|  |  |  |  |
| --- | --- | --- | --- |
| To: | MassDOT | Date: | MONTH/DATE/YEAR |
|  |  | Project #: | [MassDOT Project Number] |
| From: | Consultant Name | Re: | Project Name | |

This Stormwater Management Memorandum has been prepared to show compliance with the Massachusetts Stormwater Management Standards in accordance with the Massachusetts Water Quality Certification Regulations (314 CMR 9.00) to support the Project’s Section 401 Water Quality Certificate Application.

**[The below guidance is for user’s reference and not to be included in the plans.]**

**When a MassDOT bridge project falls under jurisdiction of the Water Quality Certification regulations, designers must document how the Project complies with each of the MassDEP Stormwater Management Standards in a Stormwater Management Memorandum. The designer should use this template as a guide to create a project-specific Stormwater Management Memorandum specifically for bridge projects; however, the designer should use their judgement to determine which sections, tables, appendices, and figures in this template are applicable. Instructions or guidance are shown in blue italics. Suggested content is shown in black text, but this text should be edited/modified/expanded upon by the designer, as necessary. Multiple reports may be necessary if a project crosses town boundaries or sections in this report may be divided into subsections by town to facilitate review by local conservation commissions.**

**The designer is responsible for ensuring that all the necessary information is included in the report. The designer should consult with MassDOT’s Environmental Services Section if additional guidance is needed for the designer to complete their Stormwater Management Memorandum.**

**MassDEP is currently revising the 2008 Massachusetts Stormwater Handbook and the Stormwater Standards. This template will be revised when MassDEP’s revisions are released.**

# Project Description

The Applicant, MassDOT, is proposing Project **[MassDOT Project Number]** to construct a bridge replacement (the Project) located in **[City/Town(s), MA].** As proposed, the Project consists of **[Generally describe the proposed activities for the Project].**

# Existing and Proposed Drainage Conditions

The project is currently **[Describe the existing conditions of the Project, including:**

* **Land Cover**
  + **Impervious areas**
  + **Grassed or pervious areas**
* **Key features**
* **Topography**
* **The major watershed(s) the Project is located within**
* **Receiving waterbodies and wetlands**
* **Drainage patterns**
* **Existing drainage infrastructure**
* **Existing Stormwater Control Measures (SCMs)**
* **Discharge points from existing drainage patterns**

**Break this section into sub-sections by town if project crosses over town boundaries, as necessary.**

The Project will include construction of **[describe the proposed drainage conditions of the Project],** including:

* **Land Cover**
  + **Proposed impervious areas**
  + **Proposed pervious areas, if any**
  + **Change in impervious area compared to existing impervious area (+ or -)**
* **Proposed grading**
* **Other key features**

**Discuss proposed drainage patterns, conveyance systems, and the stormwater management systems for the bridge, including how Integrated Site Design (ISD) and Low Impact Development (LID) techniques were considered and how these practices were implemented to the maximum extent practicable.[[1]](#footnote-1)** **Consider the following for discussion:**

* **LID techniques implemented on and adjacent to the bridge, including:**
  + **Areas of pavement disconnection (e.g., sheet flow to vegetated areas)**
  + **Slope treatments including vegetated riprap**
  + **Minimizing use of scuppers and evaluating viability of horizontal drainage**
  + **Minimizing the contributing area draining to scupper infrastructure**
  + **Catch basins outside the bridge deck directed to outfalls as far from resources as possible to provide pretreatment through buffer (compared to scuppers directly discharging to resource area)**
  + **Key project layout elements and limit-of-work restrictions designed to protect natural resources such as preserving trees, placement of the limit-of-work, etc.**
* **Non-structural SCMs for the bridge, such as catch basin cleaning and street sweeping**
* **Consideration of partnerships with adjacent landowners for stormwater treatment**

**Also include in the discussion:**

* **Proposed drainage patterns, drainage areas, and receiving water bodies and wetlands**
* **The design storm for which the closed-drainage system is designed (e.g., minimum 10-year 24-hour storm)**
* **Any impacts to key features or natural resources (e.g., wetland resource areas/ water bodies, Critical Areas, sensitive resource areas, buffer zones)**

# Massachusetts Department of Environmental Protection (MassDEP) – Stormwater Management Standards

As demonstrated below, the proposed Project complies with the MassDEP Stormwater Management Standards (the Standards). Under the Stormwater Management Standards, the Project is considered a redevelopment project because it involves maintenance and improvement of an existing **roadway *[Describe the proposed changes to the bridge including any additional impervious cover and how this qualifies as maintenance and improvement of an existing roadway].*** The Project has been designed to meet the Stormwater Management Standards to the maximum extent practicable and to improve upon existing conditions.

## Standard 1: No New Untreated Discharges

*No new stormwater conveyance (e.g. outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.*

**[Describe how the existing drainage system was reconfigured to improve or maintain existing conditions and provide water quality treatment for existing discharges to the maximum extent practicable (MEP).**

**Note that the following are examples of what are considered existing stormwater discharges and explain how these may be applicable to your project:**

1. **Relocation of a discharge to provide greater distance between the discharge and resource area, provided that the relocation is within the same wetland system as the original discharge and the relocated discharge does not have a lower time of concentration (TOC) or results in erosion or scour to wetland resource areas. Examples include relocation of a discharge:**
   1. **From a bridge deck, bridge foundations, bridge headwalls, or other ancillary bridge component to an adjacent area so that the outfall is farther away from a wetland resource area**
   2. **Along the linear roadway path such that it discharges farther upland of a land resource area**
   3. **To provide a greater TOC**
2. **Relocation of a discharge to provide additional treatment and/or improve existing conditions. Examples include relocation of a discharge:** 
   1. **To install a SCM**
   2. **To provide enhanced scour protection**
   3. **To provide bank stabilization**
3. **Combining two or more existing discharges into a single discharge, provided that any combined discharge shall be designed to have a greater TOC than that of the original separate discharges and does not result in erosion or scour to wetland resources. Examples include:** 
   1. **Elimination of a discharge that was not environmentally protective (e.g., causing scour, direct discharge)**
   2. **Redirection of runoff to an area that is more environmentally protective (e.g., greater separation from resource area, greater TOC, more stormwater treatment, enhanced scour protection, bank stabilization)].**

**Standard text for use:**

The Project has been designed to comply with Standard 1.

**If new outfalls:**

All new outfalls are designed with **[describe type of outlet protection (e.g., flared end sections and rip rap protection or other measures]** to prevent erosion to **[name of receiving water bodies or wetlands].**

See Standard 4 for the water quality treatment provided by the Project.

**If NO new outfalls:**

No new stormwater outfalls are proposed for the Project. Existing outfalls were **[describe if existing outfalls were retrofitted with improved scour protection].**

## Standard 2: Peak Rate Attenuation

*Stormwater management systems shall be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates. This Standard may be waived for discharges to land subject to coastal storm flowage as defined in 310 CMR 10.04.*

The Project has been designed to comply with Standard 2 to the maximum extent practicable.

***Discuss constraints and how existing conditions are improved in relation to the requirements of this standard. Discuss the minimal amount of pavement added (if any) and explain how the minor increase in impervious area would not substantially increase post-development peak discharge rates and would not have adverse impacts on adjacent land or the receiving water body. Explain how that there is no flooding concern because the precipitation that may previously have fallen directly on the receiving waterbody is now falling on the bridge first but then drains to the same waterbody as before.***

Table 1 provides a summary of peak rates for each design point under existing and proposed conditions. Computations and supporting information regarding the hydraulic and hydrologic modeling are attached at the end of this memo.

Table 1 Peak Discharge Rates (cfs)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Design Point | Existing | | | Proposed | | |
| 2-year | 10-year | 100-year | 2-year | 10-year | 100-year |
| *DP-#* | *#* | *#* | *#* | *#* | *#* | *#* |
| *DP-#* | *#* | *#* | *#* | *#* | *#* | *#* |
|  |  |  |  |  |  |  |

## Standard 3: Stormwater Recharge

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

The Project has been designed to comply with Standard 3 to the maximum extent practicable. The purpose of this standard is to replenish groundwater baseflows by ensuring that the infiltration volume of precipitation into the ground under post-development conditions is at least as much as the infiltration volume under pre-development conditions.

***Explain that loss of annual recharge to groundwater is eliminated with the bridge replacement design. The annual recharge from the post-development site approximates the annual recharge from pre-development conditions. Baseflow is being replenished since runoff from the bridge is immediately being discharged directly to the water body. If an outfall has been relocated to provide additional treatment (see Standard 1) then explain how annual recharge is not reduced by this relocation.***

## Standard 4: Water Quality

*Stormwater management systems shall be designed to remove 80% of the average annual post-construction load of Total Suspended Solids (TSS). This Standard is met when:*

1. *Suitable practices for source control and pollution prevention are identified in a long-term pollution prevention plan, and thereafter are implemented and maintained;*
2. *Structural stormwater best management practices are sized to capture the required water quality volume determined in accordance with the Massachusetts Stormwater Handbook; and*
3. *Pretreatment is provided in accordance with the Massachusetts Stormwater Handbook.*

The Project has been designed to comply with Standard 4 to the maximum extent practicable.

**Discuss constraints and how existing conditions are improved in relation to the requirements of this standard. This discussion may include:**

* + - * ***Constraints of resource areas and bridge foundational elements***
      * ***Review of potential infiltration SCMs and determination that an infiltration SCM has the potential to adversely affect an approach, abutment, or footing***
      * ***Evaluation of potential need for energy dissipation***
      * ***Consideration of partnerships with adjacent landowners***

**Discuss LID techniques implemented, including:**

* + **Areas of pavement disconnection (e.g., sheet flow to vegetated areas)**
  + **Slope treatments including vegetated riprap**
  + **Minimizing use of scuppers and evaluating viability of horizontal drainage**
  + **Minimizing the contributing area draining to scupper infrastructure**
  + **Catch basins outside the bridge deck directed to outfalls as far from resources as possible to provide pretreatment through buffer (compared to scuppers directly discharging to resource area)**
  + **Key project layout elements and limit-of-work restrictions designed to protect natural resources such as preserving trees, placement of the limit-of-work, etc.**

**Discuss non-structural SCMs for the bridge, such as catch basin cleaning and street sweeping**

A Long-Term Pollution Prevention Plan (LTPPP) has been developed for the project in compliance with Standard 4. The Standard 9 section of this document includes this LTPPP.

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

*For Land Uses with Higher Potential Pollutant Loads (LUHPPLs), source control and pollution prevention shall be implemented in accordance with the Massachusetts Stormwater Handbook to eliminate or reduce the discharge of stormwater runoff from such land uses to the maximum extent practicable. If through source control and/or pollution prevention all LUHPPLs cannot be completely protected from exposure to rain, snow, snow melt, and stormwater runoff, the proponent shall use the specific structural stormwater BMPs determined by the Department to be suitable for such uses as provided in the Massachusetts Stormwater Handbook. Stormwater discharges from LUHPPLs shall also comply with the requirements of the Massachusetts Clean Waters Act, M.G.L. c. 21, §§ 26-53 and the regulations promulgated thereunder at 314 CMR 3.00, 314 CMR 4.00 and 314 CMR 5.00.*

Standard 5 does not apply to the Project. There are no Land Uses with Higher Potential Pollutant Loads within the project area**. *[Reader shall review their specific site to confirm the above statement, however bridges are typically not considered LUHPPLs.]***

## Standard 6: Critical Areas

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

**Standard text for use:**

**If Critical Areas are present:**

The Project has been designed to comply with Standard 6. Figure 3 shows the Critical Areas in the vicinity of the project **site [and describe how stormwater discharges to these resource areas are treated and/or refer to earlier sections where it has already been described (e.g., Standard 4 Section).]**

**If Critical Areas are NOT present:**

Standard 6 does not apply to the Project. There are no Critical Areas near the project area.

## Standard 7: Redevelopments and Other Projects Subject to the Standards only to the Maximum Extent Practicable

*A redevelopment project is required to meet the following Stormwater Management Standards only to the maximum extent practicable: Standard 2, Standard 3, and the pretreatment and structural best management practice requirements of Standards 4, 5, and 6. Existing stormwater discharges shall comply with Standard 1 only to the maximum extent practicable. A redevelopment project shall also comply with all other requirements of the Stormwater Management Standards and improve existing conditions.*

The Project is considered a redevelopment and has been designed to comply with the Stormwater Management Standards to the maximum extent practicable.

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

*A plan to control construction-related impacts, including erosion, sedimentation and other pollutant sources during construction and land disturbance activities (construction period erosion, sedimentation, and pollution prevention plan) shall be developed and implemented.*

**User guidance:**

* + - * ***Include a summary of proposed erosion and sediment control measures depicted on the plans.***
      * ***Indicate whether the Project requires filing for NPDES Construction General Permit coverage, and/or discharges to an ORW and requires filing of Form BRP WM: 15 with MassDEP.***

**Standard text for use:**

The implementation of erosion and sediment (E&S) controls during construction is considered a standard practice for all MassDOT projects. E&S controls will be installed before any land disturbance begins for the Project and will remain in place for the duration of the Project. The E&S controls for the Project are shown on the project plans and include **[Provide description of the controls, including straw wattle, silt fence, filters at drain inlets, sedimentation basins, temporary earth berms, temporary ditches and check dams, energy dissipaters, etc. Describe any specific resources they will protect and describe if buffer between the controls and the resource area is part of the E&S control design. If the Project lasts more than one season, describe how many replacements of the E&S control will occur during the Project.]**

**If the proposed disturbance is one or more acres of land:**

The Project disturbs one or more acres of land; therefore, the project contractor will request coverage under the NPDES Construction General Permit (CGP) and develop a Stormwater Pollution Prevention Plan (SWPPP). The SWPPP follows the requirements of this standard and complies with the NPDES CGP.

## Standard 9: Operation and Maintenance Plan

*A Long-Term Operation and Maintenance (O&M) Plan shall be developed and implemented to ensure that stormwater management systems function as designed.*

**Standard text for use for MassDOT owned projects:**

**If there are no proposed drainage features:**

Because there are no proposed drainage features, Standard 9 is not applicable to this project**. [Note that any upstream MassDOT owned drainage features are maintained at a statewide, programmatic level through the State’s highway operation and maintenance program.]** Each MassDOT district office is responsible for implementing O&M for MassDOT-owned facilities within their respective jurisdictions.

**If there are proposed drainage features:**

MassDOT O&M plans are implemented on a programmatic level by each MassDOT district. In accordance with MassDOT procedures, the MassDOT District **[#]** office located in **[City/Town]**, MA, is responsible for the maintenance of all stormwater management systems on MassDOT roads within the project area. Questions or concerns regarding activities associated with this O&M Plan should be addressed to MassDOT’s District *[#]* office located at ***[address of the District’s office],*** phone ***(xxx) xxx-xxxx***, during regular weekday hours, or to MassDOT’s Highway Operations Center located in South Boston, MA at (800) 227-0608 during all other times and days, including weekends and holidays.

Long-term pollution prevention for the Project includes litter pick-up, inspection and maintenance of stormwater assets, maintenance of landscaped areas, snow and ice management, street sweeping, prohibition of illicit discharges, and spill prevention and response.

**Standard text for use for non-MassDOT owned projects:**

**If there are no proposed drainage features:**

Because there are no proposed drainage features, Standard 9 is not applicable to this project. **Note that any upstream municipally owned drainage features are maintained through the municipality’s operation and maintenance program.**

**If there are proposed drainage features:**

The **[roadway or bridge]** included in this project is not owned by MassDOT. The O&M Plan will be implemented by the municipality. The **[City/Town]** will be responsible for the operation and maintenance of all stormwater management systems within the project area. Questions or concerns regarding activities associated with this O&M Plan should be address **to [City/Town’s Department of Public Works] located at [address], phone (xxx) xxx-xxxx.**

Long-term pollution prevention for the Project includes litter pick-up, inspection and maintenance of stormwater assets, maintenance of landscaped areas, snow and ice management, street sweeping, prohibition of illicit discharges, and spill prevention and response.

## Standard 10: Prohibition of Illicit Discharges

*All illicit discharges to the stormwater management system are prohibited.*

**Standard text for use:**

Illicit Discharge Statement

The project’s stormwater management system, as shown on the plans submitted with this report, have been designed in full compliance with Standard 10. The project area does not have any known illicit connections. Any illicit connections to the stormwater management system found in the project limit of work during construction will be removed and/or resolved through MassDOT’s Illicit Discharge Detention and Elimination (IDDE) Program.

Attachments: Appendix A – Stormwater Checklist

1. See Chapter 3 of the MassDOT Stormwater Design Guide (SDG) for more guidance on ISD and LID. [↑](#footnote-ref-1)