP Summary

BMP	Status	Activities in current reporting period	Measurable goal	Department / Person Responsible	Due	Date completed or projected completion date	Additional details
5.1 Establish updated standard procedures, forms and conditions of approval that meet the LID / Runoff Reduction Legal Authority requirements of the Permit	Completed	Per a CTDOT Engineering Directive, all CTDOT projects that impact drainage or drainage patterns are reviewed by staff to implement water quality BMPs to the maximum extent practicable	Standard procedure adopted	OSTA & Bureau Chief-Engineering & Construction	June 30, 2022	June 24, 2019	Unlike a traditional Municipality, CTDOT does not have the ability to pass ordinances or regulate land use
5. 2 Ensure all CTDOT manuals are consistent with the construction measures in DEEP's E&S Guidelines, Stormwater Quality Manual and Construction General Permit Requirements	In Progress	Revised CTDOT MS4 Worksheet and Instructions to be consistent with the updated CTDEEP Stormwater Quality Manual and the updated CTDEEP E&S Manual	CTDOT Manuals are consistent with E&S Manual, Stormwater Quality Manual and Construction Permit Requirements.	Bureau Chief-Engineering & Construction	June 30, 2022	July 1, 2019	CTDOT is following the updated guidance in the 2024 versions of the CT DEEP E&S Manual and the SWQ Manual.
5.3 Implement runoff reduction / LID measures for new development and redevelopment projects within CTDOT's MS4 area	In Progress	The CTDOT MS4 Team reviews all development, and redevelopment plans to ensure runoff reduction and LID measures are implemented to the maximum extent practicable. Water quality impacts and site constraints are tracked on the CTDOT MS4 Designer Worksheet. BMP examples and calculations were also developed to provide consistency between all state and consultant forces	Document runoff reduction / LID implementation efforts for the project	Bureau Chief(s) - Policy and Planning, Engineering & Construction	June 30, 2022	July 1, 2019	The MS4 Designer Worksheet can be viewed on the CTDOT MS4 webpage. Other design guidance for implementing LID / BMPs is also provided

BMP	Status	Activities in current reporting period	Measurable goal	Department / Person Responsible	Due	Date completed or projected completion date	Additional details
5.4 Calculate DCIA for 50% of the CTDOT's MS4 Catchment Areas (or Local Watershed Basins)	In Progress	An initial GIS spatial analysis was previously completed to provide an estimate of the DCIA that CTDOT is responsible for statewide	Determine the percentage of DCIA for CTDOT's Mapped Catchment or Local Watershed Areas	Bureau Chief-Engineering & Construction	June 30, 2024	June 30, 2024	It was determined that using an automated process to determine DCIA on a catchment basis is not feasible. See section 5.4 below.
5.5 Implement a plan to ensure long term maintenance of stormwater management facilities	In Progress	On-going focus has been on inventory and maintenance tracking of CTDOT-owned stormwater management facilities. Privately owned stormwater management facilities that discharge to CTDOT's MS4 system are added to database when identified.	Develop and Implement a Plan to Ensure Long Term Maintenance of Stormwater Management Facilities	Bureau Chief(s) - Maintenance, Engineering & Construction	June 30, 2022	June 30, 2022	See Section 5.3 below for BMPs inspected and cleaned this permit year.

5.2 Describe any Post-Construction Stormwater Management activities planned for the next year, if applicable.

Plan reviews for all redevelopment projects for stormwater quality improvements will continue. CTDOT MS4 staff will continue to be a resource for design engineers to increase awareness of opportunities for stormwater best management practices as part of transportation project designs. All CTDOT projects that affect drainage must have their designs include completion of the MEP Worksheet at each design milestone. The MEP Worksheet documents the project's appropriate WQV, what portion of the WQV is retained, or treated if not retained. The amount of new Directly Connected Impervious Area (DCIA) that is not retained or treated is added to the statewide tracking of DCIA. All projects that disturb more than one acre are registered for the CT DEEP Construction Stormwater and Dewatering Discharge General Permit and must have Stormwater Pollution Prevention Plans. All projects, regardless of disturbance area, have erosion and sedimentation controls plan sheets that are reviewed by compliance staff.

5.3 Post-Construction Stormwater Management reporting metrics

Metrics	
Baseline Directly Connected Impervious Area (DCIA)	Estimated 9,165 Acres – See estimated calculation in Section 5.4.
Net DCIA Constructed	
Net DCIA Acreage Disconnected (Construction Complete)	+1.99 acres (+1.09%) of DCIA added this year -15.75 acres (-7.94%) of DCIA reduction since 2019
New structural stormwater quality BMPs constructed this Permit Year	8 this permit term / 37 total since 2019
Net DCIA Designed	
Net DCIA Acreage Designed Disconnections (Projected Per DOT Final Design Plans)	-1.75 acres of disconnections designed this year
Total number of DOT Project plan sets[1] reviewed by the DOT MS4 Team	133 this permit term
CTDOT MS4 Worksheets submitted by DOT project designers	66 this permit term
DOT projects with no impacts[2] to the MS4 System	67 this permit term
DOT Projects with Final Design Plans with Impacts to MS4 System	7 this permit term / 38 total to date
New structural stormwater quality BMPs included in Final Design Plans	5 this permit term / 23 total since 2019
Constructed/Active CTDOT Stormwater BMPs (retention basins, detention basins, HDS's, dry wells)	422 in DOT's mapping/database to date 252 Maintained within MS4 Program
Privately- or Municipally- owned Stormwater Quality BMPs Connected to DOT's MS4 System	28 in DOT's mapping/database to date

[1] Every individual project will typically have at least two milestone plan set reviews during the full course of design
[2] Projects that do not alter drainage patterns, reconstruct drainage infrastructure, or change the amount of DCIA (i.e., typical bridge rehabilitation projects are considered to have no impact to the MS4 system

5.4 Briefly describe the method to be used to determine baseline DCIA

To determine the baseline amount of DCIA, a GIS spatial analysis was performed using the following sources: UConn Roadway Impervious Cover, UConn Other Impervious Cover, CTDOT Right of Way, CTDOT Centerline of Road Data, and CTDOT Curb Data. These calculations serve as the baseline and is a conservative estimate of DOT's DCIA. It is anticipated that as mapping becomes more complete the DCIA value will be adjusted.

Total Impervious Area

CTDOT roadway[3]	24,356 acres
Other CTDOT Impervious Cover[4] (commuter lots, maintenance garages, etc.)	2,600 acres
Total Impervious Cover	**26,956 acres**

Outfalls

Total # of mapped outfalls	13,507 outfalls
Outfalls confirmed or suspected to be directly connected (e.g., discharge to a water of the state)	4,632 outfalls
Outfalls presumed to be disconnected (e.g., upland, no conveyance, and > ___' from nearest mapped waterbody)	8,875 outfalls
Percent Outfalls that are "Directly Connected"	**34%**

Directly Connected Impervious Area

Directly Connected Impervious Area	=	Total Impervious Cover	x	Percent Outfalls that are "Directly Connected"
CTDOT DCIA	=	26,956 acres	x	34%
CTDOT DCIA	**=**	**9,165 acres**		

[3] Source: Spatial Analysis using UConn Data

[4] Source: state-wide extrapolation based on CTDOT non-roadway impervious cover identified in fifty (50) municipalities using CTDOT Data

6. Pollution Prevention/Good Housekeeping (Section 6(*a*)(6) / page 31)

CTDOT continues to implement MS4 program with a specific focus on four particular items covered under the pollution prevention and good housekeeping section of the DOT MS4 General Permit. These areas of focus include:

- Catch basin inspections and cleaning,
- Street sweeping,
- Structural stormwater controls and BMP inspection and maintenance, and
- Implementation of a retrofit program to disconnect impervious areas.

6.1 BMP Summary

BMP	Status	Activities in current reporting period	Measurable goal	Department / Person Responsible	Due	Date completed or projected completion date	Additional details
6.1 Develop and implement formal employee training program	Program in place	In person and on-demand trainings for design, construction, and maintenance staff	Conduct Annual Training for Bureaus.	All Bureaus	June 30, 2021	July 1, 2019	See MS4 trainings held below
6.2 Implement infrastructure repair and rehabilitation program	Program in place	Inspection and documentation of mapped stormwater infrastructure is on-going. Inspection results are absorbed into evolving CTDOT stormwater asset rehabilitation program.	Develop and implement a repair / rehabilitation program.	Bureau Chief-Engineering & Construction	June 30, 2022	Completed Prior to Permit Issuance	ORDER
6.3 Track DCIA that is disconnected during redevelopment and retrofit projects	Completed	Tracking DCIA changes from capital and retrofit projects is on-going	Develop and Implement a Procedure to Track DCIA for projects.	Bureau Chief-Engineering & Construction	July 1, 2019	July 1, 2019	ORDER
6.4 Develop and implement a plan to disconnect 2% of calculated DCIA	Completed	Initiated design of first standalone retrofit project. Identified and created an inventory of potential retrofit locations across the State. Coordinated with other Offices within DOT to evaluate disconnection opportunities on capital projects and resiliency projects.	Develop and Implement a Plan to Disconnect 2% of DCIA	Bureau Chief-Engineering & Construction	June 30, 2022	July 1, 2019	ORDER

BMP	Status	Activities in current reporting period	Measurable goal	Department / Person Responsible	Due	Date completed or projected completion date	Additional details
6.5 Implement CTDOT MS4 Property and Operations Maintenance	Ongoing	Standard Property and Maintenance Operations were completed throughout the year	Document and Report on Maintenance Activities Implemented	Bureau Chief Maintenance	July 1, 2019	On-Going	
6.6 Develop and implement sweeping program	Completed	Implemented a new sweeping tracking procedure that will provide location data for where sweeping occurred. Also prepared an RFP to support Maintenance operations with sweeping for additional areas.	Document and Report on Sweeping Activities	Bureau Chief Maintenance	July 1, 2019	June 30, 2020	ORDER
6.7 Develop plan to optimize catch basin cleaning	Completed	A street sweeping and catch basin cleaning optimization plan was previously completed	Collect additional data on catch basin cleaning to optimize cleaning operations.	Bureau Chief Maintenance	July 1, 2019	June 30, 2020	ORDER
6.8 Inspect and clean (where necessary) catch basins.	In Progress	Implemented a new catch basin cleaning tracking procedure that will provide some location data to indicate where catch basins were inspected and cleaned (if needed). Also prepared an RFP to support Maintenance operations with private contractors for additional catch basin inspections/cleaning and street sweeping activities.	Map, Inspect and Prioritize Catch Basins.	Bureau Chief Maintenance	July 1, 2019	Ongoing	ORDER
6.9 Development, implement and optimize standard operating procedures for snow management practices	Complete	CTDOT has an existing Winter Maintenance Program that continues to be implemented	Optimize, Document and Report on Snow Management Practices.	Bureau Chief Maintenance	July 1, 2019	Completed Prior to Permit Issuance	CTDOT created the Snow and Ice Guidelines for internal BMPs for handling Snow and Ice Operations

BMP	Status	Activities in current reporting period	Measurable goal	Department / Person Responsible	Due	Date completed or projected completion date	Additional details
6.10 Track and report types of deicing materials used, lane miles treated, and total amount of deicing material used	Complete	Track Snow and Ice Maintenance Metrics	Report on amount of material, type of material and equipment used during winter maintenance	Bureau Chief Maintenance	June 30, 2020	June 30, 2020	See Section 6.3 for reporting totals
6.11 Implement additional measures for discharges to impaired waters from sites with high potential to contribute to impairment	In Progress	Capital projects that discharge to impaired waterbodies are identified early in the preliminary design phase to allow for consideration and implementation of stormwater quality management to reduce and/or eliminate pollutants of concern to the maximum extent practicable.	Prioritize outfalls discharging to impaired waters for monitoring	Environmental Compliance Environmental Planning	July 1, 2019	Ongoing	CTDOT in coordination with USGS is implementing a stormwater monitoring program scheduled to conclude in 2024. See Part II of this report titled Impaired Waters Monitoring and Investigations. The results collected from this study in conjunction with MS4 stormwater system mapping will enable modeling of catchment areas to support and prioritize DOT's retrofit projects.

6.2 Describe any Pollution Prevention/Good Housekeeping activities planned for the next year, if applicable.

CTDOT will continue to complete Pollution Prevention / Good Housekeeping activities in order to meet the pollution reduction intent of the permit requirements. CTDOT has refined its DCIA reduction plan with forecasts based on the DOT capital project (redevelopment) program and identifying stand-alone retrofit opportunities across the State.

In addition, CTDOT continues to work with CT OPM and CT DAS to procure contractor services to supplement existing maintenance operations with catch basin cleaning and street sweeping. Inspections of stormwater quality BMPs continue to be performed and maintenance on BMPs identified as needing it is actively being implemented.

CTDOT will continue to implement a Maintenance Decision Support System that provides GPS and weather-related information to control deicing material application rates. The system can access current road and weather conditions, forecast weather that will affect transportation routes, predict how road conditions will change in response to candidate maintenance treatments and evaluate the effectiveness of maintenance treatments that are applied.

6.3 Pollution Prevention/ Good Housekeeping reporting metrics

Highway Operations general supervisors, crew leaders, and district trainers receive annual stormwater training that includes pollution prevention and proper debris management during storm preparations.

Quarterly meetings are held with District Drainage Engineers, District Special Services Managers, Environmental Compliance staff, and Environmental Planning staff to discuss known locations of repeated drainage issues and action items. Maintenance of specific structural stormwater measures are decided as either activities that can be completed by state maintenance forces or those that must be coordinated with a DAS vendor.

Employee training provided for key staff	
OEP MS4 Mapping Training	Web Videos for Internal Use
MS4 Training for Facilities Design	2/14/2024
On-Demand MS4 Video Training Series for Design Engineers & Consultants	Published 6/13/2024
IDDE, GIS & BMP Inspection Training for CTDOT Environmental Compliance Consultants	2/22/2024, 2/26/2024, 2/27/2024
Meetings with District Drainage Engineers (typically 10 – 15 people)	11/8/2023, 3/25/2024
District 2 Construction Winter Training (est. 55 people)	2/7/2024

District 1 Construction Winter Training (est. 60 people)	3/4/2024
District 4 Construction Winter Training (est. 45 people)	2/27/2024
District 3 Construction Winter Training (est. 80 people)	1/31/2024
DOT Construction Supervisor's Training (est. 150 people)	1/23/2024

The EPA and CTDOT executed a Consent Order that was signed on December 12, 2023. The order sets a revised target for CTDOT to inspect and clean (where needed) all catch basins within priority areas by August 1st, 2031. Based on mapping completed to date CTDOT estimates that there are approximately 120,000 catch basins within priority areas. Based on previous catch basin cleaning efforts in permit years 1-4, CTDOT estimates that inspection (and cleaning where needed) of approximately 12,000 catch basins annually is required to meet the 2031 requirement. To achieve this, CTDOT will need to support existing / on-going Maintenance efforts with private contractors via a new Department of Administrative Services (DAS) Contract. As such, CTDOT prepared a public Request for Proposal that was put out to bid in the spring of 2024. As of July 1, 2024, the results of the bid have not been finalized. Despite not having additional catch basin inspection cleaning support from additional private contractors this permit year, CTDOT was able to increase the total catch basins cleaned from 7,225 in permit year 4 to 9,356. CTDOT believes that this meets the maximum extent practicable effort based on current resource constraints. Location data for where catch basins have been inspected and/or cleaned is currently done with a written description provided by Maintenance Staff upon completion of the work. A database with hundreds of entries summarizing location information is now maintained by CTDOT. However, this data is not in a GIS format making summarizing location data difficult. CTDOT is looking to improve the capture of location data in the future by requiring completion of simple catch basin inspection forms within a GIS environment as part of the DAS contract mentioned above.

Although the schedule for street sweeping is unchanged from the original CTDOT MS4 permit language, the requirement to inspect and sweep (where needed) all streets and parking lots within priority areas was also included in the Consent Order issued by EPA. CTDOT maintains approximately 19,000 curb miles. In permit year 5, CTDOT swept 16,135 curb miles with the remaining mileage found not to require sweeping. Documentation of where the sweeping occurred is difficult to obtain and summarize. A description of where sweeping occurred is documented by Maintenance Staff regularly and a database with hundreds of entries is now maintained by CTDOT. This data is not in a GIS format. However, in the spring of 2024, CTDOT installed a GIS tracking and data logging system into CTDOT's sixteen street sweepers. This system should provide improved spatial data that can be used to better summarize location data for the work completed in future annual reports. MS4 staff is currently working with the manufacturer of the system and Maintenance staff to extract and visualize the data generated.

Street sweeping	
Miles swept this year	16,135 miles
Volume (or mass) of material collected	Unknown

Catch Basin Inspection and Cleaning	
Total number of CTDOT owned or maintained catch basins	74,236 mapped to date / total
Total number of catch basins inspected this year	9,759
Total number of catch basins cleaned this year	9,356
Total number of catch basins inspected but cleaning not needed	403
Total number of catch basins cleaned in MS4 priority areas	Undeterminable at this time
Volume (or mass) of material removed from all catch basins	Estimated 4,900 CY

As required by the EPA consent order signed in December of 2023, CTDOT completed a Stormwater Best Management Practice (BMP) Inspection and Maintenance Plan. The plan was completed in January of 2024 and provides information about the structural BMPs in CTDOT's inventory, the schedule by which inspection and maintenance of these BMPs will be completed and general guidance on how to inspect and maintain them. A copy of this plan is included as Appendix B of this report.

The inspection of the structural BMPs in CTDOT's inventory is completed by Environmental Compliance's on-call consultants using inspection forms within GIS. BMPs identified as needing maintenance are assigned to CTDOT Maintenance or private consultants based on the level of maintenance required. BMPs that require extensive sediment removal and regrading are assigned to private consultants and DAS contractors.

CTDOT Stormwater Management Facilities / BMPs Cleaned	
CTDOT Stormwater Management Facilities / BMPs Inspected	172 this permit year 7 Underground Detention & Infiltration Systems 3 Filtering BMP 72 Stormwater Basins 2 Water Quality Swales 61 Hydrodynamic Separators (HDS) & Oil Particle Separators (OPS) 27 Dry Well / Leaching Catch Basin
CTDOT Stormwater Management Facilities / BMPs Cleaned	63 this permit year

	37 Hydrodynamic Separators (HDS) & Oil Particle Separator (OPS) 24 Dry Well 2 Stormwater Basins
Structure (Bridge) Rinsing Operations	
Total number of structures rinsed	29 Bridges

The CTDOT inventory consists of 252 BMPs. Out of these, 109 BMPs were previously identified as needing maintenance and therefore did not require new inspections. This permit year, 63 of these 109 BMPs were cleaned, leaving 46 BMPs still to be maintained according to the EPA consent order schedule. Additionally, 172 inspections were conducted during this permit year, resulting in 25 BMPs identified as needing maintenance. Overall, as of 7/1/2024 there are 71 BMPs in need of maintenance. Currently, maintenance is in progress for 22 of these BMPs. CTDOT anticipates maintaining 28 other BMPs in the next permit year with the remaining 21 BMPs scheduled to be maintained in accordance with the schedule specified in the Stormwater BMP Maintenance and Inspection Plan which is attached to this report as Appendix B.
Following the completion of the state-wide BMP inspections, the CTDOT completed its first cleaning and restoration of a dry detention basin under the MS4 program. The restored basin, which is located behind 16 Prospect Hill Road in New Milford (State Road #67) discharges to Great Brook. The restoration work involved clearing the basin of woody vegetation and debris, cleaning inlet and outlet structures, and restoring the basin according to as-built plans. Approximately 250 tons of sediment were removed from the basin during the clean-up and restoration process. A DAS-listed contractor under the oversight of CTDOT environmental consultant removed woody debris and sediment to restore the basin to its original retention capacity. The pictures below show the basin “before” and “after” the clean-up and restoration process. CTDOT will use the specifications developed for this restoration and modify them based on lessons learned, to maintain other stormwater basins in need of maintenance across the state.

New Milford Dry Detention Basin Maintenance (GIS ID# 170-BP-488)	
Before Pictures	**After Pictures**
	
	

New Milford Dry Detention Basin Maintenance (GIS ID# 170-BP--488)	
Before Pictures	**After Pictures**
	
	

Snow management Number of Winter Weather Events	5 Statewide Events / 4 Partial Events
Type(s) of deicing material used	Sodium Chloride, Sodium Chloride to make Salt Brine, and Liquid Magnesium Chloride
Total amount of each deicing material applied	79,897 tons of Sodium Chloride, 90 tons Sodium Chloride to make 66,214 gallons of salt brine 322,939 gallons of Magnesium Chloride
Type(s) of deicing equipment used	Calibrated Spreaders and Sprayers for Sodium and Magnesium Chloride, salt slurry tanks to spray salt brine liquid
Lane-miles treated	10,800 miles
Snow disposal location	None this year
Staff training provided on application methods & equipment	CTDOT Snow and Ice Committee meetings are routinely held throughout the year to provide efficient snow and ice management.
Lands with high potential to contribute bacteria (dog parks, parks with open water, & sites with failing septic systems)	No locations identified this permit term

Briefly describe the method used to optimize your catch basin inspection and cleaning schedule.

In January of 2023, CTDOT implemented a new procedure to obtain location data for catch basin inspection and cleaning activities. The procedure requires CTDOT Maintenance staff to record in a text format general location information for the area in which catch basins were inspected and cleaned. This information is input into a web-based pdf form that aggregates all information into a database. This procedure is a temporary measure to provide some location data until seasonal interns can convert text into GIS data.

MS4 staff has created a GIS catch basin inspection and maintenance form within the Stormwater Drainage Network Map to capture data from catch basin cleaning activities. This GIS based form is currently not being used due to hardware and software limitations. Once implemented, the collected data will include location data, volume of sediment removed, and if repairs are warranted or were completed. This will provide much more robust location data on where catch basin inspection and cleaning activities where performed.

6.5 Retrofit program

Redevelopment projects *constructed* in Permit Year 5 (July 1, 2023 – June 30, 2024) resulted in a net DCIA increase of 1.99 acres. Overall, redevelopment projects *constructed* since July 1, 2019, have resulted in a net DCIA decrease of 15.75 acres. The multi-year forecasted change in DCIA associated with all redevelopment projects designed, but not constructed, in Permit Year 5 is projected as a net 9.06-acre DCIA reduction. Thirteen retrofit projects progressing from planning into design are expected to disconnect 40.3 acres by 2027.

The order requires CTDOT to submit a DCIA retrofit plan annually as part of the overall MS4 annual report. The current DCIA Retrofit Plan is attached to this report as Appendix A.

Part II: Impaired waters monitoring and investigations

1. Impaired waters investigation and monitoring program

1.1 Identify which stormwater pollutant(s) of concern occur(s) in your municipality or institution.

As of July 1, 2024, CTDOT has over 800 mapped discharge locations that are directly connected to impaired waterbodies. These waterbodies are impaired for various stormwater pollutants of concern including common impairments such as bacteria, phosphorus, nitrogen among many others.

1.2 Describe program status

In consideration of the thousands of outfalls connected to the state drainage systems, an automatic outfall sampling option was incorporated into the CTDOT MS4 permit to address impaired waters sampling requirements. In order to meet the permit's monitoring requirements, the USGS, on behalf of CTDOT, completed a rigorous auto sampling program that consists of continuously monitoring a total of nine outfalls from highways for a period of approximately two years each. Each sampling event consist of over 40 analytes. The nine sites were selected based upon land use type, impervious area and the average daily traffic that passes through the drainage area for the outfall. The nine locations are:

Automatic Monitoring Outfall Locations

YEAR 1 & 2

1. I-91 Hartford
2. Route 2 Glastonbury
3. Route 3 Glastonbury
4. Route 74 Vernon
5. Route 8 Torrington

YEAR 3 & 4

6. I-95 Milford
7. Route 15 Orange
8. Route 15 Milford
9. Route 139 Branford

Status of Phase 1 Locations

The sampling at each of the Phase I locations is complete.

Highway and location	Proposed number of composite samples	Number of composite samples collected as of 6/30/2021
State Route 2, Glastonbury, CT.	15-18	18 - Complete
State Route 3, Glastonbury, CT.	15-18	18 - Complete
State Route 8, Torrington, CT.	15-18	18 - Complete
State Route 74, Vernon, CT.	15-18	18 - Complete
Interstate 91, Hartford, CT.	15-18	18 – Complete

Status of Phase 2 Locations

Sampling of the phase 2 locations is complete. The sampling at the Orange, Branford and Route 15 Milford locations were completed in the spring of 2023. The sampling at the I-95 station in Milford was delayed due to some initial equipment issues and then further delayed in 2023 by a paving project along I-95. Sampling was completed at the I-95 Milford location in the spring of 2024. Now that sampling is complete, the final report is scheduled to be completed by the winter of 2024.

Highway and location	Proposed number of composite samples	Number of composite samples collected as of 6/30/2024
I-95, Milford, CT.	15-18	18 -Complete
Route 15, Orange, CT.	15-18	18 – Complete
Route 15, Milford, CT.	15-18	18 – Complete
Route 139, Branford, CT.	15-18	18 – Complete

Water Quality Modeling of CTDOT Discharges to Impaired Waters

Now that the sampling data for both phases has been collected, the data will be uploaded by U.S. Geological Survey (once the final report is published) to the national highway runoff database.

The national highway runoff database, with the Connecticut data, is one set of inputs used in the Stochastic Empirical Loading and Dilution Model (SELDM) for evaluation of water quality associated with highway discharges and receiving waters SELDM.

Introduction and Background on SELDM

SELDM was developed by the U.S. Geological Survey (USGS) to assist in providing meaningful information about the risk of adverse effects of runoff on receiving waters, the potential need for mitigation measures, and the potential effectiveness of such management measures for reducing these risks.

USGS developed SELDM in cooperation with the Federal Highway Administration to help develop planning-level estimates of event mean concentrations, flows, and loads in stormwater from a site of interest and from an upstream basin. SELDM uses Monte Carlo methods to generate a stochastic population of the concentrations, flows, and loads needed to implement a mass-balance model for a receiving waterbody. For more information about SELDM visit the USGS SELDM webpage which can be found at this link: SELDM: Stochastic Empirical Loading and Dilution Model - Software page | U.S. Geological Survey (usgs.gov)

Status of Developing an Inventory of Outfalls Potentially Contributing to Impairments

The Monitoring Requirements section of CTDOT's MS4 permit includes a provision that CTDOT must develop an inventory of any mapped DOT MS4 outfall drainage areas that are potentially contributing to an impairment. In this permit term, CTDOT used SELDM to evaluate a limited number of outfalls discharging to impaired waterbodies and started to collect the catchment and watershed data needed to run SELDM on all currently mapped discharge locations to impaired waterbodies.

The initial evaluation was done prior to the inclusion of the water quality data collected at the nine representative CT highway locations due to the delay in completing the sampling and the issuance of USGS's final report. Based on the results of the initial evaluation, CTDOT can include the CT specific data in future model runs for locations that have potential to be contributing to an impairment.

During Permit Year 5, CTDOT evaluated 25 locations where drainage mapping is complete, and stormwater is discharged from a CTDOT owned road into an impaired waterbody. SELDM evaluations produce a "risk factor" in terms of the percent of SELDM simulated rain events expected to negatively impact downstream water quality due to the contribution of CTDOT drainage to the surface waterbody.

Preliminarily, CTDOT has adopted a risk factor of 10% as the limit above which a location will be considered a high priority and identified for further evaluation. An exceedance of 10% means the downstream water quality is negatively impacted for 10% or more of all the SELDM simulated rain events based on the contribution of the CTDOT drainage to the surface waterbody. A lower risk factor may be adopted in the future in coordination with CTDEEP based on the results of using 10% as the risk factor for the analysis.

An evaluation of the initial 25 locations determined that 22 of the discharge locations have a risk factor less than 10%. For the three locations with a risk factor that exceeded 10%, each location was evaluated further to assess the potential for the construction of a retrofit BMP to improve the discharge quality.

Although it was determined that an end of pipe BMP would not be feasible for these locations based on site constraints, further evaluation is warranted for each location. A summary of each of the locations is provided below.

- The first location (RT-130 mile 5.76-6.05) has stormwater drainage discharging into a waterbody (unnamed tributary Pawcatuck River 1000-03 (Stonington)-01) that is impaired for e. coli and is located in an urbanized area. The risk factor was evaluated to be 14.1%. An "end of pipe" BMP is not feasible for this catchment due to steep slopes present off of the road in this area. Further evaluation of e. coli sources within the outfall's catchment area is warranted as there is a municipal interconnection into CTDOT MS4 system. CTDOT anticipates completing a catchment investigation on this area within the next permit year.

- The second location (RT-2 mile 56.5-56.64) has stormwater drainage from two catchments discharging into a waterbody (unnamed tributary Pawcatuck River 1000-04 (Stonington)-01) that is impaired for e. coli and is located in an urbanized area. The risk factor was evaluated to be 37%. An "end of pipe" BMP is not feasible for this location because of the steep slopes present off of the road. Further evaluation of e. coli sources within the outfall's catchment area is warranted as there is a municipal interconnection into CTDOT MS4 system. CTDOT anticipates completing a catchment investigation on this area within the next permit year.

- The third location (I-95 mile 22.40-22.46) has stormwater drainage discharging into a waterbody (Mill River) that is impaired for fecal coliform and is located in an urbanized area. The risk factor was evaluated to be 10.8%. A retrofit BMP is not currently feasible at the outfall of the catchment without acquiring additional land that is not already part of the CTDOT ROW. However, opportunities may exist further up into the catchment area and is currently under evaluation.

Beyond the initial 25 locations already evaluated, CTDOT is gathering highway and upstream watershed data on all currently mapped discharge locations to an impaired waterbody. This data will be used to run SELDM analyses on each location in order to develop an inventory and prioritization list of locations potentially contributing to an impairment. As of June 30, 2024, CTDOT has mapped over 800 outfalls that discharge to an

impaired waterbody. CTDOT anticipates completing an analysis of approximately 20% of these locations annually and developing the inventory and prioritization list from this work. Prioritized locations identified as likely having impacts to impairments and/or downstream water quality will be considered for stand-alone retrofit and DCIA reduction projects. Updates on this work will be provided in subsequent annual reports.

2. Screening data for outfalls to impaired waterbodies (Section 6(i)(1) / page 41)

2.1 Screening data collected

Beyond the sampling at designated locations by USGS described above, the CTDOT also collected samples of a waterbody's impairment if illicit discharge detection and elimination sampling was done at an outfall. A total of 55 outfall locations were sampled or attempted to be sampled for the waterbody impairment(s) to which the outfall discharged. These locations were divided as follows.

- 3 were Inaccessible
- 6 was Not Found
- 46 locations were able to be sampled
    - Bacteria
        - 13 bacteria samples were taken
        - 11 were below the applicable thresholds in the MS4 Permit
        - 2 were above the recreation e. coli / enterococci thresholds
        - None were above the designated swimming enterococcus threshold of 104 cols/100mls
    - Nitrogen
        - 8 sample taken
        - None exceeded 2.5 mg/l permit threshold
    - Phosphorus
        - 9 samples taken
        - 2 exceeded the 0.3 mg/l permit threshold
    - Turbidity (Other Pollutant of Concern)
        - 6 sample taken
        - None exceeded the 5 NTU-difference from upstream turbidity level

3. Follow-up investigations (Section 6(i)(1)(D) / page 43)

For impaired waters sampling results that are above the thresholds listed in the permit, the CTDOT follows the same procedures as with an illicit discharge investigation. That includes sharing the results with the municipality, local sewer authority and/or the local health department in an effort to identify any known issues within the catchment areas to coordinate any catchment investigations or mitigation efforts. Unless other activities occur as a result of sharing data with local stakeholders, CTDOT will investigate catchments where exceedances of the permit's impaired waterbody triggers occurred. The catchment investigation results for this permit year are discussed in detail in the Catchment Investigation Data section in Part III of this report below. Data from catchment investigations are available upon request by emailing CTDOT at DOT.MS4@ct.gov.

4. Prioritized outfall monitoring (Section 6(i)(1)(D) / page 43)

CTDOT is following a town-by-town outfall monitoring approach during its first five-year permit term in which any non-excluded outfall will attempt to be screened / sampled once the CTDOT stormwater assets in the Town are mapped. Generally, all non-excluded outfalls are dry weather screened / sampled regardless of their prioritization category. Any outfall identified as having a suspect illicit discharge is identified for an investigation.

The CTDOT has developed a script within its GIS database to help automatically identify high priority outfalls using land use or other available GIS data including data that potentially includes some of the System Vulnerability Factors such as culverted streams, storm and sanitary sewer crossings, area density and/or land use.

Part III: Additional IDDE Program Data

1. Assessment and Priority Ranking of Catchments data (Appendix B (A)(7)(c) / page 5)

[Annual report template instructions: Provide a list of all catchments with ranking results (DEEP basins may be used instead of manual catchment delineations).]

Due to the thousands of outfalls owned and maintained by CTDOT, it is not feasible to list catchments individually below. The table below lists the number of catchments in each of the four prioritization categories based on mapping that was completed through permit year 3.

To be categorized as problem catchment, a known or suspected illicit discharge into the catchment area had to have been identified before the effective date of the permit. (During permit years 1 and 2, any catchment found via screening and sampling activities to contain suspected illicit discharges into CTDOT's MS4 system were incorrectly classified as problem catchments.) All previously identified "problem" catchments have now been reclassified as high priority catchments. CTDOT did not have catchments identified with suspect illicit discharges prior to the permit term. As such CTDOT has no problem catchments. Catchments areas with known or suspected illicit discharges will be considered as problem catchments during the next permit term.

As such, the number of Problem catchments indicated in this annual report has been revised compared to previous years.

Number of Catchments within Each Category Based on Mapping Completed in Permit Year 5				
Catchment Category	Excluded	Low Priority	High Priority	Problem
Number of Outfalls/Catchments in Each Category	9034	3611	759	0

2. Outfall and Interconnection Screening and Sampling data (Appendix B (A)(7)(d) / page 7)

2.1 Dry weather screening and sampling data from outfalls and interconnections

CTDOT conducted dry weather sampling at 229 outfalls that had dry weather flow. Of these, 25 locations discharged to an impaired waterbody. CTDOT sampled the 25 locations for the pollutant(s) of concern identified which was primarily bacteria. Overall, outfalls were dry weather screened within the following 30 municipalities: Avon, Bozrah, Bridgeport, Clinton, Derby, Hartford, Killingly, Killingworth, Lisbon, Manchester, Meriden, Milford, Monroe, Montville, New Haven, Newington, North Stonington, Old Lyme, Old Saybrook, Orange, Plainfield, Rocky Hill, Sprague, Voluntown, Wallingford, Waterbury, West Hartford, West Haven, Wethersfield and Windham.

2.2 Wet weather sample and inspection data

CTDOT did not conduct wet weather sampling this permit year. During the first four permit years, wet weather sampling at 857 locations was completed by CTDOT, none of which resulted in the identification of any illicit discharge sources. All potential illicit discharges identified by CTDOT have resulted from discoveries during construction projects and dry weather screening and sampling. CTDOT will include IDDE awareness in its training to construction staff, encourages members of the public to report suspected illicit discharges to DOTMS4.com, and has reallocated the resources previously used to conduct wet weather to instead conduct additional dry weather screenings and associated catchment investigations needed.

3. Catchment Investigations (Appendix B (A)(7)(e) / page 9)

3.1 System Vulnerability Factor (SVF) Summary

CTDOT has thousands of catchment areas statewide and no sanitary sewer or septic system mapping for many of these areas. MS4 staff review each catchment for likely SVF's at the time of mapping. For areas other than limited access highways, one or both of the following SVF's are frequently assumed to be present; 1) crossings of storm and sanitary alignments and/or 2) storm and sanitary infrastructure greater than 40 years old in medium and densely developed areas. Other SVF's may also be present. As such, CTDOT generally assumes that all non-excluded catchments have at least one SVF present. This is a conservative but time saving approach that has resulted in 4,370 catchments, which are currently mapped, that are presumed to have at least one of the twelve SVFs listed in the permit.

3.2 Summary of Catchment Investigations

CTDOT's MS4 permit requires catchment investigations be completed in three of the four catchment categories: problem, high and low.

The permit requires investigation of 40% of all non-excluded mapped catchment areas by June 30, 2024, and 100% of non-excluded catchment investigations should be completed by June 30, 2029. Investigating the

suspect sanitary sewer inputs documented in any existing problem catchments is the highest priority, followed by high priority catchments and finally low priority catchments. As CTDOT had no existing problem catchments at the start of this permit term, CTDOT is prioritizing high priority catchments with suspect illicit inputs from screening and sampling activities first. Catchments categorized as excluded do not need to be investigated.

Per CTDOT's MS4 permit, there are two ways in which a catchment investigation can be considered complete; 1) A catchment with screening and sampling results below permit triggers, no junction manholes and no SVFs and 2) A field investigation of the catchment area including screening and sampling of key junction manholes. Each of these two methods are each discussed below. See section 3.7 in Part I of this report for a summary of the total number of catchment investigations completed.

3.2.1 Catchments that Do Not Require Field Investigations

CTDOT considers a catchment investigation complete even when a field investigation has not necessarily occurred provided certain criteria are met. The underlined portions of the text below are CTDOT's additions to the permit's criteria for completing an investigation (Appendix B Section 8(d)), and CTDEEP has concurred with this modified approach.

- Catchment does not contain junction manholes, or the only junction manhole present in the catchment area is immediately up gradient of an outfall that was screened and sampled and;

- Dry weather screening reveals no dry weather flow, or dry weather flow was present, but the flow was sampled and did not exceed the permit's triggers for ammonia, surfactants and chlorine or ammonia, surfactants and bacteria (indicative of the presence of flow from a permissible discharge such as from foundation drains) and;

- No evidence of illicit discharge was noted via screening/sampling results, visual or olfactory means and;

- No wet weather System Vulnerability factors (SVFs) were identified, or wet weather SVF's were identified, or likely present but wet weather sampling was completed and the results did not exceed the permit's triggers for ammonia, surfactants and chlorine or ammonia, surfactants and bacteria

3.2.2 Catchments Requiring Field Investigations

All non-excluded catchments that do not meet the criteria above require additional field investigation of the catchment area. For the time frame between 7/1/2023 and 6/30/2024, CTDOT or other stakeholder groups in coordination with CTDOT completed 347 catchment investigations across the state.

These investigations are divided as follows: 309 investigations completed on catchments with no key junction manholes and with no source found / no evidence of illicit inputs and 38 investigations completed on all key junction manholes within a catchment area, and with no source to identify and no evidence of illicit inputs.

CTDOT will continue to prioritize catchment investigations in catchments with evidence of possible illicit inputs based on dry and/or wet weather inspection results. Catchment investigations beyond these will be prioritized according to their catchment categorization with high priority catchments completed first followed by low priority catchments. Based on data evaluated as of 6/30/24, there are 6 locations with exceedances of permit triggers that require field catchment investigations. The inspection results and analytical data for these 6 points are shown below. See section 3.7 in Part 1 of this report for information on the progress made towards the 40% catchment investigation goal.

Screening Sampling ID	Drainage Asset Type	Screening Sampling Date	Town	Highway #	Visual/Olfactory Evidence of Illicit Discharge	Ammonia (mg/L)	E. coli (cols/100 ml)	Screening Sampling Phase
170-SS-2293	Outfall	6/26/2024	Hartford	44	Yes	–	–	Need to Investigate – Potential Source to Identify
170-SS-8568	Outfall	2/8/2024	Bozrah	608	Yes	0.7	1,260	Need to Investigate – Potential Source to Identify
170-SS-9305	Outfall	4/23/2024	Milford	1	Yes	0.2	4,110	Need to Investigate – Potential Source to Identify
170-SS-14340	Interconnection	4/23/2024	Milford	1	Yes	2.0	10,000	Need to Investigate – Potential Source to Identify
170-SS-14395	Other	5/22/2024	Old Saybrook	154	Yes	–	–	Need to Investigate – Potential Source to Identify

3.3 Key junction manhole dry weather screening and sampling data

CTDOT conducted 114 dry weather illicit discharge catchment investigations during this permit year within the following 18 municipalities: Avon, Bridgeport, Clinton, Derby, Killingly, Killingworth, Milford, New Haven, Newington, Orange, Plainfield, Rocky Hill, Wallingford, Waterbury, West Hartford, West Haven, Wethersfield and Windham.

No flow was present within the key junction locations for the catchments investigated. No source was identified as part of the investigation.

3.4 Wet weather investigation outfall sampling data

CTDOT did not conduct wet weather sampling this permit year. During the first four permit years, CTDOT completed 857 wet weather sampling events, none of which resulted in the identification of any illicit discharge sources. All potential illicit discharges identified by CTDOT have resulted from discoveries during construction projects and dry weather screening and sampling. CTDOT will include IDDE awareness in its training to

construction staff, encourages members of the public to report suspected illicit discharges to DOTMS4.com, and has reallocated the resources previously used to conduct wet weather to instead conduct additional dry weather screenings and associated catchment investigations needed.

3.5 Data for each illicit discharge source confirmed through the catchment investigation procedure

CTDOT did not identify any sources during catchment investigations this permit year.

Part IV: Certification

"I have personally examined and am familiar with the information submitted in this document and all attachments thereto, and I certify that, based on reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief. I understand that a false statement made in this document or its attachments may be punishable as a criminal offense, in accordance with Section 22a-6 of the Connecticut General Statutes, pursuant to Section 53a-157b of the Connecticut General Statutes, and in accordance with any other applicable statute."

Chief Elected Official or Principal Executive Officer

Print name: **Jason Coite, P.E**.
Principal Engineer, Offices of Environmental Compliance & Engineering Project Coordination
Connecticut Department of Transportation

Signature / Date:

Appendix A – CTDOT DCIA Retrofit Plan

CONNECTICUT DEPARTMENT OF TRANSPORTATION

Directly Connected Impervious Area Retrofit Plan

August 15, 2024

CONNECTICUT DEPARTMENT OF TRANSPORTATION

Directly Connected Impervious Area Retrofit Plan

Table of Contents

I. Introduction

This plan documents the Connecticut Department of Transportation's (CTDOT) efforts to comply with the relevant conditions of the General Permit for the Discharge of Stormwater from Department of Transportation Separate Storm Sewer Systems (CTDOT MS4 General Permit or permit) and stipulations of the Administrative Order on Consent issued by the U.S. Environmental Protection Agency (EPA) signed by CTDOT and EPA on December 12, 2023.

Planning for and implementation of reductions in directly connected impervious area (DCIA) as part of CTDOT's Retrofit Program consists of two main components:

- Opportunities incorporated into redevelopment projects, and
- Stand-alone water quality retrofit projects.

Stand-alone retrofit projects had not been anticipated to be achievable during the initial term of CTDOT's MS4 permit. The retrofit plan that the permit required by the end of Permit Year 3 was incorporated as part of CTDOT's Permit Year 3 annual report. The retrofit plan had consisted of working with the United States Geological Service (USGS) to utilize a stormwater modeling program known as SELDM to identify and prioritize locations where the CTDOT MS4 system expected to have a meaningful contribution to downstream water quality concerns. In addition to using the SELDM modeling program to identify retrofit project locations, the CTDOT was also pursuing smaller scale retrofit projects targeting Department-owned park-and-ride lots, evaluating existing dry and wet detention basins for retrofit projects, as well as other collaborative disconnection projects with municipalities.

The requirement to achieve 40 acres of DCIA disconnected by 2027 and a total amount of 80 acres by 2030 was included in a Consent Order issued by EPA to CTDOT in December 2023. CTDOT is committed to complying, if not exceeded, the Order's stipulations and has developed this DCIA Retrofit Plan to update the approach in general along with specific projects that will contribute to the required 2027 DCIA reductions. CTDOT is on schedule to meet the DCIA reduction targets specified in the order as described herein.

II. DCIA Reductions Associated with CTDOT Redevelopment Projects

Since the July 1, 2019 effective date of its first MS4 permit, CTDOT has disconnected 14.61 acres of DCIA via constructed redevelopment projects. CTDOT is also currently in the preliminary design phase for 13 stand-alone retrofit projects that are estimated to disconnect 40.3 acres. These stand-alone retrofit projects are scheduled to be constructed by 2027.

A summary of the DCIA reductions (or increases) associated with each CTDOT redevelopment project, as well as the predicted reductions associated with planned redeveloped projects and stand-alone retrofit projects, is documented in CTDOT's DCIA Tracking Spreadsheet (Appendix A).

Additional reductions in DCIA are projected based on tracking of all the redevelopment projects currently in the design phase. However, the design for redevelopment projects may change prior to final design and the date by which many of these projects will be constructed is uncertain. The 2030 reduction goal is anticipated to be met with a combination of redevelopment projects and stand-alone retrofit projects prioritized based on modeling CTDOT discharges to impaired waters as described later in this plan. All CTDOT capital improvement projects that have any drainage components are reviewed by CTDOT Environmental Compliance MS4 Staff to evaluate any potential stormwater quality improvement opportunities and any DCIA changes. Any proposed decreases or increases in a project area's DCIA, pre- to post-construction, are recorded on a project's "CTDOT MS4 Project Design Maximum Extent Practicable (MEP) Worksheet" (MEP Worksheet) at each design milestone. The worksheets contain project specific details documenting the opportunities and constraints that existed at each project location.

CTDOT's internal process for developing and reviewing redevelopment plans consist of multiple milestone reviews by appropriate CTDOT engineering units as the design matures. This process typically consists of plan review requests at 30% design, 60% design, 90% design and 100% Design (Final Development Plan [FDP]). Except for very large, multi-phased projects, most projects that have reached their FDP typically start construction within the next 6-12 months and complete construction within the next 24 months. Larger projects are likely to have longer timeframes and can often have construction schedules that span more than one year.

Since the effective date of CTDOT's MS4 permit (7/1/2019), CTDOT has tracked the total DCIA changes associated with constructed redevelopment projects for both the current permit year and total to date.

Redevelopment projects *constructed* in Permit Year 5 (July 1, 2023 – June 30, 2024) resulted in a net DCIA increase of 1.99 acres. As noted on the DCIA Tracking spreadsheet in Appendix A, the DCIA increase in Permit Year 5 was largely driven by state project 0096-0204. Appendix B contains CTDOT MEP Worksheets for all redevelopment projects reviewed under CTDOT's MS4 program and constructed since the effective date of the permit, including those constructed in Permit Year 5. The 2.7 acres of new DCIA from project 96-204 could not be otherwise retained or treated, as documented in the project MEP worksheet in Appendix B: "[*Project 96-204] is located in a sole source aquifer and aquifer protection area, which precludes the use of infiltration/retention BMP's. The steep topography in the area, as well as the proximity of the two rivers on site to the roadways (Curtis Pond Brook and Pootatuck River) proved limiting to the use of disconnection and natural dispersion BMP's. Ultimately, the intent of the proposed design was to introduce grass channels to convey stormwater to suitable outlets, and to maximize overland flow paths prior to discharge in the wetland and watercourses. There are several grass channels on site which do not technically meet MS4 criteria for depth or velocity in the water quality storm event but which should result in some disconnection for lesser storm events. There are two existing HDS units on site, one of which will be replaced in the proposed condition. The proposed condition does not provide any additional treatment compared to the existing for the HDS units, so these are listed as BMP's but no credit is taken for them. Given the site limitations, BMP's were introduced consistent with the maximum extent practicable guidance."*

Overall, redevelopment projects *constructed* since July 1, 2019 have resulted in a net DCIA decrease of 15.75 acres. Appendix B contains CTDOT MEP Worksheets for all redevelopment projects reviewed under CTDOT's MS4 program and constructed since the effective date of the permit.

In addition to tracking DCIA changes associated with redevelopment projects that have been constructed, CTDOT also tracks projected changes to DCIA from redevelopment projects still in the design phase.

- Taken in aggregate, **the multi-year forecasted change in DCIA associated with all redevelopment projects designed, but not constructed, in Permit Year 5 is projected as a net 9.06-acre DCIA reduction.**
- Isolating the seven (7) projects that reached their final design plan milestone during Permit Year 5 (which are generally anticipated to be constructed within 24 months) results in a projection of a net 1.75 acres of DCIA reduction anticipated in the near term.
- Appendix C contains CTDOT MEP Worksheets for those seven Permit Year 5's FDP plans. The worksheets contain project specific details documenting the opportunities and constraints that existed at each project location.

III. Stand-Alone Retrofit Projects

Within CTDOT's initial permit term (July 1, 2019 – June 30, 2024), CTDOT's DCIA reduction plan had been developed based on that which could be achieved to the maximum extent practicable as part of its redevelopment projects. Supplemental "stand-alone" retrofit projects were contemplated as the next phase of DCIA reductions to begin after the dedicated staff resources were allocated to select, plan, design, manage and oversee the construction of retrofit projects and after CTDOT's collaboration with the U.S. Geologic Survey (USGS) was complete. CTDOT and USGS had been collecting run-off data from Connecticut highways in order to tailor USGS's SELDM model for the purpose of being able to perform large scale analyses of many CTDOT discharge points to identify retrofit locations that would have the most benefit to downstream water quality. CTDOT now has the staffing and funding resources to select, plan, design, and manage 10 to 15 stand-alone retrofit projects by 2027. However, USGS's SEDLM has not yet fully incorporated the Connecticut-specific highway runoff data. Therefore, the need to identify retrofit locations without the USGS model being complete required CTDOT to select thirteen (13) retrofit locations based on other, less quantitative criteria.

To identify specific locations with retrofit potential, CTDOT developed a GIS layer using publicly available land use data plus the mapping of the CTDOT drainage system completed to date to generate an inventory of candidate locations across the State. Protected resources such as wetlands, conservation areas, and underlying aquifers that support public drinking water supplies are avoided as retrofit sites. Shallow bedrock and shallow groundwater limit the opportunities to maximize disconnections via infiltration. Each of the thirteen retrofit projects prioritizes retaining / infiltrating the water quality volume from the contributing drainage area. Locations where retention / infiltration does not seem likely based on known site constraints have not been considered good candidates but may be considered as a location for stormwater treatment going forward. The 13 locations that were selected are currently in the preliminary design stage and are estimated to disconnect 40 acres. Appendix D contains the CTDOT Maximum Extent Practicable MS4 designer worksheets for all 13 locations.

Proposed Stand-Alone Retrofit Projects In Preliminary Design (as of 6/30/2024)

	CTDOT GIS ID #	Estimated Disconnection Credit (Acres)	Town	Comments/Description
1	170-PB-35	1.8	Norwich	Infiltration Basin at I-395 & Route 642
2	170-PB-48	3.5	Newington	Infiltration Basin at Cloverleaf at Rt 15 &175
3	170-PB-93	5	Naugatuck	Infiltration Basin at Rt 8 South near Route 847 On-Ramp
4	170-PB-102	2.0	Trumbull	Water Quality Swale & Leaching Basin in Route 8 Median East of Route 127
5	170-BP-106	4.3	Stratford	Retrofit existing detention basin south of Route 15 East of Route 110
6	170-PB-128	1.5	Killingly	Water Quality Swale & Leaching Basins in I-395 Median near Dog Hill Road
7	170-PB-138	2.4	Bristol	New Infiltration Basin Behind/North of Park and Ride Lot at Sunnydale Ave.
8	170-PB-141	4.8	Manchester	Infiltration Basin at I-384 Exit to Route 534
9	170-PB-143	3.0	Manchester	New Infiltration Trench, Leaching Basins, Water Quality Swale in I-384 Median West of Gardner Street
10	170-PB-148	2.0	Stratford	Infiltration Trench at I-95 & West Broad Street
11	170-PB-162	6.5	Meriden	Water Quality Swale & Leaching Basins in 1.2 Mile Stretch of I-691 Median
12	170-PB-186	2.0	Ansonia	Infiltration Trench West of Route 8 at Route 334
13	170-PB-149	1.5	Bridgeport	Infiltration Basin at I-95 & Route 113
	Est. TOTAL	**40.3 Acres**	**All Projects Scheduled to be Complete by 6/30/2027**	

CTDOT also evaluated 12 other locations initially indicated by the GIS analysis as having good retrofit potential. Upon further analysis these locations were determined not to be good candidate locations due to factors such as topography, drainage system elevations, drainage area, proposed grading, and temporary and/or permanent access. Appendix E contains the CTDOT Maximum Extent Practicable MS4 designer worksheets for these 12 locations.

IV. Identifying Future Stand-Alone Retrofit Projects

The amount of highway drainage area that CTDOT can practicably disconnect by a single retrofit will generally be limited to a maximum of four acres based on a several factors. Topography limits the size of a given area that will drain by gravity to a point at which the retrofit can infiltrate (or treat) the runoff. The size of the retrofit should be dictated by the volume of drainage directed toward it, but the actual size achievable is limited by several constraints. Soil conditions in the highway right of way are often made up of dense fill that limit the infiltration capacity (i.e., the denser the soils, the slower the infiltration, the more volume the retrofit must have). To be efficient with its resources, CTDOT is committed to constructing retrofits within areas it already possesses and will not be acquiring additional property at this time. In addition, where existing drainage infrastructure already exists that directs DCIA runoff to a point at which it can be infiltrated (or treated), CTDOT will be opportunistic to make the best use of its publicly funded resources rather than install new collection systems.

A tool that will be used to help determine potential retrofit project locations to meet the 2030 goal is the SELDM model discussed in Part II of the CTDOT Permit Year 5 Annual Report. To use the model, CTDOT is gathering highway and upstream watershed data on all currently mapped discharge locations to impaired waterbodies. As of June 30, 2024, CTDOT has mapped over 800 outfalls that discharge to an impaired waterbody. The data being collected for each of these locations will be used to run a SELDM analyses to develop an inventory and prioritization list of locations potentially contributing to an impairment. CTDOT anticipates completing an analysis of at least 20% of these locations annually and developing the inventory and prioritization list from this work. Prioritized locations identified as likely having impacts to impairments and/or downstream water quality will be considered for stand-alone retrofit and DCIA reduction projects. Updates on this work will be provided in subsequent annual reports.

V. Overall Retrofit Program Summary

Disconnections via retrofits as part of transportation redevelopment projects will continue and the annual progress going forward may exceed that which has been accomplished to date. However for planning purposes, CTDOT is assuming that "stand alone" retrofit projects unaffiliated with other transportation redevelopment projects will be CTDOT's Maximum Extent Practicable. Any additional DCIA reductions from redevelopment projects may be needed to supplement any of the reductions that the thirteen planned retrofit project are not able to achieve in their final constructed state.

Each subsequent Permit Year's annual report will document the progress of all retrofits constructed. Each annual report will document the amount of DCIA reductions (or increases) associated with each of its transportation redevelopment projects. Each annual report will include updated projections for the amount of DCIA expected to be affected by redevelopment projects that were planned or reviewed during the annual report's Permit Year.

The annual reports will include the annual and cumulative amount of DCIA disconnected and will include updated versions of the DCIA Tracking Spreadsheet. For those projects that are in their planning or design phase, CTDOT will also look to enhance the DCIA Tracking Spreadsheet to include a way to inform on the year in which the project is expected to be constructed. Each annual report will include the final MEP Worksheets for those redevelopment projects constructed during the annual report's Permit Year. Each annual report will include best available MEP Worksheets for all retrofit projects planned, designed, or constructed during the annual report's Permit Year.

Appendix A – CTDOT DCIA Tracking Spreadsheet

	Year 1-3 (2019-2021)				Permit Year 4 = SFY24 (2022-2023)								Year 5 (2023-2024)												Year 6 (2024-2025)												Year 7 (2025-2026)				Year 8 (2026-2027)			
	Designed		Designed & Constructed		Planning		90		FDP		Constructed		Planning		30		60		90		FDP		Constructed		Planning		30		60		90		FDP		Constructed		Design and permitting		Constructed		Design and Permitting		Constructed	
Requirement	n/a		n/a		n/a								n/a												n/a												n/a				n/a			
	Proj.	Ac.	Proj.	Ac.			Proj.	Ac.	Proj.	Ac.	Proj.	Ac.			Proj.	Ac.	Proj.	Ac.	Proj.	Ac.	Proj.	Ac.	Proj.	Ac.			Proj.	Ac.	Proj.	Ac.	Proj.	Ac.	Proj.	Ac.	Proj.	Ac.					Proj. #	Ac.			Proj. #	Ac.
Redevelopment Projects	0060-00162	0.15	0151-0273	###			~~0095-0256~~	~~FDP~~	0060-0160	0.27	No. Stonington Commuter Lot	-1.17			0128-0158	TBD	0085-0146	TBD	0135-0346	0.85	0034-0354	-0.009	0301-0047	0.2			0150-0137	TBD					0004-0134	TBD	0124-0165	-0.092										
	~~0138-0245~~	~~CON~~	0171-0412	0.8			0047-0121	0.1	0124-0172	-0.092	0042-0317	-0.49			0088-0202	TBD	0077-0244	0	0170-3704	TBD	0052-0092	0.45	0096-0204	2.7									0047-0122	0.23												
	~~0042-0317~~	~~CON~~					0056-0305	0.03	0142-0152	0.116	0040-0144	0.128	0173-0540	TBD	0302-0017	TBD	~~0155-0181~~	~~760%~~	0302-0029	-0.17	0079-0245 / 0079-0244	-1.446	N Britain Commuter Lot (488 Hartford Rd)	-1.3									0156-0181	-4.18										
	~~0059-0164~~	~~CON~~					0158-0215	0.55	~~0051-0273~~	~~CON~~	0095-0255	-0.05			0096-0208	TBD	0079-0240	-1.98	~~0088-0201~~	~~FDP~~	0079-0246	-0.13	Rt 15 SB Plaza N Haven	0.008																				
	~~0151-0321~~	~~CON~~					0082-0322	-0.07	0130-0173	-1.29	0096-0201	-1.93			0304-0029	TBD	0047-0123	0.46	0061-0154	TBD	0058-0338	0.007	0138-0245	-0.19																						
	~~0095-0201~~	~~CON~~					~~0142-0152~~	~~FDP~~	0095-0256	0.59	0151-0321	-1.13			0100-0182	TBD	0103-0277	0	0158-0223	TBD	0088-0201	0.33	0051-0273	0.57																						
	~~0102-0295~~	~~CON~~					~~0124-0165~~	~~FDP~~	0037-0103	0	0059-0164	0.11			0094-0267	TBD	0158-0203	TBD			0022-0106	-0.95																						
	0015-0382	0.063							0120-0094_120-1	0.12	0102-0295	-11.8			0083-0270	TBD	0310-0058	0.04																										
	~~0040-0144~~	~~CON~~					~~0120-0094~~	~~FDP~~	0120-0094_120-2	-0.002	EV Charging Fairfield Plaza NB & SB	0.03			0102-0358	TBD	0170-3637	-1.43																										
	~~0095-0204~~	~~CON~~							~~N Britain Commuter Lot (488 Hartford Rd)~~	~~CON~~	EV Charging New Canaan Pilaza SB	0.015			0053-0189	-1.99	0034-0324	TBD																										
	0171-0412	~~CON~~									EV Charging Madison Plaza NB & SB	0.03			0154-0127	0.06	0474-0095	TBD																										
	~~0102-0368~~	~~CON~~									0102-0368	-1.14			0094-0235	TBD	0067-0123	TBD																										
	0015-0371	0.06									0102-0368	-1.14			0168-0163	0.58	0053-0196	-3.73																										
	0083-0263	0.04													0083-0272	TBD																										
	~~No. Stonington Commuter Lot~~	~~CON~~																																									
	0044-0156	7.12																																									
	EV Charging	0.12																																								
	Walk Bridge	1.85																																								
	~~0138-0245~~	~~con~~																																								
	0102-0296	-1.03																																								
	0060-0162	0.15																																								
	0059-0168	0.2																																								
	~~0301-0047~~	~~CON~~																																								
	Rt 15 SB No. Haven Service Plaza	0.008																																								
	95-366	###																																								
	subtotal	8.731	subtotal	0.8	subtotal	0	subtotal	0.61	subtotal	-0.288	subtotal	-18.537	subtotal	0	subtotal	-1.35	subtotal	-6.64	subtotal	0.681	subtotal	-1.748	subtotal	1.988	subtotal	0	subtotal	0	subtotal	0	subtotal	-3.95	subtotal	-0.092	subtotal	0	subtotal	0	subtotal	0	subtotal	0	subtotal	0
Retrofit Projects													Manchester (170-PB-141)	-4.8															Manchester (170-PB-141)																	Project 7	
													Meriden (170-PB-162)	-6.5															Meriden (170-PB-162)																	Project 8	
													Newington (170-PB-48)	-3.5															Newington (170-PB-48)																		
													Killingly (170-PB-128)	-1.5															Killingly (170-PB-128)																		
													Norwich (170-PB-35)	-1.8															Norwich (170-PB-35)																		
													Naugatuck (170-PB-93)	-5															Naugatuck (170-PB-93)																		
													Trumbull (170-PB-102)	-2															Trumbull (170-PB-102)																		
													Stratford (170-PB-106)	-4.3															Stratford (170-PB-106)																		
													Bristol (170-PB-138)	-2.4															Bristol (170-PB-138)																		
													Manchester (170-PB-143)	-3															Manchester (170-PB-143)																		
													Stratford (170-PB-148)	-2															Stratford (170-PB-148)																		
													Bridgeport (170-PB-149)	-1.5															Bridgeport (170-PB-149)																		
													Ansonia (170-PB-186)	-2															Ansonia (170-PB-186)																		
	subtotal	0	subtotal	0	subtotal	0	subtotal	0	subtotal	0	subtotal	0	subtotal	-40.3	subtotal	0	subtotal	0	subtotal	0	subtotal	0	subtotal	0	subtotal	0	subtotal	0	subtotal	0	subtotal	0	subtotal	0	subtotal	0	subtotal	0	subtotal	0	subtotal	0	subtotal	0
	8.73		0.8		0		0.322				-18.537		-40.3				-9.057						1.988		0		-4.042								0		0		0		0		0	
Cumulative Net actually constructed			0.8								-17.737												-15.749												-15.749				-15.749				-15.75	
Cumulative Net planned, designed, and constructed			9.531								-8.684												-56.053												-60.095				-60.095				-60.10	

	Year 1-3 (2019-2021)				Permit Year 4 = SFY24 (2022-2023)							
	Designed		Designed & Constructed		Planning		90		FDP		Constructed	
Requirement	n/a		n/a				n/a		n/a		n/a	
	Proj.	Ac.	Proj.	Ac.			Proj.	Ac.	Proj.	Ac.	Proj.	Ac.
Redevelopment Projects	0060-00162	0.15	0151-0273	###			~~0095-0256~~	~~FDP~~	0060-0160	0.27	No. Stonington Commuter Lot	-1.17
	~~0138-0245~~	~~CON~~	0171-0412	0.8			0047-0121	0.1	0124-0172	-0.092	0042-0317	-0.49
	~~0042-0317~~	~~CON~~					0056-0305	0.03	0142-0152	0.116	0040-0144	0.128
	~~0059-0164~~	~~CON~~					0158-0215	0.55	~~0051-0273~~	~~CON~~	0095-0255	-0.05
	~~0151-0321~~	~~CON~~					0082-0322	-0.07	0130-0173	-1.29	0096-0201	-1.93
	~~0096-0201~~	~~CON~~					~~0142-0152~~	~~FDP~~	0095-0256	0.59	0151-0321	-1.13
	~~0102-0295~~	~~CON~~					~~0124-0165~~	~~FDP~~	0037-0103	0	0059-0164	0.11
	0015-0382	0.063							0120-0094_120-1	0.12	0102-0295	-11.8
	~~0040-0144~~	~~CON~~					~~0120-0094~~	~~FDP~~	0120-0094_120-2	-0.002	EV Charging Fairfield Plaza NB & SB	0.03
	~~0096-0204~~	~~CON~~							~~N Britain Commuter Lot (488 Hartford Rd)~~	~~CON~~	EV Charging New Canaan Pllaza SB	0.015
	~~0171-0412~~	~~CON~~									EV Charging Madison Plaza NB & SB	0.03
	~~0102-0368~~	~~CON~~									0102-0368	-1.14
	0015-0371	0.06									0102-0368	-1.14
	0083-0263	0.04										
	~~No. Stonington Commuter Lot~~	~~CON~~										
	0044-0156	7.12										
	EV Charging	0.12										
	Walk Bridge	1.85										
	~~0138-0245~~	~~con~~										
	0102-0296	-1.03										
	0060-0162	0.15										
	0059-0168	0.2										
	~~0301-0047~~	~~CON~~										
	Rt 15 SB No. Haven Service Plaza	0.008										
	95-366	###										
	subtotal	**8.731**	**subtotal**	**0.8**	**subtotal**	**0**	**subtotal**	**0.61**	**subtotal**	**-0.288**	**subtotal**	**-18.537**
Retrofit Projects												
	subtotal	**0**	**subtotal**	**0**	**subtotal**	**0**	**subtotal**	**0**	**subtotal**	**0**	**subtotal**	**0**
	8.73		0.8		0		0.322				-18.537	
Cumulative Net actually constructed			0.8								-17.737	
Cumulative Net planned, designed, and constructed			9.531								-8.684	

	Year 5 (2023-2024)											
	Planning		30		60		90		FDP		Constructed	
Requirement			n/a		n/a		n/a		n/a		n/a	
			Proj.	Ac.	Proj.	Ac.	Proj.	Ac.	Proj.	Ac.	Proj.	Ac.
Redevelopment Projects			0128-0158	TBD	0085-0146	TBD	0135-0346	0.85	0034-0354	-0.009	0301-0047	0.2
			0088-0202	TBD	0077-0244	0	0170-3704	TBD	0052-0092	0.45	0096-0204	2.7
	0173-0540	TBD	0302-0017	TBD	~~0156-0181~~	~~"90%~~	0302-0029	-0.17	0079-0245 / 0079-0244	-1.446	N Britain Commuter Lot (488 Hartford Rd)	-1.3
			0096-0208	TBD	0079-0240	-1.98	~~0088-0201~~	~~FDP~~	0079-0246	-0.13	Rt 15 SB Plaza N Haven	0.008
			0304-0029	TBD	0047-0123	0.46	0061-0154	TBD	0058-0338	0.007	0138-0245	-0.19
			0100-0182	TBD	0103-0277	0	0158-0223	TBD	0088-0201	0.33	0051-0273	0.57
			0094-0267	TBD	0158-0203	TBD			0022-0106	-0.95		
			0083-0270	TBD	0310-0058	0.04						
			0102-0358	TBD	0170-3637	-1.43						
			0053-0189	-1.99	0034-0324	TBD						
			0154-0127	0.06	0474-0095	TBD						
			0094-0235	TBD	0067-0123	TBD						
			0168-0163	0.58	0053-0196	-3.73						
			0083-0272	TBD								
	subtotal	**0**	**subtotal**	**-1.35**	**subtotal**	**-6.64**	**subtotal**	**0.681**	**subtotal**	**-1.748**	**subtotal**	**1.988**
Retrofit Projects	Manchester (170-PB-141)	-4.8										
	Meriden (170-PB-162)	-6.5										
	Newington (170-PB-48)	-3.5										
	Killingly (170-PB-128)	-1.5										
	Norwich (170-PB-35)	-1.8										
	Naugatuck (170-PB-93)	-5										
	Trumbull (170-PB-102)	-2										
	Stratford (170-PB-106)	-4.3										
	Bristol (170-PB-138)	-2.4										
	Manchester (170-PB-143)	-3										
	Stratford (170-PB-148)	-2										
	Bridgeport (170-PB-149)	-1.5										
	Ansonia (170-PB-186)	-2										
					...	...	...	...	...	...	...	...
	subtotal	**-40.3**	**subtotal**	**0**	**subtotal**	**0**	**subtotal**	**0**	**subtotal**	**0**	**subtotal**	**0**
	-40.3		-9.057								1.988	
Cumulative Net actually constructed											-15.749	
Cumulative Net planned, designed, and constructed											-56.053	

	Year 6 (2024-2025)											
	Planning		30		60		90		FDP		Constructed	
Requirement			n/a		n/a		n/a		n/a		n/a	
			Proj.	Ac.	Proj.	Ac.	Proj.	Ac.	Proj.	Ac.	Proj.	Ac.
Redevelopment Projects			0150-0137	TBD			0004-0134	TBD	0124-0165	-0.092		
							0047-0122	0.23				
							0156-0181	-4.18				
	subtotal	0	subtotal	0	subtotal	0	subtotal	-3.95	subtotal	-0.092	subtotal	0
Retrofit Projects			Manchester (170-PB-141)									
			Meriden (170-PB-162)									
			Newington (170-PB-48)									
			Killingly (170-PB-128)									
			Norwich (170-PB-35)									
			Naugatuck (170-PB-93)									
			Trumbull (170-PB-102)									
			Stratford (170-PB-106)									
			Bristol (170-PB-138)									
			Manchester (170-PB-143)									
			Stratford (170-PB-148)									
			Bridgeport (170-PB-149)									
			Ansonia (170-PB-186)									
					...	...	...	...	...	...	...	...
	subtotal	0	subtotal	0	subtotal	0	subtotal	0	subtotal	0	subtotal	0
	0		-4.042								0	
Cumulative Net actually constructed											-15.749	
Cumulative Net planned, designed, and constructed											-60.095	

	Year 7 (2025-2026)				Year 8 (2026-2027)			
	Design and permitting		Constructed		Design and Permitting		Constructed	
Requirement	n/a		n/a		n/a		40	
	Proj. #	Ac.	Proj. #	Ac.	Proj. #	Ac.	Proj. #	Ac.
Redevelopment Projects								
	subtotal	0	subtotal	0	subtotal	0	subtotal	0
Retrofit Projects							Project 7	
							Project 8	
	...	...	...	...	...	...	...	...
	subtotal	0	subtotal	0	subtotal	0	subtotal	0
	0		0		0		0	
Cumulative Net actually constructed	-15.749				-15.75			
Cumulative Net planned, designed, and constructed	-60.095				-60.10			

Appendix B – CTDOT MS4 Worksheets for Constructed Redevelopment Projects

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 1: Project Information	**Project #:**	0151-0321
	Title:	Waterbury Naugatuck River Greenway Phase 1, Platts Mill & SR 847
	Location:	Waterbury, CT

Section 2: Existing Conditions

EC1	Total Project Area			acres	
EC2	Pre-construction Directly Connected Impervious Area (DCIA):			acres	%
EC3	Soil Infiltration Potential	Data Source: ☐Existing Report / Soils Map ☑Field Verified		☐Good/Fair ☐Poor ☐Mixed	
EC4	Depth to Maximum Groundwater		☐TBD	11 to 19	ft below grade
EC5	Depth to Bedrock		☐TBD	N/A to	ft below grade
EC6	Aquifer Protection Area? (from PNDF)			☐Yes	☑No
EC7	MS4 Priority Area? (from PNDF)			☑Yes (See Below)	☐No
	Check All That Apply	☑Urbanized Area	☑DCIA >11%	☑Impaired Waterbody (See Below)	
	Select All Impairments That Apply	Cause Unknown	Choose an Item	Choose an Item	
EC8	Contamination known or suspected to be present? (From Environmental Compliance)			☐Yes	☑No
EC9	Adjoining DOT ROW beyond project limits available for stormwater quality management			N/A acres	

Section 3: Designed Conditions

	Water Quality Calculations		30% Design		60% Design	90% Design	FDP
DC1	WQV retention design goal	☐ Full ☐ 1/2"-WQV	ac-ft	☐ TBD	ac-ft	ac-ft	ac-ft
DC2	WQV goal ***retained*** (refer to page 2)		ac-ft		ac-ft	ac-ft	0.008 ac-ft
DC3	WQV goal ***treated*** (refer to page 2)		ac-ft		ac-ft	ac-ft	ac-ft
DC4	Total WQV *retained and treated*		0 **ac-ft**		0 **ac-ft**	0 **ac-ft**	0.008 **ac-ft**
DC5	Post-construction DCIA(acres)		ac.	☐ TBD	ac.	ac.	0 ac.
DC6	Pre-construction DCIA (refer to EC2 above)		ac.		ac.	ac.	1.13 ac.
DC7	Change in DCIA from pre- to post-construction *Can be positive (DCIA gained) or negative (DCIA lost)*		0 **ac.**	☐ **TBD**	0 **ac.**	0 **ac.**	-1.13 **ac.**
	Date completed						12/9/2019
	Completed by (initials)						D Imig
	Reviewed by (initials)						D Imig

Notes: The water quality numbers above are based on cross sections along SR 847 (only) comparing pre and post condition. Overall the project is reducing DCIA due to a reduction in travel lane(s) along SR847 and the inclusion of a bio-swale.

Worksheet users should refer to the *CT DOT MS4 Project Design MEP Worksheet Instructions*

Section 4: Stormwater BMP Selection Summary			
Design Phase ☐30% ☐60% ☐90% ☐FDP	**WQV Retained (ac-ft)**	**WQV Treated (ac-ft)**	**Site Constraints**
Disconnection			
No curb / natural dispersion			Choose an Item.
Vegetative filter strip			Choose an Item.
Other			Choose an Item.
Conveyance & Disconnection			
Grass channel			Choose an Item.
Water quality swale (dry)	0.008		Choose an Item.
Other			Choose an Item.
Infiltration / Retention			
Infiltration basin			Choose an Item.
Infiltration trench			Choose an Item.
Underground infiltration system			Choose an Item.
Dry well			Choose an Item.
Other			Choose an Item.
Treatment			
Wet basin / wetland system			Choose an Item.
Extended dry detention basin			Choose an Item.
Hydrodynamic-oil/grit sys.			Choose an Item.
Bioretention with underdrain			Choose an Item.
Other			Choose an Item.
TOTAL	0.008	0	

Notes: Drainage area and volume (1") to the bio-retentiuon swale was estimated based on plans. This worksheet was completed by D Imig of Env Compliance as project did not complete worksheet or provide WQV or DCIA numbers.

Worksheet users should refer to the *CT DOT MS4 Project Design MEP Worksheet Instructions.* Refer to the 2004 CT Stormwater Quality Manual for more information on BMP criteria and limitations.

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 1: Project Information	**Number:**	0042-0317
	Title:	**Route 2 Resurfacing & Safety Improvements**
	Location:	**East Hartford**

Section 2: Existing Conditions

EC1	Total Project Area			26.53 acres		
EC2	Pre-construction Directly Connected Impervious Area (DCIA) for the Project:			7.20 acres	27.14 %	
EC3	Soil Infiltration Potential	Data Source: ☐Existing Report / Soils Map ☒Field Verified		☒Good/Fair	☐Poor	☐Mixed
EC4	Depth to Maximum Groundwater		☐TBD	4' to >10' ft below grade		
EC5	Depth to Bedrock		☐TBD	N/A to __ ft below grade		
EC6	Aquifer Protection Area? (from PNDF)			☐Yes	☒No	
EC7	MS4 Priority Area? (from PNDF)			☒Yes (See Below)	☐No	
	Check All That Apply	☒Urbanized Area	☒DCIA >11%	☒Impaired Waterbody (See Below)		
	Select All Impairments That Apply	Bacteria	Choose an item.	Choose an item.		
EC8	Contamination known or suspected to be present? (From Environmental Compliance)			☒Yes	☐No	
EC9	Adjoining DOT ROW beyond project limits available for stormwater quality management			N/A acres		

Section 3: Designed Conditions

	Water Quality Calculations		30% Design		60% Design	90% Design	FDP
DC1	WQV retention design goal	☒Full ☐½-WQV	ac-ft	☐ TBD	ac-ft	0.626 ac-ft	0.880 ac-ft
DC2	WQV goal ***retained*** (refer to page 2)		ac-ft		ac-ft	0.320 ac-ft	0.477 ac-ft
DC3	WQV goal ***treated*** (refer to page 2)		ac-ft		ac-ft	0.044 ac-ft	0.084 ac-ft
DC4	Total WQV *retained and treated*		ac-ft		ac-ft	0.364 ac-ft	0.561 ac-ft
DC5	Post-construction DCIA(acres)		ac.	☐ TBD	ac.	6.65 ac.	6.71 ac.
DC6	Pre-construction DCIA (refer to EC2 above)		ac.		ac.	6.97 ac.	7.20 ac.
DC7	Change in DCIA from pre- to post-construction *Can be positive (DCIA gained) or negative (DCIA lost)*		ac.	☐ TBD	ac.	-0.32 ac.	-0.49 ac.
	Date completed						6/11/20
	Completed by (initials)						SAH / RGC
	Reviewed by (initials)						DRI (DOT)

Notes: *Designer used DCIA captured by post construction BMPs. Need to use the amount of that area that is credited (DCIA Credit). Worksheet corrected by D Imig on 7.7.20. Total amount disconnected compared to existing conditions is 0.49 acres.*
DCIA Post = 10.27 – ~~4.55~~ 3.56 (To BMPs) = ~~5.72~~ 6.71acres remains directly connected in the post construction condition
Any contamination present does not exclude the use of structural stormwater quality best management practices

Worksheet users should refer to the *CT DOT MS4 Project Design MEP Worksheet Instructions*

Section 4: Stormwater BMP Selection Summary						
Design Phase ☐30% ☐60% ☐90% ☒FDP	**WQV Retained (ac-ft)**	**WQV Treated (ac-ft)**	**DCIA Captured (Acres)**	**DCIA Credit (Percentage)**	**DCIA Credit (acres)**	**Site Constraints**
Disconnection (Dispersion)						
						Choose an item.
						Choose an item.
Conveyance (Swales / Channels)						
Dry Water Quality Swale No 1	0.033	N/A	0.271	100	0.271	Choose an item.
Vegetated Swale No 2A	N/A	0.043	0.287	15	0.043	Choose an item.
Vegetated Swale No 2B	N/A	0.041	0.424	15	0.064	Choose an item.
Infiltration / Retention						
Infiltration Basin No 1	0.080	N/A	0.939	100	0.939	
Infiltration Basin No 2	0.050	N/A	0.098	100	0.098	Choose an item.
Infiltration Basin No 3	0.074	N/A	0.600	100	0.600	Choose an item.
Infiltration Basin No 4	0.036	N/A	0.457	65.9	0.301	Choose an item.
Infiltration Basin No 5	0.051	N/A	0.271	100	0.271	Choose an item.
Infiltration Basin No 6	0.093	N/A	1.015	77.55	0.787	
Infiltration Basin No 7	0.060	N/A	0.188	100	0.188	
Treatment						
						Choose an item.
						Choose an item.
						Choose an item.
TOTAL	**0.477**	**0.084**	**4.550**		**3.562**	
Notes:						

Worksheet users should refer to the *CT DOT MS4 Project Design MEP Worksheet Instructions.* Refer to the 2004 CT Stormwater Quality Manual for more information on BMP criteria and limitations.

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 1: Project Information		
	Project #:	0059-0164
	Title:	Modern Roundabout at U.S. Route 1 and Route 22
	Location:	Guilford, Branford and North Branford

Section 2: Existing Conditions

EC1	Total Project Area			4.70 acres		
EC2	Pre-construction Directly Connected Impervious Area (DCIA):			1.51 acres	32.04 %	
EC3	Soil Infiltration Potential	Data Source: ☑Existing Report / Soils Map ☐Field Verified		☑Good/Fair	☐Poor	☐Mixed
EC4	Depth to Maximum Groundwater		☐TBD	3.5 to 13 ft below grade		
EC5	Depth to Bedrock		☐TBD	to >18.5 ft below grade		
EC6	Aquifer Protection Area? (from PNDF)			☐Yes	☑No	
EC7	MS4 Priority Area? (from PNDF)			☑Yes (See Below)	☐No	
	Check All That Apply	☐Urbanized Area	☑DCIA >11%	☐Impaired Waterbody (See Below)		
	Select All Impairments That Apply	Choose an Item	Choose an Item	Choose an Item		
EC8	Contamination known or suspected to be present? (From Environmental Compliance)			☐Yes	☑No	
EC9	Adjoining DOT ROW beyond project limits available for stormwater quality management			0 acres		

Section 3: Designed Conditions

	Water Quality Calculations		30% Design		60% Design	90% Design	FDP
DC1	WQV retention design goal	☑ Full ☐ 1/2"-WQV	ac-ft	☐ TBD	ac-ft	ac-ft	0.132 ac-ft
DC2	WQV goal ***retained*** (refer to page 2)		ac-ft		ac-ft	ac-ft	ac-ft
DC3	WQV goal ***treated*** (refer to page 2)		ac-ft		ac-ft	ac-ft	0.02 ac-ft
DC4	Total WQV *retained and treated*		0 **ac-ft**		0 **ac-ft**	0 **ac-ft**	0.02 **ac-ft**
DC5	Post-construction DCIA(acres)		ac.	☐ TBD	ac.	ac.	1.618 ac.
DC6	Pre-construction DCIA (refer to EC2 above)		ac.		ac.	ac.	1.506 ac.
DC7	Change in DCIA from pre- to post-construction *Can be positive (DCIA gained) or negative (DCIA lost)*		0 **ac.**	☐ **TBD**	0 **ac.**	0 **ac.**	0.112 **ac.**
	Date completed						3/9/2020

Section 4: Stormwater BMP Selection Summary			
Design Phase ☐30% ☐60% ☐90% ☑FDP	**WQV Retained (ac-ft)**	**WQV Treated (ac-ft)**	**Site Constraints**
Disconnection			
No curb / natural dispersion		0.010	other - describe in comment section
Vegetative filter strip			Choose an Item.
Other			Choose an Item.
Conveyance & Disconnection			
Grass channel		0.010	Choose an Item.
Water quality swale (dry)			Choose an Item.
Other			Choose an Item.
Infiltration / Retention			
Infiltration basin			Choose an Item.
Infiltration trench			Choose an Item.
Underground infiltration system			Choose an Item.
Dry well			Choose an Item.
Other			Insufficient Right-of-Way
Treatment			
Wet basin / wetland system			Choose an Item.
Extended dry detention basin			Choose an Item.
Hydrodynamic-oil/grit sys.			Choose an Item.
Bioretention with underdrain			Choose an Item.
Other			Utility Conflict
TOTAL	0	0.02	

Notes: Curbing is required to channelize traffic as part of roundabout design. Curbing is also required to provide vertical separation for the roadway and pedestrians. Limited right of way due to the increased footprint of the roundabout and underground utility facilities within the project limits prevent expansion of retention facilities.

Worksheet users should refer to the *CT DOT MS4 Project Design MEP Worksheet Instructions.* Refer to the 2004 CT Stormwater Quality Manual for more information on BMP criteria and limitations.

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 1: Project Information	**Project #:**	0096-0201
	Title:	Rehabilitiation of Bridge No.s 01218 & 04180, I-84 over Housatonic River
	Location:	Newtown/Southbury CT

Section 2: Existing Conditions

EC1	Total DOT-Owned Project Area			19.10 acres		
EC2	Pre-construction DOT-Owned Directly Connected Impervious Area (DCIA):			11.00 acres	57,59 %	
EC3	Soil Infiltration Potential	Data Source: ☑Existing Report / Soils Map ☐Field Verified		☐Good/Fair	☐Poor	☑Mixed
EC4	Depth to Maximum Groundwater		☐TBD	4.5 to 6 ft below grade		
EC5	Depth to Bedrock		☐TBD	19 to ft below grade		
EC6	Aquifer Protection Area? (from PNDF)			☐Yes	☑No	
EC7	MS4 Priority Area? (from PNDF)			☑Yes (See Below)	☐No	
	Check All That Apply ☐Urbanized Area ☑DCIA >11% ☑Impaired Waterbody (See Below)					
	Select All Impairments That Apply Chlorophyll-a Excess Algal Growth Nutrient/Eutrophication					
EC8	Contamination known or suspected to be present? (From Environmental Compliance)			☑Yes	☐No	
EC9	Adjoining DOT ROW beyond project limits available for stormwater quality management			0 acres		

Section 3: Designed Conditions

	Water Quality Calculations	**30% Design**		**60% Design**	**90% Design**	**FDP**
DC1	WQV retention design goal ☐ Full ☐ 1/2"-WQV	ac-ft	☐ TBD	ac-ft	0.40 ac-ft	0.4 ac-ft
DC2	WQV goal ***retained*** (refer to page 2)	ac-ft		ac-ft	0.15 ac-ft	0.15 ac-ft
DC3	WQV goal ***treated*** (refer to page 2)	ac-ft		ac-ft	0.01 ac-ft	0.01 ac-ft
DC4	Total WQV *retained and treated*	0 **ac-ft**		0 **ac-ft**	0.16 **ac-ft**	0.16 **ac-ft**
DC5	Post-construction DCIA(acres)	ac.	☐ TBD	ac.	9.02 ac.	9.07 ac.
DC6	Pre-construction DCIA (refer to EC2 above)	ac.		ac.	11.0 ac.	11.0 ac.
DC7	Change in DCIA from pre- to post-construction *Can be positive (DCIA gained) or negative (DCIA lost)*	0 **ac.**	☐ **TBD**	0 **ac.**	-1.98 **ac.**	-1.93 **ac.**
	Date completed				8/19/19	11/5/2019
	Completed by (initials)					KLD
	Reviewed by (initials)				D Imig	GPR

Notes: DCIA Credit for swale = impervious area directed to swale (0.37 acres) multiplied by 50% disconnection credit (0.37 ac * 0.5 = 0.185 acres)
DCIA Credit for infiltration basin = impervious area directed to basin (1.74 acres) (100% disconnection credit awarded based on size of basin. TOTAL DCIA disconnected = 1.74+0.185 = 1.925 acres.

Worksheet users should refer to the *CT DOT MS4 Project Design MEP Worksheet Instructions*

Section 4: Stormwater BMP Selection Summary			
Design Phase ☐30% ☐60% ☐90% ☑FDP	**WQV Retained (ac-ft)**	**WQV Treated (ac-ft)**	**Site Constraints**
Disconnection			
No curb / natural dispersion			not applicable
Vegetative filter strip			Choose an Item.
Other			Choose an Item.
Conveyance & Disconnection			
Grass channel			Choose an Item.
Water quality swale (dry)	0.01	0.01	Choose an Item.
Other			Choose an Item.
Infiltration / Retention			
Infiltration basin	0.14		Choose an Item.
Infiltration trench			Choose an Item.
Underground infiltration system			Choose an Item.
Dry well			Choose an Item.
Other			Choose an Item.
Treatment			
Wet basin / wetland system			Insufficient Right-of-Way
Extended dry detention basin			Choose an Item.
Hydrodynamic-oil/grit sys.			Choose an Item.
Bioretention with underdrain			Choose an Item.
Other			Choose an Item.
TOTAL	0.15	0.01	

Notes: WQV directed to dry swale = 0.031 ac-ft. Use WQV formula for drainage area directed to dry swale. {(1")(R)(A)/12} where R=0.05+0.009I, I = impervious Area (0.37 ac) and A = drainage area (0.78 ac) to swale; Dry swale WQV crediting = 0.01 ac retention credit (25% of total), 0.01 ac treatment credit (25% of total)

WQV directed to infiltration basin = 0.14 ac-ft using WQV formula for drainage area directed to infiltration basin

Worksheet users should refer to the *CT DOT MS4 Project Design MEP Worksheet Instructions.* Refer to the 2004 CT Stormwater Quality Manual for more information on BMP criteria and limitations.

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 1: Project Information	**Project #:**	102-295
	Title:	Median Reconstruction and Resurfacing of I-95
	Location:	Norwalk and Westport

Section 2: Existing Conditions

EC1	Total DOT-Owned Project Area			79.00 acres		
EC2	Pre-construction DOT-Owned Directly Connected Impervious Area (DCIA):			29.90 acres	37,85 %	
EC3	Soil Infiltration Potential	Data Source: ☑Existing Report / Soils Map ☐Field Verified		☑Good/Fair	☐Poor	☐Mixed
EC4	Depth to Maximum Groundwater		☐TBD	0 to 30+ ft below grade		
EC5	Depth to Bedrock		☐TBD	0 to 50+ ft below grade		
EC6	Aquifer Protection Area? (from PNDF)			☐Yes	☑No	
EC7	MS4 Priority Area? (from PNDF)			☑Yes (See Below)	☐No	
	Check All That Apply	☑Urbanized Area	☑DCIA >11%	☑Impaired Waterbody (See Below)		
	Select All Impairments That Apply	Lead	Nitrogen (Total)	Chlorophyll-a		
EC8	Contamination known or suspected to be present? (From Environmental Compliance)			☑Yes	☐No	
EC9	Adjoining DOT ROW beyond project limits available for stormwater quality management			0 acres		

Section 3: Designed Conditions

	Water Quality Calculations	**30% Design**	**60% Design**	**90% Design**	**FDP**
DC1	WQV retention design goal ☑ Full ☐ 1/2"-WQV	ac-ft ☐ TBD	ac-ft	3.03 ac-ft	3.03 ac-ft
DC2	WQV goal ***retained*** (refer to page 2)	ac-ft	ac-ft	1.12 ac-ft	1.12 ac-ft
DC3	WQV goal ***treated*** (refer to page 2)	ac-ft	ac-ft	0.89 ac-ft	0.89 ac-ft
DC4	Total WQV *retained and treated*	0 **ac-ft**	0 **ac-ft**	2.01 **ac-ft**	2.01 **ac-ft**
DC5	Post-construction DCIA(acres)	ac. ☐ TBD	ac.	19.1 ac.	18.1 ac.
DC6	Pre-construction DCIA (refer to EC2 above)	ac.	ac.	29.9 ac.	29.9 ac.
DC7	Change in DCIA from pre- to post-construction *Can be positive (DCIA gained) or negative (DCIA lost)*	0 **ac.** ☐ **TBD**	0 **ac.**	-10.79 **ac.**	-11.79 **ac.**
	Date completed				
	Completed by (initials)				
	Reviewed by (initials)				D Imig

Notes: Disconnected Area;Underground infiltration system 16ac+Infiltration basin=0.9ac. Total 16.9ac.
Removed DCIA; 36.3ac.(post construction DCIA) - 16.9ac. = 19.1ac. (Box DC5)
Claiming 15% credit for 6.84 acres directed to grass channels.

Worksheet users should refer to the *CT DOT MS4 Project Design MEP Worksheet Instructions*

Section 4: Stormwater BMP Selection Summary			
Design Phase ☐30% ☐60% ☐90% ☐FDP	**WQV Retained (ac-ft)**	**WQV Treated (ac-ft)**	**Site Constraints**
Disconnection			
No curb / natural dispersion			not applicable
Vegetative filter strip			Insufficient Right-of-Way
Other			not applicable
Conveyance & Disconnection			
Grass channel		0.57	Choose an Item.
Water quality swale (dry) Claim 15% disconnection credit for grass channels			Insufficient Right-of-Way
Other			Insufficient Right-of-Way
Infiltration / Retention			
Infiltration basin	0.07		Choose an Item.
Infiltration trench			Insufficient Right-of-Way
Underground infiltration system	1.05		Choose an Item.
Dry well			not applicable
Other			Insufficient Right-of-Way
Treatment			
Wet basin / wetland system			not applicable
Extended dry detention basin			not applicable
Hydrodynamic-oil/grit sys.		0.32	Choose an Item.
Bioretention with underdrain			not applicable
Other			Insufficient Right-of-Way
TOTAL	1.12	0.89	

Notes: Grass Channel - Hendricks Ave 0.36ac.ft.; Sta 231+10 to 235+80 Right 0.21ac.ft. Total=0.57 ac.ft.
HDS - Park&Ride Lot 0.04 ac.ft.; Mullberry St. 0.28 ac.ft. Total 0.32 ac.ft.

Worksheet users should refer to the *CT DOT MS4 Project Design MEP Worksheet Instructions.* Refer to the 2004 CT Stormwater Quality Manual for more information on BMP criteria and limitations.

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 1: Project Information	**Project #:**	15-382
	Title:	Rehabilitation of Bridge Nos. 03532 & 00107 I-95 NB Exit 27A to RT 8 NB
	Location:	Bridgeport

Section 2: Existing Conditions

EC1	Total Project Area			5.00 acres		
EC2	Pre-construction Directly Connected Impervious Area (DCIA):			4.52 acres	90.34 %	
EC3	Soil Infiltration Potential	Data Source: ☑Existing Report / Soils Map ☐Field Verified		☐Good/Fair	☑Poor	☐Mixed
EC4	Depth to Maximum Groundwater		☐TBD	7.9 to 11 ft below grade		
EC5	Depth to Bedrock		☐TBD	20 to 42 ft below grade		
EC6	Aquifer Protection Area? (from PNDF)			☐Yes	☑No	
EC7	MS4 Priority Area? (from PNDF)			☑Yes (See Below)	☐No	
	Check All That Apply	☑Urbanized Area	☑DCIA >11%	☐Impaired Waterbody (See Below)		
	Select All Impairments That Apply	Cause Unknown	Cause Unknown	Choose an Item		
EC8	Contamination known or suspected to be present? (From Environmental Compliance)			☐Yes	☑No	
EC9	Adjoining DOT ROW beyond project limits available for stormwater quality management			0.0 acres		

Section 3: Designed Conditions

	Water Quality Calculations		30% Design		60% Design	90% Design	FDP
DC1	WQV retention design goal	☐ Full ☐ 1/2"-WQV	ac-ft	☐ TBD	ac-ft	0 ac-ft	0 ac-ft
DC2	WQV goal ***retained*** (refer to page 2)		ac-ft		ac-ft	0 ac-ft	0 ac-ft
DC3	WQV goal ***treated*** (refer to page 2)		ac-ft		ac-ft	0 ac-ft	0 ac-ft
DC4	Total WQV *retained and treated*		0 **ac-ft**		0 **ac-ft**	0 **ac-ft**	0 **ac-ft**
DC5	Post-construction DCIA(acres)		ac.	☐ TBD	ac.	4.580 ac.	4.580 ac.
DC6	Pre-construction DCIA (refer to EC2 above)		ac.		ac.	4.517 ac.	4.517 ac.
DC7	Change in DCIA from pre- to post-construction *Can be positive (DCIA gained) or negative (DCIA lost)*		0 **ac.**	☐ **TBD**	0 **ac.**	0.0629 **ac.**	0.0629 **ac.**
	Date completed						
	Completed by (initials)						
	Reviewed by (initials)						

Notes: Total additional impervious was calculated by taking the total amount of Br. 03532 widening and subtracting the impervious area from South Frontage Road below.

Worksheet users should refer to the *CT DOT MS4 Project Design MEP Worksheet Instructions*

Section 4: Stormwater BMP Selection Summary						
Design Phase ☐30% ☐60% ☐90% ☐FDP	**WQV Retained (ac-ft)**	**WQV Treated (ac-ft)**	**DCIA Captured (Acres)**	**DCIA Disconnection Credit (%)**	**DCIA Disconnection Credit (acres)**	**Site Constraints**
Disconnection (Dispersion)						
						Choose an Item.
						Choose an Item.
						Choose an Item.
Conveyance (Swales / Channels)						
						Choose an Item.
						Choose an Item.
						Choose an Item.
Infiltration / Retention						
						Choose an Item.
						Choose an Item.
						Choose an Item.
						Choose an Item.
						Choose an Item.
						Choose an Item.
						Choose an Item.
Treatment						
						Choose an Item.
						Bedrock limits use
						Choose an Item.
TOTAL	0	0	0	0	0	

Notes:

This page is not applicable for this project.

Worksheet users should refer to the *CT DOT MS4 Project Design MEP Worksheet Instructions.* Refer to the 2004 CT Stormwater Quality Manual for more information on BMP criteria and limitations.

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 1: Project Information		
	Project #:	040-144
	Title:	Bridge Replacement Bridge No. 06887 Route 152 Over Shady Brook
	Location:	East Haddam

Section 2: Existing Conditions

EC1	Total Project Area		0.99 acres		
EC2	Pre-construction Directly Connected Impervious Area (DCIA):		0.82 acres	83.23 %	
EC3	Soil Infiltration Potential	Data Source: ☑Existing Report / Soils Map ☐Field Verified	☐Good/Fair	☐Poor	☑Mixed
EC4	Depth to Maximum Groundwater	☑TBD	to	ft below grade	
EC5	Depth to Bedrock	☑TBD	to	ft below grade	
EC6	Aquifer Protection Area? (from PNDF)		☐Yes	☑No	
EC7	MS4 Priority Area? (from PNDF)		☐Yes (See Below)	☑No	
	Check All That Apply	☐Urbanized Area	☐DCIA >11%	☐Impaired Waterbody (See Below)	
	Select All Impairments That Apply	Choose an Item	Choose an Item	Choose an Item	
EC8	Contamination known or suspected to be present? (From Environmental Compliance)		☐Yes	☑No	
EC9	Adjoining DOT ROW beyond project limits available for stormwater quality management		0 acres		

Section 3: Designed Conditions

	Water Quality Calculations		30% Design	60% Design	90% Design	FDP
DC1	WQV retention design goal	☑ Full ☐ 1/2"-WQV	ac-ft ☐ TBD	ac-ft	ac-ft	0.078 ac-ft
DC2	WQV goal ***retained*** (refer to page 2)		ac-ft	ac-ft	ac-ft	0 ac-ft
DC3	WQV goal ***treated*** (refer to page 2)		ac-ft	ac-ft	ac-ft	0 ac-ft
DC4	Total WQV *retained and treated*		0 **ac-ft**	0 **ac-ft**	0 **ac-ft**	0 **ac-ft**
DC5	Post-construction DCIA(acres)		ac. ☐ TBD	ac.	ac.	0.952 ac.
DC6	Pre-construction DCIA (refer to EC2 above)		ac.	ac.	ac.	0.824 ac.
DC7	Change in DCIA from pre- to post-construction *Can be positive (DCIA gained) or negative (DCIA lost)*		0 **ac.** ☐ **TBD**	0 **ac.**	0 **ac.**	0.128 **ac.**
	Date completed					11/20/20
	Completed by (initials)					JCB
	Reviewed by (initials)					JAR

Notes: The project area is confined to the portions of Route 151 and Wigwam Road that are impacted by the proposed construction. Contributing watersheds outside the construction limits have not been accounted for in the calculations above.

Worksheet users should refer to the *CT DOT MS4 Project Design MEP Worksheet Instructions*

Section 4: Stormwater BMP Selection Summary						
Design Phase ☐30% ☐60% ☐90% ☑FDP	**WQV Retained (ac-ft)**	**WQV Treated (ac-ft)**	**DCIA Captured (Acres)**	**DCIA Disconnection Credit (%)**	**DCIA Disconnection Credit (acres)**	**Site Constraints**
Disconnection (Dispersion)						
Curbless Roadway	0	0	0	0	0	other - describe in comment sec
						Choose an Item.
						Choose an Item.
Conveyance (Swales / Channels)						
Drainage Swale	0	0	0	0	0	Insufficient Right-of-Way
						Choose an Item.
						Choose an Item.
Infiltration / Retention						
Underground Detention	0	0	0	0	0	Insufficient Right-of-Way
Underground Infiltration	0	0	0	0	0	Insufficient Right-of-Way
Infiltration Trench	0	0	0	0	0	Insufficient Right-of-Way
						Choose an Item.
						Choose an Item.
						Choose an Item.
						Choose an Item.
Treatment						
Hydrodynamic Separator						Cost Prohibitive
						Choose an Item.
						Choose an Item.
TOTAL	0	0	0	0	0	

Notes:

The existing drainage system on Route 151 uses curbs to direct runoff to the existing catch basins, the proposed design is consistent with this.

Worksheet users should refer to the *CT DOT MS4 Project Design MEP Worksheet Instructions.* Refer to the 2004 CT Stormwater Quality Manual for more information on BMP criteria and limitations.

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 1: Project Information	**Project #:**	0096-0204
	Title:	Intersection Improvements at I-84 Interchange 11
	Location:	Newtown, CT

Section 2: Existing Conditions

EC1	Total Project Area			36.51 acres		
EC2	Pre-construction Directly Connected Impervious Area (DCIA):			11.17 acres	30.59 %	
EC3	Soil Infiltration Potential	Data Source: ☑Existing Report / Soils Map ☐Field Verified		☑Good/Fair	☐Poor	☐Mixed
EC4	Depth to Maximum Groundwater		☐TBD	1.7 to 35.0 ft below grade		
EC5	Depth to Bedrock		☐TBD	2.0 to 45.0 ft below grade		
EC6	Aquifer Protection Area? (from PNDF)			☑Yes	☐No	
EC7	MS4 Priority Area? (from PNDF)			☑Yes (See Below)	☐No	
	Check All That Apply	☑Urbanized Area	☐DCIA >11%	☐Impaired Waterbody (See Below)		
	Select All Impairments That Apply	Lead	Polycyclic Aromatic Hydr			
EC8	Contamination known or suspected to be present? (From Environmental Compliance)			☑Yes	☐No	
EC9	Adjoining DOT ROW beyond project limits available for stormwater quality management			0 acres		

Section 3: Designed Conditions

	Water Quality Calculations	**30% Design**		**60% Design**	**90% Design**	**FDP**
DC1	WQV retention design goal ☑ Full ☐ 1/2"-WQV	ac-ft	☐ TBD	ac-ft	1.20 ac-ft	1.23 ac-ft
DC2	WQV goal ***retained*** (refer to page 2)	ac-ft		ac-ft	0 ac-ft	0 ac-ft
DC3	WQV goal ***treated*** (refer to page 2)	ac-ft		ac-ft	0.045 ac-ft	0.045 ac-ft
DC4	Total WQV *retained and treated*	0 **ac-ft**		0 **ac-ft**	0.045 **ac-ft**	0.045 **ac-ft**
DC5	Post-construction DCIA(acres)	ac.	☐ TBD	ac.	1.43 ac.	13.87 ac.
DC6	Pre-construction DCIA (refer to EC2 above)	ac.		ac.	3.64 ac.	11.17 ac.
DC7	Change in DCIA from pre- to post-construction *Can be positive (DCIA gained) or negative (DCIA lost)*	0 **ac.**	☐ **TBD**	0 **ac.**	-2.21 **ac.**	2.7 **ac.**
	Date completed				6/17/20	1/8/21
	Completed by (initials)				EF	EF
	Reviewed by (initials)					

Notes: EC9: Adjoining DOT ROW was included in the project in order to implement stormwater BMP's. This is area that was not part of the project in the PD phase, and was incorporated in the project in final design. As such, it is part of the total project area and EC9 is shown as zero, as it is believed the available ROW has already been maximized for stormwater use, consistent with the MEP practicable guidance.

Worksheet users should refer to the *CT DOT MS4 Project Design MEP Worksheet Instructions*

Section 4: Stormwater BMP Selection Summary						
Design Phase ☐30% ☐60% ☐90% ☑FDP	**WQV Retained (ac-ft)**	**WQV Treated (ac-ft)**	**DCIA Captured (Acres)**	**DCIA Disconnection Credit (%)**	**DCIA Disconnection Credit (acres)**	**Site Constraints**
Disconnection (Dispersion)						
						Insufficient Right-of-Way
						Natural Slopes >15%
						other - describe in comment sect
Conveyance (Swales / Channels)						
Grass Channel	0	0.045	3.22	15%	0.48	Insufficient Right-of-Way
						other - describe in comment sec
						Choose an Item.
Infiltration / Retention						
						other - describe in comment sect
Treatment						
Proposed/Existing HDS Units						other - describe in comment sect
TOTAL	0	0.045	3.22	15	0.48	

Notes: The project is located in a sole source aquifer and aquifer protection area, which precludes the use of infiltration/retention BMP's. The steep topography in the area, as well as the proximity of the two rivers on site to the roadways (Curtis Pond Brook and Pootatuck River) proved limiting to the use of disconnection and natural dispersion BMP's. Ultimately, the intent of the proposed design was to introduce grass channels to convey stormwater to suitable outlets, and to maximize overland flow paths prior to discharge in the wetland and watercourses. There are several grass channels on site which do not technically meet MS4 criteria for depth or velocity in the water quality storm event but which should result in some disconnection for lesser storm events. There are two existing HDS units on site, one of which will be replaced in the proposed condition. The proposed condition does not provide any additional treatment compared to the existing for the HDS units, so these are listed as BMP's but no credit is taken for them. Given the site limitations, BMP's were introduced consistent with the maximum extent practicable guidance.

Worksheet users should refer to the *CT DOT MS4 Project Design MEP Worksheet Instructions.* Refer to the 2004 CT Stormwater Quality Manual for more information on BMP criteria and limitations.

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 1: Project Information	**Project #:**	0171-0412
	Title:	CTfastrak Commuter Parking Lot
	Location:	Farmington, CT

Section 2: Existing Conditions

EC1	Total Project Area			3.49 acres		
EC2	Pre-construction Directly Connected Impervious Area (DCIA):			0.54 acres	15.47 %	
EC3	Soil Infiltration Potential	Data Source: ☐Existing Report / Soils Map ☑Field Verified		☐Good/Fair	☑Poor	☐Mixed
EC4	Depth to Maximum Groundwater		☐TBD	4.5 to 10.5 ft below grade		
EC5	Depth to Bedrock		☐TBD	N/A to N/A ft below grade		
EC6	Aquifer Protection Area? (from PNDF)			☐Yes	☑No	
EC7	MS4 Priority Area? (from PNDF)			☐Yes (See Below)	☐No	
	Check All That Apply	☑Urbanized Area	☑DCIA >11%	☐Impaired Waterbody (See Below)		
	Select All Impairments That Apply	Choose an Item	Choose an Item	Choose an Item		
EC8	Contamination known or suspected to be present? (From Environmental Compliance)			☐Yes	☐No	
EC9	Adjoining DOT ROW beyond project limits available for stormwater quality management			0 acres		

Section 3: Designed Conditions

	Water Quality Calculations		**30% Design**		**60% Design**	**90% Design**	**FDP**
DC1	WQV retention design goal	☐ Full ☐ 1/2"-WQV	ac-ft	☐ TBD	ac-ft	.153 ac-ft	.153 ac-ft
DC2	WQV goal ***retained*** (refer to page 2)		ac-ft		ac-ft	.029 ac-ft	.029 ac-ft
DC3	WQV goal ***treated*** (refer to page 2)		ac-ft		ac-ft	ac-ft	ac-ft
DC4	Total WQV *retained and treated*		0 **ac-ft**		0 **ac-ft**	0.029 **ac-ft**	0.029 **ac-ft**
DC5	Post-construction DCIA(acres)		ac.	☐ TBD	ac.	1.34 ac.	1.34 ac.
DC6	Pre-construction DCIA (refer to EC2 above)		ac.		ac.	0.54 ac.	0.54 ac.
DC7	Change in DCIA from pre- to post-construction *Can be positive (DCIA gained) or negative (DCIA lost)*		0 **ac.**	☐ **TBD**	0 **ac.**	0.8 **ac.**	0.8 **ac.**
	Date completed					6/17/2020	8/19/2020
	Completed by (initials)					SAZ	SAZ
	Reviewed by (initials)					RIF	RIF

Notes:

Worksheet users should refer to the *CT DOT MS4 Project Design MEP Worksheet Instructions*

Section 4: Stormwater BMP Selection Summary						
Design Phase ☐30% ☐60% ☐90% ☑FDP	**WQV Retained (ac-ft)**	**WQV Treated (ac-ft)**	**DCIA Captured (Acres)**	**DCIA Disconnection Credit (%)**	**DCIA Disconnection Credit (acres)**	**Site Constraints**
Disconnection (Dispersion)						
No Curb/Natural Dispersion						Insufficient Right-of-Way
Vegetative Filter Strip						Insufficient Right-of-Way
						Choose an Item.
Conveyance (Swales / Channels)						
Grass Channel						other - describe in comment sec
Water Quality Swale (dry)						other - describe in comment sec
						Choose an Item.
Infiltration / Retention						
Infiltration Basin						Field Measured infiltration <0.3 i
Infiltration Trench						Field Measured infiltration <0.3 i
Underground Infiltration System						Field Measured infiltration <0.3 i
Dry Well						Field Measured infiltration <0.3 i
Check Dams	0.029					Choose an Item.
						Choose an Item.
						Choose an Item.
Treatment						
Wet Basin/Wetland System						Insufficient Right-of-Way
Extended Dry Detention Basin						Insufficient Right-of-Way
Bioretention with Underdrain						Insufficient Right-of-Way
TOTAL	0.029	0	0	0	0	

Notes:

WQV retained using check dams. Grass channels/water quality swales are unable to be used as WQV treatment due to surrounding grading a

Worksheet users should refer to the *CT DOT MS4 Project Design MEP Worksheet Instructions.* Refer to the 2004 CT Stormwater Quality Manual for more information on BMP criteria and limitations.

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 1: Project Information	**Project #:**	0102-0368
	Title:	Route 15 Safety Improvements, Enhancements, Resurfacing, and Bridge Impr
	Location:	City of Norwalk & Town of Westport

Section 2: Existing Conditions

EC1	Total Project Area			34.10 acres		
EC2	Pre-construction Directly Connected Impervious Area (DCIA):			11.66 acres	34.19 %	
EC3	Soil Infiltration Potential	Data Source: ☐Existing Report / Soils Map ☑Field Verified		☐Good/Fair	☐Poor	☑Mixed
EC4	Depth to Maximum Groundwater		☐TBD	1 to 12.9 ft below grade		
EC5	Depth to Bedrock		☐TBD	9 to 25 ft below grade		
EC6	Aquifer Protection Area? (from PNDF)			☑Yes	☐No	
EC7	MS4 Priority Area? (from PNDF)			☑Yes (See Below)	☐No	
	Check All That Apply	☑Urbanized Area	☑DCIA >11%	☑Impaired Waterbody (See Below)		
	Select All Impairments That Apply	Sedimentation/Siltation (	Bacteria	Choose an Item		
EC8	Contamination known or suspected to be present? (From Environmental Compliance)			☐Yes	☑No	
EC9	Adjoining DOT ROW beyond project limits available for stormwater quality management			28.0 acres		

Section 3: Designed Conditions

	Water Quality Calculations	**30% Design**	**60% Design**	**90% Design**	**FDP**
DC1	WQV retention design goal ☑ Full ☐ 1/2"-WQV	ac-ft ☐ TBD	ac-ft	ac-ft	0.157 ac-ft
DC2	WQV goal ***retained*** (refer to page 2)	ac-ft	ac-ft	ac-ft	0.03 ac-ft
DC3	WQV goal ***treated*** (refer to page 2)	ac-ft	ac-ft	ac-ft	0.038 ac-ft
DC4	Total WQV *retained and treated*	0 **ac-ft**	0 **ac-ft**	0 **ac-ft**	0.068 **ac-ft**
DC5	Post-construction DCIA(acres)	ac. ☐ TBD	ac.	ac.	10.52 ac.
DC6	Pre-construction DCIA (refer to EC2 above)	ac.	ac.	ac.	11.66 ac.
DC7	Change in DCIA from pre- to post-construction *Can be positive (DCIA gained) or negative (DCIA lost)*	0 **ac.** ☐ **TBD**	0 **ac.**	0 **ac.**	-1.14 **ac.**
	Date completed				07/07/20

Section 4: Stormwater BMP Selection Summary						
Design Phase ☐30% ☐60% ☐90% ☑FDP	**WQV Retained (ac-ft)**	**WQV Treated (ac-ft)**	**DCIA Captured (Acres)**	**DCIA Disconnection Credit (%)**	**DCIA Disconnection Credit (acres)**	**Site Constraints**
Disconnection (Dispersion)						
No curb / natural dispersion (SEE	0.03	0.03	0.70	100	0.70	Insufficient Right-of-Way
						Choose an Item.
						Choose an Item.
Conveyance (Swales / Channels)						
Grass channels (SEE NOTES)		0.008	0.96	15	0.144	Natural Slope > 15%
						Choose an Item.
						Choose an Item.
Infiltration / Retention						
Infiltration Trench (SEE NOTES	0	0	0	0	0	other - describe in comment sect
Infiltration Basin						other - describe in comment sect
Underground Infiltration System						other - describe in comment sect
Dry Well						other - describe in comment sect
						Choose an Item.
						Choose an Item.
						Choose an Item.
Treatment						
Wet Basin / Wetland System						other - describe in comment sect
Extended Dry Detention Basin						other - describe in comment sect
						Choose an Item.
TOTAL	0.03	0.038	1.66	115	0.844	

Notes:

SEE PAGE 3 FOR NOTES.

Worksheet users should refer to the *CT DOT MS4 Project Design MEP Worksheet Instructions.* Refer to the 2004 CT Stormwater Quality Manual for more information on BMP criteria and limitations.

SECTION 4 NOTES

NO CURB / NATURAL DISPERSION - OUTSIDE SHOULDERS OF ROUTE 15 WILL HAVE ALL EXISTING CURBING REMOVED, DECREASING DRAINAGE SYSTEM CONNECTION THROUGH THE 2.7mi CORRIDOR. OUTSIDE SHOULDER SLOPES WILL BE GRADED AT 12:1 WITH TOPSOIL AND LOW-GROW SEED MIX, INCREASING INFILTRATION. ANY FILL SECTION IN THE OUTSIDE SHOULDER WITH AT LEAST 50' DISPERSION WIDTH WAS INCLUDED IN THE CALCULATION ON PAGE 2 FOR WQV RETAINED AND WQV TREATED. ALL PROPOSED CUT SECTIONS HAVE A DISPERSION WIDTH OF 8' AND WERE NOT INCLUDED IN THE CALCULATION. SITE CONSTRAINTS INCLUDE RIGHT-OF-WAY, WETLANDS AND THE HISTORIC NATURE OF THE ROADWAY. EXCESS REMOVAL OF EXISTING TREES/SHRUBBERY IS HEAVILY REGULATED, SO FLATTENING MANY OF THE FILL SLOPES TO MEET THE REQUIREMENTS ON THE ONE-PAGER FOR NO CURB/NATURAL DISPERSION IS IMPRACTICAL.

GRASS CHANNELS - THERE ARE 3 SWALES PROPOSED IN THE PROJECT THAT MEET THE DESIGN CRITERIA SET FORTH BY THE ONE-PAGER FOR GRASS CHANNELS. THERE ARE 20 TOTAL SWALES WITHIN PROJECT LIMITS. SWALES NOT MEETING DESIGN CRITERIA EITHER CONTAIN 2:1 SIDE SLOPES, CONTAIN DESIGN VELOCITIES >1fps OR CONTAIN A FLOWING GRADE >6%. THOSE 17 SWALES WERE NOT INCLUDED IN THE CALCULATIONS ON PAGE 2.

INFILTRATION TRENCH - UNDERDRAIN SYSTEMS ARE PROPOSED AT ALL CUT SECTIONS (GRASS CHANNEL SECTIONS). DUE TO ROUTE 15 BEING HISTORIC, THE CORRIDOR'S PAVEMENT WIDTH IS RESTRICTED SO A REINFORCED GRASS SHOULDER IS PROPOSED TO ACT AS A PARTIAL SHOULDER FOR VEHICLES TO PULL OVER ONTO. UNDERDRAIN SYSTEMS CONSISTING OF A PERPHERATED PIPE IN A CRUSHED STONE TRENCH WILL BE INSTALLED ADJACENT TO EDGE OF ROAD PER CT DOT'S HIGHWAY DESIGN MANUAL FOR RUNOFF TO DRAIN INTO AND TO ALLOW WATER TRAPPED UNDERNEATH THE ROADWAY STRUCTURE TO ESCAPE. THUS, PLACING THE UNDERDRAIN SYSTEM BENEATH THE REINFORCED GRASS PARTIAL SHOULDER. THIS DESIGN DOES NOT MEET THE CRITERIA SET FORTH BY THE ONE-PAGER. BUT, WILL NONETHELESS RECEIVE, FILTER, AND CONVEY STORMWATER TO EITHER THE SOIL BELOW THE UNDERDRAIN OR TO OUTLETS.

MEDIAN SHOULDERS WILL BE CURBED THROUGH THE WHOLE CORRIDOR. EXISTING CONDITIONS IN THE MEDIAN SEE BOTH CURBED AND NON-CURBED SECTIONS. EXISTING CONDITIONS STILL DO NOT MEET BMP STANDARDS EVEN IN THE NON-CURBED SECTIONS, SO ANY IMPERVIOUS AREA DRAINING TO THE MEDIAN BOTH IN THE EXISTING AND PROPOSED CONDITIONS ARE/WILL BE CONNECTED. THE ONLY DCIA ADDED WITH THIS PROJECT WILL BE FROM MEDIAN SHOULDER WIDENING. WHICH EQUATES TO 0.53 ACRES. THE REMOVAL OF CURBING ON THE OUTSIDE SHOULDER PAIRED WITH NATURAL DISPERSION WILL REDUCE THE DCIA BY 0.96 ACRES. WITH THE GRASS CHANNELS REDUCING THE DCIA BY AN ADDITIONAL 0.70 ACRES. YIELDING A NET DECREASE OF DCIA OF 1.13 ACRES.

THE HISTORIC NATURE OF THE MERRITT PARKWAY MAKES THE IMPLEMENTATION OF MANY BEST MANAGEMENT PRACTICES INFEASIBLE AND IMPRACTIBLE. THE PROPOSED OUTSIDE SHOULDER SHEETFLOW, SWALES, AND UNDERDRAIN HAVE BEEN USED ON MOST MERRITT PARKWAY IMPROVEMENT PROJECTS IN THE PAST AND HAVE PREFORMED UP TO OR ABOVE EXPECTATIONS AND STANDARDS.

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 1: Project Information	**Project #:**	0301-0047
	Title:	Stamford Parking Garage
	Location:	South State Street, Stamford, CT

Section 2: Existing Conditions

EC1	Total Project Area			3.44 acres	
EC2	Pre-construction Directly Connected Impervious Area (DCIA):			2.98 acres	86.63 %
EC3	Soil Infiltration Potential	Data Source: ☑Existing Report / Soils Map ☐Field Verified		☐Good/Fair	☑Poor ☐Mixed
EC4	Depth to Maximum Groundwater		☐TBD	6.0 to 23.5	ft below grade
EC5	Depth to Bedrock		☐TBD	3 to 57.4	ft below grade
EC6	Aquifer Protection Area? (from PNDF)			☑Yes	☐No
EC7	MS4 Priority Area? (from PNDF)			☑Yes (See Below)	☐No
	Check All That Apply	☐Urbanized Area	☑DCIA >11%	☑Impaired Waterbody (See Below)	
	Select All Impairments That Apply	Chlordane	Polychlorinated Bipheny	Other	
EC8	Contamination known or suspected to be present? (From Environmental Compliance)			☑Yes	☐No
EC9	Adjoining DOT ROW beyond project limits available for stormwater quality management			0 acres	

Section 3: Designed Conditions

	Water Quality Calculations		**30% Design**		**60% Design**	**90% Design**	**FDP**
DC1	WQV retention design goal	☐ Full ☑ 1/2"-WQV	ac-ft	☐ TBD	ac-ft	ac-ft	.1265 ac-ft
DC2	WQV goal ***retained*** (refer to page 2)		ac-ft		ac-ft	ac-ft	0 ac-ft
DC3	WQV goal ***treated*** (refer to page 2)		ac-ft		ac-ft	ac-ft	.253 ac-ft
DC4	Total WQV *retained and treated*		0 **ac-ft**		0 **ac-ft**	0 **ac-ft**	0.253 **ac-ft**
DC5	Post-construction DCIA(acres)		ac.	☐ TBD	ac.	ac.	3.18 ac.
DC6	Pre-construction DCIA (refer to EC2 above)		ac.		ac.	ac.	2.98 ac.
DC7	Change in DCIA from pre- to post-construction *Can be positive (DCIA gained) or negative (DCIA lost)*		0 **ac.**	☐ **TBD**	0 **ac.**	0 **ac.**	0.2 **ac.**
	Date completed						7/15/21
	Completed by (initials)						
	Reviewed by (initials)						DI

Notes: Info is based on the Drainage Report prepared by CHA revised through 9/21/20 and the Geotechnical Data Report (GDR) prepared by CHA dated 5/20. D Imig (CTDOT MS4) revised page 2. No DCIA credit given for an HDS unit. HDS unit treating off-site I-95 area + onsite area.

Worksheet users should refer to the *CT DOT MS4 Project Design MEP Worksheet Instructions*

Section 4: Stormwater BMP Selection Summary						
Design Phase ☐30% ☐60% ☐90% ☑FDP	**WQV Retained (ac-ft)**	**WQV Treated (ac-ft)**	**DCIA Captured (Acres)**	**DCIA Disconnection Credit (%)**	**DCIA Disconnection Credit (acres)**	**Site Constraints**
Disconnection (Dispersion)						
						Insufficient Right-of-Way
						Choose an Item.
						Choose an Item.
Conveyance (Swales / Channels)						
						Insufficient Right-of-Way
						Choose an Item.
						Choose an Item.
Infiltration / Retention						
						Insufficient Right-of-Way
						Choose an Item.
						Choose an Item.
						Choose an Item.
						Choose an Item.
						Choose an Item.
						Choose an Item.
Treatment						
Hydrodynamic Separator		0.253	3.18	0	0	Choose an Item.
						Choose an Item.
						Choose an Item.
TOTAL	0	0.253	3.18	0	0	

Notes:

Info based on the Drainage Report by CHA revised through 9/21/20 and the Geotechnical Data Report (GDR) prepared by CHA dated 5/20.

Worksheet users should refer to the *CT DOT MS4 Project Design MEP Worksheet Instructions.* Refer to the 2004 CT Stormwater Quality Manual for more information on BMP criteria and limitations.

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 1: Project Information	**Project #:**	N/A
	Title:	Add 3 parking spaces to parking lot
	Location:	Rt 15 SB - North Haven Service Plaza

Section 2: Existing Conditions

EC1	Total Project Area		0.00 acres		
EC2	Pre-construction Directly Connected Impervious Area (DCIA):		0.00 acres	0.00 %	
EC3	Soil Infiltration Potential	Data Source: ☐Existing Report / Soils Map ☐Field Verified	☐Good/Fair	☐Poor	☐Mixed
EC4	Depth to Maximum Groundwater	☐TBD	to	ft below grade	
EC5	Depth to Bedrock	☐TBD	to	ft below grade	
EC6	Aquifer Protection Area? (from PNDF)		☐Yes	☐No	
EC7	MS4 Priority Area? (from PNDF)		☐Yes (See Below)	☐No	
	Check All That Apply ☐Urbanized Area ☐DCIA >11% ☐Impaired Waterbody (See Below)				
	Select All Impairments That Apply Choose an Item Choose an Item Choose an Item				
EC8	Contamination known or suspected to be present? (From Environmental Compliance)		☐Yes	☐No	
EC9	Adjoining DOT ROW beyond project limits available for stormwater quality management		acres		

Section 3: Designed Conditions

	Water Quality Calculations		**30% Design**		**60% Design**	**90% Design**	**FDP**
DC1	WQV retention design goal	☐ Full ☐ 1/2"-WQV	ac-ft	☐ TBD	ac-ft	ac-ft	ac-ft
DC2	WQV goal ***retained*** (refer to page 2)		ac-ft		ac-ft	ac-ft	ac-ft
DC3	WQV goal ***treated*** (refer to page 2)		ac-ft		ac-ft	ac-ft	ac-ft
DC4	Total WQV *retained and treated*		0 **ac-ft**		0 **ac-ft**	0 **ac-ft**	0 **ac-ft**
DC5	Post-construction DCIA(acres)		ac.	☐ TBD	ac.	ac.	0.008 ac.
DC6	Pre-construction DCIA (refer to EC2 above)		ac.		ac.	ac.	0 ac.
DC7	Change in DCIA from pre- to post-construction *Can be positive (DCIA gained) or negative (DCIA lost)*		0 **ac.**	☐ **TBD**	0 **ac.**	0 **ac.**	0.008 **ac.**
	Date completed						7/26/2021
	Completed by (initials)						D Imig
	Reviewed by (initials)						

Notes: Project is removing landscape island and putting parking spaces in its place. Adding 350 square feet of impervious area. Emailed with DOT Director of Concessions Jill Brennan on 7/26/2021.

Worksheet users should refer to the *CT DOT MS4 Project Design MEP Worksheet Instructions*

Section 4: Stormwater BMP Selection Summary						
Design Phase ☐30% ☐60% ☐90% ☐FDP	**WQV Retained (ac-ft)**	**WQV Treated (ac-ft)**	**DCIA Captured (Acres)**	**DCIA Disconnection Credit (%)**	**DCIA Disconnection Credit (acres)**	**Site Constraints**
Disconnection (Dispersion)						
						Choose an Item.
						Choose an Item.
						Choose an Item.
Conveyance (Swales / Channels)						
						Choose an Item.
						Choose an Item.
						Choose an Item.
Infiltration / Retention						
						Choose an Item.
						Choose an Item.
						Choose an Item.
						Choose an Item.
						Choose an Item.
						Choose an Item.
						Choose an Item.
Treatment						
						Choose an Item.
						Choose an Item.
						Choose an Item.
TOTAL	0	0	0	0	0	

Notes:

Worksheet users should refer to the *CT DOT MS4 Project Design MEP Worksheet Instructions.* Refer to the 2004 CT Stormwater Quality Manual for more information on BMP criteria and limitations.

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 1: Project Information

Project Number: 0095-0255

Title/Description: New Milford Maintenance Facility

Location: New Milford

Section 2: Existing Conditions

EC1	Total Project Area			4.0 acres	
EC2	Pre-construction Total Impervious Area			3.07 acres	
EC3	Pre-Construction Disconnected Impervious Area			3.07 acres	
EC4	Pre-construction DCIA for the Project *(EC2 minus EC3)*			3.07 acres	76.75 % (EC4/EC1)
EC5	Soil Infiltration Potential	Data Source: ☐ Existing Report / Soils Map ☐ Field Verified		☐ Good/Fair ☐ Poor	☒ Mixed
EC6	Depth to Maximum Groundwater		☐ TBD	13.5 to 25 ft below grade	
EC7	Depth to Bedrock		☐ TBD	N/A to N/A ft below grade	
EC8	Aquifer Protection Area? (from PNDF)			☐ Yes	☒ No
EC9	MS4 Priority Area? (from PNDF)			☐ Yes (See Below)	☒ No

Check All That Apply ☐ Urbanized Area ☐ DCIA >11% ☐ Impaired Waterbody (See Below)

Select All Impairments That Apply

EC10	Contamination known or suspected to be present? (From Environmental Compliance)	☒ Yes	☐ No
EC11	Adjoining DOT ROW beyond project limits available for stormwater quality management	N/A acres	

NOTES:

The site has an area of LLAOEC and AOEC - see ENV-02 for details. Bedrock not hit with boring depths

7.5.24 - D. Imig updated original V3 worksheet to V4 worksheet.

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 3: Designed Conditions

Section 3A: Document Water Quality Volume (WQV) Retained and/or Treated (ac-ft)

	Water Quality Volume Documentation		30% Design		60% Design	90% Design	FDP	
DC1	WQV design goal	☐Full ☒½-WQV *(Full = EC4 % ≤ 40%)*	ac-ft	☐ TBD	ac-ft	ac-ft	0.100	ac-ft
DC2	WQV goal **retained** (refer to page 3)			ac-ft	ac-ft	ac-ft		ac-ft
DC3	WQV goal ***treated*** (refer to page 3)			ac-ft	ac-ft	ac-ft		ac-ft

Did the Project Retain and/or Treat the Entire WQV Goal? ☒Yes ☐No

Section 3B: Document Changes in Directly Connected Impervious Area (DCIA) Pre to Post Construction (acres)

	DCIA Documentation	30% Design		60% Design	90% Design	FDP	
DC4	Post-construction Total Impervious Area	ac.	☐ TBD	ac.	ac.	3.5	ac.
DC5	Post-construction DCIA before **new** BMPs	ac.	☐ TBD	ac.	ac.	3.5	ac.
DC6	DCIA Disconnected by new BMPs (from Pg 3)	ac.	☐ TBD	ac.	ac.	0.48	ac.
DC7	Final Post-construction DCIA *(DC5 minus DC6)*	ac.	☐ TBD	ac.	ac.	3.02	ac.
DC8	Pre-construction DCIA (refer to EC4 from Pg 1)		ac.	ac.	ac.	3.07	ac.
DC9	Change in DCIA from pre- to post-construction *(DC7 minus DC8) Can be positive (DCIA gained) or negative (DCIA lost)*	ac.	☐ TBD	ac.	ac.	-0.05	ac.
	Date completed					Rev 7/5/24 Original:8/4/21	
	Completed by (initials)					Rev DI Original ME	
	Reviewed by (initials)					Updated by DI 7/5/24	

NOTES:

Project WQV Goal: 0.5 inches, % DCIA Post Construction = 2.41 (DCIA) / 4.0 (Total Ia) = 60.3%, R = 0.05+0.009(60.3) = 0.593, WQV = (0.5)(0.593)(4) / 12 = 0.099 = 0.10 ac-ft.

Worksheet users should refer to the current *CT DOT MS4 Project Design MEP Worksheet V4 Instructions*

Reference the CT DEEP Stormwater Quality Manual (SWQM) for design and the New England Stormwater Retrofit Manual for Crediting

Section 4: Stormwater BMP Selection Summary

Design Phase ☐30% ☐60% ☐90% ☒FDP	BMP Type	WQV Retained* (ac-ft)	WQV Treated* (ac-ft)	DCIA Captured by BMP (ac)	Runoff Depth from DCIA Captured by BMP (in)	HSG Soil Type	DCIA Disconnection Credit (%)**	DCIA Disconnection Credit (ac)	(TP) reduction %**	(TSS) reduction %**	(TN) reduction %*
BMP Category											
Open Conveyance (	Dry Basin / Swale	0.02	0	1.261	0.19	N/A	38	0.48	N/A	N/A	N/A
Treatment	HDS	0	0.069	0.829	1.0	N/A	0	0	N/A	N/A	N/A
Treatment	HDS	0	0.036	0.432	1.0	N/A	0	0	N/A	N/A	N/A
TOTAL		0.02	~~0.105~~ 0.100					0.48			
		To Row DC2	***To Row DC3***					***To Row DC6***			

Describe Site Constraints Limiting BMP Implementation if applicable:

Other Notes:

All stormwater runoff directed to the rip rap basin / swale is treated by one of the two HDS unit prior to entering. The rip rap basin / swale has 6" of stone above an impermeable geotextile liner to prevent infiltration. Credit taken is based on lower 1/3 of basin retaining within 6" stone layer assuming 30% void space and ponding that occurs at outlet based on grading shown. No disconnection credit for HDS taken. Disconnection credit (if any) for HDS units is TBD by CTDEEP. TP, TSS, TN not tracked since project predated updated CTDEEP Stormwater Quality Manual.

* List the amount of the WQV the BMP is designed to retain or treat.

** Refer to the CT DEEP Stormwater Quality Manual (SWQM) Stormwater Manual (ct.gov) and New England Stormwater Retrofit Manual Stormwater Retrofit Manual (snepnetwork.org) to determine disconnection and pollutant removal percentages. BMPs should be designed to meet specific TP, TN and TSS pollutant reductions to the maximum extent practicable when the entire WQV cannot be retained. Pollutant Reduction Targets are: New Development TP 60%, TN 40%, TSS 90%. Redevelopment TP 50%, TN, 30% TSS 80%. (Page 48 of the SWQM)

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 1: Project Information	**Project #:**	0138-0245
	Title:	Replacement of Bridge 00326
	Location:	Stratford

Section 2: Existing Conditions

EC1	Total Project Area			9.81 acres	
EC2	Pre-construction Directly Connected Impervious Area (DCIA):			4.39 acres	44.75 %
EC3	Soil Infiltration Potential	Data Source: ☐Existing Report / Soils Map ☐Field Verified		☐Good/Fair	☐Poor ☐Mixed
EC4	Depth to Maximum Groundwater		☐TBD	6.2 to 4.2	ft below grade
EC5	Depth to Bedrock		☐TBD	31 to 85	ft below grade
EC6	Aquifer Protection Area? (from PNDF)			☐Yes	☑No
EC7	MS4 Priority Area? (from PNDF)			☑Yes (See Below)	☐No
	Check All That Apply	☑Urbanized Area	☑DCIA >11%	☑Impaired Waterbody (See Below)	
	Select All Impairments That Apply	Choose an Item	Choose an Item	Choose an Item	
EC8	Contamination known or suspected to be present? (From Environmental Compliance)			☑Yes	☐No
EC9	Adjoining DOT ROW beyond project limits available for stormwater quality management			+/- 0.5 acres	

Section 3: Designed Conditions

	Water Quality Calculations		30% Design		60% Design	90% Design	FDP
DC1	WQV retention design goal	☐ Full ☑ 1/2"-WQV	ac-ft	☐ TBD	ac-ft	ac-ft	0.204 ac-ft
DC2	WQV goal ***retained*** (refer to page 2)		ac-ft		ac-ft	ac-ft	0 ac-ft
DC3	WQV goal ***treated*** (refer to page 2)		ac-ft		ac-ft	ac-ft	0.059 ac-ft
DC4	Total WQV *retained and treated*		0 **ac-ft**		0 **ac-ft**	0 **ac-ft**	0.059 **ac-ft**
DC5	Post-construction DCIA(acres)		ac.	☐ TBD	ac.	ac.	4.20 ac.
DC6	Pre-construction DCIA (refer to EC2 above)		ac.		ac.	ac.	4.39 ac.
DC7	Change in DCIA from pre- to post-construction *Can be positive (DCIA gained) or negative (DCIA lost)*		0 **ac.**	☐ **TBD**	0 **ac.**	0 **ac.**	-0.189 **ac.**
	Date completed						07/12/2022
	Completed by (initials)						DJL/EMW
	Reviewed by (initials)						EMW

Notes: Worksheet revised on 7/21 by D Imig. No 0.02 acre credit given for retention pond with new sediment basin. New area is being directed to the retention "pond" but it is existing and no design calculations are available.

Worksheet users should refer to the *CT DOT MS4 Project Design MEP Worksheet Instructions*

Section 4: Stormwater BMP Selection Summary						
Design Phase ☐30% ☐60% ☐90% ☐FDP	**WQV Retained (ac-ft)**	**WQV Treated (ac-ft)**	**DCIA Captured (Acres)**	**DCIA Disconnection Credit (%)**	**DCIA Disconnection Credit (acres)**	**Site Constraints**
Disconnection (Dispersion)						
Qualifying natural/vegatative filte	0	0.036	0.88	50%	0.44	Choose an Item.
						Choose an Item.
						Choose an Item.
Conveyance (Swales / Channels)						
						Choose an Item.
						Choose an Item.
						Choose an Item.
Infiltration / Retention						
						Choose an Item.
						Choose an Item.
						Choose an Item.
						Choose an Item.
						Choose an Item.
						Choose an Item.
						Choose an Item.
Treatment						
Sediment Forebay		0.023	0.248	100%	0.00	Choose an Item.
						Choose an Item.
						Choose an Item.
TOTAL	0	0.059	1.128	1500	0.44	

Notes:

No credit for retention pond with new sediment forebay. Sediment forebay is pretreatment so treatment credit is also not being claimed.

Worksheet users should refer to the *CT DOT MS4 Project Design MEP Worksheet Instructions.* Refer to the 2004 CT Stormwater Quality Manual for more information on BMP criteria and limitations.

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 1: Project Information	**Project #:**	NA
	Title:	Electrical Vehicle Charging Station
	Location:	I-95 Fairfield Northbound Service Plaza

Section 2: Existing Conditions

EC1	Total Project Area		0.02 acres		
EC2	Pre-construction Directly Connected Impervious Area (DCIA):		0.02 acres	100.00 %	
EC3	Soil Infiltration Potential	Data Source: ☐Existing Report / Soils Map ☐Field Verified	☐Good/Fair	☐Poor	☐Mixed
EC4	Depth to Maximum Groundwater	☐TBD	to	ft below grade	
EC5	Depth to Bedrock	☐TBD	to	ft below grade	
EC6	Aquifer Protection Area? (from PNDF)		☐Yes	☐No	
EC7	MS4 Priority Area? (from PNDF)		☐Yes (See Below)	☐No	
	Check All That Apply ☐Urbanized Area ☐DCIA >11% ☐Impaired Waterbody (See Below)				
	Select All Impairments That Apply Choose an Item Choose an Item Choose an Item				
EC8	Contamination known or suspected to be present? (From Environmental Compliance)		☐Yes	☐No	
EC9	Adjoining DOT ROW beyond project limits available for stormwater quality management		acres		

Section 3: Designed Conditions

	Water Quality Calculations		**30% Design**		**60% Design**	**90% Design**	**FDP**
DC1	WQV retention design goal	☐ Full ☐ 1/2"-WQV	ac-ft	☐ TBD	ac-ft	ac-ft	ac-ft
DC2	WQV goal ***retained*** (refer to page 2)		ac-ft		ac-ft	ac-ft	ac-ft
DC3	WQV goal ***treated*** (refer to page 2)		ac-ft		ac-ft	ac-ft	ac-ft
DC4	Total WQV *retained and treated*		0 **ac-ft**		0 **ac-ft**	0 **ac-ft**	0 **ac-ft**
DC5	Post-construction DCIA(acres)		ac.	☐ TBD	ac.	ac.	0.0150 ac.
DC6	Pre-construction DCIA (refer to EC2 above)		ac.		ac.	ac.	ac.
DC7	Change in DCIA from pre- to post-construction *Can be positive (DCIA gained) or negative (DCIA lost)*		0 **ac.**	☐ **TBD**	0 **ac.**	0 **ac.**	.01503 **ac.**
	Date completed						
	Completed by (initials)						
	Reviewed by (initials)						

Notes: D Imig - Revised DC6 to 0 and DC7 to 0.015 to reflect the increase in DCIA pre to post.

Worksheet users should refer to the *CT DOT MS4 Project Design MEP Worksheet Instructions*

Section 4: Stormwater BMP Selection Summary						
Design Phase ☐30% ☐60% ☐90% ☐FDP	**WQV Retained (ac-ft)**	**WQV Treated (ac-ft)**	**DCIA Captured (Acres)**	**DCIA Disconnection Credit (%)**	**DCIA Disconnection Credit (acres)**	**Site Constraints**
Disconnection (Dispersion)						
						Choose an Item.
						Choose an Item.
						Choose an Item.
Conveyance (Swales / Channels)						
						Choose an Item.
						Choose an Item.
						Choose an Item.
Infiltration / Retention						
						Choose an Item.
						Choose an Item.
						Choose an Item.
						Choose an Item.
						Choose an Item.
						Choose an Item.
						Choose an Item.
Treatment						
						Choose an Item.
						Choose an Item.
						Choose an Item.
TOTAL	0	0	0	0	0	

Notes:

Worksheet users should refer to the *CT DOT MS4 Project Design MEP Worksheet Instructions.* Refer to the 2004 CT Stormwater Quality Manual for more information on BMP criteria and limitations.

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 1: Project Information	**Project #:**	NA
	Title:	Electrical Vehicle Charging Station
	Location:	I-95 Fairfield Southbound Service Plaza

Section 2: Existing Conditions

EC1	Total Project Area		0.02 acres		
EC2	Pre-construction Directly Connected Impervious Area (DCIA):		0.02 acres	100.00 %	
EC3	Soil Infiltration Potential	Data Source: ☐Existing Report / Soils Map ☐Field Verified	☐Good/Fair	☐Poor	☐Mixed
EC4	Depth to Maximum Groundwater	☐TBD	to	ft below grade	
EC5	Depth to Bedrock	☐TBD	to	ft below grade	
EC6	Aquifer Protection Area? (from PNDF)		☐Yes	☐No	
EC7	MS4 Priority Area? (from PNDF)		☐Yes (See Below)	☐No	
	Check All That Apply ☐Urbanized Area ☐DCIA >11% ☐Impaired Waterbody (See Below)				
	Select All Impairments That Apply Choose an Item Choose an Item Choose an Item				
EC8	Contamination known or suspected to be present? (From Environmental Compliance)		☐Yes	☐No	
EC9	Adjoining DOT ROW beyond project limits available for stormwater quality management		acres		

Section 3: Designed Conditions

	Water Quality Calculations		**30% Design**		**60% Design**	**90% Design**	**FDP**
DC1	WQV retention design goal	☐ Full ☐ 1/2"-WQV	ac-ft	☐ TBD	ac-ft	ac-ft	ac-ft
DC2	WQV goal ***retained*** (refer to page 2)		ac-ft		ac-ft	ac-ft	ac-ft
DC3	WQV goal ***treated*** (refer to page 2)		ac-ft		ac-ft	ac-ft	ac-ft
DC4	Total WQV *retained and treated*		0 **ac-ft**		0 **ac-ft**	0 **ac-ft**	0 **ac-ft**
DC5	Post-construction DCIA(acres)		ac.	☐ TBD	ac.	ac.	0.015 ac.
DC6	Pre-construction DCIA (refer to EC2 above)		ac.		ac.	ac.	ac.
DC7	Change in DCIA from pre- to post-construction *Can be positive (DCIA gained) or negative (DCIA lost)*		0 **ac.**	☐ **TBD**	0 **ac.**	0 **ac.**	0.015 **ac.**
	Date completed						
	Completed by (initials)						
	Reviewed by (initials)						

Notes: D Imig - Revised DC6 to zero and DC7 to 0.015 to reflect the increase in DCIA pre to post construction

Worksheet users should refer to the *CT DOT MS4 Project Design MEP Worksheet Instructions*

Section 4: Stormwater BMP Selection Summary						
Design Phase ☐30% ☐60% ☐90% ☐FDP	**WQV Retained (ac-ft)**	**WQV Treated (ac-ft)**	**DCIA Captured (Acres)**	**DCIA Disconnection Credit (%)**	**DCIA Disconnection Credit (acres)**	**Site Constraints**
Disconnection (Dispersion)						
						Choose an Item.
						Choose an Item.
						Choose an Item.
Conveyance (Swales / Channels)						
						Choose an Item.
						Choose an Item.
						Choose an Item.
Infiltration / Retention						
						Choose an Item.
						Choose an Item.
						Choose an Item.
						Choose an Item.
						Choose an Item.
						Choose an Item.
						Choose an Item.
Treatment						
						Choose an Item.
						Choose an Item.
						Choose an Item.
TOTAL	0	0	0	0	0	

Notes:

Worksheet users should refer to the *CT DOT MS4 Project Design MEP Worksheet Instructions.* Refer to the 2004 CT Stormwater Quality Manual for more information on BMP criteria and limitations.

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 1: Project Information	**Project #:**	NA
	Title:	Electrical Vehicle Charging Station
	Location:	RT15 New Canaan Southbound Service Plaza

Section 2: Existing Conditions

EC1	Total Project Area		0.02 acres		
EC2	Pre-construction Directly Connected Impervious Area (DCIA):		0.02 acres	100.00 %	
EC3	Soil Infiltration Potential	Data Source: ☐Existing Report / Soils Map ☐Field Verified	☐Good/Fair	☐Poor	☐Mixed
EC4	Depth to Maximum Groundwater	☐TBD	to	ft below grade	
EC5	Depth to Bedrock	☐TBD	to	ft below grade	
EC6	Aquifer Protection Area? (from PNDF)		☐Yes	☐No	
EC7	MS4 Priority Area? (from PNDF)		☐Yes (See Below)	☐No	
	Check All That Apply ☐Urbanized Area ☐DCIA >11% ☐Impaired Waterbody (See Below)				
	Select All Impairments That Apply Choose an Item Choose an Item Choose an Item				
EC8	Contamination known or suspected to be present? (From Environmental Compliance)		☐Yes	☐No	
EC9	Adjoining DOT ROW beyond project limits available for stormwater quality management		acres		

Section 3: Designed Conditions

	Water Quality Calculations		**30% Design**		**60% Design**	**90% Design**	**FDP**
DC1	WQV retention design goal	☐ Full ☐ 1/2"-WQV	ac-ft	☐ TBD	ac-ft	ac-ft	ac-ft
DC2	WQV goal ***retained*** (refer to page 2)		ac-ft		ac-ft	ac-ft	ac-ft
DC3	WQV goal ***treated*** (refer to page 2)		ac-ft		ac-ft	ac-ft	ac-ft
DC4	Total WQV *retained and treated*		0 **ac-ft**		0 **ac-ft**	0 **ac-ft**	0 **ac-ft**
DC5	Post-construction DCIA(acres)		ac.	☐ TBD	ac.	ac.	0.0150 ac.
DC6	Pre-construction DCIA (refer to EC2 above)		ac.		ac.	ac.	0 ac.
DC7	Change in DCIA from pre- to post-construction *Can be positive (DCIA gained) or negative (DCIA lost)*		0 **ac.**	☐ **TBD**	0 **ac.**	0 **ac.**	0.0150367 **ac.**
	Date completed						
	Completed by (initials)						
	Reviewed by (initials)						

Notes:

Worksheet users should refer to the *CT DOT MS4 Project Design MEP Worksheet Instructions*

Section 4: Stormwater BMP Selection Summary						
Design Phase ☐30% ☐60% ☐90% ☐FDP	**WQV Retained (ac-ft)**	**WQV Treated (ac-ft)**	**DCIA Captured (Acres)**	**DCIA Disconnection Credit (%)**	**DCIA Disconnection Credit (acres)**	**Site Constraints**
Disconnection (Dispersion)						
						Choose an Item.
						Choose an Item.
						Choose an Item.
Conveyance (Swales / Channels)						
						Choose an Item.
						Choose an Item.
						Choose an Item.
Infiltration / Retention						
						Choose an Item.
						Choose an Item.
						Choose an Item.
						Choose an Item.
						Choose an Item.
						Choose an Item.
						Choose an Item.
Treatment						
						Choose an Item.
						Choose an Item.
						Choose an Item.
TOTAL	0	0	0	0	0	

Notes:

Worksheet users should refer to the *CT DOT MS4 Project Design MEP Worksheet Instructions.* Refer to the 2004 CT Stormwater Quality Manual for more information on BMP criteria and limitations.

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 1: Project Information	**Project #:**	NA
	Title:	Electrical Vehicle Charging Station
	Location:	I-95 Madison Northbound Service Plaza

Section 2: Existing Conditions

EC1	Total Project Area		0.02 acres		
EC2	Pre-construction Directly Connected Impervious Area (DCIA):		0.02 acres	100.00 %	
EC3	Soil Infiltration Potential	Data Source: ☐Existing Report / Soils Map ☐Field Verified	☐Good/Fair	☐Poor	☐Mixed
EC4	Depth to Maximum Groundwater	☐TBD	to	ft below grade	
EC5	Depth to Bedrock	☐TBD	to	ft below grade	
EC6	Aquifer Protection Area? (from PNDF)		☐Yes	☐No	
EC7	MS4 Priority Area? (from PNDF)		☐Yes (See Below)	☐No	
	Check All That Apply	☐Urbanized Area	☐DCIA >11%	☐Impaired Waterbody (See Below)	
	Select All Impairments That Apply	Choose an Item	Choose an Item	Choose an Item	
EC8	Contamination known or suspected to be present? (From Environmental Compliance)		☐Yes	☐No	
EC9	Adjoining DOT ROW beyond project limits available for stormwater quality management		acres		

Section 3: Designed Conditions

	Water Quality Calculations		**30% Design**		**60% Design**	**90% Design**	**FDP**
DC1	WQV retention design goal	☐ Full ☐ 1/2"-WQV	ac-ft	☐ TBD	ac-ft	ac-ft	ac-ft
DC2	WQV goal ***retained*** (refer to page 2)		ac-ft		ac-ft	ac-ft	ac-ft
DC3	WQV goal ***treated*** (refer to page 2)		ac-ft		ac-ft	ac-ft	ac-ft
DC4	Total WQV *retained and treated*		0 **ac-ft**		0 **ac-ft**	0 **ac-ft**	0 **ac-ft**
DC5	Post-construction DCIA(acres)		ac.	☐ TBD	ac.	ac.	0.0150 ac.
DC6	Pre-construction DCIA (refer to EC2 above)		ac.		ac.	ac.	0.00 ac.
DC7	Change in DCIA from pre- to post-construction *Can be positive (DCIA gained) or negative (DCIA lost)*		0 **ac.**	☐ **TBD**	0 **ac.**	0 **ac.**	0.0150 **ac.**
	Date completed						
	Completed by (initials)						
	Reviewed by (initials)						

Notes: DC7 - 0.0150367

Worksheet users should refer to the *CT DOT MS4 Project Design MEP Worksheet Instructions*

Section 4: Stormwater BMP Selection Summary						
Design Phase ☐30% ☐60% ☐90% ☐FDP	**WQV Retained (ac-ft)**	**WQV Treated (ac-ft)**	**DCIA Captured (Acres)**	**DCIA Disconnection Credit (%)**	**DCIA Disconnection Credit (acres)**	**Site Constraints**
Disconnection (Dispersion)						
						Choose an Item.
						Choose an Item.
						Choose an Item.
Conveyance (Swales / Channels)						
						Choose an Item.
						Choose an Item.
						Choose an Item.
Infiltration / Retention						
						Choose an Item.
						Choose an Item.
						Choose an Item.
						Choose an Item.
						Choose an Item.
						Choose an Item.
						Choose an Item.
Treatment						
						Choose an Item.
						Choose an Item.
						Choose an Item.
TOTAL	0	0	0	0	0	

Notes:

Worksheet users should refer to the *CT DOT MS4 Project Design MEP Worksheet Instructions.* Refer to the 2004 CT Stormwater Quality Manual for more information on BMP criteria and limitations.

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 1: Project Information	**Project #:**	NA
	Title:	Electrical Vehicle Charging Station
	Location:	I-95 Madison Southbound Service Plaza

Section 2: Existing Conditions

EC1	Total Project Area		0.02 acres		
EC2	Pre-construction Directly Connected Impervious Area (DCIA):		0.02 acres	100.00 %	
EC3	Soil Infiltration Potential	Data Source: ☐Existing Report / Soils Map ☐Field Verified	☐Good/Fair	☐Poor	☐Mixed
EC4	Depth to Maximum Groundwater	☐TBD	to	ft below grade	
EC5	Depth to Bedrock	☐TBD	to	ft below grade	
EC6	Aquifer Protection Area? (from PNDF)		☐Yes	☐No	
EC7	MS4 Priority Area? (from PNDF)		☐Yes (See Below)	☐No	
	Check All That Apply	☐Urbanized Area	☐DCIA >11%	☐Impaired Waterbody (See Below)	
	Select All Impairments That Apply	Choose an Item	Choose an Item	Choose an Item	
EC8	Contamination known or suspected to be present? (From Environmental Compliance)		☐Yes	☐No	
EC9	Adjoining DOT ROW beyond project limits available for stormwater quality management		acres		

Section 3: Designed Conditions

	Water Quality Calculations		**30% Design**		**60% Design**	**90% Design**	**FDP**
DC1	WQV retention design goal	☐ Full ☐ 1/2"-WQV	ac-ft	☐ TBD	ac-ft	ac-ft	ac-ft
DC2	WQV goal ***retained*** (refer to page 2)		ac-ft		ac-ft	ac-ft	ac-ft
DC3	WQV goal ***treated*** (refer to page 2)		ac-ft		ac-ft	ac-ft	ac-ft
DC4	Total WQV *retained and treated*		0 **ac-ft**		0 **ac-ft**	0 **ac-ft**	0 **ac-ft**
DC5	Post-construction DCIA(acres)		ac.	☐ TBD	ac.	ac.	0.0150 ac.
DC6	Pre-construction DCIA (refer to EC2 above)		ac.		ac.	ac.	0.00 ac.
DC7	Change in DCIA from pre- to post-construction *Can be positive (DCIA gained) or negative (DCIA lost)*		0 **ac.**	☐ **TBD**	0 **ac.**	0 **ac.**	0.0150 **ac.**
	Date completed						
	Completed by (initials)						
	Reviewed by (initials)						

Notes: DC7- 0.0150367

Worksheet users should refer to the *CT DOT MS4 Project Design MEP Worksheet Instructions*

Section 4: Stormwater BMP Selection Summary						
Design Phase ☐30% ☐60% ☐90% ☐FDP	**WQV Retained (ac-ft)**	**WQV Treated (ac-ft)**	**DCIA Captured (Acres)**	**DCIA Disconnection Credit (%)**	**DCIA Disconnection Credit (acres)**	**Site Constraints**
Disconnection (Dispersion)						
						Choose an Item.
						Choose an Item.
						Choose an Item.
Conveyance (Swales / Channels)						
						Choose an Item.
						Choose an Item.
						Choose an Item.
Infiltration / Retention						
						Choose an Item.
						Choose an Item.
						Choose an Item.
						Choose an Item.
						Choose an Item.
						Choose an Item.
						Choose an Item.
Treatment						
						Choose an Item.
						Choose an Item.
						Choose an Item.
TOTAL	0	0	0	0	0	

Notes:

Worksheet users should refer to the *CT DOT MS4 Project Design MEP Worksheet Instructions.* Refer to the 2004 CT Stormwater Quality Manual for more information on BMP criteria and limitations.

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 1: Project Information	**Project #:**	
	Title:	PROPOSED CTDOT COMMUTER LOT
	Location:	488 HARTFORD ROAD (CT ROUTE 71) & 57 VILLAGE SQUARE DRIVE - NEW BRITAIN,CT

Section 2: Existing Conditions

EC1	Total Project Area		5.10 acres		
EC2	Pre-construction Directly Connected Impervious Area (DCIA):		2.70 acres	52.94 %	
EC3	Soil Infiltration Potential	Data Source: ☑Existing Report / Soils Map ☐Field Verified	☐Good/Fair	☐Poor	☑Mixed
EC4	Depth to Maximum Groundwater	☑TBD	to	ft below grade	
EC5	Depth to Bedrock	☑TBD	to	ft below grade	
EC6	Aquifer Protection Area? (from PNDF)		☐Yes	☑No	
EC7	MS4 Priority Area? (from PNDF)		☑Yes (See Below)	☐No	
	Check All That Apply	☑Urbanized Area	☑DCIA >11%	☐Impaired Waterbody (See Below)	
	Select All Impairments That Apply	Choose an Item	Choose an Item	Choose an Item	
EC8	Contamination known or suspected to be present? (From Environmental Compliance)		☐Yes	☑No	
EC9	Adjoining DOT ROW beyond project limits available for stormwater quality management		0 acres		

Section 3: Designed Conditions

	Water Quality Calculations	30% Design		60% Design	90% Design	FDP
DC1	WQV retention design goal ☑ Full ☐ 1/2"-WQV	ac-ft	☐ TBD	ac-ft	ac-ft	.111 ac-ft
DC2	WQV goal ***retained*** (refer to page 2)	ac-ft		ac-ft	ac-ft	ac-ft
DC3	WQV goal ***treated*** (refer to page 2)	ac-ft		ac-ft	ac-ft	.134 ac-ft
DC4	Total WQV *retained and treated*	0 **ac-ft**		0 **ac-ft**	0 **ac-ft**	0.134 **ac-ft**
DC5	Post-construction DCIA(acres)	ac.	☐ TBD	ac.	ac.	1.4 ac.
DC6	Pre-construction DCIA (refer to EC2 above)	ac.		ac.	ac.	2.7 ac.
DC7	Change in DCIA from pre- to post-construction *Can be positive (DCIA gained) or negative (DCIA lost)*	0 **ac.**	☐ **TBD**	0 **ac.**	0 **ac.**	-1.3 **ac.**
	Date completed					4/10/2023
	Completed by (initials)					AMK
	Reviewed by (initials)					MRG

Notes: EXISTING PARKING AREA = +/-2.7 ACRES
PROPOSED PARKING AREA = +/-1.4 ACRES
EX WQV = 0.214 AC-FT
PR WQV = 0.111 AC-FT
* AVAILABLE STORAGE IN EXISTING DRY DETENTION BASIN = 0.134 AC-FT.

Worksheet users should refer to the *CT DOT MS4 Project Design MEP Worksheet Instructions*

Section 4: Stormwater BMP Selection Summary			
Design Phase ☐30% ☐60% ☐90% ☑FDP	**WQV Retained (ac-ft)**	**WQV Treated (ac-ft)**	**Site Constraints**
Disconnection			
No curb / natural dispersion			not applicable
Vegetative filter strip			not applicable
Other			not applicable
Conveyance & Disconnection			
Grass channel			other - describe in comment section
Water quality swale (dry)			other - describe in comment section
Other			other - describe in comment section
Infiltration / Retention			
Infiltration basin			not applicable
Infiltration trench			not applicable
Underground infiltration system			not applicable
Dry well			not applicable
Other			not applicable
Treatment			
Wet basin / wetland system			not applicable
Extended dry detention basin		.134	other - describe in comment section
Hydrodynamic-oil/grit sys.			other - describe in comment section
Bioretention with underdrain			not applicable
Other			not applicable
TOTAL	0	0.134	

Notes: EXISTING VORTECHNICS UNIT DISCHARGING INTO EXISTING DRY DETENTION BASIN THAT PROVIDES WATER QUALITY TREATMENT. PROPOSED CONDITIONS REDUCE THE CONTRIBUTING AREA WHICH ALLOWS THE BASIN TO TREAT THE WATER QUALITY VOLUME. EXISTING BASIN HAS A RAISED OUTLET CONTROL STRUCTURE AND IS GENERALLY OBSERVED DRY, WHICH INDICATES THAT INFILTRATION LIKELY OCCURS. THE VOLUME BELOW THE RAISED OUTLET EXCEEDS THE WATER QUALITY VOLUME, WHICH INDICATES THE DRY BASIN COULD PROVIDE WATER QUALITY TREATMENT.

Worksheet users should refer to the *CT DOT MS4 Project Design MEP Worksheet Instructions.* Refer to the 2004 CT Stormwater Quality Manual for more information on BMP criteria and limitations.

Water Quality Volume Calculations

Project: Proposed CTDOT Commuter Lot By: AMK Date: 4/10/23

488 Hartford Road (CT Route 71) & 57
Village Square Drive New
Location: Britain, CT Checked: Date:

Basin Name	EX CONDITIONS	PR CONDITIONS	
Rainfall, P	1.0 in.	1.0 in.	a
Area, A	2.70 ac	1.40 ac	b
Impervious Cover Area	2.70 ac	1.40 ac	c
% Impervious, I	100 %	100 %	
Volumetric Runoff Coeff., R	0.950	0.950	d
Water Quality Volume, WQV	0.214 ac-ft	0.111 ac-ft	e
	9311 cf	4828 cf	

a First one inch of rainfall; 2004 Connecticut Stormwater Quality Manual

b Area tributary to the stormwater management basin

c Impervious cover area tributary to the stormwater management basin

d R=0.05+0.009*I; Section 7.4.1 from 2004 Connecticut Stormwater Quality Manual

e WQV=P*R*A/12; Section 7.4.1 from 2004 Connecticut Stormwater Quality Manual

Stage-Area-Storage for Pond 1P: EXISTING DRY DETENTION BASIN (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
167.12	2,195	4,653
167.13	2,199	4,675
167.14	2,204	4,697
167.15	2,208	4,719
167.16	2,213	4,741
167.17	2,217	4,764
167.18	2,222	4,786
167.19	2,226	4,808
167.20	2,231	4,830
167.21	2,235	4,853
167.22	2,240	4,875
167.23	2,245	4,898
167.24	2,249	4,920
167.25	2,254	4,942
167.26	2,258	4,965
167.27	2,263	4,988
167.28	2,267	5,010
167.29	2,272	5,033
167.30	2,277	5,056
167.31	2,281	5,079
167.32	2,286	5,101
167.33	2,290	5,124
167.34	2,295	5,147
167.35	2,300	5,170
167.36	2,304	5,193
167.37	2,309	5,216
167.38	2,313	5,239
167.39	2,318	5,262
167.40	2,323	5,286
167.41	2,327	5,309
167.42	2,332	5,332
167.43	2,337	5,356
167.44	2,341	5,379
167.45	2,346	5,402
167.46	2,351	5,426
167.47	2,355	5,449
167.48	2,360	5,473
167.49	2,365	5,497
167.50	2,369	5,520
167.51	2,374	5,544
167.52	2,379	5,568
167.53	2,383	5,592
167.54	2,388	5,615
167.55	2,393	5,639
167.56	2,397	5,663
167.57	2,402	5,687
167.58	2,407	5,711
167.59	2,412	5,735
167.60	2,416	5,760
167.61	2,421	5,784
167.62	2,426	5,808
167.63	2,430	5,832
167.64	2,435	5,857
167.65	2,440	5,881
167.66	2,445	5,905
167.67	2,449	5,930
167.68	2,454	5,954
167.69	2,459	5,979
167.70	2,464	6,004
167.71	2,469	6,028
167.72	2,473	6,053
167.73	2,478	6,078
167.74	2,483	6,102
167.75	2,488	6,127
167.76	2,492	6,152
167.77	2,497	6,177
167.78	2,502	6,202
167.79	2,507	6,227
167.80	2,512	6,252
167.81	2,517	6,277
167.82	2,521	6,303
167.83	2,526	6,328
167.84	2,531	6,353
167.85	2,536	6,379
167.86	2,541	6,404
167.87	2,546	6,429
167.88	2,550	6,455
167.89	2,555	6,480
167.90	2,560	6,506
167.91	2,565	6,532
167.92	2,570	6,557
167.93	2,575	6,583
167.94	2,580	6,609
167.95	2,585	6,635
167.96	2,589	6,660
167.97	2,594	6,686
167.98	2,599	6,712
167.99	2,604	6,738
168.00	**2,609**	**6,764**

STORAGE VOLUME WITHIN EXISTING BASIN IS GREATER THAN PROPOSED CONDITIONS' REQ'D WATER QUALITY VOLUME.

RAISED OUTLET ELEVATION

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 1: Project Information	**Project #:**	51-273
	Title:	Maintenance Facility
	Location:	Farmington

Section 2: Existing Conditions

EC1	Total Project Area		4.72 acres		
EC2	Pre-construction Directly Connected Impervious Area (DCIA):		2.91 acres	61.65 %	
EC3	Soil Infiltration Potential	Data Source: ☑Existing Report / Soils Map ☐Field Verified	☐Good/Fair	☐Poor	☑Mixed
EC4	Depth to Maximum Groundwater	☐TBD	2 to 12 ft below grade		
EC5	Depth to Bedrock	☐TBD	n/a to n/a ft below grade		
EC6	Aquifer Protection Area? (from PNDF)		☐Yes	☑No	
EC7	MS4 Priority Area? (from PNDF)		☑Yes (See Below)	☐No	
	Check All That Apply	☑Urbanized Area	☑DCIA >11%	☐Impaired Waterbody (See Below)	
	Select All Impairments That Apply	Choose an Item	Choose an Item	Choose an Item	
EC8	Contamination known or suspected to be present? (From Environmental Compliance)		☑Yes	☐No	
EC9	Adjoining DOT ROW beyond project limits available for stormwater quality management		n/a acres		

Section 3: Designed Conditions

	Water Quality Calculations		**30% Design**		**60% Design**	**90% Design**	**FDP**
DC1	WQV retention design goal	☐ Full ☑ 1/2"-WQV	ac-ft	☐ TBD	ac-ft	ac-ft	.11 ac-ft
DC2	WQV goal ***retained*** (refer to page 2)		ac-ft		ac-ft	ac-ft	.0 ac-ft
DC3	WQV goal ***treated*** (refer to page 2)		ac-ft		ac-ft	ac-ft	.22 ac-ft
DC4	Total WQV *retained and treated*		0 **ac-ft**		0 **ac-ft**	0 **ac-ft**	0.22 **ac-ft**
DC5	Post-construction DCIA(acres)		ac.	☐ TBD	ac.	ac.	3.48 ac.
DC6	Pre-construction DCIA (refer to EC2 above)		ac.		ac.	ac.	2.91 ac.
DC7	Change in DCIA from pre- to post-construction *Can be positive (DCIA gained) or negative (DCIA lost)*		0 **ac.**	☐ **TBD**	0 **ac.**	0 **ac.**	.57 **ac.**
	Date completed		9/23/2022				
	Completed by (initials)		ME				
	Reviewed by (initials)						

Notes: The site has an area of LLAOEC and AOEC- see ENV-02 for details. Bedrock not hit with boring depths.

Worksheet users should refer to the *CT DOT MS4 Project Design MEP Worksheet Instructions*

Section 4: Stormwater BMP Selection Summary						
Design Phase ☐30% ☐60% ☐90% ☑FDP	**WQV Retained (ac-ft)**	**WQV Treated (ac-ft)**	**DCIA Captured (Acres)**	**DCIA Disconnection Credit (%)**	**DCIA Disconnection Credit (acres)**	**Site Constraints**
Disconnection (Dispersion)						
						other - describe in comment sect
						Choose an Item.
						Choose an Item.
Conveyance (Swales / Channels)						
						other - describe in comment sec
						Choose an Item.
						Choose an Item.
Infiltration / Retention						
						other - describe in comment sect
						Choose an Item.
						Choose an Item.
						Choose an Item.
						Choose an Item.
						Choose an Item.
						Choose an Item.
Treatment						
Basin		.22	2.82	0	0	Groundwater elevation less than
						Choose an Item.
						Choose an Item.
TOTAL	0	.22	2.82	0	0	

Notes:

2.82 Acres (DCIA) directed to wet basin.

Worksheet users should refer to the *CT DOT MS4 Project Design MEP Worksheet Instructions.* Refer to the 2004 CT Stormwater Quality Manual for more information on BMP criteria and limitations.

Appendix C – CTDOT MS4 Worksheets for Redevelopment Projects that Completed Final Design in Permit Year 5

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 1: Project Information

Project Number: 0022-0106

Title/Description: Maintenance Facility

Location: Canterbury

Section 2: Existing Conditions

EC1	Total Project Area			4.17 acres	
EC2	Pre-construction Total Impervious Area			2.44 acres	
EC3	Pre-Construction Disconnected Impervious Area			0 acres	
EC4	Pre-construction DCIA for the Project *(EC2 minus EC3)*			2.44 acres	58.51 % (EC4/EC1)
EC5	Soil Infiltration Potential	Data Source: ☐ Existing Report / Soils Map ☐ Field Verified		☐ Good/Fair ☐ Poor	☒ Mixed
EC6	Depth to Maximum Groundwater		☐ TBD	2.9 to 16.8 ft below grade	
EC7	Depth to Bedrock		☐ TBD	5 to 10 ft below grade	
EC8	Aquifer Protection Area? (from PNDF)			☐ Yes	☒ No
EC9	MS4 Priority Area? (from PNDF)			☒ Yes (See Below)	☐ No

Check All That Apply ☒ Urbanized Area ☒ DCIA >11% ☐ Impaired Waterbody (See Below)

Select All Impairments That Apply

EC10	Contamination known or suspected to be present? (From Environmental Compliance)	☒ Yes	☐ No
EC11	Adjoining DOT ROW beyond project limits available for stormwater quality management	n/a acres	

NOTES:

Original Version 3 worksheet completed by Facilities documented same wet basin but without taking any credit as allowed by the new CT DEEP Stormwater Quality Manual that became effective in April of 2024 and the accompanying New England Retrofit Manual. The design of the basin captures 1" but the WQV goal for the project was only 0.5". Taking credit per the wet basin DCIA reduction curve at a 1" deth of capture.

Worksheet users should refer to the current *CT DOT MS4 Project Design MEP Worksheet V4 Instructions*

Reference the CT DEEP Stormwater Quality Manual (SWQM) for design and the New England Stormwater Retrofit Manual for Crediting

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 3: Designed Conditions

Section 3A: Document Water Quality Volume (WQV) Retained and/or Treated (ac-ft)

	Water Quality Volume Documentation		30% Design		60% Design	90% Design	FDP	
DC1	WQV design goal	☐Full ☒½-WQV *(Full = EC4 % ≤ 40%)*	ac-ft	☐ TBD	ac-ft	ac-ft	0.12	ac-ft
DC2	WQV goal **retained** (refer to page 3)		ac-ft		ac-ft	ac-ft	0	ac-ft
DC3	WQV goal ***treated*** (refer to page 3)		ac-ft		ac-ft	ac-ft	0.24	ac-ft

Did the Project Retain and/or Treat the Entire WQV Goal? ☒Yes ☐No

Section 3B: Document Changes in Directly Connected Impervious Area (DCIA) Pre to Post Construction (acres)

	DCIA Documentation	30% Design		60% Design	90% Design	FDP	
DC4	Post-construction Total Impervious Area	ac.	☐ TBD	ac.	ac.	3.24	ac.
DC5	Post-construction DCIA before **new** BMPs	ac.	☐ TBD	ac.	ac.	3.24	ac.
DC6	DCIA Disconnected by new BMPs (from Pg 3)	ac.	☐ TBD	ac.	ac.	1.75	ac.
DC7	Final Post-construction DCIA *(DC5 minus DC6)*	ac.	☐ TBD	ac.	ac.	1.49	ac.
DC8	Pre-construction DCIA (refer to EC4 from Pg 1)	ac.		ac.	ac.	2.44	ac.
DC9	Change in DCIA from pre- to post-construction *(DC7 minus DC8) Can be positive (DCIA gained) or negative (DCIA lost)*	ac.	☐ TBD	ac.	ac.	-0.95	ac.
	Date completed			2.98		4/26/24	
	Completed by (initials)					D Imig	
	Reviewed by (initials)					D Imig	

NOTES:
Original Version 3 worksheet completed by Facilities documented same wet basin but without taking any credit as allowed by the new CT DEEP Stormwater Quality Manual that became effective in April of 2024 and the accompanying New England Retrofit Manual. The design of the basin captures 1" but the WQV goal for the project was only 0.5". Taking credit per the wet basin DCIA reduction curve at a 1" deth of capture.

Worksheet users should refer to the current *CT DOT MS4 Project Design MEP Worksheet V4 Instructions*

Reference the CT DEEP Stormwater Quality Manual (SWQM) for design and the New England Stormwater Retrofit Manual for Crediting

Section 4: Stormwater BMP Selection Summary											
Design Phase ☐30% ☐60% ☐90% ☐FDP	**BMP Type**	**WQV Retained* (ac-ft)**	**WQV Treated* (ac-ft)**	**DCIA Captured by BMP (ac)**	**Runoff Depth from DCIA Captured by BMP (in)**	**HSG Soil Type**	**DCIA Disconnection Credit (%)****	**DCIA Disconnection Credit (ac)**	**(TP) reduction %****	**(TSS) reduction %****	**(TN) reduction %***
BMP Category											
Treatment	Wet Pond	0	0.24	2.98	1.0	N/A	59	1.75	53	77	32
TOTAL		0	0.24					1.75			
		To Row DC2	***To Row DC3***					***To Row DC6***			

Describe Site Constraints Limiting BMP Implementation if applicable:

Other Notes:

* List the amount of the WQV the BMP is designed to retain or treat.

** Refer to the CT DEEP Stormwater Quality Manual (SWQM) Stormwater Manual (ct.gov) and New England Stormwater Retrofit Manual Stormwater Retrofit Manual (snepnetwork.org) to determine disconnection and pollutant removal percentages. BMPs should be designed to meet specific TP, TN and TSS pollutant reductions to the maximum extent practicable when the entire WQV cannot be retained. Pollutant Reduction Targets are: New Development TP 60%, TN 40%, TSS 90%. Redevelopment TP 50%, TN, 30% TSS 80%. (Page 48 of the SWQM)

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 1: Project Information		
	Project #:	0079-0245
	Title:	I-691 Eastbound to I-91 Northbound Interchange Improvements
	Location:	Meriden, Middletown

Section 2: Existing Conditions

EC1	Total Project Area		42.94 acres		
EC2	Pre-construction Directly Connected Impervious Area (DCIA):		20.38 acres	47.46 %	
EC3	Soil Infiltration Potential	Data Source: ☑Existing Report / Soils Map ☐Field Verified	☑Good/Fair	☐Poor	☐Mixed
EC4	Depth to Maximum Groundwater	☑TBD	to	ft below grade	
EC5	Depth to Bedrock	☑TBD	to	ft below grade	
EC6	Aquifer Protection Area? (from PNDF)		☐Yes	☑No	
EC7	MS4 Priority Area? (from PNDF)		☐Yes (See Below)	☑No	
	Check All That Apply	☑Urbanized Area	☑DCIA >11%	☐Impaired Waterbody (See Below)	
	Select All Impairments That Apply	Choose an Item	Choose an Item	Choose an Item	
EC8	Contamination known or suspected to be present? (From Environmental Compliance)		☐Yes	☑No	
EC9	Adjoining DOT ROW beyond project limits available for stormwater quality management		0 acres		

Section 3: Designed Conditions

	Water Quality Calculations		30% Design		60% Design	90% Design	FDP
DC1	WQV retention design goal	☐ Full ☑ 1/2"-WQV	0 ac-ft	☑ TBD	0.983 ac-ft	0.983 ac-ft	0.983 ac-ft
DC2	WQV goal ***retained*** (refer to page 2)		0 ac-ft		0.7015 ac-ft	0.403 ac-ft	0.403 ac-ft
DC3	WQV goal ***treated*** (refer to page 2)		0 ac-ft		.07040 ac-ft	0.074 ac-ft	0.070 ac-ft
DC4	Total WQV *retained and treated*		0 **ac-ft**		0.7719 **ac-ft**	0.477 **ac-ft**	0.473 **ac-ft**
DC5	Post-construction DCIA(acres)		0 ac.	☑ TBD	20.417 ac.	18.93 ac.	18.93 ac.
DC6	Pre-construction DCIA (refer to EC2 above)		0 ac.		20.385 ac.	20.38 ac.	20.38 ac.
DC7	Change in DCIA from pre- to post-construction *Can be positive (DCIA gained) or negative (DCIA lost)*		0 **ac.**	☑ **TBD**	0.032 **ac.**	-1.446 **ac.**	-1.446 **ac.**
	Date completed		06/16/2023		09/19/2023	10/20/2023	12/6/2023
	Completed by (initials)		LRC		LRC	LRC	LRC
	Reviewed by (initials)		RSG		RSG	RSG	RSG

Notes: See calculations for check dams. 2 Perforated CB Sumps and the removal of curbing has been added to this project.

Worksheet users should refer to the *CT DOT MS4 Project Design MEP Worksheet Instructions*

Section 4: Stormwater BMP Selection Summary						
Design Phase ☐30% ☐60% ☐90% ☑FDP	**WQV Retained (ac-ft)**	**WQV Treated (ac-ft)**	**DCIA Captured (Acres)**	**DCIA Disconnection Credit (%)**	**DCIA Disconnection Credit (acres)**	**Site Constraints**
Disconnection (Dispersion)						
Removal of Curbing	0.0704	0.0704	1.69	100%	1.69	Choose an Item.
						Choose an Item.
						Choose an Item.
Conveyance (Swales / Channels)						
						Choose an Item.
						Choose an Item.
						Choose an Item.
Infiltration / Retention						
Stone Check Dams	0.320	0	3.255	98.34%	3.201	Choose an Item.
Perforated CBs (2 Locations)	0.013	0	0	0%	0	Choose an Item.
						Choose an Item.
						Choose an Item.
						Choose an Item.
						Choose an Item.
						Choose an Item.
Treatment						
						Choose an Item.
						Choose an Item.
						Choose an Item.
TOTAL	0.4034	0.0704	4.945	198.34	4.891	

Notes:

See calculations for check dams. 2 Perforated CB Sumps and the removal of curbing has been added to this project.

Worksheet users should refer to the *CT DOT MS4 Project Design MEP Worksheet Instructions.* Refer to the 2004 CT Stormwater Quality Manual for more information on BMP criteria and limitations.

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 1: Project Information	**Project #:**	0034-0354
	Title:	Connecticut Route 53 Culvert Replacement
	Location:	City of Danbury

Section 2: Existing Conditions

EC1	Total Project Area			0.53 acres	
EC2	Pre-construction Directly Connected Impervious Area (DCIA):			0.44 acres	82.93 %
EC3	Soil Infiltration Potential	Data Source: ☑Existing Report / Soils Map ☐Field Verified		☑Good/Fair	☐Poor ☐Mixed
EC4	Depth to Maximum Groundwater		☐TBD	6 ft below grade	
EC5	Depth to Bedrock		☐TBD	>31 ft below grade	
EC6	Aquifer Protection Area? (from PNDF)			☐Yes	☑No
EC7	MS4 Priority Area? (from PNDF)			☑Yes (See Below)	☐No
	Check All That Apply	☑Urbanized Area	☑DCIA >11%	☐Impaired Waterbody (See Below)	
	Select All Impairments That Apply	Choose an Item	Choose an Item	Choose an Item	
EC8	Contamination known or suspected to be present? (From Environmental Compliance)			☐Yes	☑No
EC9	Adjoining DOT ROW beyond project limits available for stormwater quality management			0.00 acres	

Section 3: Designed Conditions

	Water Quality Calculations		**30% Design**		**60% Design**	**90% Design**	**FDP**
DC1	WQV retention design goal	☐ Full ☑ 1/2"-WQV	0.018 ac-ft	☐ TBD	ac-ft	0.014 ac-ft	.016 ac-ft
DC2	WQV goal ***retained*** (refer to page 2)		ac-ft		ac-ft	ac-ft	ac-ft
DC3	WQV goal ***treated*** (refer to page 2)		ac-ft		ac-ft	ac-ft	ac-ft
DC4	Total WQV *retained and treated*		0 **ac-ft**		0 **ac-ft**	0 **ac-ft**	0 **ac-ft**
DC5	Post-construction DCIA(acres)		0.397 ac.	☐ TBD	ac.	0.389 ac.	.433 ac.
DC6	Pre-construction DCIA (refer to EC2 above)		0.406 ac.		ac.	0.398 ac.	.442 ac.
DC7	Change in DCIA from pre- to post-construction *Can be positive (DCIA gained) or negative (DCIA lost)*		-0.00[illegible] **ac.**	☐ **TBD**	0 **ac.**	-0.009[illegible] **ac.**	-0.009[illegible] **ac.**
	Date completed		4/27/2022			8/02/2023	9/28/2023
	Completed by (initials)		NVZ			NVZ	NVZ
	Reviewed by (initials)		JJJ			JJJ	JJJ

Notes: For DC7, the loss in DCIA is due to existing paved areas being replaced with topsoil, particularly for the snow shelf along the northern side of the road. The EC1 value has increased since the 90% Design due to the paving limits being extended.

Worksheet users should refer to the *CT DOT MS4 Project Design MEP Worksheet Instructions*

Section 4: Stormwater BMP Selection Summary						
Design Phase ☐30% ☐60% ☑90% ☐FDP	**WQV Retained (ac-ft)**	**WQV Treated (ac-ft)**	**DCIA Captured (Acres)**	**DCIA Disconnection Credit (%)**	**DCIA Disconnection Credit (acres)**	**Site Constraints**
Disconnection (Dispersion)						
						Choose an Item.
						Choose an Item.
						Choose an Item.
Conveyance (Swales / Channels)						
						Choose an Item.
						Choose an Item.
						Choose an Item.
Infiltration / Retention						
						Choose an Item.
						Choose an Item.
						Choose an Item.
						Choose an Item.
						Choose an Item.
						Choose an Item.
						Choose an Item.
Treatment						
						Choose an Item.
						Choose an Item.
						Choose an Item.
TOTAL	0	0	0	0	0	

Notes:

The site is not suitable for a BMP due to the limited ROW, built-up roadside environment, and overall small project area. Additionally, there are

Worksheet users should refer to the *CT DOT MS4 Project Design MEP Worksheet Instructions.* Refer to the 2004 CT Stormwater Quality Manual for more information on BMP criteria and limitations.

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 1: Project Information	**Project #:**	079-0246
	Title:	I-91 / I-691 / Route 15 Improvements
	Location:	Meriden

Section 2: Existing Conditions

EC1	Total Project Area			152.81 acres	
EC2	Pre-construction Directly Connected Impervious Area (DCIA):			50.34 acres	32.94 %
EC3	Soil Infiltration Potential	Data Source: ☑Existing Report / Soils Map ☐Field Verified		☐Good/Fair	☑Poor ☐Mixed
EC4	Depth to Maximum Groundwater		☑TBD	to	ft below grade
EC5	Depth to Bedrock		☑TBD	to	ft below grade
EC6	Aquifer Protection Area? (from PNDF)			☐Yes	☑No
EC7	MS4 Priority Area? (from PNDF)			☑Yes (See Below)	☐No
	Check All That Apply	☑Urbanized Area	☑DCIA >11%	☑Impaired Waterbody (See Below)	
	Select All Impairments That Apply	Cause Unknown	Choose an Item	Choose an Item	
EC8	Contamination known or suspected to be present? (From Environmental Compliance)			☑Yes	☐No
EC9	Adjoining DOT ROW beyond project limits available for stormwater quality management			0 acres	

Section 3: Designed Conditions

	Water Quality Calculations	**30% Design**	**60% Design**	**90% Design**	**FDP**
DC1	WQV retention design goal ☑ Full ☐ 1/2"-WQV	ac-ft ☑ TBD	0.754 ac-ft	ac-ft	ac-ft
DC2	WQV goal ***retained*** (refer to page 2)	ac-ft	0 ac-ft	ac-ft	ac-ft
DC3	WQV goal ***treated*** (refer to page 2)	0.210 ac-ft	0.757 ac-ft	0.757 ac-ft	0.777 ac-ft
DC4	Total WQV *retained and treated*	**ac-ft**	0.757 **ac-ft**	0.757 **ac-ft**	0 **ac-ft**
DC5	Post-construction DCIA(acres)	ac. ☑ TBD	6.97 ac.	5.22 ac.	50.21 ac.
DC6	Pre-construction DCIA (refer to EC2 above)	ac.	6.75 ac.	6.75 ac.	50.34 ac.
DC7	Change in DCIA from pre- to post-construction *Can be positive (DCIA gained) or negative (DCIA lost)*	**ac.** ☑ **TBD**	0.22 **ac.**	-1.53 **ac.**	-0.13 **ac.**
	Date completed	9/12/2022	3/31/2023	6/12/2023	8/16/2023
	Completed by (initials)	JIG	JIG	EFC	EFC
	Reviewed by (initials)	PMB	PMB	PMB	PMB

Notes: Please see attached for additional information.

Worksheet users should refer to the *CT DOT MS4 Project Design MEP Worksheet Instructions*

Section 4: Stormwater BMP Selection Summary						
Design Phase ☐30% ☐60% ☐90% ☑FDP	**WQV Retained (ac-ft)**	**WQV Treated (ac-ft)**	**DCIA Captured (Acres)**	**DCIA Disconnection Credit (%)**	**DCIA Disconnection Credit (acres)**	**Site Constraints**
Disconnection (Dispersion)						
Remove curb where feasible						other - describe in comment sec
						Choose an Item.
						Choose an Item.
Conveyance (Swales / Channels)						
Swale 401		0.009	0.68	15%	0.10	Choose an Item.
Swale 402 & 405		0.008	0.54	15%	0.08	Choose an Item.
Swale 410B		0.003	0.25	15%	0.04	Choose an Item.
Infiltration / Retention						
Stormwater Management basin		0.757	7.70	100%	7.70	Choose an Item.
						Choose an Item.
						Choose an Item.
						Choose an Item.
						Choose an Item.
						Choose an Item.
						Choose an Item.
Treatment						
						Choose an Item.
						Choose an Item.
						Choose an Item.
TOTAL	0	.777	9.17	0	7.92	

Notes: This project includes substantial widening within an existing highway corridor. The widening will fill in some existing ditches and cut into existing embankments which will result in more proposed curbing/barriers than is present in existing conditions. Reducing the total amount of curb is generally not feasible due to the widening; however, a stormwater management basin is proposed which will disconnect a large amount of impervious area. Additionally in any location that allowed, swales were incorporated into the design.

Worksheet users should refer to the *CT DOT MS4 Project Design MEP Worksheet Instructions.* Refer to the 2004 CT Stormwater Quality Manual for more information on BMP criteria and limitations.

Project No. 0079-0246 Northbound Improvements to I-91, I-691 & Route 15 in Meriden, CT
MS4 Calculations

General Notes and Background:

Info Supporting MS4 Calculations (0079-0246 ONLY): Area have been calculated in Open Roads Designer, model files have been submitted with EED submission.

There are 21 ditches and swales within the project limits. All swales were evaluated for MS4 credit based on the one-sheet criteria. Only four swales that were not included in the SM-1 drainage area met all criteria. Many other swales were disqualified for not meeting only one criteria (typically side slope or depth of flow). Color coded data tables are included in this Appendix.

General Project Information

ROW Area (Existing & Proposed) 152.81 Acres

Existing Impervious (DCIA): 50.34 Acres (32.94%)

Proposed Impervious (TOTAL): 58.125 Acres (38.04%)

Proposed Impervious (DCIA - 100% Credit Basin & 15% Credit Swales): 50.21 Acres (32.86%)

Stormwater Management Basin (SM-1)

- 15.184 Acres = Total Contributing Area
- 7.699 Acres = Impervious Area

Eligible Swales

Swale 401

- 1.469 Acres = Total Contributing Area
- 0.679 Acres = Impervious Area

Swale 402

- 0.793 Acres = Total Contributing Area
- 0.329 Acres = Impervious Area

Swale 405

- 0.644 Acres = Total Contributing Area
- 0.212 Acres = Impervious Area

Swale 410B

- 0.775 Acres = Total Contributing Area
- 0.252 Acres = Impervious Area

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 1: Project Information	**Project #:**	0058-0338
	Title:	Culvert Replacement Under Route 215 at Anderson Marsh and Beebe Cove
	Location:	Town of Groton

Section 2: Existing Conditions

EC1	Total Project Area			1.26 acres		
EC2	Pre-construction Directly Connected Impervious Area (DCIA):			0.48 acres	38.10 %	
EC3	Soil Infiltration Potential	Data Source: ☑Existing Report / Soils Map ☐Field Verified		☑Good/Fair	☐Poor	☐Mixed
EC4	Depth to Maximum Groundwater		☑TBD	to		ft below grade
EC5	Depth to Bedrock		☐TBD	45 to 55		ft below grade
EC6	Aquifer Protection Area? (from PNDF)			☐Yes	☑No	
EC7	MS4 Priority Area? (from PNDF)			☑Yes (See Below)	☐No	
	Check All That Apply ☐Urbanized Area ☐DCIA >11% ☑Impaired Waterbody (See Below)					
	Select All Impairments That Apply Other Choose an Item Choose an Item					
EC8	Contamination known or suspected to be present? (From Environmental Compliance)			☑Yes	☐No	
EC9	Adjoining DOT ROW beyond project limits available for stormwater quality management			0 acres		

Section 3: Designed Conditions

	Water Quality Calculations		**30% Design**		**60% Design**	**90% Design**	**FDP**
DC1	WQV retention design goal	☑ Full ☐ 1/2"-WQV	.003 ac-ft	☐ TBD	ac-ft	.006 ac-ft	.006 ac-ft
DC2	WQV goal ***retained*** (refer to page 2)		0 ac-ft		ac-ft	0 ac-ft	0 ac-ft
DC3	WQV goal ***treated*** (refer to page 2)		0 ac-ft		ac-ft	0 ac-ft	0 ac-ft
DC4	Total WQV *retained and treated*		0 **ac-ft**		0 **ac-ft**	0 **ac-ft**	0 **ac-ft**
DC5	Post-construction DCIA(acres)		.049 ac.	☐ TBD	ac.	.055 ac.	.055 ac.
DC6	Pre-construction DCIA (refer to EC2 above)		.048 ac.		ac.	.048 ac.	.048 ac.
DC7	Change in DCIA from pre- to post-construction *Can be positive (DCIA gained) or negative (DCIA lost)*		0.001 **ac.**	☐ **TBD**	0 **ac.**	0.007 **ac.**	0.007 **ac.**
	Date completed		8/17/2022			7/11/2023	4/16/2024
	Completed by (initials)		JMM			JMM	JMM
	Reviewed by (initials)		JJJ			JJJ	JJJ

Notes: EC7: Impaired Water Body - Other : Not Supporting Harvesting for Direct Consumption.

Worksheet users should refer to the *CT DOT MS4 Project Design MEP Worksheet Instructions*

Section 4: Stormwater BMP Selection Summary						
Design Phase ☐30% ☐60% ☐90% ☑FDP	**WQV Retained (ac-ft)**	**WQV Treated (ac-ft)**	**DCIA Captured (Acres)**	**DCIA Disconnection Credit (%)**	**DCIA Disconnection Credit (acres)**	**Site Constraints**
Disconnection (Dispersion)						
						Choose an Item.
						Choose an Item.
						Choose an Item.
Conveyance (Swales / Channels)						
						Choose an Item.
						Choose an Item.
						Choose an Item.
Infiltration / Retention						
						Choose an Item.
						Choose an Item.
						Choose an Item.
						Choose an Item.
						Choose an Item.
						Choose an Item.
						Choose an Item.
Treatment						
						Choose an Item.
						Choose an Item.
						Choose an Item.
TOTAL	0	0	0	0	0	

Notes:

Worksheet users should refer to the *CT DOT MS4 Project Design MEP Worksheet Instructions.* Refer to the 2004 CT Stormwater Quality Manual for more information on BMP criteria and limitations.

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 1: Project Information		
	Project #:	0052-0092
	Title:	BRIDGE REPAIR FACILITY
	Location:	FRANKLIN

Section 2: Existing Conditions

EC1	Total Project Area		3.86 acres		
EC2	Pre-construction Directly Connected Impervious Area (DCIA):		1.82 acres	47.15 %	
EC3	Soil Infiltration Potential	Data Source: ☑Existing Report / Soils Map ☐Field Verified	☐Good/Fair	☐Poor	☑Mixed
EC4	Depth to Maximum Groundwater	☐TBD	2.9 to 16.8 ft below grade		
EC5	Depth to Bedrock	☐TBD	5 to 10 ft below grade		
EC6	Aquifer Protection Area? (from PNDF)		☐Yes	☑No	
EC7	MS4 Priority Area? (from PNDF)		☑Yes (See Below)	☐No	
	Check All That Apply	☑Urbanized Area	☑DCIA >11%	☐Impaired Waterbody (See Below)	
	Select All Impairments That Apply	Choose an Item	Choose an Item	Choose an Item	
EC8	Contamination known or suspected to be present? (From Environmental Compliance)		☑Yes	☐No	
EC9	Adjoining DOT ROW beyond project limits available for stormwater quality management		n/a acres		

Section 3: Designed Conditions

	Water Quality Calculations		30% Design		60% Design	90% Design	FDP	
DC1	WQV retention design goal	☐ Full ☑ 1/2"-WQV	ac-ft	☐ TBD	ac-ft	ac-ft	0.09	ac-ft
DC2	WQV goal ***retained*** (refer to page 2)		ac-ft		ac-ft	ac-ft	0.0	ac-ft
DC3	WQV goal ***treated*** (refer to page 2)		ac-ft		ac-ft	ac-ft	0.18	ac-ft
DC4	Total WQV *retained and treated*		0 **ac-ft**		0 **ac-ft**	0 **ac-ft**	0.18	**ac-ft**
DC5	Post-construction DCIA(acres)		ac.	☐ TBD	ac.	ac.	2.27	ac.
DC6	Pre-construction DCIA (refer to EC2 above)		ac.		ac.	ac.	1.82	ac.
DC7	Change in DCIA from pre- to post-construction *Can be positive (DCIA gained) or negative (DCIA lost)*		0 **ac.**	☐ **TBD**	0 **ac.**	0 **ac.**	0.45	**ac.**
	Date completed						08/24/2023	
	Completed by (initials)						DM	
	Reviewed by (initials)						ME	

Notes:

Select a site constraint from the drop down menu for each category (disconnection, conveyance, infiltration, treatment). We had a comment back in July that the project should maximize infiltration of roof areas by considering the use of small scale BMPS such as dry wells. Have you looked into it yet ? Contact the MS4 Program at DOT.MS4@ct.gov with any questions or for assistance with completing the worksheet.

Worksheet users should refer to the *CT DOT MS4 Project Design MEP Worksheet Instructions*

Section 4: Stormwater BMP Selection Summary						
Design Phase ☐30% ☐60% ☐90% ☐FDP	**WQV Retained (ac-ft)**	**WQV Treated (ac-ft)**	**DCIA Captured (Acres)**	**DCIA Disconnection Credit (%)**	**DCIA Disconnection Credit (acres)**	**Site Constraints**
Disconnection (Dispersion)						
						Choose an Item.
						Choose an Item.
						Choose an Item.
Conveyance (Swales / Channels)						
						Choose an Item.
						Choose an Item.
						Choose an Item.
Infiltration / Retention						
						Choose an Item.
						Choose an Item.
						Choose an Item.
						Choose an Item.
						Choose an Item.
						Choose an Item.
						Choose an Item.
Treatment						
Wet Basin		0.18	2.10	0	0	Groundwater elevation less than
						Choose an Item.
						Choose an Item.
TOTAL	0	0.18	2.1	0	0	

Notes:

2.10 Acres (DCIA) directed to wet basin.

Worksheet users should refer to the *CT DOT MS4 Project Design MEP Worksheet Instructions.* Refer to the 2004 CT Stormwater Quality Manual for more information on BMP criteria and limitations.

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 1: Project Information

Project Number: 0088-0201

Title/Description: Construction of Beeline Trail - Phase 2

Location: New Britain, Connecticut

Section 2: Existing Conditions

EC1	Total Project Area			1.26 acres	
EC2	Pre-construction Total Impervious Area			0.13 acres	
EC3	Pre-Construction Disconnected Impervious Area			0.00 acres	
EC4	Pre-construction DCIA for the Project *(EC2 minus EC3)*			0.13 acres	10 % (EC4/EC1)
EC5	Soil Infiltration Potential	Data Source: ☒ Existing Report / Soils Map ☐ Field Verified		☐ Good/Fair ☐ Poor	☒ Mixed
EC6	Depth to Maximum Groundwater		☐ TBD	10 to 11.5 ft below grade	
EC7	Depth to Bedrock		☒ TBD	_____ to _____ ft below grade	
EC8	Aquifer Protection Area? (from PNDF)			☐ Yes	☒ No
EC9	MS4 Priority Area? (from PNDF)			☒ Yes (See Below)	☐ No

Check All That Apply ☒ Urbanized Area ☒ DCIA >11% ☐ Impaired Waterbody (See Below)

Select All Impairments That Apply

EC10	Contamination known or suspected to be present? (From Environmental Compliance)	☐ Yes	☒ No
EC11	Adjoining DOT ROW beyond project limits available for stormwater quality management	0.00 acres	

NOTES:

Soil data (Depth to maximum groundwater, Soil infiltration potential) only near retaining wall.

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 3: Designed Conditions

Section 3A: Document Water Quality Volume (WQV) Retained and/or Treated (ac-ft)

	Water Quality Volume Documentation		30% Design		60% Design	90% Design	FDP
DC1	WQV design goal	☒Full ☐½-WQV *(Full = EC4 % ≤ 40%)*	ac-ft	☐ TBD	ac-ft	0.02 ac-ft	0.02 ac-ft
DC2	WQV goal **retained** (refer to page 3)			ac-ft	ac-ft	0.0 ac-ft	0.0 ac-ft
DC3	WQV goal ***treated*** (refer to page 3)			ac-ft	ac-ft	0.0 ac-ft	0.0 ac-ft

Did the Project Retain and/or Treat the Entire WQV Goal? ☐Yes ☒No

Section 3B: Document Changes in Directly Connected Impervious Area (DCIA) Pre to Post Construction (acres)

	DCIA Documentation	30% Design		60% Design	90% Design	FDP
DC4	Post-construction Total Impervious Area	ac.	☐ TBD	ac.	0.62 ac.	0.62 ac.
DC5	Post-construction DCIA before **new** BMPs	ac.	☐ TBD	ac.	0.46 ac.	0.46 ac.
DC6	DCIA Disconnected by new BMPs (from Pg 3)	ac.	☐ TBD	ac.	0.00 ac.	0.00 ac.
DC7	Final Post-construction DCIA *(DC5 minus DC6)*	ac.	☐ TBD	ac.	0.46 ac.	0.46 ac.
DC8	Pre-construction DCIA (refer to EC4 from Pg 1)		ac.	ac.	0.13 ac.	0.13 ac.
DC9	Change in DCIA from pre- to post-construction *(DC7 minus DC8) Can be positive (DCIA gained) or negative (DCIA lost)*	ac.	☐ TBD	ac.	0.33 ac.	0.33 ac.
	Date completed				05/02/2024	6/17/2024
	Completed by (initials)				BKM	BKM
	Reviewed by (initials)				SKB	SKB

NOTES:

Worksheet users should refer to the current *CT DOT MS4 Project Design MEP Worksheet V4 Instructions*

Reference the CT DEEP Stormwater Quality Manual (SWQM) for design and the New England Stormwater Retrofit Manual for Crediting

Section 4: Stormwater BMP Selection Summary											
Design Phase ☐30% ☐60% ☒90% ☐FDP	**BMP Type**	**WQV Retained* (ac-ft)**	**WQV Treated* (ac-ft)**	**DCIA Captured by BMP (ac)**	**Runoff Depth from DCIA Captured by BMP (in)**	**HSG Soil Type**	**DCIA Disconnection Credit (%)****	**DCIA Disconnection Credit (ac)**	**(TP) reduction %****	**(TSS) reduction %****	**(TN) reduction %***
BMP Category											
TOTAL		0	0					0			
		To Row DC2	***To Row DC3***					***To Row DC6***			

Describe Site Constraints Limiting BMP Implementation if applicable:

Small project area and no space for BMPs.

Other Notes:

* List the amount of the WQV the BMP is designed to retain or treat.

** Refer to the CT DEEP Stormwater Quality Manual (SWQM) Stormwater Manual (ct.gov) and New England Stormwater Retrofit Manual Stormwater Retrofit Manual (snepnetwork.org) to determine disconnection and pollutant removal percentages. BMPs should be designed to meet specific TP, TN and TSS pollutant reductions to the maximum extent practicable when the entire WQV cannot be retained. Pollutant Reduction Targets are: New Development TP 60%, TN 40%, TSS 90%. Redevelopment TP 50%, TN, 30% TSS 80%. (Page 48 of the SWQM)

Appendix D – MS4 Worksheets for Stand Alone Retrofit Projects in Preliminary Design

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 1: Project Information

Project Number: 0170-3744, GIS ID 170-PB-102

Title/Description: Multiple BMPs: 2300 LF of Water Quality Swale, (1) Leaching Basin

Location: Trumbull, Route 8, Mile Marker Range 4.15 - 4.6

Section 2: Existing Conditions

EC1	Total Project Area			TBD acres	
EC2	Pre-construction Total Impervious Area			TBD acres	
EC3	Pre-Construction Disconnected Impervious Area			TBD acres	
EC4	Pre-construction DCIA for the Project *(EC2 minus EC3)*			_____ acres	TBD % (EC4/EC1)
EC5	Soil Infiltration Potential	Data Source: ☐ Existing Report / Soils Map ☐ Field Verified		☐ Good/Fair ☐ Poor	☐ Mixed
EC6	Depth to Maximum Groundwater		☒ TBD	_____ to _____ ft below grade	
EC7	Depth to Bedrock		☒ TBD	_____ to _____ ft below grade	
EC8	Aquifer Protection Area? (from PNDF)			☐ Yes	☐ No
EC9	MS4 Priority Area? (from PNDF)			☐ Yes (See Below)	☐ No
	Check All That Apply ☐ Urbanized Area ☐ DCIA >11% ☐ Impaired Waterbody (See Below)				
	Select All Impairments That Apply				
EC10	Contamination known or suspected to be present? (From Environmental Compliance)			☐ Yes	☐ No
EC11	Adjoining DOT ROW beyond project limits available for stormwater quality management			_____ acres	

NOTES:

TBD - To Be Determined.

Worksheet users should refer to the current *CT DOT MS4 Project Design MEP Worksheet V4 Instructions*

Reference the CT DEEP Stormwater Quality Manual (SWQM) for design and the New England Stormwater Retrofit Manual for Crediting

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 3: Designed Conditions

Section 3A: Document Water Quality Volume (WQV) Retained and/or Treated (ac-ft)

	Water Quality Volume Documentation		30% Design		60% Design	90% Design	FDP
DC1	WQV design goal	☐Full ☐½-WQV *(Full = EC4 % ≤ 40%)*	ac-ft	☒ TBD	ac-ft	ac-ft	ac-ft
DC2	WQV goal **retained** (refer to page 3)		ac-ft		ac-ft	ac-ft	ac-ft
DC3	WQV goal ***treated*** (refer to page 3)		ac-ft		ac-ft	ac-ft	ac-ft

Did the Project Retain and/or Treat the Entire WQV Goal? ☐Yes ☐No

Section 3B: Document Changes in Directly Connected Impervious Area (DCIA) Pre to Post Construction (acres)

	DCIA Documentation	30% Design		60% Design	90% Design	FDP	
DC4	Post-construction Total Impervious Area	ac.	☒ TBD	ac.	ac.		ac.
DC5	Post-construction DCIA before **new** BMPs	ac.	☒ TBD	ac.	ac.		ac.
DC6	DCIA Disconnected by new BMPs (from Pg 3)	ac.	☒ TBD	ac.	ac.		ac.
DC7	Final Post-construction DCIA *(DC5 minus DC6)*	ac.	☒ TBD	ac.	ac.		ac.
DC8	Pre-construction DCIA (refer to EC4 from Pg 1)	ac.		ac.	ac.		ac.
DC9	Change in DCIA from pre- to post-construction *(DC7 minus DC8) Can be positive (DCIA gained) or negative (DCIA lost)*	-2.0 ac.	☐ TBD	ac.	ac.		ac.
	Date completed						
	Completed by (initials)						
	Reviewed by (initials)						

NOTES:

Worksheet users should refer to the current *CT DOT MS4 Project Design MEP Worksheet V4 Instructions*

Reference the CT DEEP Stormwater Quality Manual (SWQM) for design and the New England Stormwater Retrofit Manual for Crediting

Section 4: Stormwater BMP Selection Summary											
Design Phase ☐30% ☐60% ☐90% ☐FDP	**BMP Type**	**WQV Retained* (ac-ft)**	**WQV Treated* (ac-ft)**	**DCIA Captured by BMP (ac)**	**Runoff Depth from DCIA Captured by BMP (in)**	**HSG Soil Type**	**DCIA Disconnection Credit (%)****	**DCIA Disconnection Credit (ac)**	**(TP) reduction %****	**(TSS) reduction %****	**(TN) reduction %***
BMP Category											
Infiltration	Leaching Basin							0.5			
Infiltration	Swale							1.5	TBD	TBD	TBD
TOTAL		0	0					2			
		To Row DC2	***To Row DC3***					***To Row DC6***			

Describe Site Constraints Limiting BMP Implementation if applicable:

Other Notes:

* List the amount of the WQV the BMP is designed to retain or treat.

** Refer to the CT DEEP Stormwater Quality Manual (SWQM) Stormwater Manual (ct.gov) and New England Stormwater Retrofit Manual Stormwater Retrofit Manual (snepnetwork.org) to determine disconnection and pollutant removal percentages. BMPs should be designed to meet specific TP, TN and TSS pollutant reductions to the maximum extent practicable when the entire WQV cannot be retained. Pollutant Reduction Targets are: New Development TP 60%, TN 40%, TSS 90%. Redevelopment TP 50%, TN, 30% TSS 80%. (Page 48 of the SWQM)

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 1: Project Information

Project Number: 0170-3744 (GIS ID# 170-PB-35)

Title/Description: Infiltration Basin

Location: Norwich, I-395 & Route 642

Section 2: Existing Conditions

EC1	Total Project Area			TBD acres	
EC2	Pre-construction Total Impervious Area			TBD acres	
EC3	Pre-Construction Disconnected Impervious Area			TBD acres	
EC4	Pre-construction DCIA for the Project *(EC2 minus EC3)*			_____ acres	TBD % (EC4/EC1)
EC5	Soil Infiltration Potential	Data Source: ☐ Existing Report / Soils Map ☐ Field Verified		☐ Good/Fair ☐ Poor	☐ Mixed
EC6	Depth to Maximum Groundwater		☒ TBD	_____ to _____ ft below grade	
EC7	Depth to Bedrock		☒ TBD	_____ to _____ ft below grade	
EC8	Aquifer Protection Area? (from PNDF)			☐ Yes	☐ No
EC9	MS4 Priority Area? (from PNDF)			☐ Yes (See Below)	☐ No
	Check All That Apply ☐ Urbanized Area ☐ DCIA >11% ☐ Impaired Waterbody (See Below)				
	Select All Impairments That Apply				
EC10	Contamination known or suspected to be present? (From Environmental Compliance)			☐ Yes	☐ No
EC11	Adjoining DOT ROW beyond project limits available for stormwater quality management			_____ acres	

NOTES:

TBD - To Be Determined.

Worksheet users should refer to the current *CT DOT MS4 Project Design MEP Worksheet V4 Instructions*

Reference the CT DEEP Stormwater Quality Manual (SWQM) for design and the New England Stormwater Retrofit Manual for Crediting

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 3: Designed Conditions

Section 3A: Document Water Quality Volume (WQV) Retained and/or Treated (ac-ft)

	Water Quality Volume Documentation		30% Design		60% Design	90% Design	FDP
DC1	WQV design goal	☐Full ☐½-WQV *(Full = EC4 % ≤ 40%)*	ac-ft	☒ TBD	ac-ft	ac-ft	ac-ft
DC2	WQV goal **retained** (refer to page 3)		ac-ft		ac-ft	ac-ft	ac-ft
DC3	WQV goal ***treated*** (refer to page 3)		ac-ft		ac-ft	ac-ft	ac-ft

Did the Project Retain and/or Treat the Entire WQV Goal? ☐Yes ☐No

Section 3B: Document Changes in Directly Connected Impervious Area (DCIA) Pre to Post Construction (acres)

	DCIA Documentation	30% Design		60% Design	90% Design	FDP
DC4	Post-construction Total Impervious Area	ac.	☒ TBD	ac.	ac.	ac.
DC5	Post-construction DCIA before **new** BMPs	ac.	☒ TBD	ac.	ac.	ac.
DC6	DCIA Disconnected by new BMPs (from Pg 3)	ac.	☒ TBD	ac.	ac.	ac.
DC7	Final Post-construction DCIA *(DC5 minus DC6)*	ac.	☒ TBD	ac.	ac.	ac.
DC8	Pre-construction DCIA (refer to EC4 from Pg 1)	ac.		ac.	ac.	ac.
DC9	Change in DCIA from pre- to post-construction *(DC7 minus DC8) Can be positive (DCIA gained) or negative (DCIA lost)*	-1.8 ac.	☐ TBD	ac.	ac.	ac.
	Date completed					
	Completed by (initials)					
	Reviewed by (initials)					

NOTES:

Worksheet users should refer to the current *CT DOT MS4 Project Design MEP Worksheet V4 Instructions*

Reference the CT DEEP Stormwater Quality Manual (SWQM) for design and the New England Stormwater Retrofit Manual for Crediting

Section 4: Stormwater BMP Selection Summary											
Design Phase ☐30% ☐60% ☐90% ☐FDP	**BMP Type**	**WQV Retained* (ac-ft)**	**WQV Treated* (ac-ft)**	**DCIA Captured by BMP (ac)**	**Runoff Depth from DCIA Captured by BMP (in)**	**HSG Soil Type**	**DCIA Disconnection Credit (%)****	**DCIA Disconnection Credit (ac)**	**(TP) reduction %****	**(TSS) reduction %****	**(TN) reduction %***
BMP Category											
Infiltration	Basin							1.8	TBD	TBD	TBD
TOTAL		0	0					2			
		To Row DC2	***To Row DC3***					***To Row DC6***			

Describe Site Constraints Limiting BMP Implementation if applicable:

Other Notes:

* List the amount of the WQV the BMP is designed to retain or treat.

** Refer to the CT DEEP Stormwater Quality Manual (SWQM) Stormwater Manual (ct.gov) and New England Stormwater Retrofit Manual Stormwater Retrofit Manual (snepnetwork.org) to determine disconnection and pollutant removal percentages. BMPs should be designed to meet specific TP, TN and TSS pollutant reductions to the maximum extent practicable when the entire WQV cannot be retained. Pollutant Reduction Targets are: New Development TP 60%, TN 40%, TSS 90%. Redevelopment TP 50%, TN, 30% TSS 80%. (Page 48 of the SWQM)

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 1: Project Information

Project Number: 0170-3744 (GIS ID# 170-PB-138)

Title/Description: Infiltration Basin

Location: Bristol, Park & Ride Lot / Route 229 & Sunnydale

Section 2: Existing Conditions

EC1	Total Project Area			TBD acres	
EC2	Pre-construction Total Impervious Area			TBD acres	
EC3	Pre-Construction Disconnected Impervious Area			TBD acres	
EC4	Pre-construction DCIA for the Project *(EC2 minus EC3)*			_____ acres	TBD % (EC4/EC1)
EC5	Soil Infiltration Potential	Data Source: ☐ Existing Report / Soils Map ☐ Field Verified		☐ Good/Fair ☐ Poor	☐ Mixed
EC6	Depth to Maximum Groundwater		☒ TBD	_____ to _____ ft below grade	
EC7	Depth to Bedrock		☒ TBD	_____ to _____ ft below grade	
EC8	Aquifer Protection Area? (from PNDF)			☐ Yes	☐ No
EC9	MS4 Priority Area? (from PNDF)			☐ Yes (See Below)	☐ No
	Check All That Apply ☐ Urbanized Area ☐ DCIA >11% ☐ Impaired Waterbody (See Below)				
	Select All Impairments That Apply				
EC10	Contamination known or suspected to be present? (From Environmental Compliance)			☐ Yes	☐ No
EC11	Adjoining DOT ROW beyond project limits available for stormwater quality management			_____ acres	

NOTES:
TBD - To Be Determined.

Worksheet users should refer to the current *CT DOT MS4 Project Design MEP Worksheet V4 Instructions*

Reference the CT DEEP Stormwater Quality Manual (SWQM) for design and the New England Stormwater Retrofit Manual for Crediting

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 3: Designed Conditions

Section 3A: Document Water Quality Volume (WQV) Retained and/or Treated (ac-ft)

	Water Quality Volume Documentation		30% Design		60% Design	90% Design	FDP
DC1	WQV design goal	☐Full ☐½-WQV *(Full = EC4 % ≤ 40%)*	ac-ft	☒ TBD	ac-ft	ac-ft	ac-ft
DC2	WQV goal **retained** (refer to page 3)		ac-ft		ac-ft	ac-ft	ac-ft
DC3	WQV goal ***treated*** (refer to page 3)		ac-ft		ac-ft	ac-ft	ac-ft

Did the Project Retain and/or Treat the Entire WQV Goal? ☐Yes ☐No

Section 3B: Document Changes in Directly Connected Impervious Area (DCIA) Pre to Post Construction (acres)

	DCIA Documentation	30% Design		60% Design	90% Design	FDP	
DC4	Post-construction Total Impervious Area	ac.	☒ TBD	ac.	ac.		ac.
DC5	Post-construction DCIA before **new** BMPs	ac.	☒ TBD	ac.	ac.		ac.
DC6	DCIA Disconnected by new BMPs (from Pg 3)	ac.	☒ TBD	ac.	ac.		ac.
DC7	Final Post-construction DCIA *(DC5 minus DC6)*	ac.	☒ TBD	ac.	ac.		ac.
DC8	Pre-construction DCIA (refer to EC4 from Pg 1)	ac.		ac.	ac.		ac.
DC9	Change in DCIA from pre- to post-construction *(DC7 minus DC8) Can be positive (DCIA gained) or negative (DCIA lost)*	-2.4 ac.	☐ TBD	ac.	ac.		ac.
	Date completed						
	Completed by (initials)						
	Reviewed by (initials)						

NOTES:

Worksheet users should refer to the current *CT DOT MS4 Project Design MEP Worksheet V4 Instructions*

Reference the CT DEEP Stormwater Quality Manual (SWQM) for design and the New England Stormwater Retrofit Manual for Crediting

Section 4: Stormwater BMP Selection Summary											
Design Phase ☐30% ☐60% ☐90% ☐FDP	**BMP Type**	**WQV Retained* (ac-ft)**	**WQV Treated* (ac-ft)**	**DCIA Captured by BMP (ac)**	**Runoff Depth from DCIA Captured by BMP (in)**	**HSG Soil Type**	**DCIA Disconnection Credit (%)****	**DCIA Disconnection Credit (ac)**	**(TP) reduction %****	**(TSS) reduction %****	**(TN) reduction %***
BMP Category											
Infiltration	Basin							2.4	TBD	TBD	TBD
TOTAL		0	0					2			
		To Row DC2	***To Row DC3***					***To Row DC6***			

Describe Site Constraints Limiting BMP Implementation if applicable:

Other Notes:

* List the amount of the WQV the BMP is designed to retain or treat.

** Refer to the CT DEEP Stormwater Quality Manual (SWQM) Stormwater Manual (ct.gov) and New England Stormwater Retrofit Manual Stormwater Retrofit Manual (snepnetwork.org) to determine disconnection and pollutant removal percentages. BMPs should be designed to meet specific TP, TN and TSS pollutant reductions to the maximum extent practicable when the entire WQV cannot be retained. Pollutant Reduction Targets are: New Development TP 60%, TN 40%, TSS 90%. Redevelopment TP 50%, TN, 30% TSS 80%. (Page 48 of the SWQM)

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 1: Project Information

Project Number: 0170-3744 (GIS ID# 170-PB-128)

Title/Description: Multiple BMPs: 1200 LF WQ Swale, (3) Leaching Basins

Location: Killingly, I-395 Mile Marker Range 40.40 - 40.70

Section 2: Existing Conditions

EC1	Total Project Area			TBD acres	
EC2	Pre-construction Total Impervious Area			TBD acres	
EC3	Pre-Construction Disconnected Impervious Area			TBD acres	
EC4	Pre-construction DCIA for the Project *(EC2 minus EC3)*			_____ acres	TBD % (EC4/EC1)
EC5	Soil Infiltration Potential	Data Source: ☐ Existing Report / Soils Map ☐ Field Verified		☐ Good/Fair ☐ Poor	☐ Mixed
EC6	Depth to Maximum Groundwater		☒ TBD	_____ to _____ ft below grade	
EC7	Depth to Bedrock		☒ TBD	_____ to _____ ft below grade	
EC8	Aquifer Protection Area? (from PNDF)			☐ Yes	☐ No
EC9	MS4 Priority Area? (from PNDF)			☐ Yes (See Below)	☐ No

Check All That Apply ☐ Urbanized Area ☐ DCIA >11% ☐ Impaired Waterbody (See Below)

Select All Impairments That Apply

EC10	Contamination known or suspected to be present? (From Environmental Compliance)	☐ Yes	☐ No
EC11	Adjoining DOT ROW beyond project limits available for stormwater quality management	_____ acres	

NOTES:
TBD - To Be Determined.

Worksheet users should refer to the current *CT DOT MS4 Project Design MEP Worksheet V4 Instructions*

Reference the CT DEEP Stormwater Quality Manual (SWQM) for design and the New England Stormwater Retrofit Manual for Crediting

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 3: Designed Conditions

Section 3A: Document Water Quality Volume (WQV) Retained and/or Treated (ac-ft)

	Water Quality Volume Documentation		30% Design		60% Design	90% Design	FDP
DC1	WQV design goal	☐Full ☐½-WQV *(Full = EC4 % ≤ 40%)*	ac-ft	☒ TBD	ac-ft	ac-ft	ac-ft
DC2	WQV goal **retained** (refer to page 3)		ac-ft		ac-ft	ac-ft	ac-ft
DC3	WQV goal ***treated*** (refer to page 3)		ac-ft		ac-ft	ac-ft	ac-ft

Did the Project Retain and/or Treat the Entire WQV Goal? ☐Yes ☐No

Section 3B: Document Changes in Directly Connected Impervious Area (DCIA) Pre to Post Construction (acres)

	DCIA Documentation	30% Design		60% Design	90% Design	FDP	
DC4	Post-construction Total Impervious Area	ac.	☒ TBD	ac.	ac.		ac.
DC5	Post-construction DCIA before **new** BMPs	ac.	☒ TBD	ac.	ac.		ac.
DC6	DCIA Disconnected by new BMPs (from Pg 3)	ac.	☒ TBD	ac.	ac.		ac.
DC7	Final Post-construction DCIA *(DC5 minus DC6)*	ac.	☒ TBD	ac.	ac.		ac.
DC8	Pre-construction DCIA (refer to EC4 from Pg 1)	ac.		ac.	ac.		ac.
DC9	Change in DCIA from pre- to post-construction *(DC7 minus DC8) Can be positive (DCIA gained) or negative (DCIA lost)*	-1.5 ac.	☐ TBD	ac.	ac.		ac.
	Date completed						
	Completed by (initials)						
	Reviewed by (initials)						

NOTES:

Worksheet users should refer to the current *CT DOT MS4 Project Design MEP Worksheet V4 Instructions*

Reference the CT DEEP Stormwater Quality Manual (SWQM) for design and the New England Stormwater Retrofit Manual for Crediting

Section 4: Stormwater BMP Selection Summary											
Design Phase ☐30% ☐60% ☐90% ☐FDP	**BMP Type**	**WQV Retained* (ac-ft)**	**WQV Treated* (ac-ft)**	**DCIA Captured by BMP (ac)**	**Runoff Depth from DCIA Captured by BMP (in)**	**HSG Soil Type**	**DCIA Disconnection Credit (%)****	**DCIA Disconnection Credit (ac)**	**(TP) reduction %****	**(TSS) reduction %****	**(TN) reduction %***
BMP Category											
Infiltration	Swale							1.0	TBD	TBD	TBD
Infiltration	Leaching Basins							0.5			
TOTAL		0	0					2			
		To Row DC2	***To Row DC3***					***To Row DC6***			

Describe Site Constraints Limiting BMP Implementation if applicable:

Other Notes:

* List the amount of the WQV the BMP is designed to retain or treat.

** Refer to the CT DEEP Stormwater Quality Manual (SWQM) Stormwater Manual (ct.gov) and New England Stormwater Retrofit Manual Stormwater Retrofit Manual (snepnetwork.org) to determine disconnection and pollutant removal percentages. BMPs should be designed to meet specific TP, TN and TSS pollutant reductions to the maximum extent practicable when the entire WQV cannot be retained. Pollutant Reduction Targets are: New Development TP 60%, TN 40%, TSS 90%. Redevelopment TP 50%, TN, 30% TSS 80%. (Page 48 of the SWQM)

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 1: Project Information

Project Number: 0170-3744 (GIS ID# 170-PB-93)

Title/Description: Infiltration Basin

Location: Naugatuck, Route 8 & Route 847

Section 2: Existing Conditions

EC1	Total Project Area			TBD acres	
EC2	Pre-construction Total Impervious Area			TBD acres	
EC3	Pre-Construction Disconnected Impervious Area			TBD acres	
EC4	Pre-construction DCIA for the Project *(EC2 minus EC3)*			_____ acres	TBD % (EC4/EC1)
EC5	Soil Infiltration Potential	Data Source: ☐ Existing Report / Soils Map ☐ Field Verified		☐ Good/Fair ☐ Poor	☐ Mixed
EC6	Depth to Maximum Groundwater		☒ TBD	_____ to _____ ft below grade	
EC7	Depth to Bedrock		☒ TBD	_____ to _____ ft below grade	
EC8	Aquifer Protection Area? (from PNDF)			☐ Yes	☐ No
EC9	MS4 Priority Area? (from PNDF)			☐ Yes (See Below)	☐ No

Check All That Apply ☐ Urbanized Area ☐ DCIA >11% ☐ Impaired Waterbody (See Below)

Select All Impairments That Apply

EC10	Contamination known or suspected to be present? (From Environmental Compliance)	☐ Yes	☐ No
EC11	Adjoining DOT ROW beyond project limits available for stormwater quality management	_____ acres	

NOTES:
TBD - To Be Determined.

Worksheet users should refer to the current *CT DOT MS4 Project Design MEP Worksheet V4 Instructions*

Reference the CT DEEP Stormwater Quality Manual (SWQM) for design and the New England Stormwater Retrofit Manual for Crediting

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 3: Designed Conditions

Section 3A: Document Water Quality Volume (WQV) Retained and/or Treated (ac-ft)

	Water Quality Volume Documentation		30% Design		60% Design	90% Design	FDP
DC1	WQV design goal	☐Full ☐½-WQV *(Full = EC4 % ≤ 40%)*	ac-ft	☒ TBD	ac-ft	ac-ft	ac-ft
DC2	WQV goal **retained** (refer to page 3)		ac-ft		ac-ft	ac-ft	ac-ft
DC3	WQV goal ***treated*** (refer to page 3)		ac-ft		ac-ft	ac-ft	ac-ft

Did the Project Retain and/or Treat the Entire WQV Goal? ☐Yes ☐No

Section 3B: Document Changes in Directly Connected Impervious Area (DCIA) Pre to Post Construction (acres)

	DCIA Documentation	30% Design		60% Design	90% Design	FDP	
DC4	Post-construction Total Impervious Area	ac.	☒ TBD	ac.	ac.		ac.
DC5	Post-construction DCIA before **new** BMPs	ac.	☒ TBD	ac.	ac.		ac.
DC6	DCIA Disconnected by new BMPs (from Pg 3)	ac.	☒ TBD	ac.	ac.		ac.
DC7	Final Post-construction DCIA *(DC5 minus DC6)*	ac.	☒ TBD	ac.	ac.		ac.
DC8	Pre-construction DCIA (refer to EC4 from Pg 1)	-5.0	ac.	ac.	ac.		ac.
DC9	Change in DCIA from pre- to post-construction *(DC7 minus DC8) Can be positive (DCIA gained) or negative (DCIA lost)*	ac.	☐ TBD	ac.	ac.		ac.
	Date completed						
	Completed by (initials)						
	Reviewed by (initials)						

NOTES:

Worksheet users should refer to the current *CT DOT MS4 Project Design MEP Worksheet V4 Instructions*

Reference the CT DEEP Stormwater Quality Manual (SWQM) for design and the New England Stormwater Retrofit Manual for Crediting

Section 4: Stormwater BMP Selection Summary											
Design Phase ☐30% ☐60% ☐90% ☐FDP	**BMP Type**	**WQV Retained* (ac-ft)**	**WQV Treated* (ac-ft)**	**DCIA Captured by BMP (ac)**	**Runoff Depth from DCIA Captured by BMP (in)**	**HSG Soil Type**	**DCIA Disconnection Credit (%)****	**DCIA Disconnection Credit (ac)**	**(TP) reduction %****	**(TSS) reduction %****	**(TN) reduction %***
BMP Category											
Infiltration	Basin							5.0	TBD	TBD	TBD
TOTAL		0	0					2			
		To Row DC2	***To Row DC3***					***To Row DC6***			

Describe Site Constraints Limiting BMP Implementation if applicable:

Other Notes:

* List the amount of the WQV the BMP is designed to retain or treat.

** Refer to the CT DEEP Stormwater Quality Manual (SWQM) Stormwater Manual (ct.gov) and New England Stormwater Retrofit Manual Stormwater Retrofit Manual (snepnetwork.org) to determine disconnection and pollutant removal percentages. BMPs should be designed to meet specific TP, TN and TSS pollutant reductions to the maximum extent practicable when the entire WQV cannot be retained. Pollutant Reduction Targets are: New Development TP 60%, TN 40%, TSS 90%. Redevelopment TP 50%, TN, 30% TSS 80%. (Page 48 of the SWQM)

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 1: Project Information

Project Number: 0170-3744 (GIS ID# 170-PB-162)

Title/Description: Multiple BMPs: 4800 LF of Water Quality Swale, 4 Leaching Basins

Location: Meriden, I - 691 Apprx. Mile Marker Range 3.6 - 2.4

Section 2: Existing Conditions

EC1	Total Project Area			TBD acres	
EC2	Pre-construction Total Impervious Area			TBD acres	
EC3	Pre-Construction Disconnected Impervious Area			TBD acres	
EC4	Pre-construction DCIA for the Project *(EC2 minus EC3)*			_____ acres	_____ % (EC4/EC1)
EC5	Soil Infiltration Potential	Data Source: ☐ Existing Report / Soils Map ☐ Field Verified		☐ Good/Fair ☐ Poor	☐ Mixed
EC6	Depth to Maximum Groundwater		☒ TBD	_____ to _____ ft below grade	
EC7	Depth to Bedrock		☒ TBD	_____ to _____ ft below grade	
EC8	Aquifer Protection Area? (from PNDF)			☐ Yes	☐ No
EC9	MS4 Priority Area? (from PNDF)			☐ Yes (See Below)	☐ No

Check All That Apply ☐ Urbanized Area ☐ DCIA >11% ☐ Impaired Waterbody (See Below)

Select All Impairments That Apply

EC10	Contamination known or suspected to be present? (From Environmental Compliance)	☐ Yes	☐ No
EC11	Adjoining DOT ROW beyond project limits available for stormwater quality management	_____ acres	

NOTES:
TBD - To Be Determined.

Worksheet users should refer to the current *CT DOT MS4 Project Design MEP Worksheet V4 Instructions*

Reference the CT DEEP Stormwater Quality Manual (SWQM) for design and the New England Stormwater Retrofit Manual for Crediting

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 3: Designed Conditions

Section 3A: Document Water Quality Volume (WQV) Retained and/or Treated (ac-ft)

	Water Quality Volume Documentation		30% Design		60% Design	90% Design	FDP
DC1	WQV design goal	☐Full ☐½-WQV *(Full = EC4 % ≤ 40%)*	ac-ft	☒ TBD	ac-ft	ac-ft	ac-ft
DC2	WQV goal **retained** (refer to page 3)		ac-ft		ac-ft	ac-ft	ac-ft
DC3	WQV goal ***treated*** (refer to page 3)		ac-ft		ac-ft	ac-ft	ac-ft

Did the Project Retain and/or Treat the Entire WQV Goal? ☐Yes ☐No

Section 3B: Document Changes in Directly Connected Impervious Area (DCIA) Pre to Post Construction (acres)

	DCIA Documentation	30% Design		60% Design	90% Design	FDP
DC4	Post-construction Total Impervious Area	ac.	☒ TBD	ac.	ac.	ac.
DC5	Post-construction DCIA before **new** BMPs	ac.	☒ TBD	ac.	ac.	ac.
DC6	DCIA Disconnected by new BMPs (from Pg 3)	ac.	☒ TBD	ac.	ac.	ac.
DC7	Final Post-construction DCIA *(DC5 minus DC6)*	ac.	☒ TBD	ac.	ac.	ac.
DC8	Pre-construction DCIA (refer to EC4 from Pg 1)	ac.		ac.	ac.	ac.
DC9	Change in DCIA from pre- to post-construction *(DC7 minus DC8) Can be positive (DCIA gained) or negative (DCIA lost)*	-6.8 ac.	☐ TBD	ac.	ac.	ac.
	Date completed					
	Completed by (initials)					
	Reviewed by (initials)					

NOTES:

Worksheet users should refer to the current *CT DOT MS4 Project Design MEP Worksheet V4 Instructions*

Reference the CT DEEP Stormwater Quality Manual (SWQM) for design and the New England Stormwater Retrofit Manual for Crediting

Section 4: Stormwater BMP Selection Summary											
Design Phase ☐30% ☐60% ☐90% ☐FDP	**BMP Type**	**WQV Retained* (ac-ft)**	**WQV Treated* (ac-ft)**	**DCIA Captured by BMP (ac)**	**Runoff Depth from DCIA Captured by BMP (in)**	**HSG Soil Type**	**DCIA Disconnection Credit (%)****	**DCIA Disconnection Credit (ac)**	**(TP) reduction %****	**(TSS) reduction %****	**(TN) reduction %***
BMP Category											
Infiltration	Swale							4.5	TBD	TBD	TBD
Infiltration	Leaching Basins							2.0			
TOTAL		0	0					2			
		To Row DC2	***To Row DC3***					***To Row DC6***			

Describe Site Constraints Limiting BMP Implementation if applicable:

Other Notes:

* List the amount of the WQV the BMP is designed to retain or treat.

** Refer to the CT DEEP Stormwater Quality Manual (SWQM) Stormwater Manual (ct.gov) and New England Stormwater Retrofit Manual Stormwater Retrofit Manual (snepnetwork.org) to determine disconnection and pollutant removal percentages. BMPs should be designed to meet specific TP, TN and TSS pollutant reductions to the maximum extent practicable when the entire WQV cannot be retained. Pollutant Reduction Targets are: New Development TP 60%, TN 40%, TSS 90%. Redevelopment TP 50%, TN, 30% TSS 80%. (Page 48 of the SWQM)

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 1: Project Information

Project Number: 0170-3744 (GIS ID# 170-PB-143)

Title/Description: Multiple BMPs:(1) Infiltration Trench, (3) Sections of Water Quality Swales, (2) L Basins

Location: Manchester, I-384 at Gardner Street

Section 2: Existing Conditions

EC1	Total Project Area			TBD acres	
EC2	Pre-construction Total Impervious Area			TBD acres	
EC3	Pre-Construction Disconnected Impervious Area			TBD acres	
EC4	Pre-construction DCIA for the Project *(EC2 minus EC3)*			_____ acres	TBD % (EC4/EC1)
EC5	Soil Infiltration Potential	Data Source: ☐ Existing Report / Soils Map ☐ Field Verified		☐ Good/Fair ☐ Poor	☐ Mixed
EC6	Depth to Maximum Groundwater		☒ TBD	_____ to _____ ft below grade	
EC7	Depth to Bedrock		☒ TBD	_____ to _____ ft below grade	
EC8	Aquifer Protection Area? (from PNDF)			☐ Yes	☐ No
EC9	MS4 Priority Area? (from PNDF)			☐ Yes (See Below)	☐ No

Check All That Apply ☐ Urbanized Area ☐ DCIA >11% ☐ Impaired Waterbody (See Below)

Select All Impairments That Apply

EC10	Contamination known or suspected to be present? (From Environmental Compliance)	☐ Yes	☐ No
EC11	Adjoining DOT ROW beyond project limits available for stormwater quality management	_____ acres	

NOTES:
TBD - To Be Determined.

Worksheet users should refer to the current *CT DOT MS4 Project Design MEP Worksheet V4 Instructions*

Reference the CT DEEP Stormwater Quality Manual (SWQM) for design and the New England Stormwater Retrofit Manual for Crediting

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 3: Designed Conditions

Section 3A: Document Water Quality Volume (WQV) Retained and/or Treated (ac-ft)

	Water Quality Volume Documentation		30% Design		60% Design	90% Design	FDP
DC1	WQV design goal	☐Full ☐½-WQV *(Full = EC4 % ≤ 40%)*	ac-ft	☒ TBD	ac-ft	ac-ft	ac-ft
DC2	WQV goal **retained** (refer to page 3)		ac-ft		ac-ft	ac-ft	ac-ft
DC3	WQV goal ***treated*** (refer to page 3)		ac-ft		ac-ft	ac-ft	ac-ft

Did the Project Retain and/or Treat the Entire WQV Goal? ☐Yes ☐No

Section 3B: Document Changes in Directly Connected Impervious Area (DCIA) Pre to Post Construction (acres)

	DCIA Documentation	30% Design		60% Design	90% Design	FDP	
DC4	Post-construction Total Impervious Area	ac.	☒ TBD	ac.	ac.		ac.
DC5	Post-construction DCIA before **new** BMPs	ac.	☒ TBD	ac.	ac.		ac.
DC6	DCIA Disconnected by new BMPs (from Pg 3)	ac.	☒ TBD	ac.	ac.		ac.
DC7	Final Post-construction DCIA *(DC5 minus DC6)*	ac.	☒ TBD	ac.	ac.		ac.
DC8	Pre-construction DCIA (refer to EC4 from Pg 1)	ac.		ac.	ac.		ac.
DC9	Change in DCIA from pre- to post-construction *(DC7 minus DC8) Can be positive (DCIA gained) or negative (DCIA lost)*	-3.0 ac.	☐ TBD	ac.	ac.		ac.
	Date completed						
	Completed by (initials)						
	Reviewed by (initials)						

NOTES:

Worksheet users should refer to the current *CT DOT MS4 Project Design MEP Worksheet V4 Instructions*

Reference the CT DEEP Stormwater Quality Manual (SWQM) for design and the New England Stormwater Retrofit Manual for Crediting

Section 4: Stormwater BMP Selection Summary											
Design Phase ☐30% ☐60% ☐90% ☐FDP	**BMP Type**	**WQV Retained* (ac-ft)**	**WQV Treated* (ac-ft)**	**DCIA Captured by BMP (ac)**	**Runoff Depth from DCIA Captured by BMP (in)**	**HSG Soil Type**	**DCIA Disconnection Credit (%)****	**DCIA Disconnection Credit (ac)**	**(TP) reduction %****	**(TSS) reduction %****	**(TN) reduction %***
BMP Category											
Infiltration	Swale							2.4	TBD	TBD	TBD
Infiltration	Leaching Basins							0.6			
TOTAL		0	0					2			
		To Row DC2	***To Row DC3***					***To Row DC6***			

Describe Site Constraints Limiting BMP Implementation if applicable:

Other Notes:

* List the amount of the WQV the BMP is designed to retain or treat.

** Refer to the CT DEEP Stormwater Quality Manual (SWQM) Stormwater Manual (ct.gov) and New England Stormwater Retrofit Manual Stormwater Retrofit Manual (snepnetwork.org) to determine disconnection and pollutant removal percentages. BMPs should be designed to meet specific TP, TN and TSS pollutant reductions to the maximum extent practicable when the entire WQV cannot be retained. Pollutant Reduction Targets are: New Development TP 60%, TN 40%, TSS 90%. Redevelopment TP 50%, TN, 30% TSS 80%. (Page 48 of the SWQM)

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 1: Project Information

Project Number: 0170-3744(GIS ID# 170-PB-149)

Title/Description: Infiltration Basin

Location: Bridgeport, I-95 Mile Marker 31.07, Southwest of Bridge 00122 over Route 113

Section 2: Existing Conditions

EC1	Total Project Area			TBD acres	
EC2	Pre-construction Total Impervious Area			TBD acres	
EC3	Pre-Construction Disconnected Impervious Area			TBD acres	
EC4	Pre-construction DCIA for the Project *(EC2 minus EC3)*			_____ acres	TBD % (EC4/EC1)
EC5	Soil Infiltration Potential	Data Source: ☐ Existing Report / Soils Map ☐ Field Verified		☐ Good/Fair ☐ Poor	☐ Mixed
EC6	Depth to Maximum Groundwater		☒ TBD	_____ to _____ ft below grade	
EC7	Depth to Bedrock		☒ TBD	_____ to _____ ft below grade	
EC8	Aquifer Protection Area? (from PNDF)			☐ Yes	☐ No
EC9	MS4 Priority Area? (from PNDF)			☐ Yes (See Below)	☐ No

Check All That Apply ☐ Urbanized Area ☐ DCIA >11% ☐ Impaired Waterbody (See Below)

Select All Impairments That Apply

EC10	Contamination known or suspected to be present? (From Environmental Compliance)	☐ Yes	☐ No
EC11	Adjoining DOT ROW beyond project limits available for stormwater quality management	_____ acres	

NOTES:
TBD - To Be Determined.

Worksheet users should refer to the current *CT DOT MS4 Project Design MEP Worksheet V4 Instructions*

Reference the CT DEEP Stormwater Quality Manual (SWQM) for design and the New England Stormwater Retrofit Manual for Crediting

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 3: Designed Conditions

Section 3A: Document Water Quality Volume (WQV) Retained and/or Treated (ac-ft)

	Water Quality Volume Documentation		30% Design		60% Design	90% Design	FDP
DC1	WQV design goal	☐Full ☐½-WQV *(Full = EC4 % ≤ 40%)*	ac-ft	☒ TBD	ac-ft	ac-ft	ac-ft
DC2	WQV goal **retained** (refer to page 3)		ac-ft		ac-ft	ac-ft	ac-ft
DC3	WQV goal ***treated*** (refer to page 3)		ac-ft		ac-ft	ac-ft	ac-ft

Did the Project Retain and/or Treat the Entire WQV Goal? ☐Yes ☐No

Section 3B: Document Changes in Directly Connected Impervious Area (DCIA) Pre to Post Construction (acres)

	DCIA Documentation	30% Design		60% Design	90% Design	FDP	
DC4	Post-construction Total Impervious Area	ac.	☒ TBD	ac.	ac.		ac.
DC5	Post-construction DCIA before **new** BMPs	ac.	☒ TBD	ac.	ac.		ac.
DC6	DCIA Disconnected by new BMPs (from Pg 3)	ac.	☒ TBD	ac.	ac.		ac.
DC7	Final Post-construction DCIA *(DC5 minus DC6)*	ac.	☒ TBD	ac.	ac.		ac.
DC8	Pre-construction DCIA (refer to EC4 from Pg 1)	ac.		ac.	ac.		ac.
DC9	Change in DCIA from pre- to post-construction *(DC7 minus DC8) Can be positive (DCIA gained) or negative (DCIA lost)*	-1.5 ac.	☐ TBD	ac.	ac.		ac.
	Date completed						
	Completed by (initials)						
	Reviewed by (initials)						

NOTES:

Worksheet users should refer to the current *CT DOT MS4 Project Design MEP Worksheet V4 Instructions*

Reference the CT DEEP Stormwater Quality Manual (SWQM) for design and the New England Stormwater Retrofit Manual for Crediting

Section 4: Stormwater BMP Selection Summary											
Design Phase ☐30% ☐60% ☐90% ☐FDP	**BMP Type**	**WQV Retained* (ac-ft)**	**WQV Treated* (ac-ft)**	**DCIA Captured by BMP (ac)**	**Runoff Depth from DCIA Captured by BMP (in)**	**HSG Soil Type**	**DCIA Disconnection Credit (%)****	**DCIA Disconnection Credit (ac)**	**(TP) reduction %****	**(TSS) reduction %****	**(TN) reduction %***
BMP Category											
Infiltration	Basin							1.5	TBD	TBD	TBD
TOTAL		0	0					2			
		To Row DC2	***To Row DC3***					***To Row DC6***			

Describe Site Constraints Limiting BMP Implementation if applicable:

Other Notes:

* List the amount of the WQV the BMP is designed to retain or treat.

** Refer to the CT DEEP Stormwater Quality Manual (SWQM) Stormwater Manual (ct.gov) and New England Stormwater Retrofit Manual Stormwater Retrofit Manual (snepnetwork.org) to determine disconnection and pollutant removal percentages. BMPs should be designed to meet specific TP, TN and TSS pollutant reductions to the maximum extent practicable when the entire WQV cannot be retained. Pollutant Reduction Targets are: New Development TP 60%, TN 40%, TSS 90%. Redevelopment TP 50%, TN, 30% TSS 80%. (Page 48 of the SWQM)

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 1: Project Information

Project Number: 0170-3744 (GIS ID# 170-PB-186)

Title/Description: Infiltration Trench

Location: Ansonia, Route 8 Mile Marker 15.83, South of Bridge # 02999

Section 2: Existing Conditions

EC1	Total Project Area			TBD acres	
EC2	Pre-construction Total Impervious Area			TBD acres	
EC3	Pre-Construction Disconnected Impervious Area			TBD acres	
EC4	Pre-construction DCIA for the Project *(EC2 minus EC3)*			_____ acres	TBD % (EC4/EC1)
EC5	Soil Infiltration Potential	Data Source: ☐ Existing Report / Soils Map ☐ Field Verified		☐ Good/Fair ☐ Poor	☐ Mixed
EC6	Depth to Maximum Groundwater		☒ TBD	_____ to _____ ft below grade	
EC7	Depth to Bedrock		☒ TBD	_____ to _____ ft below grade	
EC8	Aquifer Protection Area? (from PNDF)			☐ Yes	☐ No
EC9	MS4 Priority Area? (from PNDF)			☐ Yes (See Below)	☐ No

Check All That Apply ☐ Urbanized Area ☐ DCIA >11% ☐ Impaired Waterbody (See Below)

Select All Impairments That Apply

EC10	Contamination known or suspected to be present? (From Environmental Compliance)	☐ Yes	☐ No
EC11	Adjoining DOT ROW beyond project limits available for stormwater quality management	_____ acres	

NOTES:
TBD - To Be Determined.

Worksheet users should refer to the current *CT DOT MS4 Project Design MEP Worksheet V4 Instructions*

Reference the CT DEEP Stormwater Quality Manual (SWQM) for design and the New England Stormwater Retrofit Manual for Crediting

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 3: Designed Conditions

Section 3A: Document Water Quality Volume (WQV) Retained and/or Treated (ac-ft)

	Water Quality Volume Documentation		30% Design		60% Design	90% Design	FDP
DC1	WQV design goal	☐Full ☐½-WQV *(Full = EC4 % ≤ 40%)*	ac-ft	☒ TBD	ac-ft	ac-ft	ac-ft
DC2	WQV goal **retained** (refer to page 3)		ac-ft		ac-ft	ac-ft	ac-ft
DC3	WQV goal ***treated*** (refer to page 3)		ac-ft		ac-ft	ac-ft	ac-ft

Did the Project Retain and/or Treat the Entire WQV Goal? ☐Yes ☐No

Section 3B: Document Changes in Directly Connected Impervious Area (DCIA) Pre to Post Construction (acres)

	DCIA Documentation	30% Design		60% Design	90% Design	FDP	
DC4	Post-construction Total Impervious Area	ac.	☒ TBD	ac.	ac.		ac.
DC5	Post-construction DCIA before **new** BMPs	ac.	☒ TBD	ac.	ac.		ac.
DC6	DCIA Disconnected by new BMPs (from Pg 3)	ac.	☒ TBD	ac.	ac.		ac.
DC7	Final Post-construction DCIA *(DC5 minus DC6)*	ac.	☒ TBD	ac.	ac.		ac.
DC8	Pre-construction DCIA (refer to EC4 from Pg 1)	ac.		ac.	ac.		ac.
DC9	Change in DCIA from pre- to post-construction *(DC7 minus DC8) Can be positive (DCIA gained) or negative (DCIA lost)*	-2.0 ac.	☐ TBD	ac.	ac.		ac.
	Date completed						
	Completed by (initials)						
	Reviewed by (initials)						

NOTES:

Worksheet users should refer to the current *CT DOT MS4 Project Design MEP Worksheet V4 Instructions*

Reference the CT DEEP Stormwater Quality Manual (SWQM) for design and the New England Stormwater Retrofit Manual for Crediting

Section 4: Stormwater BMP Selection Summary											
Design Phase ☐30% ☐60% ☐90% ☐FDP	**BMP Type**	**WQV Retained* (ac-ft)**	**WQV Treated* (ac-ft)**	**DCIA Captured by BMP (ac)**	**Runoff Depth from DCIA Captured by BMP (in)**	**HSG Soil Type**	**DCIA Disconnection Credit (%)****	**DCIA Disconnection Credit (ac)**	**(TP) reduction %****	**(TSS) reduction %****	**(TN) reduction %***
BMP Category											
Infiltration	Trench							2.0	TBD	TBD	TBD
TOTAL		0	0					2			
		To Row DC2	***To Row DC3***					***To Row DC6***			

Describe Site Constraints Limiting BMP Implementation if applicable:

Other Notes:

* List the amount of the WQV the BMP is designed to retain or treat.

** Refer to the CT DEEP Stormwater Quality Manual (SWQM) Stormwater Manual (ct.gov) and New England Stormwater Retrofit Manual Stormwater Retrofit Manual (snepnetwork.org) to determine disconnection and pollutant removal percentages. BMPs should be designed to meet specific TP, TN and TSS pollutant reductions to the maximum extent practicable when the entire WQV cannot be retained. Pollutant Reduction Targets are: New Development TP 60%, TN 40%, TSS 90%. Redevelopment TP 50%, TN, 30% TSS 80%. (Page 48 of the SWQM)

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 1: Project Information

Project Number: 0170-3744 (GIS ID# 170-PB-148)

Title/Description: Infiltration Trench

Location: Stratford, I - 95 Mile Marker 32.84,Southwest of Bridge # 00129 Over West Broad Street

Section 2: Existing Conditions

EC1	Total Project Area		TBD acres		
EC2	Pre-construction Total Impervious Area		TBD acres		
EC3	Pre-Construction Disconnected Impervious Area		TBD acres		
EC4	Pre-construction DCIA for the Project *(EC2 minus EC3)*		_____ acres	TBD % (EC4/EC1)	
EC5	Soil Infiltration Potential	Data Source: ☐ Existing Report / Soils Map ☐ Field Verified	☐ Good/Fair	☐ Poor	☐ Mixed
EC6	Depth to Maximum Groundwater	☐ TBD	_____ to _____ ft below grade		
EC7	Depth to Bedrock	☐ TBD	_____ to _____ ft below grade		
EC8	Aquifer Protection Area? (from PNDF)		☐ Yes	☐ No	
EC9	MS4 Priority Area? (from PNDF)		☐ Yes (See Below)	☐ No	

Check All That Apply ☐ Urbanized Area ☐ DCIA >11% ☐ Impaired Waterbody (See Below)

Select All Impairments That Apply

EC10	Contamination known or suspected to be present? (From Environmental Compliance)	☐ Yes	☐ No
EC11	Adjoining DOT ROW beyond project limits available for stormwater quality management	_____ acres	

NOTES:
TBD - To Be Determined.

Worksheet users should refer to the current *CT DOT MS4 Project Design MEP Worksheet V4 Instructions*

Reference the CT DEEP Stormwater Quality Manual (SWQM) for design and the New England Stormwater Retrofit Manual for Crediting

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 3: Designed Conditions

Section 3A: Document Water Quality Volume (WQV) Retained and/or Treated (ac-ft)

	Water Quality Volume Documentation		30% Design		60% Design	90% Design	FDP
DC1	WQV design goal	☐Full ☐½-WQV *(Full = EC4 % ≤ 40%)*	ac-ft	☐ TBD	ac-ft	ac-ft	ac-ft
DC2	WQV goal **retained** (refer to page 3)		ac-ft		ac-ft	ac-ft	ac-ft
DC3	WQV goal ***treated*** (refer to page 3)		ac-ft		ac-ft	ac-ft	ac-ft

Did the Project Retain and/or Treat the Entire WQV Goal? ☐Yes ☐No

Section 3B: Document Changes in Directly Connected Impervious Area (DCIA) Pre to Post Construction (acres)

	DCIA Documentation	30% Design		60% Design	90% Design	FDP	
DC4	Post-construction Total Impervious Area	ac.	☐ TBD	ac.	ac.		ac.
DC5	Post-construction DCIA before **new** BMPs	ac.	☐ TBD	ac.	ac.		ac.
DC6	DCIA Disconnected by new BMPs (from Pg 3)	ac.	☐ TBD	ac.	ac.		ac.
DC7	Final Post-construction DCIA *(DC5 minus DC6)*	ac.	☐ TBD	ac.	ac.		ac.
DC8	Pre-construction DCIA (refer to EC4 from Pg 1)	ac.		ac.	ac.		ac.
DC9	Change in DCIA from pre- to post-construction *(DC7 minus DC8) Can be positive (DCIA gained) or negative (DCIA lost)*	-2.0 ac.	☐ TBD	ac.	ac.		ac.
	Date completed						
	Completed by (initials)						
	Reviewed by (initials)						

NOTES:

Worksheet users should refer to the current *CT DOT MS4 Project Design MEP Worksheet V4 Instructions*

Reference the CT DEEP Stormwater Quality Manual (SWQM) for design and the New England Stormwater Retrofit Manual for Crediting

Section 4: Stormwater BMP Selection Summary											
Design Phase ☐30% ☐60% ☐90% ☐FDP	**BMP Type**	**WQV Retained* (ac-ft)**	**WQV Treated* (ac-ft)**	**DCIA Captured by BMP (ac)**	**Runoff Depth from DCIA Captured by BMP (in)**	**HSG Soil Type**	**DCIA Disconnection Credit (%)****	**DCIA Disconnection Credit (ac)**	**(TP) reduction %****	**(TSS) reduction %****	**(TN) reduction %***
BMP Category											
Infiltration	Trench							2.0	TBD	TBD	TBD
TOTAL		0	0					2			
		To Row DC2	***To Row DC3***					***To Row DC6***			

Describe Site Constraints Limiting BMP Implementation if applicable:

Other Notes:

* List the amount of the WQV the BMP is designed to retain or treat.

** Refer to the CT DEEP Stormwater Quality Manual (SWQM) Stormwater Manual (ct.gov) and New England Stormwater Retrofit Manual Stormwater Retrofit Manual (snepnetwork.org) to determine disconnection and pollutant removal percentages. BMPs should be designed to meet specific TP, TN and TSS pollutant reductions to the maximum extent practicable when the entire WQV cannot be retained. Pollutant Reduction Targets are: New Development TP 60%, TN 40%, TSS 90%. Redevelopment TP 50%, TN, 30% TSS 80%. (Page 48 of the SWQM)

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 1: Project Information

Project Number: 0170-3744 (GIS ID# 170-PB-141)

Title/Description: Infiltration Basin

Location: Manchester, I-384W, Apprx. Mile Marker Range 5.62 - 5.52

Section 2: Existing Conditions

EC1	Total Project Area		TBD acres		
EC2	Pre-construction Total Impervious Area		TBD acres		
EC3	Pre-Construction Disconnected Impervious Area		TBD acres		
EC4	Pre-construction DCIA for the Project *(EC2 minus EC3)*		_____ acres	TBD % (EC4/EC1)	
EC5	Soil Infiltration Potential	Data Source: ☐ Existing Report / Soils Map ☐ Field Verified	☐ Good/Fair	☐ Poor	☐ Mixed
EC6	Depth to Maximum Groundwater	☐ TBD	_____ to _____ ft below grade		
EC7	Depth to Bedrock	☐ TBD	_____ to _____ ft below grade		
EC8	Aquifer Protection Area? (from PNDF)		☐ Yes	☐ No	
EC9	MS4 Priority Area? (from PNDF)		☐ Yes (See Below)	☐ No	

Check All That Apply ☐ Urbanized Area ☐ DCIA >11% ☐ Impaired Waterbody (See Below)

Select All Impairments That Apply

EC10	Contamination known or suspected to be present? (From Environmental Compliance)	☐ Yes	☐ No
EC11	Adjoining DOT ROW beyond project limits available for stormwater quality management	_____ acres	

NOTES:

Worksheet users should refer to the current *CT DOT MS4 Project Design MEP Worksheet V4 Instructions*

Reference the CT DEEP Stormwater Quality Manual (SWQM) for design and the New England Stormwater Retrofit Manual for Crediting

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 3: Designed Conditions

Section 3A: Document Water Quality Volume (WQV) Retained and/or Treated (ac-ft)

	Water Quality Volume Documentation		30% Design		60% Design	90% Design	FDP
DC1	WQV design goal	☐Full ☐½-WQV *(Full = EC4 % ≤ 40%)*	ac-ft	☐ TBD	ac-ft	ac-ft	ac-ft
DC2	WQV goal **retained** (refer to page 3)		ac-ft		ac-ft	ac-ft	ac-ft
DC3	WQV goal ***treated*** (refer to page 3)		ac-ft		ac-ft	ac-ft	ac-ft

Did the Project Retain and/or Treat the Entire WQV Goal? ☐Yes ☐No

Section 3B: Document Changes in Directly Connected Impervious Area (DCIA) Pre to Post Construction (acres)

	DCIA Documentation	30% Design		60% Design	90% Design	FDP	
DC4	Post-construction Total Impervious Area	ac.	☐ TBD	ac.	ac.		ac.
DC5	Post-construction DCIA before **new** BMPs	ac.	☐ TBD	ac.	ac.		ac.
DC6	DCIA Disconnected by new BMPs (from Pg 3)	ac.	☐ TBD	ac.	ac.		ac.
DC7	Final Post-construction DCIA *(DC5 minus DC6)*	ac.	☐ TBD	ac.	ac.		ac.
DC8	Pre-construction DCIA (refer to EC4 from Pg 1)	ac.		ac.	ac.		ac.
DC9	Change in DCIA from pre- to post-construction *(DC7 minus DC8) Can be positive (DCIA gained) or negative (DCIA lost)*	-4.8 ac.	☐ TBD	ac.	ac.		ac.
	Date completed						
	Completed by (initials)						
	Reviewed by (initials)						

NOTES:
TBD - To Be Determined.

Worksheet users should refer to the current *CT DOT MS4 Project Design MEP Worksheet V4 Instructions*

Reference the CT DEEP Stormwater Quality Manual (SWQM) for design and the New England Stormwater Retrofit Manual for Crediting

Section 4: Stormwater BMP Selection Summary											
Design Phase ☐30% ☐60% ☐90% ☐FDP	**BMP Type**	**WQV Retained* (ac-ft)**	**WQV Treated* (ac-ft)**	**DCIA Captured by BMP (ac)**	**Runoff Depth from DCIA Captured by BMP (in)**	**HSG Soil Type**	**DCIA Disconnection Credit (%)****	**DCIA Disconnection Credit (ac)**	**(TP) reduction %****	**(TSS) reduction %****	**(TN) reduction %***
BMP Category											
Infiltration	Basin							4.8	TBD	TBD	TBD
TOTAL		0	0					2			
		To Row DC2	***To Row DC3***					***To Row DC6***			

Describe Site Constraints Limiting BMP Implementation if applicable:

Other Notes:

* List the amount of the WQV the BMP is designed to retain or treat.

** Refer to the CT DEEP Stormwater Quality Manual (SWQM) Stormwater Manual (ct.gov) and New England Stormwater Retrofit Manual Stormwater Retrofit Manual (snepnetwork.org) to determine disconnection and pollutant removal percentages. BMPs should be designed to meet specific TP, TN and TSS pollutant reductions to the maximum extent practicable when the entire WQV cannot be retained. Pollutant Reduction Targets are: New Development TP 60%, TN 40%, TSS 90%. Redevelopment TP 50%, TN, 30% TSS 80%. (Page 48 of the SWQM)

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 1: Project Information

Project Number: 0170-3744 (GIS ID# 170-PB- 48)

Title/Description: Infiltration Basin

Location: Newington, Cloverleaf at the Intersection of Routes 15 & 175

Section 2: Existing Conditions

EC1	Total Project Area		TBD acres		
EC2	Pre-construction Total Impervious Area		TBD acres		
EC3	Pre-Construction Disconnected Impervious Area		TBD acres		
EC4	Pre-construction DCIA for the Project *(EC2 minus EC3)*		_____ acres	TBD % (EC4/EC1)	
EC5	Soil Infiltration Potential	Data Source: ☐ Existing Report / Soils Map ☐ Field Verified	☐ Good/Fair	☐ Poor	☐ Mixed
EC6	Depth to Maximum Groundwater	☐ TBD	_____ to _____ ft below grade		
EC7	Depth to Bedrock	☐ TBD	_____ to _____ ft below grade		
EC8	Aquifer Protection Area? (from PNDF)		☐ Yes	☐ No	
EC9	MS4 Priority Area? (from PNDF)		☐ Yes (See Below)	☐ No	

Check All That Apply ☐ Urbanized Area ☐ DCIA >11% ☐ Impaired Waterbody (See Below)

Select All Impairments That Apply

EC10	Contamination known or suspected to be present? (From Environmental Compliance)	☐ Yes	☐ No
EC11	Adjoining DOT ROW beyond project limits available for stormwater quality management	_____ acres	

NOTES:

Worksheet users should refer to the current *CT DOT MS4 Project Design MEP Worksheet V4 Instructions*

Reference the CT DEEP Stormwater Quality Manual (SWQM) for design and the New England Stormwater Retrofit Manual for Crediting

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 3: Designed Conditions

Section 3A: Document Water Quality Volume (WQV) Retained and/or Treated (ac-ft)

	Water Quality Volume Documentation		30% Design		60% Design	90% Design	FDP
DC1	WQV design goal	☐Full ☐½-WQV *(Full = EC4 % ≤ 40%)*	ac-ft	☐ TBD	ac-ft	ac-ft	ac-ft
DC2	WQV goal **retained** (refer to page 3)		ac-ft		ac-ft	ac-ft	ac-ft
DC3	WQV goal ***treated*** (refer to page 3)		ac-ft		ac-ft	ac-ft	ac-ft

Did the Project Retain and/or Treat the Entire WQV Goal? ☐Yes ☐No

Section 3B: Document Changes in Directly Connected Impervious Area (DCIA) Pre to Post Construction (acres)

	DCIA Documentation	30% Design		60% Design	90% Design	FDP	
DC4	Post-construction Total Impervious Area	ac.	☐ TBD	ac.	ac.		ac.
DC5	Post-construction DCIA before **new** BMPs	ac.	☐ TBD	ac.	ac.		ac.
DC6	DCIA Disconnected by new BMPs (from Pg 3)	ac.	☐ TBD	ac.	ac.		ac.
DC7	Final Post-construction DCIA *(DC5 minus DC6)*	ac.	☐ TBD	ac.	ac.		ac.
DC8	Pre-construction DCIA (refer to EC4 from Pg 1)	ac.		ac.	ac.		ac.
DC9	Change in DCIA from pre- to post-construction *(DC7 minus DC8) Can be positive (DCIA gained) or negative (DCIA lost)*	-3.5 ac.	☐ TBD	ac.	ac.		ac.
	Date completed						
	Completed by (initials)						
	Reviewed by (initials)						

NOTES:
TBD - To Be Determined.

Worksheet users should refer to the current *CT DOT MS4 Project Design MEP Worksheet V4 Instructions*

Reference the CT DEEP Stormwater Quality Manual (SWQM) for design and the New England Stormwater Retrofit Manual for Crediting

Section 4: Stormwater BMP Selection Summary											
Design Phase ☐30% ☐60% ☐90% ☐FDP	**BMP Type**	**WQV Retained* (ac-ft)**	**WQV Treated* (ac-ft)**	**DCIA Captured by BMP (ac)**	**Runoff Depth from DCIA Captured by BMP (in)**	**HSG Soil Type**	**DCIA Disconnection Credit (%)****	**DCIA Disconnection Credit (ac)**	**(TP) reduction %****	**(TSS) reduction %****	**(TN) reduction %***
BMP Category											
Infiltration	Basin							3.5	TBD	TBD	TBD
TOTAL		0	0					2			
		To Row DC2	***To Row DC3***					***To Row DC6***			

Describe Site Constraints Limiting BMP Implementation if applicable:

Other Notes:

* List the amount of the WQV the BMP is designed to retain or treat.

** Refer to the CT DEEP Stormwater Quality Manual (SWQM) Stormwater Manual (ct.gov) and New England Stormwater Retrofit Manual Stormwater Retrofit Manual (snepnetwork.org) to determine disconnection and pollutant removal percentages. BMPs should be designed to meet specific TP, TN and TSS pollutant reductions to the maximum extent practicable when the entire WQV cannot be retained. Pollutant Reduction Targets are: New Development TP 60%, TN 40%, TSS 90%. Redevelopment TP 50%, TN, 30% TSS 80%. (Page 48 of the SWQM)

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 1: Project Information

Project Number: 0170-3744(GIS ID#170-PB-106

Title/Description: Infiltration Basin

Location: Stratford, Retrofit Existing Dry Detention Basin South of Route 15 East of Route 110

Section 2: Existing Conditions

EC1	Total Project Area			TBD acres	
EC2	Pre-construction Total Impervious Area			TBD acres	
EC3	Pre-Construction Disconnected Impervious Area			TBD acres	
EC4	Pre-construction DCIA for the Project *(EC2 minus EC3)*			_____ acres	TBD % (EC4/EC1)
EC5	Soil Infiltration Potential	Data Source: ☐ Existing Report / Soils Map ☐ Field Verified		☐ Good/Fair ☐ Poor	☐ Mixed
EC6	Depth to Maximum Groundwater		☐ TBD	_____ to _____ ft below grade	
EC7	Depth to Bedrock		☐ TBD	_____ to _____ ft below grade	
EC8	Aquifer Protection Area? (from PNDF)			☐ Yes	☐ No
EC9	MS4 Priority Area? (from PNDF)			☐ Yes (See Below)	☐ No
	Check All That Apply ☐ Urbanized Area ☐ DCIA >11% ☐ Impaired Waterbody (See Below)				
	Select All Impairments That Apply				
EC10	Contamination known or suspected to be present? (From Environmental Compliance)			☐ Yes	☐ No
EC11	Adjoining DOT ROW beyond project limits available for stormwater quality management			_____ acres	

NOTES:
TBD - To Be Determined.

Worksheet users should refer to the current *CT DOT MS4 Project Design MEP Worksheet V4 Instructions*

Reference the CT DEEP Stormwater Quality Manual (SWQM) for design and the New England Stormwater Retrofit Manual for Crediting

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 3: Designed Conditions

Section 3A: Document Water Quality Volume (WQV) Retained and/or Treated (ac-ft)

	Water Quality Volume Documentation		30% Design		60% Design	90% Design	FDP
DC1	WQV design goal	☐Full ☐½-WQV *(Full = EC4 % ≤ 40%)*	ac-ft	☐ TBD	ac-ft	ac-ft	ac-ft
DC2	WQV goal **retained** (refer to page 3)		ac-ft		ac-ft	ac-ft	ac-ft
DC3	WQV goal ***treated*** (refer to page 3)		ac-ft		ac-ft	ac-ft	ac-ft

Did the Project Retain and/or Treat the Entire WQV Goal? ☐Yes ☐No

Section 3B: Document Changes in Directly Connected Impervious Area (DCIA) Pre to Post Construction (acres)

	DCIA Documentation	30% Design		60% Design	90% Design	FDP
DC4	Post-construction Total Impervious Area	ac.	☐ TBD	ac.	ac.	ac.
DC5	Post-construction DCIA before **new** BMPs	ac.	☐ TBD	ac.	ac.	ac.
DC6	DCIA Disconnected by new BMPs (from Pg 3)	ac.	☐ TBD	ac.	ac.	ac.
DC7	Final Post-construction DCIA *(DC5 minus DC6)*	ac.	☐ TBD	ac.	ac.	ac.
DC8	Pre-construction DCIA (refer to EC4 from Pg 1)	ac.		ac.	ac.	ac.
DC9	Change in DCIA from pre- to post-construction *(DC7 minus DC8) Can be positive (DCIA gained) or negative (DCIA lost)*	-4.3 ac.	☐ TBD	ac.	ac.	ac.
	Date completed					
	Completed by (initials)					
	Reviewed by (initials)					

NOTES:

Worksheet users should refer to the current *CT DOT MS4 Project Design MEP Worksheet V4 Instructions*

Reference the CT DEEP Stormwater Quality Manual (SWQM) for design and the New England Stormwater Retrofit Manual for Crediting

Section 4: Stormwater BMP Selection Summary											
Design Phase ☐30% ☐60% ☐90% ☐FDP	**BMP Type**	**WQV Retained* (ac-ft)**	**WQV Treated* (ac-ft)**	**DCIA Captured by BMP (ac)**	**Runoff Depth from DCIA Captured by BMP (in)**	**HSG Soil Type**	**DCIA Disconnection Credit (%)****	**DCIA Disconnection Credit (ac)**	**(TP) reduction %****	**(TSS) reduction %****	**(TN) reduction %***
BMP Category											
Infiltration	Basin							4.3	TBD	TBD	TBD
TOTAL		0	0					4.3			
		To Row DC2	***To Row DC3***					***To Row DC6***			

Describe Site Constraints Limiting BMP Implementation if applicable:

Other Notes:

* List the amount of the WQV the BMP is designed to retain or treat.

** Refer to the CT DEEP Stormwater Quality Manual (SWQM) Stormwater Manual (ct.gov) and New England Stormwater Retrofit Manual Stormwater Retrofit Manual (snepnetwork.org) to determine disconnection and pollutant removal percentages. BMPs should be designed to meet specific TP, TN and TSS pollutant reductions to the maximum extent practicable when the entire WQV cannot be retained. Pollutant Reduction Targets are: New Development TP 60%, TN 40%, TSS 90%. Redevelopment TP 50%, TN, 30% TSS 80%. (Page 48 of the SWQM)

Appendix E – MS4 Worksheets for Eliminated Stand Alone Retrofit Projects

See notes on page 3 of each worksheet for site constraints.

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 1: Project Information

Project Number: 170-IN-55616

Title/Description: Dry Detention / Infiltration Basin

Location: Madison, I-95N

Section 2: Existing Conditions

EC1	Total Project Area			N/A acres	
EC2	Pre-construction Total Impervious Area			N/A acres	
EC3	Pre-Construction Disconnected Impervious Area			N/A acres	
EC4	Pre-construction DCIA for the Project *(EC2 minus EC3)*			_____ acres	_____ % (EC4/EC1)
EC5	Soil Infiltration Potential	Data Source: ☐ Existing Report / Soils Map ☐ Field Verified		☐ Good/Fair ☐ Poor	☐ Mixed
EC6	Depth to Maximum Groundwater		☐ TBD	_____ to _____ ft below grade	
EC7	Depth to Bedrock		☐ TBD	_____ to _____ ft below grade	
EC8	Aquifer Protection Area? (from PNDF)			☐ Yes	☐ No
EC9	MS4 Priority Area? (from PNDF)			☐ Yes (See Below)	☐ No
	Check All That Apply ☐ Urbanized Area ☐ DCIA >11% ☐ Impaired Waterbody (See Below)				
	Select All Impairments That Apply				
EC10	Contamination known or suspected to be present? (From Environmental Compliance)			☐ Yes	☐ No
EC11	Adjoining DOT ROW beyond project limits available for stormwater quality management			_____ acres	

NOTES:

Worksheet users should refer to the current *CT DOT MS4 Project Design MEP Worksheet V4 Instructions*

Reference the CT DEEP Stormwater Quality Manual (SWQM) for design and the New England Stormwater Retrofit Manual for Crediting

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 3: Designed Conditions

Section 3A: Document Water Quality Volume (WQV) Retained and/or Treated (ac-ft)

	Water Quality Volume Documentation		30% Design		60% Design	90% Design	FDP
DC1	WQV design goal	☐ Full ☐ ½-WQV *(Full = EC4 % ≤ 40%)*	ac-ft	☐ TBD	ac-ft	ac-ft	ac-ft
DC2	WQV goal **retained** (refer to page 3)		ac-ft		ac-ft	ac-ft	ac-ft
DC3	WQV goal ***treated*** (refer to page 3)		ac-ft		ac-ft	ac-ft	ac-ft

Did the Project Retain and/or Treat the Entire WQV Goal? ☐ Yes ☐ No

Section 3B: Document Changes in Directly Connected Impervious Area (DCIA) Pre to Post Construction (acres)

	DCIA Documentation	30% Design		60% Design	90% Design	FDP
DC4	Post-construction Total Impervious Area	ac.	☐ TBD	ac.	ac.	ac.
DC5	Post-construction DCIA before **new** BMPs	ac.	☐ TBD	ac.	ac.	ac.
DC6	DCIA Disconnected by new BMPs (from Pg 3)	ac.	☐ TBD	ac.	ac.	ac.
DC7	Final Post-construction DCIA *(DC5 minus DC6)*	ac.	☐ TBD	ac.	ac.	ac.
DC8	Pre-construction DCIA (refer to EC4 from Pg 1)	ac.		ac.	ac.	ac.
DC9	Change in DCIA from pre- to post-construction *(DC7 minus DC8) Can be positive (DCIA gained) or negative (DCIA lost)*	- 2.0 ac.	☐ TBD	ac.	ac.	ac.
	Date completed					
	Completed by (initials)					
	Reviewed by (initials)					

NOTES:

Worksheet users should refer to the current *CT DOT MS4 Project Design MEP Worksheet V4 Instructions*

Reference the CT DEEP Stormwater Quality Manual (SWQM) for design and the New England Stormwater Retrofit Manual for Crediting

Section 4: Stormwater BMP Selection Summary											
Design Phase ☐30% ☐60% ☐90% ☐FDP	**BMP Type**	**WQV Retained* (ac-ft)**	**WQV Treated* (ac-ft)**	**DCIA Captured by BMP (ac)**	**Runoff Depth from DCIA Captured by BMP (in)**	**HSG Soil Type**	**DCIA Disconnection Credit (%)****	**DCIA Disconnection Credit (ac)**	**(TP) reduction %****	**(TSS) reduction %****	**(TN) reduction %***
BMP Category											
TOTAL		0	0					0			
		To Row DC2	***To Row DC3***					***To Row DC6***			

Describe Site Constraints Limiting BMP Implementation if applicable:

Upon further review of the project, it was determined that the BMP area was too small and would create accessibility issue for the maintenance personnel.

Other Notes:

* List the amount of the WQV the BMP is designed to retain or treat.

** Refer to the CT DEEP Stormwater Quality Manual (SWQM) Stormwater Manual (ct.gov) and New England Stormwater Retrofit Manual Stormwater Retrofit Manual (snepnetwork.org) to determine disconnection and pollutant removal percentages. BMPs should be designed to meet specific TP, TN and TSS pollutant reductions to the maximum extent practicable when the entire WQV cannot be retained. Pollutant Reduction Targets are: New Development TP 60%, TN 40%, TSS 90%. Redevelopment TP 50%, TN, 30% TSS 80%. (Page 48 of the SWQM)

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 1: Project Information

Project Number: 170-PB-127

Title/Description: Dry Detention / Infiltration Basin

Location: Killingly, I - 395N

Section 2: Existing Conditions

EC1	Total Project Area			N/A acres	
EC2	Pre-construction Total Impervious Area			N/A acres	
EC3	Pre-Construction Disconnected Impervious Area			N/A acres	
EC4	Pre-construction DCIA for the Project *(EC2 minus EC3)*			_____ acres	_____% (EC4/EC1)
EC5	Soil Infiltration Potential	Data Source: ☐ Existing Report / Soils Map ☐ Field Verified		☐ Good/Fair	☐ Poor ☐ Mixed
EC6	Depth to Maximum Groundwater		☐ TBD	_____ to _____ ft below grade	
EC7	Depth to Bedrock		☐ TBD	_____ to _____ ft below grade	
EC8	Aquifer Protection Area? (from PNDF)			☐ Yes	☐ No
EC9	MS4 Priority Area? (from PNDF)			☐ Yes (See Below)	☐ No

Check All That Apply ☐ Urbanized Area ☐ DCIA >11% ☐ Impaired Waterbody (See Below)

Select All Impairments That Apply

EC10	Contamination known or suspected to be present? (From Environmental Compliance)	☐ Yes	☐ No
EC11	Adjoining DOT ROW beyond project limits available for stormwater quality management	_____ acres	

NOTES:

Worksheet users should refer to the current *CT DOT MS4 Project Design MEP Worksheet V4 Instructions*

Reference the CT DEEP Stormwater Quality Manual (SWQM) for design and the New England Stormwater Retrofit Manual for Crediting

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 3: Designed Conditions

Section 3A: Document Water Quality Volume (WQV) Retained and/or Treated (ac-ft)

	Water Quality Volume Documentation		30% Design		60% Design	90% Design	FDP
DC1	WQV design goal	☐Full ☐½-WQV *(Full = EC4 % ≤ 40%)*	ac-ft	☐ TBD	ac-ft	ac-ft	ac-ft
DC2	WQV goal **retained** (refer to page 3)		ac-ft		ac-ft	ac-ft	ac-ft
DC3	WQV goal ***treated*** (refer to page 3)		ac-ft		ac-ft	ac-ft	ac-ft

Did the Project Retain and/or Treat the Entire WQV Goal? ☐Yes ☐No

Section 3B: Document Changes in Directly Connected Impervious Area (DCIA) Pre to Post Construction (acres)

	DCIA Documentation	30% Design		60% Design	90% Design	FDP	
DC4	Post-construction Total Impervious Area	ac.	☐ TBD	ac.	ac.		ac.
DC5	Post-construction DCIA before **new** BMPs	ac.	☐ TBD	ac.	ac.		ac.
DC6	DCIA Disconnected by new BMPs (from Pg 3)	ac.	☐ TBD	ac.	ac.		ac.
DC7	Final Post-construction DCIA *(DC5 minus DC6)*	ac.	☐ TBD	ac.	ac.		ac.
DC8	Pre-construction DCIA (refer to EC4 from Pg 1)	ac.		ac.	ac.		ac.
DC9	Change in DCIA from pre- to post-construction *(DC7 minus DC8) Can be positive (DCIA gained) or negative (DCIA lost)*	-3.25 ac.	☐ TBD	ac.	ac.		ac.
	Date completed						
	Completed by (initials)						
	Reviewed by (initials)						

NOTES:

Worksheet users should refer to the current *CT DOT MS4 Project Design MEP Worksheet V4 Instructions*

Reference the CT DEEP Stormwater Quality Manual (SWQM) for design and the New England Stormwater Retrofit Manual for Crediting

Section 4: Stormwater BMP Selection Summary											
Design Phase ☐30% ☐60% ☐90% ☐FDP	**BMP Type**	**WQV Retained* (ac-ft)**	**WQV Treated* (ac-ft)**	**DCIA Captured by BMP (ac)**	**Runoff Depth from DCIA Captured by BMP (in)**	**HSG Soil Type**	**DCIA Disconnection Credit (%)****	**DCIA Disconnection Credit (ac)**	**(TP) reduction %****	**(TSS) reduction %****	**(TN) reduction %***
BMP Category											
TOTAL		0	0					0			
		To Row DC2	***To Row DC3***					***To Row DC6***			

Describe Site Constraints Limiting BMP Implementation if applicable:

Upon further review of the project, it was determined that a portion of the BMP area was a wetland.

Other Notes:

* List the amount of the WQV the BMP is designed to retain or treat.

** Refer to the CT DEEP Stormwater Quality Manual (SWQM) Stormwater Manual (ct.gov) and New England Stormwater Retrofit Manual Stormwater Retrofit Manual (snepnetwork.org) to determine disconnection and pollutant removal percentages. BMPs should be designed to meet specific TP, TN and TSS pollutant reductions to the maximum extent practicable when the entire WQV cannot be retained. Pollutant Reduction Targets are: New Development TP 60%, TN 40%, TSS 90%. Redevelopment TP 50%, TN, 30% TSS 80%. (Page 48 of the SWQM)

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 1: Project Information

Project Number: 170-CC-15890 & 170-CC-29707

Title/Description: Dry Detention / Infiltration Basin

Location: New London, I-95 N & S

Section 2: Existing Conditions

EC1	Total Project Area			N/A acres	
EC2	Pre-construction Total Impervious Area			N/A acres	
EC3	Pre-Construction Disconnected Impervious Area			N/A acres	
EC4	Pre-construction DCIA for the Project *(EC2 minus EC3)*			_____ acres	_____% (EC4/EC1)
EC5	Soil Infiltration Potential	Data Source: ☐ Existing Report / Soils Map ☐ Field Verified		☐ Good/Fair ☐ Poor	☐ Mixed
EC6	Depth to Maximum Groundwater		☐ TBD	_____ to _____ ft below grade	
EC7	Depth to Bedrock		☐ TBD	_____ to _____ ft below grade	
EC8	Aquifer Protection Area? (from PNDF)			☐ Yes	☐ No
EC9	MS4 Priority Area? (from PNDF)			☐ Yes (See Below)	☐ No
	Check All That Apply ☐ Urbanized Area ☐ DCIA >11% ☐ Impaired Waterbody (See Below)				
	Select All Impairments That Apply				
EC10	Contamination known or suspected to be present? (From Environmental Compliance)			☐ Yes	☐ No
EC11	Adjoining DOT ROW beyond project limits available for stormwater quality management			_____ acres	

NOTES:

Worksheet users should refer to the current *CT DOT MS4 Project Design MEP Worksheet V4 Instructions*

Reference the CT DEEP Stormwater Quality Manual (SWQM) for design and the New England Stormwater Retrofit Manual for Crediting

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 3: Designed Conditions

Section 3A: Document Water Quality Volume (WQV) Retained and/or Treated (ac-ft)

	Water Quality Volume Documentation		30% Design		60% Design	90% Design	FDP
DC1	WQV design goal	☐ Full ☐ ½-WQV *(Full = EC4 % ≤ 40%)*	ac-ft	☐ TBD	ac-ft	ac-ft	ac-ft
DC2	WQV goal **retained** (refer to page 3)		ac-ft		ac-ft	ac-ft	ac-ft
DC3	WQV goal ***treated*** (refer to page 3)		ac-ft		ac-ft	ac-ft	ac-ft

Did the Project Retain and/or Treat the Entire WQV Goal? ☐ Yes ☐ No

Section 3B: Document Changes in Directly Connected Impervious Area (DCIA) Pre to Post Construction (acres)

	DCIA Documentation	30% Design		60% Design	90% Design	FDP	
DC4	Post-construction Total Impervious Area	ac.	☐ TBD	ac.	ac.		ac.
DC5	Post-construction DCIA before **new** BMPs	ac.	☐ TBD	ac.	ac.		ac.
DC6	DCIA Disconnected by new BMPs (from Pg 3)	ac.	☐ TBD	ac.	ac.		ac.
DC7	Final Post-construction DCIA *(DC5 minus DC6)*	ac.	☐ TBD	ac.	ac.		ac.
DC8	Pre-construction DCIA (refer to EC4 from Pg 1)	ac.		ac.	ac.		ac.
DC9	Change in DCIA from pre- to post-construction *(DC7 minus DC8) Can be positive (DCIA gained) or negative (DCIA lost)*	-16.7 ac.	☐ TBD	ac.	ac.		ac.
	Date completed						
	Completed by (initials)						
	Reviewed by (initials)						

NOTES:

Worksheet users should refer to the current *CT DOT MS4 Project Design MEP Worksheet V4 Instructions*

Reference the CT DEEP Stormwater Quality Manual (SWQM) for design and the New England Stormwater Retrofit Manual for Crediting

Section 4: Stormwater BMP Selection Summary											
Design Phase ☐30% ☐60% ☐90% ☐FDP	**BMP Type**	**WQV Retained* (ac-ft)**	**WQV Treated* (ac-ft)**	**DCIA Captured by BMP (ac)**	**Runoff Depth from DCIA Captured by BMP (in)**	**HSG Soil Type**	**DCIA Disconnection Credit (%)****	**DCIA Disconnection Credit (ac)**	**(TP) reduction %****	**(TSS) reduction %****	**(TN) reduction %***
BMP Category											
TOTAL		0	0					0			
		To Row DC2	***To Row DC3***					***To Row DC6***			

Describe Site Constraints Limiting BMP Implementation if applicable:

Upon further review of the project, it was determined that BMP locations were too small and would create accessibility issue for the maintenance personnel.

Other Notes:

* List the amount of the WQV the BMP is designed to retain or treat.

** Refer to the CT DEEP Stormwater Quality Manual (SWQM) Stormwater Manual (ct.gov) and New England Stormwater Retrofit Manual Stormwater Retrofit Manual (snepnetwork.org) to determine disconnection and pollutant removal percentages. BMPs should be designed to meet specific TP, TN and TSS pollutant reductions to the maximum extent practicable when the entire WQV cannot be retained. Pollutant Reduction Targets are: New Development TP 60%, TN 40%, TSS 90%. Redevelopment TP 50%, TN, 30% TSS 80%. (Page 48 of the SWQM)

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 1: Project Information

Project Number: 170-CC-40390

Title/Description: Dry Detention / Infiltration Basin

Location: Meriden, I-691E

Section 2: Existing Conditions

EC1	Total Project Area			N/A acres	
EC2	Pre-construction Total Impervious Area			N/A acres	
EC3	Pre-Construction Disconnected Impervious Area			N/A acres	
EC4	Pre-construction DCIA for the Project *(EC2 minus EC3)*			_____ acres	_____ % (EC4/EC1)
EC5	Soil Infiltration Potential	Data Source: ☐ Existing Report / Soils Map ☐ Field Verified		☐ Good/Fair	☐ Poor ☐ Mixed
EC6	Depth to Maximum Groundwater		☐ TBD	_____ to _____ ft below grade	
EC7	Depth to Bedrock		☐ TBD	_____ to _____ ft below grade	
EC8	Aquifer Protection Area? (from PNDF)			☐ Yes	☐ No
EC9	MS4 Priority Area? (from PNDF)			☐ Yes (See Below)	☐ No

Check All That Apply ☐ Urbanized Area ☐ DCIA >11% ☐ Impaired Waterbody (See Below)

Select All Impairments That Apply

EC10	Contamination known or suspected to be present? (From Environmental Compliance)	☐ Yes	☐ No
EC11	Adjoining DOT ROW beyond project limits available for stormwater quality management	_____ acres	

NOTES:

Worksheet users should refer to the current *CT DOT MS4 Project Design MEP Worksheet V4 Instructions*

Reference the CT DEEP Stormwater Quality Manual (SWQM) for design and the New England Stormwater Retrofit Manual for Crediting

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 3: Designed Conditions

Section 3A: Document Water Quality Volume (WQV) Retained and/or Treated (ac-ft)

	Water Quality Volume Documentation		30% Design		60% Design	90% Design	FDP
DC1	WQV design goal	☐Full ☐½-WQV *(Full = EC4 % ≤ 40%)*	ac-ft	☐ TBD	ac-ft	ac-ft	ac-ft
DC2	WQV goal **retained** (refer to page 3)		ac-ft		ac-ft	ac-ft	ac-ft
DC3	WQV goal ***treated*** (refer to page 3)		ac-ft		ac-ft	ac-ft	ac-ft

Did the Project Retain and/or Treat the Entire WQV Goal? ☐Yes ☐No

Section 3B: Document Changes in Directly Connected Impervious Area (DCIA) Pre to Post Construction (acres)

	DCIA Documentation	30% Design		60% Design	90% Design	FDP	
DC4	Post-construction Total Impervious Area	ac.	☐ TBD	ac.	ac.		ac.
DC5	Post-construction DCIA before **new** BMPs	ac.	☐ TBD	ac.	ac.		ac.
DC6	DCIA Disconnected by new BMPs (from Pg 3)	ac.	☐ TBD	ac.	ac.		ac.
DC7	Final Post-construction DCIA *(DC5 minus DC6)*	ac.	☐ TBD	ac.	ac.		ac.
DC8	Pre-construction DCIA (refer to EC4 from Pg 1)	ac.		ac.	ac.		ac.
DC9	Change in DCIA from pre- to post-construction *(DC7 minus DC8) Can be positive (DCIA gained) or negative (DCIA lost)*	-2.0 ac.	☐ TBD	ac.	ac.		ac.
	Date completed						
	Completed by (initials)						
	Reviewed by (initials)						

NOTES:

Worksheet users should refer to the current *CT DOT MS4 Project Design MEP Worksheet V4 Instructions*

Reference the CT DEEP Stormwater Quality Manual (SWQM) for design and the New England Stormwater Retrofit Manual for Crediting

Section 4: Stormwater BMP Selection Summary											
Design Phase ☐30% ☐60% ☐90% ☐FDP	**BMP Type**	**WQV Retained* (ac-ft)**	**WQV Treated* (ac-ft)**	**DCIA Captured by BMP (ac)**	**Runoff Depth from DCIA Captured by BMP (in)**	**HSG Soil Type**	**DCIA Disconnection Credit (%)****	**DCIA Disconnection Credit (ac)**	**(TP) reduction %****	**(TSS) reduction %****	**(TN) reduction %***
BMP Category											
TOTAL		0	0					0			
		To Row DC2	***To Row DC3***					***To Row DC6***			

Describe Site Constraints Limiting BMP Implementation if applicable:

Upon further review of the project, it was determined that the BMP area was all watercourse and wetlands.

Other Notes:

* List the amount of the WQV the BMP is designed to retain or treat.

** Refer to the CT DEEP Stormwater Quality Manual (SWQM) Stormwater Manual (ct.gov) and New England Stormwater Retrofit Manual Stormwater Retrofit Manual (snepnetwork.org) to determine disconnection and pollutant removal percentages. BMPs should be designed to meet specific TP, TN and TSS pollutant reductions to the maximum extent practicable when the entire WQV cannot be retained. Pollutant Reduction Targets are: New Development TP 60%, TN 40%, TSS 90%. Redevelopment TP 50%, TN, 30% TSS 80%. (Page 48 of the SWQM)

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 1: Project Information

Project Number: 170-PB-183

Title/Description: Dry Detention / Infiltration Basin

Location: Darien, I - 95 N-2

Section 2: Existing Conditions

EC1	Total Project Area			N/A acres	
EC2	Pre-construction Total Impervious Area			N/A acres	
EC3	Pre-Construction Disconnected Impervious Area			N/A acres	
EC4	Pre-construction DCIA for the Project *(EC2 minus EC3)*			_____ acres	_____% (EC4/EC1)
EC5	Soil Infiltration Potential	Data Source: ☐ Existing Report / Soils Map ☐ Field Verified		☐ Good/Fair	☐ Poor ☐ Mixed
EC6	Depth to Maximum Groundwater		☐ TBD	_____ to _____ ft below grade	
EC7	Depth to Bedrock		☐ TBD	_____ to _____ ft below grade	
EC8	Aquifer Protection Area? (from PNDF)			☐ Yes	☐ No
EC9	MS4 Priority Area? (from PNDF)			☐ Yes (See Below)	☐ No

Check All That Apply ☐ Urbanized Area ☐ DCIA >11% ☐ Impaired Waterbody (See Below)

Select All Impairments That Apply

EC10	Contamination known or suspected to be present? (From Environmental Compliance)	☐ Yes	☐ No
EC11	Adjoining DOT ROW beyond project limits available for stormwater quality management	_____ acres	

NOTES:

Worksheet users should refer to the current *CT DOT MS4 Project Design MEP Worksheet V4 Instructions*

Reference the CT DEEP Stormwater Quality Manual (SWQM) for design and the New England Stormwater Retrofit Manual for Crediting

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 3: Designed Conditions

Section 3A: Document Water Quality Volume (WQV) Retained and/or Treated (ac-ft)

	Water Quality Volume Documentation		30% Design		60% Design	90% Design	FDP
DC1	WQV design goal	☐Full ☐½-WQV *(Full = EC4 % ≤ 40%)*	ac-ft	☐ TBD	ac-ft	ac-ft	ac-ft
DC2	WQV goal **retained** (refer to page 3)		ac-ft		ac-ft	ac-ft	ac-ft
DC3	WQV goal ***treated*** (refer to page 3)		ac-ft		ac-ft	ac-ft	ac-ft

Did the Project Retain and/or Treat the Entire WQV Goal? ☐Yes ☐No

Section 3B: Document Changes in Directly Connected Impervious Area (DCIA) Pre to Post Construction (acres)

	DCIA Documentation	30% Design		60% Design	90% Design	FDP
DC4	Post-construction Total Impervious Area	ac.	☐ TBD	ac.	ac.	ac.
DC5	Post-construction DCIA before **new** BMPs	ac.	☐ TBD	ac.	ac.	ac.
DC6	DCIA Disconnected by new BMPs (from Pg 3)	ac.	☐ TBD	ac.	ac.	ac.
DC7	Final Post-construction DCIA *(DC5 minus DC6)*	ac.	☐ TBD	ac.	ac.	ac.
DC8	Pre-construction DCIA (refer to EC4 from Pg 1)	ac.		ac.	ac.	ac.
DC9	Change in DCIA from pre- to post-construction *(DC7 minus DC8) Can be positive (DCIA gained) or negative (DCIA lost)*	-3.0 ac.	☐ TBD	ac.	ac.	ac.
	Date completed					
	Completed by (initials)					
	Reviewed by (initials)					

NOTES:

Worksheet users should refer to the current *CT DOT MS4 Project Design MEP Worksheet V4 Instructions*

Reference the CT DEEP Stormwater Quality Manual (SWQM) for design and the New England Stormwater Retrofit Manual for Crediting

Section 4: Stormwater BMP Selection Summary											
Design Phase ☐30% ☐60% ☐90% ☐FDP	**BMP Type**	**WQV Retained* (ac-ft)**	**WQV Treated* (ac-ft)**	**DCIA Captured by BMP (ac)**	**Runoff Depth from DCIA Captured by BMP (in)**	**HSG Soil Type**	**DCIA Disconnection Credit (%)****	**DCIA Disconnection Credit (ac)**	**(TP) reduction %****	**(TSS) reduction %****	**(TN) reduction %***
BMP Category											
TOTAL		0	0					0			
		To Row DC2	***To Row DC3***					***To Row DC6***			

Describe Site Constraints Limiting BMP Implementation if applicable:

Upon further review of the project, it was determined that the BMP was located in a floodplain zone. Only access to location is through commercial parking lot.

Other Notes:

* List the amount of the WQV the BMP is designed to retain or treat.

** Refer to the CT DEEP Stormwater Quality Manual (SWQM) Stormwater Manual (ct.gov) and New England Stormwater Retrofit Manual Stormwater Retrofit Manual (snepnetwork.org) to determine disconnection and pollutant removal percentages. BMPs should be designed to meet specific TP, TN and TSS pollutant reductions to the maximum extent practicable when the entire WQV cannot be retained. Pollutant Reduction Targets are: New Development TP 60%, TN 40%, TSS 90%. Redevelopment TP 50%, TN, 30% TSS 80%. (Page 48 of the SWQM)

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 1: Project Information

Project Number: 170-PB-185

Title/Description: Dry Detention / Infiltration Basin

Location: Darien, RT 1N

Section 2: Existing Conditions

EC1	Total Project Area		N/A acres		
EC2	Pre-construction Total Impervious Area		N/A acres		
EC3	Pre-Construction Disconnected Impervious Area		N/A acres		
EC4	Pre-construction DCIA for the Project *(EC2 minus EC3)*		_____ acres	_____ % (EC4/EC1)	
EC5	Soil Infiltration Potential	Data Source: ☐ Existing Report / Soils Map ☐ Field Verified	☐ Good/Fair	☐ Poor	☐ Mixed
EC6	Depth to Maximum Groundwater	☐ TBD	_____ to _____ ft below grade		
EC7	Depth to Bedrock	☐ TBD	_____ to _____ ft below grade		
EC8	Aquifer Protection Area? (from PNDF)		☐ Yes	☐ No	
EC9	MS4 Priority Area? (from PNDF)		☐ Yes (See Below)	☐ No	

Check All That Apply ☐ Urbanized Area ☐ DCIA >11% ☐ Impaired Waterbody (See Below)

Select All Impairments That Apply

EC10	Contamination known or suspected to be present? (From Environmental Compliance)	☐ Yes	☐ No
EC11	Adjoining DOT ROW beyond project limits available for stormwater quality management	_____ acres	

NOTES:

Worksheet users should refer to the current *CT DOT MS4 Project Design MEP Worksheet V4 Instructions*

Reference the CT DEEP Stormwater Quality Manual (SWQM) for design and the New England Stormwater Retrofit Manual for Crediting

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 3: Designed Conditions

Section 3A: Document Water Quality Volume (WQV) Retained and/or Treated (ac-ft)

	Water Quality Volume Documentation		30% Design		60% Design	90% Design	FDP
DC1	WQV design goal	☐ Full ☐ ½-WQV *(Full = EC4 % ≤ 40%)*	ac-ft	☐ TBD	ac-ft	ac-ft	ac-ft
DC2	WQV goal **retained** (refer to page 3)		ac-ft		ac-ft	ac-ft	ac-ft
DC3	WQV goal ***treated*** (refer to page 3)		ac-ft		ac-ft	ac-ft	ac-ft

Did the Project Retain and/or Treat the Entire WQV Goal? ☐ Yes ☐ No

Section 3B: Document Changes in Directly Connected Impervious Area (DCIA) Pre to Post Construction (acres)

	DCIA Documentation	30% Design		60% Design	90% Design	FDP	
DC4	Post-construction Total Impervious Area	ac.	☐ TBD	ac.	ac.		ac.
DC5	Post-construction DCIA before **new** BMPs	ac.	☐ TBD	ac.	ac.		ac.
DC6	DCIA Disconnected by new BMPs (from Pg 3)	ac.	☐ TBD	ac.	ac.		ac.
DC7	Final Post-construction DCIA *(DC5 minus DC6)*	ac.	☐ TBD	ac.	ac.		ac.
DC8	Pre-construction DCIA (refer to EC4 from Pg 1)	ac.		ac.	ac.		ac.
DC9	Change in DCIA from pre- to post-construction *(DC7 minus DC8) Can be positive (DCIA gained) or negative (DCIA lost)*	- 4.75 ac.	☐ TBD	ac.	ac.		ac.
	Date completed						
	Completed by (initials)						
	Reviewed by (initials)						

NOTES:

Worksheet users should refer to the current *CT DOT MS4 Project Design MEP Worksheet V4 Instructions*

Reference the CT DEEP Stormwater Quality Manual (SWQM) for design and the New England Stormwater Retrofit Manual for Crediting

Section 4: Stormwater BMP Selection Summary											
Design Phase ☐30% ☐60% ☐90% ☐FDP	**BMP Type**	**WQV Retained* (ac-ft)**	**WQV Treated* (ac-ft)**	**DCIA Captured by BMP (ac)**	**Runoff Depth from DCIA Captured by BMP (in)**	**HSG Soil Type**	**DCIA Disconnection Credit (%)****	**DCIA Disconnection Credit (ac)**	**(TP) reduction %****	**(TSS) reduction %****	**(TN) reduction %***
BMP Category											
TOTAL		0	0					0			
		To Row DC2	***To Row DC3***					***To Row DC6***			

Describe Site Constraints Limiting BMP Implementation if applicable:

Upon further review of the project, it was determined that the BMP was located in a floodplain zone and wetlands. In addition, the project area wasn't located fully within the DOT's Right Of Way (ROW).

Other Notes:

* List the amount of the WQV the BMP is designed to retain or treat.

** Refer to the CT DEEP Stormwater Quality Manual (SWQM) Stormwater Manual (ct.gov) and New England Stormwater Retrofit Manual Stormwater Retrofit Manual (snepnetwork.org) to determine disconnection and pollutant removal percentages. BMPs should be designed to meet specific TP, TN and TSS pollutant reductions to the maximum extent practicable when the entire WQV cannot be retained. Pollutant Reduction Targets are: New Development TP 60%, TN 40%, TSS 90%. Redevelopment TP 50%, TN, 30% TSS 80%. (Page 48 of the SWQM)

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 1: Project Information

Project Number: 170-PB-177

Title/Description: Dry Detention / Infiltration Basin

Location: Ansonia, RT 8N

Section 2: Existing Conditions

EC1	Total Project Area			N/A acres	
EC2	Pre-construction Total Impervious Area			N/A acres	
EC3	Pre-Construction Disconnected Impervious Area			N/A acres	
EC4	Pre-construction DCIA for the Project *(EC2 minus EC3)*			_____ acres	_____% (EC4/EC1)
EC5	Soil Infiltration Potential	Data Source: ☐ Existing Report / Soils Map ☐ Field Verified		☐ Good/Fair	☐ Poor ☐ Mixed
EC6	Depth to Maximum Groundwater		☐ TBD	_____ to _____ ft below grade	
EC7	Depth to Bedrock		☐ TBD	_____ to _____ ft below grade	
EC8	Aquifer Protection Area? (from PNDF)			☐ Yes	☐ No
EC9	MS4 Priority Area? (from PNDF)			☐ Yes (See Below)	☐ No

Check All That Apply ☐ Urbanized Area ☐ DCIA >11% ☐ Impaired Waterbody (See Below)

Select All Impairments That Apply

EC10	Contamination known or suspected to be present? (From Environmental Compliance)	☐ Yes	☐ No
EC11	Adjoining DOT ROW beyond project limits available for stormwater quality management	_____ acres	

NOTES:

Worksheet users should refer to the current *CT DOT MS4 Project Design MEP Worksheet V4 Instructions*

Reference the CT DEEP Stormwater Quality Manual (SWQM) for design and the New England Stormwater Retrofit Manual for Crediting

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 3: Designed Conditions

Section 3A: Document Water Quality Volume (WQV) Retained and/or Treated (ac-ft)

	Water Quality Volume Documentation		30% Design		60% Design	90% Design	FDP
DC1	WQV design goal	☐Full ☐½-WQV *(Full = EC4 % ≤ 40%)*	ac-ft	☐ TBD	ac-ft	ac-ft	ac-ft
DC2	WQV goal **retained** (refer to page 3)		ac-ft		ac-ft	ac-ft	ac-ft
DC3	WQV goal ***treated*** (refer to page 3)		ac-ft		ac-ft	ac-ft	ac-ft

Did the Project Retain and/or Treat the Entire WQV Goal? ☐Yes ☐No

Section 3B: Document Changes in Directly Connected Impervious Area (DCIA) Pre to Post Construction (acres)

	DCIA Documentation	30% Design		60% Design	90% Design	FDP
DC4	Post-construction Total Impervious Area	ac.	☐ TBD	ac.	ac.	ac.
DC5	Post-construction DCIA before **new** BMPs	ac.	☐ TBD	ac.	ac.	ac.
DC6	DCIA Disconnected by new BMPs (from Pg 3)	ac.	☐ TBD	ac.	ac.	ac.
DC7	Final Post-construction DCIA *(DC5 minus DC6)*	ac.	☐ TBD	ac.	ac.	ac.
DC8	Pre-construction DCIA (refer to EC4 from Pg 1)	ac.		ac.	ac.	ac.
DC9	Change in DCIA from pre- to post-construction *(DC7 minus DC8) Can be positive (DCIA gained) or negative (DCIA lost)*	-3.93 ac.	☐ TBD	ac.	ac.	ac.
	Date completed					
	Completed by (initials)					
	Reviewed by (initials)					

NOTES:

Worksheet users should refer to the current *CT DOT MS4 Project Design MEP Worksheet V4 Instructions*

Reference the CT DEEP Stormwater Quality Manual (SWQM) for design and the New England Stormwater Retrofit Manual for Crediting

Section 4: Stormwater BMP Selection Summary											
Design Phase ☐30% ☐60% ☐90% ☐FDP	**BMP Type**	**WQV Retained* (ac-ft)**	**WQV Treated* (ac-ft)**	**DCIA Captured by BMP (ac)**	**Runoff Depth from DCIA Captured by BMP (in)**	**HSG Soil Type**	**DCIA Disconnection Credit (%)****	**DCIA Disconnection Credit (ac)**	**(TP) reduction %****	**(TSS) reduction %****	**(TN) reduction %***
BMP Category											
TOTAL		0	0					0			
		To Row DC2	***To Row DC3***					***To Row DC6***			

Describe Site Constraints Limiting BMP Implementation if applicable:

Upon further review of the project, it was determined that daylighting the pipe at the BMP area would be impossible because it was too deep.

Other Notes:

* List the amount of the WQV the BMP is designed to retain or treat.

** Refer to the CT DEEP Stormwater Quality Manual (SWQM) Stormwater Manual (ct.gov) and New England Stormwater Retrofit Manual Stormwater Retrofit Manual (snepnetwork.org) to determine disconnection and pollutant removal percentages. BMPs should be designed to meet specific TP, TN and TSS pollutant reductions to the maximum extent practicable when the entire WQV cannot be retained. Pollutant Reduction Targets are: New Development TP 60%, TN 40%, TSS 90%. Redevelopment TP 50%, TN, 30% TSS 80%. (Page 48 of the SWQM)

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 1: Project Information

Project Number: 170-CV-3214

Title/Description: Dry Detention / Infiltration Basin

Location: Thomaston, RT 8N

Section 2: Existing Conditions

EC1	Total Project Area			N/A acres	
EC2	Pre-construction Total Impervious Area			N/A acres	
EC3	Pre-Construction Disconnected Impervious Area			N/A acres	
EC4	Pre-construction DCIA for the Project *(EC2 minus EC3)*			_____ acres	_____ % (EC4/EC1)
EC5	Soil Infiltration Potential	Data Source: ☐ Existing Report / Soils Map ☐ Field Verified		☐ Good/Fair	☐ Poor ☐ Mixed
EC6	Depth to Maximum Groundwater		☐ TBD	_____ to _____ ft below grade	
EC7	Depth to Bedrock		☐ TBD	_____ to _____ ft below grade	
EC8	Aquifer Protection Area? (from PNDF)			☐ Yes	☐ No
EC9	MS4 Priority Area? (from PNDF)			☐ Yes (See Below)	☐ No

Check All That Apply ☐ Urbanized Area ☐ DCIA >11% ☐ Impaired Waterbody (See Below)

Select All Impairments That Apply

EC10	Contamination known or suspected to be present? (From Environmental Compliance)	☐ Yes	☐ No
EC11	Adjoining DOT ROW beyond project limits available for stormwater quality management	_____ acres	

NOTES:

Worksheet users should refer to the current *CT DOT MS4 Project Design MEP Worksheet V4 Instructions*

Reference the CT DEEP Stormwater Quality Manual (SWQM) for design and the New England Stormwater Retrofit Manual for Crediting

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 3: Designed Conditions

Section 3A: Document Water Quality Volume (WQV) Retained and/or Treated (ac-ft)

	Water Quality Volume Documentation		30% Design		60% Design	90% Design	FDP
DC1	WQV design goal	☐Full ☐½-WQV *(Full = EC4 % ≤ 40%)*	ac-ft	☐ TBD	ac-ft	ac-ft	ac-ft
DC2	WQV goal **retained** (refer to page 3)		ac-ft		ac-ft	ac-ft	ac-ft
DC3	WQV goal ***treated*** (refer to page 3)		ac-ft		ac-ft	ac-ft	ac-ft

Did the Project Retain and/or Treat the Entire WQV Goal? ☐Yes ☐No

Section 3B: Document Changes in Directly Connected Impervious Area (DCIA) Pre to Post Construction (acres)

	DCIA Documentation	30% Design		60% Design	90% Design	FDP
DC4	Post-construction Total Impervious Area	ac.	☐ TBD	ac.	ac.	ac.
DC5	Post-construction DCIA before **new** BMPs	ac.	☐ TBD	ac.	ac.	ac.
DC6	DCIA Disconnected by new BMPs (from Pg 3)	ac.	☐ TBD	ac.	ac.	ac.
DC7	Final Post-construction DCIA *(DC5 minus DC6)*	ac.	☐ TBD	ac.	ac.	ac.
DC8	Pre-construction DCIA (refer to EC4 from Pg 1)	ac.		ac.	ac.	ac.
DC9	Change in DCIA from pre- to post-construction *(DC7 minus DC8) Can be positive (DCIA gained) or negative (DCIA lost)*	- 3.4 ac.	☐ TBD	ac.	ac.	ac.
	Date completed					
	Completed by (initials)					
	Reviewed by (initials)					

NOTES:

Worksheet users should refer to the current *CT DOT MS4 Project Design MEP Worksheet V4 Instructions*

Reference the CT DEEP Stormwater Quality Manual (SWQM) for design and the New England Stormwater Retrofit Manual for Crediting

Section 4: Stormwater BMP Selection Summary											
Design Phase ☐30% ☐60% ☐90% ☐FDP	**BMP Type**	**WQV Retained* (ac-ft)**	**WQV Treated* (ac-ft)**	**DCIA Captured by BMP (ac)**	**Runoff Depth from DCIA Captured by BMP (in)**	**HSG Soil Type**	**DCIA Disconnection Credit (%)****	**DCIA Disconnection Credit (ac)**	**(TP) reduction %****	**(TSS) reduction %****	**(TN) reduction %***
BMP Category											
TOTAL		0	0					0			
		To Row DC2	***To Row DC3***					***To Row DC6***			

Describe Site Constraints Limiting BMP Implementation if applicable:

Upon further review of the project, it was determined that the BMP area was all watercourse with steep sides into the river.

Other Notes:

* List the amount of the WQV the BMP is designed to retain or treat.

** Refer to the CT DEEP Stormwater Quality Manual (SWQM) Stormwater Manual (ct.gov) and New England Stormwater Retrofit Manual Stormwater Retrofit Manual (snepnetwork.org) to determine disconnection and pollutant removal percentages. BMPs should be designed to meet specific TP, TN and TSS pollutant reductions to the maximum extent practicable when the entire WQV cannot be retained. Pollutant Reduction Targets are: New Development TP 60%, TN 40%, TSS 90%. Redevelopment TP 50%, TN, 30% TSS 80%. (Page 48 of the SWQM)

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 1: Project Information

Project Number: 170-PB-97

Title/Description: Dry Detention / Infiltration Basin

Location: Trumbull, RT 15 N

Section 2: Existing Conditions

EC1	Total Project Area			N/A acres	
EC2	Pre-construction Total Impervious Area			N/A acres	
EC3	Pre-Construction Disconnected Impervious Area			N/A acres	
EC4	Pre-construction DCIA for the Project *(EC2 minus EC3)*			_____ acres	_____% (EC4/EC1)
EC5	Soil Infiltration Potential	Data Source: ☐ Existing Report / Soils Map ☐ Field Verified		☐ Good/Fair	☐ Poor ☐ Mixed
EC6	Depth to Maximum Groundwater		☐ TBD	_____ to _____ ft below grade	
EC7	Depth to Bedrock		☐ TBD	_____ to _____ ft below grade	
EC8	Aquifer Protection Area? (from PNDF)			☐ Yes	☐ No
EC9	MS4 Priority Area? (from PNDF)			☐ Yes (See Below)	☐ No

Check All That Apply ☐ Urbanized Area ☐ DCIA >11% ☐ Impaired Waterbody (See Below)

Select All Impairments That Apply

EC10	Contamination known or suspected to be present? (From Environmental Compliance)	☐ Yes	☐ No
EC11	Adjoining DOT ROW beyond project limits available for stormwater quality management	_____ acres	

NOTES:

Worksheet users should refer to the current *CT DOT MS4 Project Design MEP Worksheet V4 Instructions*

Reference the CT DEEP Stormwater Quality Manual (SWQM) for design and the New England Stormwater Retrofit Manual for Crediting

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 3: Designed Conditions

Section 3A: Document Water Quality Volume (WQV) Retained and/or Treated (ac-ft)

	Water Quality Volume Documentation		30% Design		60% Design	90% Design	FDP
DC1	WQV design goal	☐ Full ☐ ½-WQV *(Full = EC4 % ≤ 40%)*	ac-ft	☐ TBD	ac-ft	ac-ft	ac-ft
DC2	WQV goal **retained** (refer to page 3)		ac-ft		ac-ft	ac-ft	ac-ft
DC3	WQV goal ***treated*** (refer to page 3)		ac-ft		ac-ft	ac-ft	ac-ft

Did the Project Retain and/or Treat the Entire WQV Goal? ☐ Yes ☐ No

Section 3B: Document Changes in Directly Connected Impervious Area (DCIA) Pre to Post Construction (acres)

	DCIA Documentation	30% Design		60% Design	90% Design	FDP	
DC4	Post-construction Total Impervious Area	ac.	☐ TBD	ac.	ac.		ac.
DC5	Post-construction DCIA before **new** BMPs	ac.	☐ TBD	ac.	ac.		ac.
DC6	DCIA Disconnected by new BMPs (from Pg 3)	ac.	☐ TBD	ac.	ac.		ac.
DC7	Final Post-construction DCIA *(DC5 minus DC6)*	ac.	☐ TBD	ac.	ac.		ac.
DC8	Pre-construction DCIA (refer to EC4 from Pg 1)	ac.		ac.	ac.		ac.
DC9	Change in DCIA from pre- to post-construction *(DC7 minus DC8) Can be positive (DCIA gained) or negative (DCIA lost)*	-2.85 ac.	☐ TBD	ac.	ac.		ac.
	Date completed						
	Completed by (initials)						
	Reviewed by (initials)						

NOTES:

Worksheet users should refer to the current *CT DOT MS4 Project Design MEP Worksheet V4 Instructions*

Reference the CT DEEP Stormwater Quality Manual (SWQM) for design and the New England Stormwater Retrofit Manual for Crediting

Section 4: Stormwater BMP Selection Summary											
Design Phase ☐30% ☐60% ☐90% ☐FDP	**BMP Type**	**WQV Retained* (ac-ft)**	**WQV Treated* (ac-ft)**	**DCIA Captured by BMP (ac)**	**Runoff Depth from DCIA Captured by BMP (in)**	**HSG Soil Type**	**DCIA Disconnection Credit (%)****	**DCIA Disconnection Credit (ac)**	**(TP) reduction %****	**(TSS) reduction %****	**(TN) reduction %***
BMP Category											
TOTAL		0	0					0			
		To Row DC2	***To Row DC3***					***To Row DC6***			

Describe Site Constraints Limiting BMP Implementation if applicable:

Upon further review of the project, it was determined that the BMP was located in a floodplain zone.

Other Notes:

* List the amount of the WQV the BMP is designed to retain or treat.

** Refer to the CT DEEP Stormwater Quality Manual (SWQM) Stormwater Manual (ct.gov) and New England Stormwater Retrofit Manual Stormwater Retrofit Manual (snepnetwork.org) to determine disconnection and pollutant removal percentages. BMPs should be designed to meet specific TP, TN and TSS pollutant reductions to the maximum extent practicable when the entire WQV cannot be retained. Pollutant Reduction Targets are: New Development TP 60%, TN 40%, TSS 90%. Redevelopment TP 50%, TN, 30% TSS 80%. (Page 48 of the SWQM)

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 1: Project Information

Project Number: 170-BP-232

Title/Description: Dry Detention / Infiltration Basin

Location: Intersection of Wintechog Hill Rd and SR 680 in North Stonington

Section 2: Existing Conditions

EC1	Total Project Area			N/A acres	
EC2	Pre-construction Total Impervious Area			N/A acres	
EC3	Pre-Construction Disconnected Impervious Area			N/A acres	
EC4	Pre-construction DCIA for the Project *(EC2 minus EC3)*			_____ acres	_____% (EC4/EC1)
EC5	Soil Infiltration Potential	Data Source: ☐ Existing Report / Soils Map ☐ Field Verified		☐ Good/Fair ☐ Poor ☐ Mixed	
EC6	Depth to Maximum Groundwater		☐ TBD	_____ to _____ ft below grade	
EC7	Depth to Bedrock		☐ TBD	_____ to _____ ft below grade	
EC8	Aquifer Protection Area? (from PNDF)			☐ Yes	☐ No
EC9	MS4 Priority Area? (from PNDF)			☐ Yes (See Below)	☐ No
	Check All That Apply ☐ Urbanized Area ☐ DCIA >11% ☐ Impaired Waterbody (See Below)				
	Select All Impairments That Apply				
EC10	Contamination known or suspected to be present? (From Environmental Compliance)			☐ Yes	☐ No
EC11	Adjoining DOT ROW beyond project limits available for stormwater quality management			_____ acres	

NOTES:

Worksheet users should refer to the current *CT DOT MS4 Project Design MEP Worksheet V4 Instructions*

Reference the CT DEEP Stormwater Quality Manual (SWQM) for design and the New England Stormwater Retrofit Manual for Crediting

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 3: Designed Conditions

Section 3A: Document Water Quality Volume (WQV) Retained and/or Treated (ac-ft)

	Water Quality Volume Documentation		30% Design		60% Design	90% Design	FDP
DC1	WQV design goal	☐ Full ☐ ½-WQV *(Full = EC4 % ≤ 40%)*	ac-ft	☐ TBD	ac-ft	ac-ft	ac-ft
DC2	WQV goal **retained** (refer to page 3)		ac-ft		ac-ft	ac-ft	ac-ft
DC3	WQV goal ***treated*** (refer to page 3)		ac-ft		ac-ft	ac-ft	ac-ft

Did the Project Retain and/or Treat the Entire WQV Goal? ☐ Yes ☐ No

Section 3B: Document Changes in Directly Connected Impervious Area (DCIA) Pre to Post Construction (acres)

	DCIA Documentation	30% Design		60% Design	90% Design	FDP	
DC4	Post-construction Total Impervious Area	ac.	☐ TBD	ac.	ac.		ac.
DC5	Post-construction DCIA before **new** BMPs	ac.	☐ TBD	ac.	ac.		ac.
DC6	DCIA Disconnected by new BMPs (from Pg 3)	ac.	☐ TBD	ac.	ac.		ac.
DC7	Final Post-construction DCIA *(DC5 minus DC6)*	ac.	☐ TBD	ac.	ac.		ac.
DC8	Pre-construction DCIA (refer to EC4 from Pg 1)	ac.		ac.	ac.		ac.
DC9	Change in DCIA from pre- to post-construction *(DC7 minus DC8) Can be positive (DCIA gained) or negative (DCIA lost)*	-2.8 ac.	☐ TBD	ac.	ac.		ac.
	Date completed						
	Completed by (initials)						
	Reviewed by (initials)						

NOTES:

Worksheet users should refer to the current *CT DOT MS4 Project Design MEP Worksheet V4 Instructions*

Reference the CT DEEP Stormwater Quality Manual (SWQM) for design and the New England Stormwater Retrofit Manual for Crediting

Section 4: Stormwater BMP Selection Summary											
Design Phase ☐30% ☐60% ☐90% ☐FDP	**BMP Type**	**WQV Retained* (ac-ft)**	**WQV Treated* (ac-ft)**	**DCIA Captured by BMP (ac)**	**Runoff Depth from DCIA Captured by BMP (in)**	**HSG Soil Type**	**DCIA Disconnection Credit (%)****	**DCIA Disconnection Credit (ac)**	**(TP) reduction %****	**(TSS) reduction %****	**(TN) reduction %***
BMP Category											
TOTAL		0	0					0			
		To Row DC2	***To Row DC3***					***To Row DC6***			

Describe Site Constraints Limiting BMP Implementation if applicable:

Upon further review of the project, it was determined that the BMP area was too small and would create accessibility issue for the maintenance personnel.

Other Notes:

* List the amount of the WQV the BMP is designed to retain or treat.

** Refer to the CT DEEP Stormwater Quality Manual (SWQM) Stormwater Manual (ct.gov) and New England Stormwater Retrofit Manual Stormwater Retrofit Manual (snepnetwork.org) to determine disconnection and pollutant removal percentages. BMPs should be designed to meet specific TP, TN and TSS pollutant reductions to the maximum extent practicable when the entire WQV cannot be retained. Pollutant Reduction Targets are: New Development TP 60%, TN 40%, TSS 90%. Redevelopment TP 50%, TN, 30% TSS 80%. (Page 48 of the SWQM)

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 1: Project Information

Project Number: 170-PB-190

Title/Description: Infiltration Basin

Location: Ansonia, Route 8 NB Off Ramp

Section 2: Existing Conditions

EC1	Total Project Area			N/A acres	
EC2	Pre-construction Total Impervious Area			N/A acres	
EC3	Pre-Construction Disconnected Impervious Area			N/A acres	
EC4	Pre-construction DCIA for the Project *(EC2 minus EC3)*			_____ acres	_____ % (EC4/EC1)
EC5	Soil Infiltration Potential	Data Source: ☐ Existing Report / Soils Map ☐ Field Verified		☐ Good/Fair ☐ Poor	☐ Mixed
EC6	Depth to Maximum Groundwater		☐ TBD	_____ to _____ ft below grade	
EC7	Depth to Bedrock		☐ TBD	_____ to _____ ft below grade	
EC8	Aquifer Protection Area? (from PNDF)			☐ Yes	☐ No
EC9	MS4 Priority Area? (from PNDF)			☐ Yes (See Below)	☐ No

Check All That Apply ☐ Urbanized Area ☐ DCIA >11% ☐ Impaired Waterbody (See Below)

Select All Impairments That Apply

EC10	Contamination known or suspected to be present? (From Environmental Compliance)	☐ Yes	☐ No
EC11	Adjoining DOT ROW beyond project limits available for stormwater quality management	_____ acres	

NOTES:

Worksheet users should refer to the current *CT DOT MS4 Project Design MEP Worksheet V4 Instructions*

Reference the CT DEEP Stormwater Quality Manual (SWQM) for design and the New England Stormwater Retrofit Manual for Crediting

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 3: Designed Conditions

Section 3A: Document Water Quality Volume (WQV) Retained and/or Treated (ac-ft)

	Water Quality Volume Documentation		30% Design		60% Design	90% Design	FDP
DC1	WQV design goal	☐ Full ☐ ½-WQV *(Full = EC4 % ≤ 40%)*	ac-ft	☐ TBD	ac-ft	ac-ft	ac-ft
DC2	WQV goal **retained** (refer to page 3)		ac-ft		ac-ft	ac-ft	ac-ft
DC3	WQV goal ***treated*** (refer to page 3)		ac-ft		ac-ft	ac-ft	ac-ft

Did the Project Retain and/or Treat the Entire WQV Goal? ☐ Yes ☐ No

Section 3B: Document Changes in Directly Connected Impervious Area (DCIA) Pre to Post Construction (acres)

	DCIA Documentation	30% Design		60% Design	90% Design	FDP	
DC4	Post-construction Total Impervious Area	ac.	☐ TBD	ac.	ac.		ac.
DC5	Post-construction DCIA before **new** BMPs	ac.	☐ TBD	ac.	ac.		ac.
DC6	DCIA Disconnected by new BMPs (from Pg 3)	ac.	☐ TBD	ac.	ac.		ac.
DC7	Final Post-construction DCIA *(DC5 minus DC6)*	ac.	☐ TBD	ac.	ac.		ac.
DC8	Pre-construction DCIA (refer to EC4 from Pg 1)	ac.		ac.	ac.		ac.
DC9	Change in DCIA from pre- to post-construction *(DC7 minus DC8) Can be positive (DCIA gained) or negative (DCIA lost)*	-3.5 ac.	☐ TBD	ac.	ac.		ac.
	Date completed						
	Completed by (initials)						
	Reviewed by (initials)						

NOTES:

Worksheet users should refer to the current *CT DOT MS4 Project Design MEP Worksheet V4 Instructions*

Reference the CT DEEP Stormwater Quality Manual (SWQM) for design and the New England Stormwater Retrofit Manual for Crediting

Section 4: Stormwater BMP Selection Summary											
Design Phase ☐30% ☐60% ☐90% ☐FDP	**BMP Type**	**WQV Retained* (ac-ft)**	**WQV Treated* (ac-ft)**	**DCIA Captured by BMP (ac)**	**Runoff Depth from DCIA Captured by BMP (in)**	**HSG Soil Type**	**DCIA Disconnection Credit (%)****	**DCIA Disconnection Credit (ac)**	**(TP) reduction %****	**(TSS) reduction %****	**(TN) reduction %***
BMP Category											
TOTAL		0	0					0			
		To Row DC2	***To Row DC3***					***To Row DC6***			

Describe Site Constraints Limiting BMP Implementation if applicable:

Upon further review of the project, it was determined that the existing pipe inverts are too deep, which could make an infiltration system infeasible.

Other Notes:

* List the amount of the WQV the BMP is designed to retain or treat.

** Refer to the CT DEEP Stormwater Quality Manual (SWQM) Stormwater Manual (ct.gov) and New England Stormwater Retrofit Manual Stormwater Retrofit Manual (snepnetwork.org) to determine disconnection and pollutant removal percentages. BMPs should be designed to meet specific TP, TN and TSS pollutant reductions to the maximum extent practicable when the entire WQV cannot be retained. Pollutant Reduction Targets are: New Development TP 60%, TN 40%, TSS 90%. Redevelopment TP 50%, TN, 30% TSS 80%. (Page 48 of the SWQM)

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 1: Project Information

Project Number: 170-PB-xx

Title/Description: Infiltration Trench

Location: Clinton, I-95N - Bridge No. 00222

Section 2: Existing Conditions

EC1	Total Project Area		N/A acres		
EC2	Pre-construction Total Impervious Area		N/A acres		
EC3	Pre-Construction Disconnected Impervious Area		N/A acres		
EC4	Pre-construction DCIA for the Project *(EC2 minus EC3)*		_____ acres	_____ % (EC4/EC1)	
EC5	Soil Infiltration Potential	Data Source: ☐ Existing Report / Soils Map ☐ Field Verified	☐ Good/Fair	☐ Poor	☐ Mixed
EC6	Depth to Maximum Groundwater	☐ TBD	_____ to _____ ft below grade		
EC7	Depth to Bedrock	☐ TBD	_____ to _____ ft below grade		
EC8	Aquifer Protection Area? (from PNDF)		☐ Yes	☐ No	
EC9	MS4 Priority Area? (from PNDF)		☐ Yes (See Below)	☐ No	

Check All That Apply ☐ Urbanized Area ☐ DCIA >11% ☐ Impaired Waterbody (See Below)

Select All Impairments That Apply

EC10	Contamination known or suspected to be present? (From Environmental Compliance)	☐ Yes	☐ No
EC11	Adjoining DOT ROW beyond project limits available for stormwater quality management	_____ acres	

NOTES:

Worksheet users should refer to the current *CT DOT MS4 Project Design MEP Worksheet V4 Instructions*

Reference the CT DEEP Stormwater Quality Manual (SWQM) for design and the New England Stormwater Retrofit Manual for Crediting

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 3: Designed Conditions

Section 3A: Document Water Quality Volume (WQV) Retained and/or Treated (ac-ft)

	Water Quality Volume Documentation		30% Design		60% Design	90% Design	FDP
DC1	WQV design goal	☐Full ☐½-WQV *(Full = EC4 % ≤ 40%)*	ac-ft	☐ TBD	ac-ft	ac-ft	ac-ft
DC2	WQV goal **retained** (refer to page 3)		ac-ft		ac-ft	ac-ft	ac-ft
DC3	WQV goal ***treated*** (refer to page 3)		ac-ft		ac-ft	ac-ft	ac-ft

Did the Project Retain and/or Treat the Entire WQV Goal? ☐Yes ☐No

Section 3B: Document Changes in Directly Connected Impervious Area (DCIA) Pre to Post Construction (acres)

	DCIA Documentation	30% Design		60% Design	90% Design	FDP
DC4	Post-construction Total Impervious Area	ac.	☐ TBD	ac.	ac.	ac.
DC5	Post-construction DCIA before **new** BMPs	ac.	☐ TBD	ac.	ac.	ac.
DC6	DCIA Disconnected by new BMPs (from Pg 3)	ac.	☐ TBD	ac.	ac.	ac.
DC7	Final Post-construction DCIA *(DC5 minus DC6)*	ac.	☐ TBD	ac.	ac.	ac.
DC8	Pre-construction DCIA (refer to EC4 from Pg 1)	ac.		ac.	ac.	ac.
DC9	Change in DCIA from pre- to post-construction *(DC7 minus DC8) Can be positive (DCIA gained) or negative (DCIA lost)*	-2.5 ac.	☐ TBD	ac.	ac.	ac.
	Date completed					
	Completed by (initials)					
	Reviewed by (initials)					

NOTES:

Worksheet users should refer to the current *CT DOT MS4 Project Design MEP Worksheet V4 Instructions*

Reference the CT DEEP Stormwater Quality Manual (SWQM) for design and the New England Stormwater Retrofit Manual for Crediting

Section 4: Stormwater BMP Selection Summary											
Design Phase ☐30% ☐60% ☐90% ☐FDP	**BMP Type**	**WQV Retained* (ac-ft)**	**WQV Treated* (ac-ft)**	**DCIA Captured by BMP (ac)**	**Runoff Depth from DCIA Captured by BMP (in)**	**HSG Soil Type**	**DCIA Disconnection Credit (%)****	**DCIA Disconnection Credit (ac)**	**(TP) reduction %****	**(TSS) reduction %****	**(TN) reduction %***
BMP Category											
TOTAL		0	0					0			
		To Row DC2	***To Row DC3***					***To Row DC6***			

Describe Site Constraints Limiting BMP Implementation if applicable:

Upon further review of the project, it was determined that the BMP was located in a conservation area.

Other Notes:

* List the amount of the WQV the BMP is designed to retain or treat.

** Refer to the CT DEEP Stormwater Quality Manual (SWQM) Stormwater Manual (ct.gov) and New England Stormwater Retrofit Manual Stormwater Retrofit Manual (snepnetwork.org) to determine disconnection and pollutant removal percentages. BMPs should be designed to meet specific TP, TN and TSS pollutant reductions to the maximum extent practicable when the entire WQV cannot be retained. Pollutant Reduction Targets are: New Development TP 60%, TN 40%, TSS 90%. Redevelopment TP 50%, TN, 30% TSS 80%. (Page 48 of the SWQM)

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 1: Project Information

Project Number: 170-PB-184

Title/Description: Water Quality Swale

Location: Thomaston, Route 8

Section 2: Existing Conditions

EC1	Total Project Area			N/A acres	
EC2	Pre-construction Total Impervious Area			N/A acres	
EC3	Pre-Construction Disconnected Impervious Area			N/A acres	
EC4	Pre-construction DCIA for the Project *(EC2 minus EC3)*			_____ acres	_____% (EC4/EC1)
EC5	Soil Infiltration Potential	Data Source: ☐ Existing Report / Soils Map ☐ Field Verified		☐ Good/Fair	☐ Poor ☐ Mixed
EC6	Depth to Maximum Groundwater		☐ TBD	_____ to _____ ft below grade	
EC7	Depth to Bedrock		☐ TBD	_____ to _____ ft below grade	
EC8	Aquifer Protection Area? (from PNDF)			☐ Yes	☐ No
EC9	MS4 Priority Area? (from PNDF)			☐ Yes (See Below)	☐ No

Check All That Apply ☐ Urbanized Area ☐ DCIA >11% ☐ Impaired Waterbody (See Below)

Select All Impairments That Apply

EC10	Contamination known or suspected to be present? (From Environmental Compliance)	☐ Yes	☐ No
EC11	Adjoining DOT ROW beyond project limits available for stormwater quality management	_____ acres	

NOTES:

Worksheet users should refer to the current *CT DOT MS4 Project Design MEP Worksheet V4 Instructions*

Reference the CT DEEP Stormwater Quality Manual (SWQM) for design and the New England Stormwater Retrofit Manual for Crediting

CTDOT MS4 Project Design
Maximum Extent Practicable (MEP) Worksheet

Section 3: Designed Conditions

Section 3A: Document Water Quality Volume (WQV) Retained and/or Treated (ac-ft)

	Water Quality Volume Documentation		30% Design		60% Design	90% Design	FDP
DC1	WQV design goal	☐Full ☐½-WQV *(Full = EC4 % ≤ 40%)*	ac-ft	☐ TBD	ac-ft	ac-ft	ac-ft
DC2	WQV goal **retained** (refer to page 3)		ac-ft		ac-ft	ac-ft	ac-ft
DC3	WQV goal ***treated*** (refer to page 3)		ac-ft		ac-ft	ac-ft	ac-ft

Did the Project Retain and/or Treat the Entire WQV Goal? ☐Yes ☐No

Section 3B: Document Changes in Directly Connected Impervious Area (DCIA) Pre to Post Construction (acres)

	DCIA Documentation	30% Design		60% Design	90% Design	FDP
DC4	Post-construction Total Impervious Area	ac.	☐ TBD	ac.	ac.	ac.
DC5	Post-construction DCIA before **new** BMPs	ac.	☐ TBD	ac.	ac.	ac.
DC6	DCIA Disconnected by new BMPs (from Pg 3)	ac.	☐ TBD	ac.	ac.	ac.
DC7	Final Post-construction DCIA *(DC5 minus DC6)*	ac.	☐ TBD	ac.	ac.	ac.
DC8	Pre-construction DCIA (refer to EC4 from Pg 1)	ac.		ac.	ac.	ac.
DC9	Change in DCIA from pre- to post-construction *(DC7 minus DC8) Can be positive (DCIA gained) or negative (DCIA lost)*	-1.5 ac.	☐ TBD	ac.	ac.	ac.
	Date completed					
	Completed by (initials)					
	Reviewed by (initials)					

NOTES:

Worksheet users should refer to the current *CT DOT MS4 Project Design MEP Worksheet V4 Instructions*

Reference the CT DEEP Stormwater Quality Manual (SWQM) for design and the New England Stormwater Retrofit Manual for Crediting

Section 4: Stormwater BMP Selection Summary											
Design Phase ☐30% ☐60% ☐90% ☐FDP	**BMP Type**	**WQV Retained* (ac-ft)**	**WQV Treated* (ac-ft)**	**DCIA Captured by BMP (ac)**	**Runoff Depth from DCIA Captured by BMP (in)**	**HSG Soil Type**	**DCIA Disconnection Credit (%)****	**DCIA Disconnection Credit (ac)**	**(TP) reduction %****	**(TSS) reduction %****	**(TN) reduction %***
BMP Category											
TOTAL		0	0					0			
		To Row DC2	***To Row DC3***					***To Row DC6***			

Describe Site Constraints Limiting BMP Implementation if applicable:

Upon further review of the project, it was determined that the BMP site was not feasible due to limited space availability.

Other Notes:

* List the amount of the WQV the BMP is designed to retain or treat.

** Refer to the CT DEEP Stormwater Quality Manual (SWQM) Stormwater Manual (ct.gov) and New England Stormwater Retrofit Manual Stormwater Retrofit Manual (snepnetwork.org) to determine disconnection and pollutant removal percentages. BMPs should be designed to meet specific TP, TN and TSS pollutant reductions to the maximum extent practicable when the entire WQV cannot be retained. Pollutant Reduction Targets are: New Development TP 60%, TN 40%, TSS 90%. Redevelopment TP 50%, TN, 30% TSS 80%. (Page 48 of the SWQM)

Appendix B – CTDOT Stormwater Best Management Practice Inspection and Maintenance Plan

STORMWATER BEST MANAGEMENT PRACTICE (BMP) INSPECTION & MAINTENANCE PLAN

CONNECTICUT DEPARTMENT OF TRANSPORTATION

JANUARY 2024

FUSS & O'NEILL

Wet Detention Basin
Image Credit: CTDOT

ACKNOWLEDGMENTS

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Detention basin
Image Credit: Fuss & O'Neill

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ACRONYMS

CTDOT	Connecticut Department of Transportation
EPA	Environmental Protection Agency
MS4	Municipal Separate Storm Sewer System
BMP	Best Management Practice
CTDEEP	Connecticut Department of Energy & Environmental Protection
SWMP	Stormwater Management Plan
HDS	Hydrodynamic Separator
OPS	Oil Particle Separator
I&M	Inspection and Maintenance
NOAA	National Oceanic and Atmospheric Administration
RIDOT	Rhode Island Department of Transportation
QPA	Qualifying Pervious Area

1 | INTRODUCTION

BACKGROUND
HOW TO USE THIS PLAN
FEDERAL AND STATE LAWS AND REGULATIONS

1.1 BACKGROUND

The Connecticut Department of Transportation (CTDOT or the "Department") is subject to **the *General Permit for the Discharge of Stormwater from Department of Transportation Separate Storm Sewer Systems* (CTDOT MS4 General Permit)**, which was issued by the Connecticut Department of Energy and Environmental Protection (CTDEEP) with the goal of reducing the discharge of pollutants associated with stormwater runoff from the CTDOT Municipal Separate Storm Sewer System or "MS4". CTDOT has also entered into a **Consent Order with the U.S. Environmental Protection Agency** (EPA) regarding operation and maintenance of the CTDOT MS4.

CTDOT has developed and is implementing a Stormwater Management Plan (SWMP) to address the goals and requirements of the CTDOT MS4 General Permit and the EPA Consent Order.

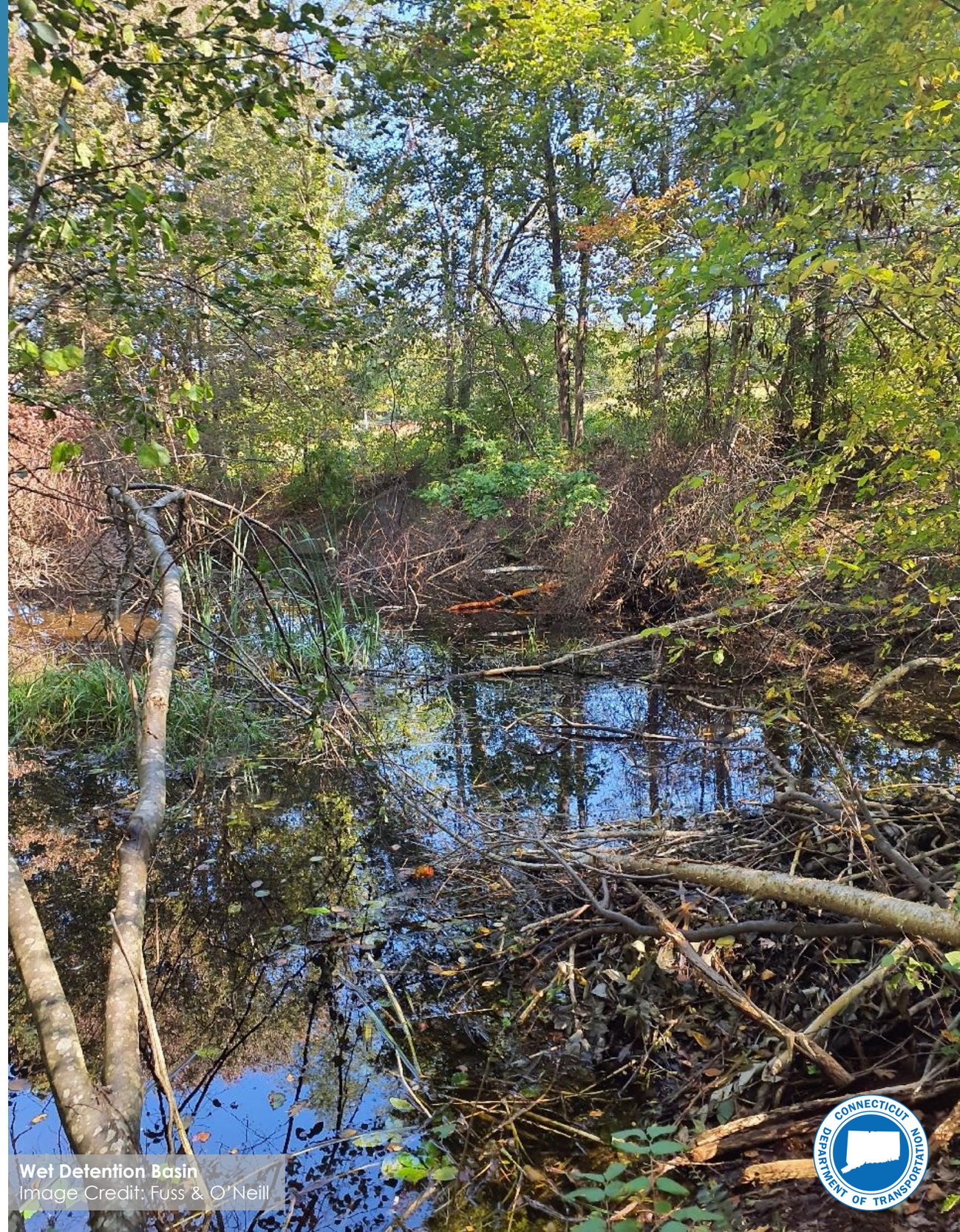
The EPA Consent Order requires CTDOT to develop and implement a written plan to inspect and maintain stormwater treatment structures and measures – referred to hereafter as stormwater best management practices (BMPs) – owned or maintained by CTDOT and located in the "Priority Area" as defined in the CTDOT MS4 General Permit and clarified in the Consent Order. This document is a Stormwater BMP Inspection and Maintenance Plan (I&M Plan), which addresses the requirements of the EPA Consent Order and CTDOT MS4 General Permit to ensure the proper functioning and long-term effectiveness of BMPs owned or maintained by CTDOT.

CTDOT owns and maintains numerous stormwater BMPs throughout the statewide drainage system. A BMP is a structure, measure, or technique that manages stormwater runoff. Increased impervious areas and development lead to increases in pollutant concentrations in runoff that eventually can reach nearby water bodies. Examples of pollutants include suspended solids, nutrients, pesticides, heavy metals, organics, and bacteria. BMPs utilize techniques such as infiltration, filtration, treatment, and detention and slow release to reduce pollutant discharges by decreasing pollutant concentrations and reducing runoff entering water bodies. CTDOT utilizes the following types of stormwater BMPs:

- Underground detention and infiltration systems
- Filtering BMPs
- Stormwater basins
- Water quality swales
- Simple disconnection / natural dispersion
- Permeable pavement
- Hydrodynamic separators (HDS) and oil particle separators (OPS)
- Dry wells and leaching catch basins

This I&M Plan addresses the inspection and maintenance of these and other types of BMPs that CTDOT may install in the future.

This Plan does not include inspection and maintenance of catch basins, which are addressed by CTDOT through a separate inspection and maintenance program in accordance with the CTDOT MS4 General Permit and SWMP. This Plan also does not apply to inspection and maintenance of construction-phase soil erosion and sediment controls, which are addressed separately through the Department's programs to comply with the construction site runoff requirements of the CTDOT MS4 General Permit and the CTDEEP Construction General Permit.



Wet Detention Basin
Image Credit: Fuss & O'Neill

1.2 HOW TO USE THIS PLAN

Purpose of this Plan

This Plan focuses on activities required before, during, and after inspections and maintenance of stormwater BMPs, including the necessary equipment, background knowledge, and documentation for completing inspection and maintenance activities. The inspections described in this Plan are intended to assess the current condition of the stormwater BMP, assess what short-term or medium-term maintenance is required to ensure proper operation of the BMP, and provide sufficient information to develop a long-term maintenance plan for the BMP as appropriate.

This Plan is designed to be used by CTDOT, consultant, and contractor personnel who are involved in the inspection and maintenance of stormwater BMPs owned or maintained by CTDOT. It contains relevant background information on each BMP type with visuals that can be referenced in the field. The Plan is intended to augment and be used with digital field BMP inspection and maintenance forms and digital data collection.

The I&M Plan is organized and described as follows.

Section 1 – Introduction

This section provides a background on this I&M Plan and how to use it. This section also summarizes the relevant regulatory framework that establishes the inspection and maintenance requirements described in this Plan, including the EPA Consent Order and the CTDOT MS4 General Permit and associated stormwater management program.

Section 2 – BMP Inspection and Maintenance Schedule

This section outlines the Department's schedule for completing short-, medium-, and long-term maintenance required to ensure proper functioning of stormwater BMPs in accordance with the timelines outlined in the EPA Consent Order.

Section 3 – Field Work Preparation and Safety

This section provides guidance on the preparation and planning that is required for conducting stormwater BMP inspection and maintenance activities, including equipment, training, and safety considerations.

Section 4 – BMP Descriptions and Inspection & Maintenance Guidance

This section describes each type of stormwater BMP owned or maintained by CTDOT and provides general and BMP-specific inspection and maintenance guidance for each BMP type. This section also provides more detailed guidance for inspection personnel when completing inspections using the digital field data collection forms and assigning condition ratings to BMPs.

Appendices

Additional information is provided in the document appendices including hard copy versions of the BMP inspection and maintenance forms, more information on BMP condition ratings and examples of deficiencies, and definitions of key terms used in this Plan.

Infiltration Basin
Image credit: Fuss & O'Neill

1.3 FEDERAL AND STATE LAWS AND REGULATIONS

CTDOT MS4 Permit

The *General Permit for the Discharge of Stormwater from Department of Transportation Separate Storm Sewer Systems* (CTDOT MS4 General Permit) was issued to CTDOT by the Connecticut Department of Energy and Environmental Protection (CTDEEP) under the authority of the National Pollutant Discharge Elimination System program. The CTDOT MS4 General Permit requires CTDOT to develop, implement, and enforce a stormwater management program designed to reduce the discharge of pollutants from the CTDOT MS4 to the maximum extent practicable, to protect water quality, and to satisfy the appropriate water quality requirements of the federal Clean Water Act. The CTDOT MS4 consists of conveyances for stormwater (including roads with drainage systems, streets, catch basins, curbs, gutters, ditches, man-made channels or storm drains) owned or operated by CTDOT and discharging to surface waters of the state.

The broad goals of the CTDOT MS4 General Permit affect nearly every aspect of CTDOT's operations, from design to construction to operations and maintenance. CTDOT has therefore developed and is implementing a Stormwater Management Plan (SWMP) to address the goals and specific requirements of the CTDOT MS4 General Permit. The SWMP identifies best management practices for each goal (referred to as Minimum Control Measures) in the CTDOT MS4 General Permit, including requirements for implementing a maintenance plan to ensure the long-term effectiveness of stormwater BMPs located within a Priority Area.

This I&M Plan addresses the stormwater BMP inspection and maintenance requirements of the CTDOT MS4 General Permit in addition to the requirements of the EPA Consent Order.

EPA Consent Order

CTDOT signed a Consent Order with EPA on December 12, 2023. The EPA Consent Order requires CTDOT to regularly map, inspect and maintain all current and future stormwater BMPs. Requirements of the EPA Consent Order addressing BMP I&M include:

- Inspect all stormwater BMPs owned or maintained by CTDOT which have been mapped and are located in the Priority Area, as defined by the CTDOT MS4 General Permit and CTDOT's SWMP.
- Through the inspections, assess the current condition of the stormwater BMP, assess what short-term or medium-term maintenance is required to ensure proper operation of the BMP, and provide sufficient information to develop a long-term maintenance plan for the BMP.
- As CTDOT completes the mapping of additional Stormwater BMPs in its MS4, CTDOT shall inspect, within one (1) year of mapping, all stormwater BMPs (excluding catch basins) owned or maintained by CTDOT which are located in the Priority Area*.
- Complete short-term and medium-term maintenance required to ensure proper functioning of stormwater BMPs as described in Section 2.
- Annually inspect all CTDOT owned or maintained stormwater BMPs and remove accumulated pollutants (such as sediment, oils, leaves, litter, etc.) to restore full solids capture design capacity where found to be in excess of 50% design capacity.

* The EPA Consent Order defines "Priority Area" as areas located in the Urbanized Area and those catchment areas of the MS4 with either Directly Connected Impervious Area (DCIA) of greater than 11% or which discharge to impaired waters. A catchment area is considered to discharge to an impaired water if the catchment area discharges directly to an impaired water, or if the catchment area discharges directly to a water body that has not been assessed for impairments by the CT DEEP in its most recent Integrated Water Quality Report and the first downstream water body that has been assessed is identified as being impaired. EPA's rulemaking in July 2023 clarifying its NPDES Phase II regulations replaces the term previously used by the Census Bureau, "urbanized area," with the phrase "urban areas with a population of at least 50,000," which is the Census Bureau's longstanding criteria for defining urbanized areas. The term "urbanized area" has been updated to "urban area" in the draft of the updated CTDOT MS4 permit.

Wet Detention Basin
Image credit: Fuss & O'Neill

2 | BMP INSPECTION AND MAINTENANCE SCHEDULE

BMP INSPECTION AND MAINTENANCE SCHEDULE OVERVIEW

BMP INSPECTION AND MAINTENANCE DEADLINES

2.1 BMP INSPECTION AND MAINTENANCE SCHEDULE OVERVIEW

Per the Consent Order between CTDOT and the EPA, CTDOT will adhere to the mapping, inspection, and maintenance deadlines outlined in this section.

Following completion of initial inspections, CTDOT will annually inspect all CTDOT owned and maintained stormwater treatment structures or measures and remove accumulated pollutants in excess of 50% of the design capacity. CTDOT may delay future inspections and routine maintenance if maintenance is required following the initial inspection until the required maintenance is complete.

Inspection Schedule

As required by the Consent Order, inspections of all retention and detention ponds and other stormwater treatment structures or measures (excluding catch basins) owned or maintained by CTDOT which have been mapped by CTDOT and located in Priority Areas were completed by **December 31, 2023.**

CTDOT will complete the stormwater system mapping required by the CTDOT MS4 General Permit by **July 1, 2029**. CTDOT will inspect newly mapped areas of MS4 within one (1) year of mapping, including all retention and detention ponds and other stormwater treatment structures or measures (excluding catch basins) owned or maintained by CTDOT which are located within the Priority Area.

Maintenance Schedule

Short- & Medium-Term Maintenance

Per the inspections completed prior to **December 31, 2023**, as required by the Consent Order, 109 BMPs were identified as needing short- or medium-term maintenance. Maintenance has been completed on 18 of these BMPs to date. To meet the Consent Order deadline of completing short- and medium-term maintenance by **November 1, 2027**, CTDOT plans on completing maintenance of approximately 25% of the remaining BMPs annually.

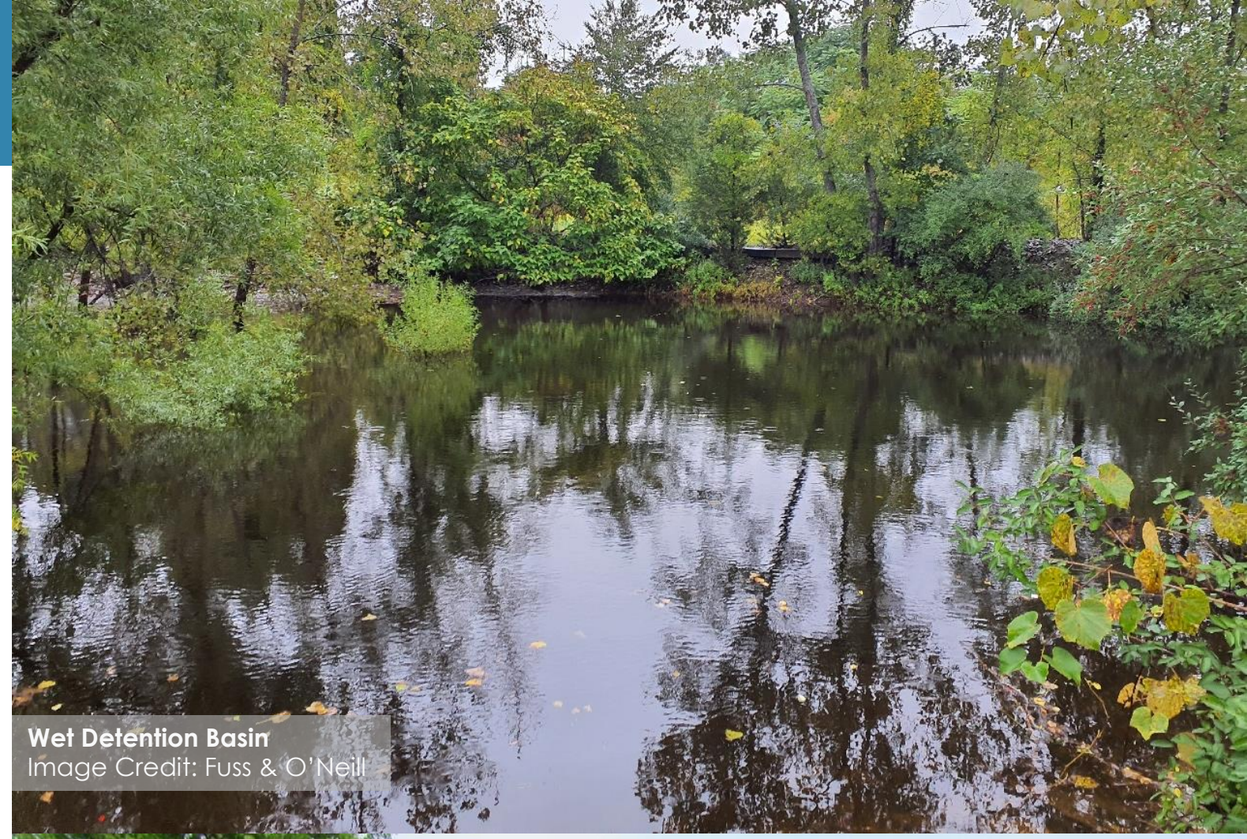
Long Term Maintenance

The Consent Order allows for additional scheduling flexibility to maintain wet basins which are greater than two (2) feet deep. These basins are categorized as having long-term maintenance needs.

As of **December 31, 2023**, CTDOT has mapped and inspected 11 wet basins with a depth at or above two (2) feet deep that require maintenance. CTDOT's schedule calls for these 11 wet basins to be maintained by **July 1, 2029**. This will allow for a primary focus on addressing the short- and medium-term maintenance needs with 20 months of additional time after **November 1, 2027** to complete long-term maintenance on large wet basins if not previously addressed.

Mapping Schedule and Maintenance

As of **December 31, 2023**, CTDOT has mapped approximately 50% of CTDOT-owned and maintained stormwater assets statewide. CTDOT is required to complete mapping of all stormwater assets by **July 1, 2029**. As new BMPs are added to the map, CTDOT has one (1) year to complete an inspection of the BMP and three (3) years after the inspection to complete any maintenance needed. The schedule for performing this maintenance work will be integrated into any overlapping short-, medium- and long-term schedules specified above.

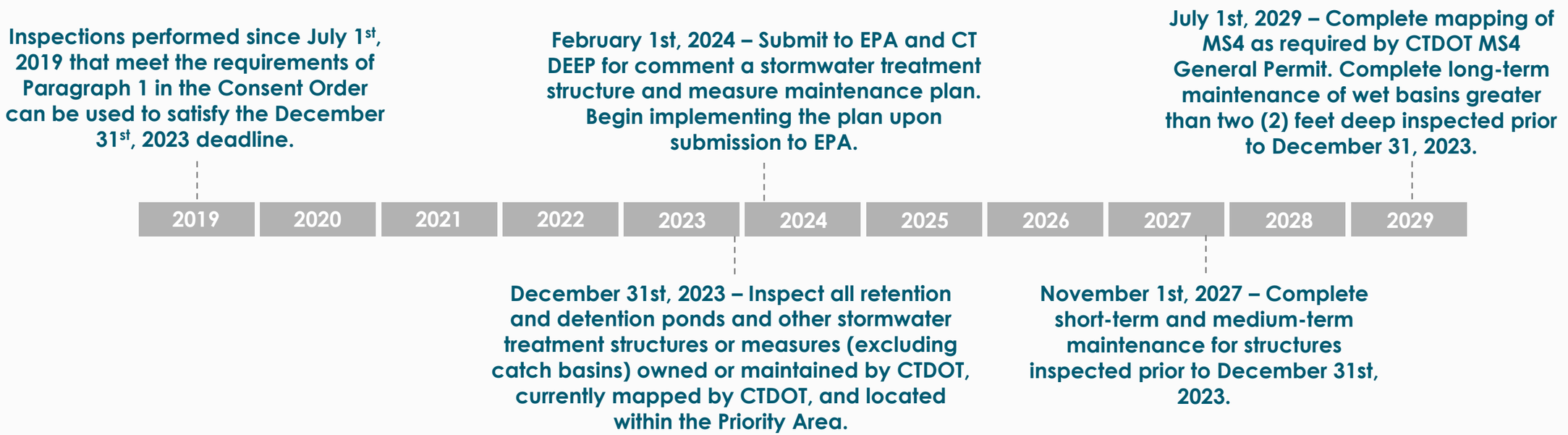


Wet Detention Basin
Image Credit: Fuss & O'Neill

Bioretention System
Image Credit: Fuss & O'Neill

2.2 BMP INSPECTION AND MAINTENANCE DEADLINES

TIMELINE OF EPA CONSENT ORDER DEADLINES



ADDITIONAL DEADLINES FROM THE EPA CONSENT ORDER

DEADLINE	INSPECTION AND MAINTENANCE REQUIREMENTS
1. Within one (1) year of completion of mapping of additional areas of the MS4 (as mapping is completed)	Inspect all stormwater BMPs owned or maintained by CTDOT which are in additional mapped areas of the MS4 and located within the Priority Area
2. Within three (3) years of the inspections described in Item 1 above	Perform short-term and medium-term maintenance (including removing sediment if at more than 50% of design capacity) of stormwater BMPs which are in additional mapped areas of the MS4 and located within the Priority Area
3. Annually	Inspect all CTDOT owned or maintained stormwater BMPs and remove accumulated pollutants (such as sediment, oils, leaves, litter, etc.) to restore full solids capture design capacity where found to be in excess of 50% design capacity. If a BMP requires maintenance as a result of inspections, CTDOT may delay future inspections and routine maintenance until the required maintenance is complete.

3 | FIELD WORK PREPARATION AND SAFETY

TRAINING AND HEALTH & SAFETY GUIDELINES

BMP INSPECTION

BMP MAINTENANCE

3.1 TRAINING AND HEALTH & SAFETY GUIDELINES

Stormwater Management Inspector Training

Prior to conducting inspections, personnel must complete the Stormwater BMP Inspection Training, which includes topics such as pre-inspection activities, what to look for during inspections, completing field inspection forms and condition ratings, post-inspection activities, and safety considerations. CTDOT provides annual training to all consultants and individuals involved with stormwater BMP inspections. This I&M Plan has been incorporated into the annual Stormwater BMP Inspection Training.

Health and Safety Guidelines

All inspection and maintenance activities must comply with local, state, and federal laws and regulations related to health and safety. Personnel shall utilize personal protective equipment (PPE), for example, head, eye, and ear protection, gloves, footwear, high-visibility clothing, and other Occupational Safety and Health Administration (OSHA) standard equipment. As explained in **Sections 3.2 and 3.3**, personnel should assess the site for safety concerns prior to the inspection or maintenance activity and develop a plan to safely and appropriately deal with health and safety concerns. No personnel should enter confined spaces (i.e., subsurface structures) unless specifically contracted to do so by CTDOT and have received specialized training, certification, and permits prior to entry. OSHA requires a confined space entry permit for spaces that include underground vaults, tanks, manholes, pits, underground utility vaults, and pipelines. If any hazardous materials or wastes are encountered, all inspections and maintenance activities must be stopped and CTDOT Office of Environmental Compliance notified. When removing manhole covers, catch basin grates, or other heavy components of a BMP, utilize specialized equipment such as a magnetic lifter device to prevent injury. The health and safety of the inspection personnel and the public is the primary concern and must be considered when performing stormwater BMP inspection and maintenance activities.

Catch Basin
Image Credit: Fuss & O'Neill

Infiltration Basin in Old Saybrook, CT
Image Credit: Fuss & O'Neill

3.2 BMP INSPECTION

Before Inspection

- Complete the CTDOT Stormwater BMP Inspector Training (see Section 3.1) prior to conducting inspections.
- Inspection personnel will be provided a list of BMPs to be inspected by CTDOT. The list will include but is not limited to the BMP ID number, BMP type, and traffic control requirements. Inspection personnel should review the location of each BMP to be inspected as they can be difficult to locate within the GIS environment.
- Review relevant digital and/or print documentation such as previous inspections, work orders, permits, or site plans.
- Look up rainfall data (from reputable sources such as National Oceanic and Atmospheric Administration) to determine the date and total rainfall of the last rain event within 72 hours of the inspection date[1]. Choose the station closest to the site as available.
- Review the route, site access restrictions, traffic control requirements and site characteristics to determine appropriate personnel, materials, equipment, and safety measures. Inspection Personnel should coordinate all traffic control with the Office of Environmental Compliance if any portion of a travel lane or paved shoulder is required to conduct the inspection. If there is conflict between site conditions, work orders, or accessibility, personnel should notify CTDOT.
- Collect all necessary field documentation and equipment for use in the field.

[1](https://www.ncei.noaa.gov/access/past-weather/)

Conducting the Inspection

- Evaluate each component of the BMP as specified within the provided BMP inspection form(s) (digital or paper) while adhering to appropriate safety measures.
- Take pictures of each BMP component to properly depict the BMP conditions while on-site.
- Maintain site conditions as-is with minimal disturbance to the ground surface and surrounding vegetation.
- Minimize disruption to both vehicular traffic and pedestrian traffic on adjacent roadways and sidewalks.

After Inspection

- All inspection results should be available within the BMP feature class on CTDOT's stormwater GIS map upon completion.
    - If the GIS system is inaccessible during the inspection, record the inspection results on the paper field forms and upload the inspection results upon returning to the office. Paper copies of any inspection results shall be available to CTDOT upon request.
- Review all inspection documentation for completeness and accuracy in the CTDOT GIS database including documenting deficiencies and noting any required maintenance as outlined in Section 4.

Inspection Equipment

The following equipment is recommended for completing stormwater BMP inspections:

- ❑ Digital device (tablet, cell phone) pre-loaded with field inspection forms and MS4 database
- ❑ Backup paper field inspection forms (Appendix A)
- ❑ Site plans or other existing documentation of the stormwater BMP (digital and/or paper versions)
- ❑ Cell phone
- ❑ High-visibility clothing
- ❑ Tape measure or measuring wheel
- ❑ Telescoping rod for sediment probing
- ❑ Equipment to help remove manhole covers/catch basin grates (crowbar, manhole hooks, magnetic lifting device, sledgehammer)
- ❑ High lumen flashlight
- ❑ Traffic cones (if traffic control is necessary)
- ❑ First aid kit
- ❑ Personal watercraft (kayak)
- ❑ Waders
- ❑ Vegetation/brush clearing tool (e.g. machete)
- ❑ Metal detector

Infiltration Trench in Old Saybrook, CT
Image Credit: Fuss & O'Neill

3.3 BMP MAINTENANCE

Planning for Maintenance

Routine and non-routine maintenance of BMPs may be performed by CTDOT or CTDOT Contractors. For BMPs maintained by Contractors, CTDOT Environmental Compliance On-Call Consultants will coordinate with CTDOT staff to compile information packages that include previous inspection results and detail on the BMP(s) and specific components that require maintenance. Prior to conducting maintenance activities, maintenance personnel should:

- Review relevant digital or print documentation such as previous inspections, work orders, permits, easements or site plans.
- Review site conditions to confirm required personnel, materials, equipment, and safety measures. If there are conflicts between site conditions and work orders, personnel should notify CTDOT.
    - Typical routine and non-routine maintenance and safety equipment is listed in the table on this page. This list is not exhaustive and will vary based on the nature and scale of the required maintenance activity.
- Schedule maintenance personnel and field activities.

Additional factors that should be considered and addressed prior to performing maintenance activities include:

- **Site Access** – is access for all stormwater BMP maintenance activities available entirely from within the CTDOT right-of-way or CTDOT property? Is coordination with a private property owner needed?
- **Staging and Stockpiling** – are sufficient staging and/or stockpiling areas available within the CTDOT right-of-way or CTDOT property? Are temporary access agreements needed with adjacent property owners to perform all necessary maintenance activities?
- **Traffic Control** – are traffic control measures or a traffic control plan needed to perform all necessary maintenance activities?
- **Erosion and Sediment Controls** – are soil erosion and sediment control measures needed to prevent or minimize soil erosion and sedimentation related to maintenance activities that involve clearing, grubbing, soil disturbance, staging and stockpiling, grading, excavation, dewatering, and similar activities?
- **Permanent Stabilization** – have permanent stabilization methods been identified?
- **Water Handling** – is dewatering and/or inflow diversion required in order to perform maintenance in the dry? How and where will this be accomplished?
- **Safety Considerations** – are there any safety concerns associated with the site or work to be completed?
- **Permitting** – are any municipal, state or federal permits or approvals required prior to performing maintenance?

Performing Maintenance

- Consultants will work with Contractors listed on the State's Department of Administrative Services (DAS) Environmental Contract to perform the maintenance needed.
- Document completion of all maintenance activities on each component of the BMP on the BMP maintenance form(s) (digital or paper) while adhering to appropriate safety measures.
- To the extent feasible, all areas of the worksite should remain as-is with minimal disturbance to the ground surface and surrounding vegetation.
- Avoid soil compaction and disturbance of areas designed for (or otherwise provide) stormwater infiltration such as infiltration basins, bioretention areas, and stormwater detention and retention basins. If soil compaction cannot be avoided, such areas should be renovated (i.e., scarified or deep tilled) to restore or enhance the infiltration capacity of the underlying soils prior to completion of the maintenance activities.
- Personnel should minimize disruption to vehicular and pedestrian traffic on adjacent roadways and sidewalks, and any necessary traffic control measures should be implemented as needed.
- All appropriate erosion and sediment control measures should be installed prior to the start of the stormwater BMP maintenance activities and maintained throughout the duration of the stormwater BMP maintenance activities.
- Properly dispose of all collected waste at a designated facility.

After Maintenance is Completed

- All maintenance work attempted or completed should be documented within the BMP feature class on CTDOT's stormwater the GIS map upon completion.
    - If the GIS system is inaccessible during the inspection, record the inspection results on the paper field forms and upload the inspection results upon returning to the office. Paper copies of any inspection results shall be available to CTDOT upon request.
- After completion of all on-site maintenance activities, the CTDOT or consultant personnel responsible for maintenance should review all documentation for completeness and accuracy in the CTDOT GIS database including documenting completed maintenance activities.

3.4 BMP MAINTENANCE

Maintenance Category	Equipment	Routine Maintenance	Non-Routine Maintenance
General	❑ Digital device or paper field forms	X	X
	❑ Crowbar and/or manhole hooks	X	X
	❑ Chisel and mallet	X	X
	❑ Assorted hand tools (screwdrivers, wrenches, pliers)	X	X
Surface Maintenance *Applies to BMPs with surface components such as filtering BMPs and stormwater basins.*	❑ Wheelbarrow or pushcart	X	X
	❑ Buckets, tarp, or other receptacle	X	X
	❑ Leaf blower	X	X
	❑ Rake, shovel, and/or spade	X	X
	❑ Chain saws (for large vegetation removal)		X
	❑ Dewatering equipment		X
	❑ Mini excavator		X
	❑ Dump trucks		X
Watering	❑ Water hose with appropriate water supply and appurtenances	X	X
	❑ Backflow preventer and associated appurtenances	X	X
	❑ Fire hydrant wrench	X	X
Subsurface Maintenance *Applies to BMPs with subsurface components such as dry wells, underground detention/infiltration systems, HDS, and OPS.*	❑ Vacuum truck with tubing	X	X
	❑ Jetter hose with nozzles of various sizes	X	X
	❑ Backflow preventer and associated appurtenances	X	X
	❑ Confined space entry harness, tripod, and air monitor as per OSHA standard 29 CR 1910.146 (as applicable)		X
Erosion and Sediment Control	❑ Catch basin filter bags		X
	❑ Silt socks		X
Safety	❑ High-visibility clothing	X	X
	❑ Hard hat	X	X
	❑ First aid kit	X	X
	❑ Work boots	X	X

Table 1. Example equipment list for stormwater BMP maintenance activities

4 | STORMWATER BMPS

UNDERGROUND DETENTION & INFILTRATION SYSTEMS
FILTERING BMP
STORMWATER BASIN
WATER QUALITY SWALE
SIMPLE DISCONNECTION
PERMEABLE PAVEMENT
HYDRODYNAMIC SEPARATOR / OIL PARTICLE SEPARATOR
DRY WELL / LEACHING CATCH BASIN

4. STORMWATER BMP TYPES

CTDOT is responsible for inspecting and maintaining various types of stormwater BMPs, which are organized into functional categories for the purposes of this plan. *Table 2* summarizes the BMP functional categories and associated types of BMPs that are addressed in this plan. These include BMPs that are currently installed as part of the state drainage system as well as BMPs that CTDOT anticipates implementing in the future.

This section provides general inspection criteria, including structural elements that are common to most BMPs (pretreatment, inlet, main treatment area, and outlet). This section also provides a description and examples of each functional category and types of BMPs along with BMP-specific inspection and maintenance criteria and guidance. For inspection criteria and field definitions and inspection forms, refer to *Appendix D*. All photos and renderings within this Plan are for illustrative purposes only and are not intended as design guidance.

I&M Plan Reference and BMP Functional Category	BMP Type	BMP Inventory as of 12/31/2023
4.1 Underground Detention & Infiltration System	• Underground Detention System • Underground Infiltration System • Subsurface Infiltration Trench	11
4.2 Filtering BMP	• Bioretention • Sand Filter • Gravel Wetland	1
4.3 Stormwater Basin	• Detention/Retention Basin • Infiltration Basin • Surface Infiltration Trench	93
4.4 Water Quality Swale	• Wet Swale • Dry Swale	2
4.5 Simple Disconnection	• Simple Disconnection (Natural Dispersion)	N/A
4.6 Permeable Pavement	• Porous Asphalt or Concrete • Permeable Interlocking Concrete Pavers	N/A
4.7 Hydrodynamic Separator (HDS) & Oil Particle Separator (OPS)	• Hydrodynamic Separator • Oil Particle Separator	95
4.8 Dry Well / Leaching Catch Basin	• Dry Well • Leaching Catch Basin	51

Table 2. BMP functional categories and types included in this plan

Underground detention system from above
Image credit: Fuss & O'Neill

Bioretention System
Image credit: Fuss & O'Neill

4.1 UNDERGROUND DETENTION & INFILTRATION SYSTEMS

Description

Underground detention systems are subsurface storage structures designed to temporarily store stormwater runoff and slowly release it at pre-development peak flow rates. They provide some pollutant removal (i.e., settling of coarse sediment), particularly for less intense rain events, and are susceptible to re-suspension of sediment during subsequent storms.

Underground infiltration systems are subsurface storage structures that reduce stormwater runoff volumes and pollutant loads, and help to recharge groundwater, by capturing, temporarily storing, and infiltrating stormwater in permeable soils below the bottom of the BMP.

Underground detention and infiltration systems typically consist of storage chambers or vaults in a crushed stone reservoir connected with pipes. Underground detention and infiltration systems often require pretreatment (i.e., HDS) to mitigate future failures or deficiencies caused by sediment and debris accumulation.

Purpose

Detention: Peak flow attenuation

Infiltration: Stormwater volume reduction, peak flow attenuation, groundwater recharge, pollutant removal

Pollutant Removal

Sediment, nitrogen, phosphorus, bacteria

Inspection Types:

- ❑ Visual inspection of any pretreatment and BMP including cleanouts, structures, and observation ports
- ❑ CCTV inspection of pipes
- ❑ Confined space entry inspection of subsurface structures

Annually Inspect for:

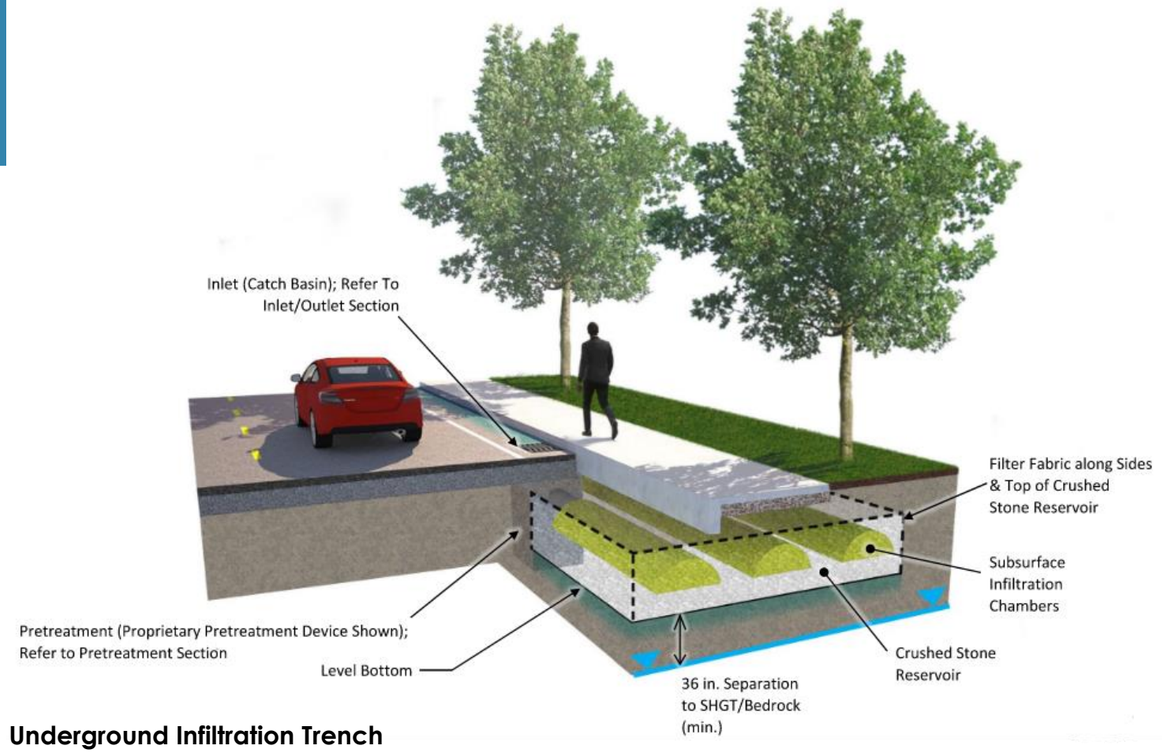
- ❑ Standing water
- ❑ Debris/sediment/litter accumulation
- ❑ Breakage/damage/corrosion/rusting of any structures
- ❑ Erosion/scour/settlement
- ❑ Riprap/gravel/sand is incomplete or missing where applicable
- ❑ Unwanted tree or woody vegetation growth
- ❑ Manhole and/or riser condition

Typical Routine Maintenance Activities:

- ❑ Remove debris, sediment, oil, grease, and unwanted vegetation
- ❑ Jet clean pipes and collect debris and water
- ❑ Vacuum clean subsurface structures
- ❑ Maintain underground chambers or vaults in accordance with manufacturer's guidelines
- ❑ Dispose of collected debris and water at approved locations

Typical Non-Routine Maintenance:

- ❑ Repair undercut or eroded areas
- ❑ Repair cracking or settling of system
- ❑ Reconstruct system or replace gravel or fill
- ❑ Repair damage to ground surface including concrete, asphalt, and masonry



Underground Infiltration Trench
Image Credit: RIDOT Linear Stormwater Manual

Underground Infiltration System
Image Credit: CT Stormwater Quality Manual

4.2 FILTERING BMP

Description

Filtering BMPs treat stormwater runoff by capturing, temporarily storing, and filtering stormwater through sand, soil, organic material, or other porous media. As the water flows through the filter media, sediment particles and attached pollutants, as well as some soluble pollutants, are removed through physical straining and adsorption. The filtered water is then infiltrated and/or collected via an underdrain and discharged back to the drainage system or to a receiving waterbody.

Filtering BMPs can include **bioretention systems, sand filters, and gravel wetlands**. A bioretention area is typically well vegetated to improve uptake of pollutants and runoff. A sand filter is a sand filled trench and a gravel wetland is a lined stormwater basin filtering runoff through gravel substrate containing pea gravel, crushed gravel and organic soil covered with vegetation.

Purpose

Stormwater volume reduction, peak flow attenuation, groundwater recharge, pollutant removal

Pollutant Removal

Sediment, nitrogen, phosphorus, bacteria

Inspection Type:

- ❑ Visual inspection of any pretreatment and BMP including cleanouts, structures, and observation ports
- ❑ CCTV inspection of pipes
- ❑ Confined space entry inspection of subsurface structures

Annually Inspect for:

- ❑ Standing water
- ❑ Debris/sediment/litter accumulation
- ❑ Erosion/scour/settlement
- ❑ Unwanted tree or woody vegetation growth
- ❑ Riprap/gravel/sand is missing or incomplete where applicable
- ❑ Vegetation and plantings condition where applicable
- ❑ Cleanout or overflow structure condition

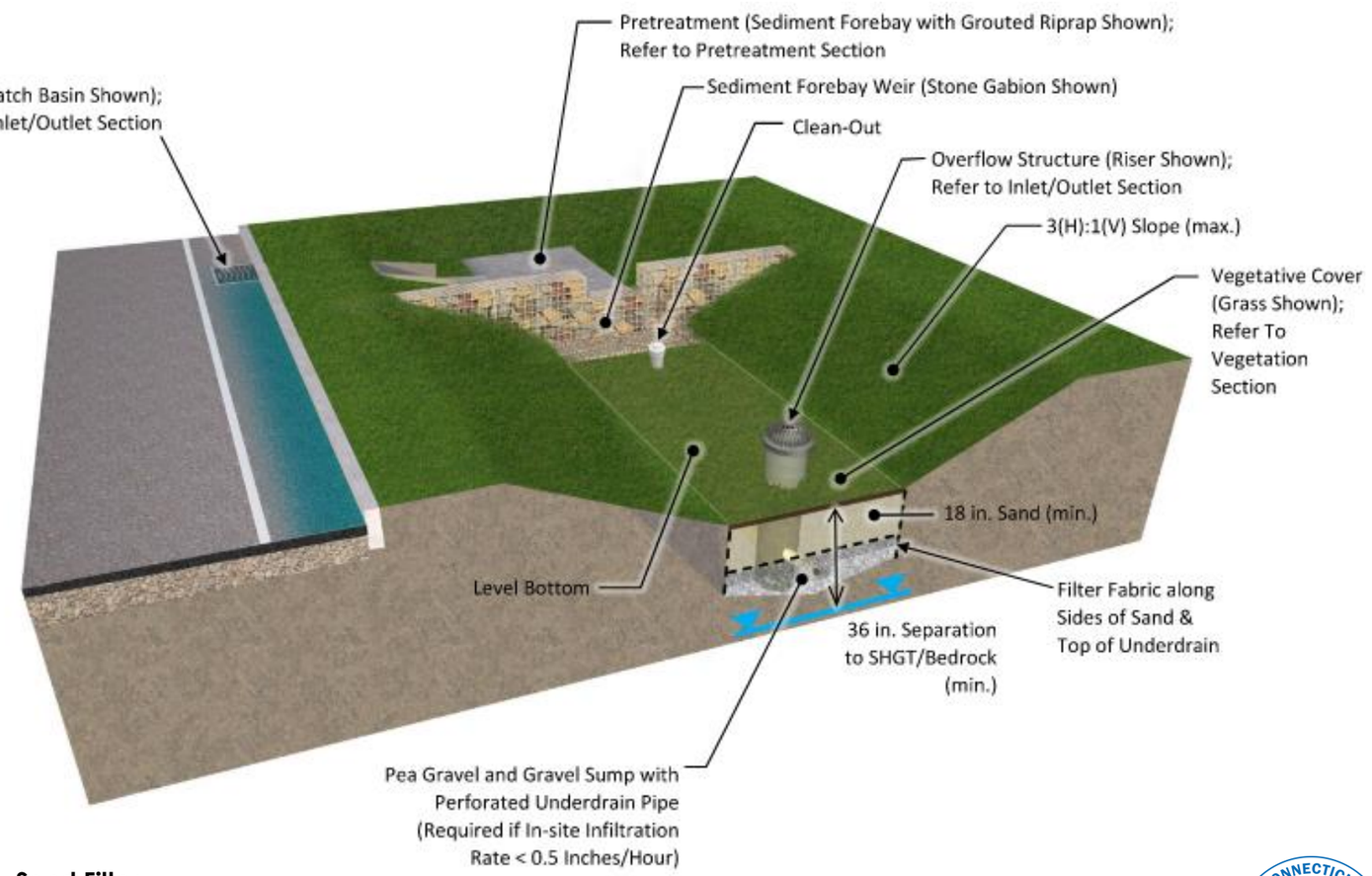
Typical Routine Maintenance Activities:

- ❑ Remove debris, sediment, oil, grease, and unwanted vegetation
- ❑ Maintain vegetation (i.e., mowing, pruning)
- ❑ Jet clean pipes and collect debris and water
- ❑ Vacuum clean subsurface structures
- ❑ Dispose of collected debris and water at approved locations

Typical Non-Routine Maintenance Activities:

- ❑ Replace clogged pea gravel/stone and topsoil
- ❑ Repair undercut and eroded areas
- ❑ Repair or replace cracking or settling of subsurface structures

Bioretention Basin
Image Credit: CT Stormwater Quality Manual



Sand Filter
Image Credit: RIDOT Linear Stormwater Manual

4.3 STORMWATER BASIN

Description

Stormwater detention, retention, and infiltration basins and surface infiltration trenches, are graded, shallow depressions that remove pollutants through settling and biological uptake. These systems reduce peak stormwater runoff that could otherwise cause erosion or flooding.

Detention and retention basins slowly discharge captured stormwater volume through an outlet to a nearby catch basin or stream. Infiltration basins retain stormwater and slowly infiltrate it into underlying, permeable soils.

Purpose

Detention/retention: Peak flow attenuation, sediment removal (retention)

Infiltration: Stormwater volume reduction, peak flow attenuation, groundwater recharge, pollutant removal

Pollutant Removal

Sediment, phosphorus, nitrogen

Stormwater basin in Middletown, RI under construction
Image Credit: Fuss & O'Neill

Inspection Type:

- ❑ Visual inspection of any pretreatment and BMP including cleanouts, structures, and observation ports
- ❑ CCTV inspection of pipes
- ❑ Confined space entry inspection of subsurface structures

Annually Inspect for:

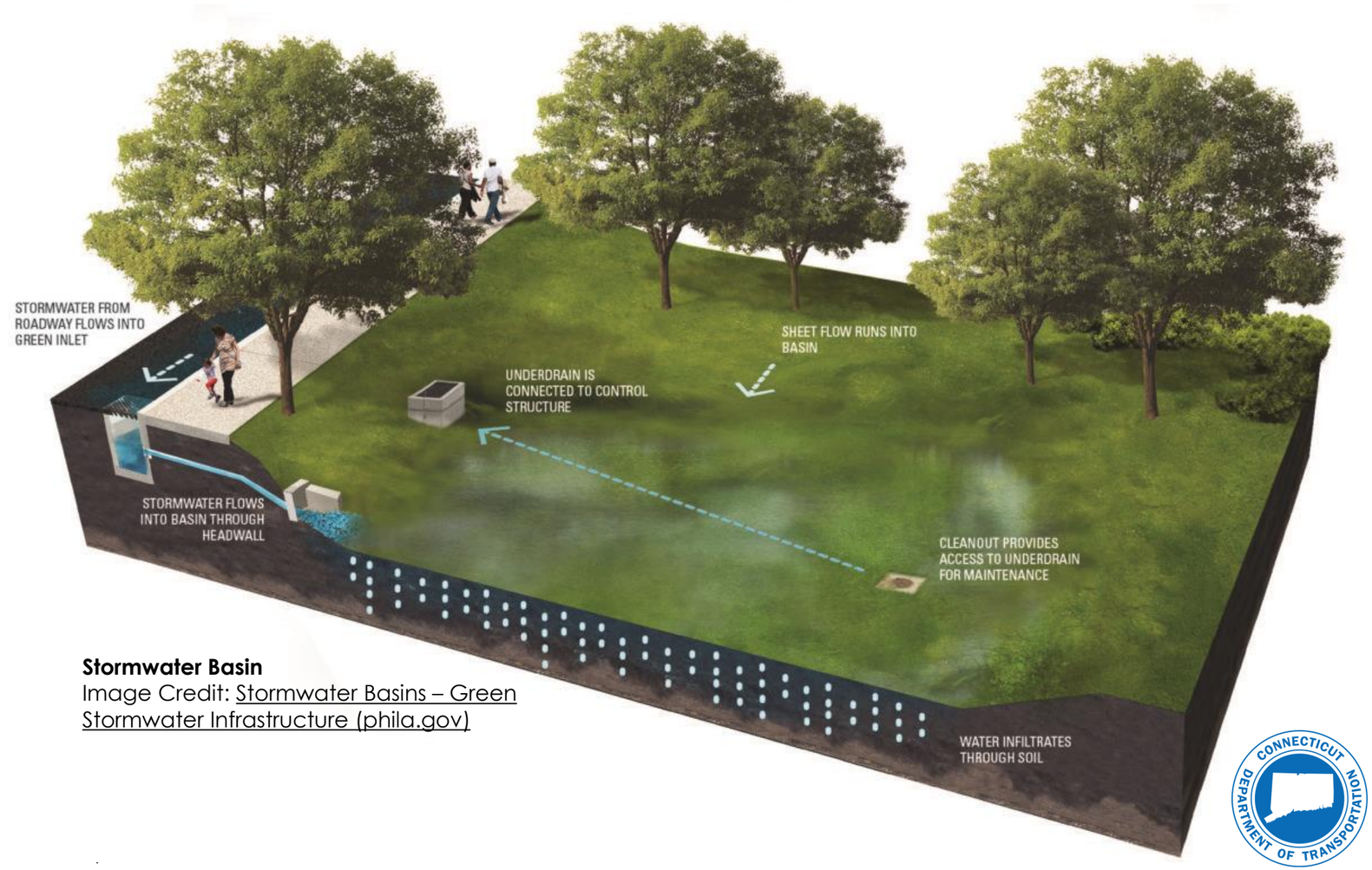
- ❑ Standing water
- ❑ Debris/sediment/litter accumulation
- ❑ Erosion/scour/settlement
- ❑ Unwanted tree or woody vegetation growth
- ❑ Vegetation and plantings condition
- ❑ Cleanout or overflow structure condition

Typical Routine Maintenance Activities:

- ❑ Remove debris, sediment, oil, grease, and unwanted vegetation
- ❑ Maintain vegetation (i.e., mowing, pruning)
- ❑ Replant or reseed lost vegetation
- ❑ Jet clean pipes and collect debris and water
- ❑ Vacuum clean subsurface structures
- ❑ Dispose of collected debris and water at approved locations

Typical Non-Routine Maintenance Activities:

- ❑ Repair undercut and eroded areas
- ❑ Pest and disease management



Stormwater Basin
Image Credit: Stormwater Basins – Green Stormwater Infrastructure (phila.gov)

4.4 WATER QUALITY SWALE

Description

A water quality swale is a vegetated channel that conveys and reduces the velocity of stormwater. They can be designed to temporarily store stormwater runoff and promote infiltration using check dams.

Water quality swales include **wet swales** and **dry swales** depending on whether they store stormwater runoff and remain saturated. Swales remove pollutants through sedimentation, adsorption, and microbial breakdown. Water quality swales are often used as pretreatment to another BMP.

Purpose

Wet Swale: Stormwater volume reduction, groundwater recharge, pollutant removal

Dry Swale: Sediment removal

Pollutant Removal

Sediment, nitrogen, phosphorus

Inspection Type:

- ❑ Visual inspection of any pretreatment, main BMP, and any conveyance structures

Annually Inspect for:

- ❑ Standing water
- ❑ Debris, sediment, and/or litter accumulation
- ❑ Erosion, scour, and/or settlement
- ❑ Unwanted tree or woody vegetation growth
- ❑ Riprap, gravel, and/or sand is missing or incomplete where applicable
- ❑ Vegetation and plantings condition

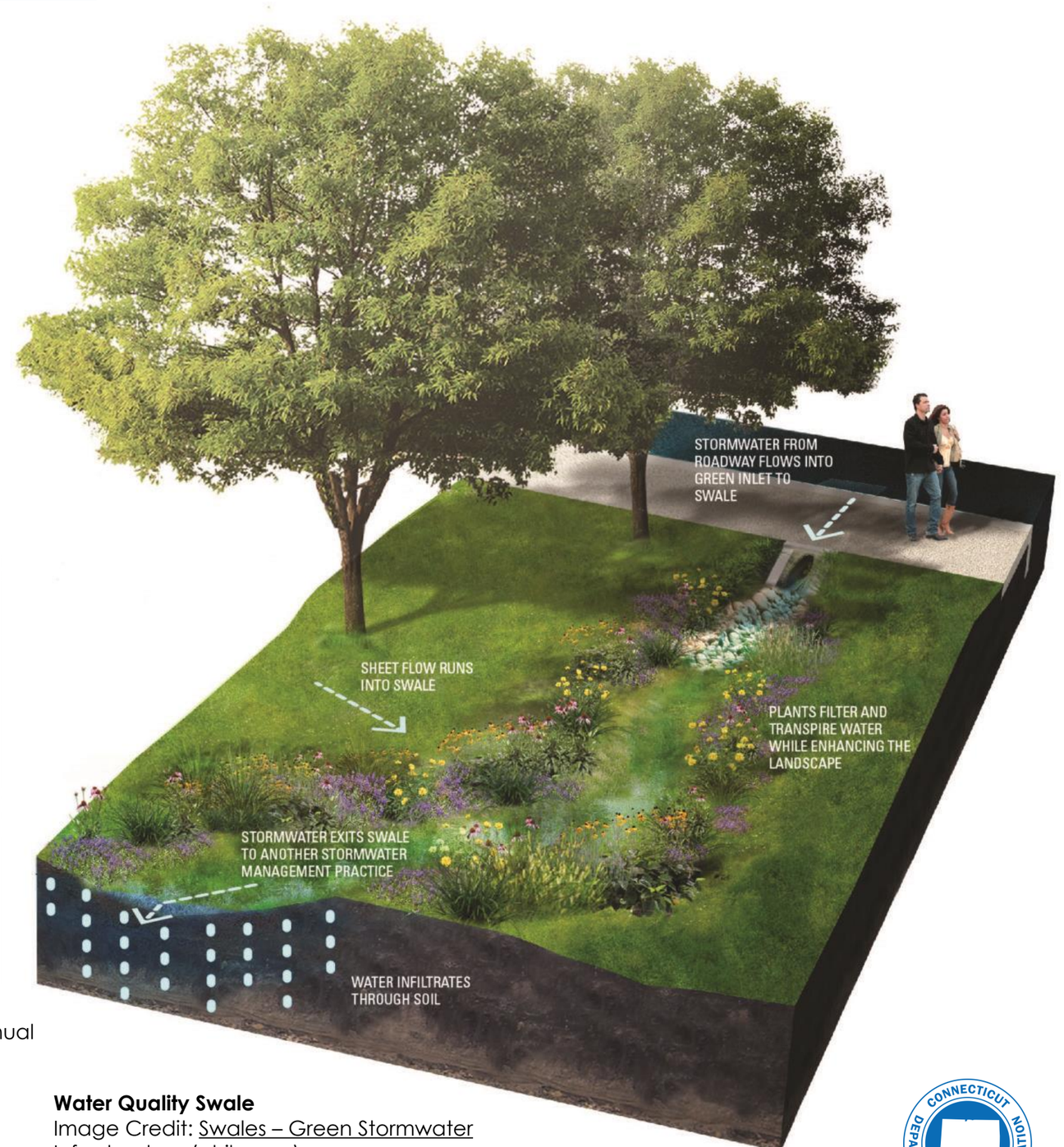
Typical Routine Maintenance Activities:

- ❑ Remove debris, sediment, oil, grease, and unwanted vegetation
- ❑ Maintain vegetation (i.e., mowing, pruning)
- ❑ Replant or reseed lost vegetation

Typical Non-Routine Maintenance Activities:

- ❑ Repair undercut and eroded areas
- ❑ Pest and disease management

Water Quality Swale
Image Credit: CT Stormwater Quality Manual



Water Quality Swale
Image Credit: Swales – Green Stormwater Infrastructure (phila.gov)

4.5 SIMPLE DISCONNECTION

Description

Simple disconnection, also known as **natural dispersion** or **impervious area disconnection**, involves the use of existing vegetation, soils and topography to filter and infiltrate sheet flow delivered from adjacent impervious areas. Runoff from impervious surfaces such as roadways, parking lots, or roofs is directed to natural or maintained vegetated areas also known as Qualifying Pervious Areas (QPAs). The QPA is often well vegetated with grasses and native plants to infiltrate, disperse, and retain stormwater runoff without causing nearby erosion or flooding.

Purpose

Stormwater volume reduction, peak flow attenuation, pollutant removal

Pollutant Removal

Sediment, nitrogen, phosphorus

Inspection Type:

❑ Visual inspection of BMP and any conveyance structures

Annually Inspect for:

❑ Standing water
❑ Debris/sediment/litter accumulation
❑ Erosion/scour/settlement
❑ Sheet flow (concentrated flow short-circuiting the system)
❑ Unwanted tree or woody vegetation growth
❑ Riprap/gravel/sand is missing or incomplete where applicable
❑ Vegetation and plantings condition

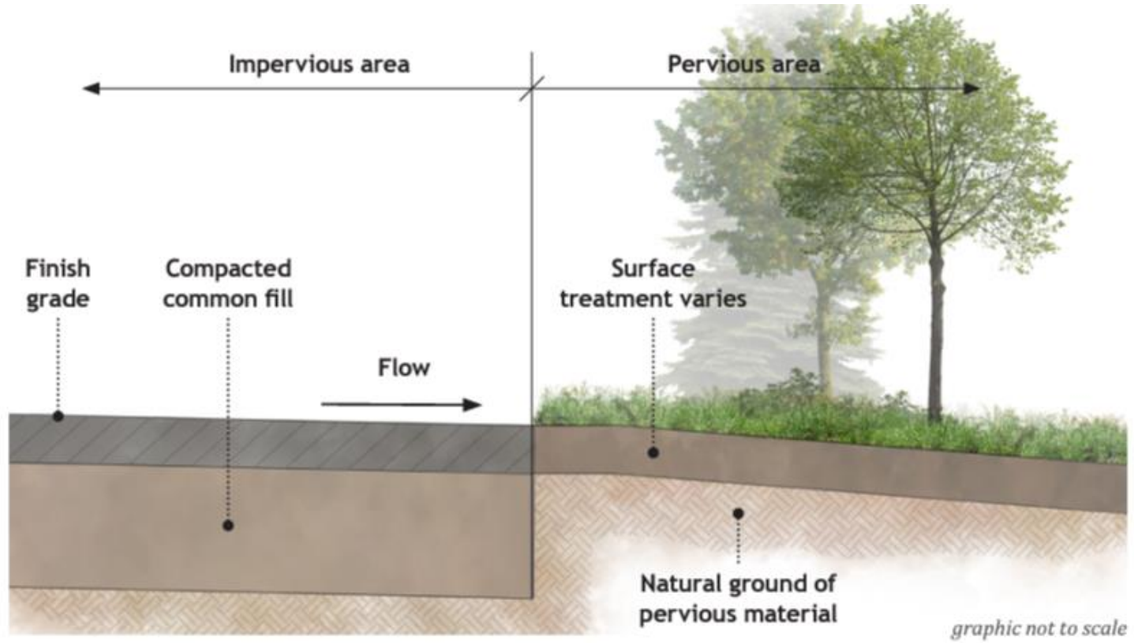
Typical Routine Maintenance Activities:

❑ Remove debris, sediment, oil, grease, and unwanted vegetation
❑ Maintain vegetation (i.e., mowing, pruning)
❑ Replant or reseed lost vegetation

Typical Non-Routine Maintenance Activities:

❑ Repair undercut and eroded areas
❑ Repair or restore inlet/outlet pipes or streams
❑ Pest and disease management

Disconnecting Roof Runoff
Image Credit: Minnesota Stormwater Manual



Impervious Area Disconnection
Image Credit: New England Stormwater Retrofit Manual

4.6 PERMEABLE PAVEMENT

Description

Permeable Pavement allows stormwater runoff to move through voids in the pavement or between paver blocks and into the underground stone reservoir where it is stored until it can infiltrate through permeable soils underneath or collect in an underdrain. Permeable paved surfaces include **porous asphalt, pervious concrete, or permeable interlocking concrete pavers (PICP)**.

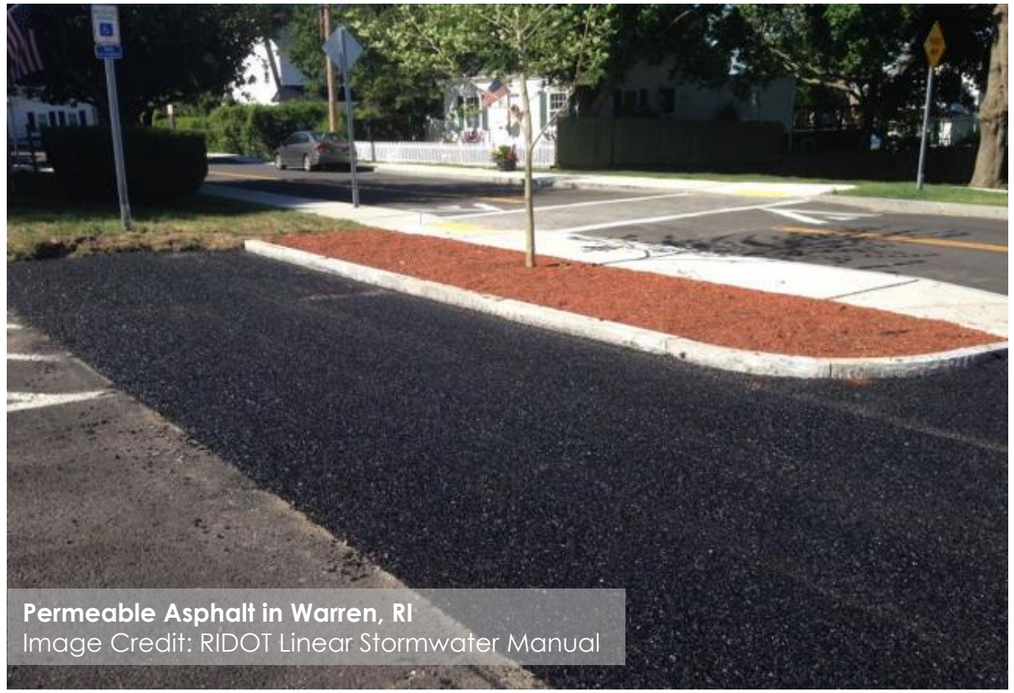
Purpose

Detention/retention: Peak flow attenuation, sediment removal

Infiltration: Stormwater volume reduction, peak flow attenuation, groundwater recharge, pollutant removal

Pollutant Removal

Sediment, nitrogen, phosphorus, bacteria



Permeable Asphalt in Warren, RI
Image Credit: RIDOT Linear Stormwater Manual

Inspection Type:

❑ Visual inspection of BMP including adjacent sites

Annually Inspect for:

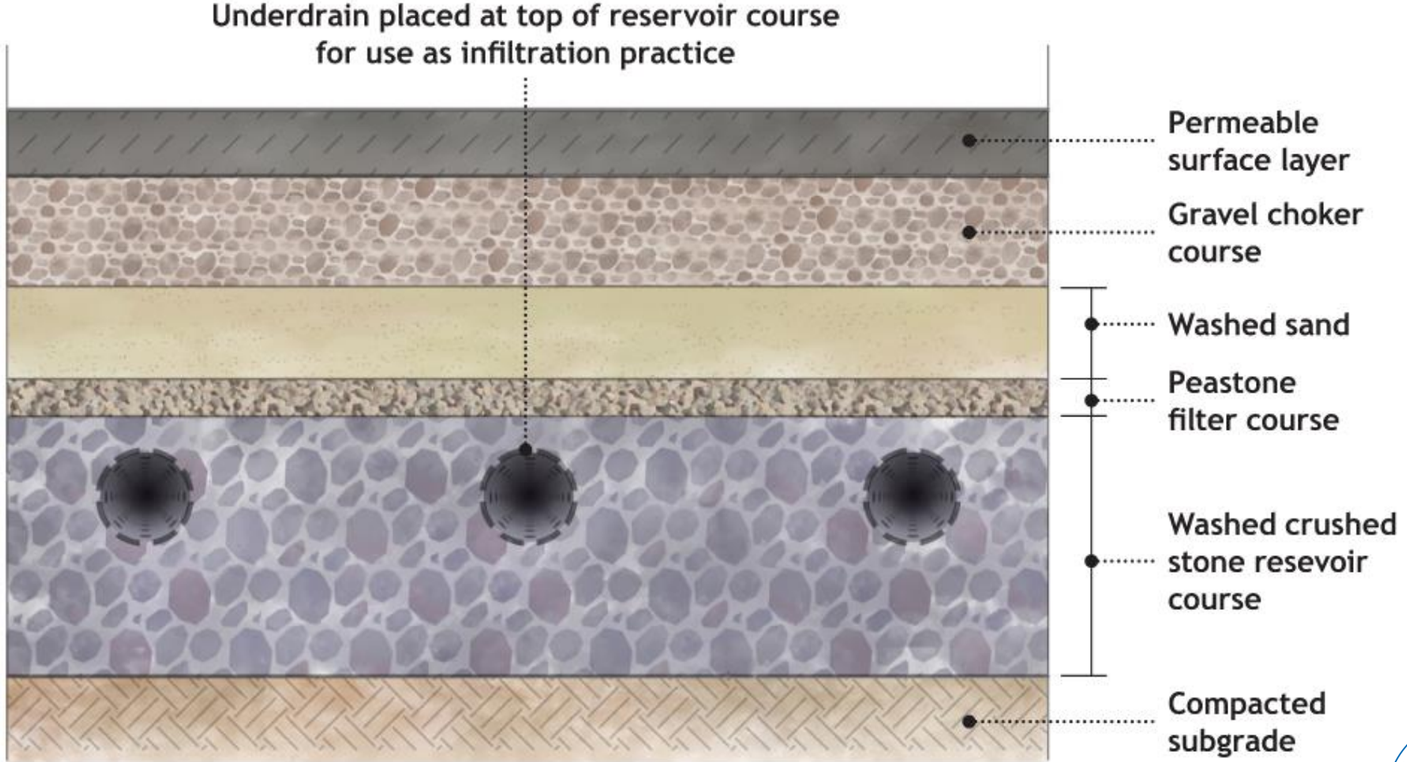
❑ Standing water
❑ Debris/sediment/litter accumulation
❑ Erosion/scour/settlement around the pavement
❑ Sheet flow
❑ Unwanted tree or woody vegetation growth
❑ Cracking or settling of the pavement

Typical Routine Maintenance Activities:

❑ Vacuum sweep and/or air blow permeable pavement surface
❑ Remove other accumulated debris, sediment, oil/grease, leaves, and unwanted vegetation from permeable pavement surface
❑ Jet clean underdrain pipes (if any) and collect debris and water
❑ Dispose of collected debris and water at approved locations

Typical Non-Routine Maintenance Activities:

❑ Repair undercut and eroded areas
❑ Repair cracking or settling of pavement



Permeable Pavement with Underdrain
Image Credit: New England Stormwater Retrofit Manual

4.7 HYDRODYNAMIC SEPARATOR (HDS) / OIL PARTICLE SEPARATOR (OPS)

Description

HDS and OPS are underground systems that separate out sediment, oil, and other particles from stormwater. A HDS uses cyclone separation and gravity to remove sediments that sink to the bottom of the chamber. An OPS removes floatables such as trash, as well as debris, sediment and oil/grease through multiple baffled chambers. Floatables and sediments are typically removed in the first chamber. The second chamber is used for oil and grease separation and an optional third chamber is used for enhanced sediment removal. Since HDS and OPS have limited volume capacity they are often used as pretreatment.

Purpose

Pollutant removal

Pollutant Removal

Sediment, oil/grease, trash

Inspection Type:

- ❑ Video inspection of BMP including cleanouts, structures, and observation ports
- ❑ Confined space entry inspection of structures, as needed

Annually Inspect for:

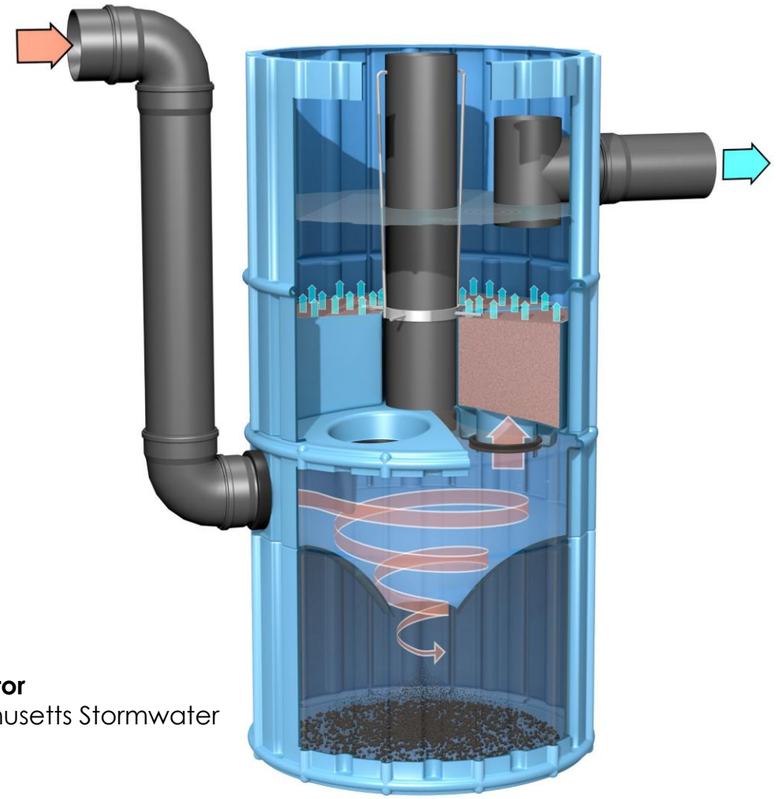
- ❑ Standing water
- ❑ Debris/sediment/litter accumulation
- ❑ Breakage/damage/corrosion/rusting of the structure
- ❑ Unwanted tree or woody vegetation growth
- ❑ Erosion/scour/settlement
- ❑ Manhole condition

Typical Routine Maintenance Activities:

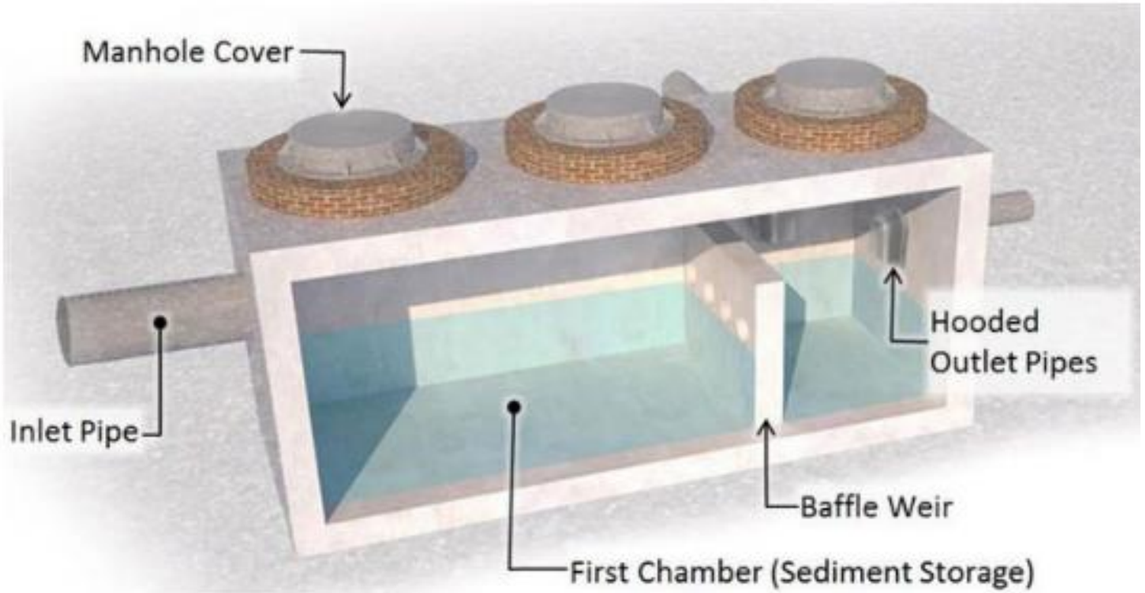
- ❑ Jet clean pipes and collect debris and water
- ❑ Vacuum clean subsurface structures
- ❑ Maintain underground structures in accordance with manufacturer's guidelines
- ❑ Dispose of collected debris and water at approved locations

Typical Non-routine Maintenance Activities:

- ❑ Repair undercut or eroded areas
- ❑ Fill in and restore settled or uneven grade around the structure
- ❑ Repair cracking or slumping of the structure



Hydrodynamic Separator
Image Credit: Massachusetts Stormwater Handbook



Oil Particle Separator
Image Source: CT Stormwater Quality Manual

4.8 DRY WELL / LEACHING CATCH BASIN

Description

Dry wells and leaching (infiltrating) catch basins are perforated precast concrete open bottomed structures surrounded by crushed stone. The structure can temporarily store stormwater runoff before it infiltrates through the crushed stone and permeable soils. Both systems are subsurface, have a small footprint, and have a limited storage capacity. They require pretreatment which is typically provided by a pretreatment structure such as a deep-sump catch basin or hydrodynamic separator.

Purpose

Stormwater volume reduction, peak flow attenuation, groundwater recharge, pollutant removal

Pollutant Removal

Sediment, nitrogen, phosphorus, bacteria

Inspection Type:

- ❑ Visual inspection of any stand-alone pretreatment and main BMP including cleanouts, structures, and observation ports
- ❑ CCTV inspection of pipes
- ❑ Confined space entry inspection of structures, as needed

Annually Inspect for:

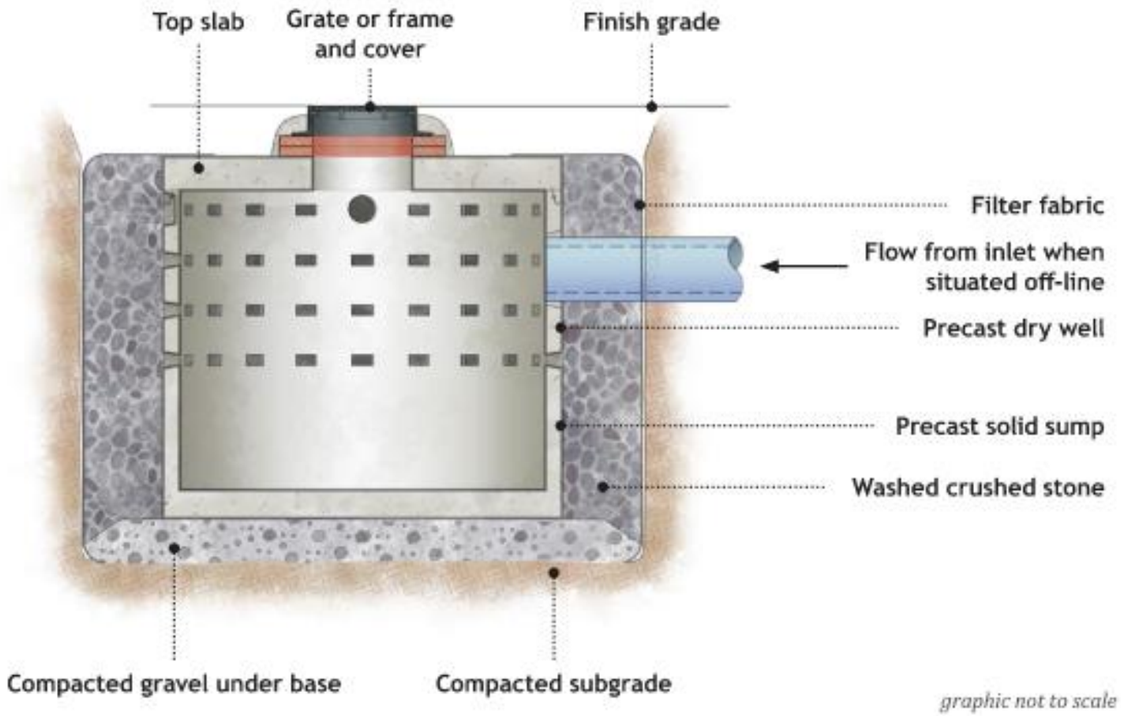
- ❑ Standing water
- ❑ Debris/sediment/litter accumulation
- ❑ Breakage/damage/corrosion/rusting of the structure
- ❑ Unwanted trees or woody vegetation growth
- ❑ Erosion/scour/settlement
- ❑ Manhole condition

Typical Routine Maintenance Activities:

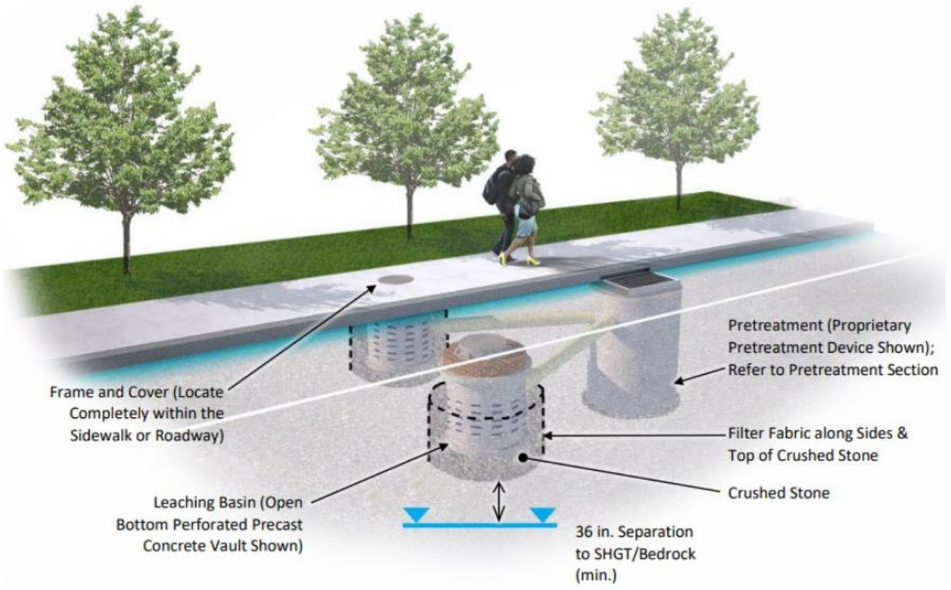
- ❑ Remove debris, sediment, oil, grease, and unwanted vegetation
- ❑ Jet clean pipes and collect debris and water
- ❑ Vacuum clean subsurface structures
- ❑ Maintain underground structures in accordance with manufacturer's guidelines
- ❑ Dispose of collected debris and water at approved locations

Typical Non-Routine Maintenance Activities:

- ❑ Repair undercut and eroded areas
- ❑ Repair cracking or settling of the structure



Perforated Precast Concrete Drywell
Image Credit: New England Stormwater Retrofit Manual



Perforated Precast Concrete Infiltrating Catch Basin
Image Credit: CT Stormwater Quality Manual

APPENDICES

APPENDIX A | BMP INSPECTION FORM

APPENDIX B | BMP MAINTENANCE FORM

APPENDIX C | BMP CONDITION RATING EXAMPLES

APPENDIX A | BMP INSPECTION FORM

BMP INSPECTION FORM FIELDS AND DEFINITIONS

General

Field	Description
BMP ID	Auto populated in the CTDOT database and is unique to each BMP
Date of Inspection	Auto populated date and time of inspection
Inspected By	Populate with the option most applicable to the inspection from CTDOT, Consultant, or Contractor
Can the BMP be located?	Is the inspector able to easily locate the BMP using the CTDOT database?
Is the BMP accessible?	Can each component of the BMP be inspected?
Is the BMP ratable?	Can each component of the BMP be rated? If not, is it unratable due to being obstructed, submerged, or other reasons?
BMP Subtype	Auto populated based on the BMP categories (Filtering, Dry well/leaching catch basin, HDS & OPS, Permeable pavement, Simple disconnection, Stormwater basin/trench, Underground detention/infiltration, Water quality swale)
Current Weather Conditions	Weather conditions at time of inspection
Date of last rain event within past 72 hours	Utilize reputable, historic weather data (such as from NOAA or NCEI) to determine the date of last rain event
Total rainfall from last rain event	Utilize reputable, historic weather data to calculate total rainfall on data of last rain event (see above)
Inspection Type	Entered by the inspector as Visual, Confined Space, Video, Drone, or Other

BMP INSPECTION FORM FIELDS AND DEFINITIONS

Pretreatment / Inlet / Main Treatment Area / Outlet

Field	Description
Standing water present location	Water levels in the system can be determined by visually inspecting open storage areas in surface components and by inspecting cleanouts and/or observation ports installed within the subsurface components. Some BMPs are designed to temporarily hold water such as a Wet Detention Basin. Refer to the plans provided by CTDOT. If the BMP is not designed to hold water, and there is standing water 48 hours after a precipitation event, then maintenance is needed. Refer to the general criteria for the last precipitation event. Which BMP components have standing water present?
Debris/siltation location	Inspect for evidence of excessive sediment buildup in or around the BMP that could potentially hinder the efficiency and productivity of the BMP.
Debris/siltation severity	Debris/siltation accumulation of >50%: Use a long telescoping rod to determine the soft bottom. Then push through the soft bottom, if possible, to determine actual, hard bottom. The difference is the sediment accumulation. Debris/siltation accumulation > 50% of storage capacity requires maintenance. Refer to plans provided by CTDOT or corresponding BMP section below for BMP storage capacity. Which components have an accumulation of debris, sediment, oil/grease or litter?
Breakage/damage location	Inspect for evidence of breakage, damage, corrosion, rusting, or vandalism in or around the BMP. Which components show signs of breakage, damage, degradation, corrosion, rusting, evidence of animal burrowing or vandalism?
Breakage/damage severity	Determine if breakage/damage could potentially hinder the efficiency or productivity of the BMP. If there is breakage, damage, corrosion, or rusting present impacting the efficiency and performance of the BMP, maintenance is needed.
Erosion location	Inspect for erosion in or around the BMP. Which components show signs of erosion, scour, or settlement?
Erosion severity	Determine if erosion could potentially hinder the efficiency or performance of the BMP. If there is erosion present impacting the efficiency of the BMP, maintenance is needed.
Riprap location	Refer to plans provided by CTDOT to determine if riprap or gravel is utilized. Which components have the riprap or gravel armoring missing or incomplete?
Riprap condition	Determine the overall condition of riprap including if it is missing or incomplete. If riprap or gravel was utilized and is presently missing or incomplete, the BMP requires maintenance.

BMP INSPECTION FORM FIELDS AND DEFINITIONS

Pretreatment / Inlet / Main Treatment Area / Outlet (continued)

Field	Description
Woody vegetation location	Inspect for tree roots and woody vegetation in or around the BMP that is impeding flow or causing damage to the structure. Which components have unwanted trees or woody vegetation growth?
Woody vegetation severity	If the tree roots or woody vegetation are impeding flow or causing damage, maintenance is needed.
Manhole location	Where applicable, refer to plans provided by CTDOT. Inspect for debris, sediment, or litter in or around the manhole covers or port caps that is impeding flow or damaging to the structure. Which components are the manhole covers or port caps covered by debris, sediment, litter, or showing evidence of rusting or deterioration?
Manhole condition	If the debris, sediment, or litter in or around the manhole covers or port caps or deterioration of the manhole covers or port caps is impeding flow or damaging the structure, maintenance is needed.
Riser/wall condition	Where applicable, refer to plans provided by CTDOT. Walls and slopes should be smoothly graded with no evidence of depressions or settling. If the walls do not appear structurally sound or there is evidence of depressions from slumping or settling, maintenance is required.
Condition of plantings	Where applicable, refer to plans provided by CTDOT. If the BMP is designed to have vegetation it should be non-woody and evenly distributed over the area without impeding the flow or efficiency of the BMP. What is the condition of the landscaped plantings detailed within the plans?
Seeding coverage	Where applicable, refer to plans provided by CTDOT. If over 85% of the BMP is not appropriately vegetated, the BMP requires maintenance.
Permeable pavement condition	Inspect the pavement for cracking, settling, pooling, or if site features adjacent or around the BMP are negatively impacting flow or efficiency of the Permeable Pavement. If the BMP is negatively affected by cracking, settling, pooling, or adjacent site features, maintenance is needed.
Sheet flow present	Does the flow from contributing impervious areas enter the receiving pervious area as sheet flow and remain as sheet flow throughout its length?

BMP INSPECTION FORM FIELDS AND DEFINITIONS

Pretreatment / Inlet / Main Treatment Area / Outlet (continued)

Field	Description
Overall Condition	Rate the BMP overall as Excellent, Good, Fair, Poor, or Failed. This should be completed after the inspection of all BMP components. If no components of the BMP require maintenance or exhibit deficiencies, the BMP is in excellent condition.
Maintenance cleaning needed	Do any inspected components of the BMP require maintenance cleaning?
Describe cleaning needed	Describe any cleaning required including the component and severity.
Maintenance repairs needed	Do any inspected components of the BMP require maintenance repair?
Describe repairs needed	Describe any repairs required including the component and severity.
Condition comments	Additional comments

CTDOT STORMWATER BMP INSPECTION FORM

BMP ID:	
Date of Inspection:	
Inspection By:	☐ CTDOT ☐ Consultant ☐ Contractor
Inspection Reason:	☐ Condition Rating ☐ Maintenance Activity
Can the BMP be located?	☐ Yes ☐ No
Is the BMP accessible?	☐ Yes ☐ No If no, please explain: _____
Is the BMP ratable?	☐ Yes ☐ No – Obstructed ☐ No – Submerged ☐ No – Other (please explain): _____
BMP Subtype:	☐ Filtering ☐ Dry well/leaching catch basin ☐ HDS & OPS ☐ Permeable pavement ☐ Simple disconnection ☐ Stormwater basin/trench ☐ Underground detention/infiltration ☐ Water quality swale
Current Weather Conditions:	☐ Sunny ☐ Mostly sunny ☐ Mostly cloudy ☐ Cloudy ☐ Rain ☐ Fog ☐ Other (please explain): _____
Date of last rain event:	
Total rainfall from last rain event:	
Inspection Type:	☐ Visual ☐ Confined Space Entry ☐ Video ☐ Drone ☐ Other (please explain): _____

INSPECTION MEASURE		
Is there standing water present? *	☐ Yes, location: ☐ Pretreatment ☐ Inlet ☐ Main BMP Area ☐ Outlet ☐ Pretreatment/Inlet ☐ Other (please explain): _____ ☐ No ☐ N/A	☐ Inlet/Main BMP Area ☐ Inlet/Main BMP Area/Outlet ☐ Main BMP Area/Outlet ☐ Inlet/Outlet ☐ All Sections
Debris/siltation present? **	☐ Yes, location: ☐ Pretreatment ☐ Inlet ☐ Main BMP Area ☐ Outlet ☐ Pretreatment/Inlet ☐ Other (please explain): _____ ☐ No ☐ N/A	☐ Inlet/Main BMP Area ☐ Inlet/Main BMP Area/Outlet ☐ Main BMP Area/Outlet ☐ Inlet/Outlet ☐ All Sections
Debris/siltation severity	☐ None ☐ Minor ☐ Moderate	☐ Severe ☐ N/A
Breakage/damage present?	☐ Yes, location: ☐ Pretreatment ☐ Inlet ☐ Main BMP Area ☐ Outlet ☐ Pretreatment/Inlet ☐ Other (please explain): _____ ☐ No ☐ N/A	☐ Inlet/Main BMP Area ☐ Inlet/Main BMP Area/Outlet ☐ Main BMP Area/Outlet ☐ Inlet/Outlet ☐ All Sections
Breakage/damage severity	☐ None ☐ Minor ☐ Moderate	☐ Severe ☐ N/A

INSPECTION MEASURE		
Erosion present?	☐ Yes, location: ☐ Pretreatment ☐ Inlet ☐ Main BMP Area ☐ Outlet ☐ Pretreatment/Inlet ☐ Other (please explain): _____ ☐ No ☐ N/A	☐ Inlet/Main BMP Area ☐ Inlet/Main BMP Area/Outlet ☐ Main BMP Area/Outlet ☐ Inlet/Outlet ☐ All Sections
Erosion severity	☐ None ☐ Minor ☐ Moderate	☐ Severe ☐ N/A
Riprap present?	☐ Yes, location: ☐ Pretreatment ☐ Inlet ☐ Main BMP Area ☐ Outlet ☐ Pretreatment/Inlet ☐ Other (please explain): _____ ☐ No ☐ N/A	☐ Inlet/Main BMP Area ☐ Inlet/Main BMP Area/Outlet ☐ Main BMP Area/Outlet ☐ Inlet/Outlet ☐ All Sections
Riprap condition	☐ Excellent ☐ Good ☐ Fair	☐ Poor ☐ Failed ☐ N/A
Woody vegetation present?	☐ Yes, location: ☐ Inlet ☐ Main BMP Area ☐ Outlet ☐ Inlet/Main BMP Area ☐ Other (please explain): _____ ☐ No ☐ N/A	☐ Inlet/Main BMP Area/Outlet ☐ Main BMP Area/Outlet ☐ Inlet/Outlet ☐ All Sections
Woody vegetation severity	☐ None ☐ Minor ☐ Moderate	☐ Severe ☐ N/A

INSPECTION MEASURE		
Manhole present?	☐ Yes, location: ☐ Inlet ☐ Main BMP Area ☐ Outlet ☐ Inlet/Main BMP Area ☐ Other (please explain): _____ ☐ No ☐ N/A	☐ Inlet/Main BMP Area/Outlet ☐ Main BMP Area/Outlet ☐ Inlet/Outlet ☐ All Sections
Manhole condition	☐ Excellent ☐ Good ☐ Fair	☐ Poor ☐ Failed ☐ N/A
Riser/wall condition	☐ Excellent ☐ Good ☐ Fair	☐ Poor ☐ Failed ☐ N/A
Condition of plantings	☐ Excellent ☐ Good ☐ Fair	☐ Poor ☐ Failed ☐ N/A
Seeding coverage	☐ Greater than 85% ☐ Less than 85% ☐ N/A	
Permeable pavement condition	☐ Excellent ☐ Good ☐ Fair	☐ Poor ☐ Failed ☐ N/A
Sheet flow present? *N/A unless simple disconnection sheet flow present*	☐ Yes ☐ No ☐ N/A	
Suggested Repair/Maintenance		
Overall Condition	☐ Excellent ☐ Good ☐ Fair	☐ Poor ☐ Failed
Maintenance cleaning needed?	☐ Yes ☐ No	
Describe cleaning needed:		
Maintenance repair (s) needed?	☐ Yes ☐ No	
Describe repair (s) needed:		
Condition Comments:		

Additional Comments:

* If there is standing water 48 hours after a precipitation event, then maintenance is needed.

* Water levels in the system can be determined by inspecting cleanout/observation ports installed within the system. If there is standing water 48 hours after a precipitation event, then maintenance is needed.

** Use a long telescoping rod to determine the soft bottom. Then push through the soft bottom, if possible, to determine the actual, hard bottom. The difference is the sediment accumulation. Sediment/debris accumulation > 50% of storage capacity requires maintenance.

APPENDIX B | BMP MAINTENANCE FORM

CTDOT STORMWATER BMP MAINTENANCE FORM

BMP ID:	
BMP Type:	
Date of Previous Inspection:	
Date of Maintenance:	

Maintenance Reason (please check one):

☐ Routine
☐ Work Order
☐ Condition Rating Request
☐ Compliant Follow-Up
☐ Storm Related
☐ Emergency
☐ Other

Maintenance Performed?

☐ Yes
☐ No

Repair Performed?

☐ Yes
☐ No

Describe repair performed:

Debris/Sediment Removed?

☐ Yes
☐ No

Estimated Debris/Sediment Removed (cubic yards):

Describe Debris/Sediment Removed:

Vegetation Management Performed?

☐ Yes
☐ No

Describe Vegetation Management Performed:

All Maintenance Issues Addressed?

☐ Yes
☐ No

Describe Maintenance Issues Not Addressed:

Maintenance Comments:

Cost of Work Performed:

APPENDIX C | BMP CONDITION RATING EXAMPLES

EXCELLENT CONDITION

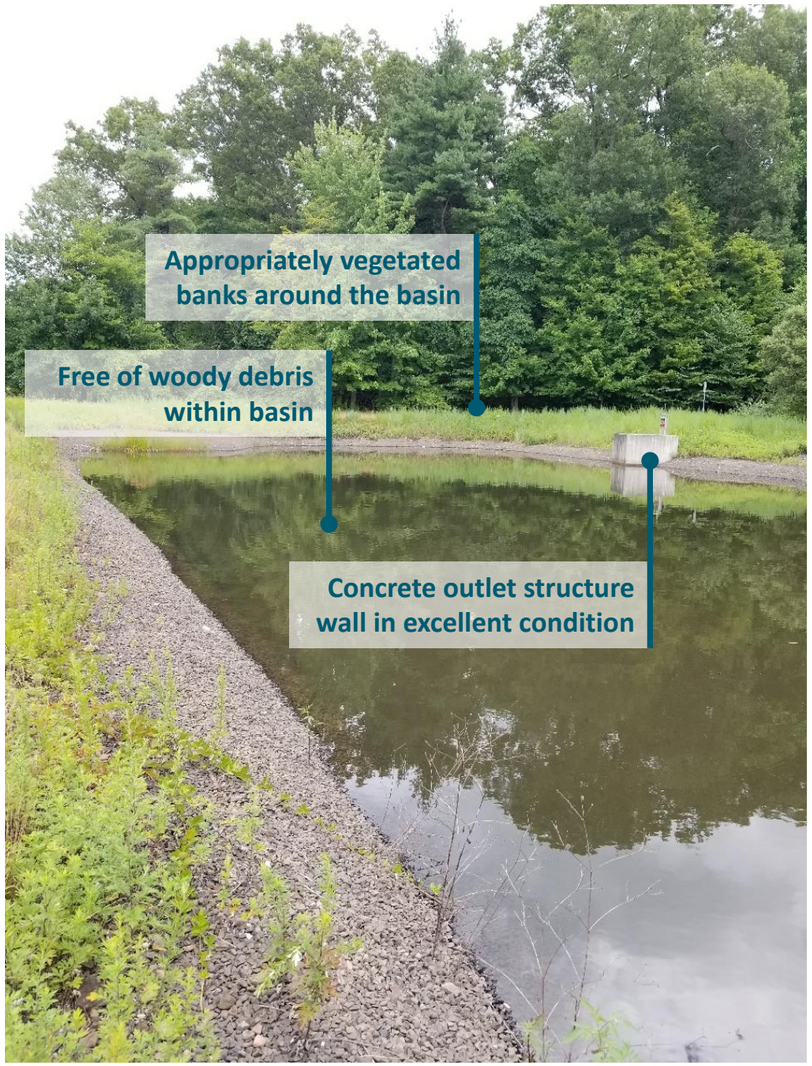


Image Credit: CTDOT

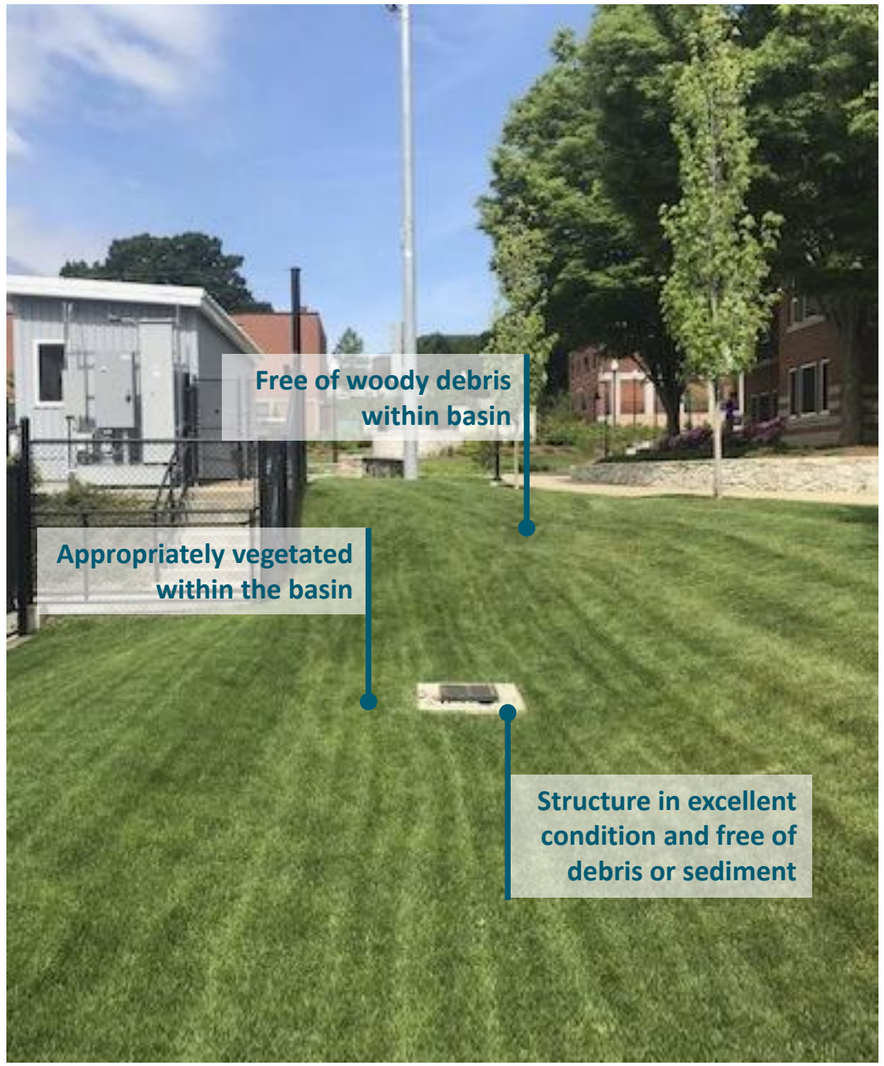
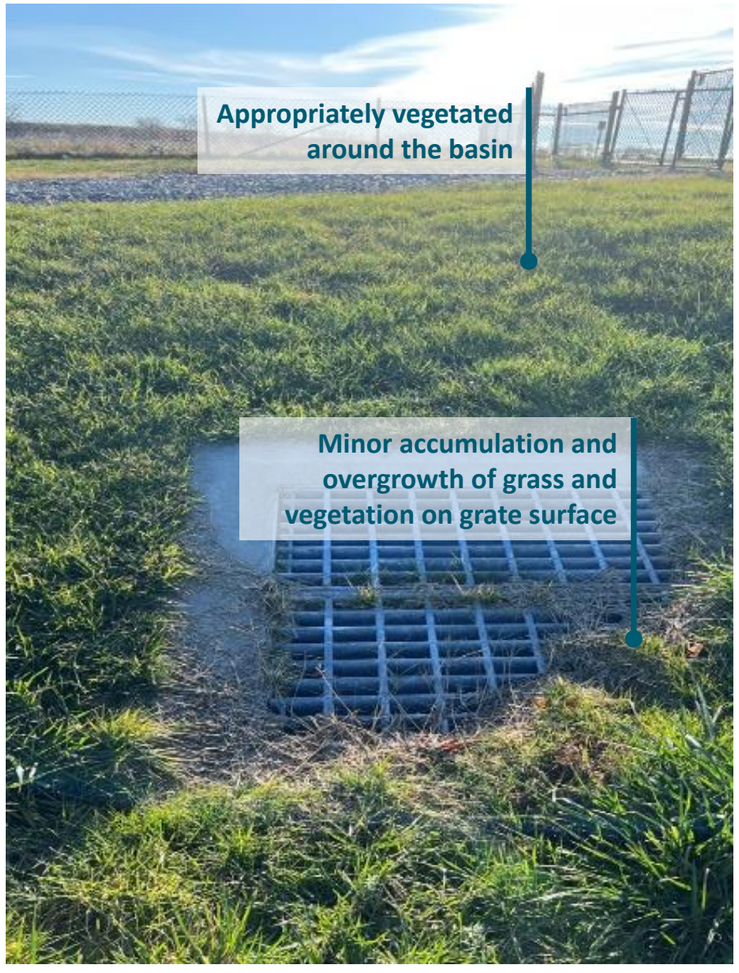


Image Credit: Fuss & O'Neill

Image Credit: CTDOT

GOOD CONDITION



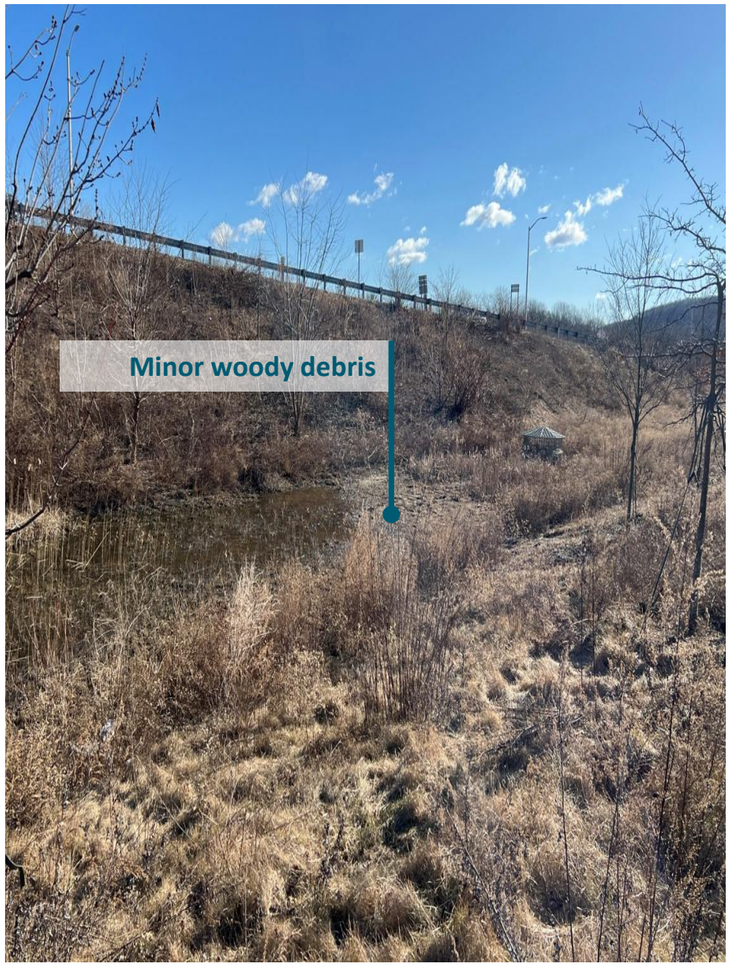
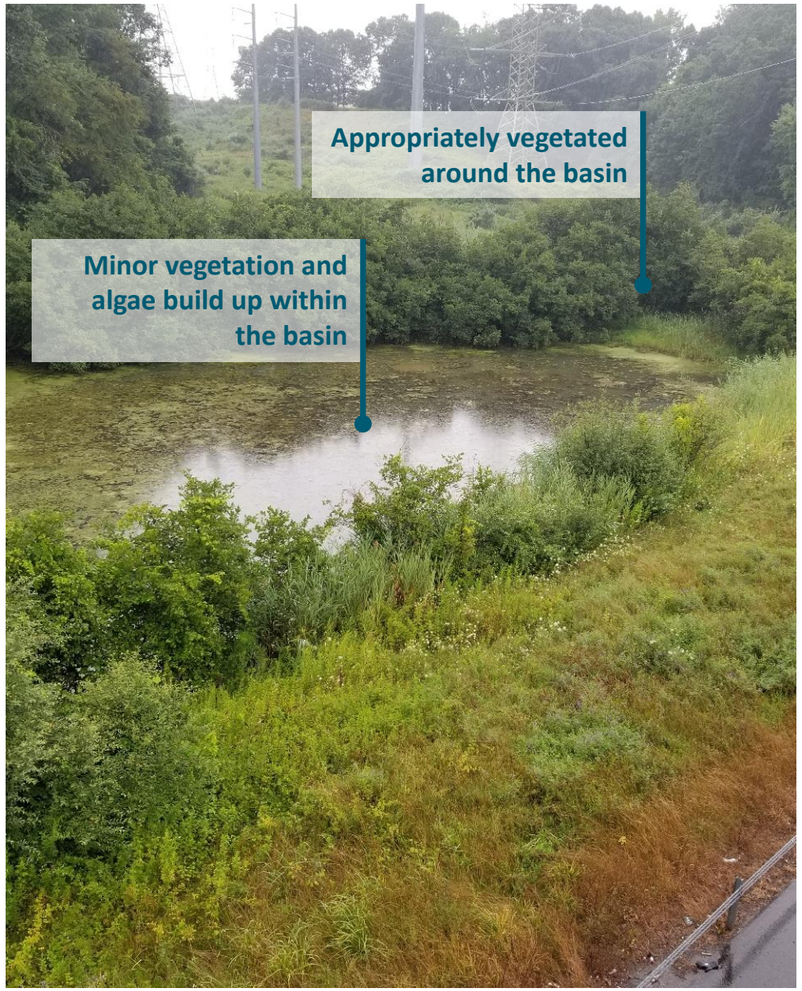
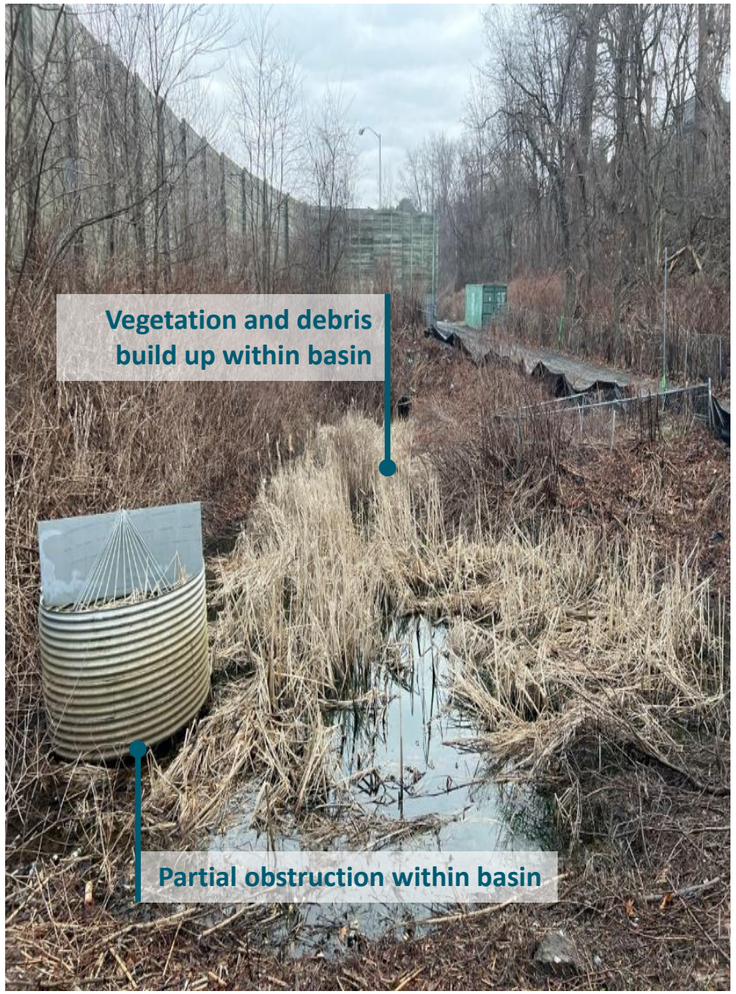


Image Credit: CTDOT

FAIR CONDITION





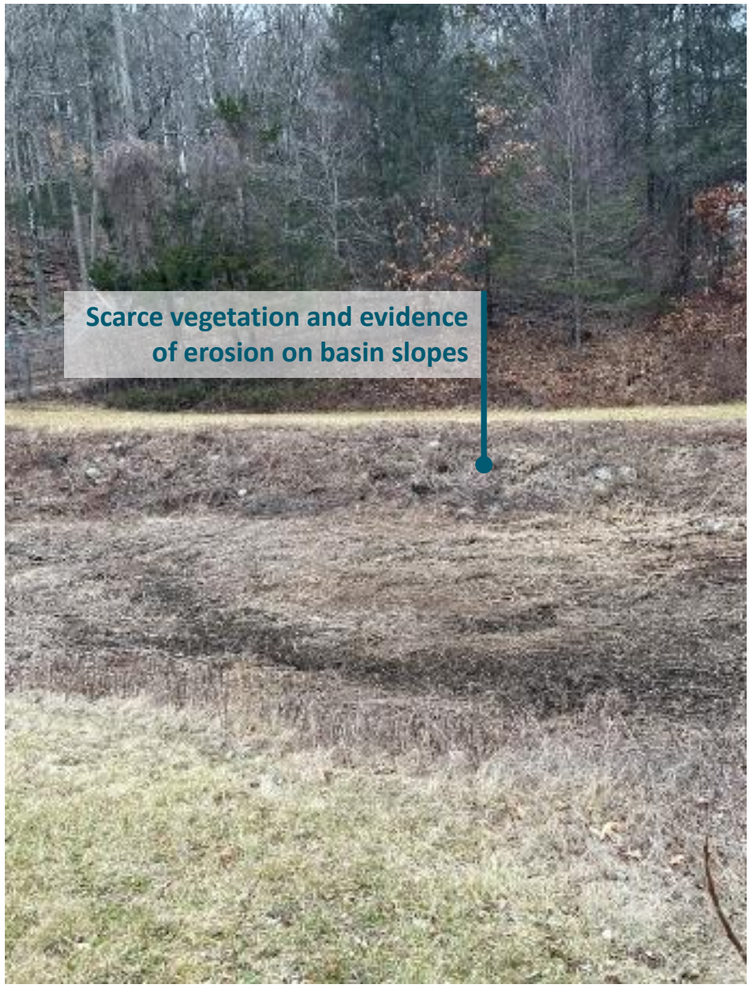
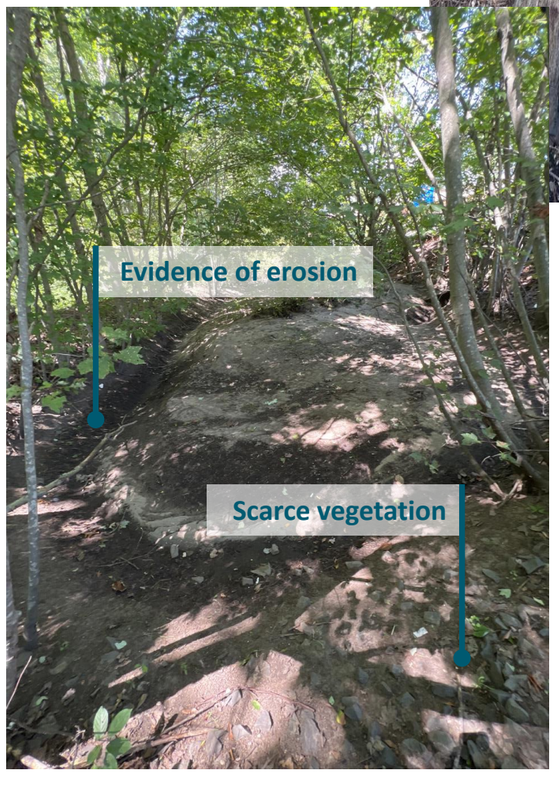


Image Credit: CTDOT

POOR CONDITION



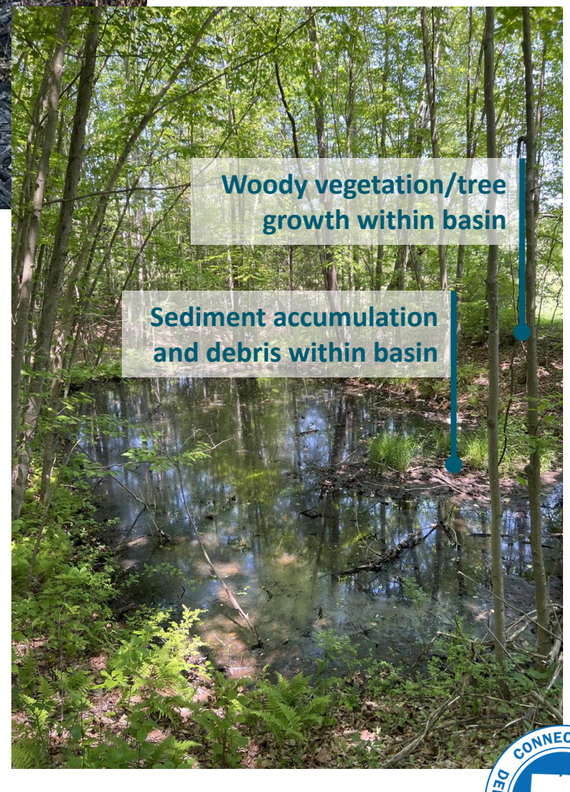


Image Credit: CTDOT

FAILED CONDITION

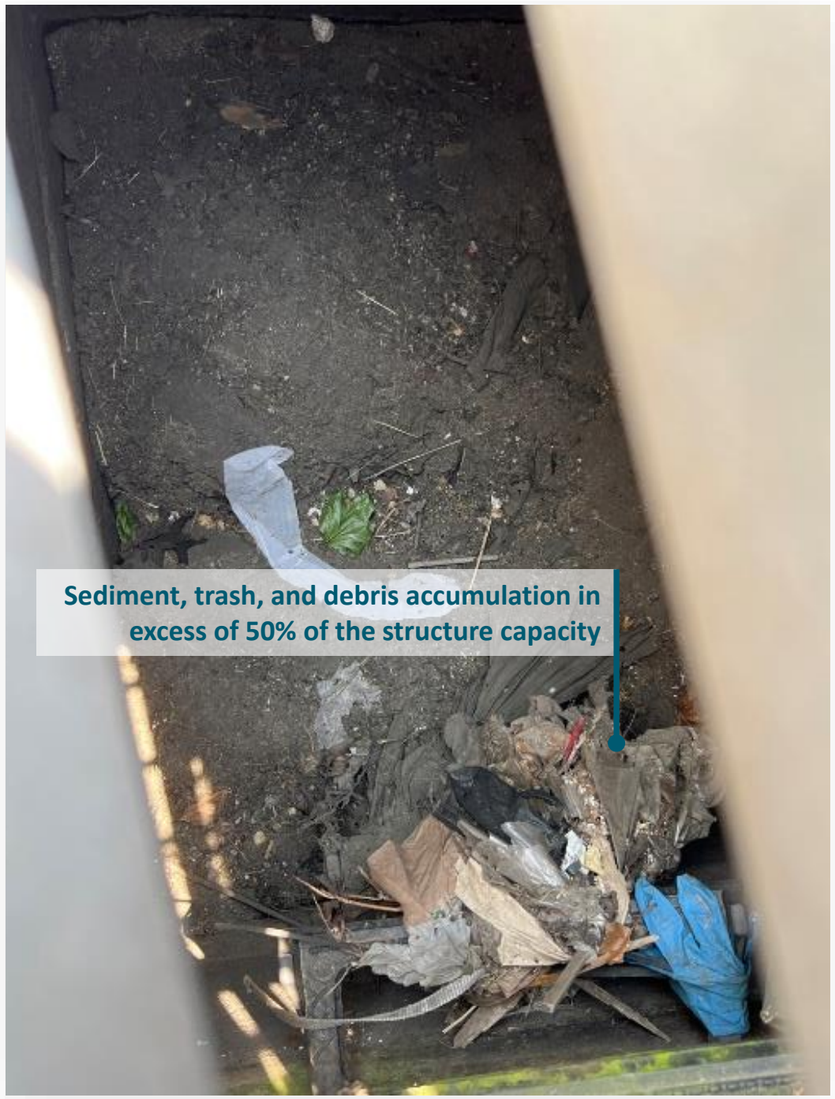


Image Credit: CTDOT

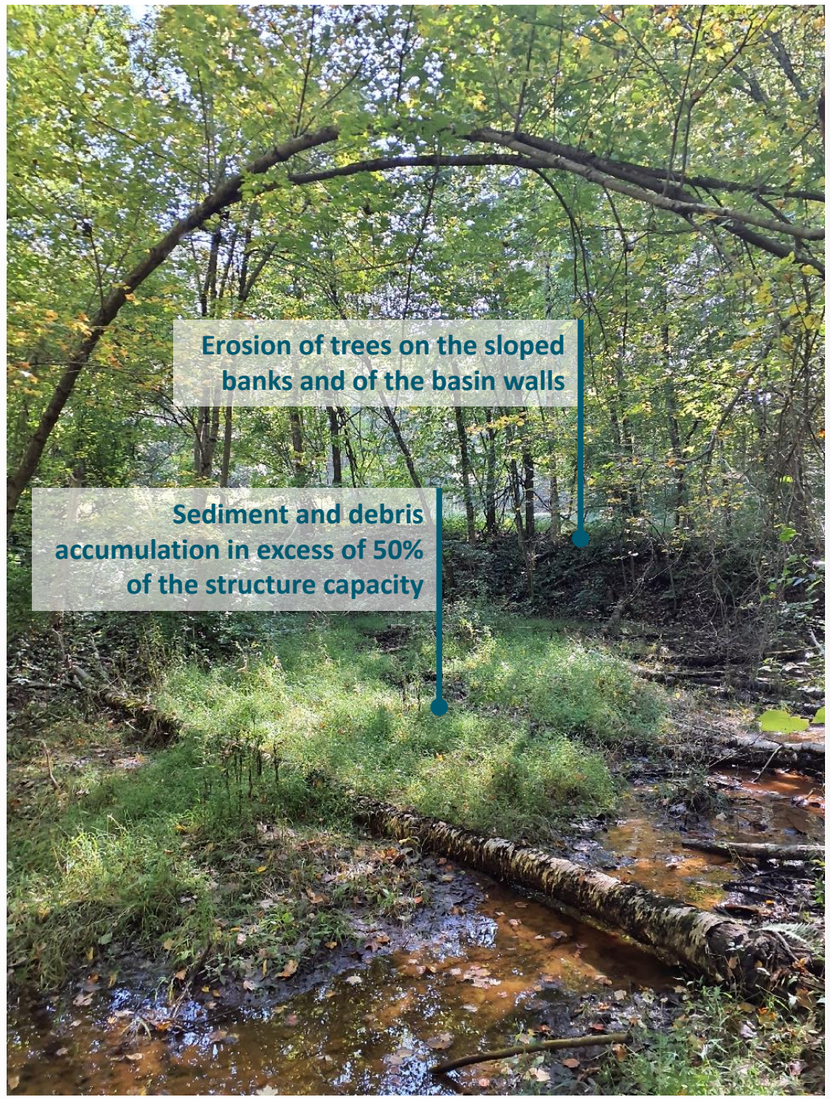


Image Credit: Fuss & O'Neill

Image Credit: CTDOT

OBSTRUCTED CONDITION

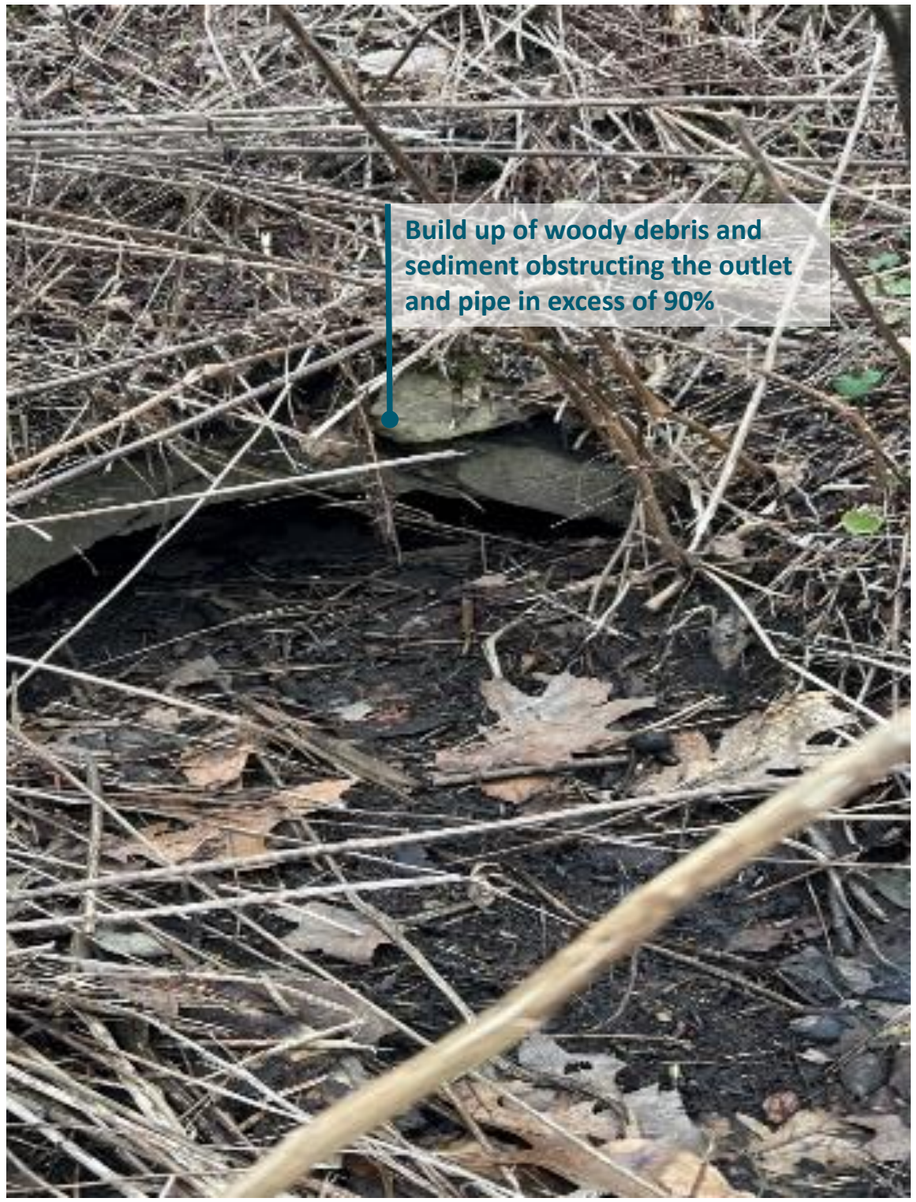


Image Credit: CTDOT

INACCESSIBLE CONDITION

Image Credit: CTDOT

CTDOT STORMWATER BEST MANAGEMENT PRACTICE
INSPECTION & MAINTENANCE PLAN

FUSS & O'NEILL

CONNECTICUT DEPARTMENT OF TRANSPORTATION