CITY OF CAMBRIDGE

STORMWATER POLLUTION PREVENTION PLAN CAMBRIDGE RINDGE AND LATIN SCHOOL GARAGE

JUNE 2020

PREPARED BY:

KLEINFELDER
Bright People. Right Solutions.

CAMBRIDGE DEPARTMENT OF PUBLIC THE WORKS

Stantec

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ABBREVIATIONS

BMP	Best Management Practice
CFR	Code of Federal Regulations
City	City of Cambridge
DPW	Department of Public Works
EPA	Environmental Protection Agency
IDDE	Illicit Discharge Detection and Elimination
MassDEP	Massachusetts Department of Environmental Protection
MCM	Minimum Control Measure
MS4	Municipal Separate Storm Sewer Systems
NPDES	National Pollutant Discharge Elimination System
SPCC	Spill Prevention, Control, and Countermeasure
SWPPP	Stormwater Pollution Prevention Plan
VSQG	Very Small Quantity Generator

GLOSSARY

Impaired waters	Water bodies that do not meet water quality standards for one or more designated use(s) such as recreation or aquatic habitat.
Outfall	A point source as defined by 40 CFR § 122.2 as the point where the municipal separate storm sewer discharges to waters of the United States

CERTIFICATION

The City of Cambridge understands the necessity for stormwater controls and hereby agrees to implement this Stormwater Pollution Prevention Plan (SWPPP) as described herein and, in accordance with 40 CFR part 23, to commit the necessary resources required to expeditiously control and remove any harmful quantity of discharge.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature: Katherine F. Watkins

Title: City Engineer

Name: 

Date: 6/29/2020

RECORD OF REVISIONS

The City of Cambridge shall review this SWPPP regularly to determine if any update or revision is required. Changes that may trigger revision include:

- An increase in the quantity of any potential pollutant stored at the Cambridge Rindge and Latin School (CRLS) Garage;
- The addition of any new potential pollutant (not already addressed in this SWPPP) to the list of materials stored or used at the CRLS Garage;
- Physical changes to the CRLS Garage that expose any potential pollutant (not presently exposed) to stormwater;
- Presence of a new authorized non-stormwater discharge at the CRLS Garage; or
- Addition of an activity that introduces a new potential pollutant.

Changes in activity may include an expansion of operations, or changes in any significant material handling or storage practices which could impact stormwater. The amended SWPPP shall describe the new activities that could contribute to increased pollution, as well as control measures that have been implemented to minimize the potential for pollution. This SWPPP shall be amended if a state or federal inspector determines that it is not effective in controlling stormwater pollutants discharged to waterways.

REVISION NUMBER	SECTION CHANGED	REASONS FOR REVISION(S)	DATE	REVISION APPROVED BY

1 INTRODUCTION

1.1 BACKGROUND

This Stormwater Pollution Prevention Plan (SWPPP) was prepared by the City of Cambridge to meet the requirements of the United States Environmental Protection Agency's (EPA) 2016 *National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges from Municipal Separate Storm Sewer Systems (MS4) in Massachusetts*, hereafter referred to as the 2016 MS4 Permit or 'the Permit'. This section describes the regulatory program that requires the preparation of this document and the applicability to the Cambridge Rindge and Latin School Garage, hereafter referred to as the CRLS Garage.

1.2 2016 MS4 PERMIT SWPPP REQUIREMENTS

The 2016 MS4 Permit requires that the City of Cambridge address six Minimum Control Measures (MCMs). These measures include the following:

1. Public Education and Outreach
2. Public Involvement and Participation
3. Illicit Discharge Detection and Elimination (IDDE) Program
4. Construction Site Stormwater Runoff Control
5. Stormwater Management in New Development and Redevelopment (Post Construction Stormwater Management)
6. Good Housekeeping and Pollution Prevention for Permittee Owned Operations

MCM 6 includes the development and implementation of written SWPPPs for all permittee-owned or operated maintenance garages, public works yards, transfer stations, and other waste handling facilities where pollutants may be exposed to stormwater, according to Part 2.3.7.b. of the Permit. Thus, the City of Cambridge is required to develop and implement SWPPPs within two (2) years of the effective date of the Permit; July 1, 2020. The Permit requires that the SWPPP include the following items:

- Stormwater Pollution Prevention Team
- Description of the facility and identification of potential pollutant sources

    - Site map identifying on-site activities and materials locations
- Identification of stormwater controls
- Management practices, such as: minimizing or preventing exposure, good housekeeping, preventative maintenance, spill prevention and response, erosion and sediment control, management of stormwater runoff, employee training, and maintenance of control activities.
- Quarterly site inspections, documentation, and annual reporting.

This SWPPP meets these requirements by:

- Identifying the Stormwater Pollution Prevention Team, which are to be employees of the CRLS Garage, Cambridge School Department, and Cambridge Department of Public Works (DPW) Staff who are responsible for developing, implementing, maintaining, and revising, as necessary, this SWPPP;
- Providing an inventory of the materials, vehicles, and equipment at the CRLS Garage that have the potential to cause stormwater pollution, and identifying locations where these materials are stored;
- Describing how stormwater is managed at the CRLS Garage;
- Reviewing activities that occur on-site that represent a potential for stormwater pollution;
- Describing the Best Management Practices (BMPs) that should be implemented at the CRLS Garage to reduce, eliminate, and prevent the discharge of pollutants to stormwater;
- Establishing a schedule and description of site inspections to be conducted by the Stormwater Pollution Prevention Team to determine if the SWPPP is effective in preventing the discharge of pollutants;
- Serving as a tool for personnel, including a place to maintain recordkeeping associated with these requirements.

2 STORMWATER POLLUTION PREVENTION TEAM

The Team Leader, is responsible for the overall implementation of this SWPPP, including assignment of the Stormwater Pollution Prevention Team (the Team). Together the Team is tasked with implementing, administering, and revising the SWPPP, regularly inspecting stormwater control structures, conducting stormwater training, and maintaining records. All members of the team must have ready access to the most recent SWPPP, supplementary SWPPP documentation such as the Good Housekeeping Manual (**Appendix A**) and applicable portions of the Permit, either in electronic or paper format.

Table 1: Stormwater Pollution Prevention Team

STORMWATER POLLUTION PREVENTION TEAM		
TITLE/NAME	**RESPONSIBILITIES**	**CONTACT INFORMATION**
Team Leader: Yilkal Bekele (DPW)	• Responsible for the overall implementation of the SWPPP, including certifying the completeness and accuracy of the SWPPP, inspections, annual comprehensive compliance evaluations, employee training, and recordkeeping. • Conducts annual Stormwater Pollution Prevention Training, annual review, and update of SWPPP, and provides as-needed direction to site personnel in the proper implementation of the SWPPP.	Office Phone: (617) 349-4806 Cell Phone: (781) 703-7007
Alternate Team Leader: Vedad Kondic (Cambridge Public Schools)	• Responsible for implementing emergency and spill response procedures • Implements preventative maintenance programs, oversees good housekeeping activities, conducts inspections, assists with employee training, and conducts sampling and visual monitoring	Cell Phone: (617) 201-6054
Team Member: Robert Catalho Cambridge Public Schools	• Assists with all components of the stormwater program, as needed. Conducts annual Stormwater Pollution Prevention Training, annual review, and update of SWPPP, performs emergency and spill response, and provides as-needed direction to CRLS Garage personnel in the proper implementation of the SWPPP.	Cell Phone: 617-201-5906

3 SITE OPERATION AND DESCRIPTION

3.1 SITE SUMMARY

The CRLS Garage at the Gustave M Solomons Transportation Career Center, henceforth known as 'the Site,' or 'the CRLS Garage' is located at 456 Broadway Street, Cambridge, Massachusetts, in the Mid-Cambridge neighborhood. The City of Cambridge owns the 19,365 square foot lot and it is used by Cambridge Public Schools as part of the Cambridge Rindge and Latin School for their automotive technology program. The Site is almost entirely comprised of the site building and does include 454 Broadway Street which is a Media Arts Studio used as classroom and office space. Due to the type of space and site activities at 454 Broadway, it was not included in the site inspection and this SWPPP does not apply to that portion of the building. There is a small paved walkway to the west, between the site building and the abutter to the west, 20 Ware Street. To the east of the site building is 452/450 Broadway Court which is used for residential space. The site building abuts Broadway Street which is a two-lane road in the separated sewer portion of the City. To the south side, the site building abuts multiple residential buildings and the parking area for 14 Ware Street. Catch basins on Broadway in this area, discharge to MS4 outfalls.

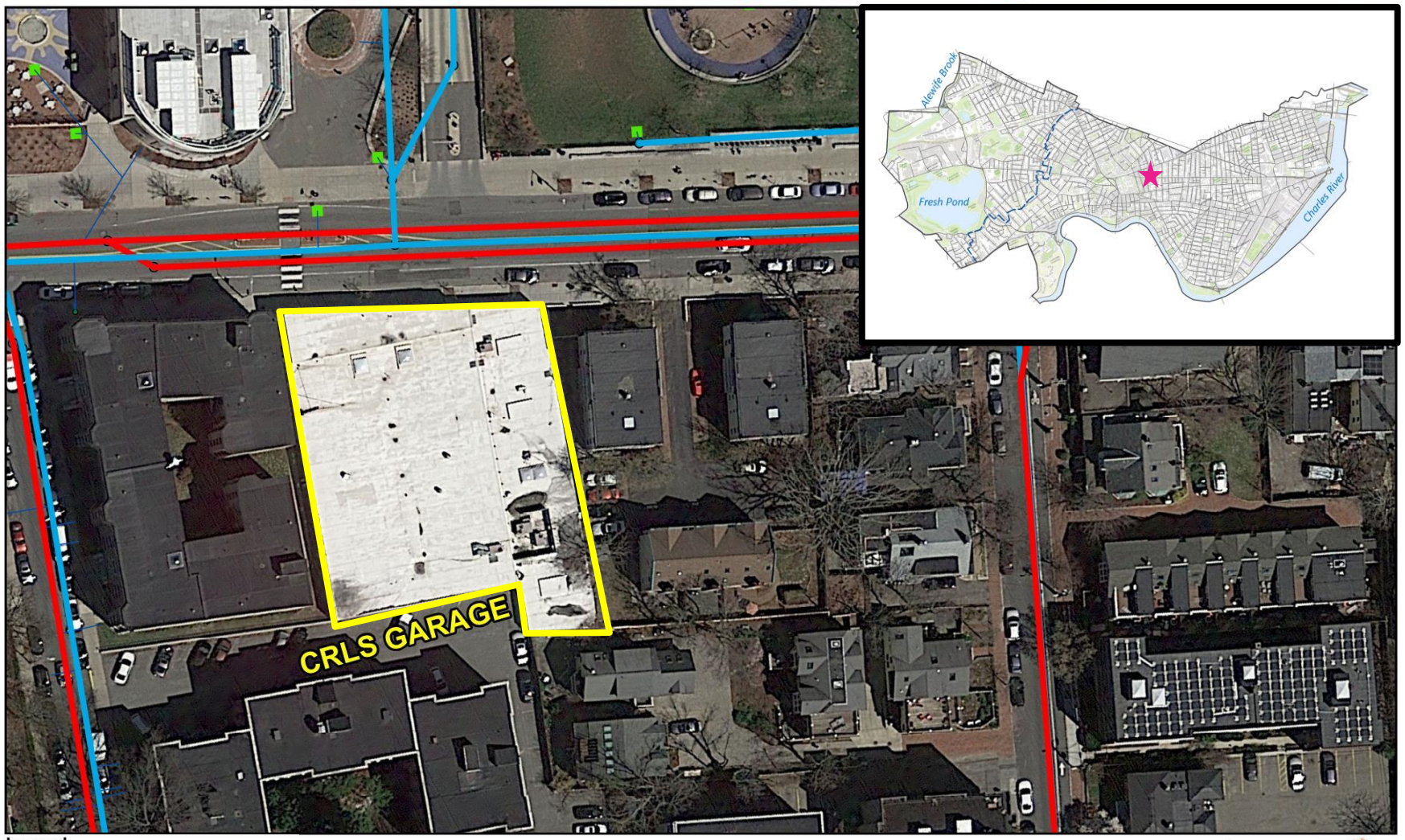
3.2 LOCATION

Facility Name:	Cambridge Rindge and Latin School Garage, 'Gustave M. Solomons Transportation Career Center.'
Facility Address:	456/454 Broadway Cambridge, Massachusetts 02138
Latitude/Longitude:	-71.111879, 42.373461
Facility Phone:	(617) 349 – 7782
Type of Facility:	Automotive Technology Program - Teaching & Maintenance Garage
Operating Hours:	Monday through Friday 8:00 AM – 4:00 PM throughout the year except during school vacations.

Figure 1 provides information concerning the location, stormwater conveyance, and layout of the CRLS Garage. The figure has been configured to provide general and specific information

concerning the stormwater management at the facility. This Figure depicts the information required for the SWPPP as understood at this time. Additional site features and the locations of site activities are included in the **Site Plan** in **Appendix D**.

Figure 1 – Site Layout Arial



3.3 SITE DESCRIPTION

The CRLS Garage serves the following purposes:

- Provides a working garage space for the automotive technology auto mechanic class for high school students
- Provides a covered vehicle storage and maintenance area, and
- Provides classroom space.

The CRLS Garage has two (2) garage bays for vehicle access and material loading/unloading. At the time of inspection, only one garage bay was in use. Multiple cars were brought into the garage during the time of inspection, and the garage door was repeatedly opened and closed. Parking for staff and teachers is available on the streets adjacent to the building (Broadway). Many vehicles were staged inside the site building and the site representatives noted that this was typical.

Beyond the site building, most of the Site is impervious.

3.4 SITE STRUCTURES

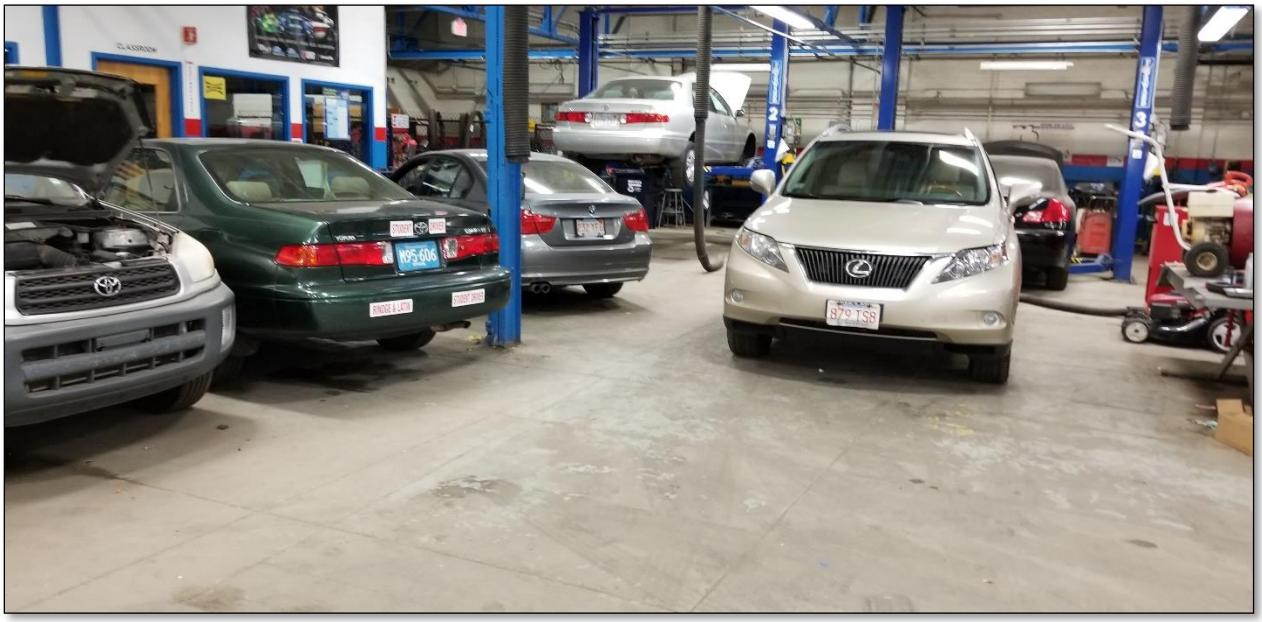
3.4.1 Vehicle Storage and Maintenance

As a teaching garage, there are multiple cars staged at repair stations throughout the garage area. The CRLS Garage is used for maintaining personal vehicles that range in size from small sedans to SUVs and small trucks. Based on the inspection, it is clear that the quantity and type of vehicles stored on-site is highly variable. Maintenance occurs routinely during class time, year-round except during school vacations. Maintenance activities include oil changes, minor engine repair, and minor body work. Refer to the **Site Plan** in **Appendix D** for locations of vehicle storage and maintenance activities.

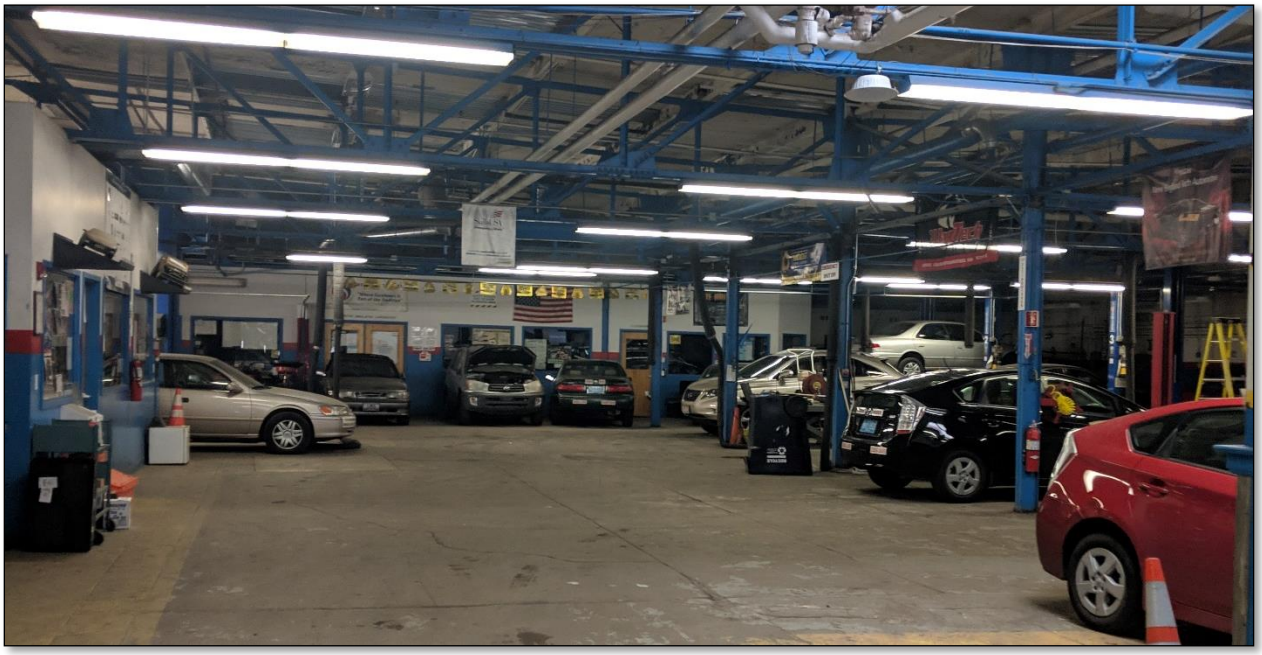
3.4.1.1 Vehicle and Equipment Inventory

The CRLS Garage does not maintain their own vehicles and therefore has no standard inventory. At the time of inspection, there were approximately twenty (20) cars located inside the site building. Since the CRLS Garage is used to maintain numerous personal vehicles, similar to a

typical automotive garage, this number is highly variable. Examples of the types of vehicles on-site are included below.



Vehicles on-site during April 2019 Site Visit



Vehicles on-site during April 2019 Site Visit

3.4.2 Storage of Other Items On-site

Tires, as well as equipment and material for vehicular maintenance activities are stored within the CRLS Garage. In addition, two (2) snowplow blades are hung from the ceiling.

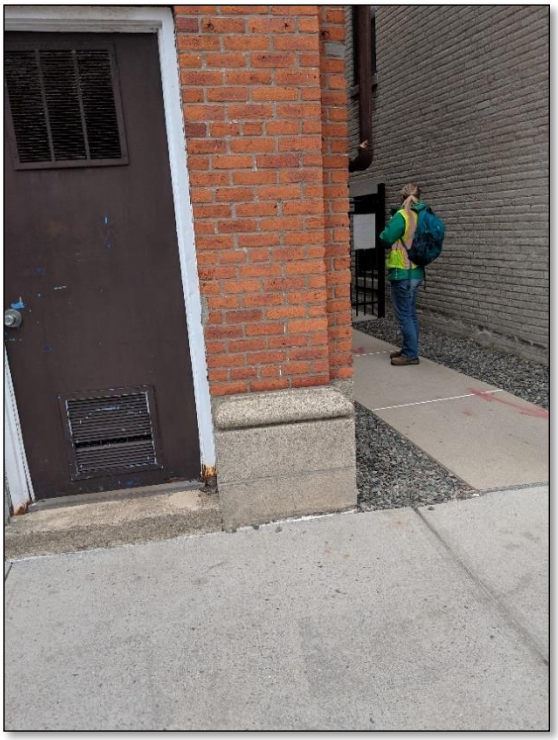
3.4.3 Teaching Space

Classroom space is located on-site for teaching purposes. The teaching space is not exposed to any potential stormwater pollutants.

3.5 SITE DRAINAGE

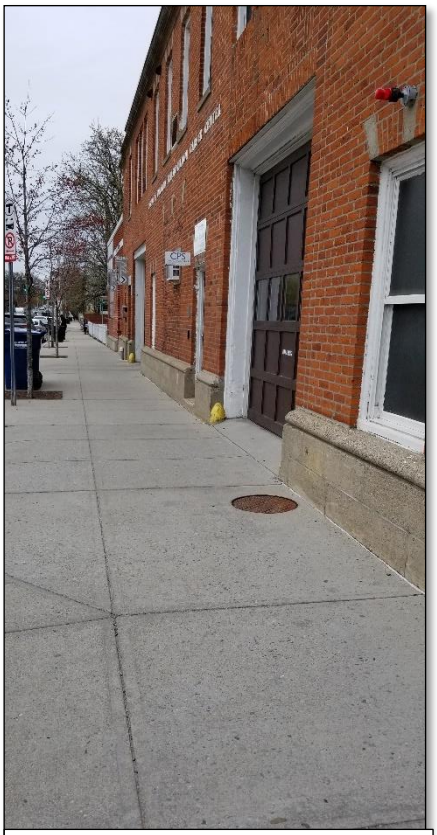
As described previously, the Site is mostly made up of the site building. North of the site building there is concrete sidewalk with three (3) small trees planted in the sidewalk as shown in the included photo.

To the west of the site building there is a narrow walkway with a gate to restrict pedestrian access. The walkway is only used for accessing the utility meters located on the west side of the site building. This walkway is made up of gravel and concrete as shown in the photo below.



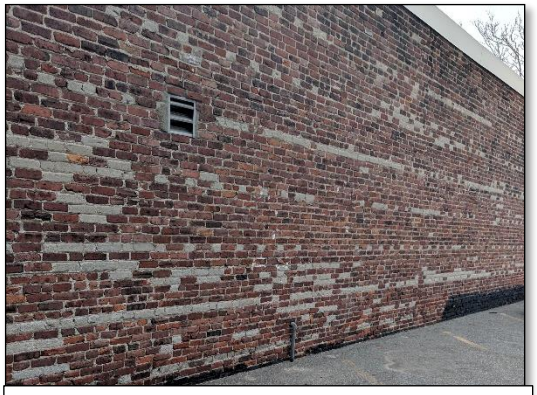
View of the utility walkway on the west side of the Site looking south.

To the east of the site building there is a fenced in garden area that is owned by the abutting property, 452/450 Broadway Court.



View of the north side of the Site looking east.

The south of the site building is used as a parking area for 14 Ware Street. This parking area is located at a much higher elevation than the north side of the site building and is not regularly accessed by the CRLS staff. No activities associated with the CRLS garage impact the south side of the building.



View of the south side of the site building in the parking area for 14 Ware Street.

Sheet Flow

Drainage from the limited impervious surfaces on the north, east and west sides of the CRLS Garage site building is directed to catch basins on Broadway (D21CBN1825, D21CBN1718, and D21CBN1850). Since the Site is relatively flat and these areas are small, the volume of sheet flow is expected to be small. Refer to **Figure 1** for locations of these catch basins.

Drainage Structures

Drainage structures on the Site are three (3) interior floor drains. Refer to the **Site Plan** for the approximate location of these floor drains, as well as the Site Inspection Report in **Appendix E** for photos. The connection of these floor drains into the sewer and drainage system was investigated by the City with the assistance of a third-party subcontractor on January 15, 2020. The Team performed CCTV inspections and observed that all potential connections between floor drains were blocked or the drain inlet was capped. Furthermore, the Team identified a manhole structure that may be intended as a leaching pit, to be filled with sediment and sand with no confirmed outlets. No known maintenance is performed on these structures. Based on the investigation, without excavation, the interior connections cannot be determined. However, based on the extent of the blockages, flow from the floor drains would remain in the floor drain structure and stay within the CRLS Garage.

3.6 NON-STORMWATER DISCHARGES

Section 1.4 of the 2016 MS4 Permit allows certain categories of non-stormwater discharges, provided that the discharge is not a significant contributor of pollutants to the MS4. No allowable non-stormwater discharges occur at the CRLS Garage.

3.7 RECEIVING WATER BODIES

The closest named water body to the CRLS Garage is the Charles River, which is located 0.4 miles away and is the final point of discharge for stormwater from this property due to the connectivity of the catch basins on Broadway. Ultimately, the catch basins on Broadway discharge to outfall D21 on the Charles River. Based on the site layout and activities on-site, there is minimal potential for pollution from the CRLS Garage to flow to the catch basins on Broadway. The Charles River has been categorized as a 303(d) List (Impaired) surface water in the Massachusetts Year 2016 Integrated List of Waters, which is the most recent final list available for Massachusetts.

The impairment of this river, assigned the unique identifier MA72-36, is considered a Category 5, meaning that more than one designated use is impaired and that a TMDL is required. Water body impairments for this segment of the Charles River (MA72-36) include chlorophyll-a, DDT and PCB in fish tissue, dissolved oxygen, Escherichia coli, fish bioassessments, algal blooms, nutrient/eutrophication biological indicators, oil and grease, high pH, total phosphorus, sediment bioassays – acute toxicity (freshwater), transparency/clarity, unspecified metals in sediment, and non-native aquatic plants. Beyond the water quality impairments, the river also has a fish passage barrier, and a flow regime modification.

3.8 SITE ACTIVITIES

Site activities are all activities associated with teaching an auto-mechanics class. Light maintenance including oil changes and minor body work occur during the school day with multiple students completing them at once. The following activities regularly occur:

- Vehicle storage
- Vehicle maintenance/repair (including oil changes)
- Waste handling and disposal

Below is a discussion of each site activity with potential stormwater pollutant sources, as well as measures that should be taken to prevent and minimize pollution. Refer to the **Site Plan** in **Appendix D** for locations of site activities. According to a review of the Massachusetts Hazardous Waste Generators in April 2019, the CRLS Garage was listed as a Very Small Quantity Generator (VSQG) with EPA ID MAR000533919. This designation, VSQG, indicates that the CRLS Garage

generates less than 100 kilograms or less per month of hazardous waste or one kilogram or less per month of acutely hazardous waste.

3.8.1 Vehicle Storage

Potential Sources of Stormwater Pollution

Vehicle storage activities are a potential source of pollution due to the diesel fuel, gasoline, oil, hydraulic fluid, antifreeze, and similar hazardous material or fuel the machinery may contain. In addition, vehicles may pick up pollutants during normal off-site activities and then deposit these pollutants at the CRLS Garage.

Pollution Prevention

Although the vehicles present at CRLS garage are typically only on-site for a short period of time to get repairs, they should be inspected when they arrive at the garage. Regular visual inspection and maintenance of the vehicles can greatly reduce the potential for pollution by finding and addressing leaks before pollution of the environment occurs. Vehicles should not be stored outside of the garage, in areas where leaks could result in pollutants entering catch basins. A spill response kit shall be located wherever waste oil is stored. Facility personnel shall know where the spill kit is located and be familiar with the procedures outlined in **Appendix A: BMP 7 "Spill Prevention and Response"**.

3.8.2 Vehicle Maintenance and Repair

Potential Sources of Stormwater Pollution

Vehicle maintenance and repair often requires the use of harmful liquids such as fuels, oils, and lubricants, and have the potential for producing dust, scrap and by-products that may contain pollutants. Both accidental and purposeful spillage, i.e., a leaky oil pan needing repair vs. draining the pan during an oil change, can lead to situations where pollutants can potentially enter stormwater runoff if the situations are not approached properly. The three (3) interior floor drains in the vicinity of vehicle maintenance activities are one of the possible routes of exposure of pollutants to the City's MS4.

Pollution Prevention

Proper maintenance and repair for vehicles should include a preliminary assessment of potential pollutant sources. This assessment should be used to determine the best means of containing any potential spills or by-products of the situation at hand. Approved containers should be used to capture hazardous liquids to then be disposed of according to applicable MassDEP and EPA guidelines. If the project may produce hazardous dust that could come in contact and mix with any liquids, the proper containment should be utilized.

Due to heavy metal accumulation in antifreeze, brake fluid, transmission fluid, and hydraulic oils, it is not recommended that any of these liquids are disposed of in the sanitary sewer system. Contaminated parts removed or replaced on any vehicles or equipment should be disposed of properly using a private third-party waste handler.

Maintenance and repairs should not take place in areas prone to stormwater runoff or where pollutants could enter catch basins. All maintenance and repairs occur inside the CRLS Garage.

3.8.3 Waste Handling and Disposal

Potential Sources of Stormwater Pollution

When not stored properly, waste oil can be a potential source of petroleum in stormwater. Waste oil containers can leak, and spills can occur while during transportation activities. At the CRLS garage, the storage and disposal of waste oil is one of the possible routes of exposure of pollutants to the City's MS4. A 250-gallon tank of waste oil including used oil, oil filters, and antifreeze is located in the northwestern portion of the site area and is serviced by a private third-party waste handler.

Pollution Prevention

All waste oil containers should be properly labeled and stored with secondary containment. Containers should be regularly inspected for rust, leaks, or other signs of deterioration. Defective containers should be promptly removed and replaced. A spill response kit should be located wherever waste oil is stored. The CRLS Garage a spill kits available for use. CRLS Garage

personnel should know where the spill kit is located and be familiar with the procedures outlined in **Appendix A – BMP 7 "Spill Prevention and Response"**. Used oil filters should also be properly disposed.

Care should be taken when transferring used oil to and from storage containers.

Waste oil should be stored indoors to prevent exposure to precipitation. Floor drains in waste oil storage areas should drain to an oil/water separator rather than the storm drain system. See **Appendix A - BMP 18 "Oil/Water Separators".**

Hazardous waste materials should be collected by a third-party vendor contracted by the City of Cambridge. These materials should be properly labeled and stored using appropriate Best Management Practices between the time of generation and disposal. Products should not be mixed prior to disposal, unless specifically recommended by the manufacturer. When possible, steps should be taken to recycle waste oil or reduce the amount generated.

It is imperative that all employees are properly trained and follow the correct procedures to reduce or eliminate stormwater pollution. Routine visual inspection of storage and use areas is critical. The visual inspection process should include identification of containers or equipment which could malfunction and cause leaks or spills. In the case a defect is found, the container or equipment should be immediately repaired or replaced.

3.9 SIGNIFICANT MATERIAL INVENTORY

Materials stored include those related to the site activities mentioned in Section 3.8. An inventory of the materials at the CRLS Garage is included in **Table 2**, which also reviews the likelihood for each identified material to come in contact with stormwater.

The locations of these material storage areas are provided on the **Site Plan** included in **Appendix D**.

Table 2: Material Inventory

Material	Storage Location	Quantity	Potential Pollutant	Covered (C) or Enclosed (E)	Likelihood of Contact with Stormwater
Petroleum-Based Compounds					
Gasoline	Southern portion of Garage	< 50 gallons	Petroleum hydrocarbons	E	Unlikely
Motor Oil	Located in the storage closet in northern portion of Garage	< 20 gallons	Petroleum hydrocarbons	E	Unlikely
Multi-Purpose Engine Oil	Located in the storage closet in northern portion of Garage	< 20 gallons	Petroleum hydrocarbons	E	Unlikely
Brake Grease	Located in the storage closet in northern portion of Garage	< 3 gallons	Petroleum hydrocarbons	E	Unlikely
Gear Oil	Located in the storage closet in northern portion of Garage	<1 gallon	Petroleum hydrocarbons	E	Unlikely
Waste Oil	Located in the Waste Oil Locker	< 250 gallons	Petroleum hydrocarbons	E	Unlikely
Total Volume of Oil at Maintenance Garage = approximately 350 gallons					
Non-Petroleum Significant Materials					
Anti-freeze	Located in the storage closet in northern portion of Garage	<20 gallons	Ethylene glycol; potential source of BOD	E	Unlikely
Spray Lubricant	Located in various locations around Garage	<5 gallons	Petroleum hydrocarbons	E	Unlikely
Windshield Washer Fluid	Located in the storage closet in northern portion of Garage	<15 gallons	Solvent; detergent	E	Unlikely
Brake Fluid	Located in the rear storage closet inside the classroom	<5 gallons	Volatile organic compounds; non-petroleum-based oil	E	Unlikely
Coolant (new or used)	Located in the Waste Oil Locker	<20 gallons	Volatile organic compounds	E	Unlikely

3.10 SITE INSPECTION

The site inspection associated with the development of this SWPPP was completed on April 18, 2019 at 9:30 AM during clear conditions. The inspection was conducted by consultants and Yilkal Bekele (Cambridge DPW). Billy, a custodian at the High School, and Robbie, a supervisor, participated in the site inspection, but neither works in the CRLS garage and thus do not have specific site knowledge.

During the site inspection, information related to the CRLS Garage's use as a teaching garage, maintenance operations, other site activities, material storage, and spill history was gathered. Future inspections should be conducted in accordance with Section 6.2. At the time of inspection, school was not in-session and no site activities were currently taking place. However, multiple cars requiring maintenance were brought into the garage during the inspection.

4 STORMWATER MANAGEMENT

4.1 STRUCTURAL BEST MANAGEMENT PRACTICES

Structural BMPs include on-site constructed systems that provide pretreatment or treatment of stormwater flows. There are no structural BMPs presently used at the CRLS Garage to maintain water quality.

4.2 SEDIMENT AND EROSION CONTROL

The CRLS Garage Site is made up almost entirely of the site building, and impervious surfaces. Furthermore, site activities do not generate significant amounts of sediment. Therefore, sediment is not likely to enter the storm drain system. At the time of inspection, no areas at the CRLS Garage have signs of noticeable soil erosion.

4.3 NON-STRUCTURAL CONTROLS

4.3.1 Good Housekeeping

Good housekeeping is a Best Management Practice (BMP) and includes clean and organized work environments with routine cleanup schedules, orderly work tasks and procedures, proper material handling and storage, up- to-date material inventories, and thorough employee and student training. A clean and orderly work area reduces the possibility of accidental spills caused by collisions, faulty machinery, or mishandling of chemicals and equipment. Well maintained material storage areas reduce the possibility of stormwater mixing with products or pollutants.

The following is a list of good housekeeping measures that are to be practiced at the CRLS Garage:

- All fluid products and wastes are to be kept indoors.
- All floor drains present within garage bays should drain to an oil/water separator.
- Spill materials and cleanup kits are to be maintained at all locations where oil materials and fluids are used, stored, may be present, or where activities may result in a spill.
- Used spill cleanup materials are to be disposed of properly.

- Materials are to be stored indoors or in covered areas to minimize exposure to stormwater.
- Lead-acid batteries are not currently stored at the CRLS Garage but should be stored indoors and within secondary containment.
- Hazardous materials storage lockers with spill containment are to be used. Storage areas are to be located away from vehicle and equipment paths to reduce the potential of accident related leaks and spills.
- Storage drums and containers are not to be located close to floor drains.
- All hazardous material storage areas and containers are to have proper signage, labels, restricted access, locks, inventory control, overhead coverage, and secondary containment.
- All materials, waste oil storage containers, and gas cans are to be properly labeled.
- Speedi Dri (or similar absorbent) should be readily available and used for appropriate spills.
- Tools and materials are to be returned to designated storage areas after use.
- Waste materials are to be collected and disposed of properly.
- Different types of wastes are to be separated as appropriate.
- Work areas are to be regularly swept or vacuumed to collect metal, wood, and other particulates and materials.
- Only the amount of materials required to complete a job should be obtained.
- Materials are to be recycled when possible.
- Staff and students are to be familiar with manufacturer directions for proper use of materials and associated Safety Data Sheets (SDSs).
- Staff and students are to be familiar with proper use of equipment.
- Drip pans are to be used for maintenance operations involving fluids and under leaking vehicles and equipment waiting repair.
- Sediment and particulate matter from paved areas and from around catch basins should be regularly removed.
- All fuel and chemical spills should be cleaned up.
- Containers of chemicals and hazardous materials are to be labeled
- Caution signage near hazardous material storage areas should be installed.
- Loading and unloading areas are to be regularly swept.
- Clean and dry floors are to be maintained.

- Metal containers containing liquids are to be stored on pallets to avoid corrosion and allow easier mobility.
- Garbage and waste material are to be disposed regularly.
- Well-organized work areas are to be maintained.

The following checklist can be used to establish good housekeeping procedures:

- Is there evidence of ongoing drips or leaks from equipment or machinery at the CRLS Garage?
- Is the CRLS Garage orderly and neat? Is there adequate space in work areas?
- Is solid waste removed regularly?
- Are walkways and passageways easily accessible, safe, and free of protruding objects, materials or equipment?
- Is there evidence of dust on the ground from operations?
- Are cleanup procedures used for spilled solids?
- Is good housekeeping included in the employee training program?
- Are good housekeeping procedures and reminders posted in appropriate locations around the CRLS Garage?
- Are there regular housekeeping inspections?

4.3.2 Preventative Maintenance

Preventative Maintenance can minimize the occurrence of stormwater pollution by addressing issues before they become problems. Vehicles shall be regularly inspected to prevent leaks of fuel, oil, and other liquids.

The following is a list of preventative maintenance procedures that shall be practiced at the CRLS Garage:

- All staff members are to be aware of spill prevention and response procedures.
- All staff members are to receive formal spill prevention and response procedure training.
- All equipment fueling procedures are to be completed by qualified personnel trained in spill response procedures.
- Vehicle storage areas are to be inspected frequently for evidence of leaking oil.

- Material storage tanks and containers are to be regularly inspected for leaks and corrosion.
- All material deliveries are to be monitored by CRLS Garage employees.
- All waste oil is to be fully contained and the containers are to be inspected regularly.

Regularly scheduled preventive maintenance and operation practices is a Best Management Practice (BMP) that ensures that processes and equipment are working correctly. During maintenance checks, if an existing or potential problem is found which could result in an impact to stormwater, it should be corrected in a timely manner or the equipment should be taken out of service. Although the CRLS staff are required to implement the preventative maintenance measures, the CRLS students should be trained and properly taught the maintenance measures too. Beyond the fact that there are many more students than teachers working in the CRLS garage, this provides an opportunity to teach the students the proper skills now for use in the future.

5 SPILL RESPONSE

5.1 LOCATION OF LEAK AND SPILL CLEANUP MATERIALS

Leak and spill cleanup materials are stored at the CRLS Garage in various locations in order to facilitate rapid response. Locations and types of leak and spill cleanup materials are identified in the following table. The supply of spill cleanup materials at the CRLS Garage should be maintained.

Table 3: Location of Leak and Spill Cleanup Materials

Area of the Site	Location	Materials Available
CRLS Garage	Vehicle Maintenance Work Area (near first aid and fire extinguisher)	Spill Kit including drum, protective gear (gloves, goggles), and absorbent materials (socks, pillows), and disposal materials (bags and ties). Additional absorbent socks are located throughout Garage.

5.2 SPILL RESPONSE ACTIONS

It is the responsibility of any employee who discovers a spill to take the following action: assess the hazards of the spill, secure the area, and immediately call the Stormwater Pollution Prevention Alternate Team Leader. Students who discover spills are required to immediately inform their teacher. The information provided by the employee at the time of the spill will allow the Alternate Team Leader to contact the appropriate response personnel. Employees should be prepared to provide the following information:

- Material spilled
- Estimated amount
- Location of spill
- Cause of spill
- Date and time of spill
- Injuries
- Proximity to drains
- Action currently taken or underway

The Alternate Team Leader has the responsibility for coordinating all emergency response measures and has the authority to commit the resources necessary to carry out response actions.

- During an emergency, the Alternate shall (as necessary):
  - activate alarm systems,
  - notify emergency responders as needed (fire, spill responders, ambulance),
  - notify outside agencies (EPA, MassDEP, National Response Center), as needed and detailed in **Appendix A: BMP 7 "Spill Prevention and Response",** and **Table 4.**
  - notify, communicate, and coordinate with the Team Leader and DPW, as needed,
  - identify the source of the spill and cause,
  - assess the health or environmental hazards, and
  - take all reasonable measures to stabilize the situation.

Table 4: Spill Response and Cleanup Contact List

Title and Name	Contact Info
Facility Supervisor: Vedad Kondic	(617) 201-6054
Fire Department	(617) 349-4900
MassDEP 24-Hour Spill Reporting	(888) 304-1133
Mass DEP Northeast Regional Office	(978) 694-3200
Hazardous Waste Compliance Assistance Line	(617) 292-5898
Household Hazardous Products Hotline	(800) 343-3420
Massachusetts Department of Fire Services	(978) 567-3100 or (413) 587-3181
Licensed Site Professionals Association (Wakefield, MA)	(781) 876-8915
Licensed Site Professionals Board	(617) 556-1091

- After an emergency, the Alternate Team Leader shall (as necessary):
  - arrange for the clean-up, storage and disposal of residues and contaminated soil,
  - arrange for the decontamination and maintenance of emergency equipment,

- submit required internal and external reports, as detailed in **Appendix A – BMP 7 "Spill Prevention and Response",** and
- notify the Team Leader

The Stormwater Pollution Prevention Team response actions include the following.

1. Assess the area for any immediate dangers to health or safety (i.e., a fire risk).
    - If any dangers are present and it is not safe to remove the risk, warn employees in the vicinity, move away from the area, and call 911.
    - If safe to do so, eliminate all immediate dangers (such as possible ignition sources if material spilled is unknown or flammable/combustible).
2. Notify the Team Leader and then continue the spill response. The Team Leader should assess additional notification requirements provided in **Appendix A – BMP 7 "Spill Prevention and Response".**
3. Control the spill to minimize impacts.
    - Try to stop or plug the leak. Retrieve the spill kit from the closest location. Use protective gear (gloves, goggles, protective clothing, etc.).
    - Assess the size of the leak and any immediate threat of the spill reaching the floor/storm drains or permeable surfaces in the area.
    - If there is an immediate threat and there are no safety concerns, then attempt to block the spill from coming in contact with the floor/storm drain by using spill kit materials, such as absorbent pads socks, and/or pillows.
4. Clean up the impacted area.
    - Once the spill has been contained and any immediate threat to storm drains has been minimized, CRLS Garage personnel may continue to clean up if they are able to do so without risking injury by using materials in the skill kit/station. Otherwise, the Alternate Team Leader or designee will contact the spill cleanup contractor and dispatch them to clean up the spill.
    - Spill cleanup for large spills are to be handled by a spill cleanup contractor as coordinated by the Alternate Team Leader.

5.2.1 Discharge Reporting

Spills shall be documented using the **Spill Documentation Form** found in **Appendix B**. Note that based on the quantity of spilled material, type of chemical, or impact, notification to agencies provided in **Appendix A – BMP 7 "Spill Prevention and Response"** may be required immediately after having knowledge of the spills. The following information must be provided in the discharge report:

- The date and time of the discharge;
- The type of material discharged;
- Estimates of the total quantity of substance discharged;
- The source of the discharge;
- A description of all affected areas (i.e., concrete, etc.);
- The cause of the discharge;
- Any damages or injuries caused by the discharge;
- Actions being used to stop, remove, and mitigate the effects of the discharge;

5.3 PREVIOUS SPILL INCIDENTS

According to the Commonwealth of Massachusetts Energy and Environmental Affairs Data Portal, no significant spills or leaks have occurred at the CRLS Garage in the previous three years. The Spill Documentation Form, which is to be completed and maintained in the facility records in the event of a future significant spill, is included in **Appendix B**.

6 SWPPP IMPLEMENTATION

6.1 EMPLOYEE TRAINING

Regular employee training is required for employees who work in areas where materials or activities are exposed to stormwater, or who are responsible for implementing activities identified in the SWPPP, including all members of the Stormwater Pollution Prevention Team. Stormwater Pollution Prevention Team members are to meet, as needed at the discretion of Team Leader, to discuss the effectiveness of and improvements to the SWPPP.

The Stormwater Pollution Prevention Team Leader is responsible for the stormwater management training. This position coordinates training related to stormwater management on an as needed basis at the discretion of the Team Leader to review specific responsibilities for implementing this SWPPP, what and how to accomplish those responsibilities, including BMP implementation. Training shall address and discuss each of the sections in this SWPPP that are relevant to individual employees' responsibilities. Training will consist of a description of employee and management responsibilities in minimizing the risk of stormwater pollution.

Additionally, general awareness training is provided regularly (preferably annually) to all employees whose actives may impact stormwater discharges. The purpose of this training is to educate workers on activities that can impact stormwater discharges and to help implement BMPs.

The topics below will be covered at employee training sessions.

1. Spill prevention and response.
2. Good housekeeping.
3. Materials management practices.

Stormwater Pollution Prevention Team members shall meet at least once a year to discuss the effectiveness of and improvements to the SWPPP. **Appendix C** contains copies of training documentation from these training activities including attendance sheets, instructor name and affiliation, date, time, and location of the training.

Important training topics include:

1. The procedures to be followed for inspections and monitoring.
2. The procedures to be followed upon recognition of a hazard or potential hazard.
3. Potential spill sources and locations, and drainage routes at the Site.
4. How to report spills and the appropriate individuals to contact.
5. How to implement the spill response procedures quickly and safely.
6. The location and contents of spill response equipment and spill kits.
7. Information that must be provided to on-site contractors, temporary personnel, and fuel/oil delivery/pick-up personnel for minimizing and preventing spills from occurring.
8. Past spill incidents and resulting response activities for lessons learned and improvements.

6.2 SITE INSPECTION REQUIREMENTS

Visual inspections of the CRLS Garage must be conducted quarterly during normal operating hours. At least one quarterly inspection shall occur during a period when it is raining. The designated Stormwater Pollution Prevention Team members will inspect the CRLS Garage for potential stormwater or spill problems and record the results of the inspection using the inspection form and Site Plan (**Appendix D**). Any noted deficiencies shall be reported to the Alternate Team Leader and the Team Leader for prompt corrective action. Copies of completed inspections shall be included in **Appendix E**.

The site inspection report, located in **Appendix D**, includes:

- The inspection date and time
- The name of the inspector
- Weather information and a description of any discharge occurring at the time of the inspection
- Identification of any previously unidentified discharges from the CRLS Garage
- Any site activities and control measures that need corrective action
- Any SWPPP changes required as a result of the inspection
- Signed certification statement.
- Site Plan

Corrective actions may be required based on evidence of past stormwater pollution or the high potential for future stormwater pollution to occur. Information about any issues and the respective corrective actions must be included in **Appendix E**. The permittee must repair or replace control measures in need of repair or replacement before the next anticipated storm event if possible, or as soon as practicable. In the interim, the permittee shall have back-up measures in place.

Completed inspection forms must be kept with the SWPPP (**Appendix E**) and must state the problem, the solution, and when the solution was implemented. Copies of the completed inspection forms shall be provided to the Team Leader.

6.3 RECORDKEEPING AND REPORTING

The permittee must keep a written record (hardcopy or electronic) of all activities required by the SWPPP including but not limited to maintenance, inspections, and training for a period of at least five (5) years. This SWPPP shall be kept at the CRLS Garage for use on-site and shall be updated if any of the conditions in Section 6.4 occur. An electronic copy of the SWPPP and all associated records, reports, and documents shall also be maintained by the Team Leader. The SWPPP and records shall be made available to state or federal inspectors and the general public upon request.

The 2016 Massachusetts MS4 Permit requires that each permittee report on the findings from site inspections in the annual report to EPA and MassDEP. **The results of the quarterly inspections will be described in the Annual Report, including any corrective actions taken**, to demonstrate that operation of the CRLS Garage complies with the 2016 Massachusetts MS4 Permit.

6.4 TRIGGERS FOR SWPPP REVISIONS

The City of Cambridge shall **annually review** and update the SWPPP if necessary. This will be conducted to ensure best management plans and other practices remain in place and to verify that all elements of the SWPPP are accurate. Review documentation should be retained as part

of this SWPPP as described in Section 6.3 of this document. Each element of this SWPPP should be evaluated and amended appropriately. The annual update should consist of the following:

- An update of the list of significant spill or notation that no spills have occurred.
- **A** documented re-evaluation of the effectiveness of the BMPs.
- An update of figures if changes have occurred

In addition to modifications to the SWPPP resulting from annual comprehensive evaluations of compliance, the SWPPP will be amended whenever there is a change in design, construction, operations or maintenance that materially affects the potential for a discharge of oil or hazardous materials that could be harmful to human health or the environment. Changes that may trigger revision include:

- An increase in the quantity of any potential pollutant stored at the CRLS Garage;
- The addition of any new potential pollutant (not already addressed in this SWPPP) to the list of materials stored or used at the CRLS Garage;
- Physical changes to the CRLS Garage that expose any potential pollutant (not presently exposed) to stormwater;
- Presence of a new authorized non-stormwater discharge at the CRLS Garage;
- Addition of an activity that introduces a new potential pollutant;
- A change in emergency coordinators;
- The SWPPP fails in an emergency;
- The list of emergency equipment changes;
- Applicable regulators are revised; or
- As required by the State.

Changes in activity may include an expansion of operations, or changes in any significant material handling or storage practices which could impact stormwater. The amended SWPPP will describe the new activities that could contribute to increased pollution, as well as control measures that have been implemented to minimize the potential for pollution.

As stated in Section 6.3, any amendments to the SWPPP will be recorded in the Table located in the Record of Revisions section at the front of this document.

7 REFERENCES

General Permits for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems in Massachusetts. United States Environmental Protection Agency issued April 4, 2016.

List of Massachusetts Hazardous Waste Generators. State of Massachusetts, April 16, 2019.

Massachusetts Year 2016 Integrated List of Waters, Final Listing of the Condition of Massachusetts' Waters Pursuant to Sections 305(b), 314 and 303(d) of the Clean Water Act. Massachusetts Department of Environmental Protection, January 2020.

Stormwater Pollution Prevention Plan Appendix A Standard Operating Procedures, Central Massachusetts Regional Stormwater Coalition, Fall 2018.

Stormwater Pollution Prevention Plan Template. Central Massachusetts Regional Stormwater Coalition, Fall, 2018.

APPENDIX A: GOOD HOUSEKEEPING MANUAL

City of Cambridge, MA

Department of Public Works

Good Housekeeping Manual - Best Management Practices to Prevent Stormwater Pollution

Excerpt for SWPPPs

Updated: June 2020

City of Cambridge, MA
Department of Public Works
of Good Housekeeping Manual–
Best Management Practices to Prevent Stormwater Pollution
Excerpt for SWPPPs

Table of Contents

BMP 1 - ROAD SAND/SALT APPLICATION AND STORAGE

DESCRIPTION

DPW's policy is to strictly use salt on street rights-of-way and to pre-treat roadways before and expected snow/ice storm with a brine solution made from "solar salt". A few facilities do use sand/salt mixtures. Proper road salt and facility sand/salt applications storage is necessary to prevent contamination to surface and ground water supplies. Salts are very soluble—once in contact with water there is no way to remove salt. The major reasons for keeping salt covered and controlling use are that salt:

- Kills vegetation
- Corrodes infrastructure
- Blocks storm drains and swales
- Increases sedimentation to streams and rivers
- Small quantities (5% road salt) contain phosphorus, nitrogen, copper, and cyanide

POLLUTION PREVENTION APPROACH

Implement applicable suggested Best Management Practices to reduce the influx of pollutants to the stormwater system.

SUGGESTED BEST MANAGEMENT PRACTICES

Proper Storage

Storage facilities for salt and sand/salt mixtures should have the following key elements:

- Covered structure on impervious surface.
- Drainage should be diverted away from storage facility.
- Sand/salt handling should be done within storage facility.
- Should not be located in a water supply watershed or within 100-year floodplain.

Proper Disposal

Disposal of sand/salt mixtures should not be done in the following areas:

- Wetlands
- Any surface waters
- Well locations and public drinking supplies

Proper Removal

- Street cleaning of all City roadways once per month between April and December.
- Catch basin cleaning completed, as necessary.

Proper Use

- Establish a low salt area near any water bodies or residential areas.
- Regulate the amount of road salt applied to prevent over-salting of motorways and increasing runoff concentrations.
- Vary the amount of salt applied to reflect site-specific characteristics, such as road width and design, traffic concentration, and proximity to surface waters.

TARGETED FACILITIES AND OPERATIONS

- All City-Owned Facilities
- Street Rights-of-Way

TARGETED CONSTITUENTS

- Sediment
- Nutrients
- Trash
- Metals
- Oil & Grease
- Organics
- Low Dissolved Oxygen

REFERENCE

- "Cambridge Public Works Snow Operations"

- Provide calibration devices for spreaders in trucks to aid maintenance workers in the proper application of road salts.
- Establish air temperature and snow depth conditions favorable for successful use of salt.
- Use alternative materials, such as sand or gravel, in especially sensitive areas.
- Use alternative products such as Magic Salt.

INSPECTION PROCEDURES

- Inspect salt storage shed for leaks on a regular basis including Fall and Spring.
- Inspect salt application equipment including calibration equipment and spreaders.
- Inspect salt regularly for lumping or water contamination.
- Inspect surface areas for evidence of runoff – salt stains in ground near and around the salt storage shed, loading area, or downslope.
- Inspect for excessive amounts of salt on roads.

MAINTENANCE PROCEDURES

- Service trucks and calibrated spreaders annually to ensure accurate, efficient distribution of salt.
- Educate and train operators on hazards of over-salting to roads and environment at the beginning of the snow season as part of meetings with supervisors and drivers.
- Repair salt storage shed leaks.

BMP 2 - SNOW STOCKPILING/REMOVAL

DESCRIPTION

Proper snow management in terms of stockpiling and removal can prevent or minimize runoff and pollutant loading impacts. Snow piles can contain trash, nutrients, sediments, salt, sand, and vehicle pollutants (petroleum, antifreeze, and oil) that can directly be carried into surface waters during snowmelt.

POLLUTION PREVENTION APPROACH

Implement applicable suggested Best Management Practices to reduce the influx of pollutants to the stormwater drainage system.

SUGGESTED BEST MANAGEMENT PRACTICES

The City's Policy is to restrict stockpiling of snow. During extreme conditions when stockpiling is necessary the following practices should be applied:

- Do not stockpile snow near or within direct drainage to surface waters.
- Do not stockpile snow in wooded areas, around trees, or in vegetated buffer zones due to sediment and salt damage to vegetation.
- Stockpile snow in pervious areas where it can slowly infiltrate.
- During plowing activities on pervious surfaces, blading (plow lowers blade below ground surface level and plows the upper layers of soil in addition to overlying snow) should be avoided to prevent erosion.
- Do not dispose of snow into waters of the United States. Snow disposal activities, including selection of appropriate snow disposal sites, will adhere to the Massachusetts Department of Environmental Protection Snow Disposal Guidance, Guideline No. BWR G2015-01 (Effective Date: December 21, 2015), located at: http://www.mass.gov/eea/agencies/massdep/water/regulations/snow-disposal-guidance.html

INSPECTION PROCEDURES

- Check snow piles for debris that could be windblown.

MAINTENANCE PROCEDURES

- Contain sediments as snow melts and removed every Spring from snow storage areas. This includes sweeping roadways and parking lots or other impervious areas.
- During plowing activities, avoid blocking drainage structures including catch basins, swales, and channels.

TARGETED FACILITIES AND OPERATIONS

- City-Wide Operations
- Street Rights-of-Way

TARGETED CONSTITUENTS

- Sediment
- Nutrients
- Trash
- Oil & Grease

REFERENCE

- "Cambridge Public Works Snow Operations"

BMP 3 - MATERIALS MANAGEMENT

DESCRIPTION

Materials management entails the selection of the individual product, the correct use and storage of the product, and the proper disposal of associated waste(s). It is important to be responsible with common chemicals and solvents including paints, cleaners, and automotive products to reduce contamination to stormwater runoff.

POLLUTION PREVENTION APPROACH

Proper management reduces the likelihood of accidental spills or releases of hazardous materials into storm drains or during storm events. In addition, health and safety conditions at the facility will improve.

Implement applicable suggested Best Management Practices to reduce the influx of pollutants to the stormwater drainage system.

SUGGESTED BEST MANAGEMENT PRACTICES

Material Inventory

- Identify all hazardous and non-hazardous substances by reviewing purchase orders and conducting a walk-through of facility.
- Compile Material Safety Data Sheets (MSDS) for all chemicals. These should be readily accessible to all facility employees.
- Label all containers of significant materials that include cleaners, fuels, and other hazards.
- Identify handling, storage, and disposal requirements of all chemicals.
- Use environmentally friendly or non-hazardous substitutes when appropriate that include but not limited to $H_2Orange_2$, Orange Thunder, and Simple Green®.
- Keep hazardous materials and waste off the ground.
- All drums and containers should be in good condition and properly labeled.
- Loose materials including any gravel piles should be covered or placed in shelter.

Solid Waste

- Trash storage bins, dumpsters, and disposal areas should be clean and free of debris, especially those located near catch basins.
- Dumpsters maintained in good condition and securely closed at all times.
- Clean up equipment and materials.
- Dispose of within local, state, and federal laws. This includes Section 8.24 of the City Ordinance.
- Temporary trash storage should be inspected weekly before taken to the local privately owned transfer station.

TARGETED FACILITIES AND OPERATIONS

- All City-Owned Facilities
- All City-Owned Parks and Open Spaces
- All Fleet Vehicle and Equipment Operations

TARGETED CONSTITUENTS

- Sediment
- Nutrients
- Trash
- Metals
- Oil & Grease
- Organics
- Low Dissolved Oxygen

- Debris piled including sweepings, construction, and wood debris should be inspected weekly before removed off site.

INSPECTION PROCEDURES

- Physical on-site verification of sealed floor drains (or redirected to sanitary sewer).
- Regular inspection of material storage areas (inside and outside) to verify items are not exposed to precipitation and are covered or in enclosed areas.
- Regular inspection and cleaning of oil/water separators by qualified contractor or facility personnel.
- Inspect stormwater discharge locations and onsite stormwater drainage infrastructure (e.g., catch basins) regularly (for contaminants, soil staining, plugged discharge lines).

MAINTENANCE PROCEDURES

- Repair or replace any leaking/defective containers and replace labels, as necessary.
- Maintain caps and/or covers on containers.
- Maintain aisle space for inspection of products/wastes.
- Routinely clean work spaces.
- Properly collect/dispose of waste.
- Routinely maintain and inspect vehicles and equipment.
- Train employees routinely and when new products enter the facility on proper use, storage, disposal, and safety concerns. MSDS sheets should be reviewed and readily accessible in central facility location.
- Review any Spill Prevention, Control, and Countermeasure (SPCC) Plan. Plans in place for a specific facility for petroleum products.

BMP 4 - HAZARDOUS MATERIAL STORAGE

DESCRIPTION

It is important to properly store hazardous materials to prevent them from contaminating stormwater runoff. Hazardous materials include:

- Cleaning agents: solvents, drain cleaners, and bleach
- Vehicle maintenance fluids: motor oil, gasoline, antifreeze, degreasers, and radiator flush
- Water treatment chemicals
- Paints

Refer to Appendix A for list of typical hazardous materials at specific City Facilities.

POLLUTION PREVENTION APPROACH

Proper management reduces the likelihood of accidental spills or releases of hazardous materials during storm events. In addition, health and safety conditions at the facility will improve.

Implement applicable suggested Best Management Practices to reduce the influx of pollutants to the stormwater drainage system.

SUGGESTED BEST MANAGEMENT PRACTICES

Loading/Unloading

- All facilities should have proper procedures in place for loading and/or unloading hazardous materials received, especially areas located near catch basins.
- Do not conduct loading and unloading of exposed hazards during wet weather, whenever possible.
- If feasible, load and unload all materials and equipment in covered areas such as building overhangs at loading docks.
- Load/unload only at designated loading areas.
- Use drip pans underneath hose and pipe connections and other leak-prone spots during liquid transfer operations, and when making and breaking connections.

Storage

- When possible, store indoors.
- Storage of reactive, ignitable, or flammable liquids must comply with the Massachusetts Fire Prevention Regulations for the Storage of Flammable and Combustible Materials (527 CMR 14.03).
- Place containers in a designated area that is paved, free of cracks and gaps, and impervious in order to contain leaks and spills. The area should also be covered.
- Provide secondary containment for hazardous materials and waste placed outdoors.
- Keep containers away from high traffic areas.
- Cover all containers and drums or place under shelter, if stored outdoors.

TARGETED FACILITIES AND OPERATIONS

- All City-Owned Facilities
- All Fleet Vehicle and Equipment Operations

TARGETED CONSTITUENTS

- Sediment
- Nutrients
- Trash
- Metals
- Oil & Grease
- Organics
- Low Dissolved Oxygen

- MSDSs should be supplied for all stored materials at a specific facility, and in readily accessible location for all facility employees.
- Maintain a log inventory of materials stored at the facility.
- Chemicals should be kept in original labeled containers.
- Containers should not be overfilled.
- Store containers on pallets.
- Properly stack containers and drums.
- Storage areas should be enclosed.
- Minimize storage onsite.
- Keep storage areas clean and organized. Certain materials are collected by the DPW on Household Hazardous Waste Collections conducted several times each year.
- Contractors should be responsible for delivery, storage, and waste disposal practices.
- Containers should not be glass.
- Segregate reactive/incompatible materials (such as chlorine and ammonia).
- Place drip pans under container spouts.
- Install overfill protection on storage tanks/drums.
- Lock storage areas and provide warning signs.

INSPECTION PROCEDURES

- Check loading and unloading equipment regularly for leaks, including valves, pumps, flanges, and connections.
- Look for dust or fumes during loading or unloading operations.
- Inspect storage areas regularly for leaks or spills.
- Conduct routine inspections and check for external corrosion of material containers.
- Check for structural failure, spills and overfills due to operator error, failure of piping system.
- Check for leaks or spills during pumping of liquids or gases from truck or rail car to a storage facility or vice versa.
- Visually inspect new tank or container installations for loose fittings, poor welding, and improper or poorly fitted gaskets.
- 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.
- Replace containers that are leaking, corroded, or otherwise deteriorating with ones in good condition. If the liquid chemicals are corrosive, containers made of compatible materials must be used instead of metal drums.
- Label new or secondary containers with the product name and hazards.

MAINTENANCE PROCEDURES

- Conduct regular inspections and make repairs, as necessary. The frequency of repairs will depend on the age of the facility.
- Check loading and unloading equipment regularly for leaks.
- Sweep area regularly with dry broom.

- Conduct major clean-out of loading and unloading area and any sumps prior to October 1 of each year.
- Repair or replace any leaking/defective containers and replace labels, as necessary.
- Maintain caps and/or covers on containers.
- Maintain aisle space for inspection of products/wastes.
- Train employees on proper procedures and when new hazardous materials are used.

BMP 5 - VEHICLE FUELING, MAINTENANCE AND STORAGE

DESCRIPTION

Vehicle repair and service (e.g. parts cleaning and fueling), replacement of fluids (e.g. oil change), and outdoor equipment storage and parking (dripping engines) can impact water quality if stormwater runoff from areas with these activities occurring on them becomes polluted by a variety of contaminants. Spills and leaks that occur during vehicle and equipment fueling can contribute hydrocarbons, oil, and grease, as well as heavy metals to stormwater runoff. It only takes 1 gallon of oil to contaminate 1 million gallons of drinking water.

POLLUTION PREVENTION APPROACH

It is important to properly store and discard vehicle fluids including oil, transmission fluid, antifreeze, and lubricants to prevent surface and groundwater contamination from spills or improper disposal.

Implement applicable suggested Best Management Practices to reduce the influx of pollutants to the stormwater drainage system.

SUGGESTED BEST MANAGEMENT PRACTICES

General Practices

- Store fluids in labeled, plastic or metal container with a lid away from drains and catch basins.
- Place flammables in a fire safe cabinet.
- Place drip pans under leaking vehicles, valves, spigots, and pumps.
- Routinely check for leaking vehicles.
- Do not do any vehicle maintenance near storm drains.
- Vehicle maintenance should be done in covered facility.
- Install inlet catch basin equipped with a small sedimentation basin or grit chamber to remove large particles from stormwater in highly impervious areas.

Fueling

- Ensure that all fueling activities are not conducted near storm drains and dry wells or that procedures are in place to control any spills.
- Fuel storage tanks should be placed on impervious surfaces with no cracks or gaps; secondary containment is recommended.
- Provide barriers such as posts, guard rails, or bollards where tanks are exposed, to prevent collision damage with vehicles.
- Post signs at the fuel dispenser or fuel island warning vehicle owners/operators against "topping off" of vehicle fuel tanks.
- Label drains within the facility boundary, by paint/stencil (or equivalent), to indicate whether they flow to an oil/water separator, directly to the sewer, to a storm drain or into a drywall.

Vehicle Maintenance

TARGETED FACILITIES AND OPERATIONS

- DPW Maintenance Facility and Garage
- Police Maintenance Facility and Garage
- Cemetery Facilities
- Water Department Facility and Garage
- Cambridge Golf Course Garage
- Cambridge Rindge and Latin School Facilities and Auto shop
- Fire Departments, Headquarters, and Maintenance Garage
- Danehy Park Maintenance Garage
- All Fleet Vehicle and Equipment Operations

TARGETED CONSTITUENTS

- Sediment
- Nutrients
- Trash
- Metals
- Oil & Grease
- Hydrocarbons

- Provide a designated area for vehicle maintenance on an impervious surface.
- Keep equipment clean; do not allow excessive build-up of oil and grease.
- If possible, perform all vehicle fluid removal or changing inside or under cover:
  - Keep a drip pan under the vehicle while you unclip hoses, unscrew filters, or remove other parts.
  - Promptly transfer used fluids to the proper waste or recycling drums. Do not leave drip pans or other open containers lying around.
  - Keep drip pans or containers under vehicles or equipment that might drip during repairs.
  - Do not change motor oil or perform equipment maintenance in non-appropriate areas.
- If temporary work is being conducted outside: Use a tarp, ground cloth, or drip pans beneath the vehicle or equipment to capture all spills and drips.
- If equipment (e.g., radiators, axles) is to be stored outdoors, oil and other fluids should be drained first. This is also applicable to vehicles being stored and not used on a regular basis.

Disposal

- Recycle or properly dispose of fluids.
- Dump full pans into 55-gallon drums.
- Dispose of debris including oil filters, oil cans, rags, and clean-up supplies.
- Do not dump vehicle fluids down storm drains.
- Interior floor drains should discharge to holding tanks or be sealed.

Used Oil

- Recycle used oil.
- Do not mix wastes with used oil.

INSPECTION PROCEDURES

- Identify locations of floor drains and catch basins and know where they discharge to. Floor drains should be connected to the sanitary sewer system and catch basins should be connected to the stormwater drainage system.
- Regularly inspect vehicles and equipment for leaks and repair immediately.
- Inspect fuel storage 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 fueling areas, catch basin inserts, containment areas, and drip pans on a regular schedule.

MAINTENANCE PROCEDURES

- Sweep the maintenance area on a regular basis, if it is paved, to collect loose particles. Wipe up spills with rags and other absorbent material immediately. Do not hose down the area to a storm drain.

- Clean oil/water separators, sumps, and on-site treatment/recycling units at appropriate intervals.
- Keep ample supplies of spill cleanup materials onsite. Cleanup spills immediately.
- Properly train employees on fueling and handling oil and waste oil.

BMP 6 - VEHICLE WASHING

DESCRIPTION

Wash water from vehicle and equipment cleaning activities performed outdoors or in areas where wash water flows onto the ground can contribute toxic hydrocarbons and other organic compounds, oils and greases, nutrients, phosphates, heavy metals, and suspended solids to stormwater runoff.

POLLUTION PREVENTION APPROACH

If possible, take vehicles to the City's DPW Garage vehicle wash bay or a commercial car wash facility. Implement applicable suggested Best Management Practices to reduce the influx of pollutants to the stormwater drainage system.

SUGGESTED BEST MANAGEMENT PRACTICES

General

- Use biodegradable, phosphate-free detergents for washing vehicles as appropriate. Products include Simple Green® biodegradable car wash cleaner.
- Mark the area clearly as a wash area.
- Post signs stating that only washing is allowed in wash area and that discharges to the storm drain are prohibited. Facility employees should know where catch basins are.
- Provide a trash container in wash area.
- Those that use the facility to wash vehicles (e.g., students) should be informed of proper washing protocols.

Vehicle and Equipment Cleaning

- To collect wash water as well as prevent stormwater run-on install sumps or drain lines, construct a berm around the designated area, or grade the area.
- Consider washing vehicles and equipment inside the building if washing/cleaning must occur on-site.
- If washing must occur on-site and outdoors:
  - Use designated paved wash areas. Designated wash areas must be well marked with signs indicating where and how washing must be done. This area must be covered or bermed to collect the wash water and graded to direct the wash water to a treatment or disposal facility.
  - Cover the wash area when not in use to prevent contact with rain water.
- Use hoses with nozzles that automatically turn off when left unattended. Use high-pressure, low-volume sprays.
- Perform pressure cleaning and steam cleaning off-site to avoid generating runoff with high pollutant concentrations. If done on-site, no pressure cleaning and steam cleaning should be done in areas designated as protection areas for public water supply.

TARGETED FACILITIES AND OPERATIONS

- DPW Garage
- Cemetery Facilities
- Water Department
- Cambridge Golf Course Garage
- Amigos and King Schools
- Cambridge Rindge and Latin School
- Tobin School
- Fire Departments, Headquarters, and Garage
- Police Maintenance Garage
- Danehy Park Maintenance Garage
- All Fleet Vehicle and Equipment Operations

TARGETED CONSTITUENTS

- Sediment
- Nutrients
- Trash
- Metals
- Oil & Grease
- Organics

Disposal

- Filter and recycle wash water if possible.
- If discharging to an oil/water separator, do not use detergents that disperse oil in wash water and make oil/water separators ineffective with oil passing to the sanitary sewer system. It is best to use high pressure water with no cleaning agent. If using a cleaner, it must be a non-emulsifying product such as QOR-110 ("Quick Oil Release").

INSPECTION PROCEDURES

- Inspect floor drain systems regularly – use only those that discharge to a sanitary sewer.
- Identify the need for cleaning of catch basins, oil/water separators.

MAINTENANCE PROCEDURES

- Maintain a map of on-site storm drain locations to avoid discharges to the storm drainage system.
- Take precautions against excess use of and spillage of detergents.
- Clean vehicles only where wastes can be captured for proper disposal.

BMP 7 - SPILL PREVENTION AND RESPONSE

DESCRIPTION

It is important to have a plan in place in the event a spill should occur so contaminants do not mix with stormwater runoff. A spill prevention and response plan can be effective at reducing the risk of contamination to surface and groundwater contamination—but only with proper personnel training, the availability of cleanup supplies, and when management ensures procedures are followed.

POLLUTION PREVENTION APPROACH

- Create a well thought out and implemented spill prevention and response plan.
- Post a response checklist in any hazardous waste storage area with contact information (including emergency phone numbers), and spill containment procedures.
- Train personnel.
- Regularly update plan, checklists, and contact information.
- Regularly inspect spill potential areas.
- Facilities with aboveground storage tanks (ASTs) and underground storage tanks (USTs) greater than 1,320 gallons and 42,000 gallons must have SPCC Plans in place.

SPILL PREVENTION AND RESPONSE PLAN

An effective Spill Prevention and Response Plan may include one or more of the following:

- Description of the facilities, the address, activities, and materials involved.
- Identification of key spill response personnel and hospital contacts.
- Identification of the potential spill areas or operations prone to spills/leaks.
- Identification of which areas should be or are bermed to contain spills/leaks.
- Facility map identifying the key locations of areas, activities, materials, structural BMPs, etc.
- Material handling procedures and safety measures for each kind of waste.
- Spill response procedures including:
  - Assessment of the site and potential impacts
  - Containment of the material
  - Notification of the proper personnel and evacuation procedures
  - Clean up of the site
  - Disposal of the waste material
  - Proper record keeping procedures
- Plan to protect all storm drains in the event of a spill.
- Descriptions of spill response equipment, including safety and cleanup equipment.

TARGETED FACILITIES AND OPERATIONS

- All City Owned Buildings
- Street and Public Rights-of-Way

TARGETED CONSTITUENTS

- Nutrients
- Metals
- Oil & Grease
- Hydrocarbons
- Organics

REFERENCE

- DPW's SPCC Plan

SUGGESTED BEST MANAGEMENT PRACTICES

Spill/Leak Prevention

- If possible, move material handling indoors, under cover, or away from storm drains or sensitive water bodies.
- Properly label all containers so that the contents are easily identifiable.
- Berm storage areas so that if a spill or leak occurs, the material is contained.
- Cover outside storage areas either with a permanent structure or with a seasonal one such as a tarp so that rain will not come into contact with the materials.
- Check containers (and any containment sumps) often for leaks and spills. Replace containers that are leaking, corroded, or otherwise deteriorating with containers in good condition. Collect all spilled liquids and properly dispose of them.
- Store contain, and transfer liquid materials in such a manner that if the container is ruptured or the contents spilled, they will not discharge, flow or be washed into the storm drainage system, surface waters, or groundwater.
- Place drip pans or absorbent materials beneath all mounted taps and at all potential drip and spill locations during the filling and unloading of containers. Any collected liquids or soiled absorbent materials should be reused/recycled or properly disposed of.
- For City programs that involve material transport, only transport the minimum amount of material needed for the daily activities and transfer materials between containers at a municipal yard where leaks and spills are easier to control.
- If paved, sweep and clean storage areas monthly, do not use water to hose down the area unless all of the water will be collected and disposed of properly (e.g., in an oil/water separator).
- Install a spill control device (such as a tee section) in any catch basins that collect runoff from any storage areas if the materials stored are oil, gas, or other materials that separate from and float on water. This will allow for easier cleanup if a spill occurs.
- If necessary, protect catch basins while conducting field activities so that if a spill occurs, the material will be contained.
- Keep ample supplies of spill cleanup materials including Speedi Dry and absorbent boom pads onsite.

Spill Clean Up

- Small non-hazardous spills:
  - Use a rag, damp cloth or absorbent materials for clean-up of liquids.
  - Use brooms or shovels for the general clean-up of dry materials
  - If water is used, it must be collected and properly disposed of. The wash water cannot be allowed to enter the storm drain.
  - Dispose of any waste materials properly.
  - Clean or dispose of any equipment used to clean up the spill.
- Large non-hazardous spills
  - Use absorbent materials for general clean-up of liquids.

  - Use brooms, shovels, or street sweepers for the general clean-up of dry materials.
  - If water is used, it must be collected and properly disposed of. The wash water cannot be allowed to enter the storm drain.
  - Dispose of any waste materials properly.
  - Clean or dispose of any equipment used to clean up the spill properly.
- For hazardous or very large spills, the Fire Department and/or a private cleanup contractor may need to be contacted to assess the situation and conduct the cleanup and disposal of the materials.
- Chemical cleanups of material can be achieved with the use of absorbents, gels, and foams.
- Remove the adsorbent materials promptly and dispose of according to regulations.
- If the spilled material is hazardous, then the used cleanup materials, including rags, are also hazardous and must be sent to a certified laundry facility or disposed of as hazardous waste.

Reporting

- Report any spills immediately to the identified key municipal spill response personnel.
- Report spills in accordance with applicable reporting laws. Spills that pose an immediate threat to human health or the environment must be reported immediately to the City's Health Department at 617-665-3824, DPW at 617-349-4800 and the Fire Department at 911.
- Large spills including those over 10 gallons should be reported to the DPW at 617-349-4800 and the Fire Department at 911.
- Federal regulations require that any oil spill into a water body or onto an adjoining shoreline be reported to the National Response Center (NRC) at 800-424-8802 (24 hour). An oil spill over 10 gallons and spills that reach a surface water, sewer, storm drain, ditch, or culvert leading thereto requires Massachusetts DEP notification at (888)-304-1133.
- After the spill has been contained and cleaned up, a detailed report about the incident should be generated and kept on file. The incident may also be used in briefing staff about proper procedures.

INSPECTION PROCEDURES

- Inspect secondary containment systems and oil/water separators periodically to identify any operational problems.
- Inspect containers for leaks, areas near storm receiver inlets and outlets, and floor drains for indications of spills.

MAINTENANCE PROCEDURES

- Pump out oil water separators as needed.
- Protect drains with oil absorbent materials.
- Clean out receivers on regular schedule.
- Remove spilled salt from salt loading areas, including the City's Salt Shed.

BMP 8 - LAWN AND GROUNDS MAINTENANCE

DESCRIPTION

Nutrient loads generated by suburban lawns as well as municipal properties can be significant, and recent research has shown that lawns produce more surface runoff than previously thought. Pesticide runoff can contribute pollutants that contaminate drinking water supplies and are toxic to both humans and aquatic organisms.

POLLUTION PREVENTION APPROACH

It is important to reduce pesticides, herbicides, fertilizers, and lawn debris from entering surface and ground water supplies by washing and cleaning up with as little water as possible, following good landscape management practices, preventing and cleaning up spills immediately, keeping debris from entering the storm drains, and maintaining the stormwater drainage system.

Implement applicable suggested Best Management Practices to reduce the influx of pollutants to the stormwater drainage system.

SUGGESTED BEST MANAGEMENT PRACTICES

Landscaping Activities

- Do not apply any chemicals (insecticide, herbicide, or fertilizer) directly to surface waters, unless the application is approved and permitted by the Massachusetts DEP.
- Use mulch or other erosion control measures on exposed soils.
- Check irrigation schedules so pesticides will not be washed away and to minimize non-stormwater discharge.
- Place temporarily stockpiled material away from watercourses and drain inlets, and berm or cover stockpiles to prevent material releases to the stormwater drainage system.
- Use hand or mechanical weeding where practical.
- Employ mowing techniques to maintain a healthy lawn and minimize chemical use—no more than 1" of lawn should be removed from each mowing (grasses kept at 2.5" to 3.0" high are more heat resistant than close-cropped grass).
- Keep mower blades sharp and leave clippings in place after mowing.
- Water plants in the early morning.

Fertilizer and Pesticide Management

- Follow manufacturers' recommendations and label directions.
- Do not apply insecticides within 100 feet of surface waters such as lakes, ponds, wetlands, and streams.
- Use less toxic pesticides that will do the job, whenever possible and use the minimum amount needed. Avoid use of copper-based pesticides if possible.
- Do not use pesticides/fertilizers if rain is expected.

TARGETED FACILITIES AND OPERATIONS

- All City-Owned Facilities with lawns and grounds
- Street and Public Rights-of-Way

TARGETED CONSTITUENTS

- Sediment
- Nutrients
- Trash
- Metals
- Bacteria
- Oil and Grease
- Organics
- Low Dissolved Oxygen

- Do not mix or prepare pesticides/fertilizers for application near storm drains.
- Perform a soil analyses prior to applying fertilizers to determine the appropriate nutrients required for soil conditions.
- Calibrate fertilizer distributors to avoid excessive application.
- Apply pesticides/fertilizers only when wind speeds are low.
- Work fertilizers into the soil rather than dumping or broadcasting them onto the surface.
- Irrigate slowly to prevent runoff and then only as much as is needed.
- Dispose of empty pesticide/fertilizer containers according to the instructions on the container label.
- Use up the pesticides. Rinse containers and use rinse water as product. Dispose of unused pesticide as hazardous waste.
- Implement storage requirements for pesticide products with guidance from the local fire department and the Massachusetts Department of Agricultural Resources.
- Provide secondary containment for pesticides.

Debris Removal

- Use yard waste as mulch and topsoil.
- Compost or mulch yard waste.
- Sweep up yard debris instead of hosing down.
- Clean pavement and sidewalk if fertilizer/pesticide is spilled on these surfaces before applying irrigation water.
- Do not leave yard waste in the street or sweep it into storm drains or streams.

INSPECTION PROCEDURES

- Inspect irrigation system periodically to ensure that the right amount of water is being applied and that excessive runoff is not occurring.
- Minimize excess watering, and repair leaks in the irrigation system as soon as they are observed.
- Inspect and remove accumulated debris from grounds.
- Routinely monitor lawns to identify problems during their early stages.
- Identify nutrient/water needs of plants.
- Inspect for problems by testing soils.

MAINTENANCE PROCEDURES

- Sweep paved areas regularly to collect loose particles.
- Wipe up spills with rags and other absorbent material immediately.
- Do not hose down the area to a storm drain.
- Keep mower blades sharp.

BMP 9 - STREET AND PARKING LOT SWEEPING

DESCRIPTION

Street and parking lot sweeping includes self-propelled equipment to remove sediment from paved surfaces that can enter storm drains or receiving waters. Sweeping is most effective for removing coarse particles, leaves, and trash. Regularly sweeping reduces catch basin cleaning. The City's Policy is to sweep all streets and parking lots a minimum of twice per year (Spring and Fall) and most streets monthly between April through December (weather permitting) and every square (including Central, Harvard, Porter, and Davis) daily.

POLLUTION PREVENTION APPROACH

Implement applicable suggested Best Management Practices to reduce the influx of pollutants to the stormwater drainage system.

SUGGESTED BEST MANAGEMENT PRACTICES

- Adhere to the City's cleaning schedule – every roadway swept once per month (April through December) and vacuum swept three times per year (Spring, Summer and Fall)
- City parking lots should be checked regularly by Facility personnel and swept when needed, but not less than twice per year (Spring and Fall)
- Any visible sediment should be swept up (including sand/salt mixtures and granular material).
- Control the number of points where vehicles leave the Facilities to allow sweeping to be focused on certain areas in parking lots.
- Sweep up the smallest particles feasible.
- Sweep in pattern to keep spilled material from being pushed into catch basins.
- Before sweeping, manually rake sand from any turf areas on surfaces to be swept.
- Use hand-held tools to assist with mechanical equipment.
- If possible, recycle Fall leaf sweepings by composting.
- The DPW should maintain a log or schedule of sweeping activities they conduct. Information should include date, locations, mileage and volume or mass of sweepings removed.
- Facilities should maintain a log or schedule for their facility parking lots. Information should include volume or mass of sweepings removed, heavily sedimented catch basins, and date of sweeping activities. By recording heavily sedimented areas, prioritizations can be made to sweep these areas or clean catch basins more frequently.

INSPECTION PROCEDURES

- Regularly inspect streets and City-owned parking lots for debris.

TARGETED FACILITIES AND OPERATIONS

- All City-Owned Facilities
- Street Rights-of-Way

TARGETED CONSTITUENTS

- Sediment
- Nutrients
- Trash
- Metals
- Oil & Grease
- Organics
- Low Dissolved Oxygen

MAINTENANCE PROCEDURES

- Adjust broom frequently to maximize efficiency of sweeping operations.
- After sweeping is finished, properly dispose of sweeper wastes.
- 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.
- Inspect sweepers to check that the contractor properly maintains and repairs them.
- Manage street sweepings in compliance with current Massachusetts Department of Environmental Protection policies: http://www.mass.gov/eea/docs/dep/recycle/laws/stsweep.pdf

BMP 10 - CATCH BASIN CLEANING

DESCRIPTION

It is important to remove sediments from catch basins that can have a high concentration of pollutants including metals and hydrocarbons. These sediments can clog downstream drainage systems and transport pollutants to nearby water bodies.

POLLUTION PREVENTION APPROACH

Implement applicable suggested Best Management Practices to reduce the influx of pollutants to the stormwater drainage system.

SUGGESTED BEST MANAGEMENT PRACTICES

- Prioritize inspection and maintenance for catch basins located near construction activities
- Ensure that no catch basin at any time will be more than 50 percent full
- Documents catch basins with sumps more than 50 percent full during two consecutive inspections/cleanings
- EPA recommends cleaning basins when solids reach one-third the depth from the basin bottom to the invert of the lowest pipe into or out of the basin.
- Target cleaning for early Spring or late Fall.
- Clean manually or with equipment (i.e., bucket loaders).
- Properly dispose of catch basin material or store until contractor picks up cleanings (Massachusetts DEP and EPA requires chemical analysis to determine if substance is hazardous waste).
- Repair damaged catch basins including outlet traps.
- Install hoods if catch basins do not have them.
- Inform employees that catch basins are part of the stormwater drainage system and not the sanitary sewer system.
- The DPW should maintain a log of cleaning activities. Information should include volume of sediment removed and areas with heavily filled basins.
- Facilities or the DPW should maintain a log of cleaning activities on their parking lots. Information should include volume of sediment removed, heavily filled catch basins, and dates cleaned.

INSPECTION PROCEDURES

- Inspect catch basins, grates, and ditches at least once per year (best times are before the start and before the end of the rainy season).
- Inspections should be incorporated during routine cleaning, as part of reconstruction contracts, and through requests made by residents or other City departments.
- If illicit discharges are observed or suspected, notify the Cambridge DPW at 617-349-4800.

MAINTENANCE PROCEDURES

TARGETED FACILITIES AND OPERATIONS

- All City-Owned Facilities
- Street Rights-of-Way
- Disposal of Removed Solids

TARGETED CONSTITUENTS

- Sediment
- Nutrients
- Trash
- Metals
- Oil & Grease
- Organics
- Low Dissolved Oxygen

- Clean catch basins based on the cleaning schedule or as needed. Catch basins should be checked for sediment levels in sump. Those in areas that accumulate a significant amount of sediment should be cleaned more frequently.
- During catch basin repairs, any hoods missing should be replaced.
- Manage catch basin cleanings (i.e. solid materials such as leaves, sand, twigs) in accordance with current Massachusetts Department of Environmental Protection policies: http://www.mass.gov/eea/agencies/massdep/recycle/regulations/management-of-catch-basin-cleanings.html

BMP 11 - STORMWATER, SANITARY AND WATER LINE MAINTENANCE

DESCRIPTION

Some operation and maintenance activities of public utilities and accidents can result in the discharge of pollutants that can pose a threat to both human health and the quality of receiving waters if they enter the storm drainage system. Sewage incident response and investigation may involve a coordinated effort between staff from a number of different departments/agencies. Storm drainage systems need to be cleaned regularly. Routine cleaning reduces the amount of pollutants, trash, and debris both in the storm drainage system and in receiving waters.

POLLUTION PREVENTION APPROACH

Inspect potential non-stormwater discharge flow paths and clear/cleanup any debris or pollutants found (i.e. remove trash, leaves, sediment, and wipe up liquids, including oil spills).

SUGGESTED BEST MANAGEMENT PRACTICES

Stormwater Drainage Maintenance

- Cleaning the storm drain by flushing is more successful for pipes smaller than 36 inches in diameter.
- A water source is necessary for cleaning. The wastewater must be collected and treated once flushed through the system.
- Depending on the condition of the wastewater, it may or may not be disposed to sanitary sewer systems.
- The efficiency of storm system flushing decreases when the length of sewer line being cleaned exceeds 700 feet.

Sanitary Sewer Maintenance

- Clean sewer lines on a regular basis to remove grease, grit, and other debris that may lead to sewer backups.
- Establish routine maintenance program. Cleaning should be conducted at an established minimum frequency and more frequently for problem areas such as restaurants that are identified.
- Cleaning activities may require removal of tree roots and other identified obstructions.
- During routine maintenance and inspection note the condition of sanitary sewer structures and identify areas that need repair or maintenance. Items to note may include the following:
  - Cracked/deteriorating pipes
  - Leaking joints/seals at manhole
  - Frequent line plugs
  - Line generally flows at or near capacity
  - Suspected infiltration or exfiltration
- Prioritize repairs based on the nature and severity of the problem. Immediate clearing of blockage or repair is required where an overflow is currently occurring or for urgent problems that may cause an

TARGETED FACILITIES AND OPERATIONS

- All City-Owned Facilities
- Street Rights-of-Way

TARGETED CONSTITUENTS

- Sediment
- Nutrients
- Trash
- Metals
- Oil & Grease
- Organics
- Low Dissolved Oxygen

imminent overflow (e.g. pump station failures, sewer line ruptures, sewer line blockages). These repairs may be temporary until scheduled or capital improvements can be completed.

- Review previous sewer maintenance records to help identify "hot spots" or areas with frequent maintenance problems and locations of potential system failure.
- Adhere to the permit requirements in the City's National Pollutant Discharge Elimination System permit for Combined Sewer Overflows (CSO), the Variance for CSO Discharges and implement the Nine Minimum Control Measures.

Spills and Overflows

- Identify, track and remedy sanitary sewer overflow discharges. Identify dry weather infiltration and inflow first. Wet weather overflow connections are very difficult to locate.
- The City's 9 permitted combined sewer overflows to the Charles River and the Alewife Brook should be checked monthly and monitored more frequently during wet weather conditions.
- Locate wet weather overflows and leaking sanitary sewers using conventional source identification techniques such as monitoring and field screening. Techniques used to identify other illicit connection sources can also be used for sewer system evaluation surveys.
- Implement community awareness programs for monitoring sanitary sewer wet weather overflows. A citizen's hotline for reporting observed overflow conditions should be established to supplement field screening efforts.
- Establish lead department/agency responsible for spill response and containment. Provide coordination within departments.
- When a spill, leak, and/or overflow occurs and when disinfecting a sewage contaminated area, take every effort to ensure that the sewage, disinfectant and/or sewage treated with the disinfectant is not discharged to the storm drainage system or receiving waters. Methods may include:
  - Blocking storm drain inlets and catch basins.
  - Containing and diverting sewage and disinfectant away from open channels and other storm drain fixtures (using sandbags, inflatable dams, etc.).
  - Removing the material with vacuum equipment.
- Record required information at the spill site.
- Perform field tests as necessary to determine the source of the spill.
- Develop notification procedures regarding spill reporting.

Septic Systems

- Document on a map the City's septic system.

Planned Water Line Maintenance

- Discharge to a sanitary sewer system with approval.
- Discharge to the storm drainage rain system using applicable pollution control measures. (Only available to clean water discharges such as water main/ water storage tank/water hydrant flushing).

- 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 of some storm drain protection options include:
  - Silt fence – appropriate where the inlet drains a relatively flat area.
  - Gravel and wire mesh sediment filter – Appropriate where concentrated flows are expected.
  - Wooden weir and fabric – use at curb inlets where a compact installation is desired.
- Prior to discharge, inspect discharge flow path and clear/cleanup any debris or pollutants found (i.e. remove trash, leaves, sediment, and wipe up liquids, including oil spills).
- General Design considerations for inlet protection devices include the following:
  - The device should be constructed such that cleaning and disposal of trapped sediment is made easy, while minimizing interference with discharge activities.
  - Devices should be constructed so that any standing water resulting from the discharge will not cause excessive inconvenience or flooding/damage to adjacent land or structures.
- The effectiveness of control devices must be monitored during the discharge period and any necessary repairs or modifications made.

Unplanned Water Line Maintenance

- Stop the discharge as quickly as possible.
- Minor discharges would include direction from the DPW. In most cases, catch basins are protected with filter fabric.
- Major discharges would require the MWRA or Massachusetts DEP to be contacted.
- 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.
- If repairs or corrective action will cause additional discharges of water, select the appropriate procedures for erosion control, chlorine residual, turbidity, and chemical additives. Prevent potential pollutants from entering the flow path.

INSPECTION PROCEDURES

- Inspect for root infiltration. Tree roots are a major cause of backups.
- Inspect for water inflow/infiltration. Rainwater entering the sewer pipe can contribute to sanitary sewer overflows.
- Inspect for solids. Typical solids that buildup in the pipe and cause backups are grease, dirt, bones, tampons, paper towels, diapers, broken dishware, garbage, concrete, and debris.
- 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.

MAINTENANCE PROCEDURES

- Repair structural defects in pipes and manholes immediately.
- Refurbish portions of the utility lines periodically.
- Repairs should adhere to the facility prioritization:
  - High Priority: public health risk, major structural problems, collapsed catch basins with road plates, and illicit connections.
  - Medium Priority: Main pipe lines with significant structural problems, non-functioning catch basins, and street pavements failures caused by minor pipe defects.
  - Low Priority: Installation of non-critical structures and service laterals.
- All maintenance activities should be documented through the City's current work order system.

BMP 12 - PET WASTE, WATERFOWL, AND LITTER MANAGEMENT

DESCRIPTION

Pet droppings have been found to be important contributors of pollution in estuaries and bays where there are high populations of dogs. It has been estimated that for a small bay watershed (up to 20 square miles), 2 to 3 days of droppings from a population of 100 dogs contribute enough bacteria, nitrogen, and phosphorus to temporarily close a bay to swimming and shell fishing. The Cambridge Municipal Code, Title 6 Animals, Chapter 6.04 (Section 6.04.060 Dogs – Removal of Waste Required) clearly states that individuals must pick up their pet's waste. Waterfowl waste not only raises bacteria concentrations to levels unsafe for water contact recreation, but it is also a source of nutrients that allow excessive growth of algae and rooted aquatic plants in receiving waters. Feeding of waterfowl by streams and ponds encourages waterfowl congregation in those areas.

POLLUTION PREVENTION APPROACH

Provide pet awareness and education programs with the following elements:

- Encouraging residents to clean up after their pets and to properly dispose of such wastes that may be deposited in their yards, streets, and parks.
- Posting signs in local parks describing the problem and urging cleanup and proper disposal of pet wastes.
- Discourage feeding of waterfowl at local parks, particularly where adjacent to waterways. Produce educational material and/or post signage as appropriate.

SUGGESTED BEST MANAGEMENT PRACTICES

- Put waste in the trash.
- Restrict dog access to areas of parks where swales, steep slopes and streams are.
- Provide vegetated buffers of prescribed widths between dog parks and waterways, swales, storm drain inlets, gulleys and steep slopes.
- Add pooper scooper stations with free sanitary "pick-up" bags and proper receptacles in all City-Owned parks, playgrounds, and reservations where dogs are allowed.
- Incorporate public outreach elements like signage and informational brochures into and around parks.

INSPECTION PROCEDURES

- Routinely inspect common dog walking areas for pet waste.

MAINTENANCE PROCEDURES

- Remove and properly dispose of pet waste.
- Enforce Cambridge Municipal Code: Section 6.04.060 Dogs – Removal of Waste Required.

TARGETED FACILITIES AND OPERATIONS

- All City-Owned Parks, Playgrounds, and Reservations
- Sidewalk and Street Rights-of-Way

TARGETED CONSTITUENTS

- Nutrients
- Organics
- Low Dissolved Oxygen

BMP 13 - SIDEWALK CLEANING AND REPAIR

DESCRIPTION

Pollutants on sidewalks and other pedestrian traffic areas and plazas are typically due to littering and vehicle use.

POLLUTION PREVENTION APPROACH

Implement applicable suggested Best Management Practices to reduce the influx of pollutants to the stormwater drainage system.

SUGGESTED BEST MANAGEMENT PRACTICES

Sidewalk Cleaning

- Post "No Littering" signs and enforce anti-litter laws.
- Provide litter receptacles in busy, high pedestrian traffic areas of the community, at recreational facilities, and at community events.
- Cover litter receptacles and clean out frequently to prevent leaking/spillage or overflow.
- Regularly broom (dry) sweep sidewalk, plaza, and parking lot areas to minimize cleaning with water.
- Dry cleanup first (sweep, collect, and dispose of debris and trash) when cleaning sidewalks or plazas, then wash with or without soap.
- Use biodegradable soaps and detergents to wash down sidewalks.
- Block the entrance to the storm drainage system by using filter fabric to block catch basins. Discharge wash water to landscaping or collect water and pump to a tank or discharge to sanitary sewer if allowed.
- Use deicing salts only when snow or ice is present (not as a preventive measure) and apply sparingly. Shoveling of snow is always preferred to dumping excessive amounts of deicing materials in an effort to avoid shoveling. If deicing salts are used, the residues and remaining granules should be swept up when the snow and ice has melted and reused or disposed of in your garbage. Un-shoveled or icy sidewalks can be reported to the DPW by calling (617) 349-4800, through the Snow Center website www.cambridgema.gov/snow or report through the Commonwealth Connect app at CambridgeMA.gov/311.

Sidewalk Repair

- Refer to "Standard Specification from Street Excavations and Construction (Section II, 2F).
- Schedule surface removal activities for dry weather if possible.
- Avoid creating excess dust when breaking asphalt or concrete.
- Take measures to protect nearby storm drain inlets prior to breaking up asphalt or concrete (e.g. filter fabric or sand bags around inlets).
- Clean afterwards by sweeping up as much material as possible.
- 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.

TARGETED FACILITIES AND OPERATIONS

- All City-Owned Facilities
- Sidewalk and Street Rights-of-Way

TARGETED CONSTITUENTS

- Sediment
- Nutrients
- Trash
- Metals
- Oil & Grease
- Organics

REFERENCE

- "Standard Specifications for Street Excavations and Construction", Section II, 2F)
- DPW's "Snow: Our Winter Challenge" brochure

- When making saw cuts in pavement, use as little water as possible. Cover each storm drain inlet completely with filter fabric during the sawing operation and contain the slurry by placing straw bales, sandbags, or gravel dams around the inlets. After the liquid drains or evaporates, shovel or vacuum the slurry residue from the pavement or gutter and remove from site.
- Always dry sweep first to clean up tracked dirt. Use a street sweeper or vacuum truck. Do not dump vacuumed liquid in storm drains. Once dry sweeping is complete, the area may be hosed down if needed. Wash water should be directed to the sanitary sewer as allowed by the DPW.

INSPECTION PROCEDURES

- Inspect sidewalks regularly for trash items and stains.

MAINTENANCE PROCEDURES

- Sweep sidewalks at least as necessary to collect loose dirt and debris rather than pushing it into the street or gutter or hosing it down. Collected materials must be disposed of as regular garbage.
- Conduct spot stain removal instead of washing entire sidewalk.

BMP 14 - GRAFFITI CLEANING

DESCRIPTION

Graffiti cleaning often results in the discharge of wastewater to the storm drainage system unless the equipment operator takes steps to collect and dispose of it legally. Discharge of pressure washing wastewater to the storm drainage system is prohibited because it contains pollutants from the cleaning compounds used and/or from the objects or surfaces being cleaned.

POLLUTION PREVENTION APPROACH

Implement applicable suggested Best Management Practices to reduce the influx of pollutants to the stormwater drainage system.

SUGGESTED BEST MANAGEMENT PRACTICES

- Avoid graffiti abatement activities during rain events.
- When graffiti is removed by painting over, ensure that the catch basin inlets are protected.
- Direct runoff from sand blasting and hot water pressure washing (with no cleaning agents) into a dirt or landscaped area after treating with an appropriate filtering device.
- Use hot water for pressure washing. If using a biodegradable soap, plug nearby storm drain inlets and vacuum/pump wash water to the sanitary sewer if a graffiti abatement method generates wash water containing a cleaning compound (such as high pressure washing with a cleaning compound).
- Ensure that a non-hazardous cleaning compound is used or dispose as hazardous waste, as appropriate.

INSPECTION PROCEDURES

- Regularly inspect facilities for graffiti.

MAINTENANCE PROCEDURES

- Remove graffiti as necessary, according to the suggested Best Management Practices.

TARGETED FACILITIES AND OPERATIONS

- All City-Owned Facilities

TARGETED CONSTITUENTS

- Sediment
- Nutrients
- Metals
- Oil & Grease
- Organics
- Low Dissolved Oxygen

BMP 15 - MOSQUITO CONTROL

DESCRIPTION

Standing water can facilitate the reproduction of mosquitos that spread diseases such as eastern equine encephalitis (EEE) and West Nile virus.

POLLUTION PREVENTION APPROACH

Implement applicable suggested Best Management Practices to reduce the influx of pollutants to the stormwater drainage system.

Identify ways to improve locations with standing water to reduce the need for additional larvicide applications

SUGGESTED BEST MANAGEMENT PRACTICES

- Adhere to manufacturer's application standard operating procedures
- Design new catch basins to limit the potential for standing water and mosquito reproduction.
- Minimize installation of BMPs that will collect stormwater for only brief periods then stagnate until the next event.
- Maintain and cleanout sediment traps and basins and all drainage structures to allow for positive water drainage

INSPECTION PROCEDURES

- Inspecting stormwater treatment structures for standing water and mosquito breeding locations.
- Identify additional maintenance needs to prevent water pooling and promote positive water drainage

MAINTENANCE PROCEDURES

- Eliminate unnecessary locations with standing water in stormwater treatment structures.
- Complete routine maintenance to ensure excess vegetation or sediment are not impeding water drainage.

TARGETED FACILITIES AND OPERATIONS

- All City-Owned Facilities

TARGETED CONSTITUENTS

- Sediment
- Stagnant water

BMP 16 - WASTE MANAGEMENT

DESCRIPTION

Improper storage and handling of solid wastes can allow toxic compounds, oils and greases, heavy metals, nutrients, suspended solids, and other pollutants to enter stormwater runoff.

POLLUTION PREVENTION APPROACH

The discharge of pollutants to stormwater from waste handling and disposal can be prevented and reduced by tracking waste generation, storage, and disposal; reducing waste generation and disposal through source reduction, re-use, and recycling; and preventing run-on and runoff.

Implement applicable suggested Best Management Practices to reduce the influx of pollutants to the stormwater drainage system.

SUGGESTED BEST MANAGEMENT PRACTICES

General

- Cover storage containers with leak proof lids or some other means. If waste is not in containers, cover all waste piles (plastic tarps are acceptable coverage) and prevent stormwater run-on and runoff with a berm. The waste containers or piles must be covered except when in use.
- Use drip pans or absorbent materials whenever grease containers are emptied by vacuum trucks or other means. Grease cannot be left on the ground. Collected grease must be properly disposed of as garbage.
- Sweep and clean the storage area regularly. If it is paved, do not hose down the area to a storm drain.
- Dispose of rinse and wash water from cleaning waste containers into a sanitary sewer if allowed by the local sewer authority. Do not discharge wash water to the street or storm drain.
- Transfer waste from damaged containers into safe containers.
- Take special care when loading or unloading wastes to minimize losses.

Controlling 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.

Waste Collection

- Keep waste collection areas clean before contractor picks up.
- Inspect solid waste containers for structural damage or leaks regularly. Repair or replace damaged containers, as necessary.
- Secure solid waste containers; containers must be closed tightly when not in use.
- Place waste containers under cover if possible.
- Do not fill waste containers with washout water or any other liquid.
- Ensure that only appropriate solid wastes are added to the solid waste container. Certain wastes such as hazardous wastes, appliances, fluorescent

TARGETED FACILITIES AND OPERATIONS

- All City-Owned Facilities

TARGETED CONSTITUENTS

- Sediment
- Nutrients
- Trash
- Metals
- Oil & Grease
- Organics
- Low Dissolved Oxygen

lamps, pesticides, etc. may not be disposed of in solid waste containers (see chemical/ hazardous waste collection section below).
- Do not mix wastes; this can cause chemical reactions, make recycling impossible, and complicate disposal.

Good Housekeeping

- Use the entire product before disposing of the container.
- Keep the waste management area clean at all times by sweeping and cleaning up spills immediately.
- Use dry methods when possible (e.g. sweeping, use of absorbents) when cleaning around restaurant/food handling dumpster areas. If water must be used after sweeping/using absorbents, collect water and discharge through grease interceptor to the sewer.
- Stencil storm drains on the facility's property with prohibitive message regarding waste disposal.

Chemical/Hazardous Wastes

- Select designated hazardous waste collection areas on-site.
- Store hazardous materials and wastes in covered containers protected from vandalism, and in compliance with fire and hazardous waste codes.
- Place hazardous waste containers in secondary containment.
- Make sure that hazardous waste is collected, removed, and disposed of only at authorized disposal areas.

Run-on/Runoff Prevention

- Prevent stormwater run-on from entering the waste management area by enclosing the area or building a berm around the area.
- Prevent the waste materials from directly contacting rain.
- Cover waste piles with temporary covering material such as reinforced tarpaulin, polyethylene, polyurethane, polypropylene or Hypalon.
- Cover the area with a permanent roof if feasible.
- Cover dumpsters to prevent rain from washing waste out of holes or cracks in the bottom of the dumpster.
- Move the activity indoor after ensuring all safety concerns such as fire hazard and ventilation are addressed.

INSPECTION PROCEDURES

- Inspect and replace faulty pumps or hoses regularly to minimize the potential of releases and spills.
- Check waste management areas for leaking containers or spills.
- Repair leaking equipment including valves, lines, seals, or pumps promptly.

MAINTENANCE PROCEDURES

- Maintain equipment for material tracking program.

BMP 17 - BUILDING OPERATIONS

DESCRIPTION

Typical building operations include cleaning operations such as outside pressure washing of buildup and repairs.

POLLUTION PREVENTION APPROACH

Implement applicable suggested Best Management Practices to reduce the influx of pollutants to the stormwater drainage system.

SUGGESTED BEST MANAGEMENT PRACTICES

Pressure Washing of Buildings, Rooftops, and Other Large Objects

- In situations where soaps or detergents are used and the surrounding area is paved, pressure washers must use a waste/water collection device that enables collection of wash water and associated solids. A sump pump, wet vacuum or similarly effective device must be used to collect the runoff and loose materials. The collected runoff and solids must be disposed of properly.
- If soaps or detergents are not used, and the surrounding area is paved, wash water runoff does not have to be collected but must be screened. Pressure washers must use filter fabric or some other type of screen on the ground and/or in the catch basin to trap the particles in wash water runoff.
- If you are pressure washing on a grassed area (with or without soap), runoff must be dispersed as sheet flow as much as possible, rather than as a concentrated stream. The wash runoff must remain on the grass and not drain to pavement. Ensure that this practice does not kill grass.

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 ground or drop cloths underneath outdoor painting, scraping, and sandblasting work, and properly dispose of collected material daily.
- Use a ground cloth or oversized tub for activities such as paint mixing and tool cleaning.
- Clean paint brushes and tools covered with water-based paints in sinks connected to sanitary sewers or in portable containers that can be dumped into a sanitary sewer drain. 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. Use a storm drain 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.

TARGETED FACILITIES AND OPERATIONS

- All City-Owned Facilities

TARGETED CONSTITUENTS

- Sediment
- Nutrients
- Trash
- Metals
- Oil & Grease
- Organics
- Low Dissolved Oxygen

- If you need to de-water an excavation site, you may need to filter the water before discharging to a catch basin or off-site. In which case you should direct the water through hay bales and filter fabric or use other sediment filters or traps.
- Store toxic material under cover with secondary containment during precipitation events and when not in use. A cover would include tarps or other temporary cover material.

INSPECTION PROCEDURES

- Sweep paved areas regularly to collect loose particles and wipe up spills with rags and other absorbent material immediately; do not hose down the area to a storm drain.

BMP 18 - OIL/WATER SEPARATORS

DESCRIPTION

Oil/Water separators/interceptors are important to prevent gasoline, oil, or sand from getting into the drainage systems. In the following places they are always required

- Repair garages where motor vehicles are serviced and repaired, and where floor drainage is provided
- Commercial motor vehicle washing facilities
- Gasoline Stations with grease racks, grease pits or wash racks
- Facilities which have oily and/or flammable waste as a result of manufacturing, storage, repair, or testing
- Public storage garages with floor drainage
- Any place where solid, oil, gasoline or other volatile liquids can enter the drainage system

POLLUTION PREVENTION APPROACH

Implement applicable suggested Best Management Practices to reduce the influx of pollutants to the stormwater drainage system.

SUGGESTED BEST MANAGEMENT PRACTICES

- DPW recommends sweeping garage floor frequently, depending on use.
- Target cleaning for early Spring or late Fall.
- Use oil absorbent materials on any liquid spills, such as oil or hydraulic fluid leaks.
- The facility manager should maintain a log of cleaning activities (including the Cambridge Work Management System). Information should include frequency of cleanings.
- It is important to remove sediments from garage floors that can have a high concentration of pollutants including metals and hydrocarbons. These sediments can clog downstream drainage systems and transport pollutants to nearby water bodies

INSPECTION PROCEDURES

- Oil/Water separators/interceptors should be inspected twice per year (best times are before the start and before the end of the rainy season).
- Oil/Water separators/interceptors should be inspected quarterly at the following facilities:
    - Water Department
    - DPW Garage
    - Fire Stations and maintenance facility
    - Police Department garage and maintenance facility
    - Municipal parking garages

MAINTENANCE PROCEDURES

TARGETED FACILITIES AND OPERATIONS

- All City-Owned Facilities
- Street Rights-of-Way
- Disposal of Removed Solids

TARGETED CONSTITUENTS

- Sediment
- Nutrients
- Trash
- Metals
- Oil & Grease
- Organics
- Low Dissolved Oxygen

- Clean oil/water separators once per year at a minimum or when:
    - Sludge accumulates to 25% of the wetted height of the separator compartment; or
    - Oil accumulates to 5% of the wetted height of the separator compartment; or
    - 75% of the retention capacity is filled.
- Drains and grates should be free of debris or sediments.
- Dipping pans should be used under vehicles or spigots.
- Spill absorbent material should be ready for use.
- Floors should be kept clean and spill materials should be cleaned up in a timely manner.

BMP 19 - GREEN ROOFS

DESCRIPTION

Green roofs allow for runoff to be filtered through a soil medium that removes different pollutants before the runoff enters the stormwater drainage system. The green roof area needs to be maintained fairly frequently for the first year and then annually after that. The frequency of inspection also depends on the type of green roof that is installed.

POLLUTION PREVENTION APPROACH

The suggested Best Management Practices should be used to reduce the influx of pollutants into the storm water drainage system and increase the longevity of the green roof.

SUGGESTED BEST MANAGEMENT PRACTICES

- It is recommended that the area be cleaned extensively once in the early spring and once in the late fall.
- The area should be cleaned with hand tools, rakes, and shovels.
- Facilities and personal in-charge of the bio-retention area should keep inspection logs and cleaning activity logs.
- Frequency of inspection and maintenance should be based on type of green roof:

a) Extensive <3 in. Low Nutrition Substrate

- Drainage outlets and inspection chambers cleared of vegetation, as with any roof.
- Ensure outlets and shingle perimeters clear of dead and live plants.
- Generally, they are allowed to develop into dry meadows.

b) Semi Extensive – 3 in. to 6 in. low to medium nutrition substrate

- Drainage outlets and inspection chambers cleared of vegetation.
- Ensure outlets and shingle perimeters clear of dead and live plants.

TARGETED FACILITIES AND OPERATIONS

- All City-Owned Facilities

TARGETED CONSTITUENTS

- Sediment
- Nutrients
- Metals
- Organics
- Low Dissolved Oxygen

REFERENCE

- "Green Roof Guide" United Kingdom
- "Green Roof Standards" City of Toronto
- ASTM Standards for Green Roofs

- Removal of undesirable vegetation 6 monthly.

c) Intensive – 6 in. + medium nutrition substrates and top soils

- Drainage outlets and inspection chambers cleared of vegetation.
- Ensure outlets and shingle perimeters clear of dead and live plants.
- Intensive care of lawns, hedges etc.
- Replacement of failed plants exceeding 5% of plants installed.
- Replenishment of any areas of settled substrate.

d) Bio-diverse - very low to low nutrition

- Drainage outlets and inspection chambers cleared of vegetation.
- Ensure outlets and shingle perimeters clear of dead and live plants.
- Low vegetation is common and none is general undesirable.

INSPECTION PROCEDURES

- Green roof areas should be inspected after every rainfall over a half inch of rainfall for the first year.
- Inspection of the green roof should be daily for the first month to ensure the area is taking properly.
- The green roof should be inspected twice a month during the growing season and once in the beginning of spring and at the end of fall.

MAINTENANCE PROCEDURES

Green roofs should be kept free of debris and weeds to ensure a properly working infiltration and stormwater management area. Routine maintenance should be done year-round.

After planting:

- The area should be watered daily for two weeks unless significant rainfall has occurred
- Inspect the green roof area for any signs of erosion.
- Ensure that the irrigation system is operational, if necessary.

After first rainfall:

- The green roof area should be free of standing within 12-hours of rainfall. No standing water should be visible within the green roof area. If the area has not drained continue to monitor, soil remediation or an improved under drain system may be needed.
- Inspect all inlets and outlet structure to ensure that runoff has drained properly with the roof.

One month of planting:

- Inspect all plants to ensure that they are free of pest and diseases; do not use any toxic pesticide or other toxic methods to remove pest and diseases. The toxic substance will enter the ground and also the storm sewer system.
- Make repairs to all areas in and around the green roof area that appear to be worn down.
- Remove any weeds from the area, ensure that all root system from the weeds have been destroyed. Do not us any toxic substances to remove weeds.

The following seasons:

- If plants are showing signs of pest, disease or are growing poorly, remove the plant(s) and replace. Inspect the plants surrounding the area to ensure that there is not a greater problem.
- During times of extended drought look for features of stress, wilting, spotted brown leaves, loss of leaves, poor plant health, etc. except when bio-diverse system is used.
- Area should be water, when needed, in the early morning when maximum absorption.
- Prune excess growth annually or more often. Trimmed material maybe recycled in with the mulch.
- Weed the area regularly; however, the area should not be mowed.
- Remove plant material away from fire walls, drainage outlets and inlets and other mechanical equipment.

BMP 20 - PERVIOUS PAVEMENT

DESCRIPTION

Pervious pavement areas allow for runoff to be filtered through a soil medium that removes different pollutants before the runoff enters the stormwater drainage system. The pervious pavement facility needs to be maintained on a yearly basis. The maintenance is relatively simple and can be done in a short amount of time depending on the size of the area.

POLLUTION PREVENTION APPROACH

The suggested Best Management Practices should be used to reduce the influx of pollutants into the storm water drainage system and increase the longevity of the pervious pavement area.

SUGGESTED BEST MANAGEMENT PRACTICES

- It is recommended that the area be cleaned once in the early spring and once in the late fall.
- The area should be cleaned with a vacuum street sweeper and the surrounding area should be cleaned of all debris.
- Facilities and personal in-charge of the pervious pavement area should keep inspection logs and cleaning activity logs.
- The area should not have any soil stockpiles, mulch, or other fine materials stored near or on top of the pavement.

INSPECTION PROCEDURES

- Pervious Pavement areas should be inspected after every rainfall over a half inch of rainfall for the first year.
- Inspection of the pervious pavement area should be monthly for the first six months to ensure the pavement and sub-bases were properly constructed.
- The pervious pavement area should be inspected at the end of the winter months to ensure that excessive winter treatment chemicals did not build-up in the pavement cross section.

MAINTENANCE PROCEDURES

TARGETED FACILITIES AND OPERATIONS

- City parking lots
- Street Rights-of-Way

TARGETED CONSTITUENTS

- Sediment
- Nutrients
- Trash
- Metals
- Oil & Grease
- Organics
- Low Dissolved Oxygen

REFERENCE

- Stormwater PA - Pervious Pavement
- Stormwater Solutions

Pervious pavement areas should be kept clean through-out the year. A vacuum sweeper is necessary to remove any sediments or other debris that has fallen in the voids of the pavement. During winter months, the pervious pavement section should be salted only. Sand and any other anti-skid product should not be placed on the pervious pavement or any area that drains to the pervious pavement. If at any time standing water is observed on the pervious pavement the area should be excavated and a pavement and below soils should be viewed for excessive sediment build-up.

BMP 21 - BIO RETENTION FACILITIES

DESCRIPTION

Bio-retention areas allow for runoff to be filtered through a soil medium that removes different pollutants before the runoff enters the stormwater drainage system. The Bio-retention facility needs to be maintained monthly during the growing season and inspected for erosion and debris buildup.

POLLUTION PREVENTION APPROACH

The suggested Best Management Practices should be used to reduce the influx of pollutants into the storm water drainage system and increase the longevity of the bio-retention basin

SUGGESTED BEST MANAGEMENT PRACTICES

- It is recommended that the area be cleaned once in the early spring and once in the late fall.
- The area should be cleaned with hand tools, rakes, shovels, and light construction equipment. Vehicles should not be driven on the bio-retention area.
- All damage should be repaired and mulch areas that are exposed should be fixed.
- Facilities and personal in-charge of the bio-retention area should keep inspectional logs and cleaning activity logs.

INSPECTION PROCEDURES

- Bio-retention areas should be inspected after every rainfall over a half inch of rainfall for the first year.
- Inspection of the bio-retention area should be daily for the first month to ensure the area is taking properly.
- The bio-retention area should be inspected once a month during the growing season and once in the beginning of spring and at the end of fall.

MAINTENANCE PROCEDURES

Bio-retention areas should be kept free of debris and weeds to ensure a properly working infiltration and stormwater management area. Routine maintenance should be done year-round and does not require much effort if area is well kept.

TARGETED FACILITIES AND OPERATIONS

- All City-Owned property
- City parking lots
- Street Rights-of-Way

TARGETED CONSTITUENTS

- Sediment
- Nutrients
- Trash
- Metals
- Oil & Grease
- Organics
- Low Dissolved Oxygen

REFERENCE

- University of Minnesota- Rain gardens and Maintenance
- “Vermont Rain Garden Manual”
- Fairfax County “Public Facility Manual”

After planting:

- The area should be watered daily for two weeks unless significant rainfall has occurred
- Inspect the bio-retention area for any signs of erosion.
- Re-mulch any area where bare soil has become exposed or mulch layer has been significantly reduced.
- If necessary, use stones to stabilize drainage paths within the bio-retention area. If it is possible us a wetland grass mixture if the area will hold the seeds

After first rainfall:

- The bio-retention area should be free of standing within 72-hours of rainfall. No standing water should be visible within the bio-retention area. If the area has not drained continue to monitor, soil remediation or an improved under drain system may be needed.
- Ensure that mulch has not moved and settled in clumps.
- If applicable, inspect all inlets and outlet structure to ensure that runoff has drained properly with the basin.

One month of planting:

- Inspect all plants to ensure that they are free of pest and diseases; do not use any toxic pesticide or other toxic methods to remove pest and diseases. The toxic substance will enter the ground and also the storm sewer system.
- Make repairs to all areas in and around the bio-retention area that appear to be worn down.
- Add mulch to areas that are bare or insufficient mulch coverage exist.
- Remove any weeds from the area, ensure that all root system from the weeds have been destroyed. Do not us any toxic substances to remove weeds.

The following seasons:

- Every 6 month or in spring and fall, whichever comes first, add 1” of mulch.
- Once every 2 to 3 years, in the spring, apply a new 3” layer of mulch in the entire bio-retention garden.
- If plants are showing signs of pest, disease or are growing poorly, remove the plant(s) and replace. Inspect the plants surrounding the area to ensure that there is not a greater problem.

- During times of extended drought look for features of stress, wilting, spotted brown leaves, loss of leaves, poor plant health, etc.)
- Area should be water, when needed, in the early morning when maximum absorption.
- Prune excess growth annually or more often. Trimmed material maybe recycled in with the mulch.
- Weed the area regularly; however, the area should not be mowed.

APPENDIX B: SPILL DOCUMENTATION FORM

Significant Spills, Leaks or Other Releases

Instructions:

- Include the descriptions and dates of any incidences of significant spills, leaks, or other releases that resulted in discharges of pollutants to waters of the U.S., through stormwater or otherwise; the circumstances leading to the release and actions taken in response to the release; and measures taken to prevent the recurrence of such releases .
- Provide information, as shown below, for each incident, and attach additional documentation (e.g., photos, spill cleanup records) as necessary. Repeat as necessary by copying and pasting the fields below.

Incident Number	Date/Time of incident	Location of incident	Description of incident – Including approximate volume released	Circumstances leading to release	Actions taken in response to release – Including who was contacted	Measures taken to prevent recurrence

Incident Number	Date/Time of incident	Location of incident	Description of incident – Including approximate volume released	Circumstances leading to release	Actions taken in response to release – Including who was contacted	Measures taken to prevent recurrence

Incident Number	Date/Time of incident	Location of incident	Description of incident – Including approximate volume released	Circumstances leading to release	Actions taken in response to release – Including who was contacted	Measures taken to prevent recurrence

Incident Number	Date/Time of incident	Location of incident	Description of incident – Including approximate volume released	Circumstances leading to release	Actions taken in response to release – Including who was contacted	Measures taken to prevent recurrence

Incident Number	Date/Time of incident	Location of incident	Description of incident – Including approximate volume released	Circumstances leading to release	Actions taken in response to release – Including who was contacted	Measures taken to prevent recurrence

APPENDIX C: EMPLOYEE TRAINING RECORDS

STORMWATER POLLUTION AND PREVENTION PLAN TRAINING

SIGN-IN SHEET

INTRUCTOR'S NAME:
INTRUCTOR'S AFFILIATION:
DATE:
TIME:
LOCATION OF TRAINING:

NAME (PRINT)	DEPARTMENT	FACILITY

STORMWATER POLLUTION AND PREVENTION PLAN TRAINING

SIGN-IN SHEET

NAME (PRINT)	DEPARTMENT	FACILITY

APPENDIX D: CRLS GARAGE INSPECTION FORM AND SITE PLAN

Site Inspection Reports

Instructions:

- Include in your records copies of all routine facility inspection reports completed for the facility.
- The sample inspection report is consistent with the requirements in the 2016 Massachusetts MS4 Permit relating to site inspections. **If MassDEP provides you with an inspection report, use that form.**

Using the Sample Site Inspection Report

- This inspection report is designed to be customized according to the specific control measures and activities at your facility. For ease of use, you should take a copy of your site plan and number all of the stormwater control measures and areas of industrial activity that will be inspected. A brief description of the control measures and areas that were inspected should then be listed in the site-specific section of the inspection report.
- You can complete the items in the "General Information" section that will remain constant, such as the facility name and inspector (if you only use one inspector). Print out multiple copies of this customized inspection report to use during your inspections.
- When conducting the inspection, walk the site by following your site map and numbered control measures/areas of industrial activity to be inspected. Also note whether the "Areas of Materials or Activities exposed to stormwater" have been addressed (customize this list according to the conditions at your facility). Note any required corrective actions and the date and responsible person for the correction.

Stormwater Site Inspection Report

General Information			
Facility Name	CRLS Garage		
Date of Inspection		**Start/End Time**	
Inspector's Name(s)			
Inspector's Title(s)			
Inspector's Contact Information			
Inspector's Qualifications			
Weather Information			
Weather at time of this inspection? ❑ Clear ❑Cloudy ❑ Rain ❑ Sleet ❑ Fog ❑ Snow ❑ High Winds ❑ Other: Temperature:			
Have any previously unidentified discharges of pollutants occurred since the last inspection? ❑Yes ❑No **If yes, describe:**			
Are there any discharges occurring at the time of inspection? ❑Yes ❑No **If yes, describe:**			

Areas of Materials or Activities exposed to stormwater
Below are some general areas that should be assessed during routine inspections.

	Area/Activity	Location on Site Plan	Inspected?	Controls Adequate (appropriate, effective, and operating)?	Corrective Action Needed and Notes	Person Responsible for Correction	Corrective Action Taken (description and date)
1	**Materials Storage Cabinet**	A	❑Yes ❑No	❑Yes ❑No			
2	**Waste Oil Storage Area**	B	❑Yes ❑No	❑Yes ❑No			
3	**Floor Drains**	C	❑Yes ❑No	❑Yes ❑No			
4	**Vehicle Storage and Maintenance Area**	D	❑Yes ❑No	❑Yes ❑No			
5							
6							

Non-Compliance

Describe any incidents of non-compliance observed and not described above:

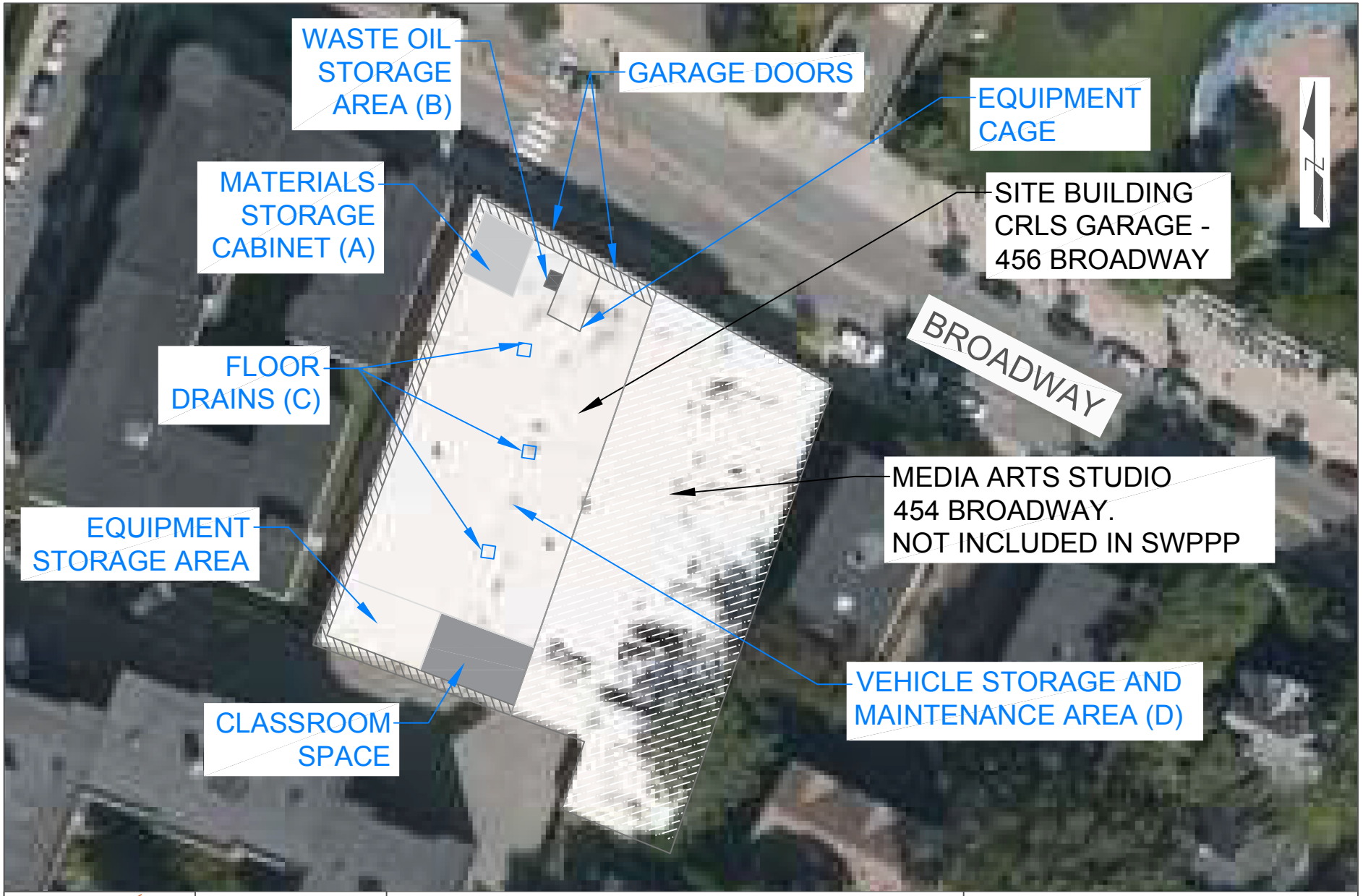
Additional Control Measures

Describe any additional control measures or changes to the SWPPP needed to comply with the permit requirements:

Notes

Use this space for any additional notes or observations from the inspection:

Print inspector names and titles:



THE WORKS — CAMBRIDGE DEPARTMENT OF PUBLIC	NOT TO SCALE.	**CAMBRIDGE RINDGE AND LATIN SCHOOL** **456/454 BROADWAY** **CAMBRIDGE, MASSACHUSETTS**	**APPENDIX D** **SITE PLAN**

APPENDIX E: COMPLETED INSPECTION RECORDS

Site Inspection Reports

Instructions:

- Include in your records copies of all routine facility inspection reports completed for the facility.
- The sample inspection report is consistent with the requirements in the 2016 Massachusetts MS4 Permit relating to site inspections. **If MassDEP provides you with an inspection report, use that form.**

Using the Sample Site Inspection Report

- This inspection report is designed to be customized according to the specific control measures and activities at your facility. For ease of use, you should take a copy of your site plan and number all of the stormwater control measures and areas of industrial activity that will be inspected. A brief description of the control measures and areas that were inspected should then be listed in the site-specific section of the inspection report.
- You can complete the items in the "General Information" section that will remain constant, such as the facility name and inspector (if you only use one inspector). Print out multiple copies of this customized inspection report to use during your inspections.
- When conducting the inspection, walk the site by following your site map and numbered control measures/areas of industrial activity to be inspected. Also note whether the "Areas of Materials or Activities exposed to stormwater" have been addressed (customize this list according to the conditions at your facility). Note any required corrective actions and the date and responsible person for the correction.

Stormwater Site Inspection Report

General Information			
Facility Name	CRLS Garage		
Date of Inspection	**4/18/19**	**Start/End Time**	**9:30-10:15**
Inspector's Name(s)	A.Fichter (KLF), P. Boticello (KLF) Y. Bekele (City)		
Inspector's Title(s)	AF: Project Professional, PB: Intern, YB: Engineer		
Inspector's Contact Information	afichter@kleinfelder.com, pboticello@kleinfelder.com, ybekele@cambridgema.gov		
Inspector's Qualifications			

Weather Information
Weather at time of this inspection? ❑ Clear ☒Cloudy ❑ Rain ❑ Sleet ❑ Fog ❑ Snow ❑ High Winds ❑ Other: Temperature: 45-55 F
Have any previously unidentified discharges of pollutants occurred since the last inspection? ❑Yes ☒No **If yes, describe:**
Are there any discharges occurring at the time of inspection? ❑Yes ☒No **If yes, describe:**

Areas of Materials or Activities exposed to stormwater
Below are some general areas that should be assessed during routine inspections

	Area/Activity	Inspected?	Controls Adequate (appropriate, effective, and operating)?	Corrective Action Needed and Notes	Person Responsible for Correction	Corrective Action Taken (description and date)
1	**Materials Storage Cabinet (A)**	☒Yes ❑No	☒Yes ❑No	No corrective action needed. Materials stored properly.		
2	**Waste Oil Storage Area (B)**	☒Yes ❑No	☒Yes ❑No	No corrective action needed. Materials stored properly.		
3	**Floor Drains (C)**	☒Yes ❑No	❑Yes ❑No	No evidence of spills was noted. Connectivity of the floor drains are unknown. Additional records or dye testing information is required to determine connectivity.	Team Leader	CCTV inspection was conducted in January 2020.
4	**Vehicle Storage and Maintenance Area (D)**	☒Yes ❑No	☒Yes ❑No	No corrective action needed. Work areas are maintained.		

Non-Compliance

Describe any incidents of non-compliance observed and not described above:

Additional Control Measures

Describe any additional control measures or changes to the SWPPP needed to comply with the permit requirements:

Notes

Use this space for any additional notes or observations from the inspection:

Likelihood of potential stormwater pollution is low. All materials are stored indoors. A site visit with dye testing is required to confirm the connectivity of floor drains to the oil/water separator and/or sewer. The City conducted a preliminary investigation and dye test on 1-15-2020. Drawings from this investigation are included below.

The City added/replaced spill kits in June 2020.

Print inspector names and titles:
Adria Fichter, PE – Project Professional, Kleinfelder

OFFICE OF THE CITY ENGINEER
CAMBRIDGE, MASSACHUSETTS

JOB 456 Broadway - Site investigation with National Water Main Garage
SHEET NO.
CALCULATED BY DATE 11/15/2020
CHECKED BY DATE
SCALE