# PIERS 90 AND 91

10/30/2023

## Stormwater Pollution Prevention Plan

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# RECORD OF SWPPP AMENDMENTS

Document updates to the Stormwater Pollution Prevention Plan (SWPPP) are listed P in the table below. This record is not intended to capture minor updates (e.g., typos, corrections) or routine additions for recordkeeping.

| Date | Individual Performing Update | Summary of SWPPP Amendment |
|---|---|---|
| March 2009 | Owen Reese, Aspect Consulting | SWPPP published. |
| September 2014 | Tom Atkins, Aspect Consulting | Updated tenant list. Updated site map and related text. Incorporated updates associated with the 2012 Ecology Stormwater Management Manual for Western Washington and 2013 Phase 1 National Pollutant Discharge Elimination System (NPDES) Municipal Permit. Miscellaneous edits to text |
| May 2015 | Tom Atkins, Aspect Consulting | Updated site map and miscellaneous edits to text. |
| December 2016 | Tom Atkins, Aspect Consulting | Incorporated updates associated with the 2016 City of Seattle (City) Stormwater Manual best management practices (BMPs).. Updated site map, and minor edits to text. |
| October 2017 | Jane Dewell, Port of Seattle | Revisions to Table 3, Table 4 and Figure 1. |
| December 2018 | Tom Atkins, Aspect Consulting | Section 2 - Facility Assessment, Section 3 – Illicit Non-Stormwater Discharges, Section 4 – Best Management Practices, Figure 1 – Site Plan, and Appendix A – Best Management Practice Descriptions were updated. |
| December 2020 | EA Engineering | Updated site map, tenant list, and related text. |
| September 2022 | EA Engineering | Updates made per 2021 City Stormwater Code and Manual. |
| October 2023 | Nathan Taylor, Port of Seattle | Updated Appendix B: Spill Plan Summary |

# ACRONYMS

| | |
|---|---|
| BMP | best management practice |
| City | City of Seattle |
| Ecology | Washington State Department of Ecology |
| IDDE | illicit discharge detection and elimination |
| MS4 | municipal separate storm sewer system |
| O&M | operations and maintenance |
| NPDES | National Pollutant Discharge Elimination System |
| P90/91 | Piers 90 and 91 |
| Phase I Permit | Phase I Municipal NPDES Permit |
| Port | Port of Seattle |
| SWMMWW | Stormwater Management Manual for Western Washington |
| SWMP | Stormwater Management Program |
| SWPPP | Stormwater Pollution Prevention Plan |

# 1. INTRODUCTION

This document presents a Stormwater Pollution Prevention Plan (SWPPP) for the Port of Seattle (Port) Piers 90 and 91 (P90/91). This SWPPP was developed to comply with Special Condition S6.E.7 of the Port's Phase I Municipal Stormwater National Pollutant Discharge Elimination System (NPDES) Permit (Phase I Permit).

**Table 1. Cross Reference to Phase I Permit Requirements**

| Permit Requirement from S6.E.7 | Corresponding SWPPP Section |
|---|---|
| *The SWMP shall include the development and implementation of one or more Stormwater Pollution Prevention Plans (SWPPPs).* | SWMP |
| *A SWPPP is a documented plan to identify and implement measures to prevent and control the contamination of discharges of stormwater to surface or groundwater.* | 1.1 SWPPP Objective |
| *SWPPP(s) shall be prepared and implemented for all Permittee-owned lands, except environmental mitigation sites owned by the Permittee, that are not covered by a NPDES permit issued by Ecology that authorizes stormwater discharges.* | SWMP |
| *a. SWPPP(s) shall be updated as necessary to reflect changes at the facility.* | Record of SWPPP Amendments<br>1. Introduction |
| *b. The SWPPP(s) shall include a facility assessment including a site plan, identification of pollutant sources, and description of the drainage system.* | 2. Facility Assessment<br>Figures – Site Locations & Plans<br>2.2 Potential Pollutant Sources<br>2.3 Stormwater Drainage System |
| *c. The SWPPP(s) shall include a description of the source control BMPs used or proposed for use by the Permittee. Source control BMPs shall be selected from the Stormwater Management Manual for Western Washington (or an equivalent manual approved by Ecology). Implementation of non-structural BMPs shall begin immediately after the pollution prevention plan is developed. Where necessary, a schedule for implementation of structural BMPs shall be included in the SWPPP(s).* | 4. BMPs<br>4.2 BMP Implementation Plan |
| *d. The Permittee shall maintain a list of sites covered by the SWPPP(s) required under this Permit. At least 20% of the listed sites shall be inspected annually.* | SWMP |
| *e. The SWPPP(s) shall include policies and procedures to reduce pollutants associated with the application of pesticides, herbicides and fertilizer.* | 4.1.6 Pesticide, Herbicide, and Fertilizer Application |
| *f. The SWPPP(s) shall include measures to prevent, identify and respond to illicit discharges, including illicit connections, spills and improper disposal. When the Permittee submits a notification pursuant to G3, the Permittee shall also notify the city or county it is located in.* | 3.1 Port illicit discharge detection and elimination (IDDE) policy |
| *g. The SWPPP(s) shall include a component related to inspection and maintenance of stormwater facilities and catch basins that is consistent with the Permittee's O&M Program, as specified in S6.E.6 above.* | 5. Operation and Maintenance (O&M) |

## 1.1 SWPPP Objective

The objective of this SWPPP, as described in Special Condition S6.E.7 is "to implement measures to prevent and control the contamination of discharges of stormwater to surface or ground water." The SWPPP will be reviewed and updated as needed.

## 1.2 Recordkeeping

All records related to this SWPPP shall be maintained for at least 5 years and stored in SharePoint.

Recordkeeping requirements are found in Special Condition S9 of the Phase I Permit.

## 1.3 SWPPP Availability

All records related to this SWPPP shall be made available to the public at reasonable times during business hours. Members of the public who request SWPPP records in person shall be allowed to view documents at the Port's offices at Pier 69. SWPPP records shall not be removed from Pier 69.

Members of the public who request copies of SWPPP and related records need to submit a public disclosure request. The Port operates under the State of Washington's Public Disclosure Act. Public disclosure requests may be submitted in the following ways:

1. Online at https://www.portseattle.org/about/public-records
2. By email to public-disclosure@portseattle.org
3. By phone to (206) 787-5652
4. By fax to (206) 787-3205
5. Or by mail to: Public Records Officer
   Port of Seattle
   Post Office Box 1209
   Seattle, Washington 98111

Questions about public records disclosure should be directed to the Public Records Officer. All records related to the SWPPP shall be made available to Ecology upon request.

# 2. FACILITY ASSESSMENT

This section presents a facility assessment, including a site plan, identification of pollutant sources, and description of the drainage system, as required by Special Condition S6.E.7.b of the Phase I Permit.

## 2.1 Facility Description

P90/91 are located on Elliott Bay at 2001 West Garfield Street in Seattle, Washington. A site plan for P90/91 is shown on Figure 1. The site is approximately 100 acres, including docks (but not including nearby open water).

The facility is primarily used for waterfront activities including vessel moorage, loading/offloading and support operations. Site facilities consist of parking areas, fenced storage areas, multiple mixed-use buildings leased by tenants, and two docks used for shipping, fishing and cruise activities. The site is generally paved except for discrete shoreline areas.

The site is owned by the Port with areas leased to tenants for a variety of uses. Table 2 provides a list of the current tenants covered under another SWPPP, a brief description of their business, and their permit status. Under Special Condition S6.E.7 of the Phase I Permit: "SWPPP(s) shall be prepared and implemented for all Permittee-owned lands, except environmental mitigation sites owned by the Permittee, that are not covered by a NPDES permit issued by Ecology that authorizes stormwater discharges." Tenant leaseholds covered by other NPDES permits are shown on Figure 1. Tenants who have developed a separate SWPPP for their leasehold/activities in coordination with the Port under the Phase I Permit are also shown on Figure 1. Construction projects with construction NPDES permits are not covered under this SWPPP. This SWPPP covers areas and activities at P90/91 that are outside of these separate NPDES permits and SWPPPs managed by individual tenants.

**Table 2. Tenants Covered Under Another SWPPP**

| Tenant | Site Use | Permit Status |
|---|---|---|
| Lineage Logistics (formerly CityIce Cold Storage Company)[1] | Cold storage refrigerated warehouse for the storage, processing and distribution of food products together with office & parking | Industrial NPDES - WAR001488 |
| Kami Tech[1] | Manufacturer and supplier of stainless steel and aluminum food processing equipment | Industrial NPDES - CNE305930 |
| American Seafoods Company LLC[2] | Berthing of fishing vessels for loading/unloading, repair and maintenance, and storage and maintenance of seafood | Municipal NPDES - Tenant SWPPP |

| Tenant | Site Use | Permit Status |
|---|---|---|
| | processing equipment and fishing gear | |
| Glacier Fish Company[2] | Office operations and storage warehouse for supporting fishing vessels | Municipal NPDES - Tenant SWPPP |
| Cruise Terminals of America[2] | Cruise facility | Municipal NPDES - Seasonal Tenant SWPPP |
| Notes:<br>1 - Tenant not covered by this SWPPP because they have a separate NPDES Permit and SWPPP or CNE<br>2 - Tenant activities covered by the Municipal NPDES Permit but requiring a tenant SWPPP | | |

For facilities with sites/areas that drain to a combined sewer, City of Seattle Stormwater Manual Volume 4 Chapter 3 BMPS 17-55 aren't applicable. In addition, the Port has developed a Spill Plan for all Port properties under Port control that provides a summary of basic spill response procedures (Appendix B).

## 2.2 Potential Pollutant Sources

### 2.2.1 Boat Moorage

Moorage for commercial vessels and cruise ships is provided along the two piers at the site. Activities conducted on the piers include moorage, loading, and unloading of passengers, equipment, and materials (liquid and solid). Potential stormwater contaminants from these activities include:

- Petroleum products including fuel from spills, leaks or drips from engines, motors, hydraulic equipment, bilge water, or other greasy equipment located on or within vessels.
- Sanitary sewage from spills or leaks from within vessels.
- Leaks or spills during loading and unloading of materials.
- Suspended solids including tire wear and road grit tracked onto docks.
- Metals from leaching galvanized materials or particulates containing metals.

### 2.2.2 Loading and Unloading of Materials

This activity applies to the loading and unloading of liquid or solid materials from a boat or ship or at a commercial or industrial loading dock.

These activities are typically conducted at shipping and receiving areas and outside storage areas. The transferred materials can include finished products, raw materials, and intermediate products. Potential stormwater pollutants from this activity include:

- Petroleum products including loading and off-loading products such as fuels, oils, or greases. Spills or leaks from drums or small containers containing petroleum products such as fuels, oils, or greases.
- Petroleum products and zinc from leaks and spills from equipment used to transfer these materials, as well as from the materials themselves.
- Zinc from tire particles, copper from brake pad dust, and debris from operation of loading/unloading equipment.
- Chemicals including spills or leaks from drums and other smaller containers containing chemical products. The type of products stored varies over time, but generally includes paint and other products.

### 2.2.3 Outdoor Storage of Materials and Equipment

Multiple areas within the site are used to store marine equipment, boats, trailers, storage containers, chemicals, treated wood, and other miscellaneous materials. Other areas at the site are used as lay down areas for equipment and materials being used by Port of Seattle personnel and tenants. Potential stormwater pollutants from these areas include:

- Petroleum products as engines, motors, etc. contain products such as fuel, oils, or greases. Spills or leaks from drums or smaller containers containing petroleum products such as fuel, oils, or greases.
- Chemicals including spills or leaks from drums and other smaller containers containing chemical products. The type of products stored varies over time, but generally includes paint and other products.
- Metals including zinc from galvanized equipment, or particles containing metals leaching from materials being stored.
- Sediment and suspended solids associated with tire wear and road grit tracked onto the docks.

### 2.2.4 Storage of Liquids in Permanent Aboveground Tanks

There can be aboveground tanks located at the site for the storage of non-stormwater liquids. Potential stormwater pollutants from these areas can include oil and grease and other potential pollutants from spills or drips when transferring liquids into and out of the tanks.

### 2.2.5 Fishing Net Repair

Fishing net repair is not currently a potential pollutant source at P90/91.

### 2.2.6 Parking

A number of parking areas for Port of Seattle staff, tenants, and the public are located around the site. The parking areas are typically used for passenger vehicles and light equipment. Potential stormwater pollutants from the parking areas include:

- Oil and grease such as leaks or drips from vehicles.
- Antifreeze such as leaks or drips from vehicle cooling systems.
- Suspended solids including tire wear, road grit, or dirt tracked in on tires or vehicle.
- Zinc such as leaching from oil drips or tire particles.
- Copper such as leaching from brake pad dust.

### 2.2.7 Waste Management

Port of Seattle staff and tenants use outdoor waste receptacles, dumpsters, or compactors for waste management and recycling. Improperly managed wastes could result in stormwater contamination. Possible pollutants include suspended solids, oil and grease, chemicals, and food wastes.

### 2.2.8 Building Roofs

Roofs of commercial and office buildings can be a source of stormwater contamination from leaching of metals, solvents, or organic compounds – particularly from uncoated galvanized surfaces. Flaking paint or roof material could also add suspended solids to stormwater.

### 2.2.9 Facility Maintenance Actions

The Port may periodically conduct minor construction and landscaping actions to support general facility maintenance for structures, buildings, pavement, and other items. As part of these minor construction actions activities such as sawcutting, concrete mixing and pouring, asphalt application, landscaping/vegetation management, and other tasks may occur following applicable BMPs from City Stormwater Manual Volume 4.

## 2.3 Stormwater Drainage System

The stormwater system at P90/91 consists of a network of catch basins, trench drains, oil water separators, and subsurface pipes as shown on Figure 1. Stormwater runoff either discharges directly to Smith Cove and Elliott Bay through a series of deck drains, or it is collected and conveyed to a number of outfalls located along the Bay.

# 3. ILLICIT NON-STORMWATER DISCHARGES

## 3.1 Port of Seattle Policy

In accordance with Special Condition S6.E.3.b, the Port has adopted a policy prohibiting illicit connections, illicit discharges, and illegal dumping. This policy was adopted by Resolution No. 3750, approved by the Port Commission on October 23, 2018. Details of the policy are outlined in the following sections.

### 3.1.1 Illicit Connections

The Port's policy prohibits illicit connections. Illicit connections are defined as, "any direct or indirect infrastructure connection to the Port of Seattle's Municipal Separate Storm Sewer System that is not intended, permitted, or used for collecting and conveying stormwater or non-stormwater discharges allowed as specified in this policy."

The Port's Illicit Discharge Detection and Elimination (IDDE) Guidance Manual is intended to assist Port staff in implementing the day-to-day activities and staff training related to the IDDE program. The City's BMP I – Eliminate Illicit Connections (included in Appendix A) provides additional guidance on procedures for identifying and eliminating illicit connections.

If an illicit connection is detected, the Pollution Prevention Team (see Section 4.1.1 and Table 3) shall take appropriate steps to redirect the connection to an appropriate discharge location.

### 3.1.2 Illicit Discharges

Illicit discharges are defined as, "any discharge to the Port of Seattle's Municipal Separate Storm Sewer System that is not composed entirely of stormwater or of non-stormwater discharges allowed as specified in this policy." Through Port Resolution No. 3750, the Port has fully prohibited the following discharges that include but are not limited to:

i. acids
ii. alkalis including cement wash water
iii. ammonia
iv. animal carcasses
v. antifreeze, oil, gasoline, grease and all other automotive and petroleum products
vi. chemicals not normally found in uncontaminated water
vii. chlorinated swimming pool or hot tub water
viii. chlorine
ix. commercial and household cleaning materials
x. detergent

xi. dirt
xii. domestic or sanitary sewage
xiii. drain cleaners
xiv. fertilizers
xv. filter backwash wastewater
xvi. flammable or explosive materials
xvii. food and food waste
xviii. gravel
xix. herbicides
xx. human and animal waste
xxi. ink
xxii. laundry waste
xxiii. liquid and powdered dyes
xxiv. metals in excess of naturally occurring amounts, whether in liquid or solid form
xxv. painting products
xxvi. pesticides
xxvii. process wastewater
xxviii. sand
xxix. soap
xxx. solid waste
xxxi. solvents and degreasers
xxxii. steam-cleaning waste
xxxiii. yard waste

In addition, the Port's IDDE policy conditionally allows the following discharges, as long as the stated conditions are met:

i. Discharges from potable water sources, including water line flushing, hyper chlorinated water line flushing, fire hydrant system flushing, pipeline hydrostatic test water, and washing of potable water storage reservoirs are allowed only if planned discharges are de-chlorinated to a total residual chlorine concentration of 0.1 ppm or less, pH-adjusted if necessary, and volumetrically and velocity controlled to prevent resuspension of sediments in the municipal separate storm sewer system (MS4). No chemicals may be added, and settleable solids must be removed prior to discharge.
ii. Discharges from lawn watering and other irrigation runoff are allowed only if minimized to the maximum extent practicable.
iii. Discharges from swimming pools, spas, hot tubs, fountains, or similar aquatic recreation facilities and constructed water features are allowed only if the discharges are dechlorinated to a concentration of 0.1 ppm or less, pH-adjusted and re-oxygenated if necessary, volumetrically and velocity controlled to prevent resuspension of sediments in the MS4, and thermally controlled to prevent an increase of temperature in the receiving water.

Swimming pool cleaning wastewater and filter backwash shall not be discharged to the MS4 under any circumstances.

iv. Discharges of street and sidewalk washwater are allowed only when the surfaces are swept prior to washing, detergents are not used, and water use is minimized.
v. Discharges of water from routine external building washdown are allowed only when detergents are not used and water use is minimized.
vi. Discharges of water used to control dust are allowed only when water use is minimized.
vii. Other non-stormwater discharges may be discharged if the Port approves a SWPPP that addresses control of such discharges.

The Phase I Permit requires that the Port visually inspect the Port's MS4 in accordance with the permit. The inspection will be performed by Marine Maintenance staff or a contractor, and will be documented in writing. To meet the Phase I Permit requirement of conducting field screening of 20% of the MS4 each year, the Port will conduct field screenings of stormwater structures that collectively receive drainage from at least 20% of Port property each year. The primary method to meet the 20% field screening requirement will be illicit discharge inspections as described in the Port's IDDE Guidance Manual.

If a prohibited discharge is observed, the Pollution Prevention Team shall take immediate action to stop the discharge. Depending on the nature of the illicit discharge, it may be necessary to report it as a spill, according to the Spill Plan (Appendix B). If it is possible to identify the responsible party of the discharge, the Port will inform the responsible party of the Port's IDDE policy and take enforcement action if necessary.

### 3.1.3 Illegal Dumping

According to Port's IDDE policy, "it is prohibited to spill, dump, release, throw, deposit or place solid waste, litter, pet waste, yard waste, or hazardous materials on Port property, without permission from the Port."

If illegal dumping is observed, the Pollution Prevention Team shall take immediate action to identify the responsible party and clean up the dumped material.

# 4. BEST MANAGEMENT PRACTICES

BMPs "prevent pollutants from contaminating stormwater runoff and entering receiving waters" (City Stormwater Manual, 2021). BMPs can be found on the City's website.[1]

This section of the SWPPP identifies the BMPs required for the potential pollutant sources at P90/91 covered by this SWPPP and presents a plan and schedule for implementing the BMPs.

In addition to the BMPs required by the Phase I Permit, the Port implements BMPs for other activities in accordance with the City's source control requirements (Seattle Municipal Code 22.803 and City of Seattle Stormwater Manual Volume 4). These requirements identify high-risk pollution generating activities and require implementation of operational source controls for those activities. The Port's general plan for compliance with source control requirements, including the identification of applicable BMPs, is defined in the Maritime Stormwater Management Program (SWMP) Plan.

## 4.1 Source Control BMPs

"Source control is the practice of preventing pollution at its source" (City Stormwater Manual Volume 4, 2021).

### 4.1.1 Pollution Prevention Team

The Pollution Prevention Team is responsible for implementing BMPs to control stormwater pollution at P90/91. Team members are responsible for inspections, O&M, operational source controls, employee and tenant training, emergency response, and other activities necessary to implement the SWPPP. Table 3 describes individual responsibilities for the Stormwater Pollution Prevention Team members.

**Table 3. Pollution Prevention Team**

| Staff Title | Individual Responsibilities |
|---|---|
| Port Operations: Director Maritime Operations and Security (Kenny Lyles); Tenants: Director Maritime Portfolio (Melinda Miller) | • Responsible authority for SWPPP execution. |
| Maritime Operations Manager (Kelli Goodwin); Real Estate Manager (Lily Ninburg); Cruise Operations Manager (Marie Ellingson) | • Assess P90/91 activities and request SWPPP updates, when needed.<br>• Identify need and plan for implementation of stormwater improvements or structural BMPs, when needed.<br>• Monitor operations and construction activities in compliance with SWPPP BMPs.<br>• Coordinate between Port Environmental staff and tenants. |

[1] https://www.seattle.gov/sdci/codes/codes-we-enforce-(a-z)/stormwater-code

| Staff Title | Individual Responsibilities |
|---|---|
| Facility Manager (Shannon Zink or assigned staff); Maritime Operations Team (Kathy Goodman, Eric Soderlund) | • Implement and inspect BMPs for Port operations.<br>• Report changes in site conditions or BMP effectiveness.<br>• Supervise facility maintenance activities in compliance with SWPPP BMPs.<br>• Assist with SWPPP education programs for operations and customers.<br>• Coordinate between Port Environmental staff and tenants.<br>• Respond to requests for maintenance. |
| Regulatory Compliance Programs Manager (Scott Silcox) | • Assist with planning for structural BMPs, when needed.<br>• Supervise O&M inspections, activities, and stormwater conveyance maintenance repairs.<br>• Assess compliance with the SWPPP and BMPs.<br>• Develop SWPPP training and educational programs.<br>• Conduct/provide oversight for spill prevention and response.<br>• Record keeping and SWPPP documentation. |
| Senior Manager, Stormwater Utility (Jane Dewell) | • Prepare and implement SWPPP, O&M manual and IDDE program.<br>• Manage the Phase I NPDES Program.<br>• Coordination and completion of tenant SWPPPs.<br>• Manage Ecology reports and correspondence. |
| Environmental Management Specialist (Nathan Taylor) | • Assess compliance with the SWPPP and BMPs.<br>• Assist with SWPPP training and education programs.<br>• Assist with recordkeeping and SWPPP documentation. |
| Tenants/Port (All) | • Tenants implement BMPs on tenant leaseholds and Port on Port-operated and common areas.<br>• Tenants report changes in site conditions or BMP effectiveness on tenant leaseholds.<br>• Tenants coordinate activities with Port team members. |

### 4.1.2 Employee and Tenant Training and Education

Volume 4, Chapter 2 of the City's Stormwater Manual (City of Seattle, 2021) identifies BMPs applicable to all operators and occupants of real property within the City. BMP 6 - Provide Oversight and Training for Staff, requires that landowners and tenants (operators and occupants of real property within the City) train all team members annually in the operation, maintenance, and inspections of stormwater BMPs, and to document the training. Other activity-specific BMPs also require annual training. The key to sustaining BMPs is to ensure that staff are properly trained in their purpose and maintenance requirements, and source control maintenance should be assigned as a job responsibility for staff. For all businesses and public entities, required elements of BMP 6 include:

- Train all team members annually in the operation, maintenance, and inspection of BMPs and keep training records on file.

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- Train all team members annually in spill cleanup.
- Assign an employee to oversee implementation and management of stormwater source control BMPs.

The Port has developed an Education Program aimed at tenants and Port employees, in accordance with Special Condition S6.E.1. The goal of the program is to reduce or eliminate behaviors and practices that cause or contribute to adverse stormwater impacts.

### 4.1.3 Spill Prevention, Reporting, and Emergency Cleanup

The Port has developed a Spill Plan for all Port properties under Port control (i.e., not tenant-controlled areas). A copy of the Spill Plan should be kept at P90/91 at all times. A summary of basic spill response procedures is included in Appendix C. The summary should be provided to all P90/91 tenants. Additional information on spill prevention and cleanup is provided in City BMP 5 - Spill Prevention and Cleanup.

### 4.1.4 Pesticide, Herbicide, and Fertilizer Application

Special Condition S6.E.7.e requires that this SWPPP include "policies and procedures to reduce pollutants associated with the application of pesticides, herbicides, and fertilizer."

Since 1998, the Port Landscaping Department has adopted an organic landscaping approach, eliminating the use of pesticides, herbicides, and synthetic fertilizers. Mulch made from plant material from Port properties is used to reduce weed growth, and torches are used instead of chemicals to eliminate weeds. Nutrients are provided using compost tea and soil amendments.

Landscape maintenance around facilities covered under this SWPPP shall continue to follow the organic landscape approach. Additional information on landscaping activities is provided in City BMP 22 - Landscaping and Vegetation Management (Appendix A).

### 4.1.5 Citywide BMPs

The following BMPs apply to all properties within the City:

- BMP 1 - Eliminate Illicit Connections and Illicit Discharges
- BMP 2 - Perform Routine Maintenance
- BMP 3 - Dispose of Fluids and Wastes Properly
- BMP 4 - Proper Storage of Solid Waste

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- BMP 5 - Spill Prevention and Cleanup
- BMP 6 - Provide Oversight and Training for Staff
- BMP 7 - Property Maintenance
- BMP 8 – Rooftop Dog Runs[2]

Descriptions for the citywide BMPs were drawn from the City's Stormwater Manual (City of Seattle, 2021) and are included in Appendix A.

### 4.1.6 Activity-Specific BMPs

The BMPs listed in Table 4 are applicable to the specific pollution-generating activities performed on site. BMP descriptions were drawn from Volume 4, Chapters 2 and 3 of the City's Source Control Technical Manual (2021) and are included in Appendix C. Activity-specific BMPs 9-16 apply to all real property, specifically focused on businesses and public agencies. It is important to note that activity-specific BMPs 17-55 do not apply to areas draining to combined sewer.

Some heavy industrial activities that are not typical for Port properties (e.g., mining, logging, storage of contaminated soils, etc.) have been removed from Table 4 to streamline BMP selection.

Descriptions for the site-specific BMPs were drawn from the City's Stormwater Manual (City of Seattle, 2021) and are included in Appendix A. Additional information on BMPs is provided in Ecology's 2019 Stormwater Management Manual for Western Washington (SWMMWW). The marked checkboxes in Table 4 indicate the BMPs that apply for this facility with additional detail provided in Table 6 and Appendix A..

**Table 4. Activity-specific BMP Selection Worksheet for Stormwater and Combined Sewer Areas**

| Activity | BMP Applicable? |
|---|---|
| **BUSINESS AND PUBLIC ENTITY BMPs FOR SPECIFIC ACTIVITIES** | |
| ***BMP 10: Mobile Fueling of Vehicles and Heavy Equipment***<br>• Applies to filling fuel tanks of equipment including generators by means of tank trucks driven to sites where the equipment is located. | ☒ |
| ***BMP 11: In-Water and Over-Water Fueling***<br>• Applies to businesses and public agencies that operate a facility used for transfer of fuels from a stationary station to vehicles or equipment in water | ☐ |

[2] This facility does not have a rooftop dog run; hence this BMP is not applicable and not included in Appendix A.

| Activity | BMP Applicable? |
|---|---|
| ***BMP 12: Maintenance and Repair of Vehicles and Equipment***<br>• Applies to maintenance and repair of equipment such as tools, structures and other equipment that cannot be moved off-site | ☒ |
| ***BMP 13: Concrete and Asphalt Mixing and Production***<br>• Applies to the mixing of raw materials on the site to produce concrete or asphalt or the making of concrete or asphalt products | ☒ |
| ***BMP 14: Concrete Pouring, Concrete/Asphalt Cutting, and Asphalt Application***<br>• Applies to construction site, driveway, and parking lot resurfacing and cutting | ☒ |
| ***BMP 16: Storage of Liquids in Aboveground Tanks***<br>• Applies to all liquids in aboveground tanks | ☒ |

**Table 5. Activity-Specific BMPs for Stormwater Drainage Areas**

| Activity | BMP Applicable? |
|---|---|
| **CLEANING OR WASHING** | |
| ***BMP 17: Cleaning or Washing***<br>Applies to all outdoor washing activities, including the following:<br>• Cleaning or washing of tools, engines, manufacturing equipment, vents, filters, pots and pans, grills, and floor mats.<br>• Mobile washing, including carpet cleaning, pressure washing, etc. | ☒ |
| **TRANSFER OF LIQUID OR SOLID MATERIALS** | |
| ***BMP 18: Loading and Unloading of Liquid or Solid Material***<br>• Applies to loading and unloading of liquid or solid materials. | ☒ |
| **PRODUCTION AND APPLICATION ACTIVITIES** | |
| ***BMP 20: Processing and Storage of Treated Wood***<br>• Applies to chemical preservative treatment of wood, as well as outdoor storage. | ☐ |
| ***BMP 22: Landscaping and Vegetation Management***<br>• Applies to grading, storage of landscape materials, soil transfer, vegetation removal, pesticide and fertilizer applications, and watering | ☒ |
| ***BMP 23: Painting, Finishing, and Coating Activities***<br>• Applies to surface preparation and the applications of paints, finishes, and/or coatings to buildings and equipment. | ☒ |
| **STORAGE AND STOCKPILING** | |
| ***BMP 26: Storage or Transfer of Leachable or Erodible Materials***<br>• Applies to storage and transfer of leachable and erodible materials, including, but not limited to: gravel, sand, salts, topsoil, compost, logs, sawdust, wood chips, | ☐ |

| Activity | BMP Applicable? |
|---|---|
| lumber and other building materials, concrete, and non-coated galvanized metal or other leachable metal. | |
| ***BMP 28: Portable Container Storage***<br>• Applies to all containers used for temporary and permanent storage. | ☒ |
| **DUST, SOIL EROSION, AND SEDIMENT CONTROL** | |
| ***BMP 29: Dust Control in Disturbed Land Areas and on Unpaved Roadways and Parking Lots***<br>• Applies to dust control measures in disturbed land areas or on unpaved roadways and parking lots. | ☐ |
| **OTHER ACTIVITIES** | |
| ***BMP 34: Boat Building, Maintenance, and Repair***<br>• Applies to all types of maintenance, repair, and building operations at shipyards, ports, and marinas. | ☐ |
| ***BMP 35: Cleaning and Maintenance of Pools, Spas, Hot Tubs, and Fountains***<br>• Applies to all public and commercial swimming pools and spas, hot tubs, and fountains that use chemicals and/or are heated | ☐ |
| ***BMP 36: Deicing and Anti-icing Operations for Airports and Streets***<br>• Applies to deicing and anti-icing operations used on highways, streets, airport runways, and aircraft to control ice and snow | ☒ |
| ***BMP 37: Maintenance and Management of Roof and Building Drains at Manufacturing and Commercial Buildings***<br>• Applies to maintenance and management of roofs and sides of manufacturing and commercial buildings. | ☒ |
| ***BMP 39: Maintenance of Public and Private Utility Corridors and Facilities***<br>• Applies to maintenance activities related to public and private utilities, including pipelines, pump stations, rights-of-way, and transmission corridors. | ☐ |
| ***BMP 40: Maintenance of Roadside Ditches***<br>• Applies to activities related to the maintenance of roadside ditches. | ☐ |
| ***BMP 41: Potable Water Line Flushing, Water Tank Maintenance, and Hydrant Testing***<br>• Applies to activities related to potable water line flushing, water tank maintenance, and hydrant testing<br>• Refer to SWMMWW Volume IV S441 BMPs for Potable Water Line Flushing, Water Tank Maintenance and Hydrant Testing | ☒ |
| ***BMP 45: Pet Waste***<br>• Applies to the general public, businesses and public agencies<br>• Refer to SWMMWW Volume IV S440 BMPs for Pet Waste | ☐ |
| ***BMP 46: Labeling Storm Drain Inlets on Your Property***<br>• Applies to businesses and public agencies that have storm drains<br>• Refer to SWMMWW Volume IV S442 BMPs for Labeling Storm Drain Inlets on Your Property | ☒ |

| Activity | BMP Applicable? |
|---|---|
| ***BMP 47: Well, Utility, Directional, and Geotechnical Drilling***<br>• Applies to businesses and public agencies that are involved with drilling activities<br>• Refer to SWMMWW Volume IV S446 BMPs for Well, Utility, Directional, and Geotechnical Drilling | ☐ |
| ***BMP 48: Goose Waste***<br>• Applies to the general public, businesses and public agencies in areas with deposition of goose waste near water bodies<br>• Refer to SWMMWW Volume IV S452 BMPs for Goose Waste | ☒ |
| ***BMP 49: Pesticides and an Integrated Pest Management Program***<br>• Applies to business and public agencies that use pesticides<br>• Refer to SWMMWW Volume IV S435 BMPs for Pesticides and an Integrated Pest Management Program | ☒ |
| ***BMP 50: Storage of Dry Pesticides and Fertilizers***<br>• Applies to storage of dry pesticides and fertilizers not stored under cover<br>• Refer to SWMMWW Volume IV S444 BMPs for the Storage of Dry Pesticides and Fertilizers | ☐ |
| ***BMP 51: Irrigation***<br>• Applies to businesses and public agencies that have irrigation systems<br>• Refer to SWMMWW Volume IV S450 BMPs for Irrigation | ☒ |
| ***BMP 52: Dock Washing***<br>• Applies to the general public, businesses, and public agencies that are involved in dock washing<br>• Refer to SWMMWW Volume IV S434 BMPs for Dock Washing | ☒ |
| ***BMP 53: Roof Vents***<br>• Applies to business and public agencies that have roof vents<br>• Refer to SWMMWW Volume IV S447 BMPs for Roof Vents | ☒ |
| ***BMP 54: Streets and Highways***<br>• Applies to business and public agencies that maintain and apply deicers/anti-icers to streets and highways<br>• Refer to SWMMWW Volume IV S406 BMPs for Streets and Highways | ☒ |
| ***BMP 55: Fertilizer Application***<br>• Applies to business and public agencies that use fertilizers<br>• Refer to SWMMWW Volume IV S443 BMPs for Fertilizer Application | ☐ |

## 4.2 BMP Implementation Plan

The plan for implementing the BMPs listed in Sections 4.1.5, 4.1.6, and 4.1.7 is shown in the attached Table 6.

A schedule for BMP implementation is required by Special Condition S6.E.7.c of the Phase I Permit. BMPs shall be implemented according to the following schedule:

- Non-structural BMPs shall be implemented immediately.
- Structural BMPs shall be implemented upon redevelopment of the portion of the site where the activity occurs.

Tenants at the facilities covered under this SWPPP are responsible for implementing the BMPs associated with their activities. Tenants who have operational control of defined areas will be required to develop a separate SWPPP. Completion of a SWPPP does not relieve the tenant of responsibility to obtain and comply with all other applicable NPDES permits.

# 5. OPERATION & MAINTENANCE

The plan for O&M of stormwater facilities at areas covered under this SWPPP is defined in the Port's O&M Program. The O&M Program was developed in accordance with Special Condition S6.E.6 of the Phase I Permit.

Generally, the Port is responsible for maintenance of stormwater facilities in common areas, and individual tenants are responsible for maintenance in tenant-controlled areas. The O&M Program includes inspection of stormwater facilities and specific maintenance actions for the following:

- Catch basins
- Roof drains
- Vaults
- Oil-water separators and other structures/treatment devices
- Manholes
- Pipes
- Trench drains
- Outfalls

Proper O&M of stormwater facilities and BMPs at these facilities requires regular inspection. Inspections are performed at least twice per yearand use area-specific inspection forms developed by Marine Maintenance, with completed inspection forms stored in SharePoint. An example site inspection form is provided in Appendix C. If Port staff or tenants notice a problem with the stormwater conveyance system, they are directed to contact Marine Maintenance to schedule maintenance or an inspection.

The O&M Manual outlines scope of inspections, inspection frequency, maintenance requirements, and other necessary components from the Phase I Permit and City's Stormwater Manual.

# 6. REFERENCES

City of Seattle, July 2021, Stormwater Manual. Volumes 1 to 5, Appendices A to I. Director's Rules SDCI 10-2021/SPU DWW-200.

Port of Seattle, 2022, Maritime Stormwater Management Program (SWMP) Plan.

Washington State Department of Ecology, 2019, Stormwater Management Manual for Western Washington (SWMMWW).

| BMP | Action[1] | Responsibility[2] | Schedule/Notes |
|---|---|---|---|
| **BMP 1** Eliminate Illicit Connections and Illicit Discharges | Perform dry season inspection - examine plumbing systems to identify any potential illicit connections. | MM | |
| | Contact the Port of Seattle Stormwater Program Manager if illicit connections or illicit discharges are identified. | MM | |
| | Eliminate illicit discharges to drainage systems and receiving waters | Env, Ops, MM, Tenants | |
| **BMP 2** Perform Routine Maintenance | Inspect all conveyance, detention and treatment systems at least annually and clean or repair structures. | MM | |
| | Clean catch basins when they are more than half full or when sediment is within 6 inches of the bottom of the lowest pipe, or there are obvious signs of pollution visible. | MM | |
| | All catch basins are required to have outlet traps. When unable to install an outlet trap, evaluate installing one in appropriate downstream location. | MM | |
| | Properly dispose of all solids, polluted material, and stagnant water collected through system cleaning. | MM | |
| | Consider posting "Dump No Waste" or other warning signs adjacent to inlets/catch basins where this is possible. | MM | |
| **BMP 3** Dispose of Fluids and Wastes Properly | Dispose of wastes in accordance with applicable regulations by:<br>• recycling,<br>• disposing in a permitted waste treatment facility,<br>• disposing in a municipal solid waste facility,<br>• disposing in a hazardous waste facility<br>• discharging to a sanitary sewer or combined sewer | Ops, MM, tenants | |
| **BMP 4** | Store wastes in suitable container(s). | Ops, MM, tenants | |

[1] BMP action summaries are provided in this table. Full BMP descriptions are provided in the Stormwater Management Manual for Western Washington (Ecology, 2019) and the City of Seattle Stormwater Manual (City of Seattle, 2021).

[2] Ops/tenants: 1) Ops will provide technical assistance to tenants, as practicable. 2) Tenants are responsible for identifying and implementing BMPs related to their operations and leaseholds. 3) Ops is not responsible for the actual implementation of BMPs for tenant operations or leaseholds. 4) For Port-operated and common areas, Ops and MM are responsible for implementing BMPs.

| BMP | Action[1] | Responsibility[2] | Schedule/Notes |
|---|---|---|---|
| Proper Storage of Solid Wastes | | | |
| | Storage containers must have leak proof lids and be kept closed. | Ops, MM, tenants | |
| | Check storage containers and trash compactors for damage and replace them if they are leaking, corroded, or otherwise deteriorating. | Ops, MM, tenants | |
| | Sweep waste area. When washing the area, contain and properly dispose of washwater. | Ops, MM, tenants | |
| | Connect trash compactors equipped with drain hose and areas containing dumpsters/trash compactors to sanitary sewer. | Ops, MM | Mobile dumpsters have lids and drain to combined sewer |
| | Properly dispose of washwater when washing dumpsters and used cooking oil containers, per BMP 17 (Cleaning or Washing) | Ops, MM | |
| | Clean up leaks and spills as they occur. | Ops, MM, tenants | |
| | Keep the area around used cooking oil storage containers clean and free of spilled grease, oils, food waste, and debris. | Ops, MM, tenants | |
| | Used cooking oil containers must be labeled with owner name and phone number, “contains used cooking oil”, “report spills by calling Marine Maintenance Dispatch at (206) 787-3350 and SPU at (206) 386-1800” | Ops, MM, tenants | |
| | Maintain tight-fitting lids on and store used cooking oil in tip-resistant containers on a level surface protected from impact and vandalism | Ops, MM, tenants | |
| | Do not overfill containers. | Ops, MM, tenants | |
| **BMP 5** Spill Prevention and Cleanup | Clearly mark or label all containers that contain potential pollutants. | Ops, MM, tenants | Environmental (Env) provide waste management assistance |
| | Store and transport liquid materials in appropriate containers with tight-fitting lids. | Ops, MM, tenants | |
| | Place drip pans underneath all containers, fittings, valves, and where materials are likely to spill or leak. Check drip pans periodically to prevent overflow during rain events. | Ops, MM, tenants | |
| | Use tarpaulins, ground cloths, or drip pans in areas where materials are mixed, carried, and applied. | Ops, MM, tenants | |

**Table 6. BMP Implementation Plan for Pier 90 and 91 (updated 9/2022)**

| BMP | Action[1] | Responsibility[2] | Schedule/Notes |
|---|---|---|---|
| | Train employees on the safe techniques for handling materials and to check for leaks and spills. | Ops, MM | FT staff attend annual HAZWOPER refresher |
| | Develop and implement a spill plan and update it annually or whenever there is a change in activities or staff responsible for spill cleanup. | Ops, MM | Assistance from Env |
| | Store spill cleanup kits near areas with a high potential for spills. | Ops | |
| | In the event of a spill, implement the spill plan immediately. | Ops, MM, tenants | Spill report forms available at FT office |
| **BMP 6** Provide Oversight and Training for Staff | Train all team members annually in the operation, maintenance, and inspection of BMPs. Keep training records on file. | Ops, Env | Env assist with training |
| | Train all team members annually in spill cleanup | Ops, Env | SPCC support from Env |
| | Assign an employee to oversee implementation and management of stormwater source control BMPs. | MM | |
| **BMP 7** Property Maintenance | Locate pollution generating activities away from inlets/catch basins, conveyance pipes, and ditches. | Ops, MM, tenants | |
| | Sweep or vacuum paved areas as needed. | Ops, MM, tenants | |
| | Do not hose down or otherwise transport pollutants from any area to the ground, drainage system, combined sewer, or receiving water. | Ops, MM, tenants | |
| | Promptly contain and clean up solid and liquid leaks and spills. | Ops, MM, tenants | |
| | Inspect areas used for loading and unloading, material/waste storage, and vehicle parking as needed to prevent pollutant transport off site or to the drainage system. | Ops, MM, tenants | |
| | Place drip pans, absorbents, or other containment below leaking vehicles. Ensure drip pan doesn't overflow and pads don't blow away and are disposed of properly. | Ops, MM, tenants | |
| | For properties that don't drain to combined sewer, oil removal system is required for parking lots that are high-use sites (SMC 22.801.090). | Engineering | Addressed during redevelopment and project design. |
| **BMP 10** Mobile Fueling of Vehicles and Heavy Equipment | Train driver/operator annually in spill prevention and cleanup. New employees must be trained upon hiring. Maintain training records. | Ops, tenants | |
| | Develop and follow a written fuel operation plan signed by manager | Ops, tenants | |

| BMP | Action[1] | Responsibility[2] | Schedule/Notes |
|---|---|---|---|
| | and distributed to all operators. Include spill notification protocol. | | |
| | Ensure driver/operator is monitoring the fuel transfer. | Ops, tenants | |
| | To extent practical, locate fueling point at least 25 feet from catch basin/inlet or inside containment area. Place drip pan or absorbent under fueling location. | Ops, tenants | |
| | Do not "top off" fuel tanks. | Ops, tenants | |
| | Maintain spill cleanup materials in fueling vehicles. | Ops, tenants | |
| | Inspect and maintain equipment on fueling vehicles. Maintain inspection records. | Ops, tenants | |
| | Immediately remove and dispose of fuel-contaminated soils with visible contamination. | Ops, tenants | |
| **BMP 12** Maintenance and Repair of Vehicles and Equipment | Inspect all incoming vehicles and equipment for leaks and spills. Clean up all leaks and spills as they occur. Store and dispose of fluids properly. | Ops, MM, tenant | |
| | Maintenance and repair activities must be conducted inside or covered impervious containment area. | Ops, MM, tenant | |
| | Containment devices must be used for emergency repairs outside. | Ops, MM, tenant | |
| | Sweep maintenance and repair areas weekly. | Ops, MM, tenant | |
| | Do not discharge wastes, such as washwater, into streets, sidewalks, drainage systems, or receiving waters. | Ops, MM, tenant | |
| | Maintenance and repair shop floor drains must discharge to sanitary sewer with proper approval. | Ops, MM, tenant | |
| **BMP 13** Concrete and Asphalt Mixing and Production | Cover production areas to prevent stormwater contact. | Ops, MM, tenant | |
| | Recycle all process water or discharge to a dead-end sump, treatment system, or sanitary sewer (obtain permit where needed). | Ops, MM, tenant | |
| | Do not discharge washout into streets, sidewalks, drainage systems, or receiving waters. | Ops, MM, tenant | |
| | Train employees annually about BMPs and maintain training records. | Ops, MM, tenant | |
| | Protect catch basins and inlets with filter socks or absorbents. Maintain filters regularly to prevent plugging. | Ops, MM, tenant | |

| BMP | Action[1] | Responsibility[2] | Schedule/Notes |
|---|---|---|---|
| | Sweep production, pouring, and all outdoor areas daily or more often as needed. | Ops, MM, tenant | |
| | Collect and properly dispose of runoff that comes in contact with release agents. | Ops, MM, tenant | |
| **BMP 14** Concrete Pouring, Concrete/Asphalt Cutting, and Asphalt Application | Sweep/collect loose aggregate and dust daily. Shove and/or vacuum all slurry and properly dispose of daily. | Ops, MM, tenant | |
| | Never hose down concrete or asphalt waste materials to catch basin, ditch, or receiving water. | Ops, MM, tenant | |
| | Protect catch basins with covers and catch basin filter sock. Maintain filter from plugging. | Ops, MM, tenant | |
| | Perform cleaning of equipment where rinse water can be collected. | Ops, MM, tenant | |
| | Collect, treat and properly dispose of runoff from cutting activities. | Ops, MM, tenant | |
| **BMP 16** Storage of Liquids in Aboveground Tanks | Do not discharge contaminated stormwater within the secondary containment area to the drainage system; evidence of contamination can include the presence of visible sheen, color or turbidity in the runoff, or existing or historical operational problems at the facility. Use screening techniques for contaminants, such as test strips or laboratory testing. | Ops, tenant | Only oil and bilge fluids are stored onsite; Env conducts monthly SPCC inspections. |
| | Provide secondary containment or use a double-walled tank. | Ops | |
| | Inspect tank containment areas regularly to identify problems (e.g., cracks, corrosion, leaks) with components such as fittings, pipe connections, and valves. | Ops, Env | |
| | Replace or repair tanks that are leaking, corroded, or deteriorating. | MM | |
| | Document and keep all inspection records; a soundness evaluation by a Professional Engineer may be requested to confirm tank stability. | Ops, Env | |
| | Sweep and clean the tank storage area regularly. | MM | |
| | For new and redeveloped sites, locate and design tanks to prevent and minimize stormwater contamination. | NA | |
| | Locate permanent tanks in an impervious (Portland cement | Env, Ops | |

| BMP | Action[1] | Responsibility[2] | Schedule/Notes |
|---|---|---|---|
| | concrete or equivalent) secondary containment area and surround the secondary containment area with dikes or provide double walled tanks approved by the Underwriters Lab. | | |
| | Design dikes to be of sufficient height to provide a containment volume of either 10 percent of the total volume of the enclosed tanks or 110 percent of the volume of the largest tank, whichever is greater. | Env, Ops | |
| | Slope secondary containment to drain to a dead-end sump or equivalent for the collection of small spills. | Env, Ops | |
| | If the tank containment area is not covered, equip the outlet from the spill containment sump with a shutoff valve; the valve should only be opened to convey contaminated stormwater to an approved treatment system or disposal facility or to convey uncontaminated stormwater to the drainage system. | Env, Ops | |
| | If contamination is present, discharge to the treatment system. | Env, Ops | |
| | Place adequately sized drip pans beneath all mounted taps and locations where drips and spills might occur during the filling and unloading of tanks. | Env, Ops | |
| | Include a tank overfill protection system to minimize the risk of spillage during loading. | Env, Ops | |
| **BMP 17**<br>Cleaning or Washing | Provide and document training to employees regarding proper disposal of wastewater. | MM, Env | |
| | Do not allow washwater to drain to the stormwater system. | Ops, MM, tenants | |
| | Wipe food service equipment, before cleaning/washing to remove excess pollutants. | Tenants | |
| | Sweep surfaces before cleaning/washing to remove excess sediment and other pollutants. | MM, tenants | |
| | Discharge wastewater from cleaning or washing activities into the sanitary or combined sewer or into a holding tank. | MM, tenants | |
| | Cover and/or contain the activity or conduct the activity inside a building | MM, tenants | |

| BMP | Action[1] | Responsibility[2] | Schedule/Notes |
|---|---|---|---|
| | having a floor drain that discharges to the sanitary sewer. | | |
| | Label all mobile cleaning equipment as follows: "Properly dispose of all wastewater. Do not discharge to an inlet/catch basin, ditch, stream, or on the ground." | MM | |
| | The uncovered portion of the wash pad discharging directly to the sanitary sewer must be no larger than 200 square feet or must have an overhanging roof. | Ops | Connected to sewer and in locked area |
| | If the uncovered wash pad cannot be less than 200 square feet, a shut off valve should be installed. | Ops | Connected to sewer and in locked area |
| | Obtain all necessary permits for installing, altering or repairing onsite drainage and side sewers. | Env | |
| | Conduct annual training on operation of shutoff valve. | Ops | |
| **BMP 18** Loading and Unloading of Liquid or Solid Material | Frequently sweep surfaces in loading and unloading areas. | MM, tenants | Conducted quarterly |
| | Use drip pans where spills may occur and when making or breaking connections. | Ops, tenants | |
| | Check loading and unloading equipment as needed. | Ops, tenants | |
| | If possible, prevent stormwater from entering loading area. | Ops, tenants | |
| | Place curbs at edge of loading area to direct stormwater to treatment system. | Ops, MM | |
| | Pave and slope loading area to prevent the pooling of water. | Ops, MM | |
| **BMP 22** Landscaping and Vegetation Management | Do not dispose of or store collected vegetation in drainage systems, waterways, receiving waters, or greenbelt areas. Use mulch or other erosion control measures | Ops, MM | Performed by MM Landscaping group |
| | Develop/implement an Integrated Pest Management plan (Appendix I of City of Seattle Stormwater Manual). | MM | |
| | Implement landscaping principles in Volume 1, Section 7.8 when maintaining landscaped areas.<br>- Maintain natural drainage patterns and features<br>- Preserve native vegetation | MM, Landscaping Group | |

| BMP | Action[1] | Responsibility[2] | Schedule/Notes |
|---|---|---|---|
| | - Plant new trees<br>- Protect soils | | |
| | Apply all fertilizers using properly trained personnel. Document and keep all training records. | MM, Landscaping Group | |
| | Do not apply fertilizers to grass swales, filter strips, or buffer areas that drain to receiving waters. | MM, Landscaping Group | |
| **BMP 23**<br>Painting, Finishing, and Coating Activities | Train employees in paint application and cleanup. Maintain all training records. | MM, tenants | |
| | Use ground cloths underneath outdoor painting, scraping, sandblasting work and properly clean up debris after each use. | MM, tenants | |
| | Use a catch basin cover or filter sock. Maintain filter regularly. | MM, tenants | |
| | Do not conduct spraying, blasting, or sanding activities over open water or where wind may blow paint into water. | MM, tenants | |
| | Sweep dock areas to collect debris. Do not hose down debris. | MM, tenants | |
| | Conduct paint mixing, tool cleaning activities inside, in an enclosed area, or using BMPs to contain spills | MM, tenants | |
| | Dispose of all waste properly and prevent releases to the air, ground or water. | MM, tenants | |
| | Store all paints, finishes, or solvents inside or in covered secondary containment. | MM, tenants | |
| | All containers must have tight-fitting lids able to retain contents if tipped over. | MM, tenants | |
| **BMP 28**<br>Portable Container Storage | Store materials in leak-proof containers with tight-fitting lids able to contain material if tipped over. | Env | Hazardous and solid waste storage overseen by Env staff |
| | Properly label all containers to identify their contents. Position containers so labels/markings are clearly visible. | Env | Hazardous and solid waste storage overseen by Env staff |
| | Place drip pans beneath all taps on mounted containers and at all potential drip and spill locations during the filling and draining of containers. | Env | Hazardous and solid waste storage overseen by Env staff |
| | Inspect container storage areas regularly for corrosion, structural failure, spills, leaks, and overfills. | Env | Hazardous and solid waste storage overseen by Env staff |

| BMP | Action[1] | Responsibility[2] | Schedule/Notes |
|---|---|---|---|
| | Check containers daily for leaks and spills. Replace containers and replace and tighten bungs in drums as needed. | Env | Hazardous and solid waste storage overseen by Env staff; contractor conducts weekly inspections |
| | Secure containers in a manner that prevents accidental spillage, or any unauthorized use. | Env | Hazardous and solid waste storage overseen by Env staff |
| | Store hazardous or dangerous material or waste containers in a designated area. Provide covered secondary containment, or cover and pave the storage area with an impervious surface and install a berm or dike to surround the area. Slope the area to drain into a dead-end sump for the collection of leaks and small spills. | Env | Hazardous and solid waste storage overseen by Env staff |
| | Store hazardous or dangerous material or wastes and liquids in a designated sloped area with the containers elevated or otherwise protected from stormwater run-on. | Env | Hazardous and solid waste storage overseen by Env staff |
| | Elevate hazardous or dangerous material or waste containers metal drums to prevent corrosion and leakage. | Env | Hazardous and solid waste storage overseen by Env staff |
| | Ensure that the storage of reactive, ignitable, or flammable liquids complies with the Seattle Fire Code and Washington State Fire Code. | Env | Hazardous and solid waste storage overseen by Env staff |
| **BMP 36** Deicing and Anti-icing Operations for Airports and Streets | Select deicers and anti-icers that result in the least adverse impact to the environment and apply only as needed using minimum quantities. | MM | |
| | Store and transfer deicing and anti-icing materials on an impervious containment pad. | MM | |
| | Clean up accumulated deicing and anti-icing materials and grit from roads as soon as possible. | MM | |
| | Increase maintenance of stormwater structures as necessary. | MM | |
| **BMP 37** Maintenance and Management of Roof and Building Drains at Manufacturing and Commercial Buildings | If leachates or emissions from buildings are suspected sources of stormwater pollutants, sample and analyze the stormwater draining from the building and sediment from nearby catch basins. | MM | |
| | If a roof or building is identified as a source of stormwater pollutants, | MM | |

| BMP | Action[1] | Responsibility[2] | Schedule/Notes |
|---|---|---|---|
| | implement appropriate operational source control measures. | | |
| | Sweep areas routinely to remove pollutant residues. | MM | |
| | If operational BMPs do not prevent or reduce zinc pollution from galvanized roofing or siding, paint/coat the galvanized surfaces or treat the stormwater runoff. | MM | |
| | If operational BMPs are not sufficient to prevent stormwater contamination, treatment controls must be implemented. | MM | |
| **BMP 41** Potable Water Line Flushing, Water Tank Maintenance, and Hydrant Testing<br><br>(S441 BMPs for Potable Water Line Flushing, Water Tank Maintenance and Hydrant Testing) | Remove solids from associated curbs and gutters before flushing water. Use erosion and sediment control BMPs to collect solids. | MM | |
| | If using super chlorination or chemical treatment as part of flushing, discharge water to sanitary sewer. Ensure water quality standards are met and water doesn't cross property lines. | MM | |
| | Get approval from local jurisdiction to discharge to drainage system. | MM | |
| | Do not over apply dichlorination agents. | MM | |
| **BMP 46** Labeling Storm Drain Inlets on Your Property<br><br>(S442 BMPs for Labeling Storm Drain Inlets) | Label storm drain inlets in any areas where contributions or dumping to storm drains is likely. | MM | |
| | Stencil or apply markers adjacent to storm drain inlets. Or use a storm drain grate stamped with warnings against polluting. | MM | |
| | Place the marker in clear sight. | MM | |
| | Use brief statement or icon to discourage illegal dumping. Examples include:<br>- "No Dumping – Drains to Stream"<br>- "No Pollutants – Drains to Puget Sound"<br>- "No Dumping – Puget Sound Starts Here" | MM | |
| | Maintain legibility of markers and signs. | MM | |
| | Temporarily block storm drain inlet when labelling. | MM | |
| **BMP 48** Goose Waste | If possible, pick up goose waste using shovels, brooms, rakes, power | MM | |

| BMP | Action[1] | Responsibility[2] | Schedule/Notes |
|---|---|---|---|
| (S452 BMPs for Goose Waste) | sweepers, and trash cans. Properly dispose of waste. | | |
| | Do not blow, sweep, or wash goose waste into waterways or storm sewer systems. | MM | |
| | Regularly clean goose waste from areas of chronic deposition. | MM | |
| | Do not feed wild geese or any other wild animals. | MM | |
| **BMP 49** Pesticides and an Integrated Pest Management Program<br><br>(S435 BMPs for Pesticides and an Integrated Pest Management Program) | Train employees on proper application of pesticides and disposal practices. | NA | Do not use pesticides |
| | Choose the least toxic pesticide. | NA | Do not use pesticides |
| | Conduct any pest control during the life stage when the pest is most vulnerable. | MM | |
| | Apply pesticides according to the directions on the label. | NA | Do not use pesticides |
| | Do not apply pesticides if it is raining or immediately before expected rain. | NA | Do not use pesticides |
| | Ensure that the pesticide application equipment is capable of immediate shutoff. | NA | Do not use pesticides |
| | Do not apply pesticides within 100 feet of receiving waters. All critical areas must be flagged prior to spraying. | NA | Do not use pesticides |
| | Mix pesticides and clean the application equipment under cover in an area where accidental spills will not enter groundwater or contaminate the soil. | NA | Do not use pesticides |
| | Use manual pest control strategies such as physically scraping moss from rooftops, high-pressure sprayers to remove moss, and rodent traps. | MM | |
| | Consider alternatives to pesticide use. | | |
| | Store pesticides in enclosed or covered impervious containment areas. | NA | Do not use pesticides |
| | Do not hose down paved areas to an inlet/catch basin or ditch. | MM | |
| | Reuse rinsate generated from equipment cleaning or recycle. | NA | Do not use pesticides |
| | Implement pesticide-use plan | NA | Do not use pesticides |

**Table 6. BMP Implementation Plan for Pier 90 and 91 (updated 9/2022)**

| BMP | Action[1] | Responsibility[2] | Schedule/Notes |
|---|---|---|---|
| | Clean up any spilled pesticides immediately. | NA | Do not use pesticides |
| | Develop and implement an Integrated Pest Management program if pests are present. | MM | |
| **BMP 51**<br>Irrigation<br><br>(S450 BMPs for Irrigation) | Irrigate with minimum water needed. | MM, Landscaping | |
| | Maintain all irrigation systems. Ensure no overspraying and even application. | MM, Landscaping | |
| | Inspect irrigated areas regularly for erosion, excess watering, erosion, and/or discharge. | MM, Landscaping | |
| | Don't spray impervious surface areas. | MM, Landscaping | |
| | Repair broken or leaking sprinkler nozzles as soon as possible. | MM, Landscaping | |
| | Do not irrigate plants during or immediately after fertilizer application and pesticide application. | MM, Landscaping | |
| | Reduce watering during wet season (Oct 1 – Apr 30) | MM, Landscaping | |
| **BMP 52**<br>Dock Washing<br><br>(S434 BMPs for Dock Washing) | Surface Prep and Spot Cleaning<br>- Scoop and collect debris and bird feces<br>- Sweep, capture and dispose of debris<br>- Sweep or vacuum docks<br>- Temporarily block drains<br>- Collect water for proper disposal<br>- Try spot cleaning | MM | |
| | Collect wash water and dispose of properly. | MM | |
| | Try pressure washing using light pressure. | MM | |
| | Use non-abrasive methods when washing treated wood. | MM | |
| | Do not discharge removed marine growth to waters of the state. | MM | |
| | Do not discharge emulsifiers, dispersants, solvents, or other toxic materials to waters of the state. | MM | |
| **BMP 53**<br>Roof Vents<br><br>(S447 BMPs for Roof Vents) | Identify processes that are vented and may contribute pollutants (metal dust, grease from food preparation, solvents, hydrocarbons, fines, stone dust) to the roof. | MM, Tenants | |
| | Look for chemical deposition around vents, pipes, and other surfaces. | MM, Tenants | |

| BMP | Action[1] | Responsibility[2] | Schedule/Notes |
|---|---|---|---|
| | Install and maintain source control measures such as air pollution control equipment. | MM, Tenants | |
| | If air pollution control equipment doesn't prevent pollutant fallout, additional treatment may be necessary. | MM, Tenants | |
| | Maintain air filters and pollution control equipment on a regular basis. | MM, Tenants | |
| | When cleaning rooftops, collect washwater and dispose properly. | MM, Tenants | |
| **BMP 54** Streets and Highways<br><br>(S406 BMPs for Streets and Highways) | Adhere to manufacturer's guidelines for use and application. | MM | |
| | Store and transfer de and anti-icing materials on impervious containment pads or an equivalent spill/leak containment area. | MM | |
| | Sweep/clean up accumulated de and anti-icing materials and grit from road. | MM | |
| | Minimize use in areas where runoff from the roadway enters sensitive areas such as fish-bearing streams. | MM | |
| | Use drip pans or absorbents wherever concrete, asphalt, asphalt emulsion, paint product, and drips are likely to spill. | MM | |
| | Cover and contain nearby storm drains. | MM | |
| | Designate area onsite for washing hand tools and collect water for disposal. | MM | |
| | Do not use diesel fuel for cleaning or prepping asphalt tools and equipment. | MM | |
| | Sweep areas as frequently as needed. Do not hose down areas into storm drains. | MM | |
| | Store all fuel, paint, and other products on secondary containment. | MM | |
| | Conduct paint striping operations during dry weather. | MM | |

# FIGURE: SWPPP SITE PLAN

6102
9886
6097
Shoreline
6112
Fish Offloading/ Vessel Moorage
Trailer
6096
5139
6095
KAMI TECH INC. (CNE305930)
P-90 M-86
NRC ENVIRONMENTAL SERVICES
LINEAGE LOGISTICS - CITY ICE (WAR001488)
6094
5136
POS
Fishing Vessel Crew Parking
Parking
6104
6101
6103
5133
GLACIER FISH COMPANY, LLC (NEEDS SWPPP)
Dumpster
Pallet Storage
Spill Response Materials
Foss Maritime Company
Parking
A-1
GLACIER FISH COMPANY, LLC (NEEDS SWPPP)
City of Seattle
T91-A 400
5121
AMERICAN SEAFOODS COMPANY LLC (AMERICAN SEAFOODS MUNICIPAL TENANT SWPPP)
9002
No Vehicle Access
T91 A-500
AMERICAN SEAFOODS COMPANY LLC (AMERICAN SEAFOODS MUNICIPAL TENANT SWPPP)
9001
P90/P91
Dumpsters
T91 A-310
Storage
Loading Dock
Loading Dock
Ground Transportation
Loading and Unloading
P90 C-173
Loading Dock
Material and Equipment Storage
Bus Parking
Parking
Loading Dock
KAMI TECH INC. (CNE305930)
Contech Treatment System
Dumpsters
6098
Pallet Storage
Scrap Metal Dumpster
Dumpster
Service Area
Loading Dock
Parking
6099
CRUISE TERMINAL
Smith Cove Cruise Terminal
P90 C-175
Cruise Ship Load/Unload
Cruise Ship Load/Unload
Loading Dock
LINEAGE LOGISTICS - CITY ICE (WAR001488)
Transformer Pad
9880
Transformer Pad
Refrigerated Truck Parking
Generator
Service Area
PIER 91
PIER 90

Cruise Terminal lease area covered under T91 SWPPP when area is vacated by tenant; When tenant is operating, area under tenant SWPPP.

**NPDES Permit Status**

- Municipal - POS
- Industrial
- Seasonal Tenant SWPPP
- Municipal - Tenant
- No Discharge

*POS Municipal Permit Area Use*

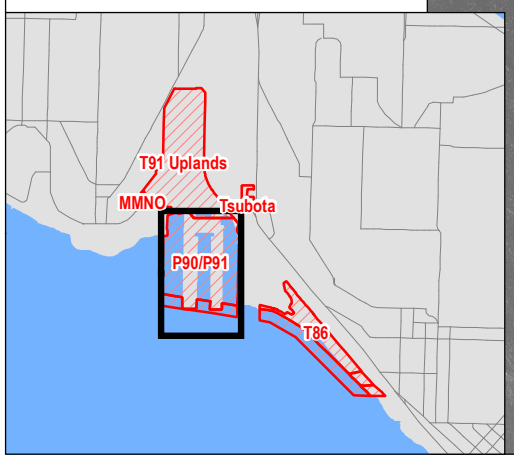
- Outfall

**Stormwater Structures and Lines**

- Catch Basin
- Manhole
- Cleanout
- Drain
- Flow Control (Other)
- Oil Water Separator
- Treatment (Other)
- Unknown
- Deck Drains
- Pipe
- Trench Drain
- Pipe

**Sewer Structures and Lines**

- Manhole
- Lift Station
- Pipe
- Tide Valve Present




# SWPPP Site Plan

Pier 90 and Pier 91
Port of Seattle
Seattle, Washington

| | | | |
|---|---|---|---|
| Aspect Consulting | NOV-2022 | BY: EAC / JHD | FIGURE NO. 1 |
| | PROJECT NO. 180312 | REVISED BY: BR | |

# APPENDIX A: BEST MANAGEMENT PRACTICES DESCRIPTIONS

# CHAPTER 2 – BEST MANAGEMENT PRACTICES FOR ALL REAL PROPERTY

## 2.1. Required Best Management Practices

All real property must implement and maintain the following source control best management practices (BMPs) to prevent or minimize pollutants from leaving a site or property (Seattle Municipal Code [SMC], Section 22.803.030):

- BMP 1: Eliminate Illicit Connections and Illicit Discharges
- BMP 2: Perform Routine Maintenance
- BMP 3: Dispose of Fluids and Wastes Properly
- BMP 4: Proper Storage of Solid Wastes
- BMP 5: Spill Prevention and Cleanup
- BMP 6: Provide Oversight and Training for Staff
- BMP 7: Property Maintenance
- BMP 8: Rooftop Dog Runs

| Stormwater Code Language | References |
|---|---|
| SMC, Section 22.803.030 – *For all discharges, responsible parties shall implement and maintain source controls to prevent or minimize pollutants from leaving a site or property.* | • None provided |
| SMC. Section 22.801.090 –<br>*"Responsible party" means all of the following persons:*<br>1. *Owners, operators, and occupants of property; and*<br>2. *Any person causing or contributing to a violation of the provisions of this subtitle.* | • None provided |

### 2.1.1. BMP 1: Eliminate Illicit Connections and Illicit Discharges

Illicit connections and discharges include sanitary or process wastewater connections and unpermitted discharges of pollutants that are improperly discharging to a drainage system or receiving water. These improper connections and discharges allow a variety of pollutants to flow directly to receiving waters instead of the sanitary sewer or septic system. Frequently, such connections and discharges are not intentional but can be very harmful to the environment and must be eliminated. Refer to *Volume 1, Section 3.11* for the minimum requirements to comply with the Seattle Side Sewer Code (SMC, Chapter 21.16).

Required elements of this BMP include:

- For all real properties, responsible parties must examine their plumbing systems to identify any potential illicit connections. A good place to start is with an examination of the site plans. Remodeling and tenant improvement projects are particularly susceptible to inadvertent illicit connections. If an illicit connection is suspected, trace the source using closed-circuit television inspection (CCTV), dye test with a nontoxic dye, smoke testing, flow test, or visual reconnaissance. These tests are typically best performed by qualified personnel such as a plumbing contractor. Notify the Washington State Department of Ecology (Ecology) Northwest Regional Office at (425) 649-7000 and Seattle Public Utilities (SPU) at (206) 386-1800 prior to performing a dye test that may result in a discharge to a receiving water.
- If illicit connections are found, permanently plug or disconnect the connections.
- Obtain all necessary permits for altering or repairing side sewers and plumbing fixtures. Restrictions on certain types of discharges, particularly industrial process waters, may require pretreatment of discharges before they enter the sanitary sewer. It is the responsibility of the property owner or business operator to obtain the necessary permits and to replace the connection.
- The Stormwater Code allows the Director to require that a responsible party provide or create site drainage and sewer system maps with verified discharge points to aid in identifying illicit connections and/or to verify that illicit connections are eliminated.
- Eliminate illicit discharges to drainage systems and receiving waters.

### 2.1.2. BMP 2: Perform Routine Maintenance

Sediment and pollutants can accumulate over time in various components of drainage collection, conveyance, and treatment systems, such as catch basins, ditches, storm drains, and oil/water separators. When a storm event occurs, the excessive sediment and pollutants can become mobilized and carried into receiving waters, the public drainage system, or a public combined sewer. Performing routine maintenance is required and helps prevent sediment and pollutants from discharging downstream.

Required elements of this BMP include:

- Inspect all conveyance, detention and treatment systems at least annually and clean or repair structures whenever the condition thresholds described in *Appendix G* are triggered. Systems in industrial areas or areas that receive excessive sediment, foliage or debris may require more frequent inspection and maintenance. If leaves or woody debris accumulate on catch basins and inlets, clean as needed to prevent flooding.
- Clean catch basins when they are greater than 60 percent full of sediment, within 6 inches of the bottom of the lowest pipe, or there are obvious signs of pollution visible. At 60 percent capacity, there is not enough settling space to remove sediment from stormwater and they cease to function as designed.
- All catch basins are required to have outlet traps (downturned elbow). Outlet traps help to keep oil and other floatables from discharging to the public drainage system, public combined sewer, or receiving waters. Replace or repair outlet traps when missing or damaged. When catch basins lack sufficient depth or room to install an outlet trap, evaluate the drainage system to determine if there is an appropriate downstream location and install an outlet trap at that location.
- Properly dispose of all solids, polluted material, and stagnant water collected through system cleaning. Do not decant untreated, treated, or filtered water back into drainage system. Do not jet material downstream into the system. In all systems, known or suspected contaminated material may need to be tested for additional disposal requirements.

Consider posting “Dump No Waste” or other warning signs adjacent to inlets/catch basins where possible.

Several contractors offer cleaning services for drainage systems. A list of contractors can be found on the SPU website, online, or in the Yellow Pages under entries such as “Sewer Contractors.”

### 2.1.3. BMP 3: Dispose of Fluids and Wastes Properly

For all real properties, responsible parties must properly dispose of solid and liquid wastes and contaminated stormwater and street waste solids. There are generally five options for disposal, depending on the type of waste:

1. Recycling facilities
2. Permitted centralized waste treatment facilities
3. Municipal solid waste disposal facilities
4. Hazardous waste treatment, storage, and disposal facilities
5. Sanitary sewer or combined sewer

Some liquid wastes and contaminated stormwater (depending on the pollutants and associated concentrations) may be discharged to the sanitary sewer system, but are subject to approval by the City and King County. Restrictions on certain types of discharges may require pretreatment of discharges before they enter the sanitary sewer.

If wastes cannot be legally discharged to a sanitary sewer, one of the other three disposal options must be used. Sumps or holding tanks may be useful for storing liquid wastes temporarily. The contents must be disposed of properly.

Contaminated street waste solids must be handled by following either the guidance in Management of Street Waste Solids and Liquids in Appendix IV-B of the *Stormwater Management Manual for Western Washington* (SWMMWW) (Ecology 2019) or the Dangerous Waste Regulations (Washington Administrative Code [WAC], Chapter 173-303), if applicable.

For assistance with finding recycling facilities, refer to the King County Green Tools web page (https://kingcounty.gov/depts/dnrp/solid-waste/programs/green-building.aspx).

For assistance in determining where to take motor oil, pesticides, smoke alarms, fluorescent bulbs, and other hazardous materials, refer to the Local Hazardous Waste Management Program website (www.hazwastehelp.com).

Required elements of this BMP include:

- Dispose of wastes in accordance with applicable solid waste, dangerous waste, industrial waste, and other regulations.

## 2.1.4. BMP 4: Proper Storage of Solid Wastes

This BMP applies to properties that store solid wastes, including garbage, recyclables, compostable materials, and cooking grease containers outdoors. If improperly stored, these wastes can contribute a variety of pollutants to stormwater.

Required elements of this BMP include:

- Store all solid wastes in suitable containers (Figure 1). Check storage containers and trash compactors for damage and replace them if they are leaking, corroded, or otherwise deteriorating.

**Figure 1. Covered Outdoor Storage of Solid Wastes.**

- Ensure that storage containers have leakproof lids or are covered by some other means, and that lids are closed at all times.
- Sweep the waste storage area or clean frequently to collect all loose solids for proper disposal in a storage container.
- Connect trash compactors equipped with a drain hose to the sanitary sewer.
- Connect areas containing dumpsters and trash compactors to the sanitary sewer, unless equipped with a drain hose.
- Contain and properly dispose of washwater pursuant to BMP 17 (Cleaning or Washing) when washing dumpsters and used cooking oil containers.
- Clean up leaks and spills as they occur. Keep the area around used cooking oil storage containers clean and free of spilled grease, oils, food waste, and debris.

- Storage Container Requirements for Used Cooking Oil:
  - Store used cooking oil containers indoors or on private property. When authorized by the Seattle Department of Transportation (SDOT) and SPU Solid Waste, containers can be stored in the right-of-way.
  - Owners of used cooking oil containers must implement the following:
    - Label each used cooking oil container with the following:

      The name and phone number of container owner

      Contains used cooking oil

      Report spills by calling SPU at (206) 386-1800

    - Record all authorized users specific to each container.
    - Place and maintain lids on used cooking oil storage containers to prevent rainwater intrusion.
    - Do not fill storage containers beyond 90 percent of their capacity. If accumulated used cooking oil exceeds 90 percent of the capacity of the storage container, obtain and use another suitable storage container.
    - Ensure that screens are kept clean and clear of debris.
  - Used cooking oil containers must be located to prevent tipping, spillage, vandalism, and vehicle impact. Spills resulting from damage, tipping, vandalism, and leaks are the responsibility of the owner of the container. Recommended approaches include:
    - Store used cooking oil in containers inherently resistant to tipping. Barrels are not tip resistant.
    - Locate used cooking oil containers on a level surface or secure them to prevent tipping.
    - Store used cooking oil in containers with a tight-fitting leak-resistant lid.
    - Store used cooking oil containers within a building or in a locked and secure area to prevent unauthorized use or vandalism.
    - Protect used cooking oil containers from vehicle impact by fenced enclosures, bollards, or other physical barriers.
    - Do not attempt to transfer used cooking oil from the kitchen to the used cooking oil container using overfilled small containers.

## 2.1.5. BMP 5: Spill Prevention and Cleanup

Leaks and spills can damage public infrastructure, interfere with sewage treatment and cause a threat to human health or the environment. Spills are often preventable if appropriate chemical and waste handling techniques are practiced effectively and the spill response plan is immediately implemented. Additional spill control requirements may be required based on the specific activity occurring on site.

A spill can be a one-time event, a continuous leak, or frequent small spills. All types must be addressed. Spills resulting from vandalism or inadequate waste management are the responsibility of the waste owner.

Businesses and real properties that load, unload, store, and manage liquids or other erodible materials must implement this BMP.

### 2.1.5.1. Spill Prevention

Implement the following practices and provide spill cleanup kits (*Section 2.1.5.3*) at activity locations where spills may occur:

- Clearly mark or label all containers that contain potential pollutants.
- Store and transport liquid materials in appropriate containers with tight-fitting lids.
- Place drip pans underneath all containers, fittings, valves, and where materials are likely to spill or leak. Check drip pans periodically to prevent overflow during rain events.
- Use tarpaulins, ground cloths, or drip pans in areas where materials are mixed, carried, and applied to capture any spilled materials.
- Train employees on the safe techniques for handling materials used on the site and to check for leaks and spills.

### 2.1.5.2. Spill Plan

- Develop and implement a spill plan and update it annually or whenever there is a change in activities or staff responsible for spill cleanup. Post a written summary of the plan at areas with a high potential for spills, such as loading docks, product storage areas, waste storage areas, and near a phone (Figure 2). The spill plan may need to be posted at multiple locations. Describe the facility, including the owner's name, address, and telephone number; the nature of the facility activity; and the general types of chemicals used at the facility.
- Designate spill response employees to be on the site during business activities. Provide a current list of the names, and telephone numbers (office and home) of designated spill response employee(s) who are responsible for implementing the spill plan.
- Provide a site plan showing the locations of storage areas for chemicals, inlets/catch basins, spill kits and other relevant infrastructure or materials information.
- Describe the emergency cleanup and disposal procedures. Note the location of the spill kit in the spill plan.
- List the names and telephone numbers of public agencies to contact in the event of a spill. Refer to *Section 2.1.5.4* for more information.


**Figure 2. Waste Storage Area with Spill Kit and Posted Spill Plan.**

### *2.1.5.3. Spill Cleanup Kit*

Store spill cleanup kits near areas with a high potential for spills so that they are easily accessible in the event of a spill. The contents of the spill kit must be appropriate to the types and quantities of materials stored or otherwise used at the facility, and refilled when the materials are used. A spill kit may include the following items:

- Absorbent pads
- Sorbent booms or socks
- Absorbent granular material (such as kitty litter)
- Protective clothing (such as latex gloves and safety goggles)
- Thick plastic garbage bags
- Drain cover

### 2.1.5.4. Spill Cleanup and Proper Disposal of Material

In the event of a spill, implement the following procedures:

- Implement the spill plan immediately.
- Contact the designated spill response employee(s).
- Block off and seal nearby inlets/catch basins to prevent materials from entering the drainage system or combined sewer.
- At the earliest possible time, but in any case within 24 hours, report all spills, discharges, or releases that have impacted or could impact a drainage system, a combined sewer, a sanitary sewer, or a receiving water to the SPU Operations Response Center at (206) 386-1800. This reporting requirement is in addition to, and not instead of, any other reporting requirements under federal, state, or local laws. Other agencies may include Seattle Fire Department (206) 386-1400, Ecology (425) 649-7000 and the National Response Center (800) 424-8802. Spill reporting should take priority over the collection of supporting information. In case of emergency, dial 911.
- Use an appropriate material to clean up spills. Do not use emulsifiers or dispersants such as liquid detergents or degreasers unless they are cleaned up afterwards.
- Do not wash absorbent materials into interior floor drains or inlets/catch basins. Pick up all absorbent materials for proper disposal after application. Spill cleanup is incomplete until all absorbent materials have been recovered.
- Dispose of used spill control materials in accordance with the Seattle Solid Waste Collection Code (SMC, Chapter 21.36), Dangerous Waste Regulations (WAC, Chapter 173-303), and applicable laws.

The SPU Green Business Program is a free conservation program funded by SPU. The program offers free technical assistance, free spill kits, and assistance in developing a spill plan. They can be reached by calling (206) 343-8505 or on the City's website (www.seattle.gov/util/ForBusinesses/GreenYourBusiness).

### 2.1.6. BMP 6: Provide Oversight and Training for Staff

The key to sustaining BMPs is to ensure that staff are properly trained in their purpose and maintenance requirements. Assign source control maintenance as a job responsibility for staff.

For all businesses and public entities, required elements of this BMP include:

- Train all team members annually in the operation, maintenance, and inspection of BMPs. Keep training records on file.
- Train all team members annually in spill cleanup.
- Assign an employee to oversee implementation and management of stormwater source control BMPs.

The SPU Green Business Program is a free conservation program funded by SPU. The program offers free technical assistance and can assist with employee training. They can be reached by calling (206) 343-8505 or on the City's website (www.seattle.gov/util/ForBusinesses/GreenYourBusiness).

### 2.1.7. BMP 7: Property Maintenance

Good property maintenance reduces the potential for stormwater to come into contact with pollutants and can reduce maintenance intervals for the drainage system and combined sewer.

Public and commercial parking lots such as those for retail stores, fleet vehicles (including rent-a-car lots and car dealerships), and equipment sale and rental businesses; equipment storage yards; parking lot driveways; and restaurant drive-throughs can be sources of toxic hydrocarbons and other organic compounds, including oils and greases, metals, and suspended solids. Even sidewalks may need occasional cleaning and could generate pollutants.

For all businesses and public entities, required elements of this BMP include:

- Locate pollution generating activities away from stormwater pathways, such as inlets/catch basins, conveyance pipes, and ditches.
- Sweep or vacuum paved areas used for loading and unloading of materials, outdoor production and manufacturing, driveways, parking lots, sidewalks, and storage areas as needed to prevent pollutant transport off site or to the drainage system. Mechanical or hand sweeping may be necessary for areas that a vacuum sweeper cannot reach.
- Do not hose down or otherwise transport pollutants from any area to the ground, drainage system, combined sewer, or receiving water except where permissible pursuant to SMC, Section 22.802.030.
- Discharges of street and sidewalk washwater may be permitted when surfaces are swept prior to washing, detergents are not used, and water use is minimized.
- Promptly contain and clean up solid and liquid leaks and spills (refer to BMP 5 for specific information on spill prevention and cleanup).
- Inspect areas used for loading and unloading, material/waste storage, and vehicle parking as needed to prevent pollutant transport off site or to the drainage system.
- Place drip pans, absorbent pads, or other containment vessels below leaking vehicles (including inoperable vehicles and equipment) in a manner that catches leaks or spills. Drip pans or other containment measures must be managed to prevent overfilling and the contents disposed of properly. Absorbent pads must be weighted down so they do not blow away and must be inspected and changed out and disposed of properly before becoming fully saturated.
- For properties other than those that drain only to the combined sewer, an oil removal system such as an American Petroleum Institute (API) oil/water separator, coalescing plate oil/water separator, catch basin filter sock, or equivalent BMP that is approved by SPU is required for parking lots that meet the threshold for vehicle traffic intensity of a “high-use site.” Refer to SMC, Section 22.801.090 for the definition of “high-use site.”

## 2.2. Required Best Management Practices for Specific Activities

For business and public entities with specific pollution-generating activities, the following BMPs must be implemented to prevent or minimize pollutants from leaving a site or property:

- BMP 9: Fueling at Dedicated Stations
- BMP 10: Mobile Fueling of Vehicles and Heavy Equipment
- BMP 11: In-Water and Over-Water Fueling
- BMP 12: Maintenance and Repair of Vehicles and Equipment
- BMP 13: Concrete and Asphalt Mixing and Production
- BMP 14: Concrete Pouring, Concrete/Asphalt Cutting, and Asphalt Application
- BMP 15: Recycling, Wrecking Yard, and Scrap Yard Operations
- BMP 16: Storage of Liquids in Aboveground Tanks

| Stormwater Code Language | References |
|---|---|
| SMC, Section 22.803.040 – *For all discharges, source controls shall be implemented, to extent allowed by law, by businesses and public entities for the following specific pollution-generating activities as specified in the joint SPU/DPD Directors' Rule titled "Seattle Stormwater Manual" at "Volume 4 – Source Control," to the extent necessary to prevent prohibited discharges as described in subsection 22.802.020.A through subsection 22.802.020.D, and to prevent contaminants from coming in contact with drainage water or being discharged to the drainage system, public combined sewer, or directly into receiving waters:*<br>*1. Fueling at dedicated stations, for new or substantially altered fueling stations.*<br>*2. Mobile fueling of vehicles and heavy equipment.*<br>*3. In-water and over-water fueling.*<br>*4. Maintenance and repair of vehicles and equipment.*<br>*5. Concrete and asphalt mixing and production.*<br>*6. Concrete pouring, concrete/asphalt cutting, and asphalt application.*<br>*7. Recycling, wrecking yard, and scrap yard operations.*<br>*8. Storage of liquids in aboveground tanks.* | • None provided |

## 2.2.2. BMP 10: Mobile Fueling of Vehicles and Heavy Equipment

This BMP applies to businesses and public agencies that fill fuel tanks of vehicles and equipment by means of tank trucks driven to sites where the vehicles are located (also known as mobile fueling, fleet fueling, wet fueling, or wet hosing).

### Description of Pollutants

Typically, stormwater contamination at mobile fueling locations is caused by leaks or spills of fuels and automotive fluids. These materials contain organic compounds, oils and greases, and metals that can be harmful to humans and to the aquatic environment. These pollutants must not be discharged to the drainage system or directly into receiving waters.

### Required BMP Elements

The following BMPs or equivalent measures are required of all businesses (organizations or individuals) and public agencies that conduct mobile fueling of vehicles and heavy equipment:

- Implement BMP 1 through BMP 8 for all real property (refer to *Section 2.1*).
- Mobile fueling operations must be permitted by the Seattle Fire Department.
- In fueling locations near sensitive aquifers, designated wetlands, wetland buffers, or other receiving water, compliance with additional local requirements may be required.
- Train the driver/operator annually in spill prevention and cleanup. Make all employees aware of the significant liability associated with fuel spills. New employees must be trained upon hiring. Document and keep all training records.
- Develop and follow a written fuel operation plan that is:
    - Properly signed and dated by the responsible manager
    - Retained at headquarters and distributed to all operators, along with the spill plan
    - Made available in the event that an authorized government agency requests a review
- Ensure that the driver/operator is present and constantly observing and monitoring the fuel transfer location during fuel transfer. Implement the following procedures at fuel transfer locations:
    - To the extent practical, locate the point of fueling at least 25 feet from the nearest inlet/catch basin or inside an impervious containment area with a volumetric holding capacity equal to or greater than 110 percent of the fueling tank volume, or cover the inlet/catch basin to ensure there is no inflow of spilled or leaked fuel. Before removing drain cover, check for sheen. Do not remove if sheen is present and properly dispose of contaminated material.
    - Place a drip pan or an absorbent pad under each fueling location prior to and during all dispensing operations. The pan must be watertight and must have a minimum capacity of 5 gallons.

  - Handle and operate fuel transfer hoses and nozzles, drip pan(s), and absorbent pads to prevent fuel spills and leaks from reaching the ground, receiving water, and inlets/catch basins.
  - Avoid extending the fueling hoses across a traffic lane without a cone barrier and do not allow vehicles to drive over fuel hoses.
  - Do not "top off" fuel tanks.
- Use automatic shutoff nozzles for dispensing the fuel. Replace automatic shutoff nozzles as recommended by the manufacturer.
- Inspect, maintain, and replace equipment on fueling vehicles, particularly hoses and nozzles, at established intervals to prevent failures. Document and keep all inspection records on file.
- Use an adequate lighting system at the filling point.
- At a minimum, maintain the following spill cleanup materials in a readily accessible location in all fueling vehicles:
  - Non-water-absorbent materials capable of absorbing 15 gallons of diesel fuel
  - An inlet/catch basin plug or cover
  - A non-water-absorbent containment boom at least 10 feet long with a 12-gallon absorbent capacity
  - A non-spark-generating shovel
  - Adequate means to hold spent absorbents generated by a 15-gallon spill for disposal.
- Immediately remove and properly dispose of fuel-contaminated soils with visible surface contamination to prevent the spread of chemicals to groundwater or receiving water via stormwater runoff.
- Immediately notify the Seattle Fire Department (911), the Ecology Northwest Regional Office (425) 649-7000, and SPU (206) 386-1800 in the event of a spill. Establish a "call down list" to ensure the rapid and proper notification of management and government officials if any significant amount of product is discharged from the site. Keep the list in a protected but readily accessible location in the mobile fueling truck. The "call down list" should also identify spill response contractors available in the area to ensure the rapid removal of significant product spills into the environment. Include this bullet item in the fuel operation plan.
- Do not use dispersants to clean up spills or sheens unless they will be picked up for proper disposal.

## 2.2.4. BMP 12: Maintenance and Repair of Vehicles and Equipment

This BMP applies to businesses and public agencies on whose premises oil, fuel, engine oil, and other fluids such as battery acid, coolants, and transmission and brake fluids are removed and replaced in vehicles and equipment. It also applies to mobile vehicle maintenance operations.

### Description of Pollutants

Pollutants of concern are total petroleum hydrocarbons, toxic organic compounds, oils and greases, pH, and metals. These pollutants must not be discharged to the drainage system or directly into receiving waters.

### Required BMP Elements

The following BMPs or equivalent measures are required of all businesses and public agencies engaged in vehicle and equipment repair and maintenance activities:

- Implement BMP 1 through BMP 8 for all real property (refer to *Section 2.1*).
- Inspect all incoming vehicles and equipment for leaks and spills. Clean up all leaks and spills as they occur. Drain all fluids that have the potential to leak from wrecked vehicles and from equipment when they arrive. Store and dispose of fluids properly.

A spill can be a one-time event, a continuous leak, or frequent small spills. All types must be addressed as prescribed in BMP 5 (Spill Prevention and Cleanup).

- Maintenance and repair activities must be conducted inside a building or other covered impervious containment area that is sloped to prevent run-on of uncontaminated stormwater and runoff of contaminated water. If an emergency situation requires immediate repair outside, containment devices must be used.
- Make sure all outside materials that have the potential to leach or spill to the drainage system are covered and contained or moved to an indoor location.
- Maintenance and repair areas cannot be hosed down. Instead, they must be swept weekly or more often as needed to collect dirt.
- Wastes, such as washwater, may not be discharged to the stormwater system or receiving waters except as conditionally allowed in SMC, Section 22.802.030. Do not discharge vehicle fluids to the drainage system, sanitary sewer, or receiving waters.
- Maintenance and repair shop floor drains must discharge to the sanitary sewer. Do not allow drains inside maintenance buildings to connect to the sanitary sewer without prior approval by SPU, King County, or both.
- If extensive staining and oily sheen are present, absorbent pillows or booms must be used in or around catch basins and properly maintained to prevent oil from entering the drainage system. If operational BMPs are insufficient to prevent and manage recurrent oily discharges, then structural source control measures may be required.

## 2.2.5. BMP 13: Concrete and Asphalt Mixing and Production

This BMP applies to businesses and public agencies that mix raw materials onsite to produce concrete or asphalt.

### Description of Pollutants

Pollutants of concern include petroleum hydrocarbons, toxic organic compounds, oils and greases, metals, and pH. Not only can concrete pouring activities severely alter the pH of stormwater runoff, but slurry from aggregate washing can harden in drainage infrastructure, thereby reducing capacity, which can result in flooding. These pollutants must not be discharged to the drainage system or directly into receiving waters.

### Required BMP Elements

Activities associated with concrete and asphalt mixing and production may require an NPDES permit from Ecology. Refer to Ecology's website (https://ecology.wa.gov/Regulations-Permits/Permits-certifications/Stormwater-general-permits ) or call Ecology at (360) 407-6000 to determine if the site activities trigger permit coverage.

The following BMPs or equivalent measures are required of all businesses and public agencies engaged in activities related to concrete and asphalt mixing and production at stationary sites:

- Implement BMP 1 through BMP 8 for all real property (refer to *Section 2.1*).
- Cover production areas to protect them from contact with stormwater.
- Recycle all process water from production, pouring, and equipment cleaning or discharge it to a dead-end sump, process water treatment system, or the sanitary sewer. Obtain all necessary permits for discharge to the sanitary sewer.
- Never discharge washout from fresh concrete or concrete mixing into streets, sidewalks, drainage systems, or receiving waters.
- Segregate production areas from stormwater inputs. Any stormwater that mixes with production areas is considered process water and cannot be discharged to the drainage system or receiving waters. Obtain all necessary permits for discharge to the sanitary sewer.
- Establish a BMP maintenance schedule and educate employees annually about the need to prevent stormwater contamination through regular BMP maintenance. Document and keep all maintenance training records on hand.
- Use absorbent materials or catch basin filter socks (Figure 5) in and around inlets/catch basins to help filter out solids. If catch basin filter socks are used, maintain the filters regularly (weekly or as needed) to prevent plugging. Stormwater contaminated with concrete or asphalt must not enter the drainage system.

Catch basin filter socks only remove solids and do not provide treatment for other pollutants associated with concrete and asphalt mixing and production.

- Sweep the production and pouring area, driveways, gutters, and all other outdoor areas daily or more often as necessary to collect fine particles and aggregate for recycling or proper disposal.

**Figure 5. Commercially Available Catch Basin Filter Sock.**

- Do not wash or hose down areas that flow to the drainage system.
- Make sure all outside materials that have the potential to leach or spill to the drainage system are covered, contained, or moved to an indoor location.
- Collect, treat, and properly dispose of runoff that comes in contact with release agents.
- If operational controls do not prevent stormwater contamination, treatment BMPs may be necessary.

For information about water quality treatment BMPs for activities related to concrete and asphalt mixing and production at stationary sites, refer to *Volume 3 — Project Stormwater Control*. For a current list of proprietary and emerging water quality treatment technologies, refer to Ecology's website (https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Stormwater-permittee-guidance-resources/Emerging-stormwater-treatment-technologies).

## Recommended BMPs

Although not required, the following BMPs are recommended to further prevent and minimize the contamination of stormwater resulting from concrete and asphalt mixing and production activities:

- Pave the mixing and production areas. A sump drain in these areas is not advisable due to potential clogging problems. Sweep these areas to remove loose aggregate and recycle or properly dispose of the aggregate.
- Use catch basin covers or similarly effective containment devices to prevent runoff from entering the drainage system.

## 2.2.6. BMP 14: Concrete Pouring, Concrete/Asphalt Cutting, and Asphalt Application

This BMP applies to businesses and public agencies that apply asphalt or pour or cut concrete or asphalt for building construction and remodeling; road construction; repair and construction of sidewalks, curbs, and gutters; sealing of driveways and roofs; and other applications.

### Description of Pollutants

Pollutants of concern include petroleum hydrocarbons, toxic organic compounds, oils and greases, metals, suspended solids, and pH. Not only can concrete pouring activities severely alter the pH of stormwater runoff, but slurry from aggregate washing can harden in stormwater pipes, thereby, reducing their capacity and resulting in flooding. These pollutants must not be discharged to the drainage system or directly into receiving waters.

### Required BMP Elements

The following BMPs or equivalent measures are required of all businesses and public agencies engaged in activities related to concrete pouring and cutting and asphalt application:

- Implement BMP 1 through BMP 8 for all real property (refer to *Section 2.1*).
- Sweep or shovel and collect loose aggregate chunks and dust for recycling or proper disposal at the end of each workday or as needed, especially at work sites such as streets, driveways, parking lots, sidewalks, curbs, and gutters where rain can readily pick up the loose material and carry it to the nearest stormwater conveyance system. Never hose down concrete or asphalt waste materials to an inlet/catch basin, ditch or receiving water.
- Place catch basin covers or similarly effective containment devices over all nearby drains at the beginning of each workday.
- Shovel and/or vacuum all slurry and remove from the site. All accumulated runoff and solids must be collected and properly disposed of at the end of each workday, or more often if necessary.
- Make sure all outside materials that have the potential to leach or spill to the drainage system are covered, contained, or moved to an indoor location.
- Use a mechanism for containment and collection of the discarded concrete slurry when performing exposed aggregate washing, where the top layer of unhardened concrete is hosed or scraped off to leave a rough finish. Dispose of the slurry properly.
- Use a catch basin filter sock to remove solid materials from inlets/catch basins. Maintain the filter regularly to prevent plugging. Stormwater contaminated with concrete or asphalt must not enter the drainage system.
- Perform cleaning of concrete application and mixing equipment or concrete delivery vehicles in a designated area where the rinse water can be controlled and properly disposed of.
- Collect, treat, and properly dispose of runoff that comes in contact with diesel or coatings used in asphalt applications, cleanup, or transportation.
- Collect, treat, and properly dispose of runoff from cutting activities.

## Recommended BMPs

Although not required, the following BMPs are recommended to further prevent and minimize the contamination of stormwater resulting from concrete pouring and cutting and asphalt application at temporary sites:

- Avoid the activity when rain is falling or expected.
- If possible, portable asphalt mixing equipment should be covered by an awning, a lean-to, or other simple structure to avoid contact with rain.
- Recycle broken concrete and asphalt. Search for "Recycling Services" online to find a local recycler.

## 2.2.8. BMP 16: Storage of Liquids in Aboveground Tanks

This BMP applies to businesses and public agencies that have on their premises aboveground tanks that contain liquids (excluding uncontaminated water). These tanks may be equipped with a valved drain, vent, pump, and bottom hose connection. These include, but are not limited to, commercial aboveground heating oil tanks; gasoline and diesel tanks; food products; or process water.

### Description of Pollutants

Pollutant sources include leaks and spills that can occur at connections and during liquid transfer. Oils and greases, organic compounds, acids, alkalis, and metals in tank water and condensate drainage can also result in stormwater contamination.

### Required BMP Elements

The following BMPs or equivalent measures are required for activities related to the storage of liquids in aboveground tanks:

- Implement BMP 1 through BMP 8 for all real property (refer to *Section 2.1*).
- Provide secondary containment or use a double-walled tank.
- Do not discharge contaminated stormwater within the secondary containment area to the drainage system. Evidence of contamination can include the presence of visible sheen, smell, color or turbidity in the runoff, or existing or historical operational problems at the facility. Check for acceptable pH ranges for areas subject to acid or alkaline contamination. Develop appropriate screening techniques for water-miscible contaminants such as test strips or laboratory testing.
- Implement the following maintenance activities to prevent and minimize stormwater contamination:
    - Inspect tank containment areas regularly to identify problems (e.g., cracks, corrosion, leaks) with components such as fittings, pipe connections, and valves.
    - Replace or repair tanks that are leaking, corroded, or otherwise deteriorating. Document and keep all inspection records. A soundness evaluation by a Professional Engineer may be requested to confirm tank stability.
    - Sweep and clean the tank storage area regularly.
- For new and redeveloped sites, locate and design tanks to prevent and minimize stormwater contamination:
    - Locate permanent tanks on an impervious (Portland cement concrete or equivalent) spill containment pad. All exposed containment surfaces within the containment area must be impervious to all material in the tanks.
    - Surround the spill containment pad with dikes or walls or provide double-walled tanks approved by the Underwriters Laboratory (UL). Design the dike to be of sufficient height to provide a containment volume of either 10 percent of the total volume of the enclosed tanks or 110 percent of the volume of the largest tank, whichever is greater. If a single tank, the dike must be able to hold 110 percent of the volume of that tank.

- Slope covered secondary containment pads so they will drain to a dead-end sump or equivalent for the collection of small spills.
- If the tank containment area is not covered, equip the outlet from the spill-containment sump with a shutoff valve. The valve should only be opened to convey contaminated stormwater to an approved treatment system or disposal facility or to convey uncontaminated stormwater to the drainage system.
- Place adequately sized drip pans beneath all mounted taps and locations where drips and spills might occur during the filling and draining of tanks.
- Include a tank overfill protection system to minimize the risk of spillage during loading.
- In areas with multiple petroleum product storage tanks, convey stormwater through an American Petroleum Institute (API) oil/water separator, coalescing plate oil/water separator, or other approved treatment system with an automatic shutoff valve or oil stop valve prior to discharge to the sanitary sewer. Oil stop valves must be selected on the basis of the type of petroleum product stored in the tank(s).

# CHAPTER 3 – BUSINESS AND PUBLIC ENTITY BEST MANAGEMENT PRACTICES FOR SPECIFIC ACTIVITIES

In addition to BMP 1 through BMP 8 for all real property (*Section 2.1)* and BMP 9 through BMP 16 for specific activities for all real property (*Section 2.2)*, there are many additional source control BMPs that may be required depending on the specific activities that occur or will occur at a business or a public entity, except those that drain only to the combined sewer. Source control requirements are outlined in Seattle Municipal Code (SMC), Section 22.803.040 (Minimum Requirements for Source Controls for All Businesses and Public Entities) and SMC, Section 22.805.020.K (Install Source Control BMPs).

Before reading this chapter, fill out the worksheet in *Section 1.6* to identify which site-specific activities require BMPs.

## 3.2. Transfer of Liquid or Solid Materials

The transfer of liquid or solid materials, including the loading and unloading of such material, fueling of vehicles or equipment at mobile or designated locations, and vehicle and equipment repair and maintenance are activities that have a high risk for spills or leaks of toxic material. Both required and recommended BMPs can help prevent, minimize, and manage the effects of accidental spills or leaks. The specific BMPs that apply to the transfer of particular types of liquid and solid materials are presented in this section.

Remember to also implement BMP 1 through BMP 8 for all real property from *Section 2.1*.

## 3.1.1. BMP 17: Cleaning or Washing

This BMP applies to cleaning, washing, and rinsing activities, including pressure washing and steam cleaning. The purpose of cleaning and washing activities is to remove pollutants from equipment, vehicles, boats and buildings; these pollutants should not be discharged to the public drainage system.

### Description of Pollutants

Source pollutants include surfactants; petroleum hydrocarbons; toxic organic compounds; fats, oils, and grease; soaps; detergents; nutrients; metals; polychlorinated biphenyls (PCBs); pH; suspended solids; substances that increase biological oxygen demand (BOD); and substances that increase chemical oxygen demand (COD).

### Required BMP Elements

The following BMPs or equivalent measures are required of all businesses and public agencies engaged in cleaning or washing activities:

- Implement all BMP 1 through BMP 8 for all real property (refer to *Section 2.1*).
- Provide training to employees regarding proper disposal of wastewater. This training must be documented.
- Outside drains discharge to the combined sewer, directly to local waters, or to the public drainage system, depending on the location within Seattle. Directing washwater into drains that discharge to the drainage system or local waters is not allowed unless specifically identified as conditionally permitted. Identify the type of system on your property and train employees about required BMPs accordingly.
- The following are conditionally permissible washing practices: (1) Discharges of street and sidewalk washwater when the surfaces have been swept prior to washing, detergents are not used, and water use is minimized; and (2) Discharges of water from routine external building washdown when detergents are not used and water use is minimized. These conditions must be met or the washing activity is prohibited. Sweep surfaces before cleaning/washing to remove excess sediment and other pollutants.
- Discharge wastewater from cleaning or washing activities into the sanitary or combined sewer if properly approved, or into a holding tank. It is illegal to discharge washwater to the drainage system or local waters. Authorization for discharge to the sanitary or combined sewer may be required, and pretreatment may be necessary. If using a holding tank, ensure that it is properly sized and does not overfill.
- Cover and/or contain the washing activity or wash inside a building having a floor drain that discharges to the sanitary sewer.
- If roof equipment or hood vents are cleaned, ensure that no wastewater or prohibited substance (refer to SMC, Chapter 22.802) is discharged to the roof drains or drainage system.
- Label all mobile cleaning equipment as follows: “Properly dispose of all wastewater. Do not discharge to an inlet/catch basin, ditch, stream, or on the ground.”

Ecology Publication WQ-R-95-056, *Vehicle and Equipment Washwater Discharges: Best Management Practices Manual* (Ecology 2012) can be used for guidance on sumps, holding tanks, and the prevention of runoff.

For wash pads discharging directly to the sanitary sewer:

- The uncovered portion of the wash pad must be no larger than 200 square feet or must have an overhanging roof (refer to Figure 6). This is to prevent excess stormwater from entering the sanitary sewer. Covering may be required in many situations.

**Figure 6. Car Wash Building with Drain to the Sanitary Sewer.**

- If the uncovered wash pad cannot be less than 200 square feet, a shut off valve may be installed which will direct washwater to the sanitary sewer when the wash pad is in use, and stormwater to the drainage system when the wash pad is not in use (refer to Figure 7). The valve on the outlet may be manually operated; however, a pneumatic or electrical valve system is preferable. The valve may be on a timer circuit, where it is opened upon completion of a wash cycle. The timer would then close the valve after the sump or separator is drained.
- The wash pad must be clearly signed as to the operation and location of the valve.
- Conduct annual training on operation of the valve system.

- If adjacent to a building or constructed over hazardous material storage areas, other regulations, including the Seattle Fire Code, may apply.
- Obtain all necessary permits for installing, altering or repairing onsite drainage and side sewers. Restrictions on certain types of discharges may require pretreatment before they enter the sanitary sewer.

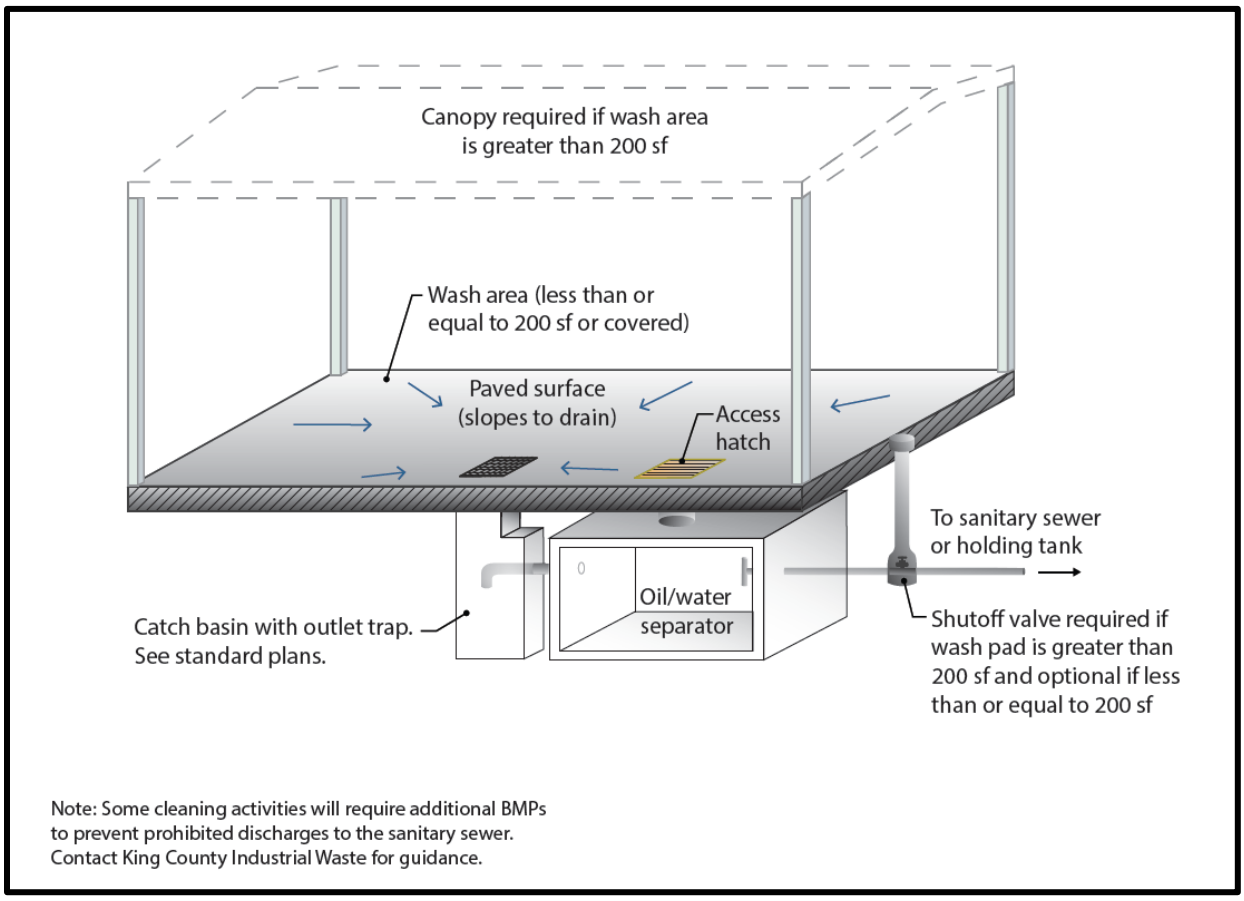



**Figure 7. Schematic of Wash Pad with Sump.**

## Recommended BMPs

Although not required, the following BMPs can provide additional pollution control for washing activities that drain to the sanitary sewer. To reduce the potential overall pollution load to the sanitary sewer from washing operations for tools, vehicles, engines, and manufacturing equipment:

- Minimize water and detergent use in all washing operations.
- Use phosphate-free detergents when practical.
- Consider recycling the washwater by installing a closed-loop water recycling system.
- Use the least hazardous cleaning products available.
- For intermittent washing of vehicles, use a car wash that recycles washwater and discharges to the sanitary sewer.

## 3.2.1. BMP 18: Loading and Unloading of Liquid or Solid Material

This BMP applies to businesses and public agencies engaged in the loading and unloading of liquid or solid materials or the transfer of non-containerized bulk materials. Sources of pollution include loading docks, vehicles, and equipment involved in material handling. These activities are typically conducted at shipping and receiving areas, outside storage areas, and fueling areas.

### Description of Pollutants

Leaks and spills of fuels, oils, powders, organic compounds, nutrients, metals, food products, salts, acids, and alkalis during transfer are potential sources of stormwater contamination. Spills from breaks in hydraulic lines and leaking forklifts are common problems at loading docks. Many inlets/catch basins in Seattle discharge directly to local streams and waterways and therefore spilled or leaked products can adversely affect water quality and harm both people and aquatic organisms that come in contact with the contaminated water. These pollutants must not be discharged to the drainage system or directly into receiving waters.

### Required BMP Elements

The following BMPs or equivalent measures are required in all loading and unloading areas:

- Implement BMP 1 through BMP 8 for all real property (refer to *Section 2.1*).
- Sweep as often as necessary to prevent material contact with stormwater and to remove accumulated debris and other material that could otherwise be washed off by stormwater. Do not sweep this debris into drainage infrastructure.
- Place drip pans or other appropriate temporary containment devices in locations where leaks or spills may occur, such as hose connections, hose reels, and filler nozzles (Figure 8).
- Always use drip pans when making and breaking connections. Clean drip pans after each use to remove any residual material. Dispose of any residual material in accordance with the Seattle Solid Waste Collection Code (SMC, Chapter 21.36) and the state Dangerous Waste Regulations (WAC, Chapter 173-303).
- Inspect loading and unloading areas after each delivery for leaks and spills and clean up immediately.
- Check material handling equipment such as valves, hoses, pumps, flanges, and connections regularly for leaks, and repair as needed. Document and keep all inspection records. Store contaminated equipment inside or under cover to prevent residual material from coming into contact with stormwater.
- Provide impervious containment with berms, dikes, etc., and/or cover the loading/unloading area to prevent run-on and runoff of contaminated stormwater. Maintain drainage areas in and around storage areas for solid materials with a minimum slope of 1.5 percent to prevent pooling and minimize leachate formation. Areas should be sloped to drain stormwater to the perimeter for collection or to internal “alleyways” where no stockpiled material is kept.


**Figure 8. Temporary Containment Device Placed Under a Hose Connection.**

The following BMPs or equivalent measures are required in areas of transfer from tanker trucks and railcars to aboveground or underground storage tanks:

- To minimize the risk of accidental spillage, prepare and follow an "Operations Plan" that describes procedures for loading/unloading. Train employees on the plan.
- For rail facilities, install and maintain a drip pan system within the rails to collect spills and leaks from tank cars, hose connections, hose reels, and filler nozzles.

The following BMPs or equivalent measures are required in areas of loading and unloading from or to marine vessels:

- Facilities and procedures for the loading or unloading of petroleum products must comply with U.S. Coast Guard requirements.

- For requirements related to the transfer of small quantities from tanks and containers:
- Refer to BMP 28 for storage of portable containers of liquid or dangerous waste containers (*Section 3.4.3*) and BMP 16 for storage of liquids in aboveground tanks (*Section 2.1.16*).

## Recommended BMPs

Although not required, the following BMPs can provide additional pollution protection:

- Whenever possible, conduct the activity indoors or under cover to minimize exposure to stormwater.
- For the transfer of liquids in areas that cannot contain a catastrophic spill, install an automatic shutoff system in case of an unanticipated interruption in off-loading (e.g., a coupling break, hose rupture, or overfill).
- Install and maintain overhangs (Figure 9) or door skirts that enclose the trailer end to prevent contact with stormwater.

**Figure 9. Loading Docks with an Overhang to Prevent Material Contact with Stormwater.**

Mobile Fueling of Vehicles and Heavy Equipment (BMP 10) (*Section 2.1.10*) is recommended in areas of transfer from tanker trucks to aboveground or underground storage tanks; it includes:

- Pave the area on which the transfer takes place. If any transferred liquid, such as gasoline, is reactive with asphalt, pave the area with Portland cement concrete or equivalent.
- Construct a slope, berm, or dike to direct runoff from the transfer area to a dead-end sump, spill containment sump, spill control oil/water separator, or other spill control device. The minimum spill retention time should be 15 minutes for the flow rate of the dispensing mechanism with the highest through-put rate, or at the peak flow rate of the 6-month, 24-hour storm event (or 91 percent of the total runoff volume for the simulation period if using continuous runoff modeling) over the surface of the containment pad, whichever is greater. The volume of the spill containment sump should be a minimum of 50 gallons with an adequate grit sedimentation volume.

## 3.3.4. BMP 22: Landscaping and Vegetation Management

This BMP applies to businesses and public agencies that perform landscaping, including grading, storage of landscape materials, soil transfer, vegetation removal, pesticide and fertilizer applications, and watering. Landscaping and vegetation management can include control of objectionable weeds, insects, mold, bacteria, and other pests by means of chemical pesticides and is conducted commercially at commercial, industrial, and residential sites. Examples of landscaping and lawn and vegetation management include weed control on golf courses, access roads, and utility corridors; treatment or removal of moss from rooftops, sidewalks, or driveways; killing of nuisance rodents; application of fungicides on patio decks; and residential lawn and plant care.

### Description of Pollutants

Stormwater contaminants from landscaping and vegetation management activities include toxic organic compounds, metals, oils, suspended solids, pH, coliform bacteria, fertilizers, pesticides, and detergents.

Pesticides such as pentachlorophenol, carbamates, and organometallics can be released to the environment as a result of leaching and dripping from treated plants, container leaks, product misuse, and outside storage of pesticide-contaminated materials and equipment. Inappropriate management of vegetation and improper application of pesticides or fertilizers can result in stormwater contamination. These pollutants must not be discharged to the drainage system or directly into receiving waters, except as permitted by Ecology.

The Washington State Department of Agriculture regulates pesticide use and application.

### Required BMP Elements

The following BMPs or equivalent measures are required of all businesses and public agencies engaged in landscaping and vegetation management activities:

- Implement BMP 1 through BMP 8 for all real property (refer to *Section 2.1*).

Landscaping:

- Do not dispose of or store collected vegetation in drainage systems, waterways, receiving waters, or public spaces. Take care to avoid contamination or site disturbance.
- Use mulch or other erosion control measures when soils or erodible materials are exposed for more than 1 week during the dry season (May 1 to September 30) or 2 days during the rainy season (October 1 to April 30).
- Comply with *Appendix I* of this manual and *S435 — BMPs for Pesticides and an Integrated Pest Management Program* in Volume IV of the SWMMWW (Ecology 2019) (referenced in BMP 49 and BMP 50) for more information.
- Implement the landscaping principles in *Volume 1, Section 7.8*, when planning, constructing, and maintaining landscaped areas.
- Comply with all landscape management plans that apply to the site (refer to *Appendix I* of this manual).

Vegetation Management:

- Fertilizer:
  - Apply all fertilizers using properly trained personnel. Document and keep all training records.
  - For commercial and industrial facilities, do not apply fertilizers to grass swales, filter strips, or buffer areas that drain to receiving waters.
  - Refer to *S443 — BMPs for Fertilizer Application* in Volume IV of the SWMMWW (Ecology 2019) for additional information (referenced in BMP 55).

## Recommended BMPs

Although not required, the following BMPs are recommended to further prevent and minimize the contamination of stormwater resulting from landscaping and lawn and vegetation management activities:

- If adjacent to a building or constructed over hazardous material storage areas, other regulations, including the Seattle Fire Code, may apply.
- Install engineered soil and landscape systems to improve the infiltration and regulation of stormwater in landscaped areas.
- Mulch and mow whenever practical.
- Dispose of grass clippings, leaves, sticks, and other collected vegetation by composting, where feasible.
- Till fertilizers into the soil where practical rather than dumping or broadcasting them onto the surface. Determine the proper fertilizer application for the types of soil and vegetation encountered.
- Till a topsoil mix or composted organic material into the soil to create a well-mixed transition layer that encourages deeper root systems and greater drought-tolerance.
- Use manual and/or mechanical methods of vegetation removal rather than applying herbicides, where practical.

An amended soil and landscape system can preserve both the plant system and the soil system more effectively. This type of approach can provide a soil and landscape system with adequate depth, permeability, and organic matter to sustain itself and continue working to effectively infiltrate stormwater and provide a sustainable nutrient cycle.

Vegetation Management:

- Material:
  - Use topsoil layer that is at least 8 inches thick and consists of at least 8 percent organic matter to provide a sufficient growing medium for the vegetation.
  - Select the appropriate turfgrass mixture for the applicable climate and soil type.

- Fertilizer:
  - Use slow-release fertilizer and organic materials for the best availability for turf grass.
  - Time the fertilizer application to periods of maximum plant uptake. Fertilizers should be applied in amounts appropriate for the target vegetation and at the time of year that minimizes loss to surface water and groundwater.
  - Do not fertilize during a drought or when the soil is dry.
  - Refer to the *S443 — BMPs for Fertilizer Application* in the SWMMWW (Ecology 2019) for additional information (referenced in BMP 55).

## 3.3.5. BMP 23: Painting, Finishing, and Coating Activities

This BMP applies to businesses and public agencies that perform outdoor surface preparation and application of paints, finishes, and coatings to vehicles, boats, buildings, and equipment.

### Description of Pollutants

Potential pollutants include organic compounds, oils and greases, metals, and suspended solids. These pollutants must not be discharged to the drainage system or directly into receiving waters.

### Required BMP Elements

Activities associated with boatyard and shipyard operations may require an NPDES permit from Ecology. Refer to Ecology's website (https://ecology.wa.gov/Water-Shorelines/Water-quality/Runoff-pollution/Stormwater) or call Ecology at (360) 407-6000 to determine if the site activities trigger permit coverage.

The following BMPs or equivalent measures are required of all businesses and public agencies engaged in activities related to the painting, finishing, and coating of vehicles, boats, buildings, and equipment outside.

- Implement BMP 1 through BMP 8 for all real property (refer to *Section 2.1*).

Preparation and Application:

- Train employees in the application and cleanup of paints, finishes, and coatings to reduce misuse and overspray. Document and keep all training records.
- Use ground cloths or drop cloths underneath outdoor painting, scraping, sandblasting work, and properly clean and temporarily store collected debris after each use.
- Use a catch basin cover, filter sock, or similarly effective runoff control device if dust, sediment or other pollutants may escape the work area. If catch basin filter socks are used onsite, maintain the filter regularly to prevent plugging. Stormwater contaminated with pollutants must not enter the drainage system.

Catch basin filter socks only remove solids and do not provide treatment for other pollutants associated with painting, finishing, and coating activities.

- Do not conduct spraying, blasting, or sanding activities over open water or where wind may blow paint into water. If windy conditions are present, use a curtain to contain the activity.
- While using a spray gun or conducting sand blasting, enclose and/or contain all work in compliance with applicable air pollution control requirements and those of the Occupational Safety and Health Administration (OSHA), the Washington Industrial Safety and Health Act, and the Puget Sound Clean Air Agency.

Cleanup:

- Wipe up spills with rags and other absorbent materials immediately. Do not hose down the area.
- On marine dock areas, sweep to collect debris. Do not hose down debris.
- Use a ground cloth, pail, drum, drip pan, tarpaulin, or other protective device for activities such as paint mixing and tool cleaning outside or where spills can contaminate stormwater. Whenever possible, conduct these activities inside or in an enclosed area.
- Clean paintbrushes and tools covered with water-based paints into drains connected to the sanitary sewer. Verify the discharge point before discharging.
- Collect solvents used to clean brushes and tools covered with non-water-based paints, finishes, or other materials. Safely and properly recycle or dispose of used solvents (e.g., paint thinner, turpentine, and xylol).

Material Storage and Disposal:

- Dispose of all waste properly and prevent all uncontrolled releases to the air, ground, or water.
- Store all paints, finishes, or solvents inside a building or in covered secondary containment.
- All containers must have tight-fitting lids able to retain the contents in the event of tipping.

## Recommended BMPs

Although not required, the following BMPs are recommended to further prevent and minimize the contamination of stormwater resulting from activities related to the painting, finishing, and coating of vehicles, boats, buildings, and equipment:

- Recycle paints, paint thinner, solvents, washwater from pressure washers, and any other recyclable materials.
- Use efficient spray equipment such as electrostatic, air-atomized, high-volume/low-pressure, or gravity-feed spray equipment.
- Purchase recycled paints, paint thinner, solvents, and other products where feasible.
- Dispose of unused paint promptly.

## 3.4. Storage and Stockpiling

Activities related to the storage and stockpiling of liquid or solid materials are potentially associated with a high risk for spillage, leakage, erosion, or leaching of pollutants. Both required and recommended BMPs can help to prevent, minimize, and manage the effects of accidental spills and leaks. The specific BMPs that apply to various types of storage and stockpiling activities are presented below.

Remember to also implement BMP 1 through BMP 8 for all real property from *Section 2.1*.

## 3.4.3. BMP 28: Portable Container Storage

The BMPs specified below apply to businesses and public agencies that keep containers outside on their premises that may include, but are not limited to, used automotive fluids, liquid feedstock, cleaning compounds, chemicals, dangerous wastes (liquid or solid), and contaminated stormwater. For outside storage of used cooking oil containers, refer to BMP 4.

### Description of Pollutants

Leaks and spills during handling and storage of portable containers are the primary sources of pollutants. Potential pollutant constituents are oils and greases, low (acid) or high (alkaline) pH, surfactants, substances that increase biological oxygen demand (BOD), substances that increase chemical oxygen demand (COD), and toxic organic compounds.

### Required BMP Elements

The following required BMPs apply to all portable containers:

- Implement BMP 1 through BMP 8 for all real property (refer to *Section 2.1*).
- Store materials in a leakproof container with a tight-fitting lid able to contain the material in the event of tipping.
- Label all containers to identify their contents. Position containers so that labels/markings are clearly visible.
- Place drip pans beneath all taps on mounted containers and at all potential drip and spill locations during the filling and draining of containers.
- Inspect container storage areas regularly for corrosion, structural failure, spills, leaks, and overfills. Check containers daily for leaks and spills. Replace containers and replace and tighten bungs in drums as needed.
- Secure containers in a manner that prevents accidental spillage, pilferage, or any unauthorized use (Figure 13 and Figure 14).

**Figure 13. Covered and Secured Storage Area for Containers.**

**Figure 14. Containers Surrounded by a Berm in an Enclosed Area.**

## Recommended BMP Elements

- Wherever possible, store containers on a paved surface under a roof or other appropriate cover or in a building.

The following BMPs or equivalent measures are required for activities related to outside storage of containers of hazardous or dangerous material or wastes and liquids except potable water:

- Store containers in a designated area. Provide covered secondary containment that is capable of holding a volume of either 10 percent of the total volume of the enclosed containers or 110 percent of the volume of the largest container, whichever is greater. Provide a portable secondary containment unit or cover and pave the storage area with an impervious surface and install a berm or dike to surround the area. Slope the area to drain into a dead-end sump for the collection of leaks and small spills.
- Store containers that do not contain free liquids in a designated sloped area with the containers elevated or otherwise protected from stormwater run-on.
- Elevate metal drums to prevent corrosion and leakage.
- Ensure that the storage of reactive, ignitable, or flammable liquids complies with the Seattle Fire Code and Washington State Fire Code.

## 3.6. Other Activities

Several activities that do not fall into the previously described categories have a high risk for generating pollutants and contaminating stormwater and receiving waters. The required and recommended BMPs for these activities are presented as follows, according to the type of activity and the potential pollutants. Regardless of the activity, an overall approach to pollutant control should first emphasize pollution prevention, then the minimization of pollution, followed by pollution management.

Remember to also implement BMP 1 through BMP 8 for all real property (refer to *Section 2.1*).

## 3.6.5. BMP 36: Deicing and Anti-icing Operations for Airports and Streets

This BMP applies to businesses and public agencies that perform deicing and anti-icing operations used on highways, streets, airport runways, and aircraft to control ice and snow.

### Description of Pollutants

Typically, ethylene glycol and propylene glycol are used on aircraft as deicers. The deicers commonly used on highways and streets include calcium magnesium acetate, calcium chloride, magnesium chloride, sodium chloride, urea, and potassium acetate.

Deicing and anti-icing chemicals become pollutants when they are conveyed to inlets/catch basins or to receiving water after application. Leaks and spills of these chemicals can also occur during their handling and storage.

Discharges of spent glycol in aircraft application areas are process wastewaters regulated under the Ecology NPDES permit. (Contact Ecology at (360) 407-6000 for details.) BMPs for aircraft deicers and anti-icers must be consistent with aviation safety requirements and the operational needs of the aircraft operator.

### Required BMP Elements

The following BMPs or equivalent measures are required for deicing and anti-icing activities related to aircraft:

- Implement BMP 1 through BMP 8 for all real property (refer to *Section 2.1*).
- Conduct aircraft deicing and anti-icing applications in impervious containment areas. Collect spent deicing liquids (e.g., ethylene glycol) and anti-icing chemicals (e.g., urea) that drain from aircraft in deicing or anti-icing application areas and convey them to a sanitary sewer, treatment facility, or other approved disposal or recovery method. Divert runoff of deicing chemicals from paved gate areas to appropriate collection areas or conveyances for proper treatment or disposal.
- Do not allow spent deicing and anti-icing chemicals or contaminated stormwater to be discharged directly or indirectly from application areas, including gate areas, to a receiving water or groundwater.
- Transfer deicing and anti-icing chemicals on an impervious containment pad, or an equivalent spill/leak containment area, and store them in secondary containment areas.

The following BMPs or equivalent measures are required for deicing and anti-icing activities related to runways and taxiways:

- Avoid excessive application of de/anti-icing chemicals, which could contaminate stormwater.
- Store and transfer de/anti-icing materials on an impervious containment pad or an equivalent containment area.

The following BMPs or equivalent measures are required for deicing and anti-icing activities related to streets and highways:

- Select deicers and anti-icers that result in the least adverse environmental impact. Apply only as needed using minimum quantities.
- Where feasible and practical, use roadway deicers, such as calcium magnesium acetate, potassium acetate, or similar materials that cause less adverse environmental impact than urea and sodium chloride.
- Store and transfer deicing and anti-icing materials on an impervious containment pad.
- Sweep or clean up accumulated deicing and anti-icing materials and grit from roads as soon as possible after the road surface clears.
- Increase maintenance of stormwater structures as necessary.

## Recommended BMPs

Although not required, the following BMPs are recommended to further reduce the potential for the contamination of stormwater and receiving waters:

Aircraft:

- Establish a centralized aircraft deicing and anti-icing facility, if feasible and practical, or conduct deicing and anti-icing in designated areas of the tarmac equipped with separate collection drains for the spent deicing liquids.
- Consider installing a recovery system for aircraft deicing and anti-icing chemicals, or contract with a chemical recycler, if practical.

Airport Runways and Taxiways:

- Include limits on toxic materials and phosphorus in the specifications for deicers and anti-icers, where applicable.
- Consider using anti-icing materials rather than deicers if they will result in less adverse environmental impact.
- Select cost-effective deicers and anti-icers that cause the least adverse environmental impact.

Streets and Highways:

- Intensify roadway cleaning in early spring to help remove particulates from road surfaces.
- Include limits on toxic metals in the specifications for deicers and anti-icers.

## 3.6.6. BMP 37: Maintenance and Management of Roof and Building Drains at Industrial and Commercial Buildings

This BMP applies to businesses and public agencies where the roofs and sides of industrial or commercial buildings can be sources of pollutants when stormwater runoff results in the leaching of roofing materials, materials from building vents, air emissions, flashing, cleaning agents, and applied moss killers. Flaking paint and caulking can also be sources of pollutants.

### Description of Pollutants

Vapors and entrained liquid and solid droplets and particles have been identified as potential pollutants in roof and building runoff. The pollutants identified include metals, solvents, low (acidic) and high (alkaline) pH, substances that increase biological oxygen demand (BOD), and organic compounds. Flaking paint or caulking may be a source of metals and organic compounds. PCBs may leach out of old paint coatings and caulking materials from buildings, such as those built or renovated between 1950 and 1980.

Entities that conduct specific industrial activities are required to obtain an Industrial NPDES Permit for their stormwater discharges. For more information about whether an entity needs an NPDES permit, refer to Ecology's website (https://ecology.wa.gov/Water-Shorelines/Water-quality/Runoff-pollution/Stormwater) or call Ecology at (360) 407-6000.

### Required BMP Elements

The following BMPs or equivalent measures are required for all commercial and industrial buildings to prevent and reduce stormwater pollution:

- Implement BMP 1 through BMP 8 for all real property (refer to *Section 2.1*).
- If leachates or emissions from buildings are suspected sources of stormwater pollutants, sample and analyze the stormwater draining from the building and sediment from nearby catch basins.
- If a roof or building is identified as a source of stormwater pollutants, implement appropriate operational source control measures, such as air pollution control equipment, selection of alternative materials, operational changes, material recycling, process changes, remediation, or treatment.
- Sweep areas routinely to remove pollutant residues.
- If operational methods do not prevent or reduce zinc pollution from galvanized roofing or siding, paint/coat the galvanized surfaces as described in Publication 08-10-025, *Suggested Practices to Reduce Zinc Concentrations in Industrial Stormwater Discharges* (Ecology 2008) or treat the stormwater runoff.
- If operational BMPs are not sufficient to prevent stormwater contamination, structural controls must be implemented, including treatment or containment.

## 3.6.10. BMP 41: Potable Water Line Flushing, Water Tank Maintenance, and Hydrant Testing

This BMP applies to businesses and public agencies that perform activities related to potable water line flushing, water tank maintenance, and hydrant testing.

### Description of Pollutants

Improper water line flushing, water tank maintenance, and hydrant testing may result in the discharge of sediments and materials to water bodies. Chemicals associated with water line flushing and water tank maintenance may be harmful to aquatic organisms and have an adverse effect on receiving water bodies.

### Required BMP Elements

Required BMP elements are contained in *S441 — BMPs for Potable Water Line Flushing, Water Tank Maintenance and Hydrant Testing* in Volume IV of the SWMMWW (Ecology 2019).

would accumulate on the sea bed.

- Do not discharge emulsifiers, dispersants, solvents, or other toxic deleterious materials to waters of the state.

# S441 BMPs for Potable Water Line Flushing, Water Tank Maintenance, and Hydrant Testing

**Description of Pollutant Sources:** Flushing is a common maintenance activity used to improve pipe hydraulics and to remove pollutants in systems. Flushing done improperly can result in the discharge of solids to receiving waters. Hydrant testing may result in the discharge of rust particles.

Chemicals used in line flushing and tank maintenance are highly toxic to aquatic organisms and can degrade receiving waters.

**Pollutant Control Approach:** Dechlorinate and pH adjust water used for flushing, tank maintenance, or hydrant testing. Dispose of the water to the sanitary sewer if possible.

## Applicable Operational BMPs:

- Remove solids from associated curbs and gutters before flushing water. Use erosion and sediment control BMPs such as BMP C235: Wattles, BMP C220: Inlet Protection, etc. to collect any solids resulting from flushing activities.
- If using super chlorination or chemical treatment as part of flushing, discharge water to the sanitary sewer. If sanitary sewer is not available, the water may be infiltrated to the ground as long as all of the following are met:
    - The water is dechlorinated to a total residual chlorine of 0.1 ppm or less.
    - Water quality standards are met.
    - A diffuser is used to prevent erosion.
    - The water does not cross property lines.
- Discharging water to a drainage system requires approval from the local jurisdiction. Check with the local jurisdiction to determine their requirements for approval. Most jurisdictions will require the water to be dechlorinated to a total residual chlorine concentration of 0.1 ppm or less and pH adjusted if necessary. Water must be volumetrically and velocity controlled to prevent resuspension of sediments or pollutants in the Municipal Separate Storm Sewer System (MS4).
- Do not over apply dechlorination agents. This can deplete the dissolved oxygen concentration and reduce the pH in discharge / receiving waters.

## Optional Operational BMPs:

- If possible, design flushing to convey accumulated material to strategic locations, such as to the sanitary sewer or to a treatment facility; thus, preventing re-suspension and overflow of a

portion of the solids during storm events.

- If possible, conduct flushing and tank maintenance activities on non-rainy days and during the time of year that poses the least risk to aquatic biota.

## Optional Treatment BMPs:

- Treatment for dechlorinating can include an application of a stoichiometric quantity of:
    - Ascorbic Acid, Sodium Ascorbate (Vitamin C)
    - Calcium Thiosulfate
    - Sodium Sulfite tablets
    - Sodium Thiosulfate
    - Sodium Bisulfite
    - Alternate Dechlorination Solutions

- Consider installing an aircraft de/anti-icing chemical recovery system, or contract with a chemical recycler.

### Applicable BMPs for Airport Runways/Taxiways:

- Avoid excessive application of all de/anti-icing chemicals, which could contaminate stormwater.
- Store and transfer de/anti-icing materials on an impervious containment pad or an equivalent containment area and/or under cover in accordance with S429 BMPs for Storage or Transfer (Outside) of Solid Raw Materials, Byproducts, or Finished Products. Consider other material storage and transfer approaches only if the de/anti-icer material will not contaminate stormwater.

### Recommended Additional BMPs for Airport Runways/Taxiways:

- Include limits on toxic materials and phosphorous in the specifications for de/anti-icers, where applicable.
- Consider using anti-icing materials rather than deicers if it will result in less adverse environmental impact.
- Select cost-effective de/anti-icers that cause the least adverse environmental impact.

## S406 BMPs for Streets and Highways

**Description of Pollutant Sources:** These BMPs apply to the maintenance and deicing/anti-icing of streets and highways. Deicing products can be conveyed during storm events to inlets/catch basins or to receiving waters after application. Leaks and spills of these products can also occur during their handling and storage. Equipment and processes using during maintenance can contribute pollutants such as oil and grease, suspended solids, turbidity, high pH, and metals.

**Pollutant Control Approach:** Apply good housekeeping practices, preventative maintenance, properly train employees, and use materials that cause less adverse effects on the environment.

### Applicable BMPs:

#### Deicing and Anti-Icing Operations

- Adhere to manufacturer's guidelines and industry standards of use and application.
- Store and transfer de and anti-icing materials on impervious containment pads, or an equivalent spill/leak containment area in accordance with S429 BMPs for Storage or Transfer (Outside) of Solid Raw Materials, Byproducts, or Finished Products.
- Sweep/clean up accumulated de and anti-icing materials and grit from roads as soon as possible after the road surface clears.
- Minimize use in areas where runoff or spray from the roadway immediately enters sensitive areas such as fish-bearing streams.

## *3.6.15. BMP 46: Labeling Storm Drain Inlets on Your Property*

This BMP applies to businesses and public agencies.

### Description of Pollutants

Storm drain inlets themselves are not a source of pollutants; however, they can be used to discharge pollutants. Labels on storm drains can educate the public about prohibitions against dumping materials in storm drains.

### Required BMP Elements

Required BMP elements are contained in *S442 — BMPs for Labeling Storm Drain Inlets on Your Property* in Volume IV of the SWMMWW (Ecology 2019).

# S442 BMPs for Labeling Storm Drain Inlets On Your Property

**Description of Pollutant Sources:** Waste materials dumped into storm drain inlets can have severe impacts on receiving waters. Posting notices regarding discharge prohibitions at storm drain inlets can prevent waste dumping. Storm drain signs and stencils are highly visible source controls that are typically placed directly adjacent to storm drain inlets.

**Pollutant Control Approach:** The stencil, affixed sign, or metal grate contains a brief statement that prohibits dumping of improper materials into the urban runoff conveyance system. Storm drain messages have become a popular method of alerting the public about the effects of and the prohibitions against waste disposal.

## Applicable Operational BMPs:

- Label storm drain inlets in residential, commercial, industrial areas, and any other areas where contributions or dumping to storm drains is likely.
- Stencil or apply storm drain markers adjacent to storm drain inlets to help prevent the improper disposal of pollutants. Or, use a storm drain grate stamped with warnings against polluting.
- Place the marker in clear sight facing toward anyone approaching the inlet from either side.
- Use a brief statement and / or graphical icons to discourage illegal dumping. Examples include:
    - "No Dumping – Drains to Stream"
    - "No Pollutants – Drains to Puget Sound"
    - "Dump No Waste – Drains to Lake"
    - "No Dumping – Puget Sound Starts Here"
- Check with your local government agency to find out if they have approved specific signage and / or storm drain message placards for use. Consult the local agency stormwater staff to determine specific requirements for placard types and methods of application.
- Maintain the legibility of markers and signs. Signage on top of curbs tends to weather and fade. Signage on face of curbs tends to be worn by contact with vehicle tires and sweeper brooms.
- When painting stencils or installing markers, temporarily block the storm drain inlet so that no pollutants are discharged from the labeling activities.

## Optional Operational BMPs:

Use a stencil in addition to a storm drain marker or grate to increase visibility of the message.

*Reference for this BMP: (CASQA, 2003)*

## Figure IV-7.6: Storm Drain Inlet Labels




DEPARTMENT OF ECOLOGY
State of Washington

Storm Drain Inlet Labels

Revised October 2017

## *3.6.17. BMP 48: Goose Waste*

This BMP applies to the general public, businesses, and public agencies.

### Description of Pollutants

Goose waste can contribute to algae growth in water due to its high nutrient content. Goose feces may contain pathogens that can affect people who use the water bodies.

### Required BMP Elements

Required BMP elements are contained in *S452 — BMPs for Goose Waste* in Volume IV of the SWMMWW (Ecology 2019).

### Suggested Operational BMPs:

- Lightly spray water on the work site to control dust and grit that could blow away. Do not use oils for dust control. Never spray to the point of water runoff from the site.
- Clean tools over a ground cloth or within a containment device such as a tub.
- Consider using filtered vacuuming to collect waste that may be hard to sweep, such as dust on a drop cloth.
- If conducting work in wet weather conditions, consider setting up temporary cover when scraping or pressure-washing lead-based paint.

## S452 BMPs for Goose Waste

**Description of Pollutant Sources:** Goose waste deposited near water or in water can contribute nutrients and algae growth. Goose feces may contain pathogens and contribute to the spread of diseases. Swimmers itch (schistosome or cercarial dermatitis) is caused by a parasite that can be spread by goose droppings, but does not mature or reproduce in humans.

**Pollutant Control Approach:** To help decrease geese pollution to water sources, remove waste periodically and use deterrent management practices.

### Applicable Operational BMPs:

This BMP is for areas of chronic accumulation of goose waste that impact stormwater systems.

- If possible, pick up goose waste using shovels, brooms, rakes, power sweepers, and trash cans. Properly dispose of goose waste in the garbage.
- Do not blow, sweep, or wash goose waste into waterways or storm sewer systems.
- Regularly clean goose waste from areas of chronic deposition where deterrence measures are impractical.
- Do not feed wild geese or any other wild animals.
- In recreational areas post signs discouraging the feeding of geese and other wild animals.

### Optional Operational BMPs:

- Change the habitat from goose friendly to goose resistant. Reduce lawn areas and increase the height of shoreline vegetation (tall grass, shrubs); as geese are reluctant to walk through tall vegetation.
- Create a natural geese barrier. 20 to 100 feet of herbaceous vegetation at least 3 feet in height to discourage geese . A narrow, winding path through the plantings will allow for beach access, while preventing geese from having a direct line of sight through the planted area.
- Make bank slopes steeper than 4:1 to discourage geese by preventing a clear view of the bank top and potential predators . Or, separate the beach from the grass with a few steep steps, which makes the ascent too difficult for most geese.

- Narrow ponds to limit takeoff and landing opportunities .
- Where space is limited use one or two rows of shrub plantings combined with a fence. Fences can be made from woven wire, poultry netting, plastic netting, plastic snow fencing, monofilament line, or electrified wire. Fences should be at least 24 inches tall (3 feet may be better), firmly constructed, and installed to prevent the geese from walking around the ends. Lower openings should be no larger than 4 inches from the ground to prevent goslings from walking under or through the fence.
- Construct a grid of wire or line above the water's surface to prevent geese from flying into a pond that they have been accustomed to using. The grid should be one to two feet above the water surface, but may be taller if humans need access to the area under the grid. There should be no more than five feet of space between grid lines. To prevent geese from walking under the grid install a perimeter fence. Regularly monitor the grid for holes, trapped wildlife, and sagging.
- Canada geese are protected under federal and state law and a hunting license and open season are required to hunt them. Where lethal control of Canada geese is necessary outside of hunting seasons, it should be carried out only after the above nonlethal control techniques have proven unsuccessful and only under permits issued by the U.S. Fish and Wildlife Service. Currently, the only agency permitted for lethal removal is the U.S. Department of Agriculture's Wildlife Services. Lethal control techniques include legal hunting, shooting out of season by permit, egg destruction by permit, and euthanasia of adults by government officials.
- Scare geese away when they are around. Geese often learn quickly to ignore scare devices that are not a real physical danger. Vary the use, timing, and location of tactics. Take advantage of geese being fearful of new objects. Examples of harassment and scare tactics:
    - **Dog patrols:** When directed by a handler, dogs are the method of choice for large open areas. Results are often immediate. After an aggressive initial use (several times a day for one or two weeks), geese get tired of being harassed and will use adjacent areas instead. A dog can be tethered to a long lead (which may require relocating the dog and tether frequently to cover more area), be allowed to chase and retrieve a decoy thrown over a large flock of geese, or be periodically released to chase the birds (if this is not against leash laws).
    - **Eyespot Balloons:** Large, helium-filled balloons with large eye-like images. Tether balloons on a 20 to 40 foot monofilament line attached to a stake or heavy object. Locate balloons where they will not tangle with trees or utility lines.
    - **Flags and Streamers:** Simple flags from plastic mounted on tall poles or mylar tape to make 6-foot streamers attached to the top of 8 foot long poles. Flags and streamers work best in areas where there is steady wind.
    - **Scarecrows:** Effective in areas where geese view humans as dangerous predators. For maximum effect, the arms and legs should move in the wind, use bright colors, and large eyes. Large, blow-up toy snakes are reported to work as a type of scarecrow.
    - **Noisemakers:** Devices that make a loud bang such as propane cannons, blanks, and whistle bombs can scare geese. Making the noise as soon as geese arrive and persistence are the keys to success when using these devices. Consult noise ordinances

and other permitting authorities (such as the local police department) before using.

- **Lasers:** Relatively low-power, long-wavelength lasers provide an effective means of dispersing geese under low light conditions. The birds view the light as a physical object or predator coming toward them and generally fly away to escape. Never aim lasers in the direction of people, roads, or aircraft.

- Geese's favorite food is new shoots of grass. Low lying grass also allows easy access to the water for protection from predators. Let grass grow to six inches or taller. Stop fertilizing and watering the lawn to reduce the palatability of the lawn.
- Minimize open sight lines for geese to less than 30 feet.
- Plant shrubs or trees along ponds to limit takeoff and landing opportunities.

Refer to: http://www.humanesociety.org/assets/pdfs/wild_neighbors/canada_goose_guide.pdf and https://wdfw.wa.gov/species-habitats/species/branta-canadensis for additional information.

## 3.6.18. BMP 49: Pesticides and an Integrated Pest Management Program

This BMP applies to businesses and public agencies that use pesticides.

### Description of Pollutants

Inadequate management of pesticides can allow them to enter stormwater and receiving water bodies, resulting in impacts on non-targeted organisms.

### Required BMP Elements

Required BMP elements are contained in *Appendix I* of this manual and *S435 — BMPs for Pesticides and an Integrated Pest Management Program* in Volume IV of the SWMMWW (Ecology 2019).

    - Preserve natural vegetation including grass, trees, shrubs, and vines when possible. See BMP C101: Preserving Natural Vegetation.

- If stabilizing or covering the erodible soil is not possible, then structural controls must be implemented. Structural practice options include:
    - Vegetated swales
    - BMP C200: Interceptor Dike and Swale
    - BMP C233: Silt Fence
    - BMP C207: Check Dams
    - BMP C232: Gravel Filter Berm
    - Sedimentation basin
    - Proper grading
    - Paving

For design information refer to II-3 Construction Stormwater BMPs.

# S435 BMPs for Pesticides and an Integrated Pest Management Program

**Description of Pollutant Sources:** Pesticides include herbicides, rodenticides, insecticides, fungicides, etc. Examples of pesticide uses include:

- Weed control on golf course lawns, access roads, utility corridors and landscaping.
- Sap stain and insect control on lumber and logs.
- Rooftop moss removal.
- Killing nuisance rodents.
- Fungicide application to patio decks.

It is possible to release toxic pesticides such as pentachlorophenol, carbamates, and organometallics to the environment by leaching and dripping from treated parts, container leaks, product misuse, and outside storage of pesticide contaminated materials and equipment. Poor management of pesticides can cause appreciable stormwater contamination and unintended impacts to non-targeted organisms.

**Pollutant Control Approach:** Control of pesticide applications to prevent contamination of stormwater. Develop and implement an Integrated Pest Management (IPM) Plan. Carefully apply pesticides, in accordance with label requirements.

## Applicable Operational BMPs:

- Train employees on proper application of pesticides and disposal practices.
- Follow manufacturers' application guidelines and label requirements.
- Do not apply pesticides in quantities that exceed the limits on the product the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) label. Avoid excessive application of chemical.
- Conduct spray applications during weather conditions as specified in the label requirements and applicable local and state regulations. Do not apply during rain or immediately before expected rain (unless the label directs such timing).
- Clean up any spilled pesticides immediately. Do not hose down to a storm drain, conveyance ditch, or water body.
- Remove weeds/vegetation in stormwater ditches, stormwater facilities, and drainage systems by hand or other mechanical means and only use pesticides as a last resort.
- Flag all sensitive areas including wells, creeks, and wetlands prior to spraying.
- Post notices and delineate the spray area prior to the application, as required by the local jurisdiction, or by Ecology.
- Refer to S411 BMPs for Landscaping and Lawn / Vegetation Management and use pesticides only as a last resort.
- Conduct any pest control activity at the life stage when the pest is most vulnerable. For example, if it is necessary to use a Bacillus thuringiens application to control tent caterpillars, apply it to the material before the caterpillars cocoon or it will be ineffective. Any method used should be site-specific and not used wholesale over a wide area.
- Mix pesticides and clean the application equipment under cover in an area where accidental spills will not enter surface or ground waters, and will not contaminate the soil.
- The pesticide application equipment must be capable of immediate shutoff in the event of an emergency.
- Implement a pesticide-use plan and include at a minimum:
    - A list of selected pesticides and their specific uses.
    - Brands and formulations of the pesticides.
    - Application methods and quantities to be used.
    - Equipment use and maintenance procedures.
    - Safety, storage, and disposal methods.
    - Monitoring, record keeping, and public notice procedures. All procedures shall conform to the requirements of Chapter 17.21 RCW and Chapter 16-228 WAC.
- Develop and implement an Integrated Pest Management (IPM) program if pests are present.

The following steps are adapted from (Daar, 1992).

- **Step One:** Correctly identify problem pests and understand their life cycle.
  - Learn more about the pest.
  - Observe it and pay attention to any damage that may be occurring.
  - Learn about the life cycle.
  - Many pests are only a problem during certain seasons, or can only be treated effectively in certain phases of the life cycle.
- **Step Two:** Establish tolerance thresholds for pests.
  - Decide on the level of infestation that must be exceeded before treatment needs to be considered. Pest populations under this threshold should be monitored but don't need treatment.
- **Step Three:** Monitor to detect and prevent pest problems.
  - Monitor regularly to anticipate and prevent major pest outbreaks.
  - Conduct a visual evaluation of the lawn or landscape's condition. Take a few minutes before mowing to walk around and look for problems.
  - Keep a notebook, record when and where a problem occurs, then monitor for it at about the same time in future years.
  - Specific monitoring techniques can be used in the appropriate season for some potential problem pests, such as European crane fly.
- **Step Four:** Modify the maintenance program to promote healthy plants and discourage pests.
  - Review your landscape maintenance practices to see if they can be modified to prevent or reduce the problem.
  - A healthy landscape is resistant to most pest problems. Lawn aeration and overseeding along with proper mowing height, fertilization, and irrigation will help the grass out-compete weeds.
  - Correcting drainage problems and letting soil dry out between waterings in the summer may reduce the number of crane-fly larvae that survive.
- **Step Five:** If pests exceed the tolerance thresholds:
  - Consider the most effective management options concurrent with reducing impacts to the environment. This may mean chemical pesticides are the best option in some circumstances.
  - Consider the use of physical, mechanical, or biological controls.
  - Study to determine what products are available and choose a product that is the least toxic and has the least non-target impact.

- **Step Six:** Evaluate and record the effectiveness of the control, and modify maintenance practices to support lawn or landscape recovery and prevent recurrence.
    - Keep records!
    - Note when, where, and what symptoms occurred, or when monitoring revealed a potential pest problem.
    - Note what controls were applied and when, and the effectiveness of the control.
    - Monitor next year for the same problems.

## Recommended Additional Operational BMPs:

- Choose the least toxic pesticide available that is capable of reducing the infestation to acceptable levels. The pesticide should readily degrade in the environment and/or have properties that strongly bind it to the soil.
- Choose pesticides categorized by EPA as reduced risk. For example, the herbicide imazamox.
- When possible, apply pesticides during the dry season so that the pesticide residue is degraded prior to the next rain event.
- If possible, do not spray pesticides within 100 feet of water bodies. Spraying pesticides within 100 feet of water bodies including any drainage ditch or channel that leads to open water may have additional regulatory requirements beyond just following the pesticide product label. Additional requirements may include:
    - Obtaining a discharge permit from Ecology.
    - Obtaining a permit from the local jurisdiction.
    - Using an aquatic labeled pesticide and adjuvant.
- Use manual pest control strategies such as physically scraping moss from rooftops, high-pressure sprayers to remove moss, and rodent traps.
- Consider alternatives to the use of pesticides such as covering or harvesting weeds, substitute vegetative growth, and manual weed control/moss removal.
- Consider the use of soil amendments, such as compost, that are known to control some common diseases in plants, such as Pythium root rot, ashy stem blight, and parasitic nematodes.
- Once a pesticide is applied, evaluate its effectiveness for possible improvement. Records should be kept showing the effectiveness of the pesticides applied.
- Follow the FIFRA label requirements for disposal. If the FIFRA label does not have disposal requirements the rinseate from equipment cleaning and/or triple-rinsing of pesticide containers should be used as product or recycled into product.
- Develop an and adaptive management plan and annual evaluation procedure including: (adapted from (Daar, 1992))

- A review of the effectiveness of pesticide applications.
- Impact on buffers and sensitive areas, including potable wells. If individual or public potable wells are located in the proximity of commercial pesticide applications, contact the regional Ecology hydrogeologist to determine if additional pesticide application control measures are necessary.
- Public concerns.
- Recent toxicological information on pesticides used/proposed for use.

### Additional Information

For more information, refer to the Pesticide Information Center Online (PICOL) Databases at http://cru66.cahe.wsu.edu/LabelTolerance.html.

Washington pesticide law requires most businesses that commercially apply pesticides to the property of another to be licensed as a Commercial Applicator from the Washington State Department of Agriculture.

## S444 BMPs for the Storage of Dry Pesticides and Fertilizers

**Description of Pollutant Sources:** Pesticides such as pentachlorophenol, carbamates, and organometallics can be released to the environment as a result of container leaks and outside storage of pesticide-contaminated materials and equipment. Inappropriate management of pesticides or fertilizers can result in stormwater contamination. Runoff contaminated by pesticides and fertilizers can severely degrade streams and lakes and adversely affect fish and other aquatic life.

**Pollutant Control Approach:** Store fertilizer and pesticide properly to prevent stormwater contamination.

### Applicable Structural BMPs:

Store pesticides and fertilizers in enclosed impervious containment areas that prevent precipitation or unauthorized personnel from coming into contact with the materials..

### Applicable Operational BMPs:

- Containers and bags must be covered, intact, and off the ground.
- Store all material so that it cannot come into contact with water.
- Immediately clean up any spilled fertilizer or pesticides.
- Keep pesticide and fertilizer contaminated waste materials in designated covered and contained areas, and dispose of properly.
- Store and maintain spill cleanup materials near the storage area.
- Sweep paved storage areas as needed. Collect and dispose of spilled materials. Do not hose

## 3.6.20. BMP 51: Irrigation

This BMP applies to businesses and public agencies that have irrigation systems.

### Description of Pollutants

Improper irrigation can encourage pest problems, leach nutrients, and make a lawn completely dependent on artificial watering.

### Required BMP Elements

Required BMP elements are contained in *S450 — BMPs for Irrigation* in Volume IV of the SWMMWW (Ecology 2019).

the storage area is not under a roof to protect it from rainfall, manage runoff by directing it to a stormwater treatment area. (FDACS, 2014)

# S450 BMPs for Irrigation

**Description of Pollutant Sources:** Irrigation consists of discharges from irrigation water lines, landscape irrigation, and lawn or garden watering. Excessive watering can lead to discharges of chlorinated potable water runoff into drainage systems; it can also cause erosion; and negatively affect plant health. Improper irrigation can encourage pest problems, leach nutrients, and make a lawn completely dependent on artificial watering. Mosquito breeding habitats may form through excessive watering.

**Pollutant Control Approach:** Limit the amount and location of watering to prevent runoff and discharges to drainage systems.

## Applicable Operational BMPs:

- Irrigate with the minimum amount of water needed. Never water at rates that exceed the infiltration rate of the soil.
- Maintain all irrigation systems so that irrigation water is applied evenly and where it is needed.
- Ensure sprinkler systems do not overspray vegetated areas resulting in excess water discharging into the drainage system.
- Inspect irrigated areas for excess watering. Adjust watering times and schedules to ensure that the appropriate amount of water is being used to minimize runoff. Consider factors such as soil structure, grade, time of year, and type of plant material in determining the proper amounts of water for a specific area.
- Inspect irrigated areas regularly for signs of erosion and / or discharge.
- Place sprinkler systems appropriately so that water is not being sprayed on impervious surfaces instead of vegetation.
- Repair broken or leaking sprinkler nozzles as soon as possible.
- Appropriately irrigate lawns based on the species planted, the available water holding capacity of the soil, and the efficiency of the irrigation system.
    - The depth from which a plant normally extracts water depends on the rooting depth of the plant. Appropriately irrigated lawn grasses normally root in the top 6 to 12 inches of soil; lawns irrigated on a daily basis often root only in the top 1 inch of soil.
- Do not irrigate plants during or immediately after fertilizer application. The longer the period between fertilizer application and irrigation, the less fertilizer runoff occurs.
- Do not irrigate plants during or immediately after pesticide application (unless the pesticide label directs such timing).
- Reduce frequency and / or intensity of watering as appropriate for the wet season (October 1 to April 30).

- Place irrigation systems to ensure that plants receive water where they need it. For example, do not place irrigation systems downgradient of plant's root zones on hillsides.

## Recommended Operational BMPs:

- Add a tree bag or slow-release watering device (e.g., bucket with a perforated bottom) for watering newly installed trees when irrigation system is not present.
- Water deeply, but infrequently, so that the top 6 to 12 inches of the root zone is moist.
- Use soaker hoses or spot water with a shower type wand when an irrigation system is not present.
    - Pulse water to enhance soil absorption, when feasible.
    - Pre-moisten soil to break surface tension of dry or hydrophobic soils/mulch, followed by several more passes. With this method, each pass increases soil absorption and allows more water to infiltrate prior to runoff.
- Identify trigger mechanisms for drought-stress (e.g., leaf wilt, leaf senescence, etc.) of different species and water immediately after initial signs of stress appear.
- Water during drought conditions or more often if necessary to maintain plant cover.
- Adjust irrigation frequency / intensity as appropriate after plant establishment.
- Annually inspect irrigation systems to ensure:
    - That there are no blockages of sprayer nozzles.
    - Sprayer nozzles are rotating as appropriate.
    - Sprayer systems are still aligned with the plant locations and root zones.
- Consult with the local water utility, Conservation District, or Cooperative Extension office to help determine optimum irrigation practices.
- Do not use chemigation and fertigation in irrigation systems. This will help avoid over application of pesticides and fertilizers.

## 3.6.21. BMP 52: Dock Washing

This BMP applies to the general public, businesses, and public agencies that are involved in dock washing.

### Description of Pollutants

Washing docks can result in the discharge of dirt and other pollutants that may be toxic to aquatic life.

### Required BMP Elements

Required BMP elements are contained in *S434 — BMPs for Dock Washing* in Volume IV of the SWMMWW (Ecology 2019).

- Operators may use a manually operated positive control valve for uncovered wash pads, but a pneumatic or electric valve system is preferable. The valve may be on a timer circuit and opened upon completion of a wash cycle. After draining the sump or separator, the timer would then close the valve.
- Minimize the use of water and detergents in washing operations when practicable.
- Use phosphate-free biodegradable detergents when practicable.
- Use the least hazardous cleaning products available.
- Consider recycling the washwater.

Operators may use soluble/emulsifiable detergents in the wash medium and should use it with care and the appropriate treatment. Carefully consider the selection of soaps and detergents and treatment BMPs. Oil/water separators are ineffective in removing emulsified or water soluble detergents. Another treatment appropriate for emulsified and water soluble detergents may be required.

### Exceptions:

- At gas stations (for charity car washes) or commercial parking lots, where it is not possible to discharge the washwater to a sanitary sewer, a temporary plug or a temporary sump pump can be used at the storm drain to collect the washwater for off-site disposal such as to a nearby sanitary sewer.
- New and used car dealerships may wash vehicles in the parking stalls as long as employees use a temporary plug system to collect the washwater for disposal as stated above, or an approved treatment system for the washwater is in place.

At industrial sites, contact Ecology for NPDES Permit requirements even when not using soaps, detergents, and/or other chemical cleaners in washing trucks.

## S434 BMPs for Dock Washing

**Description of Pollutant Sources:** Washing docks (or wharves, piers, floats, and boat ramps) can result in the discharge dirt, bird feces, soaps, and detergents that can be toxic to aquatic life, especially after they take on contaminants while cleaning. The BMPs in this section do not address dry docks, graving docks, or marine railway cleaning operations.

**Pollutant Control Approach:** Use dry methods and equipment (scraping, sweeping, vacuuming) to remove debris and contaminants prior to cleaning with water to prevent these substances from entering surface water.

### Applicable Operational BMPs:

**Surface Preparation and Spot Cleaning**

- Scoop and collect debris and bird feces.
- Sweep, capture, and dispose of debris from the dock as solid waste. Sweep or vacuum docks to minimize the need for chemical cleaners.

- During cleaning activities, if debris, substances, or wash water could enter surface waters through drains, temporarily block the drains and collect the water for proper disposal.
- Hose down the area if necessary and collect water as feasible.
- Try spot cleaning with water and a coarse cloth before using soaps or detergents.
- If a cleaner is needed for spot cleaning:
    - Mix it in a bucket and use it to scrub down only the areas that need extra attention.
    - Start with vinegar and baking soda and move to other options as needed. Spot clean using a rag if harsher cleaning products are needed.
    - Avoid or minimize the use of petroleum distillates, chlorinated solvents, and ammoniated cleaning agents.
    - Use degreasers or absorbent material to remove residual grease by hand and do not allow this material to enter surface water.
    - Keep cleaners in sealed containers. Keep cleaner containers closed securely when transporting between the shore and docks.
    - Properly dispose of the dirty bucket water.
- Minimize the scour impact of wash water to any exposed soil at the landward end(s) of the dock or below the dock. Place a tarp over exposed soil, plant vegetation, or put berms to contain eroded soil.

**Dock Washing and Disposal**

- To the extent practicable, collect any wash water generated from hosing down, pressure washing, or cleaning dock areas, and dispose of it properly.
- The following video, provided courtesy of the Port of Seattle, highlights the methods they have developed to collect wash water generated during dock washing.

  Video: Dock Scrubbing at Port of Seattle (YouTube Link): https://www.youtube.com/watch?v=7RBFdjC3K1Q
- Try pressure washing using light pressure. This uses less water and decreases the need for soap and scrubbing when washing the dock. Avoid using excessive pressure, which may damage the dock or send flakes of paint and other material into the water.
- Do not place any debris and substances resulting from cleaning activities in shoreline areas, riparian areas, or on adjacent land where these substances may erode into waters of the state.
- Where treated wood associated with the structure being washed are present, use non-abrasive methods and tools that, to the maximum extent practicable, minimize removal of the creosote or treated wood fibers when it removes marine growth from creosote or any other treated wood.
- Do not discharge removed marine growth to waters of the state where such marine growth

would accumulate on the sea bed.

- Do not discharge emulsifiers, dispersants, solvents, or other toxic deleterious materials to waters of the state.

# S441 BMPs for Potable Water Line Flushing, Water Tank Maintenance, and Hydrant Testing

**Description of Pollutant Sources:** Flushing is a common maintenance activity used to improve pipe hydraulics and to remove pollutants in systems. Flushing done improperly can result in the discharge of solids to receiving waters. Hydrant testing may result in the discharge of rust particles.

Chemicals used in line flushing and tank maintenance are highly toxic to aquatic organisms and can degrade receiving waters.

**Pollutant Control Approach:** Dechlorinate and pH adjust water used for flushing, tank maintenance, or hydrant testing. Dispose of the water to the sanitary sewer if possible.

## Applicable Operational BMPs:

- Remove solids from associated curbs and gutters before flushing water. Use erosion and sediment control BMPs such as BMP C235: Wattles, BMP C220: Inlet Protection, etc. to collect any solids resulting from flushing activities.
- If using super chlorination or chemical treatment as part of flushing, discharge water to the sanitary sewer. If sanitary sewer is not available, the water may be infiltrated to the ground as long as all of the following are met:
    - The water is dechlorinated to a total residual chlorine of 0.1 ppm or less.
    - Water quality standards are met.
    - A diffuser is used to prevent erosion.
    - The water does not cross property lines.
- Discharging water to a drainage system requires approval from the local jurisdiction. Check with the local jurisdiction to determine their requirements for approval. Most jurisdictions will require the water to be dechlorinated to a total residual chlorine concentration of 0.1 ppm or less and pH adjusted if necessary. Water must be volumetrically and velocity controlled to prevent resuspension of sediments or pollutants in the Municipal Separate Storm Sewer System (MS4).
- Do not over apply dechlorination agents. This can deplete the dissolved oxygen concentration and reduce the pH in discharge / receiving waters.

## Optional Operational BMPs:

- If possible, design flushing to convey accumulated material to strategic locations, such as to the sanitary sewer or to a treatment facility; thus, preventing re-suspension and overflow of a

## 3.6.22. BMP 53: Roof Vents

This BMP applies to businesses and public agencies that have roof vents.

### Description of Pollutants

This BMP applies to processes that vent emissions to the roof, result in the accumulation of pollutants on roofs, or both. Pollutants from these processes may build up on roofs and may pollute stormwater runoff.

### Required BMP Elements

Required BMP elements are contained in *S447 — BMPs for Roof Vents* in Volume IV of the SWMMWW (Ecology 2019).

slurry.

- Equip the driller to quickly respond to unusual conditions that may arise.
- Locate and prepare access roadways to minimize the amount of excavation and the potential for erosion.
- Contain accumulated uncontaminated water and sediment on site and pump into a storage tank or direct through a geotextile filtration system (or equivalent system) before discharging to the surrounding ground surface. Contaminants may include, but are not limited to, hydraulic fluids, contaminants in the soil and/or groundwater, polymers, and other drilling fluid additives.
- Keep all sediment-laden water out of storm drains and surface waters. If sediment-laden water does escape from the immediate drilling location, block flow to any nearby waterways or catch basins using fabric, inlet protections, sand bags, erosion fences, or other similar methods. Immediately notify Ecology and the local jurisdiction if sediment-laden water impacts the storm sewer system or surface waters.
- Divert any concentrated flows of water into the site using sandbags or check dams up-slope from the site.
- Dispose of soil cuttings and accumulated sediment appropriately. If cuttings or other soils disturbed in the drilling process are to be temporarily stockpiled on site, they must be covered and surrounded by a berm or filter device. See S429 BMPs for Storage or Transfer (Outside) of Solid Raw Materials, Byproducts, or Finished Products.
- Stabilize exposed soils at the end of the job, using mulch or other erosion control measures. See S425 BMPs for Soil Erosion and Sediment Control at Industrial Sites.
- Contain spent drilling slurry on site and allow it to dewater, or haul to an appropriate, approved disposal site.
- Restore disturbed areas with mulch (see BMP C121: Mulching) and seeding or hydroseeding (see BMP C120: Temporary and Permanent Seeding).

# S447 BMPs for Roof Vents

**Description of Pollutant Sources:** This activity applies to processes that vent emissions to the roof and/or the accumulation of pollutants on roofs. Processes of special concern are stone cutting, metal grinding, spray painting, paint stripping, galvanizing and electroplating. Pollutants from these processes may build up on roofs and may pollute stormwater roof runoff.

**Pollutant Control Approach:** Evaluate the potential sources of stormwater pollutants and apply source control BMPs where feasible.

## Applicable BMPs:

- Identify processes that are vented and may contribute pollutants to the roof. Pollutants of concern include and are not limited to:

    - Metal dust
    - Grease from food preparation
    - Solvents
    - Hydrocarbons
    - Fines
    - Stone dust
- Look for chemical deposition around vents, pipes, and other surfaces.
- Install and maintain appropriate source control measures such as air pollution control equipment (filters, scrubbers, and other treatment). (City of San José Environmental Services, 2004)
    - Check that your scrubber solution is appropriate for the chemistry of the fumes.
    - Install vent covers and drip pans where there are none.
    - Prevent leaks in pipefittings and containment vessels with routine maintenance.
- Consider instituting operational or process changes to reduce pollution.
- If proper installation and maintenance of air pollution control equipment does not prevent pollutant fallout on your roof, additional treatment of the roof runoff may be necessary.
    - Install/provide appropriate devices for roof runoff before it is discharged off site. This may include approved water quality treatment BMPs or structural stormwater treatment systems.
- Maintain air filters and pollution control equipment on a regular basis to ensure they are working properly. (The smell of odors from outside the building indicates that the pollution control equipment may need maintenance or evaluation.)
- When cleaning accumulated emissions from roof tops, collect the washwater and loose materials using a sump pump, wet vacuum or similar device. Discharge the collected runoff to the sanitary sewer after approval by the local sewer authority, or have a waste disposal company remove it.

# S451 BMPs for Building, Repair, Remodeling, Painting, and Construction

**Description of Pollutant Sources:** This activity refers to:

- The construction of buildings and other structures.
- Remodeling of existing buildings and houses.
- General exterior building repair work.

## *3.6.23. BMP 54: Streets and Highways*

This BMP applies to businesses and public agencies that maintain and apply deicers/anti-icers to streets and highways.

### Description of Pollutants

This BMP applies to maintenance and deicing/anti-icing of streets and highways. Chemicals used for deicing/anti-icing may be harmful to aquatic organisms.

### Required BMP Elements

Required BMP elements are contained in *S406 — BMPs for Streets and Highways* in Volume IV of the SWMMWW (Ecology 2019).

- Consider installing an aircraft de/anti-icing chemical recovery system, or contract with a chemical recycler.

### Applicable BMPs for Airport Runways/Taxiways:

- Avoid excessive application of all de/anti-icing chemicals, which could contaminate stormwater.
- Store and transfer de/anti-icing materials on an impervious containment pad or an equivalent containment area and/or under cover in accordance with S429 BMPs for Storage or Transfer (Outside) of Solid Raw Materials, Byproducts, or Finished Products. Consider other material storage and transfer approaches only if the de/anti-icer material will not contaminate stormwater.

### Recommended Additional BMPs for Airport Runways/Taxiways:

- Include limits on toxic materials and phosphorous in the specifications for de/anti-icers, where applicable.
- Consider using anti-icing materials rather than deicers if it will result in less adverse environmental impact.
- Select cost-effective de/anti-icers that cause the least adverse environmental impact.

## S406 BMPs for Streets and Highways

**Description of Pollutant Sources:** These BMPs apply to the maintenance and deicing/anti-icing of streets and highways. Deicing products can be conveyed during storm events to inlets/catch basins or to receiving waters after application. Leaks and spills of these products can also occur during their handling and storage. Equipment and processes using during maintenance can contribute pollutants such as oil and grease, suspended solids, turbidity, high pH, and metals.

**Pollutant Control Approach:** Apply good housekeeping practices, preventative maintenance, properly train employees, and use materials that cause less adverse effects on the environment.

### Applicable BMPs:

#### Deicing and Anti-Icing Operations

- Adhere to manufacturer's guidelines and industry standards of use and application.
- Store and transfer de and anti-icing materials on impervious containment pads, or an equivalent spill/leak containment area in accordance with S429 BMPs for Storage or Transfer (Outside) of Solid Raw Materials, Byproducts, or Finished Products.
- Sweep/clean up accumulated de and anti-icing materials and grit from roads as soon as possible after the road surface clears.
- Minimize use in areas where runoff or spray from the roadway immediately enters sensitive areas such as fish-bearing streams.

**Maintenance Operations**

- Use drip pans or absorbents wherever concrete, asphalt, asphalt emulsion, paint product, and drips are likely to spill, such as beneath discharge points from equipment.
- Cover and contain nearby storm drains to keep runoff from entering the drainage system.
- Collect and contain all solids, slurry, and rinse water. Do not allow these to enter gutters, storm drains, or drainage ditches or onto the paved surface of a roadway or driveway.
- Designate an area onsite for washing hand tools and collect that water for disposal.
- Conduct all fueling of equipment in accordance with S419 BMPs for Mobile Fueling of Vehicles and Heavy Equipment.
- Do not use diesel fuel for cleaning or prepping asphalt tools and equipment.
- Sweep areas as frequently as needed. Collect all loose aggregate and dust for disposal. Do not hose down areas into storm drains.
- Store all fuel, paint, and other products on secondary containment.
- Conduct paint striping operations during dry weather.

### Recommended Additional BMPs:

- Where feasible and practicable, use roadway deicing chemicals that cause the least adverse environmental impact. Apply only as needed using minimum quantities. Consider the Pacific Northwest Snowfighters Qualified Products List when selecting roadway de-icers and anti-icers.
- Intensify roadway and drainage structure cleaning in early spring to help remove particulates from road surfaces.
- Include limits on toxic metals in the specifications for de/anti-icers.
- Install catch basin inserts to collect excess sediment and debris as necessary. Inspect and maintain catch basin inserts to ensure they are working correctly.
- Research admixtures (e.g. corrosion inhibitors, surfactants) to determine what additional pollutants may be an issue. Verify with the local jurisdiction if there are any restrictions on admixtures.

# S415 BMPs for Maintenance of Public and Private Utility Corridors and Facilities

**Description of Pollutant Sources:** Corridors and facilities at petroleum product pipelines, natural gas pipelines, water pipelines, electrical power transmission corridors, and rights-of-way can be sources of pollutants such as herbicides used for vegetation management, and eroded soil particles from unpaved access roads. At pump stations, waste materials generated during maintenance activities may be temporarily stored outside. Additional potential pollutant sources include the leaching of

# APPENDIX B: SPILL PLAN SUMMARY

# Terminal 91 Environmental Incident Notification Guide

## Importance of Spill Response & Reporting

The Port of Seattle (Port) protects and preserves the natural environmental and human health and safety while ensuring safe and efficient maritime activities. This summary provides guidance on how to proceed for spills to land or water, including situations where hazardous materials may threaten life, health, or the environment. A sample form is on page 2.

## Landside Spills Notification

If you see evidence of or actions causing a spill on-land, call to report incident to the numbers below:

1. Port's Terminal 91 Operations Line (24-hours): **(206) 787-3751**
2. Port's Spill Dispatch Line (24-hours): **(206) 787-3350**

## Waterside Spills Notification

If you see a sheen or other evidence of a spill in waterways, follow this *(if there is NOT clear evidence that spilled material is in waterway, or if the waterside spill began on land, refer to Landside Spills for reporting)*:

1. Report spill to National Response Center (NRC) and the Washington Emergency Management Division (WaEMD):
    - NRC: **(800) 424-8802**
    - WaEMD: **(800) 258-5990**

2. After you've contacted NRC and WaEMD, make the calls listed under '**Landside Spills Notification**'

## Other Emergencies

In the event of a **hazardous material or waste release, fire, or other emergency** that could be a danger to environment or human safety and health, immediately call:

1. Seattle Fire Department & Police: 911 AND
2. Port of Seattle Police: (206) 433-5400

## Seaport Environmental Incident Notification Procedures

This is a sample form that shows information needed to help respond and report during an environmental incident or spill

| | |
|---|---|
| **Reporting Party** | |
| Name: | Organization: |
| Phone # | |
| **Responsible Party** | |
| Name: | Organization: |
| Phone # | |
| **Incident Information** | |
| Drainage structure impact? | |
| Material involved: | |
| Incident description: | |
| Amount released (estimate): | |
| Spill/sheen length: | Spill/sheen width: |
| Color (rainbow, silver, grey?): | Odor: |
| Weather conditions: | |
| **Actions taken:** | |
| Incident date: | Time of discovery: |
| Location/facility: | |
| NRC report # (if applicable): | |

# APPENDIX C: EXAMPLE SITE INSPECTION FORM

# **Appendix C** Municipal Tenant SWPPP Inspection Form

| General Information | |
|---|---|
| Facility Name: | |
| Inspection Date/Time: | Weather: |
| Inspector Name: | Inspector Title: |
| Inspector Signature: | |

| General Inspection Observations | |
|---|---|
| Are outdoor work areas and storage areas organized, clean, and free of debris? | □ YES □ **NO** □ N/A |
| Is there any evidence of contaminants (e.g., trash, debris, sheen/staining) on the ground, in stormwater catch basins/ditches, or in surface waters adjacent to the site? | □ **YES** □ NO □ N/A |
| Do any catch basins, manholes or stormwater structures require cleaning? See City of Seattle BMP 2. | □ **YES** □ NO □ N/A |
| Are all catch basins, manholes, stormwater structures, and BMPs accessible at all times? | □ YES □ **NO** □ N/A |
| Are materials/products/waste stored indoors or under cover? | □ YES □ **NO** □ N/A |
| Are outdoor waste receptacles in good condition (e.g., no holes or leaks) with lids closed? | □ YES □ **NO** □ N/A |
| Are vehicles/equipment in good condition (e.g., not leaking)? | □ YES □ **NO** □ N/A |
| The **bolded** responses should be described in Detailed Inspection Observations and Issues Resolution below. | |

| Detailed Inspection Observations | | |
|---|---|---|
| **Area** | **Observations** | **Follow-up Needed?[1]** |
| | | □ YES □ NO |
| | | □ YES □ NO |
| | | □ YES □ NO |
| | | □ YES □ NO |

[1] If yes, enter items into Issues Resolution and follow-up with appropriate parties.

| Issues Resolution | | | | |
|---|---|---|---|---|
| **Item No:** | **Description / Location:** | **Action Needed** | **Assigned To** | **Complete? (Date)** |
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |

| Additional Notes |
|---|
| |