Operations and Maintenance Plan

FOR

MassBay Community College

JUNE 2020

Prepared For:

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O&M Plan, Color Scheme

The Standard Operating Procedures (SOPs) developed as part of this Operation and Maintenance (O&M) Plan have been broken up into color-coded sections based on section contents for easy locating. For a detailed list of SOPs see page 5.

Standard Operating Procedures:

Stormwater Infrastructure (MI)

Vehicle Maintenance and Storage Yards (VM)

Spill Prevention, Response and Reporting (SR)

Parks and Open Space (PO)

Building and Facilities (BF)

Construction Management (CM)

1.0 Introduction

The Environmental Protection Agency (EPA) regulates stormwater discharges from stormwater systems through the National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) permit program, applicable within the regulated urbanized area. Under the MS4 program, MassBay is in part required to develop an inventory of all permittee-owned facilities within the following categories:

- Parks and open space.
- Buildings and facilities.
- Vehicles and equipment.

Note that unlike many regulated MS4s such as cities and towns, MassBay is a singular entity consisting of a small college campus located within the Town of Wellesley's regulated urbanized area. Unlike typical regulated communities that have extensive drainage networks and dozens of town-owned facilities throughout the community, MassBay Community College consists of a main college classroom building and two smaller satellite structures that provide support services. The college also has several parking areas and access roadways with limited drainage infrastructure, a small fraction of a typical MS4 entity. Thus, MassBay's only permittee-owned facility is the college complex itself.

MassBay must then develop written operation and maintenance (O&M) procedures to reduce the impact of stormwater runoff from operations and facilities to MS4 stormwater infrastructure (**Figure 1**). **Table 1** shows some common stormwater pollutants, the source of these pollutants, and the impacts they have on the surrounding environment. This O&M plan provides a series of Standard Operating Procedures (SOPs) for MassBay personnel to use when performing certain O&M tasks.

Table 1 – Typical Stormwater Pollutants, Sources and Impacts

Pollutant	Source(s)	Impact(s)
Sediment	Construction sites; eroding streambanks and lakeshores; winter sand applications; vehicle /boat washing; agricultural sites.	Destruction of plant and fish habitat; transportation of attached oils, nutrients and other pollutants; increased maintenance costs.
Salt and chlorides	Winter sanding operations	Destruction of plant and fish habitat.
Nutrients (phosphorus, nitrogen)	Fertilizers; malfunctioning septic systems; livestock, bird & pet waste; vehicle/boat washing; grey water; decaying grass and leaves; sewer overflows; leaking trash containers; vehicle/equipment exhaust.	Increased potential for nuisance or toxic algal blooms; increased potential of hypoxia/anoxia (low levels of dissolved oxygen that can kill aquatic organisms.)

Table 1 (continued) – Typical Stormwater Pollutants, Sources and Impacts

Pollutant	Source(s)	Impact(s)
Petroleum Hydrocarbons (PAHs, VOCs, etc.)	Vehicle and equipment leaks; vehicle and equipment emissions; pesticides; fuel spills; equipment cleaning; improper fuel storage & disposal.	Toxic at low levels.
Heavy Metals	Vehicle, brake & tire wear; vehicle & equipment exhaust; batteries; paint and wood preservatives; galvanized metal; fuels; pesticides; cleaners.	Toxic at low levels; drinking water contamination.
Toxic Chemicals	Pesticide use; spills; illegal discharges; leaks; manufacturing.	Toxic at low levels.
Debris/ Litter	Improper waste disposal and storage; fishing gear; leaking rubbish containers; littering.	Potential risk to human and aquatic life.
Pathogens	Livestock, bird & pet wastes; malfunctioning septic systems; yard waste decomposition, sewer overflows or improper connections.	Risk to human health leading to closure of shellfish areas and swimming areas; drinking water contamination.

2.0 SOPs and Purposes

The purpose of the SOPs is to provide a uniform approach for typical operations and facility activities to reduce and eliminate contamination that may enter the MS4 and/or water resources. SOPs have been color-coded and divided into the following categories for easier use, and each category has been given an abbreviation for easy indexing:

- **Stormwater Infrastructure (MI)**
- **Vehicle Maintenance and Storage Yards (VM)**
- **Spill Prevention, Response and Reporting (SR)**
- **Parks and Open Space (PO)**
- **Building and Facilities (BF)**
- **Construction Management (CM)**

Stormwater Infrastructure (MI)

- Ensure adequate maintenance of stormwater infrastructure
- Minimize pollution to waterbodies due to stormwater operations

Vehicle Maintenance and Storage Yards (VM)

- Ensure proper storage and maintenance of vehicles and equipment
- Minimize pollution due to vehicle and equipment washing and fueling activities
- Ensure proper storage of materials, sand and salt to minimize pollution potential

Spill Prevention, Response and Reporting (SR)

- Minimize pollution potential due to product spills
- Outline proper response procedures to minimize spill impacts
- Document material disposal procedures and spill reporting requirements

Parks and Open Space (PO)

- Ensure proper management of landscaping, proper mowing and irrigation
- Minimize erosion potential on unstable areas
- Minimize pollution due to pet waste
- Ensure proper storage and application of fertilizers and pesticides

Building and Facilities (BF)

- Ensure proper good housekeeping practices associated with building washing and repair
- Minimize pollution due to dumpsters and other solid wastes
- Ensure proper storage and handling of oil, hazardous waste, and flammable products

Construction Management (CM)

- Outline proper maintenance of erosion and sediment controls
- Document site inspection procedure

3.0 List of SOPs

Stormwater Infrastructure (MI)

MI-1: Street Sweeping
- Street Sweeping Log

MI-2: Catch Basin Cleaning and Inspection
- Catch Basin Inspection Procedures
- Catch Basin Inspection Form
- Catch Basin Maintenance/Repair Log

MI-3: Outfall Inspection & Maintenance
- Dry Weather Outlet Inventory and Inspection
- Outfall Maintenance/Repair Log

MI-4: Stormwater & Water Line Maintenance

MI-5: Asphalt Cleaning & Repair

MI-6: BMP Inspection & Maintenance
- Inventory of BMPs
- Map of BMP Locations
- BMP Inspection and Maintenance Log

MI-7: Oil/Water Separator (OWS)
- Oil/Water Separator Inspection Checklist

MI-8: Floor Drains

MI-9: Snow Stockpiling/Removal

MI-10: Winter Road Maintenance
- Calibration Procedures
- General Roadway Treatment Application Rates
- Deicing Product Log

Vehicle Maintenance and Storage Yards (VM)

VM-1: Vehicle & Equipment Storage & Maintenance

VM-2: Vehicle & Equipment Washing

VM-3: Vehicle & Equipment Fueling

VM-4: Parts Cleaning

Spill Prevention, Response and Reporting

SR-1: Spill Response

SR-2: Spill Reporting

SR-3: Emergency Contact Information

Parks and Open Space (PO)

PO-1: Landscape Design & Management

PO-2: Lawns & Grounds Maintenance

PO-3: Pet Waste & Litter

PO-4: Storage & Use of Pesticides & Herbicides

PO-5: Storage & Use of Fertilizers

PO-6: Waterfowl Management

Buildings and Facilities (BF)

BF-1: Building Washing & Repair

BF-2: Solid Waste Management

BF-3: Material Loading/Unloading

BF-4: Material Storage

BF-5: Painting

BF-6: Sand & Salt Storage

Construction Management (CM)

CM-1: Erosion & Sedimentation Control

CM-2: Construction Site Inspection
- Stormwater Inspection Report

WORCESTER STREET

WORCESTER STREET

BANCROFT ROAD

BANCROFT ROAD

WORCESTER STREET

GRANTLAND ROAD

CUNNINGHAM ROAD

OAKLAND CIRCLE

Swale

Swale

Swale

Snow Dump

Legend

- MassBay Catch Basin
- MassBay Leaching Catch Basin
- MassBay DMH
- MassBay Outfall
- Interconnection
- Town CB
- Town DMH
- Town Outfall
- Drain Pipe
- Leach Drain Pipe
- Town Gravity Main
- Town Lateral Line
- Parcels
- Buildings
- Impervious Area
- Approx. Regulated Area
- Road
- Streams

N

W E

S

0 125 250 375 500

Feet

MassBay Community College
Stormwater Structures
Wellesley, MA

Comprehensive Environmental Incorporated

Data Sources: CEI, MassGIS, MassBay Community College

1.30.2019

Stormwater Infrastructure (MI)

MI-1: Street Sweeping
- Street Sweeping Log

MI-2: Catch Basin Cleaning and Inspection
- Catch Basin Inspection Procedures
- Catch Basin Inspection Form
- Catch Basin Maintenance/Repair Log

MI-3: Outfall Inspection & Maintenance
- Dry Weather Outlet Inventory and Inspection
- Outfall Maintenance/Repair Log

MI-4: Stormwater & Water Line Maintenance

MI-5: Asphalt Cleaning & Repair

MI-6: BMP Inspection & Maintenance
- Inventory of BMPs
- Map of BMP Locations
- BMP Inspection and Maintenance Log

MI-7: Oil/Water Separator (OWS)
- Oil/Water Separator Inspection Checklist

MI-8: Floor Drains

MI-9: Snow Stockpiling/Removal

MI-10: Winter Road Maintenance
- Calibration Procedures
- General Roadway Treatment Application Rates
- Deicing Product Log

MI-1, Street Sweeping

Street sweeping is performed to remove sediments from streets and parking lots before it is washed into catch basins and waterways.

Procedures and Practices

- Sweep all college-owned roads and parking lots within the urbanized area with the exception of high-speed limited access highways at least once per year in the spring.
- If required, sweep priority areas such as those with construction sites or areas subject to heavier sanding and/or traffic volumes multiple times a year to minimize sediment accumulation.
- Lightly spray water on streets before sweeping to minimize airborne dust.
- Avoid pushing materials into or around storm drains and catch basins.
- Do not use kick brooms or sweeper attachments that tend to spread dirt.
- When unloading sweeper, make sure there is no dust or sediment release.
- After sweeping is finished, properly dispose of sweeper wastes (see below). Never dispose sweep debris into the storm drain systems, catch basins, or waterways.
- Never store street sweepings in areas where stormwater could transport fine materials to the storm drain system or a waterbody.
- If possible, clean catch basins after streets are swept.

Prior to the Start of the Sweeping Season (Spring)

- Train employees on the proper maintenance and operation of equipment and on the proper storage and disposal of street sweepings.
- Ensure all sweeping equipment is in good working order and conduct maintenance as needed (see Equipment Maintenance Section).
- Ensure road crews are familiar with sweeping routes to efficiently cover the entire area.

Prior to Leaving the Facility for Sweeping

- Speak with supervisor to determine special circumstances (i.e. rain, priority areas) and to confirm sweeping route.
- Inspect all vehicles. Check fluid levels and fill to proper levels. Ensure lights are in working order. Document any repairs.

Street Sweeping

- Operate all sweepers according to the manufacturer's recommended settings, standards, and procedures.
- While sweeping, drive between the optimal speed limit.
- If spills occur or illegal discharges are seen, report to your supervisor.
- Do not perform sweeping during heavy rainfall.

Upon Return to the Facility

- Provide daily progress reports on the number of miles and names of roads swept to supervisor.

- Wash vehicle following the Vehicles and Equipment Washing SOP (VM-2).
- Before parking any truck or equipment after use, check all fluid levels. Note any minor repairs conducted and other repairs that may be needed. Follow the Vehicle and Equipment Maintenance SOP (VM-1).

Storage, Disposal and Reuse

Storage

- Store separately from catch basin cleaning materials.
- Store street sweepings on an impermeable surface away from areas that receive stormwater runoff.
- Cover street sweeping piles with tarps to prevent rainwater from generating contaminated stormwater.
- Any employee handling the street sweepings should wear appropriate personal protective equipment, such as a dust mask, safety goggles, long-sleeved shirts and long pants at all times.

Reuse

Street sweepings may also be used as fill in public ways or as an additive to compost without prior approval from MassDEP provided certain conditions are met:

- Used under the road surface or as fill along the side of the road within the public way.
- Kept above the level of the groundwater.
- Not used in designated "No Salt Areas".
- Not used within the 100 foot buffer zone of a wetland or within wetland resource areas including bordering vegetative wetlands and riverfront areas.
- Not used within 500 feet of a ground or surface drinking water supply.

Inspection and Maintenance

- Inspect sweepers before sweeping to ensure they are in good working order. Maintain and adjust as necessary.
- Inspect tarp to ensure pile is covered and no tears.
- Inspect erosion controls weekly and after major storms to ensure they are free of tears and sediment buildup. Repair as needed.
- Immediately abate any nuisance conditions (i.e., noise, dust, odor).
- Train employees on proper street sweeping procedures.

Recordkeeping and Reporting

- Use attached Street Sweeping Log to document street sweeping activities.
- Employees should record:
    - Miles of roadway swept.
    - Tons or cubic yards of street sweeping materials generated.
    - Tons or cubic yards of street sweeping materials disposed of.
    - Tons or cubic yards of street sweeping materials reused as fill.

Street Sweeping Log

Date:_________________ **Precipitation in the last three days?** **Yes** **No**

Weather Today:____

Supervisor/Crew Leader:____

Street Swept (Name)	Miles	Observed Potential Sources of Pollution	Volume or Mass of Material Removed	Comments
		__ None __ Material Storage __ Construction Activity __ Equipment Storage __ Erosion __ Other*		
		__ None __ Material Storage __ Construction Activity __ Equipment Storage __ Erosion __ Other*		
		__ None __ Material Storage __ Construction Activity __ Equipment Storage __ Erosion __ Other*		
		__ None __ Material Storage __ Construction Activity __ Equipment Storage __ Erosion __ Other*		
		__ None __ Material Storage __ Construction Activity __ Equipment Storage __ Erosion __ Other*		
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		__ None __ Material Storage __ Construction Activity __ Equipment Storage __ Erosion __ Other*		
		__ None __ Material Storage __ Construction Activity __ Equipment Storage __ Erosion __ Other*		
Total Sediment Accumulated from Route (as weighed at landfill):_______________ tons				

* Provide additional comments to describe the observations made for the category. Comments should also identify issues that hinder street sweeping progress (i.e., parked cars, obstructions).

MI-2, Catch Basin Cleaning & Inspection

Catch basin cleaning (CBC) is performed to remove sediments from structures before it is washed into waterways. The college has approximately 40 catch basins to clean and maintain. For additional information, see MassBay's Catch Basin Cleaning Optimization Plan.

Schedule

All catch basins are cleaned approximately every other year by an outside contractor. Of the 40 known catch basins, approximately half are leaching structures with no overflow device.

Procedures and Practices

1. Work upstream to downstream when cleaning catch basins within a drainage network.
2. Clean sediment and trash off grate before removing grate.
3. Inspect the outside of the grate and inside of the catch basin to determine cleaning needs and for structural integrity.
4. Either manually use a shovel to remove accumulated sediments, use a bucket loader to remove accumulated sediments, or use a high pressure washer to clean any remaining material out of the catch basin while capturing the slurry with a vacuum.
5. If necessary, after the catch basin is cleaned, use the rodder of a vacuum truck to clean downstream pipe and pull back sediment that might have entered downstream pipe.
6. After cleaning is finished, properly dispose of collected sediments (see below).
7. Collect and dispose of fluids during catch basin cleaning. Do not discharge fluids to a wetland or waterway.
8. If any suspected illicit discharges are observed or suspected, notify your supervisor.
9. At the end of each day, document location and number of catch basins cleaned, amount of waste collected, and disposal method for all screenings.

Storage and Disposal

Storage

- Store separately from street sweeping materials.
- Store materials on an impermeable surface away from areas that receive stormwater runoff.
- Cover piles with tarps to prevent rainwater from generating contaminated stormwater.
- Any employee handling the street sweepings should wear appropriate personal protective equipment, such as a dust mask, safety goggles, long-sleeved shirts and long pants at all times.

Disposal

The contractor is responsible for disposing of materials offsite. Catch basin cleanings must be disposed of at landfills as daily cover. Sampling of the catch basin cleaning materials is not required unless there is evidence that cleanings were contaminated by a spill or other means. No reuse is allowed without first obtaining a Beneficial Use Determination (BUD) from MassDEP

SOP. MI-2 Catch Basin Cleaning & Inspection

Inspection and Maintenance

- Clean catch basins to maintain sediment levels in sumps at less than 50% full.
- If catch basins are more than 50% full for two consecutive cleaning events, catch basins should either be cleaned more often or the contributing area should be investigated for sediment sources.
- Inspect catch basins for structural integrity and evidence of illicit discharges during cleaning.
- Inspect tarp to ensure pile is covered and no tears.
- Immediately abate any nuisance conditions (i.e., noise, dust, odor).
- Train employees on proper CBC procedures.

Recordkeeping and Reporting

- Use attached Catch Basin Inspection Form when inspecting catch basins. Employees should record:
    - Number of catch basins inspected.
    - Number of catch basins cleaned.
    - Log of catch basins cleaned or inspected.
    - Tons or cubic yards of catch basin cleaning materials generated.
- Use attached Catch Basin Maintenance/Repair Log to document CBC activities.

Catch Basin Inspection Procedures

Option 1: Inspection during Cleaning

1. Clean sediment and trash off of grate.
2. Remove grate.
3. Fill out **Catch Basin Inspection Form** with basin-specific information:
    - **Before cleaning**:
        - Do a visual inspection of outside of grate.
        - Do a visual inspection of the inside of the catch basin to determine cleaning needs and structural issues.
        - Measure depth from rim of catch basin to top of sediment.
        - Measure depth from rim of catch basin to the top of the outlet pipe.
        - Take photo of catch basin.
    - **Clean catch basin**:
        - For manual removal, place removed material in a location protected from potential runoff and place cleanings in a vehicle for transport to designated disposal area.
        - OR use a high-powered vac truck to remove sediment.
    - **After cleaning**:
        - Measure depth from rim to bottom of catch basin.
        - Measure depth of sum (outlet pipe to bottom of catch basin).
        - Note if the catch basin is more than 50% full with sediment.
        - Note if the catch basin requires maintenance or it there are pollutants present.
        - Take photo of catch basin.
4. If any illicit discharges are observed or suspected, notify supervisor.

Option 2: Interim Inspection between Cleaning Cycles

1. Clean sediment and trash off grate.
2. Remove grate.
3. Fill out **Catch Basin Inspection Form** with basin-specific information:
    - Do a visual inspection of outside of grate.
    - Do a visual inspection of the inside of the catch basin to determine cleaning needs and structural issues.
    - Measure depth from rim of catch basin to top of sediment.
    - Using sump depth collected during previous cleaning, note if the catch basin is more than 50% full with sediment.
    - Note if the catch basin requires maintenance or if there are pollutants present.
4. If any illicit discharges are observed or suspected, notify supervisor.

Catch Basin Inspection Form

Inspection Information			
Catch Basin ID			
Street Location		GPS Location	
Inspector's Name			
Date of Inspection		Time of Inspection	
Weather (circle)	Dry Light Rain Heavy Rain Snow		

Catch Basin Information

Location	**Surface Type**	**Grate**
☐ Road/Curb ☐ Alley ☐ Ditch ☐ Parking Lot ☐ Driveway ☐ Sidewalk Other:_____	☐ Asphalt ☐ Gravel ☐ Concrete ☐ Grass/Dirt Other:_____	____inches x ____ inches Material: _____ Shape:

Catch Basin Condition

CB Damage: No Yes	Comment:

	Materials (circle)					**Condition (circle)**			
Grate	Cast Iron	Brick	Concrete	Aluminum	Fiberglass	Poor	Fair	Good	Excellent
Frame	Cast Iron	Brick	Concrete	Aluminum	Fiberglass	Poor	Fair	Good	Excellent
Chimney	Cast Iron	Brick	Concrete	Aluminum	Fiberglass	Poor	Fair	Good	Excellent
Walls	Cast Iron	Brick	Concrete	Aluminum	Fiberglass	Poor	Fair	Good	Excellent
Trap/Hood	Cast Iron	Brick	Concrete	Aluminum	Fiberglass	Poor	Fair	Good	Excellent
Sump	Cast Iron	Brick	Concrete	Aluminum	Fiberglass	Poor	Fair	Good	Excellent

Sediment Depth and IDDE (inches)

A. Depth from Rim to Top of Sediment: _____ B. Depth from Rim to Bottom of Basin (after vac): _____ C. Sump Depth: _____ D. Depth of Sediment (B-A): _____ E. More than 50% Full of Sediment? (D/C): _____ **CB Cleaned?** No Yes **Suspected illicit discharge?** No Yes	Check those Present: __Sanitary Waste/Smell __Excessive Sediment __Oil Sheen __Floatables/Trash __Pet Waste: Other:_____ Potential Source: _____

Catch Basin Maintenance/Repair Log

Structure ID	Location (Street Name, Approximate Address)	Inspection Date	Problem(s) Identified, Comments	Date of Maint/Repair	Type of Maintenance/Repair, Comments

SOP. MI-3 Outfall Inspection and Maintenance

MI-3, Outfall Inspection and Maintenance

This SOP outlines procedures and practices for inspecting and maintaining stormwater outfalls for the presence of non-stormwater flows, sediment accumulation and maintenance needs to reduce pollutant loads entering waterways. Note that this SOP does not comprehensively cover outfall sampling and screening during dry or wet weather. For additional information, see MassBay's Illicit Discharge, Detection, and Elimination (IDDE) Plan.

Procedures and Practices

- Conduct visual inspection of outfalls every five years starting in 2028.
- Note safety hazards or other issues that may hinder cleaning operations.
- Measure sediment depth at outlet.
- Use a vactor truck, backhoe loader and/or hand tools to remove sand and debris.
- Contact your supervisor if you see any of the following pollution observations:
    - Foam: indicator of upstream vehicle washing activities, or an illicit discharge.
    - Oil sheen: result of a leak or spill.
    - Cloudiness: indicator of suspended solids such as dust, ash, powdered chemicals and ground up materials.
    - Color or odor: Indicator of raw materials, chemicals, or sewage.
    - Excessive sediment: indicator or disturbed earth of other unpaved areas lacking adequate erosion control measures.
    - Sanitary waste and optical enhancers (fluorescent dyes added to laundry detergent and some toilet paper): indicators of illicit discharge.
    - Orange staining: indicator of high mineral concentrations.
- Ensure staff are trained in outfall inspection and management procedures and practices.

Disposal/Reuse

- Dispose/reuse collected sediment in the same manner as catch basin cleanings (CBC). Refer to SOP. MI-2 Catch Basin Cleaning & Inspection.

Recordkeeping and Reporting

- Use attached Outfall Inspection Log to document routine inspections.
- Use attached Outfall Maintenance/Repair log to document outfall repairs.

Outfall Inspection Log

Outfall ID# _____ **Location Aid** _____

Date:_____ Time:_____ Weather Today:_____

Surveyor/Observer:_____ Weather over past 72 hours:_____

1. Flow Observations (fill out this section only if flow is observed)	**Pipe Flow Depth (inches) Note: measure from**  _____ Depth	**Channel, Ditch or Swale Flow Depth (inches)**  _____ Depth	**Flow Appearance / Color** __ Clear __ Cloudy/Milky __ Dark (Tea) __ Sheen __ Suspended sediment (opaque) __ Other *	**Flow Odor** __ None __ Chemical __ Petroleum __ Sewage __ Other *	**Comments and Notes**			
2. Structure Details (pipe or other conveyance info.)	**Pipe Material** __ Clay __ Concrete __ Corrugated Steel __ PVC __ Cast Iron	**Pipe Condition** __ Good __ Cracked __ Exposed Steel __ Corroded __ Other*	**Channel, Ditch or Swale Condition** __ Good __ Clogged __ Debris __ Scoured or Eroded __ Other*	**Diameter or Width (specify distance units)**	**Slope (degrees)** __ Flat __ Moderate __ Steep	**Outlet Structure** __ Headwall __ Riprap __ Flared End __ No Outlet Protection	**GPS Coordinates** _____Lat. _____Lon.	**Discharge directly to surface water?**** __ Yes __ No If Yes, Provide Receiving Water Name
3. Outfall Observations (general conditions at outfall)	**Deposits** __ None __ Grease/Oil __ Paper/Trash __ Foam __ Heavy sediment deposits __ Other *	**Surrounding Vegetation** __ Little or No Distress __ Moderate Distress __ High Distress	**Erodibility** __ Little or No Erosion __ Small Areas of Erosion __ Many Eroded Areas	**Land Use at Outfall** __ Forest __ Agriculture __ Residential __ Commercial __ Industrial __ Waterbody __ Detention Pond/Basin	**Land Use Upstream of Outfall** __ Forest __ Agriculture __ Residential __ Commercial __ Industrial	**Appearance / Color** __ Clear __ Cloudy/Milky __ Dark (Tea) __ Sheen __ Suspended sediment (opaque) __ Other *	**Odor** __ None __ Chemical __ Petroleum __ Sewage __ Other *	**Sediment Depth (inches) (if present)**

Notes:

* Provide additional comments to describe the observations made for the category.

** Discharges directly to surface waters are defined as: any conveyance or discernable concentrated flow (i.e., pipe, swale, ditch) other than overland sheet flow that enters a body of water.

Outfall Maintenance/Repair Log

Structure ID	Location (Street Name, Approximate Address)	Inspection Date	Problem(s) Identified, Comments	Date of Maint/Repair	Type of Maintenance/Repair, Comments

SOP. MI-4 Stormwater & Water Line Maintenance

MI-4, Stormwater & Water Line Maintenance

Cleaning of stormwater and water lines can result in the discharge of pollutants. This SOP outlines procedures for cleaning lines to minimize the discharge of pollutants, along with routine maintenance to prevent pipe blockage that may require cleaning.

Procedures and Practices

Stormwater Drainage Maintenance

- Remove sediment accumulation using a vacuum truck or other dry method if possible.
- Use appropriate erosion and sediment control practices when performing repairs.

Water Line Maintenance

- In the event of a leak, stop the discharge as quickly as possible using water valves.
- If water is discharged to a storm drain, control measures must be put in place to control potential pollutants (i.e. sediment, chlorine, etc.). Examples include:
    - Silt fence – where the inlet drains a relatively flat area.
    - Gravel and wire mesh sediment filter – where concentrated flows are expected.
    - Wooden weir and fabric – use at curb inlets for a compact installation.
- General design considerations for catch basin protection devices include the following:
    - Construct such that cleaning and disposal of trapped sediment is made easy, while minimizing interference with discharge activities.
    - Construct so that any standing water resulting from the discharge will not cause excessive inconvenience or flooding/damage to adjacent land or structures.
    - In most cases, catch basins are protected with a silt sack.
- Inspect flow path of the discharged water. Identify erodible areas which may need to be repaired or protected during subsequent repairs or corrective actions. Identify the potential for pollutants to be washed into the waterway.
- The effectiveness of control devices must be monitored during the discharge period and any necessary repairs or modifications made.

Inspection and Maintenance

- Inspect water lines for roots, as these are a common cause of clogging and backups.
- Inspect for structural defects in pipes and manholes - Sags in the line, cracks, holes, protruding laterals, misaligned pipe, and offset joints are all possible causes of backups.
- Repair structural defects in pipes and manholes immediately.
- Refurbish portions of the utility lines periodically.
- Ensure that all personnel are properly trained on procedures and practices for pipe maintenance.
- If possible, practice preventative maintenance on pipes by inspecting pipes prior to roadway reconstruction activities.
- Document all inspections and maintenance performed.

MI-5, Asphalt Cleaning & Repair

This SOP outlines good housekeeping practices for the cleaning and repair of asphalt parking areas, roadways and sidewalks to minimize washing of aggregates into the storm drain system.

Procedures and Practices

- Schedule surface removal activities during dry weather if possible.
- Avoid creating excess dust when breaking asphalt or concrete.
- Take measures to protect nearby catch basins prior to breaking up asphalt or concrete (e.g. silt sack or sand bags around catch basins).
- Always dry sweep asphalt first to clean up tracked dirt. Use a street sweeper or vacuum truck.
- When making saw cuts in pavement, use as little water as possible. Cover each catch basin completely with a silt sack during the sawing operation and contain the slurry by placing straw bales, sandbags, or gravel dams around the catch basins.
- Designate an area for cleanup and proper disposal of excess materials.
- Remove and recycle as much of the broken pavement as possible to avoid contact with rainfall and stormwater runoff.
- Clean asphalt afterwards by sweeping up as much material as possible. Do not push accumulated debris into the street or catch basins. Collected materials must be disposed of as a solid waste.

Inspection and Maintenance

- Ensure staff are trained in proper asphalt and sidewalk repair procedures and practices.

MI-6, BMP Inspection & Maintenance

Stormwater BMPs are designed to capture and treat pollutants from stormwater runoff. If BMPs are not routinely maintained, their effectiveness at pollutant removal decreases and, in some cases, they may become a source of pollutants. This SOP outlines procedures for inspecting and maintaining stormwater BMPs so that they continue to function as designed.

Procedures and Practices

- Print maps and instructions for BMP maintenance assignments on the following pages.
- Conduct annual visual inspection of BMPs to evaluate the amount of sediment to be removed and determine the equipment that will be required to perform the work. Visual inspection will also help identify safety hazards or other issues that may hinder the cleaning operations.
- Measure depth from the top of accumulated sediment.
- Use a vactor truck, backhoe loader and/or hand tools to remove sand and debris where accumulation has occurred.
- Perform other maintenance specific to BMP type and maintenance instructions. This may include removal of invasive species, removal of dead vegetation, pruning, mowing, mulching, replacement of media and vegetation.

Inspection and Maintenance

- Perform inspection and maintenance activities as outlined on the following pages for various BMP types.

Recordkeeping and Reporting

- Use the attached BMP Inspection and Maintenance log to record inspection and maintenance activities for all college-owned BMPs.

Inventory of BMPs

BMP ID	Location	Stormwater BMP Type
Swale 1	Northeast side of Oakland Street	Grassed Swale
Swale 2	Southeast side of Oakland Street, north of student parking lot exit	Vegetated Swale
Swale 3	Southeast side of Oakland Street, south of student parking lot exit)	Vegetated Swale

WORCESTER STREET

WORCESTER STREET

BANCROFT ROAD

BANCROFT ROAD

WORCESTER STREET

GRANTLAND ROAD

CUNNINGHAM ROAD

OAKLAND CIRCLE

Swale 1

Swale 2

Swale 3

Snow Dump

Legend

- MassBay Catch Basin
- MassBay Leaching Catch Basin
- MassBay DMH
- MassBay Outfall
- Interconnection
- Town CB
- Town DMH
- Town Outfall
- Drain Pipe
- Leach Drain Pipe
- Town Gravity Main
- Town Lateral Line
- Parcels
- Buildings
- Impervious Area
- Approx. Regulated Area
- Road
- Streams

N W E S

0 125 250 375 500

Feet

MassBay Community College Stormwater Structures

Wellesley, MA

Comprehensive Environmental Incorporated

Data Sources: CEI, MassGIS, MassBay Community College

1.30.2019

Inspection and Maintenance

Swale

Procedure	Objective	Time of year	Frequency
Mowing and Vegetation	Minimize woody vegetation establishment/takeover	Spring & Fall	Mow yearly: remove mowed material and clippings every other year.
Debris and Litter Removal	Remove for aesthetics and contribution of downstream floatables problem	Spring & Fall	As needed by inspection. Not less than twice per year.
Sediment Removal	Maintain flow capacity. Inspect and remove sediment, particularly at pipe discharge.	Year Round	Inspect quarterly for the first year. Establish a specific schedule based on first year accumulations.
Structural Integrity	Minimize erosion and channelization of stormwater. Inspect for signs of scour, particularly near high velocity areas. Regrade as needed.	Year Round	After large storms (2.5 inches of rainfall), but not less than twice per year.

Raingarden

Procedure	Objective	Time of year	Frequency
Landscaping and Vegetation	Minimize weedy vegetation establishment / takeover. Maintain mulch layer to retain soil moisture. Divide plants as needed to avoid overcrowding and reduced blooms.	Year Round	At least twice per year. Apply mulch layer in Spring and as needed.
Invasive Species	Inspect for invasive species and remove if present	Year Round	Inspect quarterly for the first year. Not less than twice per year.
Debris and Litter Removal	Remove for aesthetics and contribution of downstream floatables problem.	Year Round	As needed by inspection. Not less than twice per year.
Sediment Removal	Maintain flow capacity. Inspect and remove sediment, particularly at pipe discharge.	Year Round	Inspect quarterly for the first year. Establish a specific schedule based on first year accumulations.
Structural Integrity	Minimize erosion and channelization of stormwater. Inspect for signs of scour, particularly near high velocity areas. Regrade as needed.	Year Round	After large storms (2.5 inches of rainfall), but not less than twice per year.

Inspection and Maintenance

Forebay

Procedure	Objective	Time of year	Frequency
Inspect Basin	Inspect for problems	Spring & Fall	Bi-annually and during and after major storms
Mowing and Vegetation	Minimize woody vegetation establishment/takeover	Spring & Fall	Mow yearly: remove mowed material and clippings every other year.
Debris and Litter Removal	Remove for aesthetics and contribution of downstream floatables problem	Spring & Fall	As needed by inspection. Not less than twice per year.
Sediment Removal	Maintain flow capacity. Inspect and remove sediment, particularly at pipe discharge.	Year Round	Inspect quarterly for the first year. Establish a specific schedule based on first year accumulations. At least once every 5 years.
Structural Integrity	Minimize erosion and channelization of stormwater. Inspect for signs of scouring, particularly near high velocity areas. Regrade as needed (e.g. pipe discharge, check dam).	Year Round	After large storms (2.5 inches of rainfall), but not less than twice per year.

Infiltration Pond (Impoundment)

Procedure	Objective	Time of year	Frequency
Inspect Basin	Inspect for problems	Spring & Fall	Bi-annually and during and after major storms
Mowing and Vegetation	Minimize woody vegetation establishment/takeover	Spring & Fall	Mow yearly: remove mowed material and clippings every other year.
Debris and Litter Removal	Remove for aesthetics and contribution of downstream floatables problem	Spring & Fall	As needed by inspection. Not less than twice per year.
Sediment Removal	Maintain flow capacity. Inspect and remove sediment, particularly at pipe discharge.	Year Round	Inspect quarterly for the first year. Establish a specific schedule based on first year accumulations.
Structural Integrity	Minimize erosion and channelization of stormwater. Inspect for signs of scouring, particularly near high velocity areas. Regrade as needed (e.g. pipe discharge, check dam).	Year Round	After large storms (2.5 inches of rainfall), but not less than twice per year.

Inspection and Maintenance

Underground Infiltration System

Procedure	Objective	Time of year	Frequency
Sediment Removal	Maintain flow capacity. Inspect and remove sediment, particularly at pipe discharge.	Year Round	Inspect quarterly for the first year. Establish a specific schedule based on first year accumulations.
Structural Integrity	Inspect unit for signs of deteriorating construction. Inspect filters if present	Year Round	Inspect annually.
Water Level Inspection	Inspect water level in unit. System should be drained completely 72 hours after a storm event	Spring & Fall	At a minimum inspect twice a year at least 72 hours after storm events.

Leaching Catch Basin

Procedure	Objective	Time of year	Frequency
Sediment Removal	Maintain flow capacity. Inspect and remove sediment, particularly at pipe discharge.	Year Round	Inspect quarterly for the first year. Establish a specific schedule based on first year accumulations.
Structural Integrity	Inspect leaching catch basin for signs of deterioration of masonry.	Year Round	Inspect annually.

Proprietary Unit (Swirl Separator, etc.)

Procedure	Objective	Time of year	Frequency
Sediment Removal	Maintain flow capacity. Inspect and remove sediment, particularly at pipe discharge.	Year Round	Inspect quarterly for the first year. Establish a specific schedule based on first year accumulations.
Structural Integrity	Inspect unit for signs of deteriorating masonry. Inspect filters if present.	Year Round	Inspect annually.

BMP Inspection and Maintenance Log

Instructions: record BMP inspection and maintenance results below.

Info	BMP Type	Sediment	Deposits	Erodibility	Vegetation	Odor	Security	Inlet Pipe(s)	Outlet Pipe(s)	Maintenance	BMP Working Properly?
		GENERAL CONDITION					STRUCTURAL CONDITION			FOLLOW-UP	
ID:	**INSPECTION RECORD**										
	__ Swale __ Raingarden __ Forebay __ Infiltration Pond __ Underground Infil. __ Leaching CB __ Proprietary Unit __ Other*	__ None __ Slight build up __ Heavy build up	__ None __ Grease/Oil __ Grass/Compost __ Trash/Debris	__ N/A __ None __ Channels __ Depressions __ Bank Erosion __ Displaced Riprap __ Other*	__ N/A __ No Distress __ Distressed __ Sparse __ Overgrown __ Invasive Plants __ Other*	__ N/A __ Chemical __ Petroleum __ Sewage __ Other*	Features: __ None __ Fence __ Lock	__ N/A __ Straight Pipe __ Flared End __ Headwall	__ N/A __ Straight Pipe __ Flared End __ Headwall	Required? __ Yes __ No	__ Yes __ No Inspection Date: ____________________ Inspected By: ____________________
Location:		______ Depth (in.)	_______ Amount (minor, moderate, substantial, etc.)				Condition: __ Good __ Damaged __ Missing	Condition: __ N/A __ Good __ Damaged	Condition: __ N/A __ Good __ Damaged	Access: __ Easy __ Moderate __ Difficult	Comments:

MAINTENANCE RECORD

Date(s) of Maintenance:	Material Description:	Material Hauled Away By:
Date of Last Maintenance:		Material Sent To:
Types of Maintenance**:	Depth of Material Removed:	Comments:
Maintained By:	Volume of Material Removed:	

Info	BMP Type	Sediment	Deposits	Erodibility	Vegetation	Odor	Security	Inlet Pipe(s)	Outlet Pipe(s)	Maintenance	BMP Working Properly?
ID:	**INSPECTION RECORD**										
	__ Swale __ Raingarden __ Forebay __ Infiltration Pond __ Underground Infil. __ Leaching CB __ Proprietary Unit __ Other*	__ None __ Slight build up __ Heavy build up	__ None __ Grease/Oil __ Grass/Compost __ Trash/Debris	__ N/A __ None __ Channels __ Depressions __ Bank Erosion __ Displaced Riprap __ Other*	__ N/A __ No Distress __ Distressed __ Sparse __ Overgrown __ Invasive Plants __ Other*	__ N/A __ Chemical __ Petroleum __ Sewage __ Other*	Features: __ None __ Fence __ Lock	__ N/A __ Straight Pipe __ Flared End __ Headwall	__ N/A __ Straight Pipe __ Flared End __ Headwall	Required? __ Yes __ No	__ Yes __ No Inspection Date: ____________________ Inspected By: ____________________
Location:		______ Depth (in.)	_______ Amount (minor, moderate, substantial, etc.)				Condition: __ Good __ Damaged __ Missing	Condition: __ N/A __ Good __ Damaged	Condition: __ N/A __ Good __ Damaged	Access: __ Easy __ Moderate __ Difficult	Comments:

MAINTENANCE RECORD

Date(s) of Maintenance:	Material Description:	Material Hauled Away By:
Date of Last Maintenance:		Material Sent To:
Types of Maintenance**:	Depth of Material Removed:	Comments:
Maintained By:	Volume of Material Removed:	

Info	BMP Type	Sediment	Deposits	Erodibility	Vegetation	Odor	Security	Inlet Pipe(s)	Outlet Pipe(s)	Maintenance	BMP Working Properly?
ID:	**INSPECTION RECORD**										
	__ Swale __ Raingarden __ Forebay __ Infiltration Pond __ Underground Infil. __ Leaching CB __ Proprietary Unit __ Other*	__ None __ Slight build up __ Heavy build up	__ None __ Grease/Oil __ Grass/Compost __ Trash/Debris	__ N/A __ None __ Channels __ Depressions __ Bank Erosion __ Displaced Riprap __ Other*	__ N/A __ No Distress __ Distressed __ Sparse __ Overgrown __ Invasive Plants __ Other*	__ N/A __ Chemical __ Petroleum __ Sewage __ Other*	Features: __ None __ Fence __ Lock	__ N/A __ Straight Pipe __ Flared End __ Headwall	__ N/A __ Straight Pipe __ Flared End __ Headwall	Required? __ Yes __ No	__ Yes __ No Inspection Date: ____________________ Inspected By: ____________________
Location:		______ Depth (in.)	_______ Amount (minor, moderate, substantial, etc.)				Condition: __ Good __ Damaged __ Missing	Condition: __ N/A __ Good __ Damaged	Condition: __ N/A __ Good __ Damaged	Access: __ Easy __ Moderate __ Difficult	Comments:

MAINTENANCE RECORD

Date(s) of Maintenance:	Material Description:	Material Hauled Away By:
Date of Last Maintenance:		Material Sent To:
Types of Maintenance**:	Depth of Material Removed:	Comments:
Maintained By:	Volume of Material Removed:	

* Provide additional comments to describe the observations made for the category.

** Types of Maintenance: 1) Mowing and Vegetation 2) Landscaping and Vegetation 3) Debris and Litter Removal 4) Sediment Removal 5) Structural Integrity 6) Aquatic Plant Management 7) Water Level Inspection

MI-7, Oil / Water Separator (OWS)

Oil/water separators (OWSs) are sometimes used to pretreat floor drain water from garages. It separates oils from water before discharging the water to a holding tank or municipal sewer system. Removing the oils can reduce the cost of disposal for holding tank materials. This SOP outlines operation, inspection and maintenance of OWSs.

Procedures and Practices

- Do not drain concentrated petroleum products directly to an OWS. The structures are designed to manage these materials at low and medium concentrations in wastewater, not as slug loads.
- Drains should be kept free of debris and sediment to the maximum extent practicable.
- Each OWS at a facility may receive different materials in different quantities, so the cleanout schedule may not be the same for every OWS at a facility.
- Spill cleanup materials should be maintained in the area served by the OWS. For more information on spill cleanup and response materials, refer to SOP SR-1.

Inspection and Maintenance

- Inspect area served by the OWS for evidence of leaks or spills.
- Inspect the point of discharge for evidence of petroleum bypassing the OWS.
- Inspect drains for any signs of unauthorized substances entering the OWS.
- OWS should be cleaned a minimum of once per year, and:
    - When sludge accumulates to 25% of the wetted height of the separator.
    - When oil accumulates to 5% of the wetted height of the separator.
    - When 75% of the retention capacity of the OWS is filled.
- Follow these steps for inspecting, cleaning OWS:
    - Open separator, probe sediment depth and determine oil thickness.
    - Measure depth to water and sediment and record measurements/observations on log.
    - Vacuum oil/water separator to remove oil and solids.
    - Inspect condition of pipes and structure to ensure no cracks or damage present.
    - Fill oil/water separator with clean water up to the outlet level.
- Document results on the attached Oil/Water Separator Inspection Checklist.
- Ensure staff are trained in proper oil/water separator inspection and maintenance procedures and practices.

Disposal

- Oil and sludge removed from an OWS must be disposed of as a hazardous waste through a contracted vendor.

Oil/Water Separator Inspection Checklist

(From Central Massachusetts Regional Stormwater Collaborative
SOP 11: Oil/Water Separator (OWS) Maintenance)

Facility: _____

OWS Location: _____

Inspected By: _____

Date: _____

Visual Inspection	Are there any signs of spills or leaks in the general area?	**Yes** ☐ **No** ☐
	Is there any evidence of petroleum bypassing the OWS?	**Yes** ☐ **No** ☐
	Are there any unauthorized substances entering the OWS?	☐ **Yes** ☐ **No**
	Does the OWS exhibit any signs of leaks or malfunctions?	☐ **Yes** ☐ **No**

If you answered "Yes" to any of the above questions, further inspection, repair, and/or cleaning may be necessary.

Measurements	A	Distance from rim of access cover to bottom of structure	
	B	Distance from rim of access cover to top of sludge layer	
	C = A - B	Depth of sludge layer	
	D	Distance from rim of access cover to the oil/water interface	
	E	Distance from rim of access cover to the top of the liquid surface	
	F = D - E	Depth of oil layer	

If the values for "C" and/or "F" are greater than those in the manufacturer's recommendations, the OWS must be cleaned by a licensed OWS maintenance company.

MI-8, Floor Drains

This SOP outlines good housekeeping practices for the inspection and maintenance of floor This SOP outlines good housekeeping practices for the inspection and maintenance of floor drains, as well as the storage of materials in close proximity.

Procedures and Practices

- Keep a spill kit in the vicinity of the floor drains.
- Obtain and use drain mats, adsorbent booms or covers to keep larger spills out of drains.
- Use floor drain plugs when working with oil or other hazardous materials.
- Separator compartment covers should be tightly sealed to ensure floor drainage only enters the first compartment of the oil/water separator (OWS).
- Minimize water use in the vicinity of floor drains when possible.
- Storage containers holding liquids should be located away from floor drains.
- Do not dump any material down a floor drain.
- Floor drains should only be connected to a tight tank or municipal sewer system, never to a leach field, storm drain system, or directly discharge to the ground surface.
- Never use floor drains if you are unsure of their discharge location.
- Do not store leaking vehicles or machinery in the vicinity of floor drains.

Inspection and Maintenance

- Periodically inspect and clean floor drains as needed.
- If connected to a tight tank, the tight tank should be pumped as soon as it reaches 90% full or before.
- Replace/repair floor drain system if broken, leaking, or corroding.
- Check all new drains to ensure connection is to a tight tank or municipal sewer system.
- Periodically pump and clean OWS to maintain storage capacity and prevent clogging and/or overflow.
- Record all instances of contaminants or hazardous materials entering floor drain.

MI-9, Snow Stockpiling / Removal

Snow piles can contain trash, sediment, salt and other pollutants that can be carried into the storm drain network or waterways when it melts. The storage of large snow piles can contribute concentrated amounts of these pollutants in one location. This SOP outlines procedures for stockpiling and removing snow to minimize pollutant loads to waterways.

Procedures and Practices

- Identify sensitive ecosystems such as wetland areas, vernal pools, or other similar areas prior to disposal and avoid snow disposal in these areas.
- If possible, maintain a 100-foot vegetative or wooded buffer strip during the growth season between the disposal site and adjacent water bodies to filter pollutants out of the melt water.
- Store snow on areas above groundwater level, on a flat, vegetated slope and in a location such that runoff will not drain to sensitive resource areas.
- Remove trash/waste from snow disposal areas prior to using the site for snow disposal and as soon as possible after snow melt.
- Securely place a silt fence or equivalent barrier on the down gradient side of a snow disposal site. A vegetated earthen berm is a suitable alternative.
- Do not dump snow into any water body, including rivers, streams, ponds, or wetlands.
- Do not dump snow on top of storm drain catch basins or in stormwater drainage swales or ditches.
- Do not dump snow near public or private water supply wells where road salt may contaminate water supplies.

Inspection and Maintenance

- Check snow piles for debris that could be windblown.
- Contain sediments as snow melts and removed every spring from snow storage areas. This includes sweeping roadways and parking lots or other impervious areas where snow is accumulated.
- Ensure staff are trained in proper snow stockpiling and removal procedures and practices.

MI-10, Winter Road Maintenance

This SOP outlines procedures for the storage and application of brine and salt to roadways to control snow and ice and was prepared to meet the requirements of the 2016 MA Small MS4 General Permit (2016 MS4 Permit). The 2016 MS4 Permit requires the permittee to:

- Establish procedures for the storage of salt;
- Establish procedures to minimize the use of sodium chloride and other salts;
- Evaluate the use of alternative materials; and
- Ensure that snow disposal activities do not result in disposal of snow into waters of the United States.

Responsible Personnel

This Winter Road Maintenance Plan is intended to be used by MassBay Community College (MassBay College or MassBay) staff and contractors who are responsible for snow and ice removal.

Equipment

Inventory

MassBay uses a contractor for snow and ice control on roads. In-house personnel use bagged rock salt on walkways. General equipment maintenance is conducted in accordance with the Vehicle & Equipment Storage & Maintenance SOP (VM-1). Vehicle washing is conducted in accordance with the Vehicle & Equipment Washing SOP (VM-2).

Make	Equipment Description	Additional Equipment	Primary Use

Calibration
MassBay relies on the contractor to calibrate equipment. All trucks are maintained using the manufacturer's recommendations to ensure accurate application of snow and ice control materials. Calibration procedures are included in **Attachment 1**.

Materials and Storage

Materials
MassBay uses salt for snow and ice removal. Salting is utilized typically after the storm begins, but may be done before the storm if conditions permit. Types and approximate amounts of snow removal materials used each year are listed below.

Type of Material	**Source**	**Approximate amount per year** *(based on three-year average)*
Salt		
Other		

Storage
All salt is stored in a salt shed on campus that is located on the west side of Oakland St. Salt is loaded onto trucks outside of the shed on an impervious area. Loading areas and yards are swept periodically to help prevent product buildup and runoff.

Snow Removal Route

Snow and ice control generally start with main roads then moves to bus routes (on school days) and finishes at hills and secondary roads.

Record Keeping and Documentation

- Maintain a master schedule of prioritized snow and salting routes and the miles or roads plowed or sanded.
- Keep copies of manufacturer's recommendations for equipment calibration, plowing speed, and salt/sand application rates.
- Keep records of the amounts of salt, liquid deicer, and salt alternatives applied per season.
- Keep a list of employee training performed.

Winter Road Maintenance Procedures

Preparation Phase (Prior to the Start of the Snow Season)

- Mark islands, fire hydrants, catch basins, manholes, sidewalk segments, and other infrastructure that could be obscured by snow or cause a hazard to the plow and the operator.

- Existing conditions of the above infrastructure, or any infrastructure that might be damaged by winter maintenance activities, should be noted for comparison with post-season conditions and evaluation of any damage done.
- Conduct recertification training for all staff responsible for ice and snow removal.
- Ensure all snow equipment is in good working order and conduct maintenance as needed (Vehicle & Equipment Storage & Maintenance SOP (VM-1)).
- Install snow plows, spreaders, and brine applicators, as applicable on vehicles.
- Calibrate all snow equipment to ensure efficiency and to minimize salt use. Calibration procedures are outlined in **Attachment 1**.
- Ensure road crews are familiar with mapped plowing routes to efficiently cover the entire municipality. Prioritize primary roads and heavily traveled local roads.

Prior to Leaving the Facility

- Speak with supervisor to determine special circumstances of storm (i.e. heavy rain, temperature conditions). These circumstances will determine if pre-treatment will occur.
- Inspect all vehicles. Check fluid levels and fill to proper levels. Ensure lights are in working order. Document any repairs made to the vehicle.
- Load all necessary materials on impervious surfaces. Sweep storage areas and their surroundings after loading/unloading or after spillage.

Snow Treatment and Removal

- For salt application, the optimal vehicle speed is 20 MPH. Salting will not be done when pavement temperatures are below -10 degrees F. When used, the material will be applied at an approximate rate of 200 pounds per lane mile. Use **Attachment 2** for general application rates based on temperature and weather.
- As the storm develops and 2-3 inches of snow has accumulated, all of the drivers and available equipment will begin to plow their assigned routes.
    - Avoid plowing, pushing, blowing, or storing excess snow, deicer, or other debris in or near creeks, watercourses, or storm drain systems.
    - Reduce plowing speed in sensate areas to prevent materials from entering waterways.
    - The optimal plowing speed is ~20 MPH.
- Excess snow is dumped at a dirt area that has been designated for snow dumps. The dirt area should include:
    - Securely install a silt fence or equivalent barrier on the downgradient side of the snow disposal site to reduce the potential for bulk pollutant migration as the snow melts.
    - Maintain at least a 50-foot vegetative buffer strip during growing seasons for all disposal sites adjacent to waterbodies.
    - Clear debris from site prior to snow disposal.
    - Dispose of snow on or near a pervious surface so as to allow the natural infiltration and treatment of snowmelt, and the removal of any associated debris in the spring.

- Clear snow disposal-related debris from site at the end of the snow season.
- Do not dispose of snow in salt marshes, vegetated wetlands, certified vernal pools, shellfish beds, mudflats, drinking water reservoirs and their tributaries, Zone IIs or Interim Wellhead Protection Areas (IWPAs) of public water supply wells, Outstanding Resource Waters, or Areas of Critical Environmental Concern.
- Do not dispose of snow where trucks may cause shoreline damage or erosion.

Upon Return to Facility

- Wash vehicle following the *Vehicle & Equipment Washing SOP (VM-2)*.
- Before parking any truck or equipment after use, check all fluid levels. Note any minor repairs conducted and other repairs that may be needed. Follow the *Vehicle & Equipment Storage & Maintenance SOP (VM-1)*.
- Report amount of snow removal materials used to supervisor using the log in **Attachment 3**.

Attachment 1: Calibration Procedures

Spreader Calibration Procedure

Equipment Needed

1. Scale for weighing.
2. Canvas or bucket/collection device.
3. Chalk, crayon or other marker.
4. Watch with second hand.

Calibration Steps

1. Warm truck's hydraulic oil to normal operating temperature with spreader system running.
2. Put partial load of salt on truck.
3. Mark shaft end of auger or conveyor.
4. Dump salt on auger or conveyor.
5. Rev truck engine to operating RPM (at least 2000 RPM)/
6. Count number of shaft revolutions per minute at each spreader setting, and record.
7. Collect salt for one revolution & weigh, deducting weight of container. For greater accuracy, collect salt for several revolutions and divide by this number of turns to get the weight for one revolution. This can be accomplished at idle or very low engine RPM.
8. Multiply shaft RPM (Column A) by discharge per revolution (Column B) to get discharge rate in pounds per minute (Column C), then multiply discharge rate by minutes to travel one mile at various truck speeds to get pounds discharged per mile. For example, at 20 MPH with 30 Shaft RPM and 7 lbs discharge – 30 x 7 = 210 x 3.00 = 630 lbs. per mile.

Calibrating Automatic Controls

Equipment Needed

1. Scale for weighing.
2. Canvas or bucket/collection device.
3. Chalk, crayon or other marker.
4. Watch with second hand.

Calibration Steps

1. Remove or turn off spinner.
2. Set auger on given number, such as No. 2.
3. Tie sack or heavy canvas under discharge chute.
4. Mark specific distance, such as 100 or 1,000 feet.
5. Drive that distance with spreader operating.
6. Weigh salt collected in sack or canvas.
7. Multiply weight of salt by 5.2 (in case of 1,000 feet) or 52.8 (in case of 100 feet). This will be the amount of salt discharge per mile, which remains constant regardless of speed, but calibration must be done for each control setting.

Truck No.			Spreader No.								
Date:			By:								
Gate Opening _____(inches) (Hopper Type Spreaders)			POUNDS DISCHARGED PER MILE								
Control Setting	A	B	C	MINUTES TO TRAVEL ONE MILE							
	Shaft RPM (Loaded)	Discharge Per Revolution (constant)	Discharge Rate (lbs/min)	5 mph x 12.00	10 mph x 6.00	15 mph x 4.00	20 mph x 3.00	25 mph x 2.40	30 mph x 2.00	35 mph x 1.71	40 mph x 1.5	45 mph x 1.33
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												

Note: Different materials will spread at different rates at the same setting, so spreaders must be calibrated with the material that will be used.

Attachment 2: General Roadway Treatment Application Rates

			----------Application Rate (lbs./per lane mile)----------			
Pavement Temp. (°F) And Trend (↑ ↓)	**Weather Condition**	**Maintenance Actions**	**Salt Prewetted/Pre-Treated with salt brine**	**Salt Prewetted/Pre-Treated with other blends**	**Dry salt**	**Winter Sand**
>30 ↑	Snow	Plow, treat intersections only	150	125	150	Not Recommended
	Frz. Rain	Apply chemical	175	150	200	Not Recommended
30 ↓	Snow	Plow & apply chemical	175	150	200	Not Recommended
	Frz. Rain	Apply chemical	200	175	225	Not Recommended
25-30 ↑	Snow	Plow & apply chemical	200	175	225	Not Recommended
	Frz. Rain	Apply chemical	225	200	225-275	Not Recommended
25-30 ↓	Snow	Plow & apply chemical	250	200	275	Not Recommended
	Frz. Rain	Apply chemical	275	250	275-300	450
20-25 ↑	Snow or Frz. Rain	Plow & apply chemical	275	275	275-300	450 for Frz. Rain
20-25 ↓	Snow	Plow & apply chemical	275	250	300-325	Not Recommended
	Frz. Rain	Apply chemical	300	275	325-400	450
15-20 ↑	Snow	Plow & apply chemical	300	275	325	Not Recommended
	Frz. Rain	Apply chemical	300-375	275-350	325-400	450
15-20 ↓	Snow or Frz. Rain	Plow & apply chemical	325	300	350	450 for Frz. Rain
0-15 ↑↓	Snow	Plow, treat with blends, sand hazardous areas	Not Recommended	300-350	Not Recommended	600 and spot treat as needed
< 0	Snow	Plow, treat with blends, sand hazardous areas	Not Recommended	350-500	Not Recommended	600 and spot treat as needed

Source: UNH Technology Transfer Center

Note: The Operations Supervisor, depending on actual conditions, may adjust rate of application depending on how the area treated reacts.

Attachment 3: Deicing Product Log

Date: _____ Weather Event: _____ Precipitation (in): _____

Material	Target Application Rate (lbs/lane miles)	Amount Used (lbs)	Lane Miles Treated (lane miles)	Actual Application Rate (lbs/lane miles)	Difference in Target and Actual Rates (lbs)
	A	B	C	D	E
Salt					
Magnesium Chloride					

Deicing Product Log Instructions:

1. Record the target application rate based on the weather conditions present in column A.
2. Weigh deicing material as it is loaded into distribution vehicles. Weigh any leftover material once snow removal operations have ceased. Subtract the weight of leftover materials from the initial load weight to calculate the weight of material applied to roads. Record the result in column B.
3. Track the lane miles treated prior to or during snow removal operations and record the result in column C.
4. Divide the weight of material used by the lane miles treated during snow removal operations to calculate the actual application rate of the equipment, and enter the result in column D.
5. Subtract column D from column A to calculate the difference in target and actual application rates and record the result in column E.
6. Review results and make changes to the target application rates and/or vehicle spreader calibrations as needed.

Vehicle Maintenance and Storage Yards (VM)

VM-1: Vehicle & Equipment Storage & Maintenance

VM-2: Vehicle & Equipment Washing

VM-3: Vehicle & Equipment Fueling

VM-4: Parts Cleaning

SOP. VM-1 Vehicle & Equipment Storage & Maintenance

VM-1, Vehicle & Equipment Storage & Maintenance

Vehicle and equipment maintenance can contribute pollutants such as oil, grease, and metals to stormwater runoff. This SOP outlines practices for storing and maintaining vehicle to minimize contact of pollutants with stormwater runoff.

Procedures and Practices

- Store vehicles and equipment indoors whenever possible to minimize their potential to pollute stormwater.
- If indoor storage of equipment is not possible, store on impervious surfaces.
- If vehicles or equipment are stored outside and not used regularly, store on impervious areas, cover vehicles or equipment to minimize exposure to precipitation, and place a drip pan underneath vehicles and equipment to catch incidental leaks.
- If vehicles or equipment are leaking, store indoors or within containment until repairs are performed.
- Clean equipment and vehicles prior to placing in storage. Equipment should be washed in an approved area per SOP VM-2 where wash water is collected and treated or discharged to a pervious surface, away from wetlands and storm drains.
- Never store or perform maintenance on leaking vehicles over a storm drain.
- Never dispose of spent cleaners down the floor drains, sinks, storm drains, on the ground, or into the air.
- Properly store all liquid materials to prevent spills and leaks. Don't leave drip pans or other open containers lying around where they can wash off and pollute stormwater.
- Ensure all new and used materials are properly labeled with container contents.
- Recycle or properly dispose of all fluids, oil filters, oil cans, rags, and clean-up supplies in accordance with SOP SR-1.
- All pads and absorbent materials will be taken to the proper location using the proper contractual vendor for either remediation or disposal.

Inspection and Maintenance

- Regularly inspect vehicles and equipment for leaks and repair immediately.
- Identify locations of floor drains and catch basins and know where they discharge to.
- Floor drains should be connected to a holding tank, and catch basins should be connected to the stormwater drainage system.
- Sweep the maintenance area on a regular basis. Wipe up spills with rags and other absorbent material immediately. Do not hose down the area to a storm drain.
- Keep ample supplies of spill cleanup materials onsite in quantities suitable for cleaning up a moderately sized spill. Clean up all spills immediately, no matter how small.
- Ensure staff are trained in proper vehicle and equipment maintenance procedures and practices.

VM-2, Vehicle & Equipment Washing

Vehicle wash water can contain hydrocarbons, oils, greases, nutrients, phosphates, heavy metals and suspended solids. This SOP outlines the procedures for washing vehicles to prevent discharge of pollutants to the storm drain system and waterways.

Procedures and Practices

- Perform vehicle/equipment washing in designated areas (indoors when possible) or using a commercial car wash.
- Operate a closed system with wastewater disposal/recycling (e.g., floor drain to a holding tank – requires Industrial Wastewater Holding Tank registration/permit under 314 CMR 18.00), or
- Discharge to a municipal sanitary sewer (may require local permit/pretreatment), or
- Obtain a groundwater discharge permit in accordance with 314 CMR 5.00 or surface water discharge permit in accordance with 314 CMR 3.00, or
- Discharge to a registered Underground Injection Control (UIC) Class V well or direct wash water to a vegetated area also registered under the UIC program (310 CMR 27.00) and allow it to infiltrate through the ground, if
    - The wash water is generated from rinsing vehicles with detergent free, solvent-free water under low pressure for the sole purpose of removing surface dust from a vehicle,
    - The vehicle washing does not include undercarriage or engine washing, boat bottom washing nor washing of vehicles and other equipment exposed to contamination such as vehicles at a fire, at a spill site or vehicles used to transport hazardous material,
    - Discharges to a vegetated ground surface are not in a Zone A, Zone I or Zone II drinking water source protection area, wetlands, wetlands resource areas or areas defined in the wetlands regulations (310 CMR 10.00), and
    - Discharges to a vegetated ground surface must be spread out with the use of a level spreader, where applicable, to prevent concentrated, erosive flows and to enhance infiltration.
- Discharges to storm drains and Title V septic systems are not allowed.
- If washing must take place on a hard surface, direct wash water away from areas that drain to surface waters. Direct water to a grassy area where it can infiltrate.
- If vehicles or equipment are leaking, do not rinse or wash, as this may flush pollutants into the stormwater system. Store vehicles and equipment as outlined in SOP VM-1.
- Use hoses with nozzles that automatically turn off when left unattended. Use high-pressure, low-volume sprays.
- If using soap, use phosphate-free, biodegradable detergents sparingly.
- Filter and recycle wash water if possible.

Discharge and Disposal

- Obtain applicable permits/registrations as outlined above.
- Wash water collected in a holding tank requires disposal at an approved facility.

Inspection and Maintenance

- Inspect catch basins and oil/water separators every 6 to 12 months per SOP MI-2 and SOP MI-7.
- Ensure staff are trained on proper vehicle and equipment washing procedures and practices.

VM-3, Vehicle & Equipment Fueling

Fueling of vehicles can contribute hydrocarbons to stormwater runoff. This SOP outlines good housekeeping practices to prevent discharge of hydrocarbons associated with fueling.

Procedures and Practices

- Do not fuel vehicles and equipment near storm drains and dry wells.
- Ensure that procedures are in place to control any spills per SOP SR-1.
- When fueling portable equipment, do so over an impervious area well away from any storm drains or ditches.
- When pouring fuel from a jerry can, use a funnel.
- Post signs around fueling stations warning vehicle owners/operators against "topping off" of vehicle fuel tanks.
- Do not smoke while fueling is in process or near flammable storage areas.
- All engines must be off during fueling unless used for operation of pump to load or unload bulk fuel deliveries.
- Ensure the delivery vehicle hand brake is set and wheels are checked.
- Both the delivery driver and college representative should be present during bulk fuel deliveries.
- Provide adequate barriers such as posts, guard rails, or bollards where tanks are exposed, to prevent collision damage with vehicles.
- Label all tanks with the contents to ensure delivery of the proper fuel type.
- Clearly label and mark all fuel filling receptacles.
- Properly dispose of old fuel as a hazardous waste using a contracted vendor.
- Never pour any spent fluids into a storm drain or sanitary system.

Inspection and Maintenance

- Inspect fueling equipment such as hoses and nozzles for corrosion, cracks, and damage on a regular basis.
- Inspect fueling areas for leaks or spills and sweep on regular basis.
- Inspect oil/water separator (if used) for high fluid levels per SOP MI-7.
- Clean oil/water separators, sumps and on-site treatment/recycling units at appropriate intervals.
- Ensure staff are trained in proper fueling procedures and practices.

VM-4, Parts Cleaning

This SOP outlines procedures for protecting stormwater by practicing proper parts cleaning techniques and disposing of waste cleaners properly.

Procedures and Practices

- Perform all cleaning in a designated area to minimize the potential for spills.
- Store waste cleaners in properly labeled containers in accordance with regulations.
- Dispose of all waste cleaners properly with a licensed contractor, on a regular basis.
- Close parts-cleaner lid when it is not in use.
- Use citrus-based cleaners where possible and dispose of properly.
- Use steam cleaning, pressure washing, or aqueous washers instead of solvents when possible; however, wastewater must be discharged to an oil/water separator and the wastewater treatment plant notified, or to a holding tank.
- Do not dump or dispose of spent cleaners down the floor drains, sinks, storm drain, on the ground or into the air. Disposal by evaporation violates the New Hampshire Hazardous Waste Rules.
- Do not dump mix or add spent or fresh solvents to used oil.

Inspection and Maintenance

- Regularly inspect storage area for leaks and spills.
- Ensure staff are trained in proper storage procedures and practices.

Spill Prevention, Response and Reporting (SR)

SR-1: Spill Response

SR-2: Spill Reporting

SR-3: Emergency Contact Information

SR-1, Spill Response

A spill of petroleum products or hazardous materials can pollute soils, surface and groundwaters if not addressed immediately. This SOP outlines procedures to address a spill.

Procedures and Practices

Non-Emergency (Small Spill)

- A non-emergency spill is defined as the following:
  - Personnel can respond to with available equipment without endangering themselves or the environment,
  - Involves materials that the personnel work with during routine duties.
- Take the following steps to address a non-emergency spill:

Step 1. Assess the spill area for safety concerns and direction of flow.
- Put on appropriate personal protective equipment (PPE), such as safety glasses or goggles, gloves, apron, rubber boots, and any other PPE as per the Material Safety Data Sheet (MSDS).

Step 2. Stop the spill:
- Approach the spill with the wind at your back;
- Turn off all sources of ignition;
- Remove surrounding materials that could interfere with cleanup or could be contaminated by the spill without placing yourself or others at risk of injury
- Cover nearby floor drains and catch basins;
- Stop the flow by up-righting containers or plugging holes in containers; and
- If necessary, place leaking containers into compatible larger containers.

Step 3. Clean up the spill:
- Obtain absorbent material from the nearest spill kit such as absorbent pads, booms, sandbags and other materials and instruments and place a berm of absorbent material around the edge of the spill to keep it from spreading;
- Confine the spilled material into the smallest area possible; and
- Soak up the remainder of the spill with additional absorbent material.

Step 4. Collect, label, store, and properly dispose of used absorbent in accordance with applicable federal, state and local regulation:
- Products saturated with petroleum products or other hazardous chemicals require special handling and disposal by licensed transporters. Save the shipping records for at least three years; and
- Products that no longer have free-flowing oil and do not exhibit a hazardous waste characteristic may be managed as standard solid waste for disposal.

Step 5. If you need assistance with the spill, contact the Fire Department.

Emergency or Large Spill

- An emergency spill is defined as the following:
  - Personnel cannot respond to with available equipment without endangering themselves or the environment,
  - Do not involve materials that the personnel work with during routine duties.
- Take the following steps to address a non-emergency spill:

Step 1. Evacuate the area.
Step 2. Immediately notify the Fire Department at 911.

Disposal

- Products contaminated with petroleum shall be handled and disposed of as described in MassDEP policy WCS-94-400, Interim Remediation Waste Management Policy for Petroleum Contaminated Soils, http://www.mass.gov/dep/cleanup/laws/94-400.pdf.
- Products saturated with petroleum products or other hazardous chemicals require special handling and disposal by licensed vendors. Licensed vendors will pick up spill contaminated materials for recycling or disposal. Save the shipping records for at least three years.
- Waste oil contaminated products:
  - Perform the "one drop" test to ensure absorbents do not contain enough oil to be considered hazardous. Wring absorbents through a paint filter. If doing so does not generate one drop of oil, the materials are not hazardous.
  - If absorbents pass the "one drop" test they may be discarded in the trash, unless contaminated with another hazardous waste.
  - If absorbents do not pass the "one drop" test they should be placed in separate metal containers with tight fittings lids, labeled "Oily Waste Absorbents Only".
  - It is acceptable to mix the following fluids and handle them as waste oil: Waste Motor Oil; Hydraulic Fluid; Power Steering Fluid; Transmission Fluid; Brake Fluid; Gear Oil.
  - **Do not mix** the following materials with waste oil, store each separately: Gasoline; Antifreeze; Brake and Carburetor Cleaners; Cleaning Solvents; Other Hazardous Wastes.

Training

- Ensure all employees are properly trained to respond in the case of a spill, understand the nature and properties of the contaminant and understand the spill control materials and personnel safety equipment.
- Maintain training records of current personnel on site and retain training records of former personnel for at least three years from the date they last worked at the facility.

SR-2, Spill Reporting

This SOP outlines reporting requirements when a spill has occurred.

Procedures and Practices

State and Federal Notification

- Spills or releases exceeding the following quantities must be reported to the MassDEP 24-hour spill reporting notification line, toll-free at (888)-304-1133 within 2 hours:
  - Diesel fuel: 10 gallons
  - Gasoline: 10 gallons
  - Hydraulic Oil, Engine Oil, & Other Oil Products: 10 gallons
  - Waste Oil: 10 gallons
- Additionally, any single oil discharge of greater than 1,000 gallons or more than 42 gallons in each of the two discharges within 12 months, or if discharge violates water quality standards or causes a sheen on surface waters, must be reported to the EPA Regional Administrator and National Response Center Notification within 60 days.
- The following scenarios are exempt from MassDEP reporting requirements:
  - Spills of less than 10 gallons of petroleum and do not impact a water body;
  - Spills of less than one pound of hazardous chemicals and do not present an imminent hazard;
  - Spills from passenger vehicle accidents; and
  - Spills within a vault or building with a watertight floor and walls that completely contain all released chemicals.
- Be prepared to give the following information
  - Name, location and address of the facility;
  - Your name and phone number;
  - Type and amount of petroleum stored onsite, and maximum storage capacity;
  - What was released, how much, and in what concentration;
  - Where did the release go (i.e. soil, stormwater system, waterbodies, etc.)
  - Corrective action and countermeasures taken, including an adequate description of equipment repairs and/or replacements;
  - An adequate description of the facility, including maps, flow diagrams, and topographical maps, as necessary;
  - The cause of such discharge, including failure analysis of system or subsystem in which failure occurred; and
  - Additional preventive measures taken or contemplated to minimize the possibility of recurrence.

Local Notification

- Notify the Fire Department of all spills greater than 10 gallons or beyond department property lines.

SR-3, Emergency Contact Information

This SOP provides emergency contact information in the event of a spill.

Contact Information

Massachusetts DEP (Northeast Region, Main Office)	(978) 694-3200
Massachusetts DEP (24-hour)	(888) 304-1133
Region I EPA	(888) 372-7341
National Response Center	(800) 424-8802
Fire Department	(781) 235-1300 or 911

Parks and Open Space (PO)

SOP. PO-1 Landscape Design & Management

PO-1, Landscape Design & Management

This SOP outlines procedures for designing and managing new landscapes to reduce runoff and erosion.

Procedures and Practices

- Design landscaping by taking into account soil types, light, and maintenance required.
- Minimize erosion prone steep slopes by using techniques such as terracing.
- Manage water runoff by rerouting gutters away from storm drains and maintain groundcovers between developed areas and waterways (ditches, swales, shorelines.)
- Reduce or eliminate lawn in unused areas. Convert excess lawn to meadow, forest, or other naturalized feature.
- Establish setback distances from pavement, storm drains, and waterbodies. Allow these areas to serve as buffers with disease-resistant plants and minimal mowing.
- Never develop a landscape design without assessing its impact on water quality.
- Ensure the design accounts for the surrounding area, such as minimizing the presence of large trees under overhead wires, maintaining adequate site distances at intersections and around corners, and minimizing high water demand trees near sanitary sewer pipes and storm sewer pipes.
- Use native plants that are drought tolerant, salt tolerant, and pest resistant as applicable to the proposed area. Plant the right plant in the right area.
- If supplementary water is needed beyond natural rain events, water plants in the early morning. Watering should be performed infrequently, but deeply, typically at a rate of 1-inch of water once per week.

Inspection and Maintenance

- Inspect plants and landscape areas immediately following heavy rainfall events and during periods of drought.
- Periodically water plants, especially during hot, dry conditions. Newly planted plants may need to be watered more frequently.
- Inspect for excess woody vegetation within landscaped areas. If found, prune overgrowth and remove dead vegetation, including excess grass clippings.
- Inspect for invasive species, and if found, immediately remove and properly dispose of. Most invasives should not be disposed of by composting.
- Check for areas of erosion, flooding, inundation, rotting, etc. If found, immediately repair or replace as necessary.
- Check for excess pest damage. If present, treat as per SOP PO-4.
- If mulch is present, periodically replace as required to maintain a minimum 2-3 inch thickness.
- Replace dead and damaged plants when and where necessary.
- Ensure staff are trained in proper landscape management procedures and practices.

PO-2, Lawn & Ground Maintenance

- Employ mowing techniques to maintain a healthy lawn and minimize chemical use—no more than 1" of grass should be removed from during mowing (grasses kept at a minimum of 3" to 4" high are more heat resistant than close-cropped grass).
- Keep mower blades sharp and leave clippings in place after mowing.
- Mow often and do not allow grass clippings to become excessive.
- Mow when grass is dry to prevent spread of turf disease.
- Never leave mower running in one location.
- Compost or mulch yard waste.
- Sweep up yard debris onto pervious areas such as lawns instead of hosing down. Do not leave yard waste in the street or sweep it into storm drains.
- Clean pavement and sidewalk if fertilizer is spilled on these surfaces before applying irrigation water. If spilled quantities are minimal, sweep fertilizer onto lawn areas or other pervious areas; never hose down to storm drains.
- Use mulch or other erosion control measures on exposed soils.
- Use hand or mechanical weeding where practical.

Inspection and Maintenance

- Inspect irrigation system periodically to ensure that the right amount of water is being applied, that excessive runoff is not occurring, and that sprinklers are orientated to spray onto areas in need of water rather than pavement or other impervious areas.
- Base irrigation amounts on monitoring for moisture content in the soil or on recent precipitation events and future predicted rainfall.
- Water at appropriate times (when no rain is in forecast and in cooler times of the day). Watering during morning hours is preferable to minimize the spread of disease during the night and evaporation during hot daytime hours.
- Minimize excess watering, and repair leaks in the irrigation system as soon as they are observed.
- Inspect vegetated areas immediately following heavy rainfall events and during periods of drought.
- Inspect grassed areas, particularly recently after planting. Reseed and water if necessary to ensure adequate coverage.
- Routinely monitor lawns to identify problems during their early stages.
- Inspect and remove excess woody vegetation within landscaped areas. If found, prune overgrowth and remove dead vegetation, including excess grass clippings.
- Inspect for invasive species, and if found, immediately remove.
- Sweep paved areas regularly to collect loose particles.
- Vary mowing patterns to promote even grown and reduce ruts.
- Periodically sharpen mower blades.
- Ensure staff are trained in proper lawns and grounds procedures and practices.

PO-3, Pet Waste & Litter

This SOP outlines procedures for managing pet waste and litter to prevent them from entering stormwater runoff. Pet waste carries bacteria that can impair waters.

Procedures and Practices

Pet Waste

- Encourage students and employees to clean up after their pets and to properly dispose of such waste by flushing in their toilets or throwing away with their trash.
- Post signs and brochures in and around park areas or areas frequented by dog walkers. Information should describe the problem pet waste produces and urge cleanup and proper disposal of pet waste.
- Restrict dog access to areas of parks where swales, steep slopes, and streams are.
- Provide minimum 100-foot vegetated buffers between dog parks and waterways, swales, storm drain inlets, and steep slopes.
- Dispose of collected pet waste and litter in the trash. Do not dump into stormwater system, wetlands, buffers or waterbodies.

Litter

- Post “No Littering” signs and enforce anti-litter laws.
- Provide a sufficient number of litter receptacles for the facility.
- Clean out and cover litter receptacles frequently to prevent spillage.

Inspection and Maintenance

- Routinely inspect common dog walking areas for pet waste.
- Routinely inspect public areas for litter.
- If used, routinely empty pet waste and litter receptacles to prevent overfilling.
- Ensure signs are in place.
- Ensure staff are trained in proper pet waste and litter procedures and practices.

SOP. PO-4 Storage & Use of Pesticides & Herbicides

PO-4, Storage & Use of Pesticides & Herbicides

This SOP outlines proper storage and use of pesticides and herbicides to minimize its discharge into stormwater runoff.

Procedures and Practices

Application

- Pesticides/herbicides should only be applied by licensed or certified applicators.
- Calibrate application equipment to ensure proper application and loading rates.
- Ensure that pesticide/herbicide application equipment is capable of immediate shutoff in case of emergency.
- Calibrate application equipment regularly for proper application and loading rates.
- Conduct spray applications according to specific label directions and applicable local regulations.
- Never apply pesticides/herbicides in quantities exceeding the manufacturer's instructions.
- Apply pesticides at the pest's life stage when it is most vulnerable.
- Never apply pesticides/herbicides if it is raining or immediately before expected rain.
- Do not apply pesticides/herbicides within 100 feet of open waters or of drainage channels.
- Establish setback distances from pavement, storm drains, and water bodies, with disease-resistant plants and minimal mowing.
- Spot treat infected areas only instead of the entire location.
- Mix pesticides/herbicides and clean application equipment under cover in an area where accidental spills will not enter surface water or groundwater and will not contaminate soil.
- Do not hose down paved areas into the stormwater system after pesticide/herbicide application.
- Recycle rinsate from equipment cleaning back into product.
- Choose the least toxic pesticide that is still capable of reducing the infestation to acceptable levels.
- Use alternatives to pesticides, such as manual weed control, biological controls, and Integrated Pest Management strategies.
- For use of herbicides, reduce seed release of weeds by timing cutting and pesticide application at seed set. Select vegetation and landscaping that is low-maintenance, in order to tolerate low levels of weeds without interfering with aesthetics.
- Develop a Vegetation Management Plan (VMP) and Yearly Operating Plan (YOP) and obtain a permit for application in right of way.

Storage

- Store pesticides in dry locations in accordance with the manufacturer's specifications.
- Store in cool, well-ventilated, and insulated areas.

SOP. PO-4 Storage & Use of Pesticides & Herbicides

- Store in an area which has been constructed in accordance with local fire codes for storing flammable or combustible materials.
- Store materials in an enclosed area or in covered, impervious containment, such as a locked cabinet. Locate cabinet in a room which has direct access to the outdoors.
- Storage areas should have floors that are watertight, impervious, and provide spill containment.
- Storage areas should be kept locked and the door to the storage area should contain a weatherproof sign warning of the existence and danger of pesticides inside. The door should be kept locked.
- Separate pesticides from other chemical storage and other flammable materials.
- Label all containers with date of purchase, and use the older materials first.
- Clearly label all secondary containers.
- Never leave unlabeled or unstable pesticides in uncontrolled locations.
- Maintain a current written inventory of all pesticides at the storage site.
- Order for delivery as close to time of use as possible to reduce the amount of chemical stored at the facility.
- Order only the amount of materials needed to minimize excess or obsolete materials, which require storage and disposal.
- Storage area should be equipped with easily accessible spill cleanup materials and portable firefighting equipment.
- Emergency eyewash stations and emergency drench showers should be located near the storage area.
- Ensure that waste materials are kept in designated containers and stored in a labeled, designated, covered, and contained area.

Inspection and Maintenance

- Regularly inspect storage area for leaks and spills.
- Ensure staff are licensed for pesticide/herbicide application.
- Ensure staff are trained in proper storage procedures and practices.

Disposal

- Dispose of excess or obsolete pesticides and associated waste materials in accordance with the manufacturer's specifications and all applicable regulations.

Recordkeeping and Reporting

- Maintain inventory of all pesticides/herbicides stored at each facility.
- Keep copies of licenses and ensure they are current (i.e., not expired).

PO-5, Storage & Use of Fertilizers

This SOP outlines storage and use of fertilizers to minimize their exposure to stormwater runoff. Fertilizers contain nutrients that can cause contribute to algal blooms and low dissolved oxygen levels in waterbodies.

Procedures and Practices

Application

- Fertilizers should only be applied by properly trained personnel.
- Calibrate application equipment to ensure proper application and loading rates.
- Perform soil testing before evaluating and choosing a fertilizer. The quantity of available nutrients already present in soil will determine the type and amount of fertilizer that is recommended. The soil testing will also determine soil pH, humic matter and exchangeable acidity, which will indicate whether pH adjustment is required for a fertilizer to work efficiently. A soil test should be completed at each facility, as soil type and quality can vary widely.
- Fertilizer selection shall take into account any surface waters within the watershed that are impaired for nutrients. Refer to impaired waters figure on MassBay's website or in the Stormwater Management Program Plan.
- Never apply fertilizers in quantities exceeding the manufacturer's instructions.
- Time fertilizer application periods for maximum plant uptake, usually in the fall and the spring.
- Do not over-apply fertilizer in late fall to "use it up" before winter. The effectiveness of fertilizer will not reduce when stored.
- Do not fertilize during a drought or when the soil is dry.
- Never apply fertilizer to frozen ground.
- Never apply fertilizer if it is raining or immediately before expected rain.
- Mix fertilizers and clean application equipment under cover in an area where accidental spills will not enter surface water or groundwater and will not contaminate soil.
- Do not hose down paved areas into the stormwater system after fertilizer application.
- Apply fertilizers in amounts appropriate for the type of vegetation to minimize losses to surface water and groundwater.
- Where applicable, till fertilizers into the soil rather than dumping or broadcasting.
- If phosphorous fertilizer is used when re-seeding, mix the phosphorous into root zone. Do not apply directly to the soil surface.
- Use alternatives to chemical fertilizers, such as natural compost and organic fertilizers, which are beneficial to soil organisms.
- Use slow-release fertilizer for turf grass.

Storage

- Store fertilizers in dry locations in accordance with the manufacturer's specifications.
- Store in cool, well-ventilated, and insulated areas to protect against temperature extremes.

- Store in an area which has been constructed in accordance with local fire codes for storing flammable or combustible materials.
- Store materials in an enclosed area or in covered, impervious containment, such as a locked cabinet. The cabinet shall be located in a first story room or one which has direct access to the outdoors.
- Storage areas should have floors that are watertight, impervious, and provide spill containment.
- Storage areas should be kept locked and the door to the storage area should contain a weatherproof sign warning of the existence of fertilizers inside.
- Separate fertilizers from other chemical storage and other flammable materials.
- Label all containers with date of purchase, and use the older materials first.
- Clearly label all secondary containers.
- Never leave unlabeled or unstable fertilizers in uncontrolled locations.
- Order for delivery as close to time of use as possible to reduce the amount of chemical stored at the facility.
- Order only the amount of materials needed in order to minimize excess or obsolete materials, which require storage and disposal.
- Storage area should be equipped with easily accessible spill cleanup materials and portable firefighting equipment.
- Ensure that waste materials are kept in designated containers and stored in a labeled, designated, covered, and contained area.

Inspection and Maintenance

- Regularly inspect storage area for leaks and spills.
- Ensure staff are trained in proper fertilizer application and storage procedures and practices.

Disposal

- Dispose of excess or obsolete fertilizers and associated waste materials in accordance with the manufacturer's specifications and all applicable regulations.

Recordkeeping and Reporting

- Maintain inventory of all fertilizers stored at each facility.
- Keep copies of licenses and ensure they are current (i.e., not expired).

PO-6, Waterfowl Management

This SOP outlines practices to manage the population of waterfowl near water bodies to minimize nutrient and pathogen contributions from bird feces.

Procedures and Practices

- Post signs to deter people from feeding waterfowl.
- Allow grasses to grow longer so landscape is less attractive for waterfowl to gather and graze.
- Install barriers around water bodies to deter waterfowl from walking into and out of the water.
- Use predator decoys to scare waterfowl from landing near water bodies.
- Identify waterfowl species and understand any federal and state laws that may specifically apply for their protection and management.
- Maintain vegetation around water body to prevent erosion due to waterfowl foot traffic and grazing.
- When necessary and applicable under federal and state laws, capture and relocate waterfowl.

Inspection and Maintenance

- Periodically inspect landscape around waterbodies for congregation of waterfowl and success of management techniques.
- If it is evident that excessive waterfowl populations are threatening water quality, adjust above procedures or practices as needed.

Building and Facilities (BF)

BF-1, Building Washing & Repair

This SOP addresses typical building operations including outside pressure washing of buildup and repairs to prevent pollutants from washing into the storm drain network.

Procedures and Practices

Pressure Washing of Buildings, Rooftops, and Other Large Objects

- Washing in Paved Areas Where Discharge May Enter a Catch Basin
    - If soap soaps or detergents are used, collect wash water and associated solids for treatment. Use a sump pump, wet vacuum or similar effective device to collect the runoff.
    - If soaps or detergents are not used, screen wash water before entering catch basin. This can be accomplished using a silt sack or some other type of screen on the ground and/or in the catch basin to trap the particles in wash water runoff.
- When washing on a grassed area (with or without soap), disperse runoff as sheet flow, rather than a concentrated stream and ensure it does not drain to pavement.

Building Repair, Remodeling and Construction

- Do not dump any toxic substance or liquid waste on the pavement, the ground, or toward a storm drain.
- Use a catch basin cover, filter fabric, or similarly effective runoff control mechanism if dust, grit, wash water, or other pollutants may escape the work area and enter a catch basin. The containment device(s) must be in place at the beginning of the work day, and accumulated dirty runoff and solids must be collected and disposed of before removing the containment device(s) at the end of the work day.

Inspection and Maintenance

- Sweep paved areas regularly throughout the day to collect loose particles, and wipe up spills immediately; do not hose down the area to a storm drain.
- Ensure staff are trained in proper building operations procedures and practices.

BF-2, Solid Waste Management

This SOP addresses the proper storage and handling of solid wastes and dumpsters at facilities to prevent improper disposal of other products and to prevent the discharge of pollutants to stormwater runoff.

Procedures and Practices

- Install dumpsters on a flat paved surface that is a convenient easily observable area, away from surface water and storm sewer inlets whenever possible.
- All dumpster and waste receptacles should be leak-tight with lids to keep rain water out. Cover the area with a permanent roof if feasible.
- If there is unavoidable leakage, enclose the area. Enclosing the area consists of storing the waste receptacles under a roof and curbing the area to trap the leakage. The fluid that has leaked from the dumpster is usually classified as a liquid industrial waste and the stormwater general permit does not authorize this discharge.
- If waste is not in containers, cover all waste piles (plastic tarps are acceptable coverage). The waste containers or piles must be covered except when in use.
- Prevent stormwater run-on from entering the waste management area by enclosing the area or building a berm around the area.
- Take special care when loading or unloading wastes to minimize losses.
- Ensure that only appropriate solid wastes are added to the solid waste container. Certain wastes such as hazardous wastes, appliances, fluorescent lamps, pesticides, etc. may not be disposed of in solid waste containers.
- Do not discharge wash water to the street or storm drain.

Inspection and Maintenance

- Sweep and clean the waste storage area regularly. If it is paved, do not hose down the area to a storm drain.
- Inspect solid waste containers for structural damage or leaks regularly. Repair or replace damaged containers as necessary.
- Periodically remove unused scrap/junk materials.
- Ensure staff are trained in proper waste management procedures and practices.

BF-3, Material Loading / Unloading

This SOP outlines practices for loading/unloading materials at facilities to reduce spillage and discharge of pollutants into stormwater runoff.

Procedures and Practices

- Load and unload only at designated areas, over an impervious surface (preferably in covered areas such as building overhangs at loading docks).
- If feasible, load and unload all materials and equipment in covered areas such as building overhangs at loading docks.
- If possible, do not conduct loading and unloading of materials when it's raining unless all activities are located indoors.
- Provide natural or mechanical ventilation in areas where flammable / combustible liquids are handled. Ensure all ventilation fans are running when in operation.
- Use funnels and drip pans underneath hose and pipe connections and other leak-prone spots during liquid transferring operations, and when making and breaking connections.
- Dispense flammable liquids into approved safety cans only.
- Prior to moving a drum, wipe off any product spillage from the top and sides of the drum, ensure all bungs are closed and the drum is not damaged.
- For safety reasons, ensure that two people participate in the movement of any drum.
- Properly ground and bond all drums of flammable liquids. (To ground a drum, apply a grounding wire to it to eliminate a difference in static charge changing the potential between the object and the ground. To bond two drums, use a bonding wire between them to eliminate the static charge potential).
- Ensure spill response materials are readily accessible to the movement and transfer points to facilitate rapid response to spills or leaks.

Inspection and Maintenance

- Inspect loading and unloading areas monthly for signs of stains and leaks.
- Inspect equipment regularly for leaks, including valves, pumps, hoses, flanges and connections. Replace faulty equipment.
- Ensure staff is trained on proper procedures, including loading/unloading, storage, inspection, and spill response.

BF-4, Material Handling & Storage

This SOP outlines good housekeeping practices for storing materials, including flammables and hazardous wastes at a facility to minimize potential leaks, spills and discharges from occurring and mixing with stormwater runoff.

Procedures and Practices

All Materials

- Store indoors in an enclosed area or within secondary containment and under cover if outdoors if feasible.
- If storage cannot be provided inside, ensure secondary containment for 110 percent of the maximum volume of the storage container.
- Secondary containment systems located in areas exposed to precipitation must have a drain plug that remains inserted at all times. Only after visually inspecting the contents for signs of a spill may uncontaminated rainfall be allowed to drain from the area.
- Store containers on an impervious surface, free of cracks and gaps, and away from floor drains and high traffic areas.
- Use bollards or barriers to protect containers from vehicle damage where applicable.
- All containers must be capped and closed when not in use.
- Store chemicals in compatible containers, labeled with contents. Never mix different types of product.
- Store containers on spill pallets, when possible, to prevent corrosion of the containers associated with contact with moisture on the ground and to provide collection of spills and leaks if they occur.
- Segregate reactive/incompatible materials (such as chlorine and ammonia).
- Provide a minimum of 2’ of aisle space on one side of each container to facilitate material transfer and easy access for inspection.
- Only stack containers according to manufacturers’ instructions.
- Lock storage areas from public access, prevent access by untrained or unauthorized persons, and provide warning signs indicating the areas are for authorized personnel only.
- Post release response information nearby and provide spill response materials in close proximity to materials.
- Install overfill protection on storage tanks.
- Minimize storage onsite as much as possible by only ordering what you need.
- If possible, substitute toxic materials for less or non-toxic ones.

Flammables

- Store flammable materials in a cool location, never outside in direct sunlight.
- Take precautions to prevent or control ignition sources near storage of flammable materials.
- Post “No smoking” signs in areas where flammable liquids are stored/handled.

- Properly ground and bond all drums of flammable liquids. To ground a drum, apply a grounding wire to it to eliminate a difference in static charge changing the potential between the object and the ground. To bond two drums, use a bonding wire between them to eliminate the static charge potential.
- Provide natural or mechanical ventilation in areas where flammable/combustible liquids are handled. Ensure all ventilation fans are running when in operation.
- Never mix one or more flammable liquids.

Hazardous Waste

- Clearly label containers to identify contents and label as "Hazardous Waste".
- Post signs stating "Danger – Unauthorized Personnel Keep Out" at each entrance to a hazardous waste storage area.

Inspection and Maintenance

- Keep storage areas clean and organized.
- Maintain aisle space (minimum 2') for inspection of products/wastes.
- Inspect hazardous waste storage areas weekly and all others monthly:
    - Inspect tank foundations, connections, coatings, and tank walls and piping system. Look for corrosion, leaks, cracks, scratches, and other physical damage that may weaken the tank or container system.
    - Inspect containers to ensure lids, caps and bungs are securely closed.
    - Inspect containers for signs of corrosion, cracks, or other damage. Repair or replace any leaking/defective containers immediately.
    - Inspect containers for presence of legible labels. Replace labels as necessary.
    - Visually inspect new tank or container installations for loose fittings, poor welding, and improper or poorly fitted gaskets.
- Maintain all automatic sprinkler systems, alarms, emergency lighting, fire doors and other emergency equipment in good working condition.
- Ensure that all fire extinguishers are visually inspected monthly, hydrostatically tested periodically and maintained annually.
- Ensure staff are trained on proper handling and procedures of product storage.
- Provide yearly maintenance and inspection at all facilities.
- Maintain inspection and maintenance records on site for at least 3 years.

Recordkeeping and Reporting

- Maintain an inventory log of materials stored at the facility.
- Maintain MSDSs on-site for all stored materials. MSDSs must be readily accessible for all facility employees.
- Report spills as outlined in SOP SR-4.
- Train employees on proper recordkeeping and reporting procedures.

BF-5, Painting

This SOP outlines good housekeeping practices for storing, using and disposing of paints and other similar materials.

Procedures and Practices

- Prior to sanding or scraping, test any previously painted surfaces for presence of lead paint; if present, remove and dispose of as hazardous waste, as applicable.
- Use drop cloths underneath outdoor painting, scraping, and sandblasting work, and properly dispose of collected material daily.
- Store waste paints, solvent, and rags in sealed and labeled containers.
- Properly clean, store, and dispose of paint and associated waste materials.
- Clean paint brushes and tools covered with water-based paints in sinks connected to sanitary system or in portable containers that can be dumped into a sanitary system.
- Brushes and tools covered with non-water-based paints, finishes, or other materials must be cleaned in a manner that enables collection of used solvents (e.g., paint thinner, turpentine, etc.) for recycling or proper disposal as a hazardous waste.
- Keep all paint and solvent containers closed when not in use.
- Keep spill kit nearby to properly contain, clean-up, and dispose of any spilled paint or solvents and contaminated materials.
- Never dispose of paint or waste paint products into a floor drain, the storm drain system, a waterbody, or onto the ground.

Inspection and Maintenance

- Ensure staff are trained on Best Management Practices concerning painting activities.
- Ensure that paint cans are stored properly and not leaking.
- Note deficiencies during inspections and correct any issues immediately.
- Record all actions taken to correct any deficiencies.

BF-6, Sand & Salt Storage

This SOP outlines procedures for storing sand and salt to minimize contact with stormwater runoff.

Procedures and Practices

- Salt should be stored indoors if possible.
- All salt loading should be conducted indoors if possible.
- If stored outdoors, cover sand and salt piles with waterproof tarp when not actively in use, particularly during rain events.
- If stored outdoors, locate salt piles on an impervious surface away from areas subject to flooding.
- Locate sand piles on a pervious surface away from areas subject to flooding.
- Locate sand and salt piles at the top of a rise to minimize stormwater run-on.
- Ideally, salt should not be stored in a water supply Zone II or within a 100-year floodplain.
- Use diversion berms to minimize run-on to storage areas.
- Direct stormwater runoff away from areas where salt and sand is stored by using buffers to diffuse runoff before entering waterbodies.
- Avoid loading/unloading sand and salt in the rain if possible.
- Use calibrated salt application equipment when spreading salt on all equipment.

Inspection and Maintenance

- If using a salt storage shed, inspect weekly for roof leaks on a regular basis. Repair any leaks.
- Inspect sand and salt application equipment including calibration equipment and spreaders.
- Adjust calibration rates and levels as necessary to ensure proper application rates.
- Inspect salt regularly for lumping or water contamination.
- Inspect surface areas for evidence of runoff, such as salt stains on the ground near and around the salt storage shed, loading area, or areas downgradient.
- Sweep outside storage unit doorways after loading/unloading occurs. Ensure this is done before the next rainfall event.
- Ensure staff are trained in proper sand and salt storage procedures and practices.

Construction Management (CM)

CM-1: Erosion & Sedimentation Control

CM-2: Construction Site Inspection

- Construction Site Stormwater Inspection Report

CM-1, Erosion & Sedimentation Control

This SOP describes procedures for reducing or eliminating erosion and sedimentation during construction projects that disturb soils. Note that if site disturbance is equal to or greater than one acre, the EPA requires MassBay and (if applicable) its contractor to prepare a Stormwater Pollution Prevention Plan (SWPPP) and to file for coverage under the NPDES program Construction General Permit (CGP). No work can proceed until 14 days after filing for such coverage, and all work must be conducted in accordance with the SWPPP and the requirements of the CGP.

Procedures and Practices

- On site personnel should review and understand the conditions of any permit governing the site disturbance.
- If there is a SWPPP or sediment/erosion control plan that applies to the site:
    - Personnel working on the site should be made familiar with the plan's requirements.
    - Keep a copy in a location readily accessible to the personnel working on the site.
- If the work requires an outside contractor, follow the SOP CM-2.
- Install erosion and sediment control features such as silt fences before initiating activities that remove vegetated cover or otherwise disturb the site.
- Existing vegetation should be maintained on site as long as possible.
- Vegetation should be allowed to establish before introducing flows to channels.
- Construction should proceed progressively on the site in order to minimize exposed soil, and disturbed areas should be restored as soon as possible after work has been completed. As a rule, any area that will remain un-worked for a period greater than 14 days should be stabilized with vegetation or an alternative approved practice for long-term stability.
- Construction activities should occur during dryer periods, such as summer months, to limit potential runoff.
- Minimize slope lengths to reduce the velocity of storm water runoff.
- Vegetated and wooded buffers must be protected.
- Keep land disturbance to a minimum and minimize the amount of bare soil by scheduling phases of construction and stabilization.
- Excessive soil compaction with heavy machinery should be avoided, to the extent possible.
- Responsibility for maintaining erosion and sediment control devices shall be clearly identified.
- Soils, including stockpiles, should be stabilized by mulching and/or seeding when they would be exposed for more than one week during the dry season, or more than two days during the rainy season.
- Use regular, light watering for dust control, as this is more effective than infrequent heavy watering.

Inspection and Maintenance

- The applicant's representative must inspect erosion and sediment control devices weekly, prior to and following heavy rainfall events to ensure they are working properly.
- MassBay's representative should inspect at the following intervals, or as specified by the Planning Board or other regulatory entity:
    - Erosion and sediment control measures are in place and stabilized;
    - Site clearing has been substantially completed;
    - Rough grading has been substantially completed;
    - Final grading has been substantially completed;
    - Close of the construction season; and
    - Final landscaping (permanent stabilization) and project final completion.
- Inspect silt fence for depth of sediment, tears, secure attachment of fabric to posts, and to ensure fence posts are firmly in the ground. Remove accumulated sediment from silt fencing when it has reached one third the height of the fence.
- Inspect other sediment barriers (e.g., silt socks) according to manufacturer's recommended practices.
- Inspect catch basin silt traps for sediment accumulation and clean out to maintain flow capacity and prevent failure of the trap.
- Temporary construction sediment traps and sediment barriers should be cleaned out regularly based on inspection to reduce clogging and maintain design function.
- Easements and service routes should be maintained, to enable maintenance equipment to access BMPs for regular cleaning.
- Ensure staff are trained on proper erosion and sedimentation control procedures and practices.
- Use the checklist in SOP CM-2 to guide the inspection process and record the findings of the inspection.

CM-2, Construction Site Inspection

This SOP outlines a stormwater Construction Site Inspection program to track, inspect, and enforce local stormwater requirements at construction sites.

General

1. Preconstruction Meeting

   Prior to the initiation of construction activities, the college or its representative should conduct a pre-construction meeting with the project owner/applicant, applicant's inspector and the contractor, to address the following:

   a. Identify persons who will serve as contacts for MassBay, the Owner, and the Contractor throughout the project, including compiling contact information for around the clock coverage for contingency events;

   b. Review the requirements of applicable permits;

   c. Review the Contractor's SWPPP for protecting the MS4 and Waters of the Commonwealth from construction activity impacts;

   d. Brief the owner/applicant and contractor about how this SOP applies to the project, and establish a schedule for regular inspections;

   e. Conduct an initial inspection of the site. If consistent with the requirements of permits or orders of conditions issued for the project, the Contractor may install initial erosion and sediment controls prior to this meeting, with those measures inspected as a part of the initial site walk.

2. Threshold Inspections

   Threshold inspections are conducted by MassBay's Peer Reviewer or Representative at the following intervals, or as specified by the Planning Board or other regulatory entity:

   - Erosion and sediment control measures are in place and stabilized;
   - Site clearing has been substantially completed;
   - Rough grading has been substantially completed;
   - Final grading has been substantially completed;
   - Close of the construction season; and
   - Final landscaping (permanent stabilization) and project final completion.

   The applicant must notify the Commission at least 2 working days before each inspection, which is conducted using the SOP below. The final inspection must be conducted prior to the owner/applicant and the contractor filing for certificates of completion and (if applicable) a Notice of Termination.

3. Periodic Inspections

   Periodic inspections should be performed by the applicant or their representative on a weekly basis, and before and after any anticipated storm event. Inspections should be conducted to the SOP below.

Procedures and Practices

1. Plan the inspection before visiting the construction site.
   - Obtain and review permits, site plans, previous inspection reports, and any other applicable information.
   - Inform the contractor of the planned site visit.

2. Meet with the contractor
   - Review the project's approved NOI (Notice of Intent) and confirm that information shown continues to be accurate.
   - Review the Construction SWPPP (Stormwater Pollution Prevention Plan) or other document. Compare BMPs in the approved site plans with those shown in the SWPPP.
   - Get a general overview of the project from the contractor.
   - Review recent inspections done by the contractor during the previous inspection period.
   - Review the status of any issues or corrective actions noted in previous inspection reports.
   - Discuss any complaints or incidents since the last meeting.

3. Inspect perimeter controls
   - Examine perimeter controls to determine if they are adequate, properly installed, and properly maintained.
   - For each structural BMP, check structural integrity to determine if any portion of the BMP needs to be replaced or requires maintenance.

4. Inspect slopes and temporary stockpiles
   - Determine if sediment and erosion controls are effective.
   - Look for slumps, rills, and tracking of stockpiled materials around the site.
   - Ensure that sloped areas are adequately vegetated and free of erosion.

5. Compare structural BMPs in the site plan with the construction site conditions
   - Determine whether structural BMPs are in place as specified in the site plan and if the BMPs have been adequately installed and maintained.
   - Note any areas where additional structural or non-structural BMPs may be needed which are not specified in the site plans.

6. Inspect site entrances/exits
    - Determine if there has been excessive tracking of sediment from the site.
    - Look for evidence of additional entrances/exits which are not on the site plan and are not properly stabilized.
    - Ensure that stone track-out pads are being adequately maintained.

7. Inspect sediment basins
    - Look for signs that sediment has accumulated beyond 50% of the original capacity of the basin.
    - Make sure that sediment basins are being adequately maintained.

8. Inspect pollution prevention and good housekeeping practices
    - Inspect trash areas and material storage/staging areas to ensure materials are properly maintained and pollutant sources are not exposed to rainfall or runoff.
    - Inspect vehicle/equipment fueling and maintenance areas for the presence of spill control measures and for evidence of leaks or spills.

9. Inspect discharge points and downstream, off-site areas
    - Walk down the street and/or in other directions off-site to determine if erosion and sedimentation control measures are effective in preventing off-site impacts.
    - Inspect down-slope catch basins to determine if they are protected, and identify whether sediment buildup has occurred. Basins should be cleaned if required.

10. Meet with the contractor again prior to leaving
    - Discuss current control effectiveness and whether modifications are needed.
    - Discuss possible violations or concerns noted during the site inspection, including discrepancies between approved site plans, the SWPPP, and/or the implementation of stormwater controls.
    - Agree on a schedule for addressing all discrepancies, and schedule a follow-up inspection.

11. Provide a written copy of the inspection report to the contractor.

12. Follow up, as determined, and provide copy of subsequent inspection to the contractor.

13. Utilize the resources of USEPA Region 1 to enforce the contractor's compliance with the Construction General Permit and/or other document can be achieved.

Inspection and Maintenance

- Use the attached Construction Site Stormwater Inspection Report to perform and document inspections.

Construction Site Stormwater Inspection Report

(From Central Massachusetts Regional Stormwater Collaborative SOP 5: Construction Site Inspection)

Project Name			
Project Location			
Site Operator			
Inspector's Name			
Date of Inspection		Date of Last Inspection	
Start Time		End Time	
Subject to USEPA Construction General Permit? Yes No If yes, has NOI been approved? Yes No If yes, attach approved NOI to this report. **If no, contact site operator immediately to determine status of NOI.**			
Type of Inspection: Regular Pre-Storm Event During Storm Event Post-Storm Event			
Describe the weather conditions at time of inspection			
Describe the current phase of construction			