**MAINTENANCE & OPERATIONS PLAN OF STORMWATER MANAGEMENT FACILITIES**
**FOR:**
**30 MERRILL STREET, 6-UNIT BUILDING**
**PORTLAND, MAINE**

**Responsible Party:** **Banner Properties, LLC**
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**List of Stormwater Measures:**
Vegetated Areas
Conveyance & Distribution Systems
Parking Surfaces
Paved Areas
Dry Well

**Introduction:**
The owner or operator of the proposed project will be responsible for the maintenance of all stormwater management structures, the establishment of any contract services required to implement the program, and the keeping of records and maintenance log book. At a minimum, the appropriate and relevant activities for each of the stormwater management systems will be performed on the prescribed schedule.

**Inspection & Maintenance Tasks:**
NOTE: The following instruction are excerpts from the Maine Department of Environmental Protection's *Stormwater Management for Maine, Volume III BMPs Technical Design Manual*, dated May, 2016.

**Vegetated Areas:**
**1. Routine Maintenance and Inspection:** The area should be inspected for failures following heavy rainfall and repaired as necessary for newly formed channels or gullies, reseeding/ sodding of bare spots, removal of trash, leaves and/or accumulated sediments, the control of woody or other undesirable vegetation and to check the condition and integrity of the check dams.
**2. Aeration:** Vegetated areas may require periodic mechanical aeration to restore infiltration capacity. This aeration must be done during a time when the area can be reseeded and mulched prior to any significant rainfall.
**3. Erosion:** It is important to install erosion and sediment control measures to stabilize this area as soon as possible and to retain any organic matter on the surface.
**4. Fertilization:** Routine fertilization and/or use of pesticides is strongly discouraged. If complete re-seeding is necessary, half the original recommended rate of fertilizer should be applied with a full rate of seed.

**Conveyance & Distribution Systems: (Stormwater Channels & Culverts, etc.)**
1. **Mowing:** Grass should not be trimmed extremely short, as this will reduce the filtering effect of the swale (MPCA, 1989). The cut vegetation should be removed to prevent the

decaying organic litter from adding pollutants to the discharge from the swale. The mowed height of the grass should be 2-4 inches taller than the maximum flow depth of the design water quality storm. A minimum mow height of 6 inches is generally recommended (Galli, 1993).

2. **Routine Maintenance and Inspection:** The area should be inspected for failures following heavy rainfall and repaired as necessary for newly formed channels or gullies, reseeding/ sodding of bare spots, removal of trash, leaves and/or accumulated sediments, the control of woody or other undesirable vegetation and to check the condition and integrity of the check dams.
3. **Aeration:** The buffer strip may require periodic mechanical aeration to restore infiltration capacity. This aeration must be done during a time when the area can be reseeded and mulched prior to any significant rainfall.
4. **Erosion:** It is important to install erosion and sediment control measures to stabilize this area as soon as possible and to retain any organic matter in the bottom of the trench.
5. **Fertilization:** Routine fertilization and/or use of pesticides is strongly discouraged. If complete re-seeding is necessary, half the original recommended rate of fertilizer should be applied with a full rate of seed.
6. **Sediment Removal:** The level of sediment deposition in the channel should be monitored regularly, and removed from grassed channels before permanent damage is done to the grassed vegetation, or if infiltration times are longer than 12 hours. Sediment should be removed from riprap channels when it reduces the capacity of the channel.
7. **Catch Basins**: All catch basins, and any other field inlets throughout the collection system, need to be inspected on a monthly basis to assure that the inlet entry point is clear of debris and will allow the intended water entry. At that time, these will be cleared, if necessary on a yearly basis or when sediment reaches two thirds of total volume. Catch basins need to be vacuumed and cleaned of all accumulated sediment. This work must be done by a vacuum truck under contract. The removed material must be disposed of in accordance with the Maine Solid Waste Disposal Rules.

**Parking Surfaces:**
Paved surfaces shall be swept or vacuumed at least twice annually in the Spring to remove all Winter sand, and periodically during the year on an as-needed basis to minimize transportation of sediment during rainfall events.

**Dry Well/Catch Basin:**
Preventive maintenance is vital for the long-term effectiveness of an infiltration system.

1. **Fertilization:** Fertilization of the area over the infiltration bed should be avoided unless absolutely necessary to establish vegetation.
2. **Snow Storage:** Snow removed from any on-site or off-site areas may not be stored over an infiltration area, with the exception of storage on permeable pavement.
3. **Monitoring and Inspections:** Inspect the infiltration system several times in the first year of operation and at least annually thereafter. Conduct the inspections after large storms to check for surface ponding at the inlet that may indicate clogging. Water levels in the observation well should be recorded over several days after the storm to ensure that the system drains within 24 to 48 hours after filling. The basin will need to be rehabilitated if it fails to drain before the next rain event or 72 hours.
4. **Pollution-Control Devices**: Pollution-control devices such as oil-water separators, skimmers, and booms should be inspected regularly to determine if they need to be cleaned or replaced.
5. **Sediment Removal and Maintenance of System Performance:** Sediment must be removed from the system at least annually to prevent deterioration of system performance. The pre-treatment inlets should be checked and cleaned out when accumulated sediment occupies more than 10% of the available capacity. This can be done manually or by a

vacuum pump. Inlet and outlet pipes should be checked for clogging. Accumulated grease and oil from separator devices should be removed frequently and disposed of in accordance with applicable state and local regulations. The system must be rehabilitated or replaced if its performance is degraded to the point that applicable stormwater standards are not met.

6. **Pretreatment Buffer Strips:** If a grass buffer strip is used in conjunction with the infiltration BMP it should have vigorous and dense vegetation. Bare spots or eroded areas should be repaired and/or re-seeded or re-sodded. Watering and/or fertilization should be provided during the first few months after the strip is established, and may be needed in times of drought. Grass filter strips should be mowed regularly to prevent the uncontrolled growth of weeds, but filter strip performance will be impaired if the grass is cut too short.

## Task Frequency:

| Table 11-1<br>Long-Term Inspection & Maintenance Plan | Spring | Fall or Yearly | After a Major Storm | Every 2-5 Years |
|---|---|---|---|---|
| **Vegetated Areas** | | | | |
| Inspect all slopes and embankments | X | | X | |
| Replant bare areas or areas with sparse growth | X | | X | |
| Armor areas with rill erosion with an appropriate lining or divert the erosive flows to on-site areas able to withstand concentrated flows. See Appendix A(5) of Rule. | X | | X | |
| **Stormwater Channels** | | | | |
| Inspect ditches, swales and other open stormwater channels | X | X | X | |
| Remove any obstructions and accumulated sediments or debris | X | X | | |
| Control vegetated growth and woody vegetation | | X | | |
| Repair any erosion of the ditch lining | | X | | |
| Mow vegetated ditches | | X | | |
| Remove woody vegetation growing through riprap | | X | | |
| Repair any slumping side slopes | | X | | |
| Replace riprap where underlying filter fabric or underdrain gravel is showing or where stones have dislodge | | X | | |
| **Culverts** | | | | |
| Remove accumulated sediments and debris at the inlet, at the outlet, and within the conduit | X | X | X | |
| Repair any erosion damage at the culvert's inlet and outlet | X | X | X | |
| **Catch Basin Systems** | | | | |
| Remove and legally dispose of accumulated sediments and debris from the bottom of the basin, inlet grates, inflow channels to the basin, and pipes between basins. | X | | | |
| Remove floating debris and floating oils (using oil absorptive pads) from any trap designed for such | X | | | |
| **Roadways and Parking Surfaces** | | | | |
| Clear accumulated winter sand in parking lots and along roadways | X | | | |
| Sweep pavement to remove sediment | X | | | |
| Grade road shoulders and remove excess sand either manually or by a front-end loader | X | | | |
| Grade gravel roads and gravel shoulders | X | | | |
| Clean-out the sediment within water bars or open-top culverts | X | | | |
| Ensure that stormwater is not impeded by accumulations of material or false ditches in the shoulder | X | | | |

## Table 11-1
## Long-Term Inspection & Maintenance Plan

| | Spring | Fall or Yearly | After a Major Storm | Every 2-5 Years |
|---|---|---|---|---|
| **Dry Well/Catchbasin** | | | | |
| Inspect and clean-out any pre-treatment measures that collect sediment and hydrocarbons entering an infiltration measure | X | X | | |
| Provide for the removal and disposal of accumulated sediments within the infiltration area | | | | X |
| Renew the infiltration measure if it fails to drain within 72 hours after a rainfall of one-half inch or more | | | | X |
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**Maintenance Log Sheet:**

| Maintenance Log Sheet<br>30 Merrill Street, Portland, ME | | | |
|---|---|---|---|
| **BMP's** | **Date Inspected** | **Repairs Needed?** | **Date Repaired** |
| **Example** | 4/1/17 | Y | 4/2/17 |
| **1. Vegetated Areas** | | | |
| **2. Paved Areas** | | | |
| **3. Catch Basin** | | | |
| **4. Dry Well** | | | |

| **Detailed Repair Notes:** | | |
|---|---|---|
| **BMP Type** | **Date** | **Description of Repair Made** |
| 1 | 4-1-17 | Sodded over eroded section (Example) |
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