

BELLINGHAM DEPARTMENT OF PUBLIC WORKS  
BELLINGHAM, MA

Checklist for Stormwater Report

MAY 2025

## Well 11 Replacement Process Upgrades

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## Overview

This document provides information to support the Checklist for Stormwater Report. The Checklist for Stormwater Report is included as **Attachment A**.

## Section 1 No New Untreated Discharges

There will be no new stormwater discharges created as part of this project, and therefore no new untreated discharges. The project will create no non-stormwater discharges.

## Section 2 Peak Rate Attenuation

This Section is not applicable as the project does not impact runoff rates. There is no increase in impervious cover as part of the project. All disturbed areas will be restored to natural conditions.

## Section 3 Recharge

This Section is not applicable as the project does not impact runoff rates. There is no increase in impervious cover as part of the project. All disturbed areas will be restored to natural conditions, and there are no stormwater management systems, including infiltration practices, proposed as part of this project.

## Section 4 Water Quality

This Section is not applicable as there is no increase in impervious cover, all disturbed areas will be restored to natural conditions, and there are no stormwater management systems proposed as part of this project.

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

This Section is not applicable, since there are no land uses that would trigger higher potential pollutant loads.

## Section 6 Critical Areas

This Section is not applicable as there is no stormwater discharges; however, the entire site is located within Zones 1 and/or 2 of the groundwater wells. Since the project is associated with the operation of the public water supply, the project has been designed to account for protection of the wellhead area as well as wetland complexes located on the property. During construction, wetlands will be protected with erosion controls as outlined in Section 8.

## Section 7 Redevelopments and Other Projects

This Section is not applicable as the proposed improvements do not qualify as redevelopment.

# Section 8 Construction Period Pollution Prevention & Erosion and Sedimentation Control

The following Construction Period Pollution Prevention & Erosion and Sedimentation Control Plan has been prepared for the project to control impacts during construction. The purpose of the Construction Period Pollution Prevention & Erosion and Sedimentation Control Plan is to prevent erosion, control sediment movement, and stabilize exposed soils to prevent pollutants from moving offsite or entering wetland or waterbodies from land disturbance activities, including demolition, construction, clearing, excavation, grading, filling, and reconstruction.

## 8.1 Introduction

The project consists of the reconstruction of three of the five wells at the Well 11 site (wells 11.1, 11.2, and 11.3), replacement of 100' of 4" raw water main to all four operational wells that connect to the replacement of 140' of 6" water main that pull the raw water from the four functioning wells, four meter manholes, internal electrical upgrades to the Well #11 Building, process piping upgrades within the Well #11 Building, and a new hydrant assembly for the raw water. An alternative is proposed to add a generator to the Well #11 site to allow well operation during power outages. All of the work proposed is within the 100-foot Buffer Zone.

## 8.2 Implementation of Pollution Prevention & Erosion and Sedimentation Controls

Prior to the start of any earthwork on the site, the erosion and sedimentation controls will be installed. Section 8.4 provides a sequence of construction and listing of controls. Erosion and sedimentation controls are shown on the Modification Plan (Drawing C-102) and the Erosion Control Notes and Details (Drawing C-503). The project is not subject to the NPDES Construction General Permit as the disturbance will be less than 1 acre. The Contractor will be responsible for pollution prevention and erosion and sedimentation controls in accordance with the plans and specifications of the construction contract. The Pollution Prevention & Erosion and Sedimentation Control Plan will be implemented immediately prior to soil disturbance and remain in place until the site is fully stabilized and the temporary erosion and sedimentation controls are removed.

## 8.3 Inspection and Maintenance of Stormwater Controls

Stormwater management activities during land disturbance, includes source control and pollution prevention measures. There are no long-term stormwater controls proposed for the site. All erosion and sedimentation control measures will be maintained in effective operating condition until areas are permanently stabilized. Erosion and sedimentation controls will be inspected by the Resident Engineer once every seven days and after rainfall events of a half inch or greater. Inspections will be documented using the form in Attachment B. The following standard maintenance practices will apply to the erosion and sedimentation controls for the project:

- All erosion and sediment control measures will be properly maintained. If repairs or other maintenance is necessary, it will be initiated by the Contractor within 24 hours of report.
- Silt fence will be inspected for depth of sediment, tears, to see if the fabric is securely attached to the fence posts, and to see that the fence posts are firmly in the ground.
- Built up sediment will be removed from silt fence when it has reached one-third the height of the fence and at end of the job.
- Straw wattle will be inspected for depth of sediment, tears, to see if the wattle is securely attached to the wooden stakes, and to see that the wooden stakes are firmly in the ground.
- Straw wattle and silt fence will be inspected after rain events and replaced or repaired where necessary.
- The dewatering filter bag will be inspected for tears and replaced when filled with sediment.

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If the inspections reveal the need for additional control devices to prevent erosion and sedimentation, the Contractor will promptly install additional protection devices as required. Control devices in need of repair will be repaired promptly after identification. A stockpile of silt fence will be maintained on the site and under cover for emergency repairs and routine maintenance.

The Owner (or their representative) will be responsible for preparing an inspection and maintenance report (**Attachment B**) following each inspection and filing completed reports after maintenance action has been completed by the Contractor. The Contractor's superintendent will be responsible for maintenance and repair activities and completing and signing the corrective action portion of inspection and maintenance reports.

## 8.4 Stormwater Controls for Construction Period

### 8.4.1 Project Schedule

The project construction phasing will generally proceed in the following sequence:

1. Installation of sedimentation/erosion control barriers at the down gradient limit of work.
2. Excavation and site preparation.
3. Installation of the new well pumps and pitless adapters.
4. Pipe installation via open cut.
5. Installation of meter vault and connection to existing Well 11 Building.
6. Loaming and seeding disturbed areas as construction on those areas are completed.
7. Inspection of seeding success and removal of erosion and sedimentation controls, once permanent stabilization has been established pursuant to the specifications and satisfaction of the Resident Engineer.

### 8.4.2 Erosion and Sedimentation Controls

**Temporary stabilization** measures shall be instituted to minimize effects of erosion and sedimentation during construction. The primary erosion and sedimentation controls to be used on the project include:

8. Silt fence to be installed down-gradient of proposed excavation.
9. Floating sediment turbidity curtain to contain any potential frac-out during the directional drilling.
10. Sediment basin for dewatering discharge to provide settlement of sediment in collected water.

Additional erosion and sedimentation control measures may be utilized as appropriate. Temporary erosion and sedimentation controls will be established at the site in accordance with Specification Section 02270 included in **Attachment C**.

**Permanent stabilization** measures shall be employed to minimize effects of erosion and sedimentation after the completion of construction. Detailed information is included in Specification Section 02485 - Loaming and Seeding included in **Attachment C**.

## Section 9 Operation and Maintenance Plan

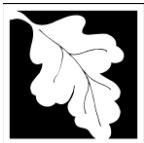
This Section is not applicable because there are no stormwater management systems installed as part of this project; therefore, a long-term (post-construction) operation and maintenance plan is not required.

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## Section 10 Prohibition of Illicit Discharges

This Section is not applicable because there are no stormwater management systems installed as part of this project. An allowable non-stormwater discharge of uncontaminated groundwater from the meter vault sump pump will be created as part of this project.

Attachment A  
Checklist for Stormwater Report



# Checklist for Stormwater Report

## A. Introduction

**Important:** When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A Stormwater Report must be submitted with the Notice of Intent permit application to document compliance with the Stormwater Management Standards. The following checklist is NOT a substitute for the Stormwater Report (which should provide more substantive and detailed information) but is offered here as a tool to help the applicant organize their Stormwater Management documentation for their Report and for the reviewer to assess this information in a consistent format. As noted in the Checklist, the Stormwater Report must contain the engineering computations and supporting information set forth in Volume 3 of the [Massachusetts Stormwater Handbook](#). The Stormwater Report must be prepared and certified by a Registered Professional Engineer (RPE) licensed in the Commonwealth.

The Stormwater Report must include:

- The Stormwater Checklist completed and stamped by a Registered Professional Engineer (see page 2) that certifies that the Stormwater Report contains all required submittals.<sup>1</sup> This Checklist is to be used as the cover for the completed Stormwater Report.
- Applicant/Project Name
- Project Address
- Name of Firm and Registered Professional Engineer that prepared the Report
- Long-Term Pollution Prevention Plan required by Standards 4-6
- Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan required by Standard 8<sup>2</sup>
- Operation and Maintenance Plan required by Standard 9

In addition to all plans and supporting information, the Stormwater Report must include a brief narrative describing stormwater management practices, including environmentally sensitive site design and LID techniques, along with a diagram depicting runoff through the proposed BMP treatment train. Plans are required to show existing and proposed conditions, identify all wetland resource areas, NRCS soil types, critical areas, Land Uses with Higher Potential Pollutant Loads (LUHPPL), and any areas on the site where infiltration rate is greater than 2.4 inches per hour. The Plans shall identify the drainage areas for both existing and proposed conditions at a scale that enables verification of supporting calculations.

As noted in the Checklist, the Stormwater Management Report shall document compliance with each of the Stormwater Management Standards as provided in the Massachusetts Stormwater Handbook. The soils evaluation and calculations shall be done using the methodologies set forth in Volume 3 of the Massachusetts Stormwater Handbook.

To ensure that the Stormwater Report is complete, applicants are required to fill in the Stormwater Report Checklist by checking the box to indicate that the specified information has been included in the Stormwater Report. If any of the information specified in the checklist has not been submitted, the applicant must provide an explanation. The completed Stormwater Report Checklist and Certification must be submitted with the Stormwater Report.

<sup>1</sup> The Stormwater Report may also include the Illicit Discharge Compliance Statement required by Standard 10. If not included in the Stormwater Report, the Illicit Discharge Compliance Statement must be submitted prior to the discharge of stormwater runoff to the post-construction best management practices.

<sup>2</sup> For some complex projects, it may not be possible to include the Construction Period Erosion and Sedimentation Control Plan in the Stormwater Report. In that event, the issuing authority has the discretion to issue an Order of Conditions that approves the project and includes a condition requiring the proponent to submit the Construction Period Erosion and Sedimentation Control Plan before commencing any land disturbance activity on the site.



# Checklist for Stormwater Report

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## B. Stormwater Checklist and Certification

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

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

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

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### Registered Professional Engineer's Certification

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

Registered Professional Engineer Block and Signature

\_\_\_\_\_  
Signature and Date

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### Checklist

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

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



# Checklist for Stormwater Report

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## Checklist (continued)

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

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

### Standard 1: No New Untreated Discharges

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



# Checklist for Stormwater Report

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## Checklist (continued)

### Standard 2: Peak Rate Attenuation

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

### Standard 3: Recharge

- Soil Analysis provided.
- Required Recharge Volume calculation provided.
- Required Recharge volume reduced through use of the LID site Design Credits.
- Sizing the infiltration, BMPs is based on the following method: Check the method used.
  - Static
  - Simple Dynamic
  - Dynamic Field<sup>1</sup>
- Runoff from all impervious areas at the site discharging to the infiltration BMP.
- Runoff from all impervious areas at the site is *not* discharging to the infiltration BMP and calculations are provided showing that the drainage area contributing runoff to the infiltration BMPs is sufficient to generate the required recharge volume.
- Recharge BMPs have been sized to infiltrate the Required Recharge Volume.
- Recharge BMPs have been sized to infiltrate the Required Recharge Volume *only* to the maximum extent practicable for the following reason:
  - Site is comprised solely of C and D soils and/or bedrock at the land surface
  - M.G.L. c. 21E sites pursuant to 310 CMR 40.0000
  - Solid Waste Landfill pursuant to 310 CMR 19.000
  - Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.
- Calculations showing that the infiltration BMPs will drain in 72 hours are provided.
- Property includes a M.G.L. c. 21E site or a solid waste landfill and a mounding analysis is included.

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



# Checklist for Stormwater Report

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## Checklist (continued)

### Standard 3: Recharge (continued)

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

### Standard 4: Water Quality

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

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



# Checklist for Stormwater Report

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## Checklist (continued)

### Standard 4: Water Quality (continued)

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

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

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

### Standard 6: Critical Areas

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



# Checklist for Stormwater Report

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## Checklist (continued)

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

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

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

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

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



# Checklist for Stormwater Report

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## Checklist (continued)

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

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

### Standard 9: Operation and Maintenance Plan

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

### Standard 10: Prohibition of Illicit Discharges

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

Attachment B  
Inspection and Maintenance Report

# INSPECTION AND MAINTENANCE REPORT FORM

To be completed once every 7 days and/or within 24 hours of a rainfall event of 0.5 inches or more

**Inspection Date/Time:** \_\_\_\_\_

**Weather Conditions:** \_\_\_\_\_

**Inspected By:** \_\_\_\_\_

**Qualifications:** \_\_\_\_\_

**Contractor's Superintendent:** \_\_\_\_\_

**Days Since Last Rainfall:** \_\_\_\_\_

**Amount of Last Rainfall (inches):** \_\_\_\_\_

## SITE STABILIZATION\* (Inspected: Yes No N/A)

Area	Date since last disturbed	Stabilized (yes/no)	Method of Stabilization	Condition

## CONSTRUCTION ENTRANCE\* (Inspected: Yes No N/A)

Is sediment tracked out on to road?	Is the gravel clean or is it filled with sediment?	Does all traffic use the stabilized entrance to leave the site?	Condition

## SILT FENCE\* (Inspected: Yes No N/A)

Is depth of sediment less than 1/3 the fence height?	Is fabric securely attached; are posts firmly in ground?	Condition of silt fence (are there any tears, etc.?)	Evidence of overtopping (yes/no)

## FLOATING SEDIMENT TURBIDITY CURTAIN\* (Inspected: Yes No N/A)

Containment area secured?	Anchors secured?	Curtain is floating properly?	Condition

\* Document corrective action needed on Page 2 of report

## INSPECTION AND MAINTENANCE REPORT FORM

To be completed once every 7 days and/or within 24 hours of a rainfall event of 0.5 inches or more

**TEMPORARY SEDIMENT BASIN\*** (Inspected:  Yes  No  N/A)

Evidence of erosion in receiving area?	Evidence of concentrated flow?	Evidence of sediment discharge?	Condition

**MATERIAL STORAGE AREA\*** (Inspected:  Yes  No  N/A)

Area	Erosion measures in place?	Sediment barrier installed downgradient of stockpiles?	Condition

**OTHER CONTROL MEASURES INSTALLED\***: (Inspected:  Yes  No  N/A)

Area	Control	Condition

### Corrective Action Needed:

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### Corrective Action Taken:

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Performed By:	Date Completed:
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\* Document corrective action needed on Page 2 of report

## INSPECTION AND MAINTENANCE REPORT FORM

To be completed once every 7 days and/or within 24 hours of a rainfall event of 0.5 inches or more

### CHANGES REQUIRED TO CONSTRUCTION POLLUTION PREVENTION PLAN:

Yes (If yes, describe below)  No

**Changes required:**

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**Reasons for changes:**

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**Performed By:**

**Date Completed:**

**I certify that the foregoing statements are, to the best of my knowledge, true and accurate.**

Inspector

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Contractor's Superintendent

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

## Attachment C Select Specifications

C-1: Section 02270 Temporary Erosion Control

C-2: Section 02485 Loaming & Seeding

SECTION 02270TEMPORARY EROSION CONTROL (WELL TESTING)PART 1 - GENERAL1.1 DESCRIPTION

## A. Work Included:

1. The work under this section shall include provision of all labor, equipment, materials, and maintenance of temporary erosion control devices, as specified herein, as shown on the Drawings and as directed by the Engineer.
2. Erosion control measures shall be provided as necessary to correct conditions that develop prior to the completion of permanent erosion control devices, or as required to control erosion that occurs during normal construction operations.
3. Construction operations shall comply with all federal, state, and local regulations pertaining to erosion control.
4. Erosion control measures shall be in accordance with the Massachusetts Department of Environmental Protection's - Stormwater Management Standards - (referred to hereafter as MassDEP SMS) and "Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas," *Franklin, Hampden, Hampshire Conservation Districts, 2003*.
5. After awarding of or after being awarded the Contract, prior to commencement of construction activities, the Contractor will meet with the Engineer to discuss erosion control requirements and develop a mutual understanding relative to details of erosion control.

## B. Design Criteria:

1. Conduct all construction in a manner and sequence that causes the least practical disturbance of the physical environment.
2. Stabilize disturbed earth surfaces in the shortest time and employ such temporary erosion control devices, as may be necessary, until such time as adequate soil stabilization has been achieved.

1.2 SUBMITTALS

- A. The Contractor shall furnish the Engineer, in writing, his work plan giving proposed locations for storage of topsoil and excavated material, before beginning construction. A schedule of work shall accompany the work plan. Acceptance of this plan will not relieve the Contractor of his responsibility for completion of the work as specified.

## PART 2 - PRODUCTS

### **2.1 MATERIALS**

- A. Fiber Rolls:
  - 1. The owner has a preference for fiber rolls (a.k.a. straw wattles) over hay bales for erosion control. Fiber rolls shall be minimum 9-inch diameter cylinders of agricultural straw or rice straw wrapped in photodegradable black synthetic netting.
- B. Silt Fencing
  - 1. Polyethylene, polypropylene, nylon, or polyester fabric supported by stakes spaced no greater than 6-feet apart.
- C. Silt Sacks:
  - 1. Silt Sacks (or equivalent) shall be placed in down gradient catch basins to prevent sediment from entering waterbodies, wetlands or drainage facilities. Silt sacks shall be periodically cleaned while in use and must be cleaned prior to and after precipitation events. Applicants are advised that they may be required to respond immediately for repair and maintenance at the request of the District within two hours of notification.
- D. Mulches:
  - 1. Straw or Salt Marsh Hay. Loose hay mulching is prohibited.
- E. Mats and Nettings:
  - 1. Twisted Craft paper, yarn, jute, excelsior wood fiber mats, glass fiber and plastic film.
  - 2. Type and use shall be as specified in the SMS.
- F. Sand Bags:
  - 1. Heavy cloth bags of approximately one cubic foot capacity filled with sand or gravel.
- G. Water:
  - 1. The Contractor shall provide water and equipment to control dust, as directed by the Engineer.
- H. Filter Fabrics:
  - 1. Filter fabric shall be of one of the commercially available brands such as Mirafi, Typar or equivalent. Fabric types for particular applications shall be approved by the Engineer prior to installation.
- I. Sediment Retention Basin for Pumped Waters:
  - 1. The Contractor shall furnish a sediment retention basin of adequate size to accommodate the pump test discharge rates of the wells. The retention basin shall be equipped with proper outlet ports and hoses to accommodate the final well pump test rates through the 48 hour pump test. The discharge hoses shall extend to the location designated by the Engineer and the flow shall not cause erosion or excess turbidity.

### **2.2 CONSTRUCTION REQUIREMENTS**

- A. Temporary Erosion Checks:
  - 1. Temporary erosion checks shall be constructed in ditches and other locations as necessary.

2. Fiber rolls or siltation fence may be used in an arrangement to fit local conditions.
- B. Temporary Berms: Temporary barriers shall be constructed along the toe of embankments when necessary to prevent erosion and sedimentation.
- C. Temporary Seeding: Areas to remain exposed for a time exceeding 3 weeks shall receive temporary seeding as indicated below:

Season	Seed	Rate
April 1 to June 1 Aug. 15 to Sept. 15	Annual Ryegrass	40 lbs/Acre
May 1 to June 30	Foxtail Millet	30 lbs/Acre
April 1 to July 1 Aug. 15 to Sept. 15	Oats	80 lbs/Acre
Aug. 15 to Oct. 15	Winter Rye	120 lbs/Acre
Nov. 1 to April 1	Mulch w/ dormant seed	80 lbs/Acre @ 50% seed rate increase

- D. Mulch All Areas Receiving Seeding: Use either wood cellulose fiber mulch (750 lbs/acre); or straw mulch with chemical tack (as per manufacturer's specifications). Wetting for small areas may be permitted. Biodegradable netting is recommended in areas to be exposed to drainage flow.
- E. Erosion control matting for slopes and ditches shall be anchored with pegs and/or staples per manufacturer's recommendations. Contractor shall provide matting along the flowline of all ditches and swales having a longitudinal slope in excess of 0.01 ft/ft, and on all slopes in excess of 3(H) to 1(V).
- F. Gravel aprons shall be installed at the entrance of construction sites where disturbance is over 4,000 square feet to prevent sediment from the construction site entering the roadway. Aprons shall be a minimum of 15 feet in length, and extend the width of the entrance.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION

- A. Fiber Rolls (Straw Wattles):  
Fiber rolls shall be staked securely into the ground and oriented perpendicular to the slope using wood takes. A minimum of 3 inches of the stake should stick out above the roll. Stakes shall be spaced 3 to 4 feet apart.
- B. Silt Fencing:  
Silt fence shall be erected in a continuous fashion from a single roll of fabric. The bottom of the fabric fence shall be buried sufficiently below the ground surface to prevent gaps from forming, usually 4 to 6 inches below ground surface. The fabric shall be installed on the upstream side of the stakes. Stakes shall be strong enough

and tall enough to securely anchor the fabric to the ground. Stake spacing shall be no more than 10 feet apart for extra-strength fabric and 6 feet apart for standard strength fabric. Maintenance of the fence is required during construction. Material shall be based on the synthetic fabric requirements as follows:

1. Filtering efficiency: 75% (minimum)
2. Tensile strength: Standard strength: 30lb/linear inch (minimum), Extra strength: 50 lb/linear inch (minimum)
3. Elongation: 20% (maximum)
4. Ultraviolet radiation: 90% (minimum)
5. Slurry flow rate: 0.3 gal/ft<sup>2</sup>/min (minimum)

C. Temporary Erosion Checks:

1. Temporary erosion checks shall be constructed in ditches and at other locations designated by the Engineer. The Engineer may modify the Contractor's arrangement of silt fences, bales, and bags to fit local conditions.
2. Fiber rolls, baled straw, silt fences, or some combination, may be used in other areas, as necessary, to inhibit soil erosion.
3. Siltation fence shall be located and installed as shown on plans or as required to comply with all Federal, State and Local Regulations.

D. Erosion control matting for slopes and ditches shall be installed where indicated on the Drawings and as required to stabilize the soil until permanent vegetative stabilization is established.

E. Maintenance:

Erosion control features shall be installed prior to excavation wherever appropriate. Temporary erosion control features shall remain in place and shall be maintained until a satisfactory growth of grass is established. The Contractor shall be responsible for maintaining erosion control features throughout the life of the construction contract. Maintenance will include periodic inspections by the Owner or Engineer for effectiveness of location, installation and condition with corrective action taken by the Contractor, as appropriate.

F. Removing and Disposing of Materials:

1. When no longer needed, material and devices for temporary erosion control shall be removed and disposed of upon approval by Engineer.
2. When removed, such devices may be reused in other locations, provided they are in good condition and suitable to perform the erosion control for which they are intended.
3. When dispersed over adjacent areas, the material shall be scattered to the extent that it causes no unsightly conditions nor creates future maintenance problems.

### 3.2 CONTROL OF PUMPED WATER

- A. Water generated from the surge development during construction of the production wells shall be discharged to a settlement tank (provided by contractor) through a circular orifice mounted on top of the settlement tank. The tank shall have an outlet and discharge hose of sufficient diameter to accommodate the maximum

- development flow rate. Silt fencing and fiber rolls shall be placed around the discharge hose to prevent erosion and to serve as an energy dissipater.
- B. At the completion of work, dispose silt fencing and fiber rolls in accordance with applicable law and regulations.
  - C. The Engineer may require that the discharge be relocated if the Contractor cannot adequately manage flows during the development and cleaning work. The contractor will be directed to relocate the control structures and discharge to an area where the protection of the resource can be ensured. Accordingly, the Contractor should be prepared to locate the discharge and control structures up to 300 feet away from the new well. No additional cost will be considered for this requirement.

END OF SECTION

SECTION 02485LOAMING & SEEDINGPART 1 - GENERAL1.1 DESCRIPTION

- A. Work Included: Furnish, place, and test topsoil, and seed where shown on the drawings and protect and maintain seeded areas disturbed by construction work, as directed by the Engineer.

1.2 REQUIREMENTS SPECIFIED ELSEWHERE

- A. Additional Requirements are specified elsewhere including, but not necessarily limited to, General Conditions, Supplementary Conditions, and Division 1.

1.3 SUBMITTALS AND TESTING

## A. Seed:

1. Furnish the Engineer with duplicate signed copies of a statement from the vendor, certifying that each container of seed delivered to the project site is fully labeled in accordance with the Federal Seed Act and is at least equal to the specification requirements.
2. This certification shall appear in, or with, all copies of invoices for the seed.
3. The certification shall include the guaranteed percentages of purity, weed content and germination of the seed, and also the net weight and date of shipment. No seed may be sown until the Contractor has submitted the certificates and certificates have been approved.
4. Each lot of seed shall be subject to sampling and testing, at the discretion of the Engineer, in accordance with the latest rules and regulations under the Federal Seed Act.

## B. Topsoil:

1. Inform the Engineer, within 30 days after the award of the Contract, of the sources from which the topsoil is to be furnished.
2. Obtain representative soil samples, taken from several locations in the area under consideration for topsoil removal, to the full stripping depth.
3. Have soil samples tested by an independent soils testing laboratory, approved by the Engineer, at the Contractor's expense.
4. Have soil samples tested for physical properties and pH (or lime requirement), for organic matter, available phosphoric acid, and available potash, in accordance with standard practices of soil testing.
5. Approval, by the Engineer, to use topsoil for the work will be dependent upon the results of the soils tests.

1.4 DELIVERY, STORAGE & HANDLING

## A. Seed:

1. Furnish all seed in sealed standard containers, unless exception is granted in writing by the Engineer.

2. Containers shall be labeled in accordance with the United States Department of Agriculture's rules and regulations under the Federal Seed Act in effect at the time of purchase.

1.5 JOB CONDITIONS

- A. Topsoil: Do not place or spread topsoil when the subgrade is frozen, excessively wet or dry, or in any condition otherwise detrimental, in the opinion of the Engineer, to the proposed planting or to proper grading. Seeding:
  1. Planting Seasons: The recommended seeding time is from April 1 to September 15. The Contractor may seed at other times. Regardless of the time of seeding, the Contractor shall be responsible for each seeded area until it is accepted.
  2. Weather Conditions:
    - a. Do not perform seeding work when weather conditions are such that beneficial results are not likely to be obtained, such as drought, excessive moisture, or high winds.
    - b. Stop the seeding work when, in the opinion of the Engineer, weather conditions are not favorable.
    - c. Resume the work only when, in the opinion of the Engineer, conditions become favorable, or when approved alternate or corrective measures and procedures are placed into effect.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Seed:
  1. Provide the grass seed mixture approved by the Engineer, having the following composition:
    - a. Park Mixture:
      - i. 50 percent Creeping Red Fescue
      - ii. 30 percent Kentucky Bluegrass
      - iii. 20 percent Annual Ryegrass
      - iv. Add 1 pound White or Dutch Clover per acre
      - v. No weed seeds allowed
    - b. Roadside Mixture:
      - i. 50 percent Creeping Red Fescue
      - ii. 15 percent Kentucky Bluegrass
      - iii. 5 percent White Clover
      - iv. 2 percent Red Top
      - v. 3 percent Birdsfoot Trefoil
      - vi. 25 percent Annual Ryegrass
      - vii. Add 1 pound of White or Dutch Clover per acre
      - viii. No weed seeds allowed
    - c. Lawn Areas:

i. Kentucky 31 Fescue	25 percent
ii. Chewing Fescue	15 percent
iii. Creeping Red Fescue	15 percent
iv. Pennfine Perennial Rye	25 percent

- v. Lynn Perennial Rye 10 percent
  - vi. Common Annual Rye 10 percent
  - vii. No weed seeds allowed
2. Do not use seed which has become wet, moldy, or otherwise damaged in transit or during storage.
- B. Topsoil:
1. Fertile, friable, natural topsoil typical of the locality, without admixture of subsoil, refuse or other foreign materials and obtained from a well-drained site. Mixture of sand, silt, and clay particles in equal proportions.
  2. Free of stumps, roots, heavy or stiff clay, stones larger than 1-inch in diameter, lumps, coarse sand, weeds, sticks, brush or other deleterious matter.
  3. Not less than 4 percent nor more than 20 percent organic matter.
  4. Topsoil depth shall be 4-inches, unless otherwise indicated.

### PART 3 - EXECUTION

#### 3.1 PREPARATION

- A. Equipment:
1. Provide all equipment necessary for the proper preparation of the ground surface and for the handling and placing of all required materials.
  2. Demonstrate to the Engineer that the equipment will apply materials at the specified rates.
- B. Soil: Perform the following work prior to the application of lime, fertilizer or seed.
1. Scarify the subgrade to a depth of 2 inches to allow the bonding of the topsoil with the subsoil.
  2. Apply topsoil to a depth of 4 inches or as directed on areas to be seeded.
  3. Trim and rake the topsoil to true grades free from unsightly variations, humps, ridges or depressions.
  4. Remove all objectionable material and form a finely pulverized seed bed.

#### 3.2 PERFORMANCE

- A. Grading:
1. Grade the areas to be seeded as shown on the Drawings or as directed by the Engineer.
  2. Leave all surfaces in even and properly compacted condition.
  3. Maintain grades on the areas to be seeded in true and even conditions, including any necessary repairs to previously graded areas.
- B. Placing Topsoil:
1. Uniformly distribute and evenly spread topsoil on the designated areas.
  2. Spread the topsoil in such a manner that planting work can be performed with little additional soil preparation or tillage.
  3. Correct any irregularities in the surface resulting from topsoiling or other operations to prevent the formation of depressions where water may stand.
  4. Thoroughly till the topsoil to a depth of at least 3 inches by plowing, harrowing, or other approved method until the condition of the soil is acceptable to the Engineer. The surface shall be cleared of all debris and or stones one inch or more in diameter.

C. Seeding:

1. Fine rake and level out any undulations or irregularities in the surface resulting from tillage, fertilizing, liming or other operations before starting seeding operations.
2. Hydroseeding:
  - a. Hydroseeding may be performed where approved and with equipment approved by the Engineer.
  - b. Sow the seed over designated areas at a minimum rate of 5 pounds per 1000 square feet.
  - c. Seed and fertilizing materials shall be kept thoroughly agitated in order to maintain a uniform suspension within the tank of the hydroseeder.
  - d. The spraying equipment must be designed and operated to distribute seed and fertilizing materials evenly and uniformly on the designated areas at the required rates.
3. Drill Seeding:
  - a. Drill seeding may be performed with approved equipment having drills not more than 2 inches apart.
  - b. Sow the seed uniformly over the designated areas to a depth of 1/2 inch and at a rate of 5 pounds per 1,000 square feet.
4. Broadcast Seeding:
  - a. Broadcast seeding may be performed by equipment approved by the Engineer.
  - b. Sow the seed uniformly over the designated areas at a rate of 5 pounds per 1,000 square feet.
  - c. Sow half the seed with the equipment moving in one direction and the remainder of the seed with the equipment moving at right angles to the first sowing.
  - d. Cover the seed to an average depth of 1/2 inch by means of a brush harrow, spike-tooth harrow, chain harrow, cultipacker, or other approved devices.
  - e. Do not perform broadcast seeding work during windy weather.

D. Compacting:

1. Seeded areas must be raked lightly after sowing unless seeding is to be directly followed by application of an approved mulch.
2. Compact the entire area immediately after the seeding operations have been completed.
3. Compact by means of a cultipacker, roller, or other equipment approved by the Engineer weighing 60 to 90 pounds per linear foot of roller.
4. If the soil is of such type that a smooth or corrugated roller cannot be operated satisfactorily, use a pneumatic roller (not wobbly wheel) that has tires of sufficient size to obtain complete coverage of the soil.
5. When using a cultipacker or similar equipment, perform the final rolling at right angles to the prevailing slopes to prevent water erosion, or at right angles to the prevailing wind to prevent dust.

3.3 PROTECTION & MAINTENANCE

A. Protection:

1. Protect the seeded area against traffic or other use.

2. Erect barricades and place warning signs as needed.
- B. Maintenance:
1. At the time of the first cutting, set mower blades two inches high. All lawns shall receive at least two mowings before acceptance. Coordinate schedule for mowing with Engineer.
  2. Maintenance shall also include all temporary protection fences, barriers and signs and all other work incidental to proper maintenance.
  3. Maintain grass areas until a full stand of grass is indicated, which will be a minimum of 45 days after all seeding work is completed, and shall not necessarily relate to Substantial Completion of the General Contract.
  4. Protection and maintenance of grass areas shall consist of watering, weeding, cutting, repair of any erosion and reseeding as necessary to establish a uniform stand for the specified grasses, and shall continue until Acceptance by the Engineer of the work of this section. It shall also include the furnishing and applying of such pesticides as are necessary to keep grass areas free of insects and disease. All pesticides shall be approved by Engineer prior to use.

3.4 ACCEPTANCE

- A. At final acceptance of the project all areas shall have a close stand of grass with no weeds present and no bare spots greater than three inches (3") in diameter over greater than five percent (5%) of the overall seeded area.

END OF SECTION



78 Blanchard Road, Suite 404  
Burlington, MA 01803  
978.416.8000 | [wright-pierce.com](http://wright-pierce.com)

[jim.cray@wright-pierce.com](mailto:jim.cray@wright-pierce.com)