MUNICIPAL SEPARATE STORM SEWER SYSTEM STORMWATER MANAGEMENT PROGRAM DOCUMENT

City of Portland, Oregon
February 2025

ENVIRONMENTAL SERVICES
CITY OF PORTLAND
working for clean rivers

MUNICIPAL SEPARATE STORM SEWER SYSTEM STORMWATER MANAGEMENT PROGRAM DOCUMENT

February 2025

Prepared by the
City of Portland Bureau of Environmental Services
Portland, Oregon

For National Pollutant Discharge Elimination System Municipal Separate Storm Sewer Systems
Phase I Individual Permit #101314

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ACRONYMS and ABBREVIATIONS

ACWA	Oregon Association of Clean Water Agencies
BES	City of Portland Bureau of Environmental Services
BMP	best management practice
BPS	City of Portland Bureau of Planning and Sustainability
City	City of Portland, Oregon
CWA	Clean Water Act
DEQ	State of Oregon Department of Environmental Quality
DMA	Designated Management Agency
ENB	Environment (Built)
EPA	United States Environmental Protection Agency
ESCM	Erosion and Sediment Control Manual
FIT	(Stormwater) Facility Inspection Team
IDDE	Illicit Discharge Detection and Elimination
IGA	Intergovernmental Agreement
IPM	integrated pest management
ISW	Industrial Stormwater Program
LA	load allocation
LID	low-impact development
MEP	maximum extent practicable
MS4	municipal separate storm sewer system
NEC	No Exposure Certification
NPDES	National Pollutant Discharge Elimination System
O&M	operations and maintenance
ODOT	State of Oregon Department of Transportation
PBOT	City of Portland Bureau of Transportation
PCC	Portland City Code

PF&R	City of Portland Fire and Rescue
PP&D	Portland Permitting & Development
PP&R	Portland Parks and Recreation
SCM	Source Control Manual
SMF	stormwater management facility
SPCR	Spill Protection and Community Response
SWMM	Stormwater Management Manual
SWMP	Stormwater Management Program
TMDL	Total Maximum Daily Load
UIC	Underground Injection Control
USR	Under Staff Review
WLA	waste load allocation
WPCF	Water Pollution Control Facility

EXECUTIVE SUMMARY

This is the City of Portland's updated Stormwater Management Program, or SWMP, Document. This SWMP Document reflects new knowledge and insights about environmental management practices, emerging pollution risks, and pollution prevention strategies relevant to the Portland community. It presents detailed stormwater program measures with up-to-date goals and a process to adapt to shifting community priorities and water quality developments.

This plan is a requirement of the City's Municipal Separate Storm Sewer System (MS4) National Pollutant Discharge Elimination System (NPDES) permit. Meeting the permit's requirements is how the City keeps its stormwater system compliant with the federal Clean Water Act (CWA).

Background

Rainwater from storms flows into and over roads, roofs, planted fields, and natural or landscaped areas. It picks up fertilizers, pesticides, industrial chemicals, gasoline, oils, construction materials, and bacteria from leaky sewers and pet waste. It delivers these pollutants through storm sewers and into our rivers, streams, lakes, groundwater, and coastal waters.

The Clean Water Act aims to protect water sources from such pollutants. It includes an NPDES permitting program. The program requires permits not only for wastewater treatment plants and industrial processes, but also for stormwater runoff. The City's permit is in a category called MS4, which stands for municipal separate storm sewer system. This means that the City's permit covers a stormwater system that is separate from the wastewater collection system.

In Oregon, the Department of Environmental Quality (DEQ) is the authority responsible for issuing NPDES permits. The DEQ issued the City's first MS4 permit In 1995, following an amendment to the CWA for stormwater runoff in 1987. DEQ reissued the permit in 2006, 2011, and most recently on Sept. 15, 2021, with an expiration date of Sept. 30, 2026. The Portland Bureau of Environmental Services (BES) administers the permit, but multiple City bureaus carry out its requirements. The Port of Portland, which also maintains a storm sewer system, is the City's co-permittee.

The MS4 permit requires the City to maintain, adapt and enforce a Stormwater Management Program to reduce pollutants to the "maximum extent practicable." The program must be described in a SWMP Document.

This SWMP Document describes best management practices (BMPs) and commitments for the length of the permit term to prevent and control pollution from stormwater discharges. These BMPs must address specific program elements, including:

- Conducting education and outreach to the public
- Providing opportunities for involving the public
- Detecting and eliminating illicit discharges
- Controlling runoff from construction sites (such as through erosion control)
- Implementing water quality design standards to address runoff from new and re-development projects
- Implementing good housekeeping procedures to prevent pollution associated with municipal operations and maintenance activities
- Preventing pollution from industrial and commercial facilities

This document describes how the City will fulfill each element and defines metrics to help track and evaluate effectiveness. The City drafts an annual report and sends it to the DEQ each year by November 1. These annual reports are available on the City's Stormwater Permit web page.

The permit also requires the City to monitor stormwater quality and local waterways. This SWMP Document includes an overview of the City's Monitoring Plan.

1 INTRO

Rainfall in the Pacific Northwest is fundamentally important to communities throughout our region and natural landscape. Rain is necessary for the growth of our crops, gardens, and cherished wild areas. It nourishes critical habitat for salmon, birds, insects, and other wildlife. Rain falls on our mountains as snow and ice and then replenishes our drinking water, feeds our rivers and alpine streams, and supports some of the world's best recreation. These basic values ultimately rely on cool, fresh, clean water. The bottom line is this: we *must* consider rainfall as a vital resource for so many of the things that we as Oregonians hold dear.

Rainwater that falls onto the ground creates stormwater runoff that flows into and over different types of land surfaces, such as roadways, rooftops, agriculture, and natural or landscaped areas. Rain that falls onto urbanized areas picks up pollution as it moves over pavement and into storm drains, delivering it straight into our rivers, streams, lakes, and coastal waters. Pollutants in runoff can include things like household fertilizers and pesticides, industrial chemicals, gasoline and oils, and sediment from construction activities. Certain state and federal laws like the Clean Water Act (CWA) are aimed at protecting our water resources from this kind of harmful pollution.

The CWA National Pollutant Discharge Elimination System (NPDES) program regulates stormwater discharges in 5-year timeframes from three main sources: the municipal separate storm sewer system (MS4), which is the subject of this Stormwater Management Program (SWMP) Document, runoff from construction sites, and runoff from industrial sites.

In Portland stormwater runoff discharging to local creeks and waterways via the municipal drainage system is regulated by the Oregon Department of Environmental Quality (DEQ) with an MS4 NPDES permit. DEQ issued the City of Portland's first MS4 permit in 1995, after the CWA regulations for municipal stormwater discharges were enacted. The permit was later reissued in 2006 and again in 2011. Most recently, DEQ renewed the City's fourth MS4 permit, effective October 1, 2021.

One of the primary requirements of an MS4 permit is to develop and implement a comprehensive stormwater management program. The program must be described in detail in a SWMP Document that that includes the management activities, practices, and commitments

over the MS4 permit term to prevent and control pollution from the municipality's stormwater discharges.

The City originally developed this SWMP Document in 2022, to comply with the MS4 permit issued in 2021, based on a comprehensive evaluation of pre-existing stormwater program activities along with insights about emerging pollution risks. The evaluation included:

- A thorough review of previous SWMPs and annual compliance reports;
- An in-depth gap analysis of existing program strategies and protocols when compared with new MS4 permit requirements;
- Detailed interviews, a "document discovery" effort, and collaboration with City managers and specialists responsible for MS4 implementation;
- Insights gained from decades of engaging community, non-profit, and business partners; and
- Subject matter expert input on ordinance administration and enforcement.

The City regularly evaluates stormwater strategies and best management practices, or BMPs, to determine adjustments that are needed to improve our pollution prevention efforts. This SWMP Document reflects the City's consideration of the best available technologies and practices relevant to municipal control of stormwater pollution. It also presents up-to-date goals and performance tracking measures, along with a process to evaluate resources to adaptively manage our stormwater activities.

The MS4 permit also requires a monitoring program plan (Monitoring Plan) to assess local water quality and potential impacts to waterways and to evaluate the effectiveness of SWMP activities. Monitoring requirements include the collection of water quality samples and analysis of environmental data. This SWMP Document includes an overview of the City's new Monitoring Plan.

The Bureau of Environmental Services leads administration of and compliance with the City of Portland's MS4 permit, including the SWMP Document and Monitoring Plan, but multiple City bureaus are responsible for implementation of the requirements. Our SWMP strategies and environmental monitoring results are evaluated continuously by the City's MS4 management team.

Detailed descriptions on all the MS4 SWMP elements are provided on the following pages.

1.1 About This Document

1.1.1 Organization

This SWMP Document mirrors the primary structure of the MS4 permit, which is organized in a sequence of "schedules" that outline the requirements.

Schedule A lists "conditions for municipal stormwater discharges," including the required Stormwater Management Program Control Measures. The City's strategies and control measures are described in detail in Section 2 of this SWMP Document. Each strategy includes metrics that will be used to evaluate program effectiveness.

Schedule B of the MS4 permit lists monitoring and reporting requirements that specify the water quality sampling that the City is required to undertake. Response to those requirements, including our Monitoring Plan and annual reporting evaluation, is described in Section 3 of this SWMP Document.

SWMP implementation requires reliance on numerous municipal ordinances, policies, procedures, guidance manuals, checklists, forms, maps, and other related documents. Throughout this SWMP Document, relevant materials are referenced and linked within each major strategy. All major program components can also be found on the City's MS4 website.

Stormwater Management Program Control Strategies, described in detail in Section 2 of this SWMP Document, include the following:

- Public Education and Outreach Strategy (Section 2.1)
- Public Involvement and Participation Strategy (Section 2.2)
- Illicit Discharge Detection and Elimination Strategy (Section 2.3)
- Erosion Control Strategy for Construction Site Runoff (Section 2.4)
- Post-Construction Site Runoff Strategy for New and Re-Development (Section 2.5)
- Post-Construction Long-Term Operation and Maintenance (Section 2.6)
- Pollution Prevention and Good Housekeeping Strategy for Municipal Operations (Section 2.7)
- Industrial and Commercial Facilities Strategy (Section 2.8)

1.1.2 Geography and Applicability

The MS4 permit applies to all existing and new discharges of stormwater from the Municipal Separate Storm Sewer System (MS4) within the City of Portland's Urban Services Boundary. The MS4 is a drainage network that collects upland runoff from streets, properties, and natural areas and conveys it to open waterways through hundreds of outfalls throughout the City. In Portland, this equates to roughly 20% of the area within City limits, or around 15,000 acres.[1] The remaining 80% of Portland's area is served by other means of conveying and discharging stormwater runoff. (See Figure 1 for a geographical overview.)

Portland's topography results in several distinct watersheds that have unique ecological characteristics and urban influences. A *watershed* is an area of land that drains rainfall into a specific stream or river based on its topography. The City strives toward an integrated planning approach for stormwater and wastewater management that addresses the specific issues and needs of each watershed. [2] Yet at the same time, fundamental and comprehensive BMP control measures are appropriate and necessary in every watershed. Figure 2 shows the different watersheds, or subbasins, that make up Portland's MS4 coverage area.

There are other stormwater drainage areas of the City that are *not* covered by the MS4 permit but instead are regulated by other laws and include the following:

Combined Sewer Areas

In much of Portland's central area, including downtown, stormwater drains into the City's combined sewer system, which is not regulated by the MS4 permit. In a combined sewer system, rainwater flows into a shared pipe system that mixes with residential and commercial wastewater and sewage in a combined pipe system that then ends up at the City's municipal wastewater treatment plants and is treated prior to discharge. Discharges from wastewater treatment plants are covered by different NPDES Wastewater Discharge permits[3] issued by DEQ.

[1] The exact amount of acreage changes regularly as new development and re-development occurs. More precise numbers are provided each year in the City's Annual MS4 Compliance Reports.

[2] Integrated planning is a process for municipalities to achieve clean water and human health goals while addressing aging wastewater and stormwater infrastructure, changing population and rainfall patterns, and competing priorities for funding. Learn more at https://www.epa.gov/npdes/integrated-planning-municipal-stormwater-and-wastewater.

[3] NPDES Waste Discharge Permit 101505 (EPA Number OR0026905) applies to the Columbia Boulevard Wastewater Treatment Plant. NPDES Waste Discharge Permit 101614 (EPA Number OR0026891) applies to the Tryon Creek Wastewater Treatment Plant.

Groundwater Discharge Areas

Large portions of the city drain stormwater into the ground through Underground Injection Control (UIC) devices. Common types of UICs include sumps, drywells, and trench drains. UICs help protect surface water, replenish groundwater supplies, and support low-impact development (LID) strategies for stormwater management. Areas that drain stormwater to the City's UICs are not subject to the MS4 permit but are instead regulated by a UIC Water Pollution Control Facility (WPCF) permit[4] issued by DEQ under the federal Safe Drinking Water Act.

Non-Point Source Runoff Areas

A *non-point source* refers to potential pollution from overland runoff, atmospheric deposition, and other such disperse sources where the runoff is not conveyed through the City's MS4. In Portland, these areas are mostly located in forested areas or along riparian corridors. The term *riparian* refers to wetland or river-bank areas along waterways. While not regulated by the MS4 permit, the City still addresses non-point sources of pollution in Portland under the CWA's Total Maximum Daily Load (TMDL) requirements.

Private Drainage and Other Non-City MS4s

Stormwater runoff from substantial portions of Portland is managed by individual landowners, including private parties and other governmental entities. This is especially the case in areas adjacent to waterways (i.e., riparian areas), where stormwater runoff is typically discharged via privately owned outfalls. These areas are not part of the City's MS4.

There are also other jurisdictional MS4 operators in the Portland area. These include the Port of Portland, which is a co-permittee on the City's MS4 permit, the Oregon Department of Transportation (ODOT), and Multnomah County. Both ODOT and Multnomah County have separate MS4 permits for stormwater discharges from infrastructure that they own and operate.

[4] Water Pollution Control Facilities Permit For Class V Stormwater Underground Injection Control Systems, City of Portland (Permit No. 102830).

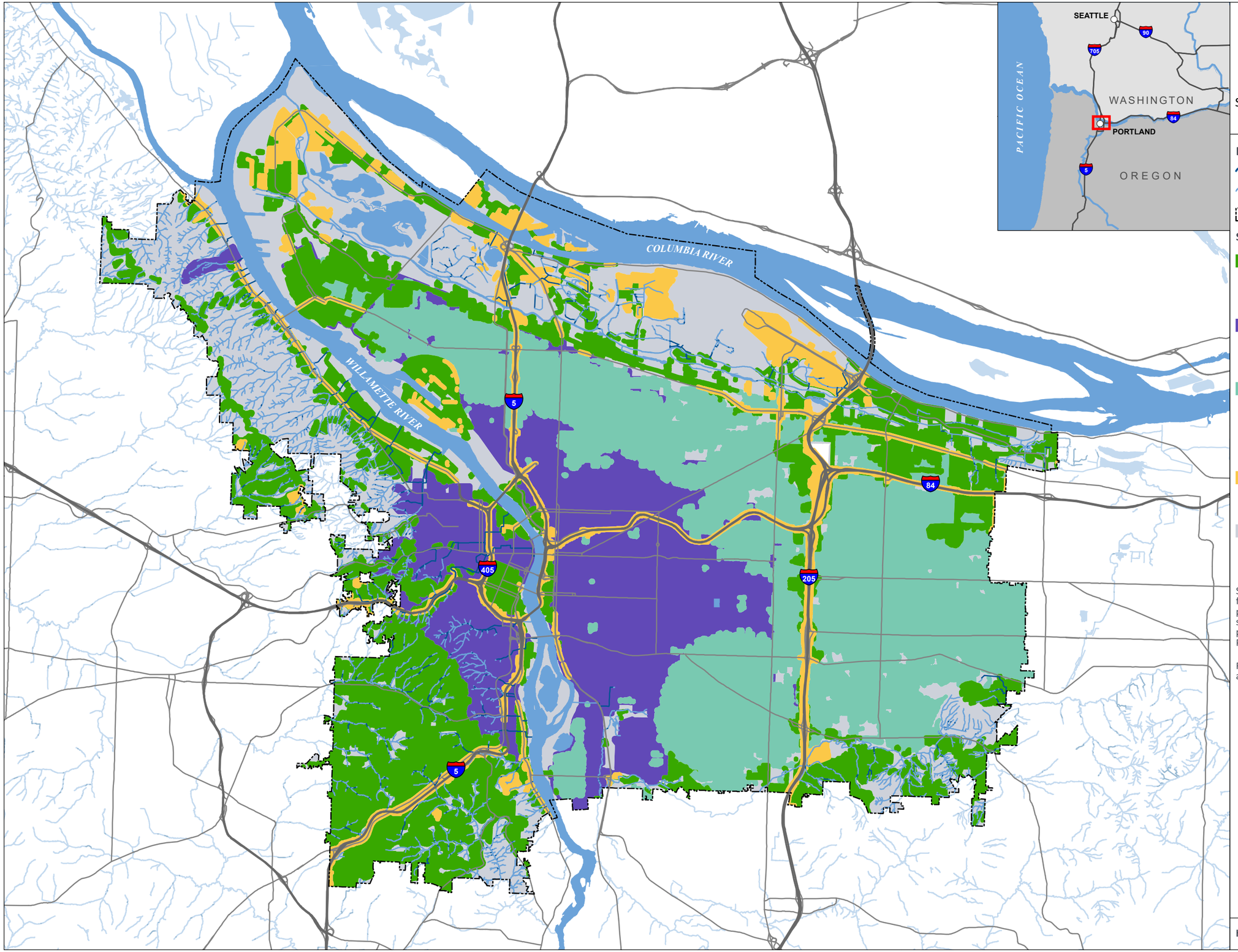

FIGURE 1

Storm System Type Coverage Map

STORMWATER MANAGEMENT PROGRAM DOCUMENT
Portland, Oregon

LEGEND

- Piped Waterway
- Waterway
- City of Portland Boundary

System Coverage

City Municipal Separate Storm Sewer System (MS4)
This City system carries stormwater in pipes either directly to a local creek or stream, or to green infrastructure, where it can soak into the ground close to where the rain fell.

City Combined Sewer
This City system carries both sewage and stormwater in the same pipes to the treatment plant. Many of Portland's older neighborhoods have a combined system.

City Underground Injection Control (UIC) System
UICs are drywells, perforated pipes, or drain tiles that are used to discharge fluids underground. In Portland, this is generally a drywell system that collects and filters stormwater before allowing it to soak into the ground. The water then replenishes groundwater supplies.

Non-City MS4
These MS4 systems are owned and/or operated by other jurisdictions, such as the Port of Portland, or the Oregon Dept. of Transportation.

Non-Point/Private Drainage
This category includes areas of open water in addition to natural drainages, private pipes, private UICs, green streets, and open spaces.

Stormwater runoff is generated from rain and snowmelt that flows over land or impervious surfaces, such as paved streets, parking lots, and building rooftops, and does not naturally soak into the ground. As it flows, stormwater can pick up pollution along the way before it is managed by one of the Portland's three stormwater systems.

Resolution of GIS System Converage data is 50 percent of actual and does not capture drainage at the property level.

N

0 4,500 9,000 Feet

1: 108,000
1 in = 9,000 feet

https://www.portlandmaps.com/bes/ms4monitoringsitesmap

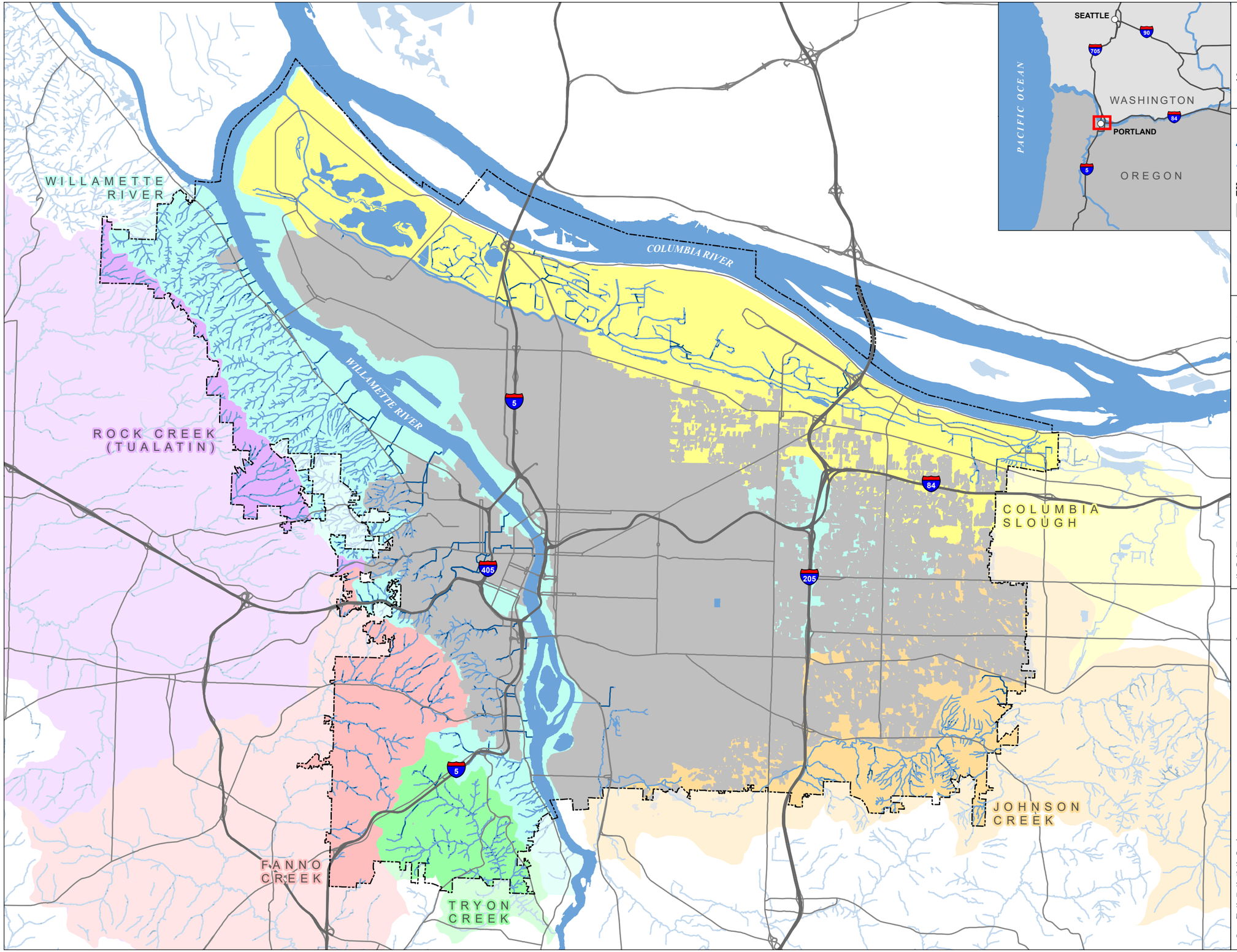

FIGURE 2

Watershed Basins Map

STORMWATER MANAGEMENT PROGRAM DOCUMENT
Portland, Oregon

LEGEND

- Piped Waterway
- Waterway
- City of Portland Boundary
- Combined Sewer/City UIC Area

N

0 4,500 9,000 Feet

1: 108,000
1 in = 9,000 feet

PERCENT OF ENTIRE SUBWATERSHED WITHIN CITY LIMITS

Willamette River & Tributaries	82%
Columbia Slough	0.5%
Johnson Creek	38%
Fanno Creek	23%
Tryon Creek	72%
Rock Creek (Tualatin)	8%

Percent of subwatershed describes the portion of each total watershed area located within City limits, indicating the extent to which the City's management strategies in the plan may be applied to each subwatershed.

SUBWATERSHED AREA (ACRES) INSIDE CITY LIMITS

Willamette River & Tributaries	17,319	21,575
Columbia Slough	17,189	10,027
Johnson Creek	5,322	7,864
Fanno Creek	4,635	
Tryon Creek	3,045	
Rock Creek (Tualatin)	1,798	

The acreage within each topographic subwatershed is the total of colored and gray bar segments. Fanno, Tryon and Rock Creeks are not served by combined systems or UICs. Colored segments show acreage flowing to surface waters potentially subject to the City's management strategies described in the plan. Gray segments represent areas managed by either the City's combined sewer or UIC systems, where stormwater is conveyed to the wastewater treatment plant or to groundwater through sumps.

Gray shows acreage within combined sewer and UIC service areas

1.2 Maximum Extent Practicable

The City developed and has been refining a comprehensive SWMP since the first MS4 permit was issued in 1995 to reduce the discharge of pollutants to the *maximum extent practicable* (MEP). MEP is a defined standard under the CWA that sets the level of effort that an MS4 operator is expected to implement to prevent and control pollution over the permit term. The MEP standard is exclusive to MS4 permittees and designed to allow flexibility due to the unique circumstances that exist for every MS4 operator throughout the country. The U.S. Environmental Protection Agency (EPA) interprets MEP in a manner that provides the flexibility "to optimize reductions in stormwater pollutants on a location-by-location basis" due to the scale and complexity associated with municipal stormwater.

The control measures, or *strategies*, that the City uses to comply with the MS4 permit are described in detail in the next section of this SWMP Document. These strategies consist of a variety of different external and internal activities and are supported by many related City policies, legal authorities, procedures, and manuals. The SWMP and associated SWMP Document are a result of the City's ongoing adaptive management since the original SWMP was submitted with the MS4 permit application in 1993 and subsequent MEP evaluations. Adaptive management, simply stated, is *learning by doing*. It is a process that identifies when program elements, strategies, activities, BMPs, etc. should be examined more deeply and adjusted. It informs the selection of alternatives that can be incorporated based on experience and performance (see Section 3 for further details).

By issuing the MS4 permit, DEQ determines that permit requirements are achievable and protective of water quality. However, the permit itself and the MEP standard still allow the City flexibility to determine *how* the requirements are met, based on social, economic, and environmental influences unique to Portland. Therefore, to define what MEP means for Portland, the City has developed, and continues to implement, appropriate BMPs to satisfy control measures required by the permit, through the evaluative process described in Section 3. The decision-making process is designed to produce the kinds of results desired by the public, elected officials, DEQ, and City leadership. Most importantly, the results should continue to show the optimal water quality improvements for the resources invested.

The City's comprehensive SWMP and associated SWMP Document take a holistic approach to stormwater management and recognize the need to balance community and regulatory expectations with on-the-ground realities of funding limitations, urgent social issues, and a

constantly fluctuating local and regional economy. The City's broad suite of stormwater control strategies are built on many years of experience and investment of public (and private) resources. This approach aligns stormwater management with other community priorities and what the public is willing to fund. For example, key strategies include outreach and education that focus on pollution prevention, rather than the more costly pollution treatment. Other program elements aim to manage stormwater through an optimized mix of affordable and sustainable green, gray, and natural infrastructure that integrates both community resiliency and quality of life that is important to Portlanders.

Stormwater management through a multi-dimensional watershed approach gives the City a unique opportunity to advance sustainability, resiliency, and community livability. In a time of competing priorities, creating efficiencies between bureaus and seeking collaborative opportunities to share resources and achieve multiple objectives allows the City to better connect water quality and stormwater conveyance needs and investments with other community priorities and long-range planning efforts across City jurisdictions.

1.3 Waterway Impairments (TMDLs)

In addition to MS4 requirements, the City is subject to TMDL regulations under the CWA. A TMDL serves as a restoration plan for impaired or polluted waterways. In Oregon, TMDLs are established and developed by DEQ. They identify the maximum amount of a specific pollutant that a particular waterbody can receive and still meet water quality standards. The maximum amount of the pollutant is then divided up and "allocated" to the various dischargers to that waterway. These dischargers are referred to as designated management agencies (DMAs). Pollutant load allocations (LAs) are identified for non-point sources of pollution and waste load allocations (WLAs) for point sources of pollution. Under the TMDL program, municipal stormwater discharges are regulated as a point source if covered by an MS4 permit, which means that relevant TMDL requirements are included directly in the permit (see Schedule D of the City's MS4 permit). For non-point source areas, however, DMAs like the City are required to develop a TMDL Implementation Plan describing how pollution in these areas will be controlled. It is important to note that most TMDL pollutants are related to stormwater runoff and are addressed by the MS4 program. However, other waterway problems, like increased stream temperatures and harmful algal blooms, are less related to stormwater runoff and more related to climate change and lack of tree canopy shading. [5]

This SWMP Document represents the City's plan to address TMDL WLAs. Schedule D of the permit includes TMDL-related requirements for a mercury minimization assessment and a pollutant load reduction evaluation.

To address non-stormwater pollutants, strategies like riparian shade, wetland restoration, tree planting and protection, and land use zoning tools are covered in the City's TMDL Implementation Plan.

TMDLs in effect for non-point sources of pollution and related controls are discussed and identified in Portland's

TMDL Implementation Plan

[5] Stormwater runoff is not a contributor of heat or "thermal loading" to surface waters. Temperature is designated as a non-point source pollutant and is specifically addressed under the TMDL program as opposed to the MS4 permit.

1.4 Coordination Partnerships

1.4.1 Co-Permittee Coordination

The City and Port of Portland are co-permittees on the MS4 permit. The City is the lead permittee, as the Port's MS4 lies within the City's Urban Services Boundary. The City conducts most stormwater program activities city-wide, with some activities overlapping with the Port's MS4 service area. The Port manages its own MS4 service area, but some Port properties discharge to the City's MS4. The Port and City coordinate MS4 permit compliance and related costs through an Intergovernmental Agreement (IGA). As co-permittees, City and Port staff communicate regularly to share information about program implementation, BMP effectiveness, inspections, monitoring, illicit discharges and other related issues. This coordination avoids duplication and helps ensure the cost-effective use of resources.

1.4.2 Regional Coordination and Partnerships

The City and Port of Portland coordinate with many regional jurisdictions and authorities, including DEQ, to cooperatively address water quality issues. The City and Port also coordinate on MS4 permit implementation issues with jurisdictions through the Oregon Association of Clean Water Agencies (ACWA). City and Port representatives participate in ACWA's water quality, stormwater, groundwater, and other committees.

1.4.3 Internal City Management and Coordination

BES's Stormwater Program Manager (MS4 Program Manager) is responsible for overall program management, compliance reporting, policy development, and coordination within the City of Portland, as well as for coordination with Portland's co-permittee, the Port of Portland. Managers and staff members in multiple bureaus serve as leaders and subject matter experts for the BMPs that comprise the City's SWMP. Because the permit is applied city-wide, many staff members outside BES are involved with stormwater program development, implementation, and reporting. The BES MS4 program facilitates coordination between internal parties on a variety of relevant stormwater practices.

1.5 Legal Authority

The MS4 permit requires the adoption, update, and maintenance of "adequate legal authority through ordinance(s), code(s), interagency agreement(s), contract(s), and/or other mechanisms to control pollutant discharges into and discharges from its MS4 and to implement and enforce the conditions of [the] permit, to the extent allowable pursuant to the respective authority granted under state law." The City maintains legal authority to implement and enforce the SWMP strategies that prevent discharges of pollution into and from the MS4. The City's legal authority exists in the form of ordinances, Portland City Code (PCC), Administrative Rules, and other types of policy documents. The PCC legal authorities listed below either directly address explicit MS4 permit requirements for legal authority or provide additional support to the City's SWMP strategies. Related strategies are detailed in Section 2.

- **PCC Title 10**, ***Erosion and Sediment Control Regulations***. This the ordinance/code giving the City authority to require controls for construction sites to prevent the offsite discharge of sediment and other pollutants from ground-disturbing activity. These requirements are intended to (1) prevent sediment and pollutants caused by runoff from construction and development activities, (2) prevent dirt and mud from accumulating on public streets and surrounding properties during construction and development, and (3) reduce or prevent airborne dust during ground-disturbing activities. Title 10 gives legal authority to the Portland Permitting & Development (PP&D) and BES to administer and enforce erosion and sediment control requirements. See the related construction runoff strategy in Section 2.4.
- **PCC Title 17, *Public Improvements.*** This title regulates public improvements, including the City's sewer and stormwater collection systems. Relevant chapters include:
    - **Chapter 17.32**, ***Public Sewer and Drainage System Permits*.** This chapter regulates access and connection to, and the use, construction, modification, maintenance, repair, or removal of, components of the City sewer, storm sewer, and drainage systems and easements. It operates in conjunction with Chapter 17.38 (below) to regulate collection, conveyance, and disposal of sanitary and stormwater discharges from public and private properties.
    - **Chapter 17.33**, ***Connection to the Public Sewer*.** This chapter supports the City's responsibility to protect public health, water quality, and the environment by identifying the circumstances and site conditions that require

a property owner to connect their property, structure, use or activity to the public sanitary sewer. As a general policy, all plumbing fixtures from which wastewater is or may be discharged must connect to and discharge into the public sanitary sewer. In addition, this chapter facilitates conversion of nonconforming private sewer systems and provides financial assistance to eligible property owners to assist with connection mandates and to prevent disruption of service. These requirements ensure that wastewater is not discharged into the storm system.

    - **Chapter 17.38, *Drainage and Water Quality*.** This chapter details requirements for the management of stormwater, groundwater, and drainage to protect and improve water quality. It includes details for the protection of drainageways and stormwater management requirements related to new development and re-development. See the related post-construction runoff strategy in Section 2.5.

    - **Chapter 17.39, *Stormwater System Discharges*.** This chapter contains requirements for discharges to the City's storm system to convey, manage, and protect water quality. It includes details regarding allowable discharges, prohibited discharges, notifications, and control of illicit connections and discharges. See the related illicit discharge elimination strategy in Section 2.3.

- **PCC Title 33, *Planning and Zoning*.** The City's zoning code supports Portland's Comprehensive Plan to protect the health, safety, and general welfare of Portlanders. Section 33.430 (Environmental Zones) describes the City's environmental conservation zones. Section 33.440 (Greenway Overlay Zone) protects; conserves; enhances; and maintains the natural, scenic, historical, economic, and recreational qualities of lands along Portland's rivers. Section 33.475 (River Overlay Zones) promotes the protection, conservation, restoration, enhancement, and maintenance of the economic, natural, scenic, and recreational qualities of lands along the central reach of the Willamette River.

2 STORMWATER PROGRAM MANAGEMENT CONTROL MEASURES

This section of the SWMP Document contains detailed descriptions of the strategies the City will implement to reduce the discharge of pollutants to and from the MS4 to Portland's waterways.

- Public Education and Outreach Strategy (Section 2.1)
- Public Involvement and Participation Strategy (Section 2.2)
- Illicit Discharge Detection and Elimination Strategy (Section 2.3)
- Erosion Control Strategy for Construction Site Runoff (Section 2.4)
- Post-Construction Site Runoff Strategy for New and Re-Development (Section 2.5)
- Post-Construction Long-Term Operation and Maintenance (Section 2.6)
- Pollution Prevention and Good Housekeeping Strategy for Municipal Operations (Section 2.7)
- Industrial and Commercial Facilities Strategy (Section 2.8)

Metrics and goals have been developed for each strategy in this SWMP Document. Metrics and other information about program activities will be reported annually and used to evaluate trends and program effectiveness. Metrics may be adjusted over time as new insights are gained, new goals created, or improved data tracking systems are implemented. The City aims to develop program elements that measure incremental progress as well as clearly and deliberately work toward long-term goals.

The City follows an adaptive management approach described in Section 3 to assess and modify SWMP strategies and adopt new or revised SWMP activities to improve performance of key program elements and eliminate or reduce pollution.

SWMP Modifications

The MS4 permit provides procedures for changes to the actions and/or activities described in the approved SWMP Document for adaptive management purposes. Per Schedule A.2.f. of the permit, adding elements or deleting, adjusting, or replacing elements with an alternate action or activity may be made at any time, provided there is appropriate supporting information in the

subsequent annual report. A list of modifications to this SWMP Document over the effective permit term is provided in Appendix A.

2.1 Public Education and Outreach Strategy

Permit Schedule A.3.a

The City implements a Public Education and Outreach Strategy to inform the public and business community about the impacts that certain activities can have on our waterways and the actions they can take to reduce pollution. The goal of this strategy and its components is to change behaviors by raising awareness about sources of pollution and encouraging practices that prevent harm to the environment and encourage stewardship of our natural resources. An important aspect to a good education and outreach strategy is removing barriers that may prevent people or certain demographics from adopting alternative behaviors and practices. The MS4 permit specifies that the strategy promote information and actions to:

- Increase understanding of specific water quality problems in the community and the pollutants, products, and behaviors contributing to those problems;
- Communicate and demonstrate how to reduce pollution in stormwater runoff;
- Encourage participation in the protection and enhancement of local watershed ecosystems and wildlife; and
- Prevent wastes from entering waterways by publicizing and promoting the reporting of illicit discharges (see the Illicit Discharge Detection and Elimination Strategy, Section 2.3).

Our Public Education and Outreach Strategy is described below and includes details about specific programs and activities, priority audiences, and intended goals and metrics. Table 1 is a list of important City pollution reduction web resources, and Table 2 shows which activities are geared toward specific priority audiences.

2.1.1 General Environmental Outreach

The City uses a mix of printed, web-based, digital, and social media tools and materials to distribute information directly to the public regarding stormwater, water quality, and water resources management. Materials typically include information and best practices on what residents, community groups, and business owners can do to:

- Implement practices that prevent pollution of waterways
- Manage stormwater on their property
- Enhance and restore natural resources
- Report spills
- Protect city sewer infrastructure
- Support and recognize the benefits of capital improvement projects

Much of the City's environmental outreach content is produced by a team of communications and outreach experts in BES, but several other City bureaus also distribute important environmental messaging, as described throughout this strategy.

The City actively utilizes social media to engage Portlanders on important environmental and water quality issues and developments. In addition, BES is using the City's "GovDelivery" subscriber service. This is a relatively new marketing platform used to update interested parties on issues like capital improvement projects and other outreach events. Interested parties can create a subscriber account on the City's public GovDelivery site.

2.1.2 Clean Rivers Education Programs

Our Clean Rivers Education team provides *free* classroom and field science environmental education programs for students and youth, from kindergarten through college. Students learn about watershed health, the causes and effects of water pollution, stormwater management, wastewater treatment, and what they can do to protect rivers and streams. During our field-based offerings, students spend time outdoors observing, interpreting, exploring, and connecting to local natural areas. They also learn how our Portland's natural and built (i.e., "green and gray") infrastructure protects people and the environment. Our Clean Rivers educators prepare the next generation of leaders with environmental knowledge, skills, and information about environmental careers that match their interests.

Clean Rivers Education staff work with teachers in the Portland area to develop curricula that advances the City's environmental mission and priorities and support Next Generation Science Standards (nextgenscience.org). This includes modeling claim-evidence-reasoning, focusing on scientific practices such as asking questions, defining problems, and creating models to explain environmental or ecological events and design solutions.

Our educators adapt standard program offerings to meet teacher and student needs that promote culturally responsive teaching. A key focus is to increase environmental awareness among disenfranchised youth, by prioritizing historically under-represented students, under-resourced schools, and community-based education organizations that center on unhoused and BIPOC students. During the COVID pandemic, educators developed online and virtual resources to support teachers pre- and post-classroom and field study programs. While nothing can replace the value of in-person field trip and classroom learning, the City's specially curated online resources provide us the opportunity to reach *more* students, support *varied learning styles*, and help teachers dive deeper into content and extend units of study.

2.1.3 Regional Clean Water Partnerships

The City participates in regional education and outreach opportunities with other organizations, both as a member of Oregon ACWA and as other campaign partnership opportunities arise. Our current partnerships include the following:

Clean Rivers Coalition. The City participates in coordination activities for the statewide Clean Rivers Coalition. The coalition uses funds from participating jurisdictions to support and launch branded, statewide clean water communications campaigns, such as *Follow the Water*. The current campaign focus is on pesticides and insecticides. The City sponsors marketing campaign development, community feedback, and the identification of priority water issues in our state.

Regional Coalition for Clean Rivers and Streams. The City participates in clean water education programming in the Portland metropolitan area. This coalition seeks to help residents make informed decisions about their home and automobile practices that reduce stormwater pollution and improve watershed health through *The River Starts Here* campaign. The City's participation helps support awards for a student clean river practices video contest.

Television Campaign. The City participates and contributes to the development and delivery of the *Clean Water, It's Our Future* campaign with a group of regional clean water partners. The campaign comprises a series of public service announcements (PSAs), social media posts, and website content focusing on practical advice for implementing practices that are protective of

water. The PSAs air during local televised news segments, and complementary information is posted on KPTV's community webpages and shared via social media posts. The City participates in the development and curation of the campaign's messages.

These partnerships provide tremendous outreach in getting clean water messages delivered to a diversity of Portlanders and beyond.

2.1.4 Household Waste and Recycling

The City's Bureau of Planning and Sustainability (BPS) administers residential and commercial solid waste and recycling programs in Portland to facilitate and promote proper and sustainable waste management practices and to prevent illegal dumping of solid and liquid wastes. BPS facilitates curbside collection services for household wastes, but also conducts related outreach on BMPs for residential garbage, recycling, yard debris, and food waste. Available in multiple languages, the City's annual *Curbsider* newsletter is a key outreach tool distributed to every address in Portland. It provides an overview of recycling and composting programs and other BMPs for household waste. Information is also provided about community cleanup resources and public trash and litter disposal.

In addition, the City coordinates with regional and local waste collection programs conducted by community organizations, non-profits, and jurisdictional partners, such as Metro's Master Recycler Program, SOLVE, and Trash for Peace to prevent and reduce waste and encourage recycling. These partnerships are critical for engaging the community around decreasing carbon emissions, reducing food waste, promoting the reuse and repair economy, and creating access points for under-represented communities to the residential and commercial solid waste and recycling programs.

2.1.5 Parks and Pet Waste

The City's Portland Parks and Recreation (PP&R) bureau conducts public outreach and education activities related to the care and maintenance of our parks and natural resources, including related water quality issues like pet waste cleanup, "leave no trace" principles, and fire awareness. PP&R routinely conducts the following types of activities:

- **Pet waste.** Portland is often ranked as one of the most dog-friendly cities in the country. With so many dogs, it's important to remind residents that waste cleanup is essential for the health of our streams. Dog waste contains pollutants that are harmful to our waterways, including nutrients that deplete the water of oxygen and

fecal bacteria that can cause disease. PP&R encourages compliance with Portland's "leash and scoop" laws through education, such as park signage to increase awareness, provision of off-leash areas with waste bins, and conducting outreach at public events. PP&R also conducts related enforcement activities, where necessary.

- **Park Rangers.** The City's Park Rangers patrol our parks daily. They respond to calls for service and proactively engage with the community. Rangers provide park visitors with resources and information, help solve park user conflicts, and enforce City Code for park usage and related environmental issues. Rangers also perform tabling and outreach events where they provide "Leave No Trace, Urban Principles" information. Rangers are also often the first point of contact for issues related to homelessness (see Section 2.3, Illicit Discharge Detection and Elimination Strategy, for further details). In such cases, the team uses a harm reduction model to offer services and provides information to unsheltered people, for example, about fire awareness.
- **Nature and stewardship.** PP&R also conducts education, outreach, and engagement activities that focus on maintaining natural resources within the network of parks and natural areas located in Portland. This includes things like stewardship opportunities, signage about ecologically sustainable landscapes, and the popular and important Portland Plant List that PP&R coordinates with BPS.

2.1.6 Toxics Reduction

BES implements a Toxics Reduction Program, which focusses on pollution source control and prevention activities, including outreach and education efforts. Program activities evolve based on relevant needs and priorities. Examples include efforts such as creating detailed BMP fact sheets for commercial and industrial businesses, posting related info on the City website, development of a mercury minimization fact sheet for use in school curricula, conducting internal educational webinars for staff regarding emerging contaminants, participation in and coordination on regional pollution prevention activities, and distribution of educational BMPs to carpet cleaning businesses in the area.

2.1.7 Alternative Transportation

The City's Portland Bureau of Transportation (PBOT) promotes carpooling, public transit, and active modes of transportation. These modes include biking, walking, and rolling to reduce pollution and toxic emissions from cars and trucks, decrease traffic congestion, and support actions that mitigate climate change. PBOT conducts a variety of education and outreach

activities and coordinates with partner organizations to encourage alternatives to single occupancy vehicles on our roadways. Outreach typically involves alternatives such as taking transit, cycling, and carpooling, which significantly decrease the number of cars on the road, which, in turn, reduces pollution in our rivers and streams. The following activities are actively promoted by the City:

- **Carpooling.** In partnership with Oregon's Drive Less Connect program, PBOT matches carpooling partners and provides discounted carpool parking.

- **Cycling.** Portland is world-renowned as a bike-friendly city, and PBOT plays an important role in that achievement. PBOT maintains bilingual Bike and Walk maps for the Portland area, including a mobile-friendly version. The City also provides a virtual format for Portland cyclists with Bike Break, a webcast that covers topics of interest, and Portland By Cycle, which offers free guided rides and skill-building classes. Portland also has a bike-share system that is always adapting to a dramatically changing transportation landscape.

- **General transportation awareness outreach.** The City also promotes the following types of events and activities through mailers, event tabling, and web/social media content.

    - Free Sunday Parkways events, a popular program that encourages alternative forms of transportation and a healthy, active lifestyle. The City hosts these events in its largest public space: streets.

    - Games and contests. One of the most recent examples is "Go By Greenways," a scavenger hunt that raises awareness about green spaces, parks, and schools.

    - The Transportation Wallet program offers passes and credits for use on public transit, bike-share, e-scooters, ride-share, and car-share in one package, giving Portlanders lots of choices on how to get around without the need to rely on a single occupancy vehicle. The program also reduces parking demand and congestion.

2.1.8 City Leadership and Elected Officials

BES leads administration of the City's MS4 permit and SWMP, but multiple bureaus are responsible for implementation. These MS4 regulations have significant influence and impact in

Portland and beyond, which is why it is important to inform and engage City leaders. BES stormwater managers brief, present, and discuss the SWMP, the SWMP Document, and other items of MS4 significance to City commissioners and bureau leadership teams at pertinent stages of development.

Engagement with the City's elected officials, bureau directors, and public boards is important to ensure the long-term support for and success of our comprehensive MS4 SWMP. Goals for this specific kind of engagement are to:

- Build awareness of local water quality issues and regulations
- Generate responsiveness to Portlanders' environmental concerns at the organization's highest levels
- Ensure that related questions and concerns are directed to appropriate City staff
- Inform leadership and decision-makers on key compliance issues
- Improve understanding of the relationship between critical urban issues and water quality, like land use and development, business and commercial influences, social dynamics, and the importance of natural area preservation and restoration

2.1.9 Public Education and Outreach Strategy Metrics

The following is a list of the reporting metrics and related goals, where applicable, for the Public Education and Outreach Strategy:

ID	Metrics and Goals
2.1-R1*	GovDelivery engagement rate, with a goal to increase the rate over the permit term.
2.1-R2*	Number of social media "likes", with a goal to increase the number over the permit term.
2.1-R3	Description of significant activities, accomplishments, and/or challenges related to General Environmental Outreach.
2.1-R4*	Number of Clean Rivers educational programs (virtual or onsite) delivered, with a goal to deliver 1,600 over the permit term.

ID	Metrics and Goals
2.1-R5	Description of significant activities, accomplishments, and/or challenges related to Clean Rivers Education Programs.
2.1-R6	Description of significant activities, accomplishments, and/or challenges related to Regional Clean Water Partnerships.
2.1-R7	Description of significant activities, accomplishments, and/or challenges related to Household Waste and Recycling.
2.1-R8	Description of significant activities, accomplishments, and/or challenges related to Parks and Pet Waste.
2.1-R9	Description of significant activities, accomplishments, and/or challenges related to Toxics Reduction outreach.
2.1-R10	Description of significant activities, accomplishments, and/or challenges related to Alternative Transportation outreach.
2.1-R11	Description of significant activities, accomplishments, and/or challenges related to information sharing and education of City Leadership and Elected Officials.

* Metric contains a measurable goal.

2.2 Public Involvement and Participation Strategy

Permit Schedule A.3.b

The City's Public Involvement and Participation Strategy works in concert with the Public Education and Outreach Strategy. The latter Strategy involves outward-facing information for the public, whereas, this Public Involvement strategy is about engaging the community and gathering input from the public on the City's stormwater and environmental programs. This critical feedback loop helps the City adapt and orient its activities to best serve the Portland community and protect public health and the environment. The Public Involvement and Participation Strategy is described below.

2.2.1 Public Website

The City maintains and promotes a network of websites with information relevant to the MS4 program and related strategies. Table 1 provides an extensive list of web-based pollution reduction resources. MS4-related websites are also linked throughout this SWMP Document. Our websites are maintained on an ongoing basis. Required MS4 web content is available, as noted:

- **MS4 Stormwater Program.** This site serves as the City's "MS4 hub" and includes a copy of the SWMP Document and other materials, as required.
- **Illicit Discharge reporting.** (See Section 2.3 for web links).
- **Pollution Reduction resources.** (See Table 1).
- **Ordinances and policies.** Linked throughout the SWMP Document. (See also Section 1.5, "Legal Authority").
- **Monitoring Plan.** The plan is provided online along with an interactive map.
- **MS4 Web Map.** Our interactive map, available for the public to explore different MS4 features.

Table 1: Pollution Reduction Web Resources

Pollution Reduction Topics

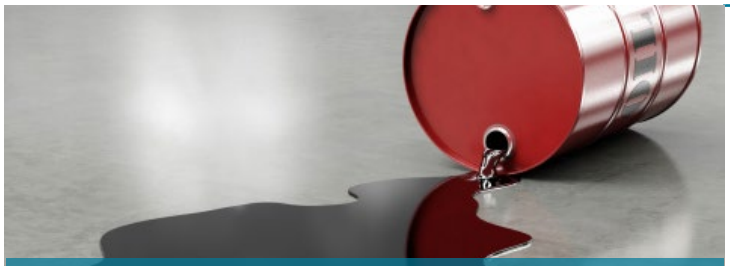 **1. Impacts of illicit discharges on receiving waters and how to report them.**	• Report a Spill or Pollution • How You Can Help Keep Our Rivers Healthy • Prevent Pollution from Sandblasting and Painting Operations • Spill Prevention and Response Plans and Procedures for Business and Industry • How to Properly Empty Your Pool or Hot Tub
 **2. Appropriate practices or techniques to avoid adverse water quality impacts due to impervious surfaces.**	• Managing Rain on Your Property • Request Technical Assistance for Drainage Issues on Your Property • Non-stormwater Discharges from Residential Properties
 **3. BMPs for proper use, application, storage, and disposal of pesticides, herbicides, fertilizers, and other household chemicals.**	• How to Properly Store Outdoor Materials to Prevent Pollution • Prevent Pollution from Outdoor Manufacturing and Equipment Operations • What You Can (and Can't) Flush
 **4. BMPs to avoid or reduce discharge of litter and trash to the MS4 or surface waters.**	• Community Cleanup Resources • Community Waste Collection Events

Table 1: Pollution Reduction Web Resources

Pollution Reduction Topics

5. BMPs for recycling programs.

- Garbage, Recycling, and Compost
- Recycling – what goes in the bin
- Compost – what goes in the bin
- Garbage – what goes in the bin
- Large household waste disposal options

6. BMPs to avoid discharges from power washing, carpet cleaning, and auto repair and maintenance.

- Guide to the Mobile Washer Program
- Prevent Pollution when Washing Vehicles and Equipment
- Prevent Pollution when Cleaning Your Building or Sidewalk
- Prevent Pollution from Vehicle and Equipment Maintenance
- Prevent Pollution from Pressure Washing and Graffiti Removal

7. Low-impact development and green infrastructure approaches.

- Managing Rain on Your Property
- Basins
- Downspout Disconnection
- Drywells
- Ecoroofs
- Permeable Pavement
- Planters
- Rain Barrels
- Residential Rain Gardens
- Roof Gardens
- Soakage Trenches
- Trees
- About Green Streets

8. Watershed awareness education, including how storm drains lead to local creeks and rivers, and potential impacts to fish and other wildlife.

- How You Can Help Keep Our Rivers Healthy
- How We Manage Stormwater
- Portland's Watersheds
- Columbia Slough Watershed
- Fanno Creek Watershed
- Johnson Creek Watershed
- Tryon Creek Watershed
- Willamette River Watershed

Table 1: Pollution Reduction Web Resources

Pollution Reduction Topics

9. Operation & Maintenance practices for privately owned stormwater quality management facilities.

- Post-Construction Maintenance Inspection Program
- Private Stormwater Facilities Maintenance Mailer
- O&M Form for Private Stormwater Facilities
- O&M Form for Private Street/Shared Stormwater Management Facilities
- O&M Form for Drainage Reserves

10. Construction site control measures and BMPs, including information on where in-depth training on erosion prevention and sediment control can be obtained.

- Preventing Pollution by Controlling Sediment and Material Track-Out
- Preventing Pollution from Sawcutting Slurry
- Erosion and Sediment Control for Preventing Pollution
- Dust Control for Pollution Prevention
- Prevent Pollution from Lead and Asbestos during Demolition or Abatement
- Asbestos and Lead-Based Paint Information

11. Stormwater issues of significance identified by co-permittees.

- City of Portland's TMDL Implementation Plan for Non-Point Source Pollution
- How to Reduce Vehicle Pollution by Using Alternative Forms of Transportation
- Environmental Grants and Incentives
- Get Involved! with Stewardship Opportunities
- Prevent FOG (Fats, Oils, Grease)
- Homelessness Impact Reduction

2.2.2 Watershed Education and Stewardship

The City engages Portlanders to foster public involvement in our stormwater and environmental protection programs. Stewardship activities typically vary by watershed to incorporate the unique dynamics inherent to each. In general, the efforts include event sponsorship, presentation, partnerships, and public participation events. City bureaus actively work with and co-sponsor activities with many organizations, including the Columbia Slough Watershed Council, Johnson Creek Watershed Council, Tryon Creek Watershed Council, Crystal Springs Partnership, Tualatin Basin Public Awareness Committee, Friends of Trees, and more.

The City conducts routine community outreach and engagement through presentations, workshops, and other events. Outreach also includes distribution of newsletters, brochures, open houses, and customized outreach to property owners. Topics include invasive species removal and riparian restoration, watershed stewardship, stormwater facility maintenance, green street stewardship, tree planting, community "greening," and other pollution prevention efforts. Stewardship activities also include technical data collection and distribution efforts. The City often partners with multiple agencies and jurisdictions on educational monitoring activities related to outreach; specifically, water quality and macroinvertebrate monitoring as immersive ways to explore the technical field aspects of environmental stewardship. A key goal in this work is that all Portlanders are aware of environmental stewardship opportunities and feel empowered to engage in those opportunities; in particular, disenfranchised community groups and the organizations that serve them.

2.2.3 Grants Programs

The City implements a variety of grant and financial incentive programs to involve the public in watershed protection and enhancement. Current activities include:

- **Community Watershed Stewardship Grant Program**. BES has implemented a Community Watershed Stewardship Grant Program since 1995. The program provides grants of up to $12,000 per project to community members and organizations. To qualify, projects must be within the city, promote community involvement in environmental stewardship, promote leadership from under-represented groups, encourage partnerships, and be of public benefit.
- **Percent for Green.** The Percent for Green grant program is open to community groups for large-scale green infrastructure projects that provide broad benefits for watershed health and the community. Grants range from $20,000 to $150,000.

- **Portland Harbor Community Grants.** This grant program encourages participation in the Portland Harbor Superfund site cleanup process and specifically prioritizes BIPOC-led organizations and disproportionately impacted community groups. [6]

2.2.4 Public Involvement and Participation Strategy Metrics

The following is a list of the reporting metrics and related goals, where applicable, for the Public Involvement and Participation Strategy:

ID	Metrics and Goals
2.2-R1	Description of activities related to Public Website.
2.2-R2*	Number of participants or volunteers for Watershed Education and Stewardship activities, with a goal to involve at least 40,000 people over the permit term.
2.2-R3	Description of significant activities, accomplishments, and/or challenges related to Watershed Education and Stewardship.
2.2-R4*	Number, dollar amount, and general description of grants awarded under the Community Watershed Stewardship Grant Program, with a permit term goal of $500,000 awarded by all grant programs cumulatively.
2.2-R5*	Number, dollar amount, and general description of grants awarded under the Percent for Green Program, with a permit term goal of $500,000 awarded by all grant programs cumulatively.
2.2-R6*	Number, dollar amount, and general description of grants awarded under the Portland Harbor Community Grants Program, with a permit term goal of $500,000 awarded by all grant programs cumulatively.

* Metric contains a measurable goal.

‡ A Community Engagement Initiative project was described in the City's previous 2022 SWMP Document and has since been successfully completed, as discussed in annual MS4 compliance reports for FY23 and FY24. The project description has been removed from this SWMP and no additional status reporting is needed.

[6] U.S. EPA, *What is Superfund?*

Table 2: Engagement Activities & Audiences

SECTION	ACTIVITY	GENERAL PUBLIC										LOCAL & REGIONAL OFFICIALS					CONSTRUCTION & POST-CONSTRUCTION PRACTITIONERS			BUSINESS				
		Youth	Students & Educators	Commuters	Outdoor Recreationalists	Visitors, Tourists	Renters	Homeowners	HOAs: Homeowner Associations	Community Advisory Bodies[1]	Advocacy & Volunteer Groups	Elected Leaders	Land Use Planners	Engineers	Tribal, State, National Officials	MS4 Partners	Contractors/Site Developers	Public Works Contractors	Stormwater Facility Owners	Commercial Sites	Industrial Facilities	Food Service Establishments	Auto Repair Shops	Landscape Maintenance
Public Education & Outreach Strategy																								
2.1.1	General Environmental Outreach	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
2.1.2	Clean Rivers Education Programs	●	●																					
2.1.3	Regional Clean Water Partnerships	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
2.1.4	Household Waste & Recycling	●	●	●	●		●	●	●		●					●								
2.1.5	Parks & Pet Waste	●	●		●	●	●	●	●										●					
2.1.6	Toxics Reduction	●	●				●	●	●	●	●					●								
2.1.7	Alternative Transportation				●	●	●	●			●	●	●											
2.1.8	City Leadership & Elected Officials									●		●	●	●	●	●								
Public Involvement & Participation Strategy																								
2.2.1	Public Website	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
2.2.2	Watershed Education & Stewardship	●	●		●		●	●	●	●	●					●	●			●	●			●
2.2.3	Grants Programs	●	●		●		●	●	●	●	●				●	●			●	●	●	●	●	●
Additional Activities																								
2.4.6	Erosion Control Education & Outreach							●	●	●	●	●	●	●	●	●	●	●	●					●
2.5.6	Post-Construction Program Outreach							●	●	●	●	●	●	●	●	●	●	●	●					●
2.6.5	Long-term O&M Outreach & Assistance							●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
2.8.4	Commercial & Industrial BMP Outreach									●	●	●	●	●	●	●			●	●	●	●	●	●

1. Community advisory bodies include Portland Utility Board (PUB). Development Review Advisory Committee (DRAC) and others.

2.3 Illicit Discharge Detection and Elimination Strategy

Permit Schedule A.3.c

The City conducts a variety of activities as part of an Illicit Discharge Detection and Elimination, or IDDE, strategy described on the following pages. An illicit discharge is basically waste of any kind that is not supposed to be in the storm system. It is any discharge to the MS4 that is not stormwater, unless specifically identified as an "allowable discharge" in the MS4 permit. Examples of illicit discharges include:

- Flows containing pollutants that are discharged to a storm system during dry weather.
- Sewage that has the potential to enter the MS4 through piped "cross-connections" or other means.
- Wastewater from activities like truck washing, commercial rinse water, or concrete cutting slurry.
- Illegal dumping, chemical or oil spills, and other such pollution that enters a storm drain.

2.3.1 MS4 Map

The City continues to conduct extensive mapping of the MS4 and related assets, including stormwater conveyance pipes, storm drains, outfalls, and structural controls in accordance with the MS4 permit. Teams of technical mapping and database experts that locate, track, and record a huge range of MS4 system components and related information on a daily basis.

An MS4 permit-specific web map application is available to the public as a helpful involvement tool.

2.3.2 Ordinance

As mentioned in Section 1 of this SWMP Document, the City developed and continues to maintain legal authority to address illicit discharges that enter or impact the MS4. The following items comprise key components of the City's IDDE-related ordinances:

- **PCC Chapter 17.39, *Stormwater System Discharges*** contains requirements and prohibitions for discharges to the City's MS4 to convey, manage, and protect water quality. Implementation of PCC Chapter 17.39 is further supported by Administrative Rule ENB-4.13.
- **PCC Chapter 17.32, *Public Sewer and Drainage System Permits*** regulates access and connection to the MS4, along with the maintenance, repair, or removal of the City's conveyance assets. PCC Chapter 17.32 and associated Administrative Rule ENB-4.22 aids in preventing or correcting cross-connections.
- **Administrative Rule** ENB-4.15 supports the BES Enforcement Program and procedures for assessing violations of these ordinances, administrative rules, and discharge permits. A more detailed description of the BES Enforcement Program is included in Section 2.3.5.

2.3.3 Program to Detect and Eliminate Illicit Discharges

The City's Spill Protection and Community Response (SPCR) program operates a 24-hour pollution complaint hotline and administers a team of Duty Officers to respond to spills and pollution incidents that have the potential to impact the MS4. A detailed description of the program's activities is provided below.

Public Reporting of Pollution Complaints

The City operates a **Spill Response Hotline (503-823-7180)** 24 hours a day, 365 days a year, that the public and other agencies can use to report pollution complaints in the Portland area. The hotline is posted on the City website, on signage at construction sites, in City vehicles, and at industrial facilities with stormwater or wastewater permits managed by the City. Reporting is also made available via email.

Other City bureaus, including PBOT, PP&D, and Portland Fire and Rescue (PF&R) also operate incident hotlines that take calls for spills, construction-related

discharges, sanitary sewer releases, and more. These bureaus coordinate with and refer complaints to BES through the hotline where appropriate.

Response Investigation Procedures

The City initiates response and/or investigation within 24 hours of receiving a pollution complaint or notification. General procedures are as follows:

1. **Complaint intake.** Upon receipt of the complaint, BES SPCR staff gather incident details from the complainant and use online mapping tools to verify the location and ownership of the potentially impacted receiving system.[7] Spills and pollution complaints that impact a non-City system are referred to the appropriate jurisdiction and/or DEQ within 1 working day, where appropriate. In cases where the discharge is in or originates from another jurisdiction, the other jurisdiction will be notified as soon as practicable and at least within 1 working day. The complaint intake process helps SPCR identify a proper response and/or referral.

2. **Complaint investigation.** If the City is identified as the responsible jurisdiction or if the jurisdiction is not immediately apparent, SPCR initiates a response to the complaint within 24 hours. The SPCR response may involve a field investigation to identify the source, extent, type, and amount of the potential illicit discharge. The investigation involves field observations and data gathering such as photo documentation. It may also involve system tracing, collection of samples for laboratory analysis, property records research, and coordination with the City's industrial permit managers or other City programs. In cases where it is unsafe or impractical (e.g., high water conditions, concern for personal safety), the field investigation is deferred until safety precautions can be put in place.

3. **Notice of investigation.** If the source of an illicit discharge is identified, SPCR directs the responsible party to immediately cease the discharge. SPCR staff informs the responsible party of potential City code violations, liabilities, and penalties, and provides technical assistance on the necessary cleanup or corrective action measures. A Notice of Investigation form is issued to the responsible party to formalize directives.

4. **Cleanup and corrective actions**. A key function of SPCR is to initiate and direct spill cleanup, when needed. The City ensures spills that enter the storm sewer system or have the potential to enter the storm sewer system are cleaned up. SPCR refers the spill to

[7] As described in Section 1, the City manages multiple collection and conveyance systems where the MS4 permit may not apply. There are also drainage systems owned or operated by private parties or government agencies in the Portland area for which the City does not have code authority.

PBOT or hires a contractor to conduct cleanup activities. The City also may direct the responsible party, if known, to conduct cleanup activities, corrective actions, and/or repairs, if appropriate.

5. **Enforcement.** In cases where a responsible party has been identified, the City conducts enforcement in accordance with BES Enforcement Program protocols, as described later in this strategy.

2.3.4 Dry-Weather Screening Program

Dry-weather screening is a proactive method that the City uses to search for illicit discharges. It is a monitoring activity conducted during the summer season (typically June through September) at priority locations in the MS4. We refer to our dry-weather screening activity as the Outfall Basin Inspection (OBI), program. The goals of OBI are to:

- Discover and correct improper or illegal industrial, commercial, and residential sewer connections to the City's MS4.
- Identify and eliminate illegal discharges of pollution, including industrial wastes, that enter the City's MS4.

Priority Locations

The City's IDDE experts, primarily SPCR staff with the assistance of field science specialists, inspect priority MS4 outfalls annually during dry weather. An updated risk-based methodology was implemented in 2024 and is used to select priority locations. The methodology accounts for factors such as land use, impervious area, landscape features, and past dry-weather screening results. The inspections are conducted in accordance with internal screening protocols and a sampling plan, as described below. Current dry-weather screening locations are shown on the MS4 Map.

Field Screening and Investigation Procedures

City staff responsible for conducting dry-weather screening activities use detailed procedures and a customized OBI inspection form to document:

- Observations including pipe conditions, evidence of turbidity, oils, trash and debris, odors, and other non-stormwater flows indicating a presence of pollution and/or an illicit discharge.

- Field screening monitoring results, including a comparison of established pollutant parameter action levels, and samples collected for laboratory analyses, if needed.[8]

If dry-weather flow is sufficient and/or field observations warrant, field screening is conducted *in-situ* using field test instruments and compared with pollutant parameter action levels. The inspection form incorporates established pollutant parameter action levels. Additional samples are collected for laboratory analysis depending on the nature and magnitude of the field screening results. Screening and sampling may then also occur at both downstream and upstream locations if further investigation is needed.

Field screening methods and sample collection procedures for laboratory analysis are detailed in a Dry-Weather Field Screening and Sampling SOP, which describes the detailed sampling procedures based on the use of standardized equipment during dry-weather screening activities.

City laboratory analysts notify and coordinate with field staff if sample analyses confirm elevated levels of pollutants, and a follow-up screening and/or investigation ensues. The follow-up investigation includes conducting additional sampling at and upstream of the priority location within 3 working days. If follow-up sampling results do not show elevated pollutants, the location is flagged for future inspection and for consideration of a more frequent inspection schedule.

If the source of an illicit discharge is identified, response and enforcement activities are conducted as described in Section 2.3.5.

[8] Pollutant parameter action levels were documented in an IDDE Field Screening Action Levels Update Memo, submitted to DEQ in 2014.

2.3.5 Enforcement

An important aspect of the City's IDDE program is enforcement of ordinances to protect the MS4 and prevent impacts to waterways. The City coordinates enforcement response activities for the Duty Officer program to ensure compliance with codes and administrative rules described previously in this section. Detailed violation response and escalating enforcement procedures are outlined in guidance documents and are summarized below. A public website about the BES enforcement process was developed in 2024 and contains information on how to respond to an enforcement action, the appeals process, how to prevent violations, and more.

Determining an Enforcement Response

Information collected during an IDDE investigation is reviewed to determine the appropriate level of enforcement response, including the source, extent, type, and amount of discharge along with the environmental and/or infrastructure impacts. The City uses an escalating enforcement strategy to ensure that parties responsible for an IDDE incident: 1) cease the offending discharge/activity immediately, 2) return to compliance as soon as possible, 3) perform and/or pay for all necessary cleanup measures, and 4) are deterred from any future occurrences. The level of the City's enforcement response is determined by the following:

- Severity and duration of the violation.
- Level of environmental and/or structural impact.
- The responsible party's compliance history and efforts to return to compliance.
- An evaluation of circumstances beyond the party's reasonable control.

The City uses a violation classification matrix to determine the appropriate enforcement response to an IDDE violation. Violation classes range from less to greater severity in the following order: Warning Notice, Class III, Class II, and Class I. These are based on the degree of departure from City regulations and/or the level of threat or harm to human health and safety, property, or the environment.

Enforcement Actions and Penalties

When a pollution investigation identifies a violation and an associated responsible party, City staff will issue an enforcement action as classified above. The City's enforcement actions document the violating conditions, required corrective actions, civil penalties (if applicable), procedures for requesting an appeal, and compliance schedules, as applicable. Response dates

associated with appealable enforcement actions are tracked, and a Final Determination is issued after 20 business days if no response has been received.

Escalating enforcement actions are issued in response to un-addressed or repeated violations. The City's formal actions include the following:

- **Warning Notice**. Issued in response to minor reporting or operational violations where there is no impact to the City's collection system, the environment, or public health.
- **Notice of Violation.** Issued in response to 1) Class I, II or III violations or 2) repeat offenses of the same violation within the cycle of violation. An NOV includes a civil penalty that is assessed using an algorithm incorporating base and gravity penalty components.
- **Compliance Order.** A formal order directing the responsible party to take specific corrective actions within a specified timeframe to resolve a violation. A CO is a unilateral action that is non-negotiable. If circumstances warrant the development of an action plan to achieve compliance, the action plan is incorporated into the CO with deadlines.
- **Voluntary Compliance Agreement.** An agreement between the responsible party and the City that combines the force of a CO with the flexibility of a negotiated settlement. A VCA is appropriate when the responsible party assumes responsibility for its non-compliance and is willing (in good faith) to correct its causes. The VCA contains compliance schedules, stipulated fines and/or remedial actions, and consequences for failure to comply.
- **Notice of Termination.** Issued when all other attempts to bring a site or a discharge into compliance have been exhausted. In situations where there is imminent danger to public health, welfare, or the environment, or an imminent threat of harm to the City sewer and drainage system, the Director of Environmental Services may immediately terminate an existing discharge, prevent a new discharge, or revoke a permit after providing notice to the violator.
- **Civil litigation or criminal prosecution.**

Enforcement actions can be issued individually or collectively to ensure compliance. For example, an NOV with monetary penalties may precede a CO. In addition to monetary penalties, the City performs cost-recovery to recoup all reasonable costs incurred by the City's spill and cleanup response activities by issuing a Notice of Assessment of Costs to the responsible party.

Criminal prosecution and/or enforcement referral to DEQ and EPA may occur if the City has evidence of non-compliance showing intentional criminal intent or negligence.

2.3.6 Data Tracking

City staff tracks information related to all complaints, referrals, investigation activities, and enforcement actions in several databases:

- **SPCR Pollution Complaint database.** This database tracks details about pollution complaint intake calls, reported and investigated spill/incident details, and follow-up activities. A daily report of the previous day's incidents is distributed broadly to affected City programs each working day.
- **Enforcement database.** All enforcement activities, penalties, and corrective actions for violations of the City Code are tracked in a separate enforcement database.
- **Asset management database.** The asset management system stores information related to the conveyance system, including repairs, cleanouts, and maintenance.

2.3.7 IDDE Staff Training and Education

The training strategy for IDDE staff includes extensive onboarding of new employees on:

- Pollution prevention and source control techniques.
- Spill response procedures and safety.
- Coordination with laboratory and NPDES-permitting staff.
- Local IDDE ordinances, administrative rules, and "driver" regulations.
- Standard operating procedures, including pollution complaint response and investigation data tracking.

After initial onboarding, the SPCR team places a heavy focus on mentoring and job shadowing, to provide direct and real-time experience to new staff members on Portland's environment, infrastructure, and governing authority for IDDE incidents. In addition, Duty Officers receive professional and field training experience through formal and regional coordination venues on documentation protocols, spill response equipment, vehicle and personal safety, investigative techniques, and enforcement strategies. The City conducts internal monthly meetings that include debriefs on IDDE case-studies and reviews of applied and/or needed procedures or

rules. Annual refresher training is also conducted for dry-weather screening activities on sampling and safety protocols.

A variety of internal training and external professional development opportunities are made available to all IDDE staff annually.

2.3.8 Services Related to Homelessness

Homelessness is a complex challenge throughout our region with high impacts to community, safety, and the environment. The incidence of local populations that are unsheltered and/or living in camps, recreational vehicles (RVs), etc., without easy access to sanitation and waste services has resulted in a rise of IDDE complaints and events in recent years. While the City continues to address the issue of homelessness with partners on a broad scale, the SWMP includes specific strategies below to prevent and mitigate water quality impacts from unhoused populations.

Impact Reduction

The City's *Impact Reduction Program* provides garbage removal, hygiene access, resource referral and job opportunities to the homeless and removes campsites that pose the highest risk to health and safety. The program minimizes the impacts of homelessness *today* while partner programs expand long-term access to safe, affordable housing. Specific activities performed by the Impact Reduction Program include:

- **Cleanup and garbage removal.** Work teams help remove trash and debris at campsites—as much as 800,000 pounds per month.
- **Portable sanitation and hygiene stations**. The City provides portable toilets and hygiene stations to serve people experiencing homelessness.
- **Partnerships and job opportunities.** The City partners with others to create jobs for the homeless to compensate them for helping address the impacts of unsanctioned camping and educate peers about important public works projects.
- **Campsite assessments and removals**. When concerns are reported, a team is dispatched to assess health and safety. The highest-risk sites are scheduled for removal; personal property is safely stored.
- **Street services coordination.** The Street Services Coordination Center (SSCC) is a collaboration of City of Portland and Multnomah County with the purpose of

providing streamlined services to those living outside. One purpose of the SSCC is to coordinate trash pickup and camp cleanup, reducing trash in the streets and ultimately, waterways and green infrastructure.

RV Pollution Prevention

BES has created an RV Pollution Prevention Program for pump-out and trash pickup. By providing sewage pump-outs to Portlanders living in RVs as well as trash collection, BES is keeping illicit discharges out of the storm system and local waterways.[9]

2.3.9 Illicit Discharge Detection and Elimination Strategy Metrics

The following is a list of the reporting metrics and related goals, where applicable, for the Illicit Discharge Detection and Elimination Strategy:

ID	Metrics and Goals
2.3-R1	Description of activities related to MS4 mapping and digital inventory.
2.3-R2	Description of any code and ordinance updates related to IDDE (i.e., PCC Chapter 17.39 and 17.32)
2.3-R3	Number of pollution complaints and inquiries received annually via the City's IDDE spill reporting hotline.
2.3-R4*	Number of dry-weather screening locations inspected annually, with the goal of inspecting all priority locations over the permit term.
2.3-R5	Description of major findings, illicit discharges observed, and source investigations conducted from dry-weather screening activities annually.
2.3-R6	Number and types of enforcement actions issued annually as part of the IDDE strategy. (PCC 17.39)
2.3-R7	Dollar amount of penalties and costs assessed annually as part of the IDDE strategy. (PCC 17.39)
2.3-R8	General description of IDDE data tracking activities and/or significant database updates.

[9] Funding for the RV Pollution Prevention Program is not fixed. BES will continue to evaluate program effectiveness and continue coordination with other City bureaus and regional partners.

ID	Metrics and Goals
2.3-R9	Description of IDDE staff training and education activities conducted annually.
2.3-R10	Summary of the Impact Reduction Program's accomplishments, activities, and challenges related to cleanup, garbage removal, and other services.
2.3-R11	Summary of the BES RV Pollution Prevention program accomplishments, challenges, and activities, including the number of pump outs and trash removal.

* Metric contains a measurable goal.

2.4 Erosion Control Strategy for Construction Site Runoff

Erosion happens when soil is swept away by water, wind, and other forces. It strips our land and overwhelms our streams with silt. Ground-disturbing construction activities can be a significant source of erosion. Without proper controls, construction results in both onsite and offsite erosion and the discharge of sediment and other pollutants to our streams. The City's Erosion Control Program regulates construction projects in Portland to prevent environmental impacts from construction activity.

Permit Schedule A.3.d

2.4.1 Ordinance

The City enacted legal authority for the construction site runoff program following its first MS4 permit. **PCC Title 10, *Erosion and Sediment Control Regulations*** is the ordinance giving the City authority to require BMP controls for construction sites to prevent the discharge of sediment and other pollutants to our waterways. Requirements are outlined in the City's Erosion and Sediment Control Manual (ESCM), which is primarily administered by PP&D. PCC Title 10 and the ESCM apply to all ground-disturbing activities, unless such activities are otherwise exempted. PCC Title 10 and the ESCM (Administrative Rule ENB-4.10) describe, in detail, requirements and technical guidance for temporary and permanent erosion prevention, sediment control, and other site development activities that may cause pollution during the construction process. The ESCM also has detailed requirements for site-specific erosion and sediment control plans, inspections, and industry-standard specs for installation and maintenance of construction-related BMPs.

The City also requires that construction sites 1 acre or more obtain an NPDES 1200-C Construction Stormwater General Permit from the DEQ, which provides additional regulatory controls for large developments.

2.4.2 Erosion Control Plan Requirements and Plan Review

Any City of Portland building, public works, or development permit involving ground-disturbing activity triggers a review for ESCM compliance. Project sites with 500 square feet or more of ground-disturbing activity are required to develop and submit an Erosion and Sediment Pollution Control Plan (ESPCP). The requirements for ESPCPs are described in detail in the ESCM. Certain low-risk sites may qualify for use of a "Simple Site" ESPCP if they meet all criteria. These are generally flat sites located outside of environmentally sensitive zones and do not have any known or suspected contamination.

PP&D employs a team of plan review experts that review building permit applications with ground-disturbing activities. The team reviews all ESPCPs in accordance with checklist criteria and conducts the following activities:

- Review permit applications that have been identified to have to ground-disturbing activities.
- Determine if the site meets standard ESPCP criteria or Simple Site ESPCP criteria by reviewing the permit drawings, documents, details, and site location information.
- Review and verify ESPCPs for the following:
    - Plans are consistent with the proposed development and existing and proposed site topography.
    - The minimum number and type of BMPs is in conformance with the ESCM.
    - ESPCPs are prepared by a licensed design professional as required.
    - Required construction notes and erosion control site manager contact information are included.
    - For qualifying projects, the Simple Site ESPCP template is complete and accurate.
- For sites that exceed 1 acre or more of ground-disturbing activities, verify the DEQ 1200-C permit has been issued or document that DEQ is not requiring a 1200-C permit.

2.4.3 Construction Site Inspections

The City inspects construction sites for both temporary and permanent erosion control measures in accordance with the ESCM. Interim checks are conducted during overall project inspections, or as needed for problem or complaint-related sites. Inspections are performed:

- After initial installation of temporary erosion control measures and prior to ground-disturbing activity.
- Near completion of construction prior to project finalization.
- In response to complaints.
- To follow-up on identified deficiencies, corrective measures, or problem sites.

Trained City inspectors follow standardized procedures and utilize inspection checklists to perform inspections. Written or electronic inspection forms and correction notices are utilized to document compliance and observed deficiencies for BMP implementation, effectiveness, and maintenance. Site operators are required to implement corrective actions, if necessary. City inspections include detailed observations of:

- Site-specific BMPs in accordance with the approved ESPCP, ESCM, and PCC Title 10.
- The site perimeter and interior, including entrances and exits, inlet protection, material and waste storage areas, evidence of offsite discharges, onsite spill prevention, and good housekeeping practices as applicable.
- Environmentally sensitive areas, including discharge points to the City's MS4 and/or receiving waters.
- Maintenance records and site operator inspection reports as necessary.
- Any required corrective measures, accompanied by verification and documentation.

2.4.4 Enforcement

The City's ESCM Enforcement Rule outlines the City's escalating enforcement process for the Erosion Control Program. It provides a description of the enforcement process procedures, including what constitutes a violation, compliance timelines, and escalating re-inspection fees and penalties based on potential threat, severity, and recurrence. The escalating enforcement process is built on common practices utilized for inspections, including notices of correction; correction timelines; re-inspection fees; stop-work orders; citations and civil penalties; voluntary compliance agreements; and administrative reviews.

Sites with ground-disturbing activities that are not permitted by PP&D are subject to enforcement and penalties by the BES SPCR Program, as described in the IDDE Strategy (Section 2.3.5).

2.4.5 Data Tracking

Information and documents about construction projects that trigger the ESCM are entered and stored in a proprietary database administered by PP&D and used by all permitting plan review and inspection staff. The database tracks construction projects from permit application through project completion. Details recorded include plan review activities and approvals, site inspection events and results, and enforcement actions and penalties.

2.4.6 Erosion Control Education and Outreach

The City conducts outreach and engagement on the ESCM when it is updated and to construction site operators. The ESCM has significant environmental and economic impact to development in Portland. Outreach on related updates is performed to gather input from site developers, home builders, the environmental community, and other important partners on this important policy. Typical outreach and engagement activities may include:

- A 30-day public comment period, followed by tracking and response to comments received.
- Draft ESCM "lunch and learn" discussions.
- Targeted outreach to interested parties and users of the ESCM, including contractors, design professionals, City practitioners, and interested community members.
- Briefings to relevant commissioners' offices and City advisory bodies, such as the Development Review Advisory Committee (DRAC), and the Portland Utility Board (PUB).

Newsletters are typically provided to construction site operators prior to the wet season with information about appropriate wet weather BMPs and erosion control requirements.

2.4.7 Erosion Control Staff Training and Education

All City Erosion Control Program inspectors and associated plan review staff receive training. The training strategy for both teams is primarily focused on new employee onboarding. Onboarding includes thorough review of applicable codes and rules, program procedures and processes, and

database applications with a focus on job shadowing and supervised inspections or plan reviews. The Plan Review and Inspections teams meet regularly to ensure consistency with program implementation. The City requires that Senior Inspector positions obtain and maintain an ESC specialty certification. Also, the City provides ongoing refresher and professional/trade development opportunities for all program staff.

2.4.8 Erosion Control Strategy Metrics

The following is a list of the reporting metrics and related goals, where applicable, for the Erosion Control Strategy:

ID	Metrics and Goals
2.4-R1	Description of any code and ordinance updates related to erosion control (i.e., PCC Title 10 and the ESCM)
2.4-R2	Number of construction development permits issued annually.
2.4-R3	Description of significant erosion control plan review accomplishments, activities, and/or challenges.
2.4-R4*	Number of erosion control inspections performed annually, with a goal of inspecting all sites that trigger the ESCM.
2.4-R5	Number of erosion control enforcement actions issued annually.
2.4-R6	General description of erosion control data tracking activities and/or significant database updates.
2.4-R7	Description of any erosion control education and outreach activities conducted annually.
2.4-R8	Description of erosion control staff training and education activities annually.

* Metric contains a measurable goal.

2.5 Post-Construction Site Runoff Strategy for New and Re-Development

Permit Schedule A.3.e

Increased urbanization results in more impervious surfaces, such as parking lots, buildings, and commercial storage yards, which in turn have a big impact on our watersheds. The sheer volume of runoff can be as harmful to a stream as any pollution carried with it. If not properly managed, more impervious surface means more runoff, faster runoff, more potential for stormwater to pick up pollution, and more instances of flooding and stream erosion. Our strategy to mitigate these impacts from new and re-development is detailed in the following pages. The City's Stormwater Management Manual (SWMM) and associated long-term O&M strategy regulate both the quantity and quality of runoff from development project sites.

2.5.1 Stormwater Management Manual

The City has teams of specialists that implement and regularly update our post-construction runoff program, which has significant environmental and economic influence in Portland. Our Stormwater Management Manual provides policy and design requirements for post-construction stormwater runoff. All applicable new development, re-development, and improvement projects in Portland on both private and public property, including roadways, must adhere to the City's stormwater retention, treatment, and low-impact development (LID) requirements. LID refers to systems, policies, and practices that use or mimic natural ecosystem functions to protect water quality and watershed habitat. In accordance with the MS4 Permit, the City submitted an updated LID Strategy with the annual report in 2023.

Applicable development projects proposing new or replaced impervious surface area in accordance with the MS4 permit's 1,000-square-foot threshold trigger the City's SWMM requirements. This includes mandates for stormwater retention, flow control, and water quality treatment using

green and/or gray infrastructure. The City imposes a site stormwater management "hierarchy" that first requires onsite infiltration of stormwater to the maximum extent feasible from the impervious area. The SWMM hierarchy prioritizes the use of vegetated and infiltration facilities to the maximum extent practicable. In cases where onsite infiltration of stormwater is not feasible, the City imposes water quality treatment and flow controls for runoff that then overflows to an offsite discharge location. Additional details are provided in the sections below.

2.5.2 Ordinance

The City instituted its legal authority for the post-construction site runoff program in the mid-to-late 1990s in response to its first MS4 permit. **PCC Chapter 17.38 *Drainage and Water Quality*** is the ordinance giving the City authority to regulate the volume, flow, and quality of stormwater runoff from new and re-development project sites. The SWMM itself is Administrative Rule ENB 4.01. Both regulatory mechanisms are implemented and maintained by BES. This authority also includes rules and requirements for the site/facility owner to perform long-term O&M activities to ensure the stormwater management facilities, or SMFs, are performing as intended. (See Section 2.6, Post-Construction Long-Term Operations and Maintenance.)

Post-Construction Stormwater Management and LID Requirements

The SWMM prioritizes LID principles for new and re-development, including the use of green infrastructure and infiltration facilities for the management of stormwater. Site designers and project engineers are required to prioritize the use of vegetated or infiltration facilities to retain stormwater onsite.

The SWMM also requires drainage reserve protections for sites with surface drainageways. A *drainageway* is a constructed or natural channel or depression that may at any time collect and convey water. A *drainage reserve* is the regulated area adjacent to and including a drainageway. The City's requirements typically overlay a 30-foot-wide buffer over a drainageway, which imposes more significant development restrictions and triggers a special review for potential impacts or encroachments to the drainageway.

Stormwater management controls are required for all project sites that create or replace (i.e., develop or redevelop) impervious surface area. Controls are also required for projects proposing new "routes of conveyance" or connections. For example, sites that decommission onsite UICs (sumps) and re-route stormwater to the MS4 are required to comply with the SWMM.

The City imposes specific *performance standards* and site stormwater management feasibility criteria using an infiltration and discharge hierarchy. At the top of the hierarchy is a *numeric stormwater retention standard* for the infiltration of stormwater. Treatment and flow-control standards are specified for sites where retention is infeasible.

Foremost, project designers must evaluate the feasibility of onsite stormwater infiltration according to the City's required retention standard, which is infiltration of the 10-year, 24-hour design storm event.[10] In Portland, this is equivalent to about 3.5 inches of rainfall in 24 hours. If deemed feasible, then the site is required to design and install controls to meet that standard. If, however, onsite retention of the 10-year storm event is infeasible, project designers are required to install stormwater controls that provide water quality treatment and flow control designed to target pre-development hydrology. In such cases, the City imposes a water quality treatment standard, requiring treatment of 90-percent of the average annual runoff. In Portland, this equates to a little over 1.61 inches in 24 hours. In addition, the City imposes flow-control requirements when needed to slow the runoff down and protect receiving waterways from erosion and flooding. Our flow-control standards address small, frequent events and larger, more infrequent events. Specifically, flow-control requirements apply for 50% of the 2-year, 24-hour storm event, and the, 5-and 10-, 24-hour storm events.

For projects where all or a portion of the site is entirely infeasible for installation of stormwater management facilities, a "Special Circumstances" offsite management fee is imposed to meet the intent of the City's post-construction requirements. This is further described below in Water Quality Benefit Offset Programs (Section 2.5.5) and in the SWMM.

2.5.3 Post-Construction Site Runoff Plan Review

The City employs a team of plan reviewers that research all development permits and project sites that may be subject to SWMM requirements. The team conducts the following activities:

- Review and confirm project site SWMM triggers.
- Review site development plans, including stormwater facility engineering designs, geotechnical reports, and storm-event design calculations.
- Approve development permitting applications if/when SWMM requirements are met or require corrections, if needed.

[10] A "design storm" is a hypothetical storm event for the purposes of performing engineering analysis for facility sizing. It is typically defined by the amount of rain, the duration of the event, and the intensity or patterning of rainfall over the course of the event.

- Coordinate with the PP&D during the building permit intake process to screen for land use reviews, new construction, structural additions or alterations, tenant improvements, change of use/occupancy, site excavation, and sewer utility connections.
- Record relevant data in tracking system (see description in Section 2.5.8, Data Tracking).
- Provide technical assistance to site developers and engineers to promote understanding of SWMM requirements.
- Review and approve or reject Special Circumstances applications based on adequate justification of infeasibility (see description below in Section 2.5.5, Water Quality Benefit Offset Programs [Special Circumstances]).
- Ensure that required O&M Agreements are submitted and recorded in county property records, as required.

2.5.4 Stormwater Management Facility Installation Inspections

In addition to performing site plan reviews, City staff conduct onsite inspections during the project's construction phase to assess and ensure proper installation of the approved site design and stormwater controls. (Post-construction O&M inspections are described in Section 2.6.) Inspectors also evaluate the quality of materials and construction methods to optimize performance and prevent future failure or non-compliance with long-term O&M requirements. City inspectors require corrective actions if non-compliance is observed with SMF installation. This situation can result in delaying final approval for the entire building development permit, which in turn delays "occupancy approval" for the project.

2.5.5 Water Quality Benefit Offset Programs (Special Circumstances)

On projects where installation of stormwater controls for all or a portion of the site is entirely infeasible, the City requires that site developers/engineers submit a Special Circumstances application to qualify for an exemption. Site conditions that render controls infeasible include the following:

- Presence of steep slopes or landslide hazards.
- Presence of high groundwater.

- Presence of environmental contamination.
- Zoning laws that prevent adequate setbacks for infiltration.
- Local grading issues that prevent a small area of the site from draining to a stormwater facility.

Applicants must provide site-specific details documenting why onsite infiltration and/or treatment of stormwater is infeasible. Special Circumstance applications are thoroughly reviewed by experts specializing in site development plan review, SWMM policy administration, and engineering design. A consensus is required to determine if the applicant's rationale for infeasibility is valid. If so, then the applicant must pay an offsite management fee to receive site permit approval. Qualifying sites must pay a fee, which is rated and assigned per square foot of "unmanaged" impervious surface area.

Monies collected are used to fund the City's *Percent for Green* grant program, described in Section 2.2. Percent for Green projects often include multiple green infrastructure improvements such as de-paving, adding rain gardens, constructing green streets, or completing large-scale LID stormwater drainage improvements. The City works with grantees to develop and implement projects that will improve the environmental condition of Portland's watersheds.

2.5.6 Post-Construction Program Outreach

The City conducts robust outreach and engagement on the SWMM, especially when it is updated. The purpose is to gather input from land use planners, engineers, site developers, and other important partners, and to provide technical training for SWMM users. Outreach and engagement typically consist of:

- A 30-day public comment period and opportunity for a public hearing, followed by tracking and response to comments received.
- Proactive outreach to interested parties and regular users of the SWMM (e.g., engineers, landscape architects, design professionals, City practitioners, and interested community members). This includes sharing information on the City's website and conducting presentations prior to, during, and after publication to highlight and explain the requirements and changes. We also have SWMM training videos available online.
- Briefings to City advisory bodies, including the Development Review Advisory Committee (DRAC) and the Portland Utility Board (PUB).

- Direct outreach to vendors for green infrastructure, soil specifications, and quality design of manufactured treatment technologies.
- Updated website details about stormwater facility design.

2.5.7 Post-Construction Staff Training and Education

All staff responsible for implementing the City's SWMM receive training on a routine and ongoing basis. New hires are onboarded with training that covers all aspects of SWMM requirements. This includes a mandatory training presentation with management and plan review test exercises, which is then followed by job shadowing with lead mentors. After the initial training phase is completed, staff utilize specialized check lists and guidance documents summarizing the City's post-construction requirements and development permitting plan review procedures. "Live" permit review and approvals/disapprovals are screened by management until new employees have reached an acceptable level of competency. Site-specific plan reviews are then assigned to staff based on project complexity and staff level of proficiency and experience. One-on-one reviews are routinely conducted to address specific questions, and regular team meetings occur where cases and scenarios are discussed. Upon updates to the SWMM, plan review staff receive additional training that focuses on regulatory and procedural changes and implementation.

Staff involved in the development of our post-construction rulemaking engage regularly with regional professional organizations, such as the Green Infrastructure Leadership Exchange, regional and nationwide MS4s, and the local Association for Civil Engineers Environmental Working Group, among others.

2.5.8 Data Tracking

Information about development projects that trigger the SWMM is entered and stored in a proprietary database administered by PP&D and used by all permitting plan review staff. Details recorded include property information, impervious area managed, stormwater facility type(s) and their performance objectives (e.g., infiltration, water quality), and infiltration testing information. Plans and permit-related documents such as storm and geotechnical reports, O&M Agreements, and Special Circumstances applications are uploaded into the system. Plan review status and site/facility inspections are also tracked. This information is then spatially mapped, which allows staff to evaluate SWMM trends on a city-wide scale.

2.5.9 Post-Construction Site Runoff Strategy Metrics

The following is a list of the reporting metrics and related goals, where applicable, for the Post-Construction Runoff Strategy:

ID	Metrics and Goals
2.5-R1	Description of any code and ordinance updates related to post-construction runoff (i.e., PCC 17.38 and the SWMM).
2.5-R2	Number of SWMM-related permits/projects with SMFs issued annually.
2.5-R3	Number of environmental land use reviews conducted annually.
2.5-R4	Description of significant SWMM plan review accomplishments, activities, and/or challenges.
2.5-R5	Amount of impervious area (acres) managed by new SMFs annually.
2.5-R6	Description of significant accomplishments, activities, and/or challenges related to SMF installation inspections.
2.5-R7	Description of accomplishments, activities, and/or challenges related to the Water Quality Benefit Offset (Special Circumstances) program.
2.5-R8	Description of SWMM-related education and outreach activities conducted annually.
2.5-R9	Description of staff training activities related to SWMM administration and implementation.
2.5-R10	General description of SWMM data tracking activities and/or significant database updates.

2.6 Post-Construction Long-Term Operation and Maintenance

Permit Schedule A.3.a.vi

The City's Stormwater Facility Inspection Team (Stormwater FIT) ensures that SMFs installed under the SWMM are properly operated and maintained. The Stormwater FIT inventories, maps, and inspects SMFs. They conduct outreach, assistance, and enforcement activities in accordance with SWMM-required O&M Agreements. Details are provided below.

2.6.1 Ordinance

Stormwater FIT operates under the same ordinance described previously, PCC Chapter 17.38 *Drainage and Water Quality*. In addition to imposing stormwater volume, flow, and quality standards, PCC Chapter 17.38 also authorizes the City to implement rules for the long-term O&M of controls installed under the SWMM. City Administrative Rule ENB-4.31 further supports the regulation of source controls and SMF O&M. These rules are implemented in conjunction with the BES Enforcement Program Administrative Rules (Portland Policy Documents item ENB-4.15), described previously as part of the City's IDDE strategy.

2.6.2 Maintenance Inspection Strategy

Program staff screen for new O&M Agreements for finalized development permits with SWMM requirements on a quarterly basis. Site and facility details are entered into a database, as described in the following section, which allows the team to map and plan the inspection strategy. There are currently around 17,000 SMFs in the inventory, of which, roughly 38% are on single-family residential property. Inspections are conducted in accordance with the MS4 permit. Inspection criteria, as required by the SWMM, include the following types of observations.

- **Infiltration and flow.** Inlet/outlet conveyance, filter media, sediment accumulation, site grading.
- **Vegetation.** Plant coverage, invasives coverage, dead or stressed vegetation, pruning, debris.
- **Structural.** Broken or damaged components, missing components, liner integrity, evidence of erosion.

Each inspection results in a rating of 1 to 3 (respectively, no corrective actions required, routine corrective actions required, corrective actions required with a deadline to correct), issuance of an inspection letter to the SMF operator detailing any required maintenance activities and setting a next inspection target date. Re-inspection dates are set based on SMF type and overall performance condition and/or potential for future non-compliance. Stormwater FIT staff uses a flow-chart matrix to assign re-inspection dates. Most SMFs are set at 2-4 years for re-inspection. New SMFs that have not been inspected since installation are assigned a target inspection date of 1 year after the development permit is finalized.

Stormwater FIT staff uses a risk-based inspection approach, prioritizing O&M inspections of SMFs on sites with higher pollution potential, which includes industrial, commercial, and multi-family residential properties. The team further prioritizes inspections of SMFs furthest past their targeted next inspection date. The related enforcement strategy is described below.

2.6.3 Enforcement

Stormwater FIT has an escalating enforcement approach to non-compliance with City O&M requirements. Enforcement actions are issued when: 1) corrective action deadlines outlined in the inspection follow-up are not met, 2) inspection access is not granted, or 3) there has been modification to or removal of an SMF. Any enforcement action not addressed by the responsible party will continue to escalate in accordance with the BES Enforcement Program Administrative Rules as described in the IDDE Strategy.

2.6.4 Data Tracking

The City records and maintains O&M details of SMFs in a database, which includes info on location, type, related development permit, property zoning, inspection dates, inspection results, corrective actions, and more. The City migrated existing program data into a proprietary and more comprehensive asset management system in 2022, adding functionality that includes the use of electronic/mobile inspection forms and direct linking to the PP&D permitting database.

Enforcement actions are tracked in the BES enforcement program application (described in the IDDE strategy).

2.6.5 Long-Term O&M Outreach and Assistance

The Stormwater FIT team conducts outreach and technical assistance to SMF owners and operators. When possible, the team coordinates inspections with site and/or SMF operators to provide direct education and guidance on the SMF functions, appropriate maintenance techniques, current deficiencies, and ongoing O&M responsibilities. Each inspection is then followed up with a detailed letter that provides instructions specific to each SMF type onsite, including routine and required maintenance activities. Stormwater FIT staff also sends annual outreach mailers to all single-family residential properties with vegetated SMFs. The mailer reminds or notifies the SMF owner of their required maintenance obligations and provides instructions on when and how often to complete important maintenance activities. The program also maintains a detailed website on all relevant BMPs for the long-term operation and maintenance of SMFs.

2.6.6 Long-Term O&M Staff Training and Education

Stormwater FIT's training strategy is focused on new employee/inspector onboarding and ongoing refresher and professional development opportunities. Onboarding includes thorough review of existing regulations, program procedures and processes, and database applications. A heavy focus on job shadowing is emphasized with supervised inspections. Staff attend professional and trade conferences as available and receive training when SWMM regulations are updated. The team meets regularly to discuss program activities to help ensure consistent implementation. Training and development for team members is conducted on an ongoing basis.

2.6.7 Post-Construction Long-Term O&M Strategy Metrics

The following is a list of the reporting metrics and related goals, where applicable, for the Post-Construction Runoff Long-Term O&M Strategy:

ID	Metrics and Goals
2.6-R1	Number of new SWMM O&M agreements issued annually.
2.6-R2	Number of SMFs covered by new O&M agreements issued annually.
2.6-R3*	Number of SMFs inspected, with an annual goal of 1,500 inspections and a permit term goal of 7,500 total inspections.
2.6-R4	Number and type of corrective actions required and/or enforcement actions issued annually.
2.6-R5	General description of data tracking activities and/or significant database updates.
2.6-R6	Description of Stormwater FIT-related education and outreach activities conducted annually.
2.6-R7	Description of Stormwater FIT staff training activities conducted annually.

* Metric contains a measurable goal.

2.7 Pollution Prevention and Good Housekeeping Strategy for Municipal Operations

Permit Schedule A.3.f

It is important for MS4 operators to evaluate and properly manage their own actions and facilities to help prevent and reduce pollution in the stormwater conveyance system, on municipal roadways, storage lots, waste and maintenance facilities, parks and open spaces, and other such City-owned and -operated sites and services. The City conducts many activities to prevent pollution from its municipal operations. Our strategy includes a wide range of environmental BMPs that encompass the following:

- Maintenance of the MS4.
- Maintenance of roadways and transportation facilities.
- Deicing and anti-icing activities.
- Chemical usage in parks and natural areas.
- Waste management and litter control.
- Wastewater conveyance and treatment.
- Discharges from firefighting activities.

A detailed description of our strategy for these municipal/public operations is provided throughout this section.

2.7.1 MS4 Inspection, Maintenance, and Cleaning

The City has three different stormwater conveyance systems based on Portland's history and geography. Stormwater from most of the older, historic areas of town, including much of Downtown and the Central Eastside, drain to the combined sanitary system, which ultimately flows to the City's Columbia Boulevard Wastewater Treatment Plant. Stormwater managed by City systems outside of the combined sewer

area either flow deep into the ground via UICs or to surface water rivers and streams via the MS4. (See Figure 1 for details.)

BES owns and operates much of the City's storm and sanitary systems with the assistance of a critical partnership with PBOT, which performs much of the in-field maintenance and cleaning work. BES generates work orders for PBOT inspection and maintenance activities on BES assets (storm and sanitary) based on established preventative maintenance schedules as well as reactive maintenance/repair needs. Respective roles and responsibilities are set out in a Cooperative Work Agreement between bureaus. PBOT also conducts maintenance activities independently, typically based on known "hot spot" areas prone to seasonal flooding and/or complaints, for example. Inspection and maintenance activities are based on "asset type" (e.g., storm inlets, pipes, and structural treatment controls). MS4 components are grouped into two broad categories: conveyance assets and water quality assets.

Stormwater O&M Inspection and Cleaning Activities

BES maintains a detailed *Stormwater Operations and Maintenance Manual* that serves as internal guidance to City staff on specific levels of service, maintenance procedures, and disposal methods for the different types of infrastructure components.

- **Storm inlets.** The City currently has over 55,000 storm inlets, or catch basins, in its asset inventory. Roughly 13,000 of the 55,000 storm inlets, are within the MS4 area. The remainder of the inlets are within the City's combined sewer and UIC areas. O&M activities include:
    - Inspection for structural issues. Repair or replacement as needed.
    - Inspection for obstructions and clogs. Remove obstructions and/or schedule cleaning if needed.
    - Cleaning if sediment has filled 50% or more of the design capacity or is blocking the pipe.

  As specified in the MS4 Permit, the City uses an inlet inspection prioritization system for its catch basins and other structural MS4 assets. The factors used in the prioritization system include, but are not limited to, the following:

- MS4 areas expected to have high total suspended solids (TSS) loading, as identified by BES using a water quality risk assessment model.[11] This accounts for factors such as land use, ecological and human health susceptibility, and the presence (or absence) of structural SMFs.
- "Hot spots", as identified by PBOT, for areas in and around City rights-of-way prone to flooding during the wet season.
- Complaints, as reported by the public, and/or specific intra-bureau requests.
- Inlets and other components associated with water quality treatment facilities and green infrastructure.
- Safety and accessibility.

- **Drainage ditches.** There are currently nearly 100 miles of open roadside channels that convey stormwater runoff. Ditches may be native soil, or lined with rock or vegetation. Vegetation is usually prevalent and encouraged because it stabilizes the channel against erosion, reduces flow velocity, and removes pollutants. O&M activities include:
  - Inspection of ditch channel and adjacent road edge and shoulder for overall condition and function, erosion, build-up of sediment and debris, and vegetation overgrowth.
  - Ditch channels, and adjacent road edge and shoulder, should be largely free of erosion, sediment, and debris build-up and vegetation overgrowth.
  - Schedule erosion repair and or shoulder regrading if needed.
  - If ditch capacity is blocked by 50% or more, schedule ditch channel cleaning to remove sediment, debris and overgrowth of vegetation.
- **Trash racks.** There are currently over 300 trash racks in our MS4 that catch large debris. Trash racks are typically located where surface stormwater flows out of unimproved areas.
  - Inspection and cleaning multiple times each year, with a goal to inspect quarterly and in response to severe weather events for high-priority trash

[11] BES developed a stormwater quality risk assessment process, using a predictive model, based on expected loading rates from various land uses and pollutant removal efficacy from structural BMPs. The model was used to identify inlets located in MS4 areas expected to have high loading rates of TSS. The risk assessment scores are on a relative ranked scale of 1 to 5, 1 being the lowest expected TSS loading rates and 5 the highest. The highest scoring inlets were added to the inspection inventory.

racks. Inspections are performed to evaluate function, access, debris, and identify defects posing an immediate hazard. When immediate hazards are found, corrective measures are implemented as rapidly as possible, taking into account other operational demands, current conditions, and forecast weather. The intent is to eliminate or mitigate the hazard as much as possible and stabilize the situation in order to support a comprehensive and effective response after the event has ended.

- Clear debris from racks as needed at each inspection. Rack grates shall be structurally sound and clear of vegetation, debris, and sediment. Schedule cleaning or structural repair if needed. Rack frames or structures shall be structurally sound. Schedule structural repair if needed.
- Observe trash rack identification signage to ensure it is intact, legible, and unobscured by vegetation. Schedule repair or vegetation clearing if needed.
- Ensure access routes are clear and safe to use. Schedule vegetation clearing if needed. Schedule installation or repair of trail and/or steps if needed.

- **Structural water quality treatment facilities.** The City owns many different types of water quality treatment systems throughout the MS4. This includes features such as dry and wet ponds, infiltration basins, green streets, sedimentation traps, vegetated swales, and proprietary filter systems and hydrodynamic separators.
  - Wet ponds, spill ponds, dry ponds, and infiltration basins. All ponds and basins are inspected at least twice each year. Inspections are conducted for overall condition and function, structural aspects, vegetation, access, sediment level, signage, and more.

    Vegetation maintenance, grading, repair, cleaning, or other restoration is scheduled if needed. Triggers: Pipe capacity is blocked by 25% or more. Forebays are not structurally sound and/or have less than 50% of design volume remaining for sediment accumulation. Pond capacity has filled 50% or more with sediment. Embankments and slopes have significant erosion, settlement, and/or holes. Schedule restoration if needed.
  - Vegetated swales. All vegetated swales are inspected a minimum of twice each year. Inspections are conducted for overall condition and function,

vegetation health and coverage, structural components, access, sediment level, signage, and more.

Vegetation maintenance, grading, repair, cleaning, or other restoration is scheduled if needed. Triggers: Pipe capacity is blocked by 25% or more. Forebays are not structurally sound and/or have less than 50% of design volume remaining for sediment accumulation. Swale capacity has filled 50% or more with sediment. Embankments and slopes have significant erosion, settlement, and/or holes. Accumulated sediment is harming vegetation. Schedule restoration if needed.

- Green streets. During the first 2 years after construction (the warranty/establishment period), vegetation maintenance and irrigation is conducted as specified:

    1. Maintenance and/or inspection at least four times per year.
    2. Irrigation 10 to 16 times per growing season (May 15 to September 30). Irrigation may be adjusted to an as needed basis if quantifiable precipitation allows.
    3. Replanting, as needed, to achieve a target of at least 90% vegetative cover.
    4. Tree replanting, as needed, if trees have failed.

    Once the construction warranty period has ended, all green streets are maintained on an as needed basis with guidelines for specified minimums based on functional condition assessment:

    1. Maintenance and/or inspection around three times per year.
    2. Irrigation on an as needed basis or up to 10 to 16 times per growing season (May 1 to September 30) for 2 years, for green streets that have been replanted in the previous planting season.
    3. Prioritized replanting and planning to occur, as needed, to achieve a target of at least 75% vegetative cover.
    4. Tree replanting, as needed, if trees have failed.

- Manufactured or proprietary treatment devices. All manufactured water quality treatment structures are inspected concurrently with planned maintenance of the facility, or independently for a minimum of once each

year in the summer. Summer inspections are timed to identify any maintenance needs prior to the wet season. Inspections are conducted for overall condition and function, structural defects, access, and sediment levels.

Cleaning trigger: Sediment has filled 50% or more of design capacity.

Manufactured water quality treatment structures have specialized inspection and maintenance procedures that vary depending on the specific type and manufacturer. Manufacturer documentation shall be referenced to effectively perform inspection and maintenance on these facilities.

2.7.2 Stormwater O&M Staff Training and Education

Staff training and education related to stormwater O&M includes the following:

- Comprehensive onboarding for all new employees.
- Periodic, annual, or seasonal training for specific job classes and specialized tasks.

2.7.3 Roadways and Transportation

The City is responsible for a complex network of roadways. In fact, the very definition of an MS4 means a "conveyance or system of conveyances including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, human-made channels, or storm drains…"

Transportation corridors are critical for commuters and moving commercial goods, but they can also convey pollution from traffic, including heavy metals from tires, brakes, and engines, along with gasoline, petroleum, and other toxic fluids. Proper environmental management of our roadways is a key principle of the MS4 permit, but also critically important is public safety and hazard prevention. In some cases, necessary or even mandated safety measures can be at odds with the environment, such as the activity of road-salting (see the Winter Operations and Maintenance Strategy, next section). The City continuously strives to find the proper balance between public safety and watershed health in our roadway O&M practices.

We implement a variety of BMPs in and around City roadways to prevent and control pollution. These BMPs include both structural and non-structural controls, such as street sweeping, spill prevention, green streets, storm drain cleaning, erosion control, eco-friendly product procurement, and other controls related to the O&M of City roadways.

PBOT is responsible for maintaining the City's roads and related infrastructure. There are also other MS4-permitted jurisdictions in the greater Portland area that own and operate their own roadway systems, such as ODOT, Multnomah County, and the Port of Portland.

The PBOT *Maintenance Environmental Handbook* is an internal guide developed under our former MS4 permit to ensure PBOT field crews have easily accessible information on handling wastes, erosion, control measures, spill control and prevention practices, vehicle fueling/washing, invasive plant management, and working near or in waterways. Several key BMPs described in the handbook and used to manage the City's roadways include:

- **Material removal.** The Street Leaf Removal Program removes about 5,000 tons of leaves and debris from roadways each year for both environmental and public safety purposes. The service area includes routes with mature street trees and dense canopy where fallen leaves tend to clog catch basins and cause hazardous road conditions or localized flooding.
- **Street sweeping.** The City's street cleaning program removes dirt and debris from our roadways. Removal of sediment, litter, leaves, and debris helps prevent street flooding and the discharge of pollutants to waterways. The City sweeps over 1,000 lane miles of major arterial streets in Portland several times a year. The public can even access an interactive map showing day and night routes for street cleaning.
- Additional BMPs that the City uses for roadways include the following:
    - Referencing and adopting key BMPs from ODOT's "Blue Book," or *Routine Road Maintenance Water Quality and Habitat Guide*.
    - Using low-disturbance sign installation methods to avoid or minimize digging and using mild cleaners, with no solvents, to clean signage.
    - Monitoring weather conditions during asphalt grinding to avoid runoff.
    - Hand-applying asphalt where necessary to prevent materials from entering the MS4.

2.7.4 Winter Operations and Maintenance Strategy

The City has established procedures to address the operational and safety challenges that arise from serious snow and ice events. PBOT maintains and follows a detailed *Snow and Ice Response Plan* that includes specifications on equipment, materials, critical routes, coverage areas, and stormwater and other environmental controls and protocols.

PBOT's anti-icing and deicing strategies are consistent with guidance from the Federal Highway Administration's *Manual of Practice for an Effective Anti-Icing Program*, the Pacific Northwest Snowfighters Association, ODOT, and other local or regional agencies. Public safety and travel during extreme inclement weather in Portland is most efficiently managed with liquid deicer, magnesium chloride ($MgCl_2$) and solid, granular "road salt" (sodium chloride, or NaCl). PBOT also provides information about snow and ice response to the public:

- PBOT (Winter) Weather hub page with links to maps, information, and programs.
- Webmap of snowplow routes, locations, cameras, and closure notices.

The City's Winter Operations and Maintenance Strategy outlines procedures and BMPs to ensure compliance with the MS4 permit. The City strives to keep Portlanders safe while minimizing the impact of operations on the environment and waterways. Details related to materials management, tracking, training, and more are listed below:

- **Materials storage.** Solid materials (road salt, gravel) are stored in dedicated bins at a PBOT facility located in the combined sewer area. Salt is covered and shielded from the wind, and all truck-based salt spreaders are fitted with specially made tarps to keep the salt dry and in solid form while stored and/or transported. Long-term storage for deicing liquid ($MgCl_2$) has secondary containment.
- **Conservative application rates.** PBOT applies the appropriate amount of salt, deicing liquid, and gravel as necessary to create safe conditions on City streets. All salt spreaders are calibrated, and all salt and sand spreaders are capable of variable application rates. Crews are instructed each year to apply only the amounts needed and no more. Each salt and deicing crew is supervised by staff that are trained and familiar with salt application procedures and best practices and use appropriate application rate guidelines. Gravel is used in targeted areas for greatest impact and reduced cost of cleanup.
- **Tracking.** PBOT maintains anti-icing and deicing logs in the form of GPS-enabled maps and provides these map logs that show application rates, locations, and times of application of each material used across the City. Coordination with BES on location and frequency of application is ongoing in order to identify areas where water quality impacts may be greater on sensitive habitats and listed species and to protect environmentally sensitive areas.
- **Coordination.** Every regional roadway operator, including the State of Oregon; Port of Portland; Multnomah, Clackamas, and Washington counties; and the City of Portland performs snow and ice response operations on streets under their

jurisdiction in accordance with established priorities and protocols. The connectedness of our roadway system mirrors the need for an interconnected snow and ice response plan. As such, the City coordinates and maintains partnerships with these jurisdictions to ensure effective and responsible management of roadways during snow and ice events. Each year a pre-winter season interagency coordination meeting is held to prepare for a proper and coordinated response. This includes representatives of PBOT, Portland Water Bureau, Portland Police Bureau, PF&R, Portland Bureau of Emergency Management, Multnomah County, ODOT, and local hospitals and school districts. The goal is to share the snow and ice plan with the agencies and organizations, receive feedback and guidance, and foster communication and cooperation.

2.7.5 Roadways and Winter O&M Staff Training and Education

The City continues to provide educational training to staff on O&M and construction practices to protect water quality. Specific training efforts related to roadway maintenance include the following:

- Training on the PBOT *Maintenance Environmental Handbook* for street maintenance crews. This ensures that crews have easily accessible information on handling wastes, erosion control measures, spill control and prevention practices, vehicle fueling/washing, invasive plant management, and working near or in waterways. The handbook is used to guide employee training sessions and made available for reference by PBOT staff.
- This training is given to all new employees and to specific work crews as needed thereafter.
- All crews directly responsible for winter maintenance activities receive training on BMPs associated with the Pacific Northwest Snow Fighters Association prior to the start of the winter season in October.
- Each year, the Snow and Ice Working Group organizes a series of trainings for all staff to learn new information, share knowledge, and test equipment. Drivers are trained in the use of plows, chaining, spreader controls, deicing and anti-icing procedures, snow routes, and communications.
- Salt and anti-icing crews are trained in snow and ice application rate guidelines and procedures and on how to operate application tracking map logs annually. They are reminded of the environmental harm that results from non-compliance and why it is

so important to be careful stewards of the environment while making the roadways open for emergency services and safe for the traveling public.

2.7.6 Integrated Pest Management: Pesticide and Fertilizer Use

The City has a well-established strategy to minimize the use and exposure of pesticides and fertilizers. This is especially relevant to our management of the City's extensive parks network. PP&R's strategic plan and asset inventory, Park System by the Numbers, emphasizes a parks program that integrates with operations, financial planning, and performance management. PP&R implements many BMPs that prevent stormwater pollutants from the City's diverse parks system. For example, PP&R became the first City bureau to achieve Salmon-Safe certification in 2004.

The City's use of pesticides and fertilizers is centered around the principles of integrated pest management (IPM), which focuses on long-term prevention of pests and their damage to the natural environment through a combination of techniques, such as biological controls, strategic habitat management, responsible cultural practices, and use of resistant plant varieties. The goal is to manage pests that are harmful to the health, function, or aesthetic value of park landscapes in an efficient, effective, and environmentally responsible manner, while paying careful attention to public and employee safety. The City's IPM strategy is available online. Our IPM principles first dictate a determination of whether a pest needs to be managed, and if so, when, where, and how best to do it.

The IPM process ensures that the most effective, low-risk methods and materials are used to manage pests. IPM and the program guidelines are used by staff in multiple City bureaus, including PP&R for the City's parks and recreational facilities, PBOT for vegetated areas adjacent to roadways, and BES for natural and green infrastructure areas. Examples of IPM principles include:

- Mulching planting beds to prevent new weeds.
- Proper mowing and irrigation of park turf to increase vigor and reduce weed populations.
- Pruning plants to increase air circulation, helping to suppress some diseases.
- Using correct fertilization rates to encourage plant health and pest resistance.
- Using plants with natural pest resistance.
- Aerating and overseeding turf to encourage healthy grass.

- Applying carefully selected herbicides to control invasive weeds.
- Release of natural biological control insects.

The City's IPM efforts also include reducing water and fertilizer inputs on park properties, restoring riparian and upland habitats, and using alternatives to pesticides. The IPM program is regularly evaluated and adapted through reliance on the best available scientific expertise and assessments from the EPA, the World Health Organization, and regional universities.

2.7.7 IPM Staff Training and Education

The cornerstone of PP&R's IPM program is our trained staff, which includes horticulturalists, ecologists, technicians, and specialists. Their understanding of plant and landscape needs makes decision-making about which IPM option to use in individual cases possible. PP&R's policies require that personnel who apply pesticides of any kind are required to maintain an Oregon Public Pesticide Applicators license, administered by the State of Oregon. To keep this license, personnel are also required to attend continuing training and education where they learn about the latest pest management techniques and materials. Our licensing requirements exceed state and federal standards. PP&R is committed to this higher level of training for our applicators. PP&R's IPM Coordinator develops and refines the overall program and ensures that regulatory requirements are met. The coordinator also researches IPM science, develops pest management strategies, trains staff, and communicates with the public and other bureaus.

2.7.8 Sewage Release Prevention

The City actively works to identify, prevent, and repair sanitary sewer problems that can cause harmful releases, or seepage, of wastewater to the MS4 and surface waters. Under the City's NPDES wastewater regulations and as part of a risk-based asset management program, BES performs in-depth technical analyses, preventative source control programs, and robust maintenance activities on combined and sanitary sewer systems. This includes identifying areas where collection system infrastructure may be in poor condition or at risk of failure. The City uses a variety of tools such as scoping pipes using TV equipment, O&M inspections of sewer manholes, jetting and cleaning sewer pipes, and prevention programs to reduce sewer blockages, such as our *Cut Through the FOG* program. The City also uses an integrated planning approach to asset management that further helps identify sewer release risks, such as spatial and condition analysis of sewer pipe and stream crossing intersections.

BES also implements PCC Title 17.33 for Mandatory Sewer Connections, which requires properties using onsite wastewater disposal systems or non-conforming private sewer systems to connect to an available public sanitary sewer collection system.

Many of these activities are tracked and reported under the City's NPDES wastewater regulations and associated Capacity, Management, Operation, and Maintenance requirements.

2.7.9 Firefighting Training Activities

PF&R is Oregon's largest fire and emergency services provider. PF&R operates and maintains a network of fire stations and fleet equipment to fulfill its mission for public health and safety.

Discharges to the MS4 from fire hydrant flushing and emergency firefighting activities are allowed under the MS4 permit. However, such discharges from PF&R activities are appropriately managed by the City's infrastructure and BMP controls. The potential for harmful discharges from PF&R activities are prevented from entering the storm system as follows:

- **Discharges from training exercises.** Firefighting training activities occur at PF&R's training facility located at 4800 NE 122nd Avenue. Discharges from these non-emergency training activities are routed to the City's sanitary sewer.
- **Equipment washing.** Equipment washing is generally conducted at all fire stations. Per PF&R policy, all washing occurs inside station apparatus bays, where water is discharged to the City's sanitary sewer, typically through an oil/water separator.
- **Equipment maintenance.** Equipment maintenance and repair is performed at PF&R's logistics facility, located at 1135 SE Powell Boulevard, which is in the City's combined sewer area and drains to the sanitary sewer system.

2.7.10 Pollution Prevention and Good Housekeeping Metrics

The following is a list of the reporting metrics and related goals, where applicable, for the Pollution Prevention and Good Housekeeping Strategy for Municipal Operations:

ID	Metrics and Goals
2.7-R1*	Number of inspections, repairs, and cleanings by asset type, with a goal to inspect and/or clean all priority MS4 inlets, where safe and accessible, over the permit term.
2.7-R2	Description of BES staff training activities related to green stormwater infrastructure O&M.
2.7-R3*	Street sweeping frequency, with a goal to sweep arterial streets four times per year.
2.7-R4	Amount of material removed from City roadways, including storm inlets.
2.7-R5	Number of winter weather events where deicing and/or anti-icing materials were used.
2.7-R6	Amounts and types of deicing and/or anti-icing materials used annually.
2.7-R7	Description of general location(s) where deicing and/or anti-icing materials were used and associated application rate(s).
2.7-R8	Description of PBOT staff training activities related to stormwater O&M and Winter Maintenance.
2.7-R9	Description of significant IPM program accomplishments, activities, and/or challenges.
2.7-R10	Description of staff training activities related to IPM conducted annually.
2.7-R11	Description of significant accomplishments, activities, and/or challenges related to sewage release prevention.

* Metric contains a measurable goal.

2.8 Industrial and Commercial Facilities Strategy

The City's strategy to reduce pollutants in stormwater discharges from industrial and commercial facilities consists of two primary activities. Our Industrial Stormwater Management Program and the Source Control Manual work in tandem to control pollution from both pre-existing and development sites that pose high pollution risks from onsite activities and land uses. The City also conducts outreach activities to industrial and commercial facilities as part of its Public Education and Outreach Strategy.

Permit Schedule A.3.g

2.8.1 Industrial Stormwater Program

The City's Industrial Stormwater Program (ISW) prevents and reduces pollution from industrial and commercial facilities, primarily through an agreement with DEQ to administer General NPDES Industrial Stormwater 1200-Z and 1200-A discharge permits. ISW also implements legal code authority to ensure that facilities posing an elevated pollution risk to the City's MS4 are properly controlled.

1200-Z and 1200-A NPDES Permit Administration

ISW operates under an IGA with DEQ to administer 1200-Z and 1200-A Industrial Stormwater Discharge Permits for required sites within the City of Portland. The City coordinates regularly with DEQ on all matters related to program administration and enforcement. This program is implemented both within and outside the City's MS4 (areas that discharge directly to water bodies without being conveyed by the MS4 are outside of the MS4). Portland has been using this approach since the mid to late 1990s. It is highly effective for preventing and reducing pollution from sites with the potential to contribute significant pollutant loads to Portland's waterways.

DEQ's 1200-Z and A permits include a robust set of water quality requirements for runoff from certain industry types. The requirements

are especially comprehensive for sites with stormwater discharges to the Portland Harbor region of the Lower Willamette River and to the Columbia Slough. Those areas serve as the main industrial corridors in Portland. Dischargers to Portland Harbor or the Columbia Slough are required to apply for 1200-Z or A permit coverage based on the exposure of certain onsite industrial activities to rainfall. ISW's administrative activities for this program include:

- **Site screening.** Identification of, and notification to sites requiring permit coverage. (See "Facility Screening" below).
- **Document review.** Review and approval or disapproval of the site's permit application, including the Stormwater Pollution Control Plan, prior to a public comment period.
- **Inspections**. Detailed compliance inspections of permitted sites. (See "Site Inspections" below).
- **Monitoring evaluation**. Review of facilities' stormwater monitoring results.
- **Enforcement**. Enforcement actions for permit violations, including referral to DEQ for formal state enforcement, and/or City Code violations. (See "Enforcement" below).
- **Technical assistance**. Technical assistance and outreach to permitted facilities. (See also the Public Education and Outreach Strategy in Section 2.1.)
- **Assessment of exemptions**. Identification and inspection of sites that qualify for exemption from 1200-Z/A permit coverage via the No Exposure Certification (NEC) process. Review and renewal of expiring NECs.

Facility Screening

ISW screens existing and new industrial and commercial facilities to assess whether they may be subject to the 1200-Z/A permit and/or have the potential to contribute high levels of pollution to the MS4. The City's screening activity is conducted on an ongoing basis through a variety of methods:

- **Surveys.** Review of industrial surveys administered by the City's Environmental Compliance team, which contains relevant site drainage and activity details.
- **EPA toxics info**. Regular review of the EPA Toxics Release Inventory report for facilities subject to Section 313 of Title III of the Superfund Amendments and Reauthorization Act (SARA) to scan for compliance with state and local stormwater regulatory requirements.

- **Referrals and complaint response.** Assessment and follow-up of referrals and complaints from internal and external parties.
- **Field reconnaissance.** Oversight of regulated facilities is typically organized on a geographic or watershed basis within Portland. The team spends a considerable amount of time in the field performing investigations and site inspections. This approach allows our ISW experts to become familiar with the environmental and business dynamics of their assigned watershed area.
- **Priority area screening.** ISW works with other bureau partners and DEQ to research and conduct inspections of certain priority areas in Portland. This may be related to waterway contamination drivers, capital project improvement areas, or other drivers. ISW's current focus is to evaluate non-permitted industrial and commercial facilities in targeted areas of the Columbia Slough Watershed in coordination with the City's Columbia Slough Sediment Program. This involves proactive site assessment and inspections to determine if additional pollution controls, stormwater permitting, and/or City Code requirements may be necessary to ensure additional water quality protections.

ISW's screening typically results in one of the following outcomes:

- No further action required.
- Requirement to apply for 1200-Z or A NPDES permit or certify a condition of "no exposure" via the NEC process.
- Requirement to implement controls to reduce or eliminate the potential significant pollutant load to the MS4, which may include submittal of a Source Control Plan.
- Onsite inspection to further categorize activities and stormwater discharge destination(s) to determine DEQ and City stormwater control requirements. This is typically referred to as an Under Staff Review (USR) inspection, which results in one or more of the three outcomes above.

Site Inspections

Inspection procedures and frequency vary depending on the type of inspection. Inspections are documented using a detailed inspection form, site maps where applicable, and photographs. Each inspection is followed up with a detailed letter documenting the results of the inspection, including any deficiencies. Inspection results and follow-up and/or enforcement actions are entered into a database, as described later under "Data Tracking."

The ISW Program performs different types of facility inspections that include the following:

- **1200-Z or A permit compliance inspections.** Procedures involve conducting pre-inspection preparation, including a detailed review of the site file (including the site's Storm Water Pollution Control Plan, monitoring data, compliance history, and previous inspection). Onsite inspections involve observations of all outdoor areas with a focus on activity and stormwater drainage areas, interior loading/unloading areas, and detailed document and recordkeeping review. ISW inspectors then conduct an overall assessment and determination of compliance with the requirements. Enforcement actions are assessed and issued, as described below.

- **Non-permitted site inspections.** This includes sites identified through the general screening process described above and NEC sites. New sites identified through screening are referred to as USR sites and have a particular inspection form and protocol. Preparation procedures for USR sites usually involve extensive property research, including business activities and site plumbing/drainage infrastructure and generation of a site file. NEC sites already have an established site file.

  In preparation for a site inspection, ISW reviews the existing site file, prior correspondence, any City-required Source Control Plans, and facility details in the tracking database. Onsite inspections include a discussion of applicable regulations with site operators and technical assistance, inspection of all outdoor activity and stormwater drainage areas, interior loading/unloading areas, and a check for potential illicit discharges or connections. Post-inspection activities include a follow-up letter describing the results and a determination of NPDES permit, NEC renewal eligibility, and/or City Code requirements. Details are entered and tracked into a database as described below.

- **Priority area screening inspections.** The process and preparation for these sites are similar to the non-permitted site inspections, as described above, but are catered to the needs of the particular area and environmental driver. Onsite inspections include a thorough observation of potential high-risk pollution areas, necessary BMPs and source controls, and a discussion of applicable regulations. Post-inspection activities include a follow-up letter describing the results and a determination of the NPDES permit, NEC renewal eligibility, and/or City Code requirements. Details are entered and tracked into a database as described below in "Data Tracking."

City Requirements for Additional Stormwater Controls

Some commercial and industrial facilities with the potential to contribute elevated pollution to the MS4 are *not* subject to Oregon's NPDES Industrial Stormwater Discharge permit. Also, some sites may qualify for an NEC but still pose a water quality risk to the MS4, as determined by the City. In these types of situations, ISW uses City Code authority to impose pollution source controls. The City exercises the ability to require an enforceable Source Control Plan to ensure ongoing implementation of BMPs. ISW has identified the following types of sites or activities that have high potential to discharge pollutants to the MS4:

- Sites that removed exposure of industrial activities to qualify for exemption from 1200-Z/A permitting (i.e., NECs, but have higher potential to lapse if BMPs are not strictly implemented).
- Sites *not* subject to Oregon's 1200-Z/A permit, but still have elevated risk of spills or pollution discharge to the MS4, such as from outdoor storage of liquids or onsite fueling, sediment track-out, or other high-risk activities.
- Discharges of allowable non-stormwater to the MS4 that require BMPs to reduce potential pollution.[12] ISW issues discharge authorizations for short- or long-term discharges. Examples include dewatering from construction sites, groundwater from well-pump tests, and dechlorinated commercial swimming pool discharges.

Enforcement

The City's ISW Program has a two-pronged enforcement approach. Enforcement related to 1200-Z/A permit violations are referred to DEQ as the formal permitting authority. Enforcement related to local code violations are processed by the City. Details are as follows:

- **1200Z/A enforcement.** ISW coordinates directly with the DEQ on NPDES related enforcement and adheres to DEQ's water quality violation guidance. For "warning" level violations (e.g., first time), the City issues a Warning Letter enforcement action noting the permit violation(s) and corrective measures required. Any escalating violations, including failing to comply with a Warning Letter and failure to apply for a permit, are referred to DEQ's Office of Compliance and Enforcement via a Pre-Enforcement Notice (PEN). The notice is a more extensive packet of information detailing the permit violation(s), violation history, and other details as required by the DEQ Office of Compliance and Enforcement.

[12] Allowable non-stormwater discharges are listed in the MS4 permit on page 2 (Schedule A.1.d).

- **City Code enforcement.** ISW issues enforcement actions to commercial and industrial sites (both permitted and non-permitted) for non-compliance with PCC Chapter 17.39 and the BES Enforcement Program as described in the IDDE Strategy (Section 2.3). This is typically for violations related to required preventative BMPs, prohibited discharges, and pollution source controls for stormwater runoff to the City's MS4.

Assessment and Tracking of Compliance with Municipal Ordinances

All sites evaluated and inspected by ISW are subject to compliance with PCC Chapter 17.39, *Storm System Discharges* (described in the IDDE Strategy) and associated Administrative Rule ENB 4.13, *Administrative Rules for Discharges to the City Storm Sewer and Drainage System*. Compliance is assessed primarily through the inspection process and tracked electronically, as described in the following section. Non-compliance results in escalating enforcement in accordance with BES Enforcement Program administrative rules, described in detail in the IDDE Strategy.

Data Tracking

ISW Program activity data is primarily stored and tracked in a proprietary software application. Data includes details on facility location and activity type, City or State water quality permitting status, and permit administration specifics (monitoring data, inspection dates/types, violations, and enforcement actions). Additional records, including correspondence, discharge monitoring reports, compliance documents, and enforcement actions are routinely filed and archived as appropriate. City-issued enforcement actions are also tracked in an enforcement-specific database described in the IDDE Strategy.

2.8.2 Industrial Stormwater Staff Training and Education

The training strategy for ISW staff focuses on onboarding for new employees and ongoing refresher and professional development for all team members. New employees receive training on existing state and federal industrial stormwater regulations, program procedures, and management systems. ISW has a heavy focus on job shadowing and management and/or mentor-supervised inspections for newer employees. All ISW staff attend professional and trade conferences, which often occur on an annual basis. Trainings and discussions are also facilitated when relevant regulations change. Staff receive refresher training periodically on subjects such as inspection expectations and monitoring report compliance review. The ISW team meets

regularly to discuss program activities to help ensure consistency in program implementation. Training and development for team members are conducted on an ongoing basis.

2.8.3 Source Control Manual

The City's Source Control Manual (SCM) is another substantial policy that prevents pollution from high-risk activities in Portland. Similar to the SWMM, it is an administrative rule that is adopted, implemented, and enforced by BES. The purpose of the SCM is to describe source control requirements specific to certain higher-risk types of development and post-development activities that have the potential to discharge pollutants to surface waters, groundwater, or the City's storm, sanitary, or combined sewer systems. A source control is a structural, treatment, or operational BMP to prevent or control the release of pollutants generated by certain site activities or characteristics. The SCM requires BMP controls for site uses like food cart pods, commercial waste storage, loading docks, fleet storage, materials processing areas, fuel transfer and fuel dispensing, equipment and vehicle washing, repair and maintenance areas, exterior storage, and dewatering. The SCM is authorized by PCC Chapters 3.13, 17.34, 17.38, and 17.39 and their respective administrative rules. It was most recently updated in 2020.

2.8.4 Commercial and Industrial BMP Outreach

Various City programs provide both direct and indirect education and technical assistance outreach to commercial and industrial facilities. The ISW Program, described previously, conducts ongoing pollution prevention outreach to facilities. Technical assistance is provided during inspections and in correspondence with both permitted and non-permitted sites. An outreach program to non-permitted sites includes semi-regular calls to remind facilities of their pollution prevention requirements and answer questions. ISW also maintains web-based guidance and BMP fact sheets focused on specific pollution controls for higher-risk activities. This information is kept up to date and coordinated with additional team efforts.

The City also implements a Groundwater Protection Program that conducts outreach to commercial and industrial facilities in the Columbia South Shore Well Field Wellhead Protection Area for compliance with Portland's drinking water regulations. The rules and policies are designed to prevent contamination of local groundwater sources used as our community's drinking water when necessary. Since much of the area overlaps with the City's MS4, the outreach is beneficial to both the stormwater and drinking water programs. Businesses are required to implement structural and operational BMPs to manage harmful chemicals and prevent and mitigate spills. The City's outreach to facilities includes activities like technical

assistance inspections, workshops, and distribution of free spill kits, containment pallets, and spill response signage.

2.8.5 Industrial and Commercial Facilities Metrics

The following is a list of the reporting metrics and related goals, where applicable, for the Industrial and Commercial Facilities Strategy:

ID	Metrics and Goals
2.8-R1	Number of 1200-Z and A permits administered.
2.8-R2	Number of new 1200-Z and A permits issued annually.
2.8-R3*	Number of 1200-Z and A site inspections, with the goal of inspecting all sites once per year. ‡
2.8-R4	Number and type of 1200-Z and A enforcement actions issued annually.
2.8-R5*	Number of NECs issued/re-issued annually, with the goal of inspecting all NECs upon expiration.
2.8-R6*	Number of inspections at non-permitted sites, with the goal of conducting 30 per year.
2.8-R7	Number of sites required to develop pollution prevention source control plans, per PCC 17.39.
2.8-R8	Description of training activities for staff conducting commercial and industrial facility inspections.
2.8-R9	Description of significant accomplishments, activities, and/or challenges related to implementation of or updates to the Source Control Manual.
2.8-R10	Description of the PWB's Groundwater Protection Program's significant accomplishments, activities, and/or challenges related to industrial and commercial facilities.

* Metric contains a measurable goal.

‡ The number of site inspections may be different than the number of permits administered, because some permits are terminated mid-year and may not be inspected.

Table 3. Pollutants Addressed by Stormwater Program Control Strategies

		POLLUTANTS ADDRESSED								STRATEGIES SUPPORTED								
SECTION	MANAGEMENT STRATEGY	Bacteria	Heavy Metals[1]	Nutrients	Toxic Organic Compounds	Sediment / Solids	Mercury	BOD	Temperature	Education & Outreach	Public Involvement & Participation	Illicit Discharge Detect/Eliminate	Erosion Control	Post-Construction (New, Re-Dev)	Post-Construction Long-Term O&M	O&M, Pollution Prevention	Industrial & Commercial	Ecosystems
Public Education & Outreach Strategy																		
2.1.1	General Environmental Outreach	♦	♦	♦	♦	♦	♦	♦	♦	●	●	●	●	●	●	●		●
2.1.2	Clean Rivers Education Programs	♦	♦	♦	♦	♦	♦			●	●	●	●	●	●	●	●	●
2.1.3	Regional Clean Water Partnerships	♦	♦	♦	♦	♦	♦	♦	♦	●	●	●	●	●	●	●	●	●
2.1.4	Household Waste & Recycling	♦	♦	♦	♦	♦	♦	♦		●	●	●			●	●	●	
2.1.5	Parks & Pet Waste	♦		♦				♦		●	●	●			●	●		●
2.1.6	Toxics Reduction	♦	♦	♦	♦	♦	♦	♦		●	●	●	●	●	●	●	●	●
2.1.7	Alternative Transportation		♦		♦					●	●	●				●		
2.1.8	City Leadership & Elected Officials	♦	♦	♦	♦	♦	♦	♦	♦	●	●	●	●	●	●	●	●	●
Public Involvement & Participation Strategy																		
2.2.1	Public Website	♦	♦	♦	♦	♦	♦	♦	♦	●	●	●	●	●	●	●	●	●
2.2.2	Watershed Education & Stewardship	♦	♦	♦	♦	♦	♦	♦	♦	●	●	●	●	●	●	●	●	●
2.2.3	Grants Programs	♦	♦	♦	♦	♦	♦	♦	♦	●	●					●		●
Illicit Discharge Detection and Elimination Strategy																		
2.3.1	MS4 Map	♦	♦	♦	♦	♦	♦	♦	♦	●	●	●	●	●	●	●	●	●
2.3.2	Ordinance	♦	♦	♦	♦	♦	♦	♦		●	●	●	●	●	●	●	●	●
2.3.3	Program to Detect and Eliminate Illicit Discharges	♦	♦	♦	♦	♦	♦	♦	♦	●		●	●	●	●	●	●	●
2.3.4	Dry-Weather Screening Program	♦	♦	♦	♦	♦	♦	♦	♦	●		●	●		●	●	●	●
2.3.5	Enforcement	♦	♦	♦	♦	♦	♦	♦	♦	●	●	●	●	●	●	●	●	●
2.3.7	IDDE Staff Training and Education	♦	♦	♦	♦	♦	♦	♦	♦	●	●	●	●	●	●	●	●	●
2.3.8	Services Related to Homelessness	♦	♦	♦	♦	♦	♦	♦	♦	●	●	●	●		●	●		●

Table 3. Pollutants Addressed by Stormwater Program Control Strategies

SECTION	MANAGEMENT STRATEGY	POLLUTANTS ADDRESSED								STRATEGIES SUPPORTED								
		Bacteria	Heavy Metals[1]	Nutrients	Toxic Organic Compounds	Sediment / Solids	Mercury	BOD	Temperature	Education & Outreach	Public Involvement & Participation	Illicit Discharge Detect/Eliminate	Erosion Control	Post-Construction (New, Re-Dev)	Post-Construction Long-Term O&M	O&M, Pollution Prevention	Industrial & Commercial	Ecosystems
Erosion Control for Construction Site Runoff																		
2.4.1	Ordinance	♦	♦	♦	♦	♦	♦	♦		•	•	•	•	•		•		
2.4.2	Erosion Control Plan Requirements & Plan Review	♦	♦	♦	♦	♦	♦	♦		•	•	•	•	•		•		
2.4.3	Construction Site Inspections	♦	♦	♦	♦	♦	♦	♦		•	•	•	•	•		•		
2.4.4	Enforcement	♦	♦	♦	♦	♦	♦	♦		•	•	•	•	•		•		
2.4.6	Erosion Control Education & Outreach	♦	♦	♦	♦	♦	♦	♦		•	•	•	•	•	•	•	•	•
2.4.7	Erosion Control Staff Training and Education	♦	♦	♦	♦	♦	♦	♦		•	•	•	•					
Post-Construction Site Runoff Strategy for New and Re-Development																		
2.5.1	Stormwater Management Manual	♦	♦	♦	♦	♦	♦	♦	♦		•		•	•	•	•		•
2.5.2	Ordinance	♦	♦	♦	♦	♦	♦	♦	♦		•		•	•	•	•		•
2.5.3	Post-Construction Site Runoff Plan Review	♦	♦	♦	♦	♦	♦	♦	♦	•	•	•	•	•	•	•	•	•
2.5.4	Stormwater Management Facility Installation Inspections	♦	♦	♦	♦	♦	♦	♦	♦	•		•	•	•	•	•	•	
2.5.5	Water Quality Benefit Offset Programs (Special Circumstances)	♦	♦	♦	♦	♦	♦	♦	♦				•	•	•	•		•
2.5.6	Post-Construction Program Outreach	♦	♦	♦	♦	♦	♦	♦	♦	•	•	•	•	•	•	•	•	•
2.5.7	Post-Construction Staff Training and Education	♦	♦	♦	♦	♦	♦	♦	♦	•	•	•	•	•	•	•	•	•
Post-Construction Long-term Operation & Maintenance																		
2.6.1	Ordinance	♦	♦	♦	♦	♦	♦	♦	♦	•	•	•	•	•	•	•	•	
2.6.2	Maintenance Inspection Strategy	♦	♦	♦	♦	♦	♦	♦		•	•	•	•	•	•	•	•	
2.6.3	Enforcement	♦	♦	♦	♦	♦	♦	♦		•	•	•	•	•	•	•	•	•
2.6.5	Long-term O&M Outreach & Assistance	♦	♦	♦	♦	♦	♦	♦		•	•	•	•	•	•	•	•	•
2.6.6	Long-Term O&M Staff Training and Education	♦	♦	♦	♦	♦	♦	♦		•	•	•	•	•	•	•	•	•

Table 3. Pollutants Addressed by Stormwater Program Control Strategies

SECTION	MANAGEMENT STRATEGY	POLLUTANTS ADDRESSED								STRATEGIES SUPPORTED								
		Bacteria	Heavy Metals[1]	Nutrients	Toxic Organic Compounds	Sediment / Solids	Mercury	BOD	Temperature	Education & Outreach	Public Involvement & Participation	Illicit Discharge Detect/Eliminate	Erosion Control	Post-Construction (New, Re-Dev)	Post-Construction Long-Term O&M	O&M, Pollution Prevention	Industrial & Commercial	Ecosystems
Pollution Prevention & Good Housekeeping Strategy for Municipal Operations																		
2.7.1	MS4 Inspection, Maintenance & Cleaning	●	●	●	●	●	●	●	●			●	●	●	●	●	●	
2.7.2	Stormwater O&M Staff Training and Education	●	●	●	●	●	●	●	●			●	●	●	●	●	●	
2.7.3	Roadways and Transportation	●	●	●	●	●	●	●					●		●	●		
2.7.4	Winter Operations and Maintenance Strategy		●	●		●	●	●								●		
2.7.5	Roadways and Winter O&M Staff Training and Education	●	●	●	●	●	●	●					●		●	●		
2.7.6	Integrated Pest Management: Pesticide and Fertilizer Use		●	●	●			●					●			●		●
2.7.7	IPM Staff Training and Education		●	●	●			●					●			●		●
2.7.8	Sewage Release Prevention	●		●		●	●	●		●		●	●	●		●		
2.7.9	Firefighting Training Activities	●	●	●	●	●	●	●				●			●	●		
Industrial and Commercial Facilities Strategy																		
2.8.1	Industrial Stormwater Program	●	●	●	●	●	●	●		●	●	●	●		●	●	●	
2.8.2	Industrial Stormwater Staff Training & Education	●	●	●	●	●	●	●		●	●	●	●		●	●	●	
2.8.3	Source Control Manual	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	
2.8.4	Commercial & Industrial BMP Outreach	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●

1. See separate column for Mercury.

3 MONITORING and EVALUATION

The City is required to develop and implement a monitoring program for the collection and analysis of stormwater, surface water and macroinvertebrate samples. The monitoring requirements and objectives are outlined in Schedule B of the MS4 permit.

Permit Schedule B.1

The City's Monitoring Plan describes the objectives, strategy, and procedures for the collection and analysis of stormwater, instream, and macroinvertebrate samples. Objectives include the evaluation of pollution sources, characterization of stormwater runoff quality, assessment of water quality trends in Portland waterways, pollutant load reduction evaluation, and adaptive management of our stormwater programs. The Monitoring Plan strategy includes both new and existing monitoring locations, sampling frequencies, updated pollutant parameters, analytical methods, quality control procedures, staffing resources, and a summary of field operating procedures.

3.1 Compliance Assessment and Reporting

Permit Schedule B.2 and B.3

The City conducts a self-evaluation of MS4 permit compliance on a regular basis, with ongoing compliance coordination conducted by the City's MS4 permit management team. A formal compliance assessment is completed at least once per year, documented in the Annual MS4 Compliance Report submitted to the DEQ on November 1. The formal assessment includes an evaluation of progress toward implementing the SWMP control measures, and actions to comply with any additional permit requirements, such as Schedule B monitoring components and Schedule D TMDL components.

The City has developed a process of continual improvement for assessing and vetting stormwater program controls. We evaluate funding sources and other structures and/or processes needed to meet MS4 permit requirements and protect water quality.

The City's SWMP has a strong foundation and has been updated over time to reflect evolving regulations and water quality conditions. The City developed and submitted its first MS4 SWMP Document in 1993. Since that time, regular evaluation and reporting have occurred every year. The history of the SWMP Document includes these milestones:

- Original 1993 permit application and proposed SWMP Document, followed by 1995 permit issuance.
- Permit renewal application in 2000.
- A 2006 Interim Evaluation Report.
- The 2008 permit renewal application.
- The 2015 permit renewal application.

A description of the adaptive management process conducted to assess the existing MS4 program and develop a proposed SWMP Document for the next permit term was included in the 2015 permit application. There was also information provided to support DEQ's

assessment of the City's comprehensive program with respect to compliance with the MEP standard.

Given the rigor of the City's ongoing self-evaluation and improvement process, and DEQ's subsequent review and approval of submittals, the City follows the established process to ensure continued compliance with the permit and the MEP standard.

City Compliance Evaluation Process

Planning, implementing, checking and corrective action are all essential components in the continual improvement of the program elements needed to sustain efficient and effective management of stormwater discharges. The purpose of the evaluation and update process is to ensure:

- Compliance with all aspects of the MS4 permit.
- Best available and practicable technologies and ideas are considered.
- The elements of the stormwater program that have an adaptive management component are meeting the MEP standard.
- Funding is available and sufficient.
- City leadership, elected officials, the community and DEQ are all on board.

The City engages in a review process following the end of each fiscal year to produce the annual report and also conducts a more comprehensive evaluation process at the end of the permit term in preparation of the permit renewal application. In addition to these formal reviews, the MS4 program collaborates throughout the year with other responsible City bureaus to assess the status of BMP implementation and identify if any adjustments are needed.

The City also works with its co-permittee, the Port of Portland, and other jurisdictions to discuss comprehensive program issues, identify potential opportunities for future coordination, and share information about permit term activities such as monitoring results that may inform the adaptive management process.

3.2 Program Review, Reporting and Adaptive Management

As described in the previous section, the City implements an annual adaptive management process that reflects the collective knowledge acquired from within City bureaus and through collaborative interactions with other jurisdictions, including DEQ, ACWA, peer MS4s, and other supporting organizations. The MS4 program collects information about SWMP implementation during the previous fiscal year from each responsible City bureau. As part of this process, and in accordance with MS4 permit requirements, the City produces an annual compliance report that describes SWMP implementation, including accomplishments, achievement of tracking measures, and progress toward key metrics. Compliance reports for each reporting period (July 1 to June 30) are submitted to DEQ each year by November 1st.

Information gathered for the annual compliance reports is used to conduct a thorough assessment of whether applicable BMP tasks have been implemented as planned or conclude that adjustments are needed to more efficiently and/or effectively achieve the desired outcomes. Progress toward or achievement of goals is also part of the review. The results of this adaptive management process are used to assess whether any program adjustments are needed to continue to reduce the discharge of pollutants from the MS4 to the MEP and to meet permit requirements.

In addition, the City produces an annual Monitoring Report summarizing results from stormwater and surface water quality sampling activities conducted throughout the year. An evaluation and summary of monitoring data is submitted along with the MS4 Annual Compliance Report. This evaluation includes a review of long-term water quality trends that may also be used to support adaptive management decisions.

The City understands the importance of well-documented compliance and a well-maintained record management system. An effective system ensures regulatory requirements and other commitments are met, any documentary evidence is easily available, and exposure to risk is reduced. As part of the annual review, the City evaluates the program documentation requirements and makes adjustments as needed to improve record-keeping and ensure complete and accurate reporting.

In addition to annual reviews, the City conducts a comprehensive adaptive management process at the end of each 5-year permit term. Results are used to identify proposed program modifications submitted as part of the permit renewal package. The process includes a review of

cumulative results of the annual adaptive management process and considers new areas of focus for the upcoming permit term. The City continues to self-evaluate and prioritize program elements using objective criteria based on effectiveness, local applicability, and availability of resources to assess the adequacy of the MS4 Program, and compliance with the MEP standard.

APPENDIX

APPENDIX A: SWMP DOCUMENT MODIFICATIONS

SWMP ADAPTIVE MANAGEMENT CHANGES

Date	Description of Change	Rationale
Nov. 1, 2024	Removed outdated appendices and initiated an effort to provide updated materials on the City's MS4 website.	Better ability to swap newer versions of reference materials.
Nov. 1, 2024	Re-organized reporting metrics and goals within tables at the end of each SWMP Document strategy.	Better readability and reporting.
Nov. 1, 2024	Strategy 2.1: Public Education and Outreach Removed references to specific social media brands, due to ongoing developments in that industry and associated use policies. Removed BES-specific metric related to "govdelivery" engagement rate, since the BES account was merged in with citywide account.	Provided in FY23 and FY24 annual reports.
Nov. 1, 2024	Strategy 2.1: Public Education and Outreach Replaced Pollution Prevention Outreach sub-strategy with Toxics Reduction Program.	Provided in FY23 and FY24 annual reports.
Nov. 1, 2024	Strategy 2.2: Public Involvement and Participation Revised permit term goal of 50,000 to 40,000 participants in Watershed Education and Stewardship activities.	Provided in FY23 annual report.
Nov. 1, 2024	Strategy 2.2: Public Involvement and Participation Removed Neighborhood to River listing under "Grants Programs."	Provided in FY23 annual report.
Nov. 1, 2024	Strategy 2.2: Public Involvement and Participation Removed description of the Community Engagement Initiative, which was successfully completed in FY24.	Provided in FY24 annual report.
Nov. 1, 2024	Strategy 2.3: Illicit Discharge Detection and Elimination Per Schedule A.3.c.v of the MS4 permit, the City implemented an updated risk-based methodology for the selection of priority dry-weather screening locations. A description has been added to Section 2.3.	Provided in FY23 and FY24 annual reports.
Nov. 1, 2024	Strategy 2.3: Illicit Discharge Detection and Elimination Published a new website with information about the City's IDDE environmental enforcement program. Description and link added.	Provided in FY24 annual report.
Nov. 1, 2024	Strategy 2.3: Illicit Discharge Detection and Elimination Began implementation of the BES homelessness strategy. Removed related metric.	Provided in FY24 annual report.

Date	Description of Change	Rationale
Nov. 1, 2024	Strategy 2.5: Post-Construction Runoff for New and Re-Development Finalized an update to the City's Stormwater Management Manual. Removed related metric.	Provided in FY24 annual report.
Nov. 1, 2024	Strategy 2.5: Post-Construction Runoff for New and Re-Development Included reference and link to new LID strategy.	Provided in FY23 annual report.
Nov. 1, 2024	Strategy 2.7: Pollution Prevention and Good Housekeeping for Municipal Operations Removed metrics related to internal O&M guidance.	Provided in FY24 annual report.
Nov. 1, 2024	Strategy 2.7: Pollution Prevention and Good Housekeeping for Municipal Operations Included an updated inspection prioritization system for MS4 inlets. Removed related goal.	Provided in FY24 annual report.
Nov. 1, 2024	Strategy 2.7: Pollution Prevention and Good Housekeeping for Municipal Operations Removed reference to residential street sweeping. Added metric for arterial sweeping frequency.	Provided in FY24 annual report.
Nov. 1, 2024	Strategy 2.7: Pollution Prevention and Good Housekeeping for Municipal Operations Completed metrics related to the PBOT Maintenance Environmental Handbook. Removed related goal.	Provided in FY24 annual report.

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