Annual Compliance Report No. 29

Fiscal Year (FY) 2023–2024

(July 1, 2023, to June 30, 2024)

National Pollutant Discharge Elimination System (NPDES)
Municipal Separate Storm Sewer System (MS4)
Discharge Permit No. 101314

Prepared for:

Oregon Department of Environmental Quality

Submitted by:

City of Portland
Port of Portland

Date:

November 1, 2024

CITY OF PORTLAND
ENVIRONMENTAL SERVICES

1120 SW Fifth Ave, Suite 613, Portland, Oregon 97204 ▪ Mingus Mapps, Commissioner ▪ Dawn Uchiyama, Director

November 1, 2024

Pablo Martos
MS4 Permit Manager
Oregon Department of Environmental Quality
700 NE Multnomah St, Suite 600
Portland, OR 97232

Dear Mr. Martos:

The City of Portland and the Port of Portland are pleased to submit the enclosed *NPDES Annual Compliance Report No. 29* for fiscal year 2023-24 (FY24). This report fulfills reporting requirements for the Portland Group's NPDES Municipal Separate Storm Sewer System (MS4) Discharge Permit No. 101314. It provides information about activities that were accomplished in accordance with the co-permittees' Stormwater Management Program (SWMP) Documents from July 1, 2023 through June 30, 2024. The report describes stormwater activities in accordance with MS4 permit requirements.

Each co-permittee's section of the report (Part I for the City of Portland and Part II for the Port of Portland) details the activities implemented, program status, and any initiated or proposed program changes. A Monitoring Report summarizing the monitoring activities and results is included as Part III.

Please email me at loren.shelley@portlandoregon.gov if you have any questions concerning this report.

Sincerely,

L. Shelley

Loren Shelley
MS4 Program Manager

cc: Andrea Matzke, Oregon Dept. of Environmental Quality
Blake Hamalainen, Port of Portland

Portland, Oregon
National Pollutant Discharge Elimination System
Municipal Separate Storm Sewer System Discharge Permit
Permit Number: 101314

ANNUAL COMPLIANCE REPORT

Fiscal Year 2023–2024
(July 1, 2023 – June 30, 2024)

We, the undersigned hereby submit this annual compliance report for the Municipal Separate Storm Sewer System Discharge Permit No. 101314, in accordance with Schedule B, Section 5 of that permit. We certify, as required by 40 CFR Section 122.22, under penalty of law, that this document was prepared under our direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on our inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of our knowledge and belief, true, accurate, and complete. We are aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Dawn Uchiyama Digitally signed by Dawn Uchiyama Date: 2024.10.18 15:31:01 -07'00'

Dawn Uchiyama
Director, Bureau of Environmental Services
City of Portland

10/18/24
Date

Kristina Kelchner

Kristina Kelchner
Chief Development Services Officer
Port of Portland

10/21/24
Date

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Executive Summary

This 29th *Annual Compliance Report* submitted to the Oregon Department of Environmental Quality (DEQ) fulfills reporting requirements for the National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Discharge Permit #101314 (referred to as the "MS4 permit" or "permit"). DEQ issued this permit to the City of Portland and the Port of Portland (the co-permittees) on September 15, 2021, and it became effective on October 1, 2021.

This report provides information about activities conducted by the co-permittees in accordance with their respective Stormwater Management Program (SWMP) Documents during fiscal year (FY) 2023–24, from July 1 through June 30, also referred to as the "reporting period," or FY24. It also includes a monitoring report that summarizes sampling and monitoring activities conducted during the reporting period (Part III). The co-permittees initially and independently submitted updated SWMP Documents to DEQ on November 1, 2022, in accordance with permit requirements. DEQ approved both the City's and the Port's SWMP Documents on December 16, 2022. The co-permittees each updated their respective SWMP Documents in the fall of 2024. The current SWMP Documents are available on the City and Port's respective public websites:

City of Portland: Municipal Separate Storm Sewer System Permit | Portland.gov

Port of Portland: Port of Portland - Environmental - Stormwater Management

The City of Portland continued implementation of all stormwater program elements described in the DEQ-approved SWMP Document during FY24. The City continues to experience ongoing challenges related to a slow economic recovery following the pandemic and a major restructuring of the City government. While the City continues to meet and exceed permit requirements, adaptive management of the SWMP may be ongoing.

The Port of Portland has been able to meet all SWMP targets during FY24. The Port also undertook a significant effort during this reporting year to update the Port's *Stormwater Design Standards Manual*. Updates were made to address permit requirements related to retention and prioritization of low impact development and green infrastructure. The Port's threshold for application of these requirements was also modified to match the

permit, and design storm calculations were revised using more recent rainfall data. The Port's SWMP Document was updated to reflect these changes. Additional SWMP updates were also made to add clarity related to water quality facility inspection and to reflect tasks that have been completed. A revisions log is provided as Attachment A in the SWMP Document. The Port expects to continue to implement activities listed in its updated SWMP Document throughout the permit cycle.

Accomplishments, challenges, and adaptive management of stormwater program implementation are noted in detail and discussed in each co-permittee's respective report if and where appropriate.

Permit History

DEQ issued the first MS4 permit to the City and other co-permittees (Port of Portland, Oregon Department of Transportation [ODOT], Multnomah County, Multnomah County Drainage District #1, Peninsula Drainage District #1, and Peninsula Drainage District #2) within the Portland urban services boundary (USB) on September 7, 1995. DEQ renewed the permit for a second permit term in March 2004 and subsequently revised and reissued that permit on July 27, 2005. For the second permit issuance, the three drainage districts were removed as co-permittees. The co-permittees submitted a permit renewal package to DEQ on September 2, 2008, and DEQ subsequently issued the third-term permit on January 31, 2011 (for this third permit issuance, Multnomah County was removed as a co-permittee and obtained its own individual permit). The co-permittees (City of Portland and Port of Portland) submitted a renewal package to DEQ on July 31, 2015, for the fourth permit term. The 2011 permit expired on January 30, 2016, and was administratively extended until the fourth term permit was reissued September 15, 2021, with an effective date of October 1, 2021.

Permit Areas

The permit areas for the co-permittees are as follows:

- **City of Portland:** Approximately 15,231 acres within the City's USB drain to the City's MS4.
- **Port of Portland:** The Port owns approximately 6,165 acres within the City of Portland's USB. Much of this property drains to the Port's MS4 and is regulated

by the MS4 permit. Port property includes (1) aviation, (2) marine, (3) industrial, and (4) undeveloped property.[1]

Program Coordination

The City and Port regularly coordinate to share information about program development and implementation, the effectiveness of best management practices (BMPs), monitoring, and other issues related to the MS4 permit. This coordination avoids duplication and promotes the cost-effective use of resources. To further ensure ongoing collaboration and efficiency, the City and Port have an intergovernmental agreement that allocates responsibilities and resources.

The City and Port also coordinate and address stormwater permit implementation issues with other jurisdictions in the state through the Oregon Association of Clean Water Agencies (ACWA). City and Port representatives participate in ACWA's water quality, stormwater, and groundwater committees.

Document Organization

The following table (Table E.1) outlines the organization of this annual report, with respect to the 2021 NPDES MS4 annual reporting requirements per Schedule B.3 of the permit.

The City's NPDES MS4 annual report is included in this document as Part I. The City included their TMDL Annual Report for FY24 with their NPDES MS4 annual report as Appendix A of Part I. The Port's NPDES MS4 annual report is included as Part II. The collective monitoring annual report is included as Part III.

[1] The Port's undeveloped properties within the USB include wetland and grassland mitigation sites; natural areas including West Hayden Island, which had not previously been reflected in the area calculation; and vacant tax lots.

Table E.1: NPDES MS4 Annual Reporting Requirements for Permit Year 29 (FY24)

	Location in Document	
	City of Portland	**Port of Portland**
a) Status of implementing SWMP elements, including progress in meeting Measurable Goals and program tracking and assessment metrics.	Part I, Section 2	Part II, Section 7.1.1 through 7.1.9
b) Summary of the adaptive management implementation and any changes or updates to programs made during the reporting year, including new BMPs.	Part I, Section 3	Part II, Section 8.0
c) Any proposed changes to SWMP program elements to reduce TMDL pollutants to the MEP.	NA	Part II-8.0
d) A summary of education and outreach and public involvement activities, progress toward or achievement of measurable goals, and any relevant assessment of those activities.	Part I, Section 2	Part II, Section 7.1.1
e) A summary of the number and nature of enforcement actions, inspections, and public education programs, including results of ongoing field screening and follow-up activities related to illicit discharges.	Part I, Section 2	Part II, Section 7.1.1 through 7.1.9
f) A list of entities referred to DEQ for possible 1200-Z NPDES general permit coverage based on co-permittee screening activities, a list of categories of facilities inspected, and an overview of the results of inspections of commercial and industrial facilities.	Part I, Section 2	Part I, Section 2
g) A summary of total stormwater program expenditures and funding sources over the reporting fiscal year, and those anticipated in the next fiscal year.	Part I, Section 1	Part II, Section 4.0
h) A summary of monitoring program results, including monitoring data that is accumulated throughout the reporting year and submitted in the DEQ-approved Data Submission Template and any assessments or evaluations of that data completed by the co-permittees or an authorized third party.	Part III	Part III and Part II, Section 6.1
i) Any proposed modifications to the Monitoring Plan necessary to ensure that adequate data and information are collected to conduct stormwater program assessments.	An updated Monitoring Plan was approved by DEQ on Dec. 16, 2022.	
j) An overview, as related to MS4 discharges, of concept planning, land use changes, and new development activities that occurred within the UGB expansion areas during the previous year, and those forecast for the following year, where such data is available.	Part I, Section 1	Part I, Section 1, and Part II, Sections 2.1 and 9.0
k) The details of all corrective actions implemented that are associated with Schedule A.1.b.iii during the reporting year.	NA	Part II, Section 9.0
l) Additional items per Schedule B.3.I that are due November 1, 2024. • Post-construction ordinance update.	Part I, Section 1[a]	NA

BMP=best management practice; DEQ=Oregon Department of Environmental Quality; MEP=maximum extent practicable; MS4=Municipal Separate Storm Sewer System; NA=not applicable; NPDES=National Pollutant Discharge Elimination System; SWMP=Stormwater Management Plan; TMDL=Total Maximum Daily Load; UGB=Urban Growth Boundary.

a. Additional deliverables are discussed in the Introduction portion of the City's report.

PART I
CITY OF PORTLAND

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List of Tables

Acronyms and Abbreviations

ACWA	Oregon Association of Clean Water Agencies
BDS	City of Portland Bureau of Development Services
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
CMOM	capacity, management, operations, and maintenance
DEQ	State of Oregon Department of Environmental Quality
EPA	U.S. Environmental Protection Agency
ESCM	Erosion and Sediment Control Manual
IDDE	Illicit Discharge Detection and Elimination
IGA	Intergovernmental Agreement
IPM	integrated pest management
ISW	Industrial Stormwater Program
LID	low-impact development
MIP	Maintenance Inspection Program
MS4	municipal separate storm sewer system
NEC	No Exposure Certification
NPDES	National Pollutant Discharge Elimination System
O&M	operations and maintenance
PBOT	City of Portland Bureau of Transportation
PCC	Portland City Code
PF&R	City of Portland Fire and Rescue
PP&D	Portland Permitting and Development
PP&R	City of Portland Parks and Recreation
ROW	right-of-way
SMF	stormwater management facility
SWMM	Stormwater Management Manual
SWMP	Stormwater Management Program
TIP	TMDL Implementation Plan
TMDL	Total Maximum Daily Load
UIC	underground injection control

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1 Introduction

This annual report fulfills reporting requirements of the City of Portland's National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Discharge Permit Number 101314. The report represents the City's Stormwater Management Program (SWMP) activities that occurred during the 2023 to 2024 fiscal year, from July 1, 2023, through June 30, 2024, and is thereby abbreviated as FY24.

The City's NPDES MS4 permit was renewed on September 15, 2021, and listed as effective on October 1, 2021. An updated SWMP Document reflecting the new permit requirements and updated reporting schedule was submitted to the Oregon Department of Environmental Quality (DEQ) on November 1, 2022. The SWMP Document was approved by DEQ December 16, 2022. In accordance with Schedule A.2.f. and as described in last year's annual report, an updated SWMP Document was prepared for the Fall 2024 submittal to DEQ. The permit, current SWMP Document, and associated reports are all available at the MS4 Permit page on the City's public website.

Many of the strategies and best management practices (BMPs) outlined in the City's SWMP Document are also conducted to fulfill obligations under the related Total Maximum Daily Loads (TMDLs) in effect for Portland-area waterways. BMP activities outlined in the City's 2023 *TMDL Implementation Plan* and conducted during FY24 are identified in this MS4 annual report if they pertain to stormwater-related pollutants. The City's *TMDL Implementation Plan* also describes additional activities related to temperature, and the *TMDL Implementation Plan* Annual Report is included with the MS4 annual report as Appendix A.

Annual reporting requirements related to program authority, urban growth expansion, and stormwater expenditures/funding sources are described in this section. Details about stormwater program activities conducted during the reporting period are detailed in Section 2. A summary and details of adaptive management changes are discussed in Section 3. Monitoring activities conducted pursuant to Schedule B of the permit are included in Part III of this report.

1.1 Program Authorization

Portland City Council passed a resolution in June 1995 supporting the City's NPDES MS4 permit application. In that resolution, the Bureau of Environmental Services (BES) was designated as the lead for the City's implementation of the MS4 stormwater program. The City continues to

maintain and update legal authority to implement the programs outlined in the SWMP Document, as originally demonstrated in Part 1 of the 1991 NPDES MS4 permit application.

1.2 Urban Growth Boundary Expansion Areas

There were no changes to the Urban Growth Boundary within the City's MS4 area during the permit year.

1.3 Stormwater Funding Sources

The Portland City Council approves revised stormwater monthly user fees and stormwater system development charges (SDCs) at the start of each fiscal year. Rate adjustments are based upon cost-of-service principles, thereby ensuring equity by charging ratepayers and developers according to the amount of sewer and drainage service they use. Visit the City/BES webpage for more information on the FY24 rate study process.

1.3.1 Stormwater Monthly User Fees

Monthly user fees are adjusted to reflect operating, maintenance, and capital costs of the City's sanitary sewer and drainage system. Table 1.1 reports the monthly single-family stormwater management charge and the monthly stormwater rate per 1,000 square feet of impervious area. Table 1.1 also includes the anticipated monthly stormwater management charge and stormwater rate for the next fiscal year (FY25).

The City completed a rate study with implementation beginning in FY25. The rate study produced several changes for stormwater charges:

- The term used for the rate per 1,000 square feet is now the "Stormwater Billable Area" (SBA), as opposed to the previous term "impervious area." These terms and others sewer charges are defined in Portland City Code (PCC) 17.36.020.
- The rate study added a new billing statistic to the stormwater charge, Equivalent Service Units (ESU), based on dwelling units for residential customers and stormwater billable area for non-residential customers to reflect impacts on the stormwater system that are not solely impacted by the built environment.
- Single dwelling customers are charged a tiered rate based on the SBA instead of a flat rate per dwelling.

1.3.2 Stormwater System Development Charges

Portland's SDCs are assessed for new development and significant redevelopment. All development projects that create a new or increased demand on the public sewer and drainage system are subject to SDCs. These charges are intended to promote equity between new and existing customers by recovering a proportionate share of the cost of existing and future capital facilities that serve or will serve the developing property.

Stormwater SDCs for residential and nonresidential development are based on the net increase of impact on the storm system using the measured square feet of stormwater billable area on a site. The City determines the stormwater SDC by multiplying the development's net increase of stormwater billable area by the then-current stormwater SDC rate. Table 1.1 summarizes the actual and anticipated SDC fees.

Table 1.1: Stormwater Management and SDC Charges and Rates

Stormwater Charges and Rates Per 30 Days Starting FY25 Prior year values have been adjusted to 30 days		**FY22***	**FY24****	**% Change from Previous Year*****	**% Change over Permit Term*****	**Adopted FY25********
	Single-Family Residential Charge – Standard	$30.02	$32.00	2.6%	6.6%	$38.59
	Residential Rate ($/1,000 SF of Stormwater Billable Area)	$12.51	$13.34	2.6%	6.6%	$13.68
	Nonresidential Rate ($/1,000 SF of Stormwater Billable Area)	$12.92	$13.91	3.3%	7.6%	$14.25
	Residential and Non-Residential Rate ($/Service Unit)	NA	NA	NA	NA	$5.76
SDC Charges and Rates		**FY22***	**FY24****	**% Change from Previous Year*****	**% Change over Permit Term*****	**Adopted FY25********
	Onsite Portion ($/1,000 SF of Stormwater Billable Area)	$263.00	$259.00	0.0%	-1.5%	$507.00
	ROW Portion ($/Linear Foot of Frontage)	$7.84	$8.36	0.0%	6.6%	$0.00
	ROW Portion ($/Vehicle Trips)	$4.36	$4.67	0.0%	7.1%	$0.00

NA=not applicable; ROW=right-of-way; SDC=system development charge; SF=square foot.

** FY22 rates were adopted May 2021.*

*** FY24 rates were adopted May 2023.*

**** % change from previous year is based on the difference in rates implemented between FY23 and FY24. % change over permit term is based on the difference in rates implemented between FY22 (start of the permit term) and FY24.*

***** FY25 rates were adopted March 2024.*

1.4 Stormwater Program Expenditures

The City of Portland has invested more than $2 billion in stormwater management services since the original MS4 permit was issued.

Revenue requirements for FY24 totaled approximately $178.1 million. In FY25, the City plans to invest $219.5 million in stormwater management services and facilities, which reflects the updated cost-of-service results. Direct monthly user fees will pay for 83.6% of these investments.

1.5 Additional Reporting Requirements

The City successfully completed the following additional items required by the permit to be submitted with the FY24 annual report, as described below.

1.5.1 Post-Construction Standards and Ordinance

Schedule A.3.e.iii of the permit states:

> *The co-permittees must, by November 1, 2024, develop and implement enforceable post-construction stormwater management requirements in ordinance or other regulatory mechanism that, at a minimum, prioritize onsite retention of stormwater and pollutant removal, and include technical standards according to either of the following options.*

Section 2.5 of the City's SWMP Document describes, in detail, a strategy for post-construction site runoff from new and redevelopment that meets the requirements as noted above in Schedule A.3.e.iii. The City's *Stormwater Management Manual* (SWMM) and associated ordinance, PCC 17.38, employs comprehensive low-impact development (LID) and green infrastructure (GI) design, planning, and engineering principles and policies that provide a hierarchy for stormwater retention and treatment, including the following:

- Numeric Stormwater Retention Requirement (NSRR): Hierarchy Level 1 requires retention of a 10-year, 24-hour storm event.
- In the MS4, if Level 1 of the hierarchy cannot be met (i.e., it is infeasible to infiltrate the 10-year, 24-hour storm event), then sites are required to treat the water quality design storm. Portland's water quality design storm is 90% of the average annual runoff.
- Treatment must be provided using a vegetated stormwater facility. If that is infeasible, a manufactured filtration system may be used. Any manufactured system must have Washington State Department of Ecology TAPE certification.

- Sites that discharge to surface water bodies, directly or through a piped system, are required to meet flow control standards for offsite discharges unless the receiving water body is large (e.g., Willamette River or Columbia Slough). The flow control standards include managing peak flows for half of the 2-year storm event, which is designed to mitigate impacts of hydromodification.

City staff ensure implementation of these requirements through extensive development plan review and site inspection procedures. In addition, Section 2.6 of the SWMP Document describes the enforcement program related to SWMM implementation and associated operations and maintenance requirements.

The City, therefore, has met the November 1, 2024, deadline to develop and implement an enforceable post-construction stormwater management strategy and associated ordinance that meets permit requirements, including the prioritization of onsite stormwater retention.

1.6 Adaptive Management

The City's formal adaptive management approach includes two key elements: (1) an **annual process** to ensure that the City's stormwater program is being implemented in accordance with the SWMP Document, to evaluate progress toward meeting metrics and milestones, and to assess whether any programmatic adjustments or modifications to the SWMP Document are needed; and (2) a **comprehensive process** submitted as part of the City's permit renewal package that includes the modification, addition, or removal of BMP strategies and associated metrics and milestones in the SWMP Document.

Adaptive management results from the FY24 annual process are described in Section 3 of this report, which includes necessary SWMP Document modifications identified.

2 Stormwater Management Program Activities

The City's SWMP Document includes detailed descriptions of strategies implemented to reduce the discharge of pollutants from the MS4 to Portland's waterways. It also includes reporting metrics (milestones) as well as other reportable items to align program activities with each strategy. Select reporting metrics are intended to be reported annually to evaluate trends and program effectiveness.

Annual reporting metrics and program activities for FY24 are outlined in Tables 2.1 through 2.8 in accordance with the following strategies as defined in the SWMP Document.

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

Metrics and other reportable items may be adjusted over time as new insights are gained and new goals are created, or in accordance with the City's adaptive management process (Section 3). Specific metrics and program activities subject to adjustment are identified in Tables 2.1 through 2.8 with a check in the Adaptive Management column.

Table 2.1: Public Education and Outreach Activities

Reporting Metric	2023–24 Activities	Adaptive Management
SWMP Strategy: 2.1.1 General Environmental Outreach		
Annual GovDelivery engagement rate	BES merged its GovDelivery account with City of Portland during FY24. The engagement rate metric (percentage of recipients that opened or clicked an email bulletin in a rolling 90-day period) is no longer available for only BES email bulletins. New citywide reporting methods measure individual contact responses, averaging 23% of recipients responding to outreach attempts. Previously, the engagement rate calculation counted engagement following multiple contact attempts, which resulted in a higher rate.	✓
Number of social media "likes"	BES received 586 likes/reactions on Facebook. The total is down 15% from the previous reporting period. Use of the BES Twitter (now X) account continues to be used only to disseminate urgent public advisory notifications.	
SWMP Strategy: 2.1.2 Clean Rivers Education Programs		
Number of education programs (onsite or virtual) delivered.	321 Clean Rivers Education programs were delivered to Portland-area students. Challenges related to program delivery are detailed below in accordance with the reporting metric below.	✓
Summarize challenges, accomplishments, and partnership highlights, including work done in concert with historically underserved students and schools	Clean Rivers Education developed equity-based metrics after consulting with regional educators to address BES's equity goal of delivering at least half of its programs to schools or organizations that meet any of the equity criteria described below. • Title I-funded schools. • Schools with over 50% of students participating in the federally assisted Free and Reduced Lunch program. • Schools with over 50% Combined Historically Underserved populations (only Portland Public School District publishes this data). • Community-based education organizations that center on the unhoused, communities of color, and/or culturally specific students. **Achievements** • During FY24, 60% of Clean Rivers Education programs were delivered to groups and schools meeting equity criteria. • During FY24, 85% of groups and schools receiving student field trip transportation funding met equity criteria. • Partnerships were developed with equity-priority organizations and BES staff from multiple teams to provide 11 career-connected learning field and classroom programs. Staff with expertise in natural area restoration, water quality monitoring, engineering, and stormwater and wastewater taught students about their work and career paths. • Continued community partnerships to engage elementary students and high school peer mentors in hands-on restoration of a local natural area. The program enabled high school students to complete graduation requirements while gaining valuable work experience. • Continued to partner with Portland Parks and Recreation's Nature Patch program to engage four schools with native planting projects in parks adjacent to schools. • With the BES Toxics Program Manager, a factsheet was developed on Mercury Pollution Prevention for students and families. The factsheet was provided to Portland Public Schools Sustainability Team for distribution and will be available on the Clean Rivers Education webpage. • Continued to develop web-based resources for educators for background information, student research, and curricular extensions. Recorded 2,355 Clean Rivers Education webpage page views by 985 users.	

Table 2.1: Public Education and Outreach Activities (continued)

Reporting Metric		2023–24 Activities	Adaptive Management
		Challenges • Classes were canceled for 1 month in Portland Public Schools, the City's largest school district, due to a teacher's strike that impacted scheduled Clean Rivers Education programming. • Clean Rivers Education programming was reduced during the first quarter of the fiscal year due to a staff member on leave. • While school bus transportation and driver shortages have improved, transportation requirements of roughly $15,000 in FY24 reflect the current state of elevated costs.	
SWMP Strategy: 2.1.3 Regional Clean Water Partnership			
	Description of annual participation efforts in regional clean water partnerships	**Clean Rivers Coalition.** The City participates in the statewide Clean Rivers Coalition, which uses funds from participating jurisdictions to support the "Follow the Water" public outreach campaign, providing the "why" for clean water, sharing water-related values, ties to Northwest cultural identity, and the importance of clean water to communities. The City's participation in FY24 included a $5,000 sponsorship contribution supporting website design and maintenance, outreach campaign tools, and digital advertising focusing on values-based storytelling and residential pesticide use reduction. **Regional Coalition for Clean Rivers and Streams.** The City participates in "The River Starts Here" campaign with other NPDES permit holders in the Portland metropolitan area to help residents make informed home and automobile care decisions that reduce stormwater pollution and improve watershed health. The campaign features local restoration and clean-up events, profiles of diverse local organizations, and tips for clean water around the home. The City's participation in FY24 included a $5,000 sponsorship to support online tools and community events. **KPTV 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, banner ads, and website content focusing on practical advice for implementing clean water practices such as alternatives to herbicide use and keeping storm drains clear. The PSAs air during KPTV news segments, and complementary information is posted on the KPTV Community webpages and shared via Facebook posts. The City participated in the development of messages and contributed $5,000 to this campaign in FY24. The PSAs aired throughout the year in the Portland metropolitan area.	
SWMP Strategy: 2.1.4 Household Waste & Recycling			
	Description of annual outreach related to household waste and recycling	During FY24, the following activities were conducted by the Portland Bureau of Planning and Sustainability (BPS) related to household waste and recycling: • Participated in citywide events, totaling 1,043 community interactions (conversations) across 23 events. • Mailed the annual newsletter *Curbsider* to approximately 190,000 residential homes in June 2024. The topics included what materials go in which bin (compost, recycling, and garbage), why compost food scraps, accepted and not accepted materials, instructions on how to handle "other wastes" (used oil, e-waste, etc.), collection schedules and reminders, and recycling and reuse options for bulky materials. • Provided weekly contacts to about 50,000 individuals (of the 190,000 households) through the garbage day reminder app.	

Table 2.1: Public Education and Outreach Activities (continued)

Reporting Metric	2023–24 Activities	Adaptive Management
SWMP Strategy: 2.1.5 Parks and Pet Waste (Pet Waste, Rangers, Stewardship)		
Description of annual education and outreach accomplishments regarding pet waste and other environmental activities	The Portland Parks & Recreation (PP&R) Land Stewardship Division installs and maintains pet waste signage throughout Portland-area parks and natural areas to remind visitors of the importance of scooping waste. PP&R Park Rangers perform education and outreach activities related to pets and pet waste in parks as part of general duties. Rangers regularly provide a positive presence in Portland-area parks and set up "Leave No Trace" booths at parks with high volumes of complaints related to pet activity, as well as at community events, fairs, and festivals. The Leave No Trace booths provide an easily understood framework of minimum impact practices for anyone visiting the outdoors, including picking up pet waste, being considerate of other visitors, and respecting wildlife. In FY24, due to increased staffing, Park Rangers made 8,562 contacts—about 23 per day—related to pets, pet waste, and off-leash animals. In these contacts, Rangers educated the individual(s) or issued a warning or citation as needed. To consistently inform community members about leash and scoop laws, Rangers place additional, temporary signage in areas where complaints increased about off-leash dogs. Park Rangers activities nearly doubled from last year.	
SWMP Strategy: 2.1.6 Pollution Prevention Outreach		
Description of annual Pollution Prevention and Toxics Reduction Outreach accomplishments	Portland BES maintains a Toxics Reduction Program, which focuses on source control and pollution prevention activities, including outreach and education. Program activities evolve based on BES needs. **Accomplishments** • Updated detailed BMP factsheets for industrial businesses that were posted on the City's website and available for distribution by other programs within the City. • Made technical contributions to a mercury minimization factsheet for use in school curricula. • Conducted internal educational webinars for staff on emerging contaminants. • Participated in and coordinated regional pollution prevention activities, such as an educational mailing of BMPs for regional carpet cleaners.	✓
SWMP Strategy: 2.1.7 Alternative Transportation		
Description of annual accomplishments related to Alternative Transportation	Portland Bureau of Transportation (PBOT) performed a number of activities during the reporting year related to alternative transportation: **Open Streets and Active Transportation** An open streets and active transportation engagement program engaged community members through bike rides, bike workshops, and events. The focus on bike rides and workshops was intentionally shifted to communities of color and people new to biking. There were over 60,000 attendees for three Sunday Parkways events. **Partnerships** PBOT partnered with various community organizations to offer Portlanders more transportation programming and information. AARP led 10 walks with a total of 347 walkers, and OPAL hosted a Bus Riders Unite program with travel workshops. PBOT hosted 13 community bike rides and 8 workshops to help educate and encourage the community to ride for daily trips. Through a mail marketing program, SmartTrips, and via partner organizations, PBOT distributed 35,105 Portland Walk & Bike Maps, helping to deliver climate-friendly travel information to many households.	

Table 2.1: Public Education and Outreach Activities (continued)

Reporting Metric		2023–24 Activities	Adaptive Management
		Ride Every Wednesday Campaign During FY24, PBOT hosted five neighborhood-scale community bike fairs that helped people new to biking connect with this transportation option. Events were held in partnership with schools and community organizations. During the events, 56 people learned to ride a bike for the first time or greatly improved their beginner riding skills. Each fair had a quick-fix station, and 94 bikes were repaired to good working order. **Transportation Wallet Access for All** Transportation Wallet is a program focused on offering a package of free transportation options, such as transit fare, bike or scooter-share rides, and ride-shares (Uber/Lyft) or taxi rides for people and households living on low incomes. The program is focused on reducing barriers to transportation such as cost, technology access, credit/debit card requirements, and low-income verification processes for different providers. During FY24, PBOT staff provided over 1,300 transportation wallets for people across 18 community partner organizations.	
SWMP Strategy: 2.1.8 City Leadership and Elected Officials			
	Description of annual education and outreach to City Leadership and Elected Officials	The BES MS4 Program Manager worked internally with delegates to inform City leaders and elected officials on storm and surface water regulatory requirements relative to the shift in City government and related organizational changes. A key part of this work was focused on natural resources management and the administration of associated regulatory drivers.	

Table 2.2: Public Involvement and Participation Activities

Reporting Metric	2023-24 Activities	Adaptive Management
SWMP Strategy: 2.2.1 Public Website		
Description of website activities.	BES continued to maintain the new MS4 program website and websites for associated strategies.	
SWMP Strategy: 2.2.2 Watershed Education and Stewardship		
Involve approximately 10,000 participants and volunteers in community events, workshops, stewardship projects, and restoration events annually	BES stewardship activities involved 11,908 participants and volunteers during the reporting period. **Accomplishments** Offered a wide variety of ways for Portlanders to participate, including paddling events, natural planting projects for students in natural areas and developed parks, trash clean-up and education for unhoused community members, and restoration events using Indigenous traditional ecological and cultural knowledge.	✓
SWMP Strategy: 2.2.3 Grants Programs		
Community Watershed Stewardship Program Grants Award at least $100,000 in grants annually (cumulative)	This program provided funding for eight projects with organizations including the Ethiopian and Eritrean Cultural and Resource Center, SOLVE, Black Men in Training, and Division Midway Alliance. Projects included activities such as education, restoration activities, and clean-ups. Funding was provided as follows: • Grants: $92,946 • Mini-grants: $7,500 • **Total grants: $100,446** In addition, the program provided funding for planting and clean-up events in all watersheds and in partnership with Columbia Slough Watershed Council, Johnson Creek Watershed Council, Westside Watershed Center, and Tryon Creek Watershed Council. BES also aligned with events such as Leach Back5 Project, Blueprint Mindfulness, Children's Clean Water Festival, PSU Oak Savanah, Slough Celebration and Explorando, and Vanport Spaces at Rose Cup Races, among many others.	
Neighborhood to the River (N2R) Grants Award at least $100,000 in grants annually (cumulative)	Provided funding for six projects with organizations, including Verde, Blueprint Foundation, Color Outside the Lines, Friends of Trees, and Portland Audubon. As reported in FY23, future N2R activities or reporting is not expected. • **Total grants: $90,981**	✓
Percent for Green Grants Award at least $100,000 in grants annually (cumulative)	Percent for Green Grants included stormwater facilities at Creston and Glencoe Elementary Schools and a street tree pilot in the curb zone in partnership with PBOT. • **Total grants: $1,648,321**	
Portland Harbor Community Grants Award at least $100,000 in grants annually (cumulative)	The Portland Harbor grant program awarded a total of $500,000 in community grants during FY24.	
SWMP Strategy: 2.2.4 Community Engagement Initiative		
Complete the evaluation of initial project phase results from the BES Community Engagement Initiative and include a summary in the third year *MS4 Annual Compliance Report* (due November 1, 2023)	The BES Community Engagement Initiative concluded in FY23, and future reporting of outcomes is not expected. In FY24, findings from the Fall 2022 BES Community Engagement Initiative supported extensive City-conducted outreach to gather feedback and refine recommendations for improving the way BES charges its customers. BES staff engaged with hundreds of individuals and organized more than 40 outreach events to residential, multi-family, commercial, and industrial customers and the broader community, including nonprofit and affinity organizations. Feedback revealed widespread support for many of the proposed changes (as outlined in Section 1), as well as opposition from some highly impacted communities. Input gathered will inform future decision-making.	✓

Table 2.3: Illicit Discharge Detection and Elimination (IDDE) Activities

Reporting Metric	2023–24 Activities	Adaptive Management
SWMP Strategy: 2.3.1 MS4 Map		
Maintain an MS4 map and digital inventory	The City continues to maintain and update a current MS4 digital inventory and map of MS4 assets. This is performed on a daily, ongoing basis. The map can be accessed via the BES MS4 website and via PortlandMaps.com.	
SWMP Strategy: 2.3.2 Ordinance		
Description of annual activities related to IDDE ordinances (Portland City Code [PCC] Chapter 17.39 and 17.32)	The City made a targeted update to PCC 17.32 to clarify enforcement and responsibility for damages to City assets (effective July 1, 2024). More comprehensive updates or revisions to PCC 17.32 and related administrative rules (ENB-4.22) are planned, and future revisions to PCC 17.39 are anticipated.	
SWMP Strategy: 2.3.3 Program to Detect and Eliminate Illicit Discharges		
Number of pollution complaints and inquiries received via the City's spill reporting hotline annually	The City's spill reporting hotline received 2,071 pollution complaints and/or inquiries. Out of this number, 788 warranted and resulted in further investigation, 211 were referred to other responsible parties, 644 were spill or illicit discharge-related, and 55 were related to erosion control concerns.	
SWMP Strategy: 2.3.4 Dry-Weather Screening Program		
Update dry-weather priority locations and strategy by November 2023	In FY24, BES finalized a new risk-based methodology for selecting priority locations for inspection as part of the dry-weather screening program. The new methodology expands the geographic scope of the program to include stormwater outfalls that have not been inspected in the past.	✓
Perform dry-weather screening inspections at 25% or more of all major and priority outfall locations annually	Fifty-eight outfall basins were inspected as part of FY24 dry weather field screening activities. Outfall basins include all outfalls defined under the 2011 permit as "major" outfalls, in addition to other locations prioritized by BES for special investigations, inspection history, or other factors. There was one potential illicit discharge identified at Outfall M2, where potassium levels exceeded action levels, which triggered metals analyses and a subsequent special basin investigation. The investigation revealed that a stormwater lateral discharged water at mercury levels above the Outfall Basin Inspection (OBI) program guidance threshold of 0.05 ug/L. An enforcement action required the property owner to discontinue their discharge, and after disconnection, continued flow was observed but determined to have no private source other than groundwater. The City chose to abandon the lateral and cap it at the curb.	✓
SWMP Strategy: 2.3.5 Enforcement		
Number of enforcement actions issued under PCC Chapter 17.39 annually	A total of 46 enforcement actions were issued under the City's Illicit Discharge ordinance (PCC 17.39), including violations issued by the following teams: BES Spill Response, BES Industrial Stormwater Program, and BES Industrial Permitting staff. Enforcement activities by type include: • Notice of Violation (NOV)*: 33 • Notice of Assessment of Cost (NOAC)*: 6 • Warning Notice (WN): 3 • Compliance Order (CO): 3 • Voluntary Compliance Order (VCO): 1 ** NOVs assess civil penalties and NOACs assess cost recovery.*	
Provide publicly available information about the current internal BES enforcement guidance by November 1, 2025	BES's Environmental Compliance Division created a new webpage with information about the City's enforcement process and how BES assesses violations and civil penalties (https://www.portland.gov/bes/environmental-enforcement). The webpage contains information on the purpose of enforcement, how to respond to an enforcement action, the appeals process, prevention of violations, and how to request a public record of an enforcement action. Links to the full content of Portland City Code and BES Program Administrative Rules are also provided.	✓

Table 2.3: Illicit Discharge Detection and Elimination (IDDE) Activities (continued)

Reporting Metric		2023–24 Activities	Adaptive Management
		The webpage was created to provide transparency to the public about the enforcement process and link to resources about the prevention of violations. Revised enforcement summary reports, including civil penalties and City cost recovery associated with individual enforcement actions, will be available on the webpage in the coming reporting year.	
	Number of associated penalties and costs assessed annually	Penalties and costs associated with violations of PCC 17.39 in FY24 as noted above were $32,905. The total penalty amounts do not include cases where the responsible party requested an administrative review and the case is still pending. Penalty amounts by type: • Civil Penalties (NOVs): $22,850 • Cost Recovery (NOACs): $10,053	
SWMP Strategy: 2.3.6 Data Tracking			
	Description of data tracking system(s)	The City continues to track implementation of IDDE activities via various databases (pollution complaint, enforcement, etc.) and geographic information systems. Data tracking and assessment is performed on a daily, ongoing basis.	
SWMP Strategy: 2.3.7 Staff Training and Education			
	Description of staff training activities	The OBI Program Lead provided training to the other BES staff that performed OBI inspections in June 2023. Training activities included: • Review of inspection documents, including the inspection form/Smartsheet form and the OBI Field Screening Guidance. • Overview of inspection locations. • Field meters overview and calibration requirements.	
SWMP Strategy: 2.3.8 Services Related to Homelessness			
	Provide annual summary, outlining challenges, accomplishes, and partnerships	The City continued to provide sewage pump-out services for individuals living in recreational vehicles (RVs) in rights-of-way (ROWs). The City now provides an email address as well as phone number for pump-out requests to serve more people. Additional promotional materials were produced through PP&R Park Rangers, the BES Spill Response Duty Officers, and third-party service providers. During FY24, BES and associated contractors performed 1,266 sewage pump-outs for RVs and collected 705 bags of trash. The BES Spill Response Program (SPCR) intake system received 108 calls/emails related to RV discharges and complaints of RV discharges or requests for information regarding the RV pump-out program. SPCR provided individual RV occupants referrals to the RV pump-out program and left a door hanger on RVs whenever possible.	
	Description of activities related to camp removal and clean-ups, garbage removal, and portable sanitation station deployment	The City collaborates with outside partner agencies to reduce the presence of garbage and debris in public spaces. During FY24, the following activities were conducted: • Cleaned up approximately 11.4 million pounds of garbage throughout the City of Portland. • Removed 6,500 campsites. • Completed over 42,000 campsite assessments. The City of Portland's average response time is 2.7 days between campsite reporting and assessment. All campsite assessments include the removal of garbage and debris. • Provided bathroom access (via portable hygiene stations). The City reduced the number of hygiene stations in public spaces to between five and 10 units during FY24. Units are placed based on the known presence of human waste in public spaces.	

Table 2.4: Erosion Control for Construction Site Runoff Activities

Reporting Metric	2023–24 Activities	Adaptive Management
SWMP Strategy: 2.4.1 Ordinance		
Description of annual activities related to Erosion Control Ordinance (PCC Title 10)	In 2022, Portland City Council adopted changes to the PCC Title 10: Erosion and Sediment Control Regulations, to bring erosion control policies up to current and best standards. These changes moved many of the provisions relating to specific requirements and standards from PCC Title 10 to the *Erosion and Sediment Control Manual* (ESCM) or the Erosion and Sediment Control Enforcement Administrative Rule. These changes help provide clarity, consistency, and ease of administration. Portland Permitting and Development (PP&D), formerly the Bureau of Development Services (BDS), began implementing the Erosion and Sediment Control Enforcement Administrative Rule on February 1, 2024. An enforcement fee and penalty schedule was implemented that adds escalating enforcement fees and fines for non-compliance with PCC Title 10 and the ESCM.	
SWMP Strategy: 2.4.2 Erosion Control Plan Requirements and Plan Review		
Number of construction/development permits issued annually	PP&D issued approximately 1,785 development permits that required Erosion and Sediment Control Plan review and inspection.	
Description of annual erosion control plan review activities	PP&D Site Development staff continued to review permit applications with ground-disturbing activities to determine if Erosion and Sediment Control Plan review and inspection are required. Staff reviewed submitted materials, which consist of either a graphical erosion control plan or the new Simple Site Erosion Control form, for compliance with the City's 2022 ESCM. Starting in January 2024, PP&D experienced a reduction in staffing, due to a decrease in construction activity. This resulted in a reduction of Site Development staff from five to four engineers.	
SWMP Strategy: 2.4.3 Construction Site Inspections		
Number of erosion control inspections performed annually	PP&D conducted approximately 3,474 erosion control inspections.	
SWMP Strategy: 2.4.4 Enforcement		
Number of enforcement actions issued annually	PP&D issued 41 enforcement actions for erosion control violations under PCC Title 10.	
SWMP Strategy: 2.4.5 Data Tracking		
Description of data tracking system(s)	The City continues to track implementation of the Construction Site Runoff program activities using a development permitting database system. Data tracking is performed on a daily, ongoing basis.	
SWMP Strategy: 2.4.6 Erosion Control Education and Outreach		
Description of Erosion Control education and outreach activities conducted annually	PP&D completed extensive education and outreach activities related to implementation of the Erosion and Sediment Control Enforcement Administrative Rule. Customer communications to describe enforcement procedures were made via direct notification and public postings. New digital inspection reports with photos were created for customers to increase compliance.	
SWMP Strategy: 2.4.7 Erosion Control Staff Training and Education		
Description of staff training activities	PP&D Erosion Control staff conducted internal trainings related to new digital inspection reports and enforcement fees.	

Table 2.5: Post-Construction Site Runoff for New and Redevelopment Activities

Reporting Metric	2023–24 Activities	Adaptive Management
SWMP Strategy: 2.5.1 Stormwater Management Manual (SWMM)		
Finalize a SWMM update by November 1, 2024. Maintain and update the SWMM to align with performance standard requirements in the MS4 permit.	BES completed substantive revisions to the *Stormwater Management Manual* (SWMM), conducted public outreach, and hosted an associated public comment period during FY24. Progress is underway for SWMM revisions to be adopted in early 2025.	✓
Conduct a technical evaluation of the current SWMM threshold related to new MS4 performance standards by June 30, 2024	BES completed a technical evaluation of the SWMM impervious area threshold. BES developed technical memos related to this evaluation and presented findings to the leadership team that ultimately supported a change to a standardized 1,000-square-foot impervious area threshold and removal of the impervious area threshold from City Code.	✓
SWMP Strategy: 2.5.2 Ordinance		
Description of annual activities related to post-construction ordinance (Portland City Code [PCC] Chapter 17.38).	City Council approved an update to the Post-Construction Ordinance (PCC 17.38) in July 2024. Changes were minor and included removal of the SWMM impervious area threshold from the PCC and deferral to the SWMM document itself. Changes went into effect October 1, 2024.	
SWMP Strategy: 2.5.3 Post-Construction Runoff Site Plan Review		
Annual number of SWMM-related permits/projects with constructed stormwater management facilities (SMFs) issued	Fifty-one development projects with constructed SMFs were implemented in the City's MS4 area during the reporting period (Citywide: 470 projects; MS4 area: 51 projects).	
Annual number of land use reviews conducted	A total of 295 environmental land use reviews were conducted during the reporting period.	
Annual amount of impervious area acreage managed by SMFs	Thirty-two acres of impervious area were managed by SMFs constructed in the MS4 area during the reporting period (Citywide: 145 acres; MS4 area: 32 acres).	
Description of annual SWMM plan review activities	All development-focused BES personnel were moved from BES to a new permitting bureau (Portland Permitting & Development, or PP&D) on July 1, 2024. This includes all land use review, building plan review, and public works permitting staff. This organizational change presented a challenge during FY24 due to the significant amount of work to plan for the change during the entire reporting period. It could be a challenge going forward as organizational connections to BES fade with time and due to potentially high rates of staff attrition, as the impacts of the organizational change continue to reverberate.	
Description of annual land use plan review activities	The City continued to conduct land use reviews. No significant challenges were identified during the reporting period.	
SWMP Strategy: 2.5.4 Stormwater Management Facility Installation Inspections		
Description of SMF installation inspections	City staff continued to conduct onsite inspections during the construction phase of development projects subject to the SWMM to assess and ensure proper installation of the approved site design and stormwater controls.	
SWMP Strategy: 2.5.5 Water Quality Benefit Offset Programs (Special Circumstances)		
Description of annual activities related to the Water Quality Benefit Offset Programs (Special Circumstances)	No significant accomplishments or challenges are reported for Water Quality Benefit Offset Programs (Special Circumstances).	

Table 2.5: Post-Construction Site Runoff for New and Redevelopment Activities (continued)

Reporting Metric		2023–24 Activities	Adaptive Management
SWMP Strategy: 2.5.6 Post-Construction Program Outreach			
	Description of SWMM-related education and outreach activities conducted annually	The City worked to prepare for a public comment period in July and August 2024 to provide education and outreach about the upcoming SWMM revision. Activities included web materials and two public information sessions.	
SWMP Strategy: 2.5.7 Post-Construction Staff Training and Education			
	SWMM Administration Description of staff training activities	SWMM implementation staff attended trainings including: • Portland Sustainable Stormwater Symposium in Fall 2023. • Ongoing peer learning circles hosted by the Green Infrastructure Leadership Exchange. • Oregon Association of Clean Water Agencies Stormwater Symposium. • Environmental Law Institute webinars on the Clean Water Act and Endangered Species Act.	
	SWMM Development Plan Review Description of staff training activities	No specific training activities for the Development Plan Review Team plan reviewers are reported.	
	Land Use Plan Review Description of staff training activities	No specific training activities for Land Use Review Team plan reviewers are reported.	
SWMP Strategy: 2.5.8 Data Tracking			
	Description of data tracking system(s)	Continued to track implementation of the Post-Construction Site Runoff program activities via the development permitting database and related systems. Data tracking is performed on a daily, ongoing basis.	

Table 2.6: Post-Construction Long-Term Operation and Maintenance Activities

Reporting Metric		2023–24 Activities	Adaptive Management
SWMP Strategy: 2.6.1 Ordinance			
	Description of annual activities related to Post-Construction Ordinance (Portland City Code [PCC] Chapter 17.38)	City Council approved an update to the Post-Construction Ordinance (PCC 17.38) in July 2024. Changes were minor and included removal of the SWMM impervious area threshold from the PCC and deferral to the SWMM document itself. Changes went into effect October 1, 2024.	
SWMP Strategy: 2.6.2 Maintenance Inspection Strategy			
	Number of private stormwater management facilities (SMFs) inspected	A total of 2,102 SMFs were inspected by the BES Stormwater Facility Inspection Team, formerly the Maintenance Inspection Program (MIP).	
	Number of new SWMM Operations and Maintenance (O&M) Agreements	A total of 232 new SWMM Operations & Maintenance (O&M) Agreements for SMFs were recorded.	
	Number of SMFs covered by new O&M Agreements	A total of 519 new SMFs were installed and covered by O&M Agreements.	
SWMP Strategy: 2.6.3 Enforcement			
	Number of corrective actions required and/or enforcement actions issued	The Stormwater Facility Inspection Team issued a total of 417 enforcement actions during the reporting period, including: • 409 Corrective Actions • 3 Notices of Violation • 5 Warning Notices	
SWMP Strategy: 2.6.4 Data Tracking			
	Description of data tracking system(s)	The Stormwater Facility Inspection Team continued to track implementation of the long-term O&M program activities via an asset management database. Data tracking is performed on a daily, ongoing basis.	
SWMP Strategy: 2.6.5 Long-Term O&M Outreach and Assistance			
	Description of SMF-related education and outreach activities conducted annually	The following outreach activities were conducted during FY24: • A total of 1,692 maintenance reminders were mailed to single-family homeowners with vegetated SMFs. This is done on an annual basis for those properties with O&M agreements. • 997 mailers were sent to residents and owners of shared SMFs, located on private streets, condominium associations, homeowner associations (HOAs), and multi-family complexes. The mailer is largely informational and provides information on the shared ownership and responsibility for maintenance of various types of SMFs, both vegetated and structural. The team worked with BES Communications to develop new web content focused on providing maintenance guidance for vegetated SMFs. The new web material is live, and new content is being considered for the near future.	

Table 2.6: Post-Construction Long-Term Operation and Maintenance Activities (continued)

Reporting Metric	2023–24 Activities	Adaptive Management
SWMP Strategy: 2.6.6 Long-Term O&M Staff Training and Education		
Description of staff training activities	The Stormwater Facility Inspection Team staff continued training on new asset management software for tracking SMFs and associated O&M activities and in-field inspection software for tracking inspection activities. Two staff also attended the bi-annual Sustainable Stormwater Symposium. This local symposium highlights the most current research, studies, and program implementation of sustainable stormwater strategies. Other internal training and education occurred between groups in informational sessions, including: • BES Development Review: Understanding the Permit Process. • Clean River Rewards: Updates on rate structure and impacts to program. • Review of changes to the 2024 SWMM. Additional safety and awareness trainings provided skills and knowledge important to the inspection program, including: • Confined Space Entry-Competent Person, for opening lids to confined spaces during inspections. • De-Escalation and Navigating Challenging Conversations, to help inspectors identify aggressive situations and learn tools and methods of de-escalation.	

Table 2.7: Pollution Prevention and Good Housekeeping Activities for Municipal Operations

Reporting Metric	2023–24 Activities	Adaptive Management
SWMP Strategy: 2.7.1 MS4 Inspection, Maintenance, and Cleaning		
Evaluate the feasibility of a risk-based inspection and maintenance schedule for inlets in accordance with permit Schedule A.3.f.ii. during the permit term	BES continued testing and refining a new inlet inspection process to support the goal of inspecting MS4 inlets using a risk-based approach during the 5-year permit period.	✓
Number of inspections, cleanings, and/or repairs by asset type	The following maintenance activities were conducted during FY24: • Storm inlets: 13,021 inspections/cleanings (56,236 total assets). • Storm culverts and pipes: 6 miles inspected, 4 miles cleaned (447 total miles). • Trash racks: 1,615 inspections and cleanings (325 assets). • Green streets: 2,595 inspections and 6,300 cleanings (2,572 green street assets). • Water quality facilities (other than green streets): 132 inspections/cleanings (4,344 assets). • Stormwater conveyance ditches: No value provided. *Note: The asset inventory and reported numbers have not yet been delineated by MS4, underground injection control, or combined sewer area.*	
SWMP Strategy: 2.7.2 SW O&M Staff Training and Education		
BES Stormwater Maintenance Engineering Description of staff training activities	No specific training activities are reported during the period. Field crews were focused on safety-related training and community hazards.	
BES Green Stormwater Infrastructure Description of staff training activities	• All new green stormwater infrastructure (GSI) O&M staff receive comprehensive onboarding and training in the months after hiring, with one senior GSI O&M staff person designated as trainer and at least one "onboarding buddy" to assist. Similarly, when contracted service vendors (contractors) hire a new employee, GSI O&M staff provide initial training and ongoing oversight to ensure that their work conforms to expected standards and contract specifications. • GSI O&M staff also uses semi-monthly Lunch & Learn field sessions and occasional "summits" in the office for all staff to gather to review topics, share information, and discuss ideas for future improvement. Lunch & Learn topics during the reporting period included parcel-based new facility construction, condition assessment inspections, parcel-based water quality facility management, unique project (New Columbia) history, soil subsidence capital repair, and management and rehabilitation of problematic facilities. Summits included green street design and construction, facility rehabilitation and replanting, stormwater facility easements, and plant and tree species review. • GSI O&M staff received technical training to support the transition from Hansen Mobile Solutions to Infor Field Inspector, a new application for interfacing with Infor Public Sector from the field. • Multiple GSI O&M staff are active in the Green Infrastructure Leadership Exchange (giexchange.org), participating in monthly peer learning sessions for asset management, innovations in design, and maximizing GSI performance. • Most GSI O&M staff attend the annual Urban Ecology and Conservation Symposium (uercportland.org/symposia) hosted by the Urban Ecological Research Consortium at Portland State University. • Several GSI O&M staff hold an Oregon Department of Agriculture (ODA)	

Table 2.7: Pollution Prevention and Good Housekeeping Activities for Municipal Operations (continued)

Reporting Metric	2023–24 Activities	Adaptive Management
	public pesticide applicator license and must attend trainings to earn recertification credits. Multiple GSI O&M staff attend the annual Four-County Cooperative Weed Management Area's "Pull-Together" event, an opportunity for ODA recertification credits or learning about emerging issues and species of concern for invasive plant management in the Portland metro region. • All GSI O&M staff must stay current with training for work-zone traffic control to ensure safe implementation of maintenance activities in the right-of-way (ROW). Roadway worker protection trainings are hosted as needed, such as for new hires or expiring certifications. • GSI O&M received training in effective communication and de-escalation to foster safer interactions with members of the community, including those that may be struggling with houselessness, mental health issues, or drug abuse.	
PBOT Maintenance Operations Description of staff training activities	PBOT Maintenance Operations staff that conduct stormwater O&M activities received training on general and specific safety procedures related to their work. They also received specific training on chemical safety and hazard communications and proper ditching techniques to maintain the stormwater conveyance system in the ROW. These trainings are conducted annually.	
SWMP Strategy: 2.7.3 Roadways and Transportation		
Street sweeping frequency by major roadway type	Arterial roadways were swept five to six times during the reporting period.	✓
Amount of material removed from City roadways (tons or cubic yards)	A total of 3,672 tons of material was removed from ROWs. A total of 928 cubic yards of material was removed from cleaning of storm inlets and catchbasins.	
Initiate review of the PBOT *Maintenance Environmental Handbook* by June 30, 2024, and report progress thereafter	PBOT staff reviewed the PBOT *Maintenance Environmental Handbook* and identified possible minor updates. No substantive updates were identified.	✓
SWMP Strategy: 2.7.4 Winter O&M Strategy		
Deicing and anti-icing materials used annually	During the FY24 winter season (November to April), the following volumes of deicing materials were used: • Magnesium chloride anti-icing liquid (99,794 gallons). • Salt during snow events (2,658 cubic yards).	
Number of winter weather events where deicing and/or anti-icing material was used annually	During FY24 winter season (November to April), deicing and/or anti-icing material was applied as follows: • Magnesium chloride was placed on roadways during 26 shifts (8-hour work periods). • Salt was deployed during three snow events.	
Quantities and general location(s) of materials used (e.g., estimates of salt used based on route distance annually)	Salt and anti-icing material are placed only on pre-approved routes by PBOT during the winter period as needed. Routes account for potential impacts to waterbodies. • Magnesium chloride is applied at a rate of 30 gallons/lane mile to prevent bonding of ice onto the roadway. • Salt is applied at a rate of 200 tons per lane mile to break up ice and prepare surfaces for plows.	
SWMP Strategy: 2.7.5 Roadways and Winter O&M Staff Training and Education		
Description of staff training activities	PBOT conducts training for winter operations field staff annually in October. The refresher includes snow-fighting techniques, best management practices, equipment use, and safety.	

Table 2.7: Pollution Prevention and Good Housekeeping Activities for Municipal Operations (continued)

Reporting Metric		2023–24 Activities	Adaptive Management
SWMP Strategy: 2.7.6 Integrated Pest Management: Pesticide and Fertilizer Use			
	Description of annual activities related to the Integrated Pest Management (IPM) Program	Portland Parks & Recreation (PP&R) received a Salmon Safe recertification in the fall of 2023.	
SWMP Strategy: 2.7.7 IPM Staff Training and Education			
	Description of staff training activities	PP&R offered two recertification training opportunities to pesticide applicators. Trainings award 12 CEUs toward an Oregon Department of Agriculture pesticide license. IPM overview training is delivered to new employees and seasonal maintenance workers.	
SWMP Strategy: 2.7.8 Sewage Release Prevention			
	Description of relevant sewage release prevention activities	Portland's capacity, management, operations, and maintenance (CMOM) program ensures that components of the collection system are cleaned and inspected at the right frequency. The program also ensures that preventive maintenance and repairs are performed to cost-effectively reduce the number of sewer releases, extend the useful life of the City's sewer infrastructure, and properly manage collection system operations. BES' CMOM program accomplishments can be referenced in Section 3.1 of the FY24 CSO and CMOM annual report. A summary of accomplishments for FY24 include: • Inspection of 0.71 million feet (134 miles) of sewer pipe, or about 7.0% of the mainline sewer system. • Cleaning of 1.14 million feet (216 miles) of sewer pipe, or about 11.2% of the mainline sewer system. • Mainline sewer maintenance repairs on 5,303 feet of pipe; 42% of the repairs were in response to collection system problems. • Repair of 5,264 feet of service laterals; 74% of those repairs were in response to discovered problems. • Treatment of nearly 283,950 feet (54 miles) of sewer pipe for roots using chemical root foaming. • Completion of 45 inspections of maintenance holes considered to be at greatest risk of failure. • Completion of five capital improvement program (CIP) projects repairing and rehabilitating portions of 12 sanitary combined gravity mainlines during the 2023 calendar year, resulting in an estimated risk reduction of $1.6 million. Maintenance activity on sanitary mainlines and service laterals also resulted in an estimated risk reduction of $6.1 million.	
SWMP Strategy: 2.7.9 Firefighting Training Activities			
	Description of pertinent activities related to firefighting training facilities	No relevant activities to report.	

Table 2.8: Industrial and Commercial Facility Activities

Reporting Metric	2023–24 Activities	Adaptive Management
SWMP Strategy: 2.8.1 Industrial Stormwater Program		
Number of 1200-Z/A permits administered	The BES Industrial Stormwater Program (ISW) administered 232 1200-Z/A NPDES Industrial Stormwater Discharge Permits under an Intergovernmental Agreement with the Oregon Department of Environmental Quality (DEQ) during the reporting period. ISW copies DEQ on all notifications to facilities that are required to obtain permit coverage.	
Number of 1200-Z/A site inspections	ISW conducted 225 site inspections of 1200-Z/A permitted facilities. Sites that applied for permit termination during the reporting year may not have received an inspection.	
Number of 1200-Z/A violations with enforcement actions	The following 1200-Z/A permit violations were identified by ISW and resulted in enforcement actions: • 304 total violations • 44 pre-enforcement referral notices • 156 warning letters • 104 warning letters with opportunity to correct	
Number of non-permitted site inspections	ISW conducted 57 inspections of nonpermitted sites	
Number of No Exposure Certifications (NECs) issued/reissued	ISW issued or reissued 31 NECs.	
Number of new City-required Source Control Plans approved	ISW approved five Source Control Plans: • Three Industrial Stormwater Source Control Plans • Two Spill Response Source Control Plans	
Conduct 30 inspections of nonpermitted sites per year	ISW achieved the milestone of at least 30 inspections at nonpermitted sites.	
Inspect NEC sites upon or prior to the 5-year NEC expiration date	ISW met the target to inspect NEC sites by the expiration date. Nonpermitted site inspection rates/counts were lower due to onboarding and training of new staff.	
SWMP Strategy: 2.8.2 Industrial Stormwater Staff Training and Education		
Description of staff training activities	The following internal training activities were given to all ISW staff: • Portland City Code 17.39, specific to ISW. • Designation and processing of "Under Staff Review" sites requiring stormwater follow-up to determine applicable regulatory oversight • Response to sediment track-out to the right-of-way The following internal trainings were given to ISW Permit Managers: • Discharge Monitoring Report refresher training to ensure comprehensive and consistent compliance reviews. • Tier 2 Corrective Action Report review refresher • Monitoring database entry QA/QC methodologies ISW onboarded four new teammates via promotion or new hires. All teammates received extensive training about rules and regulations, program processes and procedures, and extensive inspection job shadowing, playing both shadow and lead. The following training was conducted outside of ISW and BES: • Two team members took a 4-day Environmental Enforcement training • Two took a Qualified Industrial Stormwater Inspector certification course • Six attended the Northwest Environmental Business Council Managing Stormwater in Oregon conference	

Table 2.8: Industrial and Commercial Facility Activities (continued)

Reporting Metric	2023–24 Activities	Adaptive Management
SWMP Strategy: 2.8.3 Source Control Manual		
Description of annual activities related to the *Source Control Manual*	BES continued to implement the *Source Control Manual* during FY24. There was no activity during the period to update the manual.	
SWMP Strategy: 2.8.4 Commercial and Industrial BMP Outreach		

Description of Groundwater Protection Program education and outreach activities conducted annually	The following outreach activities were conducted by the Portland Water Bureau to advance the reach of the Groundwater Protection Program:
	• Provided multiple new language translations of the free spill response sign, now available in English, Spanish, Russian, Mandarin and Vietnamese.
	• Provided technical assistance to 40 businesses within the Columbia South Shore Wellhead Field (CSSWF).
	• Supported a groundwater protection workshop for approximately 20 businesses that included spill control content.
	• Observed increased demand for Spanish-language signage:
	  ▪ Spill kits (5)
	  ▪ Spill response signs (18)
	• Maintained the City of Portland and Columbia Corridor Association webpages on the Groundwater Protection Program with information for businesses and residents.
	• Conducted 148 site inspections for compliance with CSSWF Wellhead Protection Area requirements.	

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3 Adaptive Management

Adaptive management is a structured, iterative process designed to refine and improve stormwater programs over time by evaluating results and adjusting actions based on what has been learned.[2] Simply stated, it is *learning by doing*. It identifies when program strategies, activities, BMPs, and the like should be examined more deeply and adjusted where needed.

The MS4 Permit states that "co-permittees must continue to implement, adaptively manage, and enforce the Stormwater Management Program (SWMP) designed to reduce pollutants from the MS4 to the Maximum Extent Practicable (MEP), to protect water quality and to satisfy the appropriate water quality requirements of the Clean Water Act."[3] The U.S. EPA intentionally did not provide a precise definition of MEP for MS4 permitting to allow maximum flexibility on a location-by-location basis. Among the factors to be considered in an MEP evaluation include "specific local concerns … MS4 size, climate, implementation schedules, current ability to finance the program … and capacity to perform operation and maintenance."[4]

The City's formal adaptive management approach includes two key elements:

(1) An **annual process** to ensure that the City's stormwater program is implemented in accordance with the SWMP Document, to evaluate progress toward meeting metrics and milestones, and to assess whether any programmatic adjustments or modifications to the SWMP Document are needed; and

(2) A **comprehensive process** submitted as part of the City's permit renewal application package that includes the modification, addition, and/or removal of BMP strategies and associated metrics and milestones in the SWMP Document.

The adaptive management process can result in updates to the stormwater management program or amendments to the SWMP Document as necessary.

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[2] Schedule D.4.a, *Definitions*, 2021 MS4 NPDES Permit.

[3] Schedule A.1.a.

[4] U.S. EPA. "National Pollutant Discharge Elimination System—Regulations for Revision of the Water Pollution Control Program Addressing Storm Water Discharges." Vol. 64 Fed. Reg. 68722 (December 8, 1999). https://www.govinfo.gov/content/pkg/FR-1999-12-08/pdf/99-29181.pdf.

As allowed in Schedule A.2.f of the MS4 Permit, the City may update actions and activities described in the DEQ-approved SWMP Document for adaptive management purposes. In accordance with the permit, the following sections provide the analysis, rationale, and discussion for needed adjustments to the City's SWMP and specifics about modifications to the SWMP Document. The details discussed below relate to the annual process, as described, for both the reporting period (FY24) and the current period (FY25).

3.1 Evaluation

As reported in last year's (FY23) *MS4 Annual Compliance Report,* the City of Portland continues to face challenges due to economic conditions but also significant opportunities for programmatic efficiencies, effectiveness, and innovation. Portland is in the process of a complete restructuring of City government to be implemented by January 1, 2025.[5] While BES oversees the City's MS4 Permit, multiple City bureaus implement the SWMP.

The City continues to meet or exceed MS4 Permit requirements. However, limited funding, combined with increased expenses and the need for new investments in aging and failing infrastructure, means that City and individual bureau budget reductions and re-allocations will occur at levels that may affect stormwater programs. At the same time, new opportunities and efficiencies will likely be gained from City reorganization, new leadership, and an integrated "One Water" approach, as described below. In addition to those reported last year, the following events and dynamics may prompt additional SWMP and SWMP Document modifications:

- Continued spending of significant money to address the local humanitarian crisis of homelessness, including higher personnel costs due to historic rates of overtime in emergency response bureaus.
- Economic factors such as inflation that continue to affect City project and staffing costs and partnerships with external partners. For example, Portland Public Schools, the City's largest school district, had classes canceled in late 2023 due to a teacher's strike, impacting Clean Rivers Education programming.
- Overhaul of the City's governance structure, which involves re-allocating funding and resources from individual bureaus to support, in part, new positions. On November 1, 2023, City Council approved an organizational chart to unify bureaus, programs, and services under the leadership of a City Administrator. Organized by service areas, the new model establishes key leadership positions and realigns core services to operate

[5] City of Portland government transition overview: https://www.portland.gov/transition/overview.

efficiently and effectively.[6] The structure went into effect on July 1, 2024, to allow the City to learn how to best work in the structure before the formal change in the voter-approved form of government, which will take effect on January 1, 2025. The FY25 adopted budget spans both forms of government with the current Council executing the first half of the fiscal year and the newly elected Mayor executing the second half of the fiscal year.[7]

- Restructuring of City government and creation of a Citywide department of infrastructure bureaus that will likely present opportunities to achieve better environmental outcomes. During the fiscal year, BES became part of the new Public Works Service Area, along with the Water Bureau and the Bureau of Transportation. The service area is now managed by a Deputy City Administrator who is leading an effort to assess the feasibility of a "One Water" model. The objective is to determine if integrating water management systems is practical and beneficial for enhancing sustainability, efficiency, and resilience in managing water resources for Portland. This is a high-level study including technical analysis, financial evaluation, regulatory and legal review, risk assessment for future phases.
- Exploration of the EPA-supported concept of Effective Utility Management, or EUM. EUM is an approach for building and sustaining the technical, managerial, and financial capacity of the drinking water, wastewater, and stormwater systems.[8] This effort, along with the related "One Water" model mentioned above, could prompt both large- and small-scale changes to the City's stormwater programs and how they are organized to improve alignment and collaboration.
- Implementation of a BES rate increase to address higher costs over the next few years that are related to environmental remediation, deferred capital investment, increased capital construction costs, as well as commitments to other large projects, including the Columbia Boulevard Wastewater Treatment Plant Secondary Treatment Expansion Project and Tryon Creek Wastewater Treatment Plant.[9] However, due to the change in the form of government, there is uncertainty whether adequate rate increases will be approved in the FY26 budget and beyond.

[6] City of Portland organizational highlights: https://www.portland.gov/transition/government/city-organization#toc-organizational-structure-highlights.
[7] City of Portland FY 2024-25 Adopted Budget: https://www.portland.gov/cbo/2024-2025-budget/development/adopted.
[8] EPA Effective Water Utility Management Practices: https://www.epa.gov/sustainable-water-infrastructure/effective-water-utility-management-practices.
[9] See footnote 7.

- FY25 adopted budget support of approximately $14.1 million per year from the Portland Clean Energy Community Benefits Fund (PCEF) for stormwater management services that support carbon sequestration. With PCEF support, BES can mitigate increased pressure on ratepayer funds. The adopted budget contains two program areas receiving PCEF support: (1) Watershed, Natural Systems, Restoration, and Biological Sciences and (2) Stormwater Management, Blue/Green Infrastructure, and Revegetation. The programs total $14.1 million per year for stormwater management and regulatory compliance that connect directly to the City Climate Emergency Workplan.[10]

3.2 SWMP Modifications

Table 3.1 lists near-term modifications of the City's SWMP and SWMP Document based on an adaptive management evaluation of the reporting period (FY24) and information known to-date about the current period (FY25).

[10] I*d.* at 474. It is important to note that this funding currently does not include inflationary cost increases.

Table 3.1: Adaptive Management

	Item	SWMP Document Modifications
Strategy 2.1 Public Education and Outreach		
Substrategy 2.1.1 General Environmental Outreach		
	Annual GovDelivery engagement rate	BES merged its GovDelivery account with the City of Portland's main account during the FY24 reporting period. The engagement rate goal listed in the SWMP Document, specifically the reporting metric of the percentage of recipients that open or click an email bulletin in a rolling 90-day period, will likely need to be removed or modified due to the inability to filter for BES-specific results.
Substrategy 2.1.2 Clean Rivers Education Programs		
	Number of education programs (onsite or virtual) delivered	Potential modification: Milestones may need to be revised due to external forces that continue to affect public schools and, therefore, the BES Clean Rivers Education program. These external forces include the teacher's strike in 2023, bus transportation shortages, ongoing pandemic challenges for schools, and related circumstances that were unforeseen at the time of SWMP development.
2.1.6 Pollution Prevention Outreach		
	Description of annual P2O accomplishments	Last year's *MS4 Annual Compliance Report* described the discontinuation of the City's participation in the P2O/EcoBiz program. This Public Education and Outreach substrategy will be replaced by BES's Toxics Reduction Program, which focuses on source control and pollution prevention activities, including outreach and education. Section 2.1.6 of the SWMP Document will be modified accordingly.
Strategy 2.2 Public involvement and Participation		
Substrategy 2.2.2 Watershed Education and Stewardship		
	Involve approximately 10,000 participants and volunteers in community events, workshops, stewardship projects, and restoration events annually	As described in last year's *MS4 Annual Compliance Report,* the permit-term goal of 50,000 participants will need to be reduced due to severe contracting barriers and impediments experienced by external partners that were unforeseen at the time of SWMP development.
Substrategy 2.2.3 Grants Programs		
	Neighborhood to the River Grants	As described in last year's *MS4 Annual Compliance Report,* the Neighborhood to the River program was curtailed in FY24.
Substrategy 2.2.4 Community Engagement Initiative		
	Community Engagement Initiative	The Community Engagement Initiative was a temporary effort to engage underrepresented community groups that have interacted with BES through certain programs or services. One goal was to learn ways in which BES can improve communications and relationships with community members. The effort was successfully concluded, as reported, and will be removed from the SWMP Document.
Strategy 2.3 Illicit Discharge Detection and Elimination		
Substrategy 2.3.4 Dry-Weather Screening Program		
	Update dry-weather screening priority locations and strategy by November 2023	As reported, the City finalized a new risk-based methodology for selecting priority locations for dry-weather screening. The City began implementing the methodology and inspecting the new priority locations in FY25. Since it has been successfully implemented, associated metrics about updating the methodology will be removed from the SWMP Document.
Substrategy 2.3.5 Enforcement		
	Provide publicly available information about the current internal BES enforcement guidance by November 1, 2025	As reported, BES successfully completed the effort to provide public-facing information about the environmental enforcement program and procedures, including the launch of a new website: https://www.portland.gov/bes/environmental-enforcement. Associated metrics will be removed from the SWMP Document.

	Item	SWMP Document Modifications
Substrategy 2.3.8 Services Related to Homelessness		
	Refine and adopt a BES homelessness strategy by the end of the permit term	BES has been implementing an informal homelessness strategy that involves a variety of activities focused on employee safety, especially field crews, and facility and natural area security. For example, significant funds have been allocated to prevent vehicles from entering City-owned restoration properties. Since this item has been achieved, it will be removed from the SWMP Document.
Strategy 2.5 Post-Construction Site Runoff for New and Redevelopment		
Substrategy 2.5.1 Stormwater Management Manual (SWMM)		
	SWMM update	As reported, BES completed substantive revisions to the SWMM, including the impervious area threshold and other technical details to support MS4 permit post-construction requirements. Adoption of the new SWMM is expected in early 2025.
Strategy 2.7 Pollution Prevention and Good Housekeeping for Municipal Operations		
Substrategy 2.7.1 MS4 Inspection, Maintenance, and Cleaning		
	Provide or reference in the SWMP Document an alternate risk-based inspection and maintenance schedule for inlets in accordance with permit Schedule A.3.f.ii during the permit term	As reported, the City continued testing and refining a new risk-based inlet inspection approach, per Schedule A.3.f.ii. This updated approach will be included in the SWMP Document, and the associated reporting metric will be removed upon completion.
	Adapt the current internal O&M guidance as a public-facing document by November 1, 2025	This item was determined to be problematic by internal O&M experts. The content is intended for internal audiences and includes details that would pose security issues if posted publicly. The item will be removed from the SWMP Document.
Substrategy 2.7.3 Roadways and Transportation		
	Street sweeping frequency by major roadway type	The City continues to conduct street sweeping of arterial roadways; however, residential sweeping has been curtailed due to budget constraints. The description of this activity will be amended accordingly in the SWMP Document.
	Review the PBOT Maintenance Environmental Handbook for needed updates by November 1, 2024 and, if determined appropriate, revise and make available as a public-facing document by November 1, 2025.	A review was completed. It was determined that only minor updates are needed, and that the Handbook is specifically targeted for internal O&M crews. This completed item will be removed from the SWMP Document.

3.3 Summary

Challenges affecting the City's budget, revenue reductions, rising expenses, and needed investments indicate that modifications to the City's stormwater activities and SWMP Document may be ongoing to tackle Portland's urgent issues. However, opportunities will likely arise with the transition of the City's government and more integration of bureau activities, such as within the new Public Works Service Area. By prioritizing items noted previously the City will address the most pressing needs for water quality and environmental health.

An updated SWMP Document is submitted concurrently with this annual report. Substantive modifications were identified and described in both last year's *MS4 Annual Compliance Report* and in Table 3.1 above.

The City's environmental professionals continue to innovate through major "change events" that Portland is facing. In accordance with the MEP standard, what is *practicable* for the City is ever shifting. In a time of both extraordinary challenge and opportunity, the City remains fully committed to ongoing compliance with the MS4 Permit.

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APPENDICES

A TMDL Implementation Plan Annual Report

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Appendix A

TMDL Implementation Plan Annual Report

November 1, 2024

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City of Portland, Oregon

Total Maximum Daily Load (TMDL) Implementation Plan

ANNUAL STATUS REPORT NO. 15

Fiscal Year 2023-2024

(July 1, 2023, to June 30, 2024)

Prepared for:

Oregon Department of Environmental Quality

Submitted by:

City of Portland

Submitted on: November 1, 2024

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Acronym List

BES	Bureau of Environmental Services
City	City of Portland
DEQ	Department of Environmental Quality
DMA	Designated Management Agency
FY	fiscal year
MS4	municipal separate storm sewer system
NPDES	National Pollutant Discharge Elimination System
SWMM	stormwater management manual
SWMP	stormwater management program
TIP	TMDL Implementation Plan
TMDL	Total Maximum Daily Load

Section 1
Introduction

This Total Maximum Daily Load (TMDL) annual status report (annual report) summarizes key activities and accomplishments in accordance with the City of Portland's 2023 *TMDL Implementation Plan* (TIP). This TMDL annual report summarizes the implementation status of the City of Portland's (City's) activities and management strategies to reduce TMDL pollutants in local water bodies during fiscal year (FY) 2023–24 (July 1, 2023, through June 30, 2024).

The City employs many environmental programs and activities to address both point and nonpoint sources of pollutants.[1] Consequently, many activities implemented by the City to meet TMDL requirements are also conducted to fulfill obligations under the City's National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Discharge Permit No. 101314 (MS4 Permit). A separate annual report is submitted to the Oregon Department of Environmental Quality (DEQ) for compliance with the City's MS4 Permit and associated *Stormwater Management Program* (SWMP) document. This TMDL annual report is included as an appendix to the City's MS4 annual report and refers to that report for stormwater-related topics and implementation of select management strategies identified in the TIP. Temperature-related strategies to specifically address thermal load allocations are detailed in this annual report.

1.1 Background and Applicability

The City is a listed Designated Management Agency (DMA) in Portland-area TMDLs, developed by the DEQ and approved by the U.S. Environmental Protection Agency. DMAs are required to develop a TIP, report on implementation progress annually, provide a summary of overall progress every 5 years, and update the TIP as necessary.

The City's 2023 TIP identifies management strategies the City uses to reduce pollutants from nonpoint sources to restore and protect water quality in local waterways and the Willamette River. It reflects an update of the City's previous TIP (September 2022) following the completion of DEQ's 5-year lookback survey, which reported on TIP implementation progress over the last 5 years. The survey provided an opportunity to identify improvements to the City's management strategies.

Following the 5-year plan cycle, the City submitted its latest TIP to DEQ for review and approval in November 2023. The new TIP includes updated management strategies, performance metrics, and timelines based on the findings from the 5-year "lookback" survey. At the time of this report, the City is awaiting approval of the 2023 TIP from DEQ. For FY 2023–24, DEQ directed the City to report on implementation of the 2023 TIP.

1 TMDLs divide a total allowable pollutant load into allocations to point sources (called "waste load allocations") and nonpoint sources (called "load allocations") and several other input factors. Waste load allocations established in TMDLs are implemented through NPDES permits.

1.2 Report Organization

This annual TMDL report covers implementation actions and accomplishments that occurred during FY 2023–24. The report is organized into the following sections:

- Section 2: Adaptive Management and Reporting
- Section 3: Management Strategies
- Section 4: Temperature-Related Activities

Section 2
Adaptive Management and Reporting

The City uses an adaptive management approach to identify whether the TIP needs to be modified for improved effectiveness. This includes both an annual process and a more comprehensive longer-term process. Public involvement and reporting activities are conducted throughout the plan implementation period.

2.1 Adaptive Management

The City conducts the annual adaptive management process in conjunction with its annual MS4 report and TMDL report preparation. This annual review process is used to determine if the City's TMDL programs are being implemented in accordance with the TIP and to identify whether any adjustments are needed.

In addition, every 5 years, DEQ requires DMAs to evaluate the implementation of management strategies contained in their TIPs. The resulting 5-year lookback report indicates whether the TIP is adequately meeting pollution reduction goals. As part of this process, the City reviews the TIP to assess its strategies and progress toward meeting goals and to propose changes as appropriate. Existing strategies are reviewed and refined to reflect progress made over the last 5 years, and the TIP is updated accordingly, if needed. The City completed the most recent assessment of sufficiency in 2023, evaluating the performance of management strategies in meeting TMDL load allocations. The results of the assessment indicate that the City's strategies are making steady progress toward meeting load allocations within Portland. The City successfully achieved all but one of the temperature goals in the City's previous TIP. Given the findings from the most recent evaluation, the City's 2023 TIP continues to employ many of the same management strategies, along with updated goals and timelines.

2.2 Public Involvement and Reporting

Annual reports are prepared and submitted to DEQ each year by November 1, outlining activities and accomplishments that are associated with identified strategies, performance monitoring metrics, and implementation timelines reflected in the TIP. The report summarizes implementation of strategies and identifies programmatic issues or modifications needed.

The City's current TIP, past TIPs, annual TMDL reports, 5-year evaluations, and other relevant information are posted online and made publicly available.[2] A contact number is provided for those who have questions or want to provide input on the City's plans, strategies, and other environmental program activities.

2 TMDL and MS4 materials are available on the City's website at: https://www.portland.gov/bes/stormwater/ms4.

Section 3
Management Strategies

The City's TIP proposes a range of management strategies to reduce TMDL pollutants from sources in the Columbia Slough, Tualatin Subbasin, and Willamette Basin. These strategies are designed to restore and protect water quality in local waterways and the Willamette River.

The City implements these management strategies through different mechanisms. As noted previously, DEQ implements TMDL requirements for point sources through NPDES permit conditions, including the City's MS4 Permit. The City's SWMP document describes in detail the stormwater management strategies the City employs to meet MS4 Permit conditions.[3] The stormwater strategies are designed to prevent and control pollution from stormwater discharges, including TMDL pollutants. Although the SWMP addresses discharges from the City's MS4, most of the SWMP strategies are applied citywide and reduce TMDL pollution from nonpoint sources as well.

The City reports on stormwater management strategies described in the SWMP document in the City's annual MS4 report. More information about the stormwater management strategies can be found in the City's current SWMP document, and details about the stormwater management activities conducted during the 2023–24 reporting period are included in the City's 2023–24 annual MS4 compliance report.

The management strategies described in detail in the TIP focus on those that address temperature. Temperature is not considered a stormwater pollutant and is not covered by the City's SWMP. Strategies that specifically address temperature and coldwater refugia are discussed in more detail in Section 4.

3 The City's MS4 Permit and current Stormwater Management Program document are available online: https://www.portland.gov/bes/stormwater/ms4.

Section 4
Temperature-Related Activities

The City conducts multiple activities to address elevated stream temperatures in local streams and rivers. Restoration and the protection of riparian vegetation are the primary methods for increasing stream shading and addressing nonpoint source load allocations to achieve system potential shade conditions.[4] The City uses a combination of strategies to address temperature, including planning, resource protection, land acquisition, active restoration and planting, monitoring, and public outreach.

As noted in Section 3, many of the City's key management strategies to reduce TMDL pollutants and improve water quality are conducted to address requirements of the City's NPDES MS4 Permit and associated SWMP. Specific goals and targets related to water temperature and the City's efforts toward meeting nonpoint source temperature load allocations are identified in and are the focus of the TIP and the TMDL annual report.

Temperature-related goals and targets are summarized below in Table 4.1. Each goal includes a timeline, performance metric(s), interim milestone(s), and a description of implementation activities conducted during FY 2023–24 to meet the identified interim milestones or performance metrics. Specific projects to meet TIP Goal #11 (TIP-11) related to hydrologic connectivity and watershed restoration are referenced in Table 4.2.

The City maintains an inventory of completed restoration projects and hosts a publicly available interactive web map.[5] The inventory and associated web map include details on the projects that have been completed to date, showing project goals, metrics (e.g., number of trees planted), and locations. Projects listed in Table 4.2 that have been completed can be viewed in the web map.

4 System potential vegetation for the Willamette River subbasins, as defined in Appendix C, Chapter 2– Potential Near-Stream Land Cover in the Willamette Basin for TMDLs, is the potential near-stream land cover condition. Potential near-stream land cover can grow and reproduce on a site given climate, elevation, soil properties, plant biology, and hydrologic processes. System potential does not consider management or land use as limiting factors**.** In essence, system potential is the design condition used for TMDL analysis that meets the temperature standard by minimizing human-related warming.

System potential is an estimate of the condition where anthropogenic activities that cause stream warming are minimized.

System potential is not an estimate of presettlement conditions. Although it is helpful to consider historic land cover patterns, channel conditions, and hydrology, many areas have been altered to the point that the historic condition is no longer attainable given drastic changes in stream location and hydrology (channel armoring, wetland draining, urbanization, etc.).

5 The web map can be accessed online at: https://pdx.maps.arcgis.com/apps/webappviewer/index.html?id=807ed51bb0314f9cbd31815c73ff9b6e.

Presented in Table 4.1 are several activities that were not included in the City's 2023 TIP. While not included as annual commitments in the TIP, these activities are funded by the City and implemented by partner organizations. These activities include the planting of native trees and shrubs and invasive species treatment and management by community groups and non-profit organizations in Portland. These activities help the City achieve nonpoint source load allocations.

Table 4.1: Goals and Targets for Temperature TMDL Strategies

Goal ID	Category	Target/Description	Timeline (Goal)	Performance Metrics	Interim Milestones and Timelines	Reporting Activities
TIP-01	**Effective Shade Assessment**	Conduct a geospatial assessment of riparian conditions within Portland and progress toward meeting the TMDL nonpoint source load allocations.	Complete by end of TIP cycle	Completed assessment	1. FY 2023–24: Review previous effective shade assessment. 2. FY 2024–25: LiDAR acquisition. 3. FY 2025–26: Process LiDAR and GIS datasets. 4. FY 2026–27: Complete modeling and compile effective shade results. 5. FY 2027-28: Report effective shade results.	1. Completed FY 2023–24: Reviewed previous effective shade assessment and secured an agreement to collect LiDAR data in summer 2024.
TIP-02	**Floodplain, Riparian, and Wetland Protection**	Complete the Columbia Corridor and Industrial Lands Environmental Overlay Zone Project.	Anticipate public hearings in 2024 and adoption by the end of the TIP cycle	Updated Overlay Zone Map	1. FY 2023–24: Publish preliminary draft environmental overlay zones. 2. FY 2024–25: Hold public hearings on the draft environmental overlay zones. 3. FY 2027–28: Complete the Columbia Corridor and Industrial Lands Environmental Overlay Zone Project.	1. Completed FY 2023–24: Published preliminary draft environmental overlay zones based on the Natural Resource Inventory.
TIP-03	**Floodplain, Riparian, and Wetland Protection**	Complete the Floodplain Resiliency Plan.	Anticipate public hearings in 2023 and adoption in 2024	Adopted Plan and updated City Code	1. FY 2023–24: Release draft plan and accept public testimony. 2. FY 2024–25: Adopt Plan and update City Code.	1. Completed FY 2023–24: Published draft Plan and accepted public testimony.
TIP-04	**Onsite Stormwater Retention and LID**	Revise and update the *Stormwater Management Manual* (SWMM).	Within the next MS4 Permit term	Updated SWMM	Outline schedule in accordance with provisions of the SWMP document and renewed Phase I NPDES MS4 Permit.	Completed FY 2023–24: Draft SWMM and internal review completed.
TIP-05	**Invasive Species Management and Treatment**	Perform management, assessment, and treatment of invasive species on 5,000 acres.	By the end of the TIP cycle	Acres managed, assessed, and treated	Perform management, assessment, and treatment of invasive species on 1,000 acres each year on average.	Acres: 2023–24: 1,891; Annual: 1,891; Cumulative: 1,891; % of Goal: 37.8%
TIP-06	**Invasive Species Management and Treatment**	Survey the Lower Columbia Slough for invasive aquatic macrophytes and treat where identified. Total extent is 9.4 miles on center or 18.8 miles along left and right banks.	80% or more of total extent by end of TIP cycle	Linear miles surveyed	Survey the Lower Columbia Slough for invasive aquatic macrophytes and treat where identified. Work to cover 80% or more of the total extent: at least 7.5 miles on center or 15 miles at banks.	Miles: 2023–24: On Center 7.2, At Banks 14.4; % of Goal: 96%
TIP-07	**Riparian Revegetation**	Plant 100,000 native trees and shrubs in identified natural and riparian areas.	By the end of the TIP cycle	Plantings (#)	Plant 20,000 native trees and shrubs in identified natural and riparian areas each year on average.	Plantings: 2023–24: Annual 59,507, Cumulative 59,507; % of Goal: 59.5%
TIP-08	**Land Acquisition**	Evaluate the potential for land acquisition for strategic restoration and protection of watershed hydrology.[1]	By the end of the TIP cycle	Acres acquired (#)[2]	Due to the uncertainty associated with feasibility, interim milestones and timelines are not feasible. The City will report on all land acquisition activities annually.	Acres[2]: 2023–24: Annual 29.2, Cumulative 29.2
TIP-09	**Upland Tree Planting**	Plant 7,500 upland trees during the Plan term through partnerships with nonprofits, community members, businesses, and schools.	By the end of the TIP cycle	Trees planted (#)	Plant an average of 1,500 upland trees each year during the plan term through partnerships with nonprofits, community members, businesses, and schools.	Trees: 2023–24: Annual 551, Cumulative 551; % of Goal: 7.3%
TIP-10	**Cold water Refugia**	Evaluate and update the inventory and mapping of coldwater refugia in the Lower Willamette River in Portland.	By the end of the TIP cycle	Provide status updates	Annually evaluate new temperature data collected during the year and identify new coldwater refugia where indicated by the data.	Completed FY 2023–24: Reviewed available temperature data. No new coldwater refugia were identified.

Table 4.1: Goals and Targets for Temperature TMDL Strategies

Goal ID	Category	Target/Description	Timeline (Goal)	Performance Metrics	Interim Milestones and Timelines	Reporting Activities
TIP-11	**Hydrologic Connectivity (Watershed Restoration)**	Advance five restoration projects through the project development cycle. Restoration projects may address canopy closure, enhancing refugia, removing heat source due to water impoundment, groundwater recharge, and/or protecting springs/coldwater sources.[3]	By end of TIP cycle	Projects planned, designed, and/or constructed (#)	Advance one project per year to the next project phase.	See Table 4.2 below for a list of projects, including status and description for each.
N/A	**Partnership Restoration Activities**	Plant native trees and shrubs in natural and riparian areas by community and non-profit groups.	N/A	Plantings (#)	This activity was not originally included in the City's 2023 TIP; however, planting native trees and shrubs contributes to improved stream temperatures. Activities funded by the City and conducted by partner organization are presented here.	Plantings: 2023–24 | 2024–25 | 2025–26 | 2026–27 | 2027–28 Annual: 14,407 Cumulative: 14,407
N/A	**Partnership Restoration Activities**	Perform management, assessment, and treatment of invasive species by community and non-profit groups.	N/A	Acres managed, assessed, and treated	This activity was not originally included in the City's 2023 TIP; however, invasive species management and treatment contribute to improved stream temperatures. Activities funded by the City and conducted by partner organization are presented here.	Acres: 2023–24 | 2024–25 | 2025–26 | 2026–27 | 2027–28 Annual: 5.8 Cumulative: 5.8

1. Feasibility of land acquisition depends on willing sellers and real estate markets for land acquisition, landowner permissions, and availability of funding.

2. Land acquisition values include purchased properties and conservation easements secured.

3. Feasibility of project advancement depends on willing sellers and real estate markets for land acquisition, landowner permissions, availability of funding, and the permitting process. The project development process is typically composed of five phases (conceptual, 30%, 60%, and 90% design phases, followed by construction).

Table 4.2: Projects for Temperature Goal TIP-11 Hydrologic Connectivity (Watershed Restoration)

Project Name	Previous Report Year / Status* / Current Report Year	Description and Benefits
Springwater Wetlands and Floodplain Restoration Project *Johnson Creek*	Final Design DESIGN → CONSTRUCTION	The Springwater Wetlands and Floodplain Restoration Project will restore wetland habitat on publicly owned property, improving habitat for wildlife and reducing flood risk to local homes and businesses. The project is located east of the I-205 freeway in the Lents and Powellhurst-Gilbert neighborhoods and builds on two previous floodplain restoration projects along Johnson Creek. Areas with artificial fill will be removed from the project area, which will expand the wetland habitat and flood storage within City property. Invasive vegetation will be removed, and native trees, shrubs, and wetland plants will be installed along with wood piles, snags, and amphibian logs to promote healthy habitat. Once complete, this project will hold more floodwater on public land, reducing flood risk to local homes and businesses along Johnson Creek. *Benefits: Floodplain connectivity, invasive species management, native plantings, wetland habitat, wildlife habitat.*
Miller Creek Fish Passage Improvement Project *Willamette Tributaries*	Final Design DESIGN → CONSTRUCTION	Miller Creek is a coldwater tributary to the Willamette River that originates in Forest Park, where much of the watershed is forested with little impervious area. Miller Creek supports a healthy population of cutthroat trout and is the only Forest Park stream where anadromous salmon have been found; however, the culvert underneath a driveway at the marina presents a partial passage barrier for anadromous fish. The Miller Creek Fish Passage Improvement Project will replace the existing aging culvert, remove invasive vegetation, and restore important fish passage and habitat to one of the larger coldwater tributaries in the area. Once completed, this project represents an opportunity to maximize the recovery of Endangered Species Act-listed salmon in Miller Creek and may move Miller Creek closer to becoming a designated Salmon Sanctuary. *Benefits: Fish passage barrier removal, invasive species management, native plantings, salmon sanctuary.*
West Lents Floodplain Restoration Project *Johnson Creek*	Final Design DESIGN → CONSTRUCTION	This project reconnects a straightened reach of Johnson Creek to its historic floodplain in Southeast Portland. It is designed to improve stream habitat complexity and hydraulics by returning the channel pattern to follow its historic meander and adding large wood. Invasive species treatment and riparian plantings are planned. BES has already successfully purchased 13 private properties in the project area and removed the buildings in the floodplain. *Benefits: Floodplain connectivity, channel form, large wood, instream cover, invasive species management, native plantings.*
Johnson Creek Oxbow Restoration Project *Johnson Creek*	60% Design DESIGN → CONSTRUCTION	The Johnson Creek Oxbow Restoration Project is part of a broad city effort to improve habitat conditions and reduce the impacts of flooding along Johnson Creek. It will build on four previous restoration projects in the area: Tideman-Johnson (2006), Errol Heights Wetlands (2007), Errol Creek Confluence (2009), and the Johnson Creek Oxbow Scour Repair (2019). These efforts to restore Johnson Creek focus on returning it to a more natural state by removing the Works Progress Administration levee to reconnect and restore the surrounding floodplains, restore instream habitat in Johnson and Errol Creeks, and improve fish passage through the existing fish ladder. *Benefits: Floodplain connectivity, channel form, large wood, instream cover, invasive species management, native plantings, fish passage.*
Brookside Wetland Retrofit Project *Johnson Creek*	Conceptual Design DESIGN → CONSTRUCTION	Located along SE Foster Road near the intersection of SE 110th Avenue, the existing Brookside Wetland includes a relatively shallow inline pond that contributes warm water to Johnson Creek. A sediment bar has formed across the mouth of the pond and exacerbates warming by impounding creek flow and creating stagnant open water conditions. This project will improve summertime temperature conditions in Johnson Creek, as well as high-flow conditions to protect against erosion and remove safety risks associated with nuisance camping in flood-prone areas. *Benefits: Floodplain connectivity, large wood, instream cover, invasive species management, native plantings, reduced stream temperature.*
Eastbank Crescent *Willamette River*	Conceptual Design DESIGN → CONSTRUCTION	The City is working with partners on the Eastbank Crescent project, a large riverbank restoration effort on the Willamette River near the Oregon Museum of Science and Industry. The Eastbank Crescent Plan was approved by the City Council in June 2017, and the City is exploring funding the project as a mitigation bank. While the project does not have direct coldwater inputs, it will include large wood structures installed into a laid-back bank with native vegetation, creating micro-refugia and shaded riverbanks. The City's strategy is derived from sampling at Sellwood Park that found high densities of juvenile salmonids in areas of submerged vegetation, even when coldwater inputs are absent. The project has potential as a pilot for how to create (versus enhance existing) coldwater refugia, given its similarity to habitat conditions common throughout Portland. *Benefits: Coldwater refugia, large wood.*
Crystal Springs Lake *Johnson Creek*	Conceptual Design DESIGN → CONSTRUCTION	The City is actively working with the U.S. Geological Survey to model temperatures in Crystal Springs Lake—a known heat source located at the headwaters of Crystal Springs Creek. The City will be using the results of lake temperature modeling to develop restoration scenarios to reduce heat loads to the stream and keep the entire 2.3 miles of Crystal Springs Creek below 18°C year-round. *Benefits: Coldwater refugia, salmon sanctuary, removal of heat sources.*

* Design typically comprises four phases: Conceptual, 30%, 60%, and 90%.

Gray markers indicate status in the previous report year.

Black arrows indicate status in the current report year.

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PART II
PORT OF PORTLAND

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Port of Portland

National Pollutant Discharge Elimination System
Municipal Separate Storm Sewer System Permit

ANNUAL REPORT NO. 29

July 1, 2023 – June 30, 2024

Permit Number 101314

Prepared for:
Oregon Department of Environmental Quality

November 1, 2024

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List of Abbreviations

ARFF	Aircraft Rescue Fire Fighting
BMP	best management practice
CAP	Corrective Action Plan
City	City of Portland
CSWC	Columbia Slough Watershed Council
DEQ	Department of Environmental Quality
DSM	Design Standards Manual
IDDE	Illicit Discharge Detection and Elimination
IGA	Intergovernmental Agreement
MFM	Marine Facilities Maintenance
MS4	Municipal Separate Storm Sewer System
MS4 Permit	NPDES Phase I MS4 Permit
MX	PDX Maintenance
NPDES	National Pollutant Discharge Elimination System
O&M	operations and maintenance
PDX	Portland International Airport
Port	Port of Portland
SPCC	Spill Prevention Control and Countermeasure
SWMM	Stormwater Management Manual
SWMP	Stormwater Management Program Document
SWPCP	Stormwater Pollution Control Plan
TMDL	Total Maximum Daily Load
USB	Urban Services Boundary
WPCF	Water Pollution Control Facility

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Section 1: Introduction

The Oregon Department of Environmental Quality (DEQ) regulates stormwater runoff from Port of Portland (Port) property through the National Pollutant Discharge Elimination System (NPDES) Phase I Municipal Separate Storm Sewer System (MS4) Permit No. 101314 and other NPDES stormwater permits, including the 1200-Z, 1200-CA and Individual permits. This annual report describes activities specifically related to implementation of the Port's MS4 Permit.

The Port and City of Portland (City) are co-permittees on MS4 Permit No. 101314. As required under Schedule B.3 of the permit (2021 MS4 Permit), each co-permittee must submit an annual report. This report documents activity from July 1, 2023, to June 30, 2024, related to the Port's stormwater management efforts under the MS4 Permit and associated November 1, 2022 (revised October 3, 2023, and again November 1, 2024) Stormwater Management Program Document (SWMP). This report emphasizes efforts and activities associated with individual best management practices (BMPs) from the Port's SWMP (as summarized in Section 7.0). Schedule B.3 of the 2021 MS4 Permit states the specific annual reporting requirements. These requirements are addressed within the report as follows:

a. **Status of SWMP implementation**: Section 7.1.1 through 7.1.9
b. **Summary of the adaptive management process**: Section 8.0
c. **Proposed changes to the SWMP to reduce Total Maximum Daily Load (TMDL) pollutants**: Section 8.0
d. **Summary of education and outreach and public involvement activities**: Section 7.1.1
e. **Summary describing enforcement actions and the results of the dry-weather field screening and Illicit Discharge Detection and Elimination (IDDE) follow-up activities**: Section 7.1.3
f. **A list of entities referred to DEQ for 1200-Z permit coverage**: See the City of Portland's Annual Report Section 2.0.
g. **Summary of stormwater program expenditures**: Section 4.0
h. **Summary of monitoring results**: See Part III Monitoring Compliance Report of this combined annual report. Section 6.1 of this document explains the Port's monitoring coordination with the City.
i. **Proposed changes to the monitoring plan**: See Part III Monitoring Compliance Report of this combined annual report. Section 6.1 of this report explains the Port's monitoring coordination with the City.
j. **Overview of concept planning, land use changes, and new development**: Section 2.1 and Section 9.0.
k. **Details of any corrective actions implemented**: Section 9.0.
l. **Additional Annual Report requirements**: Not applicable for 2024.

As mentioned above, this report is based on the Port's 2022 SWMP. Per the 2021 Permit requirements, the Port submitted a new 2022 SWMP to DEQ for approval in conjunction with the submittal of the annual report on November 1, 2022. The 2022 SWMP was approved by DEQ on December 16, 2022. The 2023 annual report, and this year's 2024 annual report reflect implementation of the Port's 2022 SWMP.

The Port made one change to the 2022 SWMP during FY2023 to document their updated construction enforcement procedures (See Section 7.1.4). The Port made another change to the 2022 SWMP during FY2024 to reflect updates made to the Port's Stormwater Design Standards Manual (DSM) to meet Schedule A.3.e.iii permit requirements.

The revised SWMP is posted on the Port's Stormwater Management page of their public website (https://portofportland.com/Environment/StormwaterManagement) and revisions) and changes are noted in the Attachment A revisions log (see Table A-1 of the SWMP).

Section 2: Port of Portland Permit Area and Responsibilities

The Port owns approximately 6,165 acres within the City's Urban Services Boundary (USB). Port property is divided into three primary Business Lines, plus a fourth division composed of undeveloped property:

1. Aviation (PDX)
2. Marine
3. Industrial and Economic Development
4. Undeveloped Property[1]

Within the City USB, the Aviation Business Line consists of Portland International Airport (PDX), and the Marine Business Line includes Marine Terminals 4, 5, and 6 (T4, T5, and T6). The Industrial and Economic Development Business Line consists of Terminal 2 (T2) and the following industrial parks:

1. Swan Island
2. Port Center
3. Rivergate
4. Cascade Station
5. Portland International Center
6. Airtrans Center

Figure 2-1 illustrates the location of Port property covered by the MS4 Permit. It further delineates those properties leased to tenants and additionally covered by a Port or tenant-managed Industrial Stormwater Permit (i.e., a DEQ-issued 1200-Z or Individual NPDES Stormwater Permit). There were no new stormwater industrial permits issued in FY2024.

Because it is not acting as a typical city government, the Port is in a unique situation regarding permit compliance with regards to the more typical municipal planning, permitting, and land use modification processes. With the exception of the Port's stormwater design standards that are applied to Port-operated areas at PDX and T6, the City is responsible for these activities, and the Port complies with the City's process. For the purposes of this report, applicable reporting on the requirements contained in Schedule A.3.e (2021 MS4 Permit – Post Construction requirements) are also satisfied in the City's section of this annual report.

[1] The Port's undeveloped properties within the USB include wetland and grassland mitigation sites, natural areas, and vacant tax lots.

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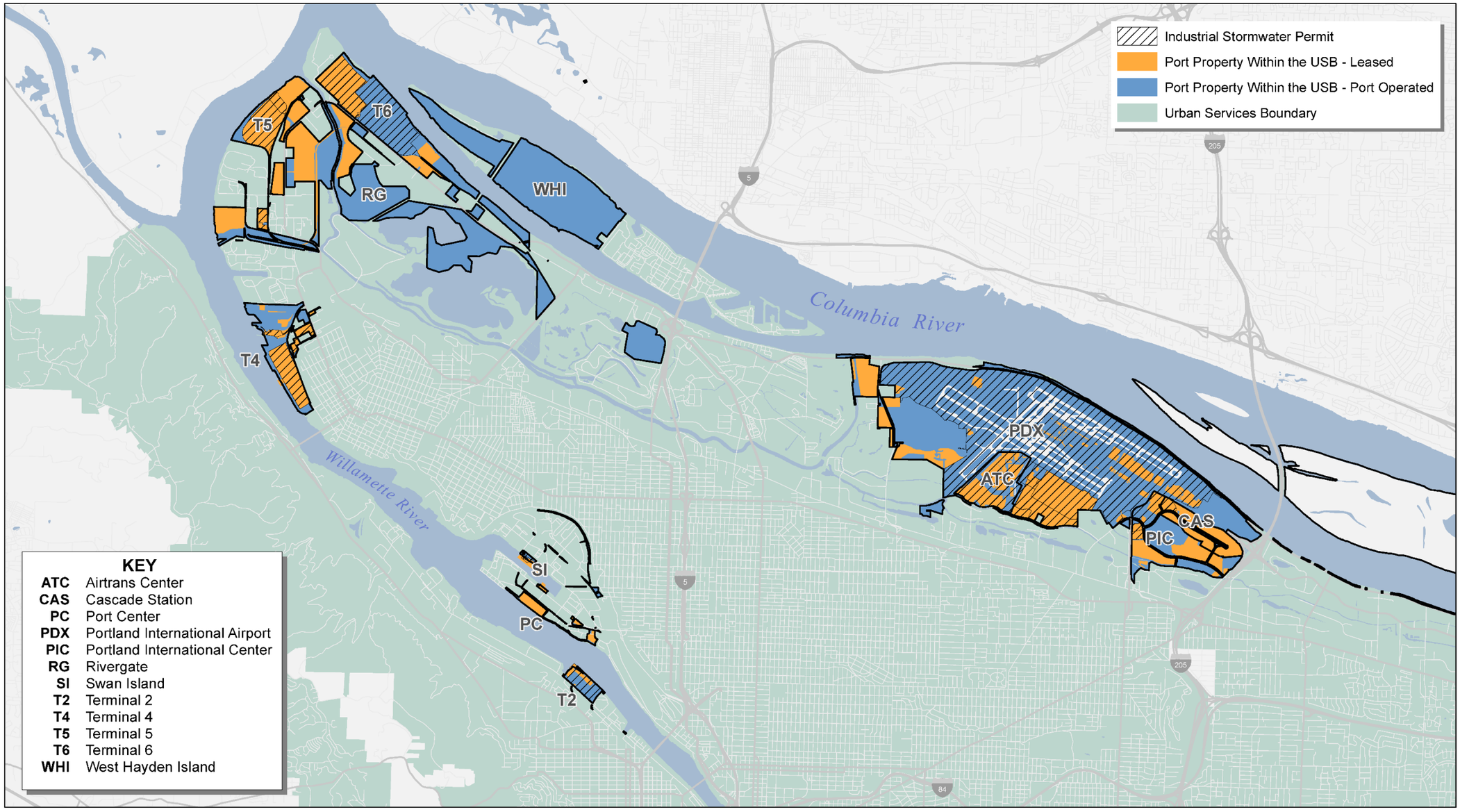

Figure 2-1. Port of Portland MS4 Permit Boundary Area

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PDX, the marine terminals, and the industrial parks are partially occupied by tenants. The Port manages those tenant properties through lease agreements. Leased property represents approximately 27% of Port property within the USB (1676 acres). A more detailed description of Port operating areas is included in Section 2.1.

Property owned by the Port is primarily zoned for commercial and industrial use. Many of these areas accommodate industrial activities that require DEQ-issued NPDES industrial stormwater general permits or individual permits addressing stormwater discharges. Within the USB, 48.1 percent of the Port's holdings are regulated under these permits. Portions of PDX, Terminal 2, Terminal 6, and the Navigation Base at Swan Island are operated by the Port under DEQ-issued industrial stormwater discharge permits. In addition, some tenants occupying leased property at PDX, Terminals 4, 5, 6, and the industrial parks also operate under NPDES industrial stormwater permits. For Port operations within these areas, several of the MS4 Permit requirements are satisfied through implementation of industrial stormwater permit requirements as addressed in the facility's Stormwater Pollution Control Plans (SWPCPs). Section 2.2 addresses how these activities are coordinated with the Port's MS4 Permit responsibilities.

2.1 MS4 Permit Area

2.1.1 Aviation-PDX

PDX comprises an area of approximately 2,605 acres and is located in northeast Portland between the Columbia River and the Columbia Slough. The facility is owned and operated by the Port; however, numerous aviation-related tenants also conduct operations at PDX.

Stormwater runoff from PDX property discharges into the Columbia Slough through a series of pipes, open channels, and nine major outfalls. These stormwater discharges are permitted under the Individual PDX NPDES Waste and Stormwater Discharge Permit No. 101647 (Individual NPDES permit) issued and administered by DEQ. This Individual NPDES permit is structured to specifically address the Columbia Slough TMDL parameters, which include dissolved oxygen, pH, nutrients, bacteria, and toxics. Stormwater can also be pumped to the Columbia River through a de-icing treatment system. These discharges are also covered under the Port's Individual NPDES permit.

Currently, the Oregon Air National Guard and Yoshida Foods international have their own 1200-Z permits for their operations at PDX. Other PDX tenants whose operations trigger the need for a stormwater permit are co-permittees with the Port on the Port's Individual NPDES permit.

In addition to the Individual NPDES permit, PDX is also covered by an NPDES 1200-CA (Construction Discharge) Permit, a Water Pollution Control Facility (WPCF) 1700-B Wastewater Permit, and a Pretreatment permit issued by the City for discharges to the sanitary system. The pretreatment permit covers the following areas:

- Heating, ventilation, and air conditioning waste streams
- Firefighting activities
- Maintenance activities
- Wash water generated by the Quick Turn-around Facility (a high-volume vehicle wash facility)
- Treated de-icing fluid discharges

2.1.2 Marine Facilities

The Port has three marine terminals (T4, T5, and T6) that are managed by the Port's Marine Business Line and one marine terminal managed by the Port's Industrial Development Business Line (T2). The terminals collectively occupy approximately 1,009.9 acres along the Willamette River (T2, T4, and T5); the Columbia River, and the Columbia Slough (T6). These terminals handle the shipping, receiving, and temporary storage of finished goods, agricultural products, and raw materials.

Stormwater runoff from T6 discharges into the Columbia River and the Columbia Slough and is covered by 1200-Z permits held by both the Port and individual tenants. The Port obtained a 1200-Z permit for the Port-operated area of T6 in August of 2017. The Port also continues to hold a 1200-Z permit for T2, a portion of which is leased to tenants. Multiple properties located at T4 and T5 are also leased to tenants, and several of these tenants hold their own 1200-Z or Individual NPDES permits that are issued by DEQ and administered by the City.

The Navigation facility is managed by the Port's Navigation Department and is located on Swan Island adjacent to the Willamette River. The facility is used to support dredging operations, including storage and maintenance of equipment used for dredging. Stormwater runoff from the Navigation facility discharges directly to the Willamette River or indirectly to the City's MS4 via a conveyance system consisting of catch basins, pipes, and an Rx stormwater treatment system. The Navigation facility is covered by the 1200-Z permit, obtained in 2017. In addition, capital improvement projects at the marine terminals over 1-acre in size are also covered by the Port's NPDES 1200-CA (Construction Discharge) permit.

2.1.3 Industrial Parks

As listed previously, the Port's Industrial Development Business Line manages six Port-owned industrial parks, Swan Island, Rivergate, Cascade Station, Portland Center, Airtrans Center, and the Portland International Center, totaling approximately 1,479 acres. Several industrial park tenants hold the 1200-Z or Individual NPDES permits issued by DEQ and administered by the City. The Ports Construction Discharge permit also applies at the industrial parks.

2.1.4 Undeveloped Properties

The Industrial Development Business Line also manages approximately 2656 acres of undeveloped property within the City's USB. Stormwater management activities for undeveloped properties discharging into the Port's MS4 are conducted under the MS4 Permit.

2.2 Summary of Port Permit Responsibility and Co-Permittee Coordination

The Port's responsibility, as described in the 2021 MS4 Permit (Schedule A.2), is influenced primarily by the following two factors:

First, the City is designated as a co-permittee with the Port on the 2021 MS4 Permit. The City generally conducts MS4 Permit-related activities on a city-wide basis, with some activities overlapping with the Port's MS4 service area. As a result, the Port and City coordinate on meeting select MS4 Permit requirements through an Intergovernmental Agreement (IGA) to avoid duplication of effort. Specifically, planning and implementation of controls for new development, stormwater facility inspections, and stormwater monitoring are generally conducted by the City on behalf of the Port within the Port's MS4 service area. An exception would be related to the implementation of controls for new development where the Port applies its own DSM at PDX and Terminal 6 Port-operated areas.

Second, the Port is unique in that its land use is primarily industrial, with no residential areas and relatively large-scale parcels. As described in Section 2.1, some of the Port's operating areas (marine terminals, airport facilities, and/or industrial parks) are also regulated under 1200-Z or Individual NPDES permits and their associated SWPCPs. In addition, DEQ regulates stormwater discharges associated with the Port's capital improvement construction activities performed on Port property pursuant to the Port's 1200-CA permit.

Many requirements outlined in DEQ-issued 1200-Z and Individual NPDES permits, and their respective BMPs required pursuant to the associated SWPCPs, are similar to requirements outlined in Schedule A.3 of the 2021 MS4 Permit. This includes specific requirements for activities related to

operations and maintenance, illicit discharge elimination, spill response, and industrial monitoring. For this reason, operating areas with 1200-Z or Individual NPDES permits already meet many MS4 Permit requirements related to the above activities. In addition, many requirements in the Port's 1200-CA permit overlap with MS4 Permit requirements for erosion control.

Table 2-1 lists the 2021 MS4 Permit requirements and responsibilities and describes how each requirement is met by the 2022 SWMP. Responsibility for each MS4 Permit requirement is divided into two categories:

- Port MS4 Permit service areas that do not have 1200-Z or Individual NPDES permits
- Port MS4 Permit service areas where the Port, or its tenants, have 1200-Z or Individual NPDES permits

Areas where the activity is covered by 1200-Z or Individual NPDES permits or through an IGA with the City are shaded gray in the table. The table was developed to clarify the complex relationship between the Port's management of stormwater BMPs within the City's USB, the City's overlapping stormwater management activities, and DEQ's regulation of stormwater on Port properties through industrial or construction NPDES permits.

Section 7 outlines the BMPs listed in the Port's 2022 SWMP and specifies responsible parties for each BMP implementation task. Section 7 also describes the Port's SWMP implementation during the permit year to address tracking measures and progress toward meeting measurable goals under each BMP.

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Table 2-1. Port of Portland 2021 MS4 Permit Requirements and Responsibilities[2]

MS4 Permit SWMP Requirements	MS4 Service Areas Not Covered Under NPDES 1200-Z or Individual Stormwater Permits		MS4 Service Areas Covered Under NPDES 1200-Z or Individual Stormwater Permits	
	Tenants	Port Operations	Tenants	Port Operations
Schedule A.3.a Public Education and Outreach				
i. Implement a documented public education and outreach program	PEO-1: Implement Public Education Measures to Protect Stormwater Quality			
ii. Provide educational material to the community or conduct equivalent outreach activities	PEO-1: Implement Public Education Measures to Protect Stormwater Quality PEO-2: Implement a Tenant Stormwater Education Program	N/A	PEO-1: Implement Public Education Measures to Protect Stormwater Quality PEO- 2: Implement a Tenant Stormwater Education Program	N/A
	PEO-1: Implement Public Education Measures to Protect Stormwater Quality			
iii. Identify target audiences and priority pollution reduction topics	PEO-1: Implement Public Education Measures to Protect Stormwater Quality			
Schedule A.3.b Public Involvement and Participation				
i. Publicly accessible SWMP website	PI-1: Implement SWMP Website Updates			
ii. Provide stewardship opportunities	PI-2: Implement a Public Participation Approach for SWMP Implementation			
iii. Describe public involvement programs, including metrics and tracking measures	PI-1: Implement SWMP Website Updates PI-2: Implement a Public Participation Approach for SWMP Implementation			
Schedule A.3.c Illicit Discharge Detection and Elimination				
i. Maintain maps showing major MS4 outfalls, conveyance system, structural stormwater controls, chronic illicit discharges, and priority dry-weather screening sites	ILL-2: Conduct Dry-Weather Field Screening			
ii. Prohibit through ordinance or other regulatory mechanism, illicit discharges	ILL-1: Implement IDDE Program			
iii. Describe and implement enforcement response procedures	ILL-1: Implement IDDE Program ILL-3: Implement Spill Response Program			
iv. Implement a program to detect and eliminate illicit discharges	ILL-1: Implement IDDE Program		Activities address employee reporting and are covered under 1200-Z or Individual NPDES permits. ILL-3: Implement Spill Response Program ILL-1: Implement IDDE Program	
v. Conduct annual dry-weather screenings	ILL-2: Conduct Dry-Weather Field Screening			
vi. Conduct IDDE trainings	TRN -1: MS4 Permit Training			
Schedule A.3.d Construction Site Runoff Control				
i. Ordinance and/or other regulatory mechanism that requires erosion and sediment controls	Covered by the City's erosion control ordinance and program; may also be covered under DEQ's 1200-C Construction Stormwater General Permit program.	Covered by the Port's DEQ issued 1200-CA Permit and the City's erosion control program and related contract specifications.	Covered by the City's erosion control ordinance and program; may also be covered under DEQ's 1200-C permit program.	Covered by the Port's DEQ issued 1200-CA Permit and the City's erosion control program and related contract specifications.
ii. Require construction site operators to develop site plans and implement erosion and sediment control BMPs				
iii. Require review of erosion and sediment control plans				
iv. Conduct construction site inspections				
v. Implement and maintain enforcement response procedures				
vi. Construction runoff control training and education				
Schedule A.3.e Post-Construction Site Runoff for New Development and Redevelopment				
i. Adopt an ordinance that applies to sites that create or replace 1,000 SF of impervious surface	Covered by the City's SWMM and associated implementation program and ordinance except for PDX, Terminal 6, and designated properties around the airfield which are covered by PC-1: Port-Specific Post-Construction Site Runoff Controls, and associated training in TRN-1.			
ii. Prioritize the use of Low Impact Development and Green Infrastructure				
iii. Develop and implement an enforceable post-construction SWMM to include prioritizing onsite retention				
iv. Develop a water quality benefit offset program				

[2] This table has been updated in the Port's 2022 SWMP and is now reflected in this Annual Report. DEQ approved the 2022 SWMP in December 2022 and updated it in October, 2023 and November, 2024 (posted on the Port's public website).

Table 2-1. Port of Portland 2021 MS4 Permit Requirements and Responsibilities[2]

MS4 Permit SWMP Requirements	MS4 Service Areas Not Covered Under NPDES 1200-Z or Individual Stormwater Permits		MS4 Service Areas Covered Under NPDES 1200-Z or Individual Stormwater Permits	
	Tenants	Port Operations	Tenants	Port Operations
v. Standardized procedure for the review and approval of structural stormwater control plans for new development and redevelopment projects				
vi. Implement a strategy to ensure that all public and private stormwater controls discharging to the MS4 are operated and maintained to the Maximum Extent Practicable				
vii. Post-construction training of staff responsible for performing post-construction site plan reviews, administering the post-construction program requirements, and performing/evaluating operations and maintenance (O&M) practices				
Schedule A.3.f Pollution Prevention and Good Housekeeping for Municipal Operations				
i. Develop and implement an O&M strategy for both co-permittee-owned controls and controls owned and operated by other non-MS4 and non-NPDES entities discharging to the MS4	See A.3.e.vi–Long Term Operation and Maintenance			
ii. Implement a program to inspect, maintain, and clean MS4 and related structures	OM-1: Stormwater System Cleaning and Maintenance			
iii. Conduct O&M activities	OM-1: Stormwater System Cleaning and Maintenance OM-2: Minimize Water Quality Impacts Associated with Landscape Management Practices OM-3: Coordinate with the Local Fire Department to Minimize Pollutant Discharge from Firefighting Training Activities			
iv. Maintain coverage for applicable facilities under DEQ's NPDES Industrial Stormwater General Permit	Covered under NPDES industrial stormwater permits.			
v. Implement a winter O&M program	OM-5: Winter Weather Management [3]			
vi. Implement a program to control the use and application of pesticides and fertilizers	OM-2: Minimize Water Quality Impacts Associated with Landscape Management Practices			
vii. Implement a litter control program	OM-6: Litter Control			
viii. Material disposal program	OM-1: Stormwater System Cleaning and Maintenance			
ix. Address water quality in flood control, transportation, and other infrastructure planning	The City conducts planning for public flood control, transportation, and other infrastructure except for at PDX. PDX has its own master plan that addresses water quality.			
x. Training on pollution prevention during O&M activities	TRN-1: MS4 Permit Training			
Schedule A.3.g Industrial and Commercial Facilities				
i. Screen existing and new industrial stormwater permitting	The City conducts screening for existing and new facilities to assess NPDES permitting needs		The City conducts screening of existing and new facilities to assess NPDES permitting needs. IND-1: Screen Existing and New Industrial and Commercial Facilities at PDX	
ii. Reduce pollutants from industrial and commercial facilities	IND-1: Screen Existing and New Industrial Facilities IND-2: Address High Pollutant Source Facilities		These areas are already covered by an industrial stormwater NPDES permit.	
iii. Train staff on evaluating industrial and commercial trainings	TRN-1: MS4 Permit Training			
Schedule A.3.h Infrastructure Retrofit and Hydromodification Assessment Update				
i. Complete hydromodification assessment	RET-1: Infrastructure Retrofits			

Note: Rows that have a grey background indicate that the activity is covered by 1200-Z or Individual NPDES permits or through an IGA with the City.

DEQ = Oregon Department of Environmental Quality; IDDE = Illicit Discharge Detection and Elimination; MS4 = Municipal Separate Storm Sewer System; O&M = operations and maintenance; NPDES = National Pollutant Discharge Elimination System; PDX = Portland International Airport; SWMM = Stormwater Management Manual; SWMP = Stormwater Management Program Document.

[3] OM-4: GIS System and Asset Management Database is a BMP that is implemented to meet tracking measure requirements and is not covered in this table. See Section 7.1.6.

Section 3: Port of Portland Organizational Structure

The Port's Environmental Department is responsible for administering the MS4 Permit and the SWMP. The Environmental Land and Water Manager serves as the MS4 Permit manager.

Environmental is the lead group responsible for planning, tracking, and overall implementation of the Port's SWMP. The following Port departments/groups also participate in stormwater program implementation:

- Aircraft Rescue Fire Fighting (ARFF)
- Engineering
- Construction Services
- Marine Facilities Maintenance (MFM, Marine's general maintenance group)
- PDX Maintenance (MX)
- Properties

As a means of coordinating Port-wide programs and policies, environmental program managers regularly meet with cross-functional teams consisting of Port staff from various operating areas. One team that regularly meets is the Stormwater Asset Management Program Team. This team includes staff from Environmental, Maintenance, Asset Management, and Planning. The team is responsible for providing input on Port-wide projects, policies, water quality issues, and permit implementation. The MS4 Permit Manager is a key team member and actively participates.

Port Environmental Planners also regularly meet with Port Long Rang Planners, Project Managers, and members of the Executive Team to review and discuss environmental related plans, policies, initiatives, projects, etc. Environmental Planners engage MS4 subject matters experts whenever a need is identified.

With respect to implementation of the Port's industrial stormwater discharge permits, Environmental staff prepares, updates, and ensures implementation of SWPCPs in coordination with co-permittees and non-Port operators where applicable. Tenants with industrial stormwater discharge permits are also required to prepare, maintain, and implement SWPCPs. The City (DEQ's agent for administering industrial permits) coordinates directly with Port tenants holding these permits.

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Section 4: Stormwater Expenditures

The Port's state-mandated mission is to enhance the region's economy and quality of life by providing efficient cargo and air passenger access to global and national markets. In support of this mission, the Port annually undertakes budget and business planning to identify areas of focus and required actions.

Port revenue is primarily derived from business transactions with the users and tenants of Port facilities. A small portion (approximately 3 to 4 percent) of the Port's overall revenue is from property taxes. Business transactions generally occur between the Marine Business Line, Aviation Business Line (Commercial Aviation and General Aviation), Industrial and Economic Development Business Line, and associated users and tenants of those properties. Industrial and Economic Development Business Line revenue source also includes the sale of property. The Port is reimbursed by the U.S. Army Corps of Engineers for costs incurred providing dredging services.

Commercial Aviation (PDX) funds are derived primarily from fees related to passenger and cargo airline operators, airport parking, rental car revenue, passenger facility charges, federal grants, and other tenant fees. PDX revenue cannot be comingled with other operating area revenue and is restricted for use at aviation facilities only by bond ordinances and Federal Aviation Administration regulations.

The Port annually budgets resources to fund projects and programs identified in the Strategic and Business Line Plans and capital improvement projects identified in stormwater master plans. Program expenses are allocated among Business Lines and departments involved in implementation of the program. Specifically, stormwater resources are allocated across the following business lines and departments: Information Technology, Legal, Engineering, Marine and Industrial Development, and Aviation. Stormwater program expenditures include the cost of staff salary (including fringe costs), permit fees, contractor and consultant fees, stormwater infrastructure construction and maintenance, City of Portland stormwater fees, disposal of collected material, sample analysis, stormwater training, and outreach materials.

The estimated and projected stormwater program expenditures are broken out by area and presented in Table 4-1.

Table 4-1. Summary of Port Stormwater Expenditures

Business Line	Estimated 2023-2024 Stormwater Expenditures	Projected 2024-2025 Stormwater Expenditures
Marine and Industrial Development	$2,340,962	$2,411,191
Deicing	$3,055,652	$3,147,322
Aviation	$1,295,309	$1,334,168
Engineering	$928,741	$956,603
Information Technology	$4,544	$4,680
Legal	$11,950	$12,309
Total:	**$9,098,632**	**$9,371,591**

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Section 5: Demonstration of Continued Legal Authority to Implement the Programs Outlined in the SWMP

The Port has authority to implement programs outlined in the SWMP through ordinance, permits, and contracts.

The Port has statutory authority to enact ordinances to regulate stormwater sewers that it owns, operates, maintains, or controls. On March 11, 1992, the Port Commission adopted Ordinance No. 361, which provided the Port with legal authority over specific activities conducted by persons occupying land owned by the Port (e.g., tenants, vendors, contractors). Section 4 of Ordinance No. 361 requires written permission from the Port before connecting to a Port storm sewer.

Section 5 of Ordinance No. 361 authorizes the Port to perform the following activities:

- Inspect the land and storm sewers for violations of the ordinance or applicable law that governs the conveyance or disposal of stormwater.
- Control the contribution of pollutants to storm sewers owned or operated by the Port.
- Control the quality of stormwater discharged from the sites of industrial activity on land owned by the Port.
- Control the discharge to storm sewers owned or operated by the Port of pollutants from spills, dumping, or the disposal of materials other than stormwater.

In addition, in Ordinance 361 and the Portland International Airport Rules, the Port has legal authority to control the contribution of pollutants to the municipal storm sewer through contracts with its tenants. The lease agreements require the lessee to comply with the Port's MS4 Permit. Some properties also have industrial stormwater permits, and lease agreements also include requirements to comply with these permit conditions. Through these regulatory and contractual mechanisms, the Port is working with tenants and users of Port facilities to implement and evaluate BMPs that control the contribution of pollutants to the Port's MS4.

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Section 6: Stormwater Monitoring

The Port's monitoring program consists of both environmental and BMP monitoring elements. These monitoring elements are conducted for the purposes of addressing the following monitoring objectives:

1. Evaluate the source(s) of and means for reducing the pollutants of concern applicable to the Port's permit area, including 2018/2020 303(d) listed pollutants, as applicable;
2. Evaluate the effectiveness of BMPs to help determine BMP implementation priorities;
3. Characterize stormwater based on land use type, seasonality, geography, or other catchment characteristics;
4. Evaluate status and long-term trends in receiving waters associated with MS4 stormwater discharges;
5. Assess the chemical, biological, and physical effects of MS4 stormwater discharges on receiving waters; and
6. Assess progress toward reducing TMDL pollutant loads.

A description of each monitoring program element is provided below.

6.1 Environmental Monitoring

The Port satisfies the MS4 environmental monitoring requirements through an IGA with the City of Portland. The IGA specifies the terms and conditions of how the Port shares costs with the City for environmental monitoring efforts. The monitoring data summarized in this annual report was collected according to the City's 2022 Monitoring Plan, which consists of instream, stormwater, and macroinvertebrate monitoring elements. A discussion of this program and its operations during FY2024 is included in the City of Portland's Monitoring Compliance Report (Section III of the City's Annual Report). The joint 2022 Monitoring Plan was updated for implementation in FY2022. This joint Monitoring Plan was submitted to DEQ with the annual report on November 1, 2022, and was approved on December 16, 2022.

6.2 BMP Monitoring

The Port's BMP monitoring activities are described as tracking measures and measurable goals in the most recently approved SWMP, submitted to DEQ on November 1, 2022 and updated on October 3, 2023, and November 1, 2024. These monitoring activities are specific indicator metrics that help document the completion of tasks and assess the relative effectiveness of BMPs. The implementation tasks and tracking measures associated with each Port BMP are provided in Sections 7.1.1 through 7.1.9.

6.3 Additional Stormwater Monitoring Activities

The Port collects and submits additional stormwater monitoring data to DEQ as required by the Port's various NPDES stormwater permits. Data collected for these permits is not included in the MS4 Permit annual report, however, it can be provided upon request.

Additional monitoring provides valuable data on stormwater discharges from Port industrial properties. Data from these sampling events is used to help manage the stormwater program at the respective facility and will continue to be used as a tool for understanding and addressing any potential water quality impacts stemming from various industrial activities.

The Port submitted stormwater monitoring data to DEQ for the following industrial stormwater discharge permits in FY2024:

- NPDES 1200-Z Industrial Stormwater Discharge Permit, DEQ File No. 114024 (Terminal 2)
- NPDES 1200-Z Industrial Stormwater Discharge Permit, DEQ File No. 125313(Terminal 6)
- NPDES 1200-Z Industrial Stormwater Discharge Permit, DEQ File No. 125569 (Navigation Base)
- NPDES Individual Waste and Stormwater Discharge Permit, DEQ File No. 107220 (PDX)

Section 7: Accomplishments For Permit Year Twenty-Eight (2023–2024)

7.1 SWMP Implementation

The content and format presented in this section are based on the SWMP submitted to DEQ on November 1, 2022, and updated in 2023 and 2024. The SWMP is structured into nine major elements. These elements contain the necessary BMPs to address 2021 MS4 Permit requirements included in Schedule A (3) (a-h), including the Port's MS4 Training Strategy provided in Element #9 (Section 7.1.9). Reporting for each BMP, including implementation tasks and tracking measures is provided in the following subsections.

7.1.1 Element #1: Education and Outreach

PEO-1: Implement Public Education Measures to Protect Stormwater Quality

BMP Description:

- The Port implements a public education strategy and conducts a variety of outreach activities to educate the public and employees on the protection of stormwater quality. The Port's primary target audience for public outreach is the industrial and commercial tenants. Such educational activities include participation in media campaigns.
- The Port's cooperative public education efforts with other groups or agencies include the Columbia Slough Watershed Council (CSWC) and Oregon Environmental Council. Port staff serve on the CSWC board and the Port provides an annual monetary sponsorship.

Implementation Tasks:

1. Continue participation in the KPTV Public Outreach Campaign (July–June).
2. Continue to include stormwater educational materials at Port-sponsored outreach events and post stormwater educational materials, including the Port's SWMP Document, on the Port's public website to reach the target audience.
3. Provide the target audience with education materials on priority topics to address: 1) proper disposal of waste materials, 2) proper application of fertilizer and pesticides, and 3) reducing spills into waterways.
4. Continue to attach the "Dump No Waste, Drains to Stream" decals to catch basins associated with all new Port construction annually at PDX. Continue to paint this message at marine terminal stormwater inlets. Expand this program to all Port properties during the Permit term. This program helps address the interconnection between catch basins/storm drains and local creeks/surface waters.
5. During inspections conducted under the BMPs "Implement Inspections of Significant Pollutant Source Areas" and "Implement a Stormwater System Cleaning and Maintenance Program," identify catch basins where it would be relevant and appropriate to apply "Dump No Waste, Drains to Stream" decals and apply decals.

Tracking Measures:

1. Track events where stormwater educational materials were made available.
    - In FY2024, the Port's cooperative efforts with other groups or agencies included the CSWC and the Oregon Environmental Council. Port staff serve on the board of the CSWC and the Port provides an annual monetary sponsorship.

2. Track participation in the KPTV Annual Campaign.
    - In FY2024, the Port of Portland participated in the KPTV Annual Campaign.[4] The premise of the campaign is to educate and engage viewers with helpful water conservation and healthy water tips. The campaign has many elements, including promos produced by KPTV and fronted by KPTV's chief meteorologist.
3. Track the Decal Program.
    - The Port applied approximately 33 new decals at PDX, and 89 new decals in marine and industrial development properties during FY2024.

PEO-2: Implement a Tenant Stormwater Education Program

BMP Description:

- The Port's primary target audience is industrial and commercial tenants. Outreach efforts directed to industrial and commercial tenants results in the reduction of pollutant discharges from municipal separate storm sewers.
- Port staff will provide a variety of stormwater education and outreach materials to tenants as needed and include stormwater rules, regulations, and other educational material in tenant leases (Section 7.0 of the Airport Facility Lease document addresses Environmental Management). Such educational materials may include educational information on pesticide, herbicide, and fertilizer management and information related to appropriate spill response procedures.

Implementation Tasks:

1. Maintain an inventory of all active tenants or lease holders.
    - Marine, Aviation (PDX), and Industrial Development Properties groups provide an updated list of leaseholders annually. Tenant information is also updated on its own GIS layer within PortGIS, through a separate process. However, many of these leaseholds do not have any significant exposure to stormwater. Operating area environmental staff are familiar with the circumstances and needs of specific leaseholders. This information is taken into consideration when selecting priority facilities for inspection.
2. Provide stormwater educational materials in new tenant leases.
    - The Port has stormwater BMP education and outreach materials targeting industrial properties for use during inspections.
    - The Port provides stormwater language in new leases, and tailors it for each tenant considering their operations.

Tracking Measures:

1. Verify the completion and/or update of a leasehold inventory.
    - Leaseholders are included in the Port's GIS (see Figure 1 for a map of lease holder coverage).
2. Track stormwater education materials provided to tenants.
    - In FY2024, the Port provided technical assistance to address stormwater issues encountered as relevant during priority facility inspections (see Section 7.17, BMP IND-2 below for inspections conducted). The Port also provided stormwater educational materials to tenants during these inspections.

[4] https://www.kptv.com/page/clean-water-its-our-future/.

7.1.2 Element #2: Public Involvement and Participation

PI-1: Implement SWMP Website Updates

BMP Description:

- Maintain and promote a publicly accessible website containing information on the SWMP Document and implementation and educational materials.

Implementation Tasks:

1. Post a reporting mechanism for public complaints or reports of illicit discharges.
2. Include links to final reports, plans, and other documents relevant to the MS4 programs, as well as drafts of documents requiring public comment.
3. Provide links to ordinances, policies, and/or guidance documents related to construction and commercial/industrial stormwater management control programs.
4. List contact information for relevant staff, including a phone number, mailing address, and email address.

Tracking Measures:

1. Document SWMP website updates in the annual report.
    - The MS4 Permit Manager updates and maintains the Port's MS4 website, which includes the SWMP Document and a Document Library. The website also includes a reporting mechanism for public complaints or reports of illicit discharges.

PI-2: Implement a Public Participation Approach for SWMP Implementation

BMP Description:

- Identify appropriate stewardship opportunities for the public to be involved in related to implementation of the Port's MS4 program and implement these projects over the permit term.

Implementation Tasks:

1. Determine what projects are appropriate for public involvement.
2. Make the public aware of the selected involvement opportunities via the Port's website and the CSWC.
3. Implement selected projects, and document public involvement.
4. Continue to participate in local school career days.

Tracking Measures:

1. Describe any projects implemented where the public had the opportunity to participate and the extent of public involvement for each.
    - The following FY2024 events provided the opportunity for the public to participate in implementation of the Port's stormwater program:
        - The Port of Portland participated in the KPTV Clean Waters Campaign in FY2024. The public has the opportunity to participate in the campaign to the extent that they desire. The Port has a community engagement website on the Port's public website[5].

[5] The Port's community engagement site is on the Port's public website https://portofportland.com/Community, In addition, the public can send comments to enviroideas@portofportland.com which is listed on the Port's environmental page.

- Port staff visited a local middle school to engage the public on the Port's SWMP for career day.

7.1.3 Element #3: Illicit Discharge Detection and Elimination

ILL-1: Implement the Illicit Discharge Detection and Elimination (IDDE) Program

BMP Description:

- Through Ordinance 361, the Port has the authority to eliminate illicit discharges throughout its property including those associated with tenants on Port property.
- Environmental staff implements and enforces documented IDDE procedures.

Implementation Tasks:

1. Implement the Port's updated "Work Instruction: IDDE Program" with new response timelines (Responsibility: Environmental Operations).
2. Continue to enforce Ordinance 361 to prohibit non-stormwater discharges into the MS4 (Responsibility: Environmental Operations).
3. Implement a reporting program for potential illicit discharges by maintaining spill notification signs throughout Port property. Continue to implement documented IDDE procedures. Environmental staff implement an updated document for IDDE procedures. (Responsibility: Environmental)
   - See Element #9 (Section 7.1.9) for required training.

Tracking Measures:

1. Track the status of any updates to the IDDE procedures.
   - The latest updates were completed in FY2023.
2. Track the number, type, location, and resolution of any illicit discharge investigations conducted.
   - Aviation (PDX) did not have any reportable illicit discharges in FY2024.
   - Marine did not have any reportable illicit discharges in FY2024.
   - Industrial did not have any reportable illicit discharges in FY2024.
   - The Port maintains an IDDE reporting page on its public website: https://portofportland.com/Environment/ReportSpillDischargeForm

ILL-2: Conduct Annual Dry-Weather Field Screening

BMP Description:

- The Port conducts annual field screening activities during dry-weather conditions (between July and September) at all Port-owned priority outfall locations. Activities are conducted according to documented procedures. If necessary, in accordance with dry-weather field screening activities, the Port updates its GIS files annually related to existing outfall and priority outfall locations.

Implementation Tasks:

1. Update and maintain an MS4 map of outfall locations, conveyance system, stormwater controls, chronic illicit discharges, and dry-weather priority screening sites. Annually, as necessary, update Port data files related to outfall locations in accordance with dry-weather field screening activities.
2. Review and update dry-weather screening prioritization criteria and include results in the review of the third-year annual report. If necessary, update the SWMP document to reflect new criteria and procedures.

3. Conduct annual dry-weather field screening activities at all priority outfall locations within 72 hours of an antecedent dry period. In general, these activities include the following:
   - Document general observations of flow, turbidity, oil sheen, trash, debris or scrum, condition, color, odor, and other relevant observations of any non-stormwater or illicit discharges.
   - Field screening and analysis if flow is observed.
   - Utilize pollutant parameter action levels as part of field screening.
   - If the source cannot be identified, collect water quality samples and conduct laboratory analysis for ongoing discharges.
   - See Element #9 for required training.

Tracking Measures:

1. Track the number and location of priority outfalls inspected during dry-weather field screening activities.
   - In FY 2024, 16 Aviation (PDX) outfalls were inspected.
   - In FY 2024, 50 Marine & Industrial outfalls were inspected.
   - The location of Port priority outfalls for dry-weather field screening is mapped in the Port's GIS system.
2. Summarize dry-weather field screening inspection results and indicate outfalls requiring sampling or follow-up activities.
   - Aviation (PDX) screening was conducted in FY2024.
   - **Summary:** Sixteen outfalls were inspected; no visible illicit discharges were observed.
   - Marine & Industrial screening was conducted in FY2024.
   - **Summary:** Fifty Port outfalls were inspected; no visible illicit discharges were observed.
3. Indicate the outcome and resolution of inspection activities conducted.
   - No illicit discharges were observed.

ILL-3: Implement the Spill Response Program

BMP Description:

- Facilities subject to the Spill Prevention Control and Countermeasures Act (SPCC) and/or the industrial stormwater permit program include site specific spill response plans in the facility's SPCC and/or SWPCP plan. Site specific spill response plans for these facilities can be accessed on the Port's public website. [6]
- The Port also implements a Spill Response Program for all Port properties in accordance with provisions outlined in the Port's Spill Response Procedures. Spills are reported to the PDX Communication Center, which notifies on-call Port Environmental staff, who in turn coordinate response and ensure proper cleanup. Port Environmental staff dispatch an on-call emergency response contractors as needed. Port Environmental staff also completes the necessary reporting requirements, including notification of the Oregon Emergency Response System and the National Response Center, when appropriate. Spills occurring at marine terminals are first reported to Marine Security, which then notifies the PDX Communication Center.

Implementation Tasks:

1. Continue to implement the Port's spill response procedures and update, as necessary.

6 Current SPCC and SWPCP plans can be downloaded from here: https://portofportland.com/Environment/StormwaterManagement

2. Continue to implement a reporting program for potential illicit discharges by maintaining spill notification signs throughout Port property and an online reporting mechanism.

Tracking Measures:

1. Track the number of spill complaints received.
   - No spill complaints were received in FY2024.
2. Track the number, location, and type of spills of a reportable quantity for which a spill response was conducted.
   - One spill occurred that exceeded the reportable quantity at PDX (JetA). Atlas Air was the responsible party. The specific location was 7425 NE Airtrans Way. The spill included approximately 50 gallons of petroleum/oil due to leaking equipment. The spill occurred along the taxiway in the air cargo area. Booms were placed around the storm drains and granular absorbents and bio-skim were applied. Additional booms were placed in the spill containment basins for stormwater Basins 4 and 6. Impacted grass/soil along the taxiway were removed. NRC and OERS were contacted.

7.1.4 Element #4: Construction Site Runoff Control

The goals of the construction site runoff control program are to prevent sediment and other construction related materials from leaving construction sites through the implementation of properly selected and installed BMPs, education on erosion prevention and sediment control principals, site inspections, and enforcement.

The City of Portland's erosion control program, as outlined in its Erosion Control Manual, is applied city-wide and also applies to areas within the Port's MS4 Permit jurisdiction. At a minimum, all construction sites with ground-disturbing activities are required to comply with the City's Title 10 Erosion and Sediment Control Regulations. Construction sites with qualifying ground-disturbing activities are required to obtain a City-issued Site Development Permit, which includes specific erosion control BMP requirements. Additionally, construction sites disturbing 1 acre, or more are required to obtain a 1200-C general permit from DEQ. As an agent of DEQ, the City administers the 1200-C permit for projects occurring within its MS4 Permit jurisdiction.

Port capital improvement construction projects that disturb 1 acre or more are covered by the Port's 1200-CA permit, issued and administered by DEQ. The Port incorporates both City and 1200-CA permit erosion control BMPs, as appropriate, into project specifications and contracts to ensure compliance.

7.1.5 Element #5: Post-Construction Site Runoff Control

PC-1: Port-Specific Post-Construction Runoff Controls

BMP Description:

- For select areas of PDX and T6, development/redevelopment projects address the MS4 Permit post-construction requirements through implementation of the Port's Stormwater DSM, dated 2017 (updates were made to the manual in 2024 – a revisions log is included in the DSM to summarize changes made).
- The City of Portland's Stormwater Management Manual for post-construction development standards is applied to all other Port property within the Port's MS4 permit boundary.

Implementation Tasks:

1. Implement the DSM for development and redevelopment in areas where the DSM applies. Airport-specific standards will be consistent with FAA and airport operations requirements.
2. Conduct a gap analysis review and update the DSM to ensure compliance with the MS4 Permit, including a review of the LID strategy.

Tracking Measures:

1. Track IGA adoption.
   - The Port's IGA with the City of Portland has been adopted. As a result, this tracking measure has been removed from the SWMP as one of the 2024 SWMP revisions.
2. Track the number of development applications reviewed and approved for compliance with stormwater regulations.
   - In FY2024, the Port conducted reviews of 47 development related applications for compliance with stormwater regulations.
3. Track the number, type, and drainage area of stormwater facilities installed to address post-construction requirements.
   - In FY2024,[7] no new stormwater facilities were installed to address post-construction requirements.

Note: The Port conducted a post-construction requirements gap analysis of the DSM in FY2023. Updates to the 2017 DSM to address identified gaps were finalized by November 1, 2024 as required in Schedule A.3.e of the NPDES MS4 permit. The updated DSM is posted on the Port's website.

7.1.6 Element #6: Pollution Prevention and Good Housekeeping for Municipal Operations

OM-1: Stormwater System Cleaning and Maintenance

BMP Description:

– The Port has a program for periodically inspecting, maintaining, and cleaning the MS4 and related structures. The Port maintains records of the inspection and cleaning activities.

Implementation Tasks:

1. The Port inspects and cleans all catch basins (as necessary) annually in Port-managed Marine Business Line areas.
2. The Port maintains its stormwater system through a program that features inspections and maintenance.
3. Marine-operated water quality treatment facilities are inspected, maintained and cleaned per the facilities O & M Manual to maintain proper operation.
4. Aviation (PDX) owned water quality treatment facilities (except for quiescent and detention ponds) are cleaned on an annual basis or per the facilities O & M Manual. The ponds are typically cleaned on a 3-year rotating basis.
5. The Port tracks all inspection and cleaning activities, including the total number of catch basins cleaned, tons of waste removed from catch basins, water quality facilities inspected and maintained, and linear feet of pipe cleaned.
6. The Port sweeps Port-managed areas of the Marine terminals annually at a minimum and more frequently as needed.
7. The Port sweeps landside roadways and parking areas within Port-owned property adjacent to PDX twice weekly at a minimum and more frequently as needed.
8. The Port sweeps the PDX maintenance facility and select areas of the PDX airfield daily.

[7] There are currently 266 stormwater treatment facilities operating on Port property. No new stormwater treatment facilities were constructed in FY2024. The Port is currently working to develop a stormwater treatment facility tool in GIS to help locate and quantify impervious area treated.

9. The Port decants material collected from sweeping and storm system cleaning in water-tight drop boxes (Decant Water Collection Boxes) that drain to an approved sanitary sewer discharge point.

Tracking Measures:

1. Track sweeping frequency at the Marine terminals.
   - Sweeping was conducted periodically throughout the year at Terminal 2, Terminal 4 and Terminal 6.
   - The Port performed 316.5 hours of sweeping at marine terminals.
2. Track sweeping frequency at Airport Way, Frontage Road, and the PDX employee parking lots.
   - PDX Maintenance performs regular sweeping for these areas, totaling 1,225 hours in the reporting year.
   - PDX Maintenance also performs routine sweeping of the maintenance facility and the airfield, totaling 1,802 hours in the reporting year.
   - The PDX Maintenance staff performed a total of 3,027 hours of sweeping.
3. Report the amount of materials removed from catch basins. Materials include those collected from catch basins and other structural devices.
   - 7.94 tons of material were removed from catch basins and 47.5 tons from impervious surfaces (sweeping) at Marine facilities.
   - 135 tons of material were removed from catch basins and 137.76 tons from impervious surfaces (sweeping) at Aviation (PDX) facilities.

OM-2: Minimize Water Quality Impacts Associated with Landscape Maintenance Practices

BMP Description

– The Port has a program to control the use and application of pesticides, herbicides, and fertilizers on Port property. This program includes guidance for marine, industrial, aviation (PDX) and undeveloped properties. As necessary, the program will be updated to meet permit requirements.

Implementation Tasks:

1. Apply pesticides and fertilizers using an integrated pest management approach to minimize impacts to stormwater (Responsibility: Mitigation and Enhancement Site Managers, , MX, MFM).
2. Review the Port's program to control pesticides, herbicides, and fertilizers annually and update as appropriate.
3. Maintain an inventory of pesticides used on Port property and update annually.

Tracking Measures:

1. Track annual pesticide use.
   - The amounts of each pesticide/herbicide /fertilizer used in FY2024 are presented below in Tables 7-1 to 7-5.

Table 7-1. Herbicide Use from July 1, 2023, to June 30, 2024 (FY2024) (Mitigation and Enhancement Sites)	
Trade Name	**Amount Used**
Aquaneat	1304 ounces
Select Max	52 ounces
Transline	127 ounces
Poast	168 ounces
Vastlan	1203 ounces

Table 7-2. MFM Pesticides/Herbicides/Fertilizer from July 1, 2023, to June 30, 2024	
Trade Name	**Amount Used**
Agri Star Triclopyr (3A and Garlon alternative)	25.44 gallons
Ranger Pro, herbicide	37.84 gallons
Casoron	446 lbs
Surge/Fert	600 lbs
Dimension	103 lbs
Gallery	165 oz.
Surflan	288 oz.

Table 7-3. PDX General Maintenance Pesticide Use from July 1, 2023, to June 30, 2024	
Trade Name	**Amount Used**
Sureguard	336 ounces
Crossroads	372.75 gallons
Alligare	138 pounds
Ranger Pro	25.5 gallons
Zinc Phosphide	13,500 pounds
Acelepyrn	4,800 pounds

Table 7-4. PDX Landscape Maintenance Herbicide Use from July 1, 2023, to June 30, 2024	
Trade Name	**Amount Used**
Atrimmec GR	5 gallons
Casaron 4G	50 pounds
Dimension 2EW	7.5 gallons
Pendulum AquaCap	30 gallons
Q4 Turf herbicide	5 gallons
Ranger Pro	10 gallons
Simazine 4L	25 gallons
Tower ore-m herbicide	12.5 gallons
Triclopyr 3A	7.5 gallons
T-Zone herbicide	5 gallons

Table 7-5. Marine Landscape Maintenance Herbicide Use from July 1, 2023, to June 30, 2024

Trade Name	Amount Used
Ranger Pro	4,843.5 ounces
Triclophry 3A Herbicide	3,256 ounces
Casaron	446 pounds
Surge/Fert	600 pounds
Dimension	103 pounds
Gallery	165 ounces
Surflan	288 ounces

OM-3: Coordinate with the Local Fire Department to Minimize Pollutant Discharge from Firefighting Training Activities

BMP Description:

– PDX and the Oregon Air National Guard have their own fire departments. No other fire districts train on Port property. PDX has a designated fire training facility equipped with an oil/water separator and holding tanks. All water used for live-fire training is captured and reused for future training exercises, allowed to evaporate, or disposed off-site. Firefighting foam is not used for training purposes The Air National Guard conducts training operations in accordance with their DEQ-issued NPDES permit.

Implementation Tasks:

1. PDX fire training activities will continue to implement current protocols for handling runoff to prevent water quality impacts.
2. Stormwater educational related material will be provided to the PDX fire department on a regular basis.

Tracking Measures:

1. Track stormwater related educational materials and/or training provided to the fire department.
   - In FY2024, the Port provided education materials in the form of environmental training to the PDX Aircraft Rescue and Firefighting Department. The objectives of the training were:
   - Stormwater Awareness and BMPs
   - SPCC and Spill Response Plans and Procedures
   - Regulated Materials and Management
   - Given its known PFAS content and potential water quality benefits, it should be noted that in FY2024, the Port completed the transition from Aqueous Film Forming Foam (AFFF) to Fluorine-Free Foam (F3). This transition included a combination of replacing and decontaminating trucks and apparatus and appropriately disposing of AFFF in a Subtitle C Hazardous Waste Landfill.

OM-4: GIS System and Asset Management Database

BMP Description:

– All Port storm system maps are available to operations and administrative personnel internally through the Port GIS interphase located on Navigator (the Port's intranet) or accessible externally through Portgis.com. The Port GIS System is updated regularly.

Implementation Tasks:

1. Create a tracking system for illicit discharges to identify repeat illicit discharges over time in the MS4 map.
2. Develop an outfall inventory with locations, unique identifier, and receiving water information for each outfall. Add and maintain outfall inventory with collection area characteristics to the MS4 map.
3. Add municipal structural stormwater facilities to the GIS database within 1 year of construction completion.

Tracking Measures:

1. Track the location and drainage area of new public and private water quality facilities as applicable.
   - The Port tracks the location and drainage areas of new public and private water quality facilities in the Port GIS System. In FY2024, no new public or private water quality facilities were constructed.
2. Track the number of outfalls in the GIS inventory.
   - The Port tracks the number of outfalls in the Port GIS System. There are 155 outfalls in the MS4 GIS inventory. Note that the inventory includes outfalls adjacent to the MS4 Permit areas, as shown in the MS4 Maps. Table 7-6 provides a summary of the outfalls in the Port's MS4 GIS inventory in FY2024.

Table 7-6. Outfalls in the Port's MS4 GIS Inventory

Owner	MS4 Permit Area Outfalls	Adjacent Outfalls	Total
Port of Portland	109	16	125
City of Portland	13	8	21
Unknown	2	7	9
Total	124	31	155

3. Track the number of municipal structural stormwater facilities in the GIS inventory.
   - The Port tracks the number of municipal structural stormwater facilities in the Port GIS System. There are 266 engineered stormwater quality facilities in the Port's GIS inventory in FY2024. Stormwater quality facilities include but are not limited to swales, infiltration basins, filter vaults, oil water separators and sediment manholes.

OM-5: Winter Weather Management

BMP Description:

– The Port's winter weather management activities related to public roads apply to the Port's jurisdictional boundary at PDX only. These roadways include Airport Way, Frontage Road, Airtrans Way, Air Cargo Road, Courier Court, Airway Circle, and NE 82nd Avenue. The Port typically contracts snow-removal activities (i.e., plowing) for these roads. Snow removal is initiated if the forecasted snow level is greater than 0.5 inch. Sand is not used on these roadways. If chemical deicers are needed, MX crews apply them. Chemical deicers are applied when forecasted temperatures are <32°F with moisture present on roadways. For elevated surfaces, chemical deicers are applied when forecasted temperatures are <36°F. If snow accumulation continues, deicers are applied after plowing. Potassium acetate is applied for pretreatment and throughout most storms. If forecasted precipitation is >1 inch, or if conditions dictate (freezing rain, rain, wet snow), sodium acetate may be applied. Sodium acetate is stored in a covered maintenance storage building at PDX. Potassium acetate is stored in aboveground storage tanks within secondary containment at PDX.

Implementation Tasks:

1. When chemical deicers are applied to public roads in the Port's jurisdiction, application equipment will be calibrated by weight and volume to apply deicers at the suggested rates per the manufacturer's requirements to avoid overapplication.

Tracking Measures:

1. Track the number of winter storms, amount of materials used, and quantities and locations of materials used.
    - In FY2024, the Port experienced 1 winter weather event when winter maintenance was conducted. The Port applied 2,130 gallons of potassium acetate (liquid) over 33.6 lane-miles and 24.25 tons of sodium acetate (solid) over 30.62 lane-miles. Deicers were applied to public roads and parking lots.

OM-6: Litter Control

BMP Description:

– The Port conducts litter pickup and vegetation management activities to ensure performance of all stormwater system features and to protect stormwater quality. The PDX airfield is heavily patrolled for foreign object debris that can be ingested into jet engines. The Port also implements a Corrective Action Plan or CAP system, which is an internal system for reporting observed issues such as illegal dumping and homeless camps. Once an item is entered into the CAP system, it is assigned to a Port staff member who is responsible for addressing the issue and coordinating clean-up.

Implementation Tasks:

1. Continue to implement the Port's online reporting system for responding to reports of dumping.
2. Continue litter pickup and vegetation management activities to ensure performance of all stormwater system features and to protect stormwater quality.

Tracking Measures:

Not applicable.

7.1.7 Element #7: Industrial and Commercial Facilities

IND-1: Screen Existing and New Industrial and Commercial Facilities

BMP Description:

– Facilities with significant industrial or commercial activities within the Port's jurisdiction are covered by a DEQ-issued 1200-Z or Individual NPDES permit. Such facilities include portions of PDX, T2, T4, T5, T6, Navigation Base, and select tenant properties. Screening of existing and new industrial facilities primarily applies to existing and new tenants occupying property not otherwise subject to an industrial stormwater permit. The City conducts screening of facilities for 1200-Z or Individual NPDES permit coverage in the Port's jurisdiction. The Port also screens new tenants and refers new tenants who may require permit coverage to the City for further screening or requires new tenants operating within areas of Port managed permits to become co-permittees on the Port's Individual NPDES permit or obtain their own 1200-Z permit.

Implementation Tasks:

1. Coordinate with the City over the permit term to track the results of screening industrial facilities in the Port's MS4. Track tenants listed as co-permittees on Port permits.

Tracking Measures:

1. Track leaseholders that have an industrial permit in the Port's MS4 area.
   - In FY2024, the Port tracked leaseholders that have an industrial permit in the Port's MS4 area. No new 1200-Z permits were added in FY2024.
2. Track new co-permittees on Port 1200-Z and PDX Individual NPDES permits.
   - No new co-permittees were added to the Port's 1200-Z or individual NPDES permits.

IND-2: Address High Pollutant Source Facilities

BMP Description:

- The Port's property includes a variety of industrial and commercial facilities both with and without 1200-Z or Individual NPDES industrial stormwater permits. The Port follows an established strategy for identifying and inspecting priority facilities. The City of Portland conducts inspections of Port tenants with 1200-Z or Individual NPDES stormwater permits.
- The Port maintains a list of priority facilities that have the potential to contribute substantial pollutant loads to the MS4. Priority facilities are inspected annually based on an evaluation of established criteria outlined in the Port's procedures.

Implementation Tasks:

1. Continue to implement the Port's specific Municipal Stormwater Permit Industrial Facility Inspection Program that addresses 1) facility types or activities to prioritize for inspections; 2) inspection procedures, documentation standards, and frequency of inspections; and 3) the process to assess and track whether industrial and commercial facilities are in compliance with ordinances related to discharges to the MS4.
2. Review and as necessary update the industrial/commercial facilities strategy and post changes on the Port of Portland website for at least 30 days prior to submission to DEQ as required prior to November 1, 2023.

Tracking Measures:

1. Report on the status of updating the Industrial and Commercial Facilities Strategy.
   - In FY2023, the Port updated its Industrial and Commercial Facilities Strategy. The draft document was posted to the Port's public website for 30 days prior to finalizing for DEQ submittal. A minor update was also made during this reporting year (dated 11/1/24) to emphasize that water quality treatment facility inspections are included as a part of the industrial/commercial facility inspections.
2. Track the number of facilities inspected annually.
   - In FY2024, 14 industrial and commercial facilities were inspected.
3. Track improvements made to priority facilities as a result of inspections.
   - Improvements included the following: (1) covering of trash and recycling dumpsters and bins, (2) increased sweeping, (3) catch basin cleaning, (4) installation of catch basin filters, (5) signage placed at hazardous material and waste areas, (6) spill response signage placed at oil and fuel handling areas, (7) spill containment placed beneath battery storage area, and (8) tire grindings removed from site.

7.1.8 Element #8: Infrastructure Retrofits and Hydromodification Assessment Update

RET-1: Implement Public Education Measures to Protect Stormwater Quality

BMP Description:

- The Port's 2014 Hydromodification Report states that the majority of the Port's MS4 stormwater discharges directly to the Willamette and Columbia Rivers and the Columbia Slough.
- The report states there is no current risk of Port runoff causing hydromodification impacts in these receiving waters.
- The Port's 2014 Stormwater BMP Retrofit Plan identifies retrofit measures designed to help improve water quality.

Implementation Tasks:

1. No further work is needed to address hydromodification impacts.
2. Conduct an assessment of progress in implementing the retrofit plan and consider updates as needed related to new goals and priorities and planned projects.
3. Continue to implement retrofit measures identified in the 2014 Stormwater BMP Retrofit Plan.

Tracking Measures:

1. Track retrofit activities.
    - The Port's retrofit and hydromodification assessment update was provided to DEQ in Appendix C of last year's annual report (FY2023).
    - As stated in the 2023 retrofit and hydromodification assessment update, with respect to tools for supporting retrofit planning, the Port maintains a 10-year capital improvement project portfolio that prioritizes and initiates projects for construction. Stormwater treatment projects are prioritized by treatment need and treatment provided. To track required treatment, the Port utilizes a stormwater treatment tracking tool, initiated in 2015. This tool tracks required treatment for both existing and proposed impervious surfaces at PDX and T6. Similar to a check book, this tool tracks treatment credit and debit. FY2023 retrofit project goals for FY2024 included a PDX Basin 6 Stormwater Treatment Project (retrofit of an existing stormwater spill containment facility to increase hydraulic residency time and treat stormwater), and PDX Airtrans Way Stormwater Treatment Vault Reconstruction (retrofit of an existing treatment vault to provide an additional 10.3 acres of impervious area treated).
    - Stormwater improvements that were constructed during FY2024 included the following:
        - Construction began for the PDX Basin 6 Stormwater Treatment Project as listed in the previous bullet. This facility provides treatment for 186 impervious acres. Completion is scheduled for October 2024.
        - The PDX Airtrans Way Stormwater Treatment Vault Reconstruction Project as listed in the previous bullet, is included in the Port's capital improvement project list for calendar year 2025.

7.1.9 Element #9: Port's MS4 Training

TRN-1: MS4 Permit Training

BMP Description:

- This section presents the status of implementing the Port's multi-year and multi-topic training strategy to address stormwater education for Port staff. The Port's 2021 MS4 Permit requires training for Port staff in several stormwater-related categories listed below.
  - Illicit discharge detection and elimination
  - Construction site runoff controls
  - Post-construction site stormwater management
  - Pollution prevention and good housekeeping for municipal operations
  - Industrial and commercial facilities stormwater management
    - Newly hired Port staff are trained in the environmental duties associated with their new position during onboarding. Existing staff receive refresher training in the environmental-related duties of their position annually. All staff are trained on updated or changed procedures throughout the permit term as changes occur.
    - The MS4 Permit includes the training requirements as shown below. In some cases, the language for the listed Permit requirements has been condensed.
    - The 2022 SWMP Table 3-15 outlines the Port's strategy for conducting the required stormwater training for Port staff.

MS4 Permit:

1. Schedule A.3.c.vi: Illicit Discharge Detection and Elimination Training and Education
   - The co-permittees must ensure that all persons responsible for investigating and eliminating illicit discharges and illicit connections into the MS4 are appropriately trained in such activities. All staff directly responsible for conducting dry-weather screening activities or responding to reports of illicit discharges and spills into the MS4 must be properly trained to conduct such activities, and training strategies and frequencies for staff must be documented and described or referenced in the SWMP Document.
2. Schedule A.3.e.vii: Long-Term Operation and Maintenance Training and Education
   - The co-permittees must ensure that staff responsible for performing post-construction runoff site plan reviews, administering the post-construction program requirements, and performing operations and maintenance (O&M) or evaluating compliance with long-term O&M requirements are trained or otherwise qualified to conduct such activities. Staff training strategies and frequencies must be described or referenced in the SWMP Document.
3. Schedule A.3.f.x: Pollution Prevention and Good Housekeeping for Municipal Operations: O&M Staff Training
   - The co-permittees must continue to ensure that staff responsible for evaluating O&M practices, evaluating compliance with long-term O&M requirements, or ensuring pollution prevention at facilities and during operations are trained or otherwise qualified to conduct such activities. Training strategies and frequencies for staff must be described in the SWMP Document.

4. Schedule A.3.g.iii: Commercial & Industrial Facility Inspection Staff Training
    - The co-permittees must ensure that staff responsible for inspecting and evaluating commercial and industrial facilities, evaluating compliance with municipal ordinances related to discharges to the MS4, or ensuring pollution prevention at facilities through inspections and/or provision of educational materials on stormwater management are trained or otherwise qualified to conduct such activities. Staff training strategies and frequencies must be described in the SWMP Document.

Stormwater Training Topics:

1. Identifying and reporting illicit discharges (including procedures for enforcement and follow-up actions).
2. Dry weather screening procedures, documentation, reporting, and follow-up actions.
3. Best practices and new technologies for erosion prevention and sediment control.
4. Proposed or adopted changes to stormwater design standards and stormwater-related land use policies.
5. Port site inspection processes and documentation procedures (including violation enforcement processes).
6. O&M best practices for stormwater management facilities.
7. Inspection, cleaning, and documentation/tracking procedures for MS4-related structures (catch basins, storm drains inlets, and pipes)
8. Stormwater pollution prevention and good housekeeping practices for field operations.
9. Facility stormwater pollution prevention planning and best practices.
10. Integrated pest management and proper application of pesticides and fertilizers.
11. Industrial and commercial facility inspection procedures.

Tracking Measure:

1. In FY2024, 46 new employees received the environmental spill response and stormwater training that includes all stormwater training topics listed above.
2. In addition, the 185 existing employees received the annual refresher training on environmental spill response and stormwater topics as follows:
3. MX – 75 employees received training on stormwater awareness and BMPs; permit requirements; preventative maintenance, illicit discharges; spill response plans and procedures; and regulated materials management.
4. ARFF – 30 employees received training on stormwater awareness and BMPs; permit requirements; illicit discharges; spill response plans and procedures; and regulated materials management.
5. Port Construction Services – 12 employees received training in construction permits, BMPs, dewatering, soils handling, hazardous materials, air quality, natural resources and spill response procedures.
6. MFM and Landscape Maintenance – 18 employees received training on stormwater issues; permit requirements; BMPs; erosion and sediment control; spill prevention and response; snow and ice removal; preventative maintenance, illicit discharges; regulated wastes; hazardous materials.
7. NAV – 45 employees received training on stormwater management, stormwater permit requirements, BMPs, operations & maintenance, monitoring results, illicit discharges, environmental protection, spill control and response, and regulated materials management.
8. MFM Pesticide Applicator: One applicator received Oregon Department of Agriculture (ODA) training regarding appropriate pesticide/herbicide use.

9. Inspections Staff: Training was provided for the two staff conducting industrial/commercial inspections and dry weather field screening.

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Section 8: Adaptive Management Process Implementation and Proposed SWMP Changes

As it has, since Permit Year One, the Port continues to use adaptive management to modify and improve BMPs and to implement practices that reduce pollutant loading to the Maximum Extent Practicable. This process involves direct coordination with operating area personnel who provide suggested BMP modifications. In the 2024 MS4 reporting year, an adaptive management process was used to ensure all viable ideas were heard, documented, and implemented. Examples include:

- PDX and MFM have continued to refine data collection for cleaning and documenting maintenance of the storm sewer system.
- In 2017, the Port installed a 333-cartridge stormwater treatment vault system at PDX in Drainage Basin 7. Following commissioning, the vault system did not appear to function as originally designed, so a performance study was initiated and as a result, the pump logic and controls were reconfigured, enhancing the system's treatment capacity.
- In 2018, the Port installed a proprietary stormwater treatment cartridge vault at PDX in Drainage Basin 5. Following commissioning the performance of the vault system was monitored and key retrofits were identified, including the installation of a weir wall. Performance monitoring has continued, and additional key retrofits have been identified. These additional retrofits have been added to the capital improvement project portfolio, and construction is planned for summer 2025.
- In the reporting year 2021, the Port constructed stormwater treatment system at T4 and the Navigation Facility. Performance monitoring of these systems continued through the FY2024 reporting year.
- Construction of a vegetated infiltration basin at T6 was completed in 2022. This facility treats stormwater runoff from approximately 20 impervious acres in Basin K and 60 in Basin L. During FY2024, this facility was inspected monthly to ensure proper functioning per the operations and maintenance plans.
- The Port added T6 to its Stormwater DSM in 2021 and added an additional 10 acres in September 2022. Construction of a stormwater infiltration basin to treat the entire 10 acres is currently underway.
- The Port's Stormwater Design Manual was updated and refined to further emphasize infiltration as a requirement and to prioritize green infrastructure.
- As noted in Section 7.1.8, construction began for the PDX Basin 6 Stormwater Treatment Project which includes the retrofit of an existing stormwater spill containment facility to increase hydraulic residency time to treat stormwater. This facility provides treatment for 186 impervious acres. Drawing on lessons learned from the construction and operation of previous stormwater treatment systems, a long-term commissioning plan has been developed to ensure the system fully functions as designed. Completion of construction is expected in October 2024.
- To support better tracking of treatment, the Port is working to develop a stormwater treatment facility tool in GIS to help track, locate and quantify impervious area treated.

- While water quality treatment facility inspections have been conducted by the City, and by the Port under the Port's industrial/commercial inspection program, the SWMP was updated for clarity to include a tracking measure specific to tracking the inspection of treatment facilities constructed to comply with the Port's Stormwater DSM. In addition, minor modifications were made in the Port's Industrial and Commercial Facility Inspection Strategies document to clarify and further emphasize that water quality treatment facility inspections are included as a part of the industrial/commercial facility inspections.

The Port prepared the 2022 SWMP to reflect the 2021 MS4 Permit requirements (effective October 1, 2021). The Draft 2022 SWMP was open for public comment for 30 days in September/October 2022. No public comments were received. The 2022 SWMP was finalized and dated November 1, 2022, and was approved by DEQ on December 16, 2022.

The Port updated the 2022 SWMP during FY2024 to document its updated Stormwater DSM (see Section 7.1.5). No additional proposed changes were made to the SWMP at this time. A Revision Log is included in the updated SWMP (Table A-1) to document SWMP changes. The revised SWMP is posted on the Port's Stormwater Management Page of their public website.

Section 9: 2021 MS4 Permit Additional Elements

Schedule B.3.l of the 2021 MS4 Permit requires the Port to track and report on additional elements that are found in specified sections of the permit. A summary of those elements for FY2024 reporting is as follows:

- Schedule A.1.b.iii: Schedule A.1.b.iii requires co-permittees to submit the details of all corrective actions implemented that are associated with this section of the permit (Water Quality Standards). The Port has no corrective actions to report for FY2024.
- Schedule A.3.c.vii: Schedule A.3.c.vii requires co-permittees to include updates in the annual report regarding any capital improvements needed or implemented associated with the IDDE program. In FY2024, there were no capital improvement programs needed or implemented that were associated with the IDDE Program.
- Schedule B.3.j: In FY2024, the City's Urban Growth Boundary expansion areas were unchanged. Therefore, the Port issued no post-construction permits for land use changes or new development activities that occurred within the City's Urban Growth Boundary expansion areas.

Schedule D.3.b: Schedule D.3.b. requires co-permittees to develop and submit a mercury minimization assessment that documents the Port's current actions, such as BMPs implemented, that reduce the amount of solids discharged into and from the permitted MS4 system (similar to the actions currently required by 2021 Permit Schedule A). The Port's Mercury Minimization Assessment was submitted with the FY2022 Annual Report as Appendix A.

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PART III
MONITORING REPORT

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1 Introduction

This annual monitoring report is submitted in compliance with Schedule B of the City of Portland (City) and Port of Portland's National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Discharge Permit Number 101314. Schedule B of the MS4 permit (Table B-1) contains specific requirements on the monitoring types, locations, frequency, and parameters. This report summarizes monitoring activities conducted by the City during the 2023–24 permit year (July 1 to June 30) in accordance with Schedule B and discusses pertinent results. More information about the City's monitoring approach, including information about monitoring objectives, sample design, field and laboratory procedures, and data management can be found in the City's 2022 MS4 Monitoring Plan.

The City's sampling activities and results are summarized in Sections 2 and 3, respectively. Section 4 includes an evaluation of trends in water quality based on the City's stormwater sampling. A map of all monitoring locations is available online at: www.portlandmaps.com/bes/ms4monitoringsitesmap. All monitoring data collected during the 2023–24 permit year have been submitted electronically to the Oregon Department of Environmental Quality (DEQ) and are made available by DEQ through DEQ's water quality monitoring data portal, the Ambient Water Quality Monitoring System.

2 Sampling Activities

The City conducts sampling and analysis of stormwater, instream, and biological (macroinvertebrates) parameters to fulfill MS4 permit requirements. The monitoring also supports and informs the City's actions in meeting Total Maximum Daily Load (TMDL) objectives related to receiving-water health. Detailed information on the City's monitoring strategy is provided in the City's 2022 MS4 Monitoring Plan, including the methods used to collect samples, frequency of collection, and the number of sampling locations.

Table 1: *Summary of monitoring activities conducted during the permit year and the commitments included in the 2022 monitoring plan. A range is provided when the frequency varied by site.*

	2022 Monitoring Plan		2023–24 Activities	
Monitoring Type	**Number of Sites**	**Frequency/Site**	**Number of Sites**	**Frequency/Site**
Stormwater Outfall	15	3 storm events	15	3–4 storm events
Stormwater Outfall Pesticides	15	3 storm events/ permit term	15	1 storm event
Instream	16	4 seasonal 1 storm event	20	4 seasonal 1 storm event
Fixed Instream		Not included	3	12 events
Continuous Instream (USGS)	8	Continuous: 30-minute interval maximum	8	Continuous: 30-minute interval maximum
Macroinvertebrates	12	1 sample	15	1 sample

During the 2023–24 permit year, the City completed all permit-required monitoring activities (Table 1). In response to the new MS4 permit monitoring requirements in Schedule B, the City modified its instream monitoring approach to focus on collecting samples at 20 randomly selected locations. The City's 2016 MS4 Monitoring Plan included sampling at 11 fixed instream sites sampled four times per year, however, these fixed instream locations have been sufficiently characterized and are no longer included in the 2022 MS4 Monitoring Plan. The City does continue to collect samples from the three locations on the mainstem Willamette River. Results from these locations are summarized in this monitoring report.

2.1 Stormwater Monitoring

Portland's municipal stormwater conveyance system includes approximately 1,500 stormwater outfalls that are covered by the City's MS4 permit. These outfalls vary in size, with catchment areas ranging from 0.01 to 750 acres with a mean of 9.7 acres. The outfall basins comprise a variety of different land uses and are located throughout the city in all watersheds. In 2022 the City initiated a new stormwater monitoring effort that focuses on collecting grab samples from locations representative of the City's MS4 outfall basins.

During the 2023–24 permit year, the City successfully sampled 15 stormwater outfall locations. The samples were collected from seven separate storm events (Table 2). At least 0.1 inches of rain were recorded in the 24 hours prior to sample collection for each sampling event.

Table 2: *Summary of storm events sampled as part of the City's stormwater outfall monitoring during the permit year.*

Sampling Date	Number of Sample Locations	Event Length Before Sample Collection (Hours)	24-Hour Antecedent Rainfall (Inches)
2023-10-10	2	1.3–9.7	0.18
2023-11-30	6	3.4–6.0	0.1–0.2
2024-02-14	5	2.9–4.9	0.1–0.2
2024-02-25	4	4.3–6.3	0.1–0.2
2024-02-28	11	1.1–9.2	0.1–0.4
2024-02-29	5	1.3–21.7	1.1–1.2
2024-04-25	15	7.4–11.0	0.2–0.4

2.2 Instream Monitoring

The City collects and analyzes water quality samples from multiple streams throughout Portland that receive MS4 discharges. The City employs a probabilistic survey design to monitor Portland's waterways, with a total target of 80 perennial sites across the city's watersheds. The sample sites are divided into four panels that are sampled on a 4-year rotating basis, with a target of 20 perennial stream sites included in each panel. Seasonal (once per quarter) water quality samples are collected at each site each year. Additionally, the City aims to collect one targeted sample during a storm event at each instream site each year. Given the program design, the number of monitoring sites in each watershed varies from year to year. The City continues to collect water quality samples from three fixed stations along the mainstem Willamette River. These three locations are sampled on a monthly basis.

During the 2023–24 permit year, the City collected water quality samples from all of the instream water quality monitoring sites (Table 3). As is required by Schedule B.2.d.i.A of the permit, over half of the samples were collected during the wet season (from September 1 to April 30).

Table 3: *Summary of the instream water quality monitoring locations and the number of samples collected at each site during the permit year for both the probabilistic locations and mainstem Willamette River sites.*

Watershed	Number of Sites	Wet Weather Samples/Site	Dry Weather Samples/Site	Subtotal of Samples
Columbia Slough	5	1	4	25
Johnson Creek	6	1	4	30
Tualatin River	4	1	4	20
Willamette River	5	1	4	25
Willamette Mainstem	3	8	4	36
Total	**23**			**136**

2.3 Continuous Instream Monitoring

Continuous instream monitoring includes ongoing physical and chemical stream monitoring at fixed locations within streams that receive MS4 runoff. Continuous instream flow and temperature monitoring provides a high-resolution dataset that can be used to evaluate the physical characteristics of streams that receive MS4 discharges. The U.S. Geological Survey (USGS) operates eight stream gauges in the Portland area. The City provides partial funding for the monitoring sites through joint funding agreements.[1] All eight of the gauges record stream discharge, and five gauges also record water temperature. The Willamette gauge measures additional parameters, including chlorophyll-*a*, cyanobacteria, dissolved oxygen, nutrients, pH, specific conductance, and turbidity.

All eight stream gauges were operational throughout the permit year. There are short periods of missing discharge data at four gauges. Equipment failures resulted in 8 days of missing discharge data at the Tryon Creek gauge (#14211315) in May and June, 5 days of missing discharge data at the Johnson Creek Sycamore gauge (#14211500) at the beginning of January, several 1-day gaps at the Columbia Slough gauge (#14211820), and 5 days of missing discharge data at the Willamette River (#14211720) gauge in March. Short periods of missing temperature data occurred at the Johnson Creek Sycamore gauge (#14211500) and Crystal Springs Creek (#14211542).

The USGS makes the instantaneous flow and temperature data available prior to the completion of its full data review process. A portion of the data presented here are provisional at the time of reporting and may be subject to change after USGS completes the full quality assessment.

2.4 Macroinvertebrate Monitoring

Macroinvertebrate monitoring provides information on biological communities within water bodies that receive MS4 discharges. The City collects benthic macroinvertebrate samples, drawing from the same set of rotating sampling locations where the instream monitoring is conducted. The approach focuses on collecting samples

[1] U.S. Department of the Interior, U.S. Geological Survey 2019 Joint Funding Agreement for Water Resource Investigations, https://efiles.portlandoregon.gov/Record/13152687.

from wadeable perennial streams throughout the Portland area. Macroinvertebrate monitoring is timed to occur during the low-flow period to facilitate sampling and capture conditions during the period of highest stress for many organisms.

The City collected benthic macroinvertebrates at 15 perennial stream sites during the summer and early fall of 2023. All wadeable, riffle-dominated sites were sampled in accordance with the 2022 MS4 Monitoring Plan. No sampling problems were encountered.

2.5 Permit Year Precipitation Patterns

Precipitation patterns across Portland are variable, delivering different amounts of rain to different parts of the city. The City operates a network of rain gauges as part of the HYDRA Rainfall Network.[2] Each rain gauge records rainfall amounts in 0.01-inch increments. For the purposes of summarizing the precipitation patterns observed during the permit year, data from eight gauges located across the City were summarized (Figure 1). During the 2023–24 permit year, Portland received a total of approximately 47.1 inches of precipitation. During the previous 20 years, the eight rain gauges recorded a mean total annual rainfall amount of 38.1 inches.

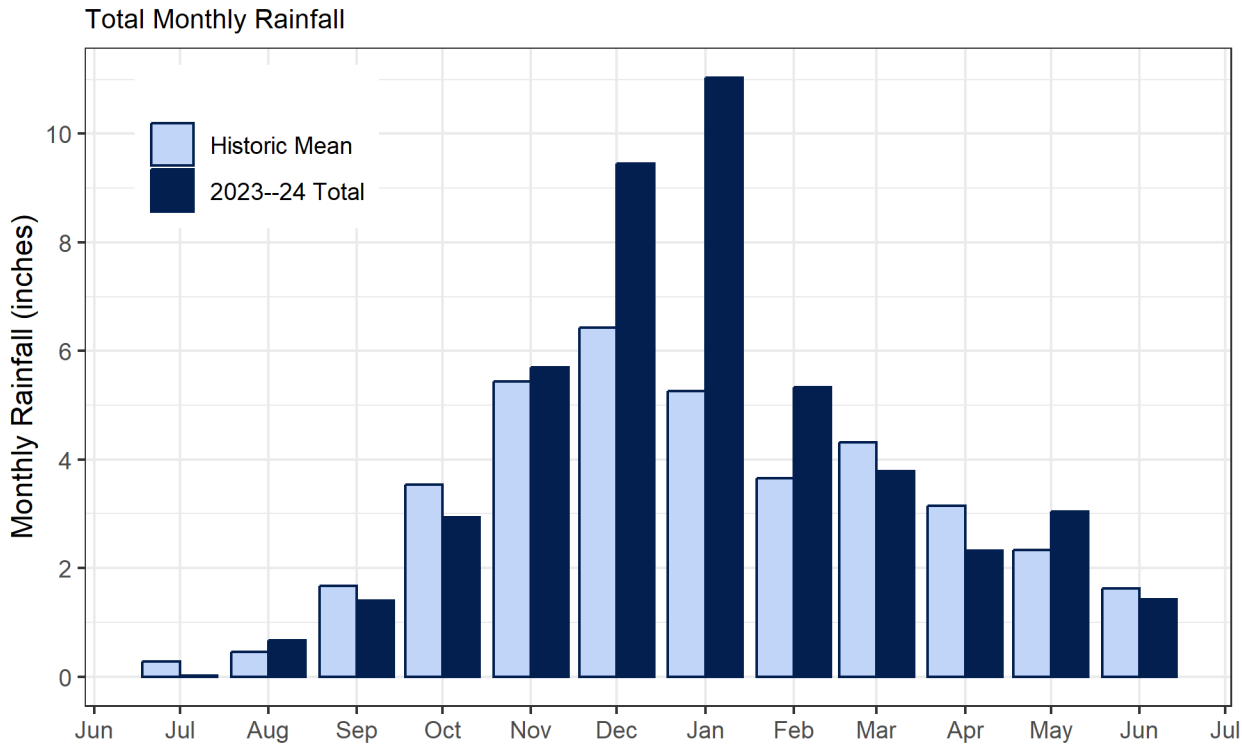

Figure 1: *Mean total monthly rainfall recorded at eight stations across Portland from July 1, 2023, to June 30, 2024, compared to the mean monthly totals recorded from the previous 20 years (2002–2022).*

Compared to previous years, Portland received more rain by approximately 9 inches during the 2023–24 permit year. The winter months experienced higher than average rainfall amounts, with the largest deviations occurring in December and January (Figure 1).

[2] More information about the HYDRA Rainfall Network is available here: https://or.water.usgs.gov/non-usgs/bes.

3 Monitoring Results

The following sections describe the results of the instream, stormwater, and biological monitoring conducted by the City during the 2023–24 permit year. Results are presented and summarized for each monitoring effort.

3.1 Stormwater Monitoring Results

The City collected three sets of stormwater grab samples during four separate events at each of the 15 stormwater outfall sites (Table 4) during the 2023–24 permit year. The water quality samples were analyzed for the full suite of required parameters.

Table 4: *Summary of the stormwater outfall monitoring results from the permit year.*

	Analyte	Mean	Median	Minimum	Maximum	Detections/ Samples
Field	Conductivity (umhos/cm)	70	59	9	191	45/45
	Dissolved oxygen (mg/L)	11.0	10.8	8.6	12.3	45/45
	Temperature (°C)	10.0	10.1	5.8	15.9	45/45
	pH (pH Units)	7.0	7.0	6.6	7.8	45/45
General	Alkalinity (mg $CaCO_3$/L)	19.0	16.4	3.1	47.9	45/45
	BOD (mg/L)	8.7	6.0	<2	22.0	36/45
	Dissolved organic carbon (mg/L)	8.1	7.3	1.8	23.4	45/45
	E. coli (MPN/100 mL)	1,500	510	<10	24,000	44/45
	Hardness (mg $CaCO_3$/L)	25.0	20.9	4.4	64.6	45/45
	Total suspended solids (mg/L)	57	25	<3	422	42/45
Metals (ug/L)	Copper	13.0	8.1	2.4	42.6	45/45
	Copper, dissolved	7.0	4.1	1.1	35.1	45/45
	Lead	3.7	2.3	0.2	36.4	44/45
	Lead, dissolved	0.23	0.13	<0.106	1.37	26/45
	Mercury	0.0100	0.0072	0.0015	0.0617	45/45
	Zinc	100.0	63.2	13	1,340.0	45/45
	Zinc, dissolved	54.0	29.6	4.7	870.0	45/45
Nutrients (mg/L)	Ammonia-nitrogen	0.17	0.11	<0.02	0.58	43/45
	Nitrate-nitrogen	0.61	0.40	<0.1	2.52	26/30
	Orthophosphate	0.08	0.07	<0.02	0.22	43/45
	Total Phosphorus	0.28	0.23	0.045	2.43	45/45

E. coli was regularly detected at all 15 of the stormwater outfalls. During the October 10, 2023, storm event, the sample collected at ACM553 had a high concentration of *E. coli* (24,000 MPN/100 mL; Table 4). Follow-up sampling was conducted at the site on October 12, 2023. The *E. coli* concentration had decreased to 1,900 MPN/100 mL. City staff examined the upstream basin draining to this outfall and did not observe any activities indicating illicit discharges.

Copper, mercury, and zinc were detected in all 45 stormwater samples. Total lead was detected at all 15 sites; however, dissolved lead was below detection in over half of the samples. The mean concentrations for all of the metals presented in Table 4 are higher than the median concentrations. This indicates that there are a small number of higher concentration results that increase the mean value, but do not occur frequently enough to increase the median concentrations. The probabilistic stormwater results were not compared to any water quality standards as no criteria apply directly to stormwater runoff.

The City analyzed stormwater grab samples for pesticides from one storm event during the 2023–24 permit year. Thirteen different pesticides were detected and at least one pesticide was detected at each outfall location (Table 5). The most commonly detected pesticide was pentachlorophenol—detected at 14 of the outfall locations. 2,4-D and Endosulfan I were also frequently detected—seen in at least half of the outfall locations (Table 5).

Table 5: *Summary of the stormwater outfall monitoring results for pesticides from the permit year. Only pesticides over the detection limit are presented.*

Analyte (ug/L)	OF-ACF516	OF-ACF620	OF-ACG083	OF-ACG438	OF-ACG532	OF-ACG618	OF-ACM125	OF-ACM130	OF-ACM133	OF-ACM432	OF-ACM479	OF-ACM553	OF-ANJ675	OF-ANJ827	OF-APP645
2,4-D	0.285	0.304		0.210	0.368			0.083		0.989	5.860	0.529	0.510	0.130	0.754
alpha-Chlordane						0.0023									
Dicamba											0.28				0.12
Dichlobenil								0.16							
Dieldrin *						0.0035									
Endosulfan I	0.0065		0.0110	0.0065	0.0078			0.0038			0.0042		0.0044	0.0079	
Endrin				0.0074								0.0019			
Endrin Aldehyde	0.0054		0.0120											0.0063	
Fipronil							0.077								
Heptachlor Epoxide						0.0048									
MCPP															0.140
Oxyfluorfen					0.62										
Pentachlorophenol	0.10		0.78	0.49	0.08	0.18	0.07	0.34	0.04	0.07	0.06	0.50	0.16	0.14	0.18

Note: Only the detected pesticides are presented in the table above. The analytes noted with an asterisk (*) were specifically targeted in the 2022 MS4 Monitoring Plan, along with DDE, DDT, dinoseb, MCPA, and triclopyr. All other pesticides were reported as part of the Multi-Residue Pesticide Profile using EPA 8321B/ 8270D methods. The full suite of pesticides for which the stormwater samples were analyzed can be found in the 2022 MS4 Monitoring Plan.

3.2 Instream Monitoring Results

Throughout the 2023–24 permit year, the City collected 101 water quality grab samples across a range of flow and seasonal conditions from 20 probabilistically selected perennial stream sites and three fixed sites on the Willamette River. The water quality samples collected were analyzed for the full suite of required parameters. The results are summarized in Table 6, including observed exceedances for parameters with associated water quality criteria or Total Maximum Daily Load (TMDL) limits.

Table 6: *Summary of the instream monitoring results from the permit year.*

	Analyte	Watershed	Median	Range	Detections/ Samples	Percent above Water Quality Criteria/TMDL Limit
General	Dissolved oxygen (mg/L)	Columbia Slough	8.8	5.4–12.4	25/25	16
		Johnson Creek	11.3	3.4–13.2	30/30	3
		Tualatin River	10.6	8.3–11.9	20/20	0
		Willamette Mainstem	11.8	8.1–14.1	36/36	0
		Willamette Tributaries	10.9	7.6–12	25/25	0
	Temperature (°C)	Columbia Slough	12.3	3.9–19.5	25/25	
		Johnson Creek	10.9	2.7–20.1	30/30	
		Tualatin River	10.5	5.2–17.3	20/20	
		Willamette Mainstem	11.4	6.3–24	36/36	
		Willamette Tributaries	9.8	5.8–15.8	25/25	
	pH (pH units)	Columbia Slough	6.9	6.2–7.3	25/25	4
		Johnson Creek	7.4	6.6–8.3	30/30	0
		Tualatin River	7.5	7.3–7.8	20/20	0
		Willamette Mainstem	7.2	6.5–7.5	36/36	0
		Willamette Tributaries	7.5	6.8–7.9	25/25	0
	BOD (mg/L)	Columbia Slough	2.0	<2–3	4/25	
	Dissolved organic carbon (mg/L)	Columbia Slough	1.85	<1–3.09	24/25	
		Johnson Creek	1.96	1.4–4.94	30/30	
		Tualatin River	2.34	<1–5.31	18/20	
		Willamette Tributaries	2.33	1.2–9.2	25/25	
	E. coli (MPN/100 mL)	Columbia Slough	75	<10–260	25/25	0
		Johnson Creek	115	<10–6500	30/30	23
		Tualatin River	63	<10–7700	19/20	30
		Willamette Mainstem	16	<1–410	36/36	3
		Willamette Tributaries	41	<10–1300	20/25	16
	Total suspended solids (mg/L)	Columbia Slough	3	<3–13	13/25	
		Johnson Creek	4	<3–80	19/30	
		Tualatin River	3	<3–18	8/20	
		Willamette Mainstem	5	<3–116	25/36	
		Willamette Tributaries	4	<3–22	14/25	

	Analyte	Watershed	Median	Range	Detections/ Samples	Percent above Water Quality Criteria/TMDL Limit
Metals (ug/L)	Copper	Columbia Slough	1.01	0.38–2.22	25/25	
		Johnson Creek	1.00	0.6–5.72	30/30	
		Tualatin River	1.82	0.87–8.62	20/20	
		Willamette Mainstem	0.75	0.45–6.92	36/36	
		Willamette Tributaries	1.25	0.32–4.02	25/25	
	Copper, dissolved	Columbia Slough	0.57	0.21–1.46	25/25	4
		Johnson Creek	0.66	0.38–5.42	30/30	0
		Tualatin River	1.22	0.52–5.78	20/20	0
		Willamette Mainstem	0.40	0.29–3.02	36/36	3
		Willamette Tributaries	0.69	0.25–2.69	25/25	0
	Lead	Columbia Slough	0.19	<0.1–0.576	19/25	
		Johnson Creek	0.22	<0.111–3.05	26/30	
		Tualatin River	0.36	<0.111–2.34	17/20	
		Willamette Mainstem	0.10	0.042–1.55	35/35	
		Willamette Tributaries	0.32	<0.111–1.4	21/25	
	Lead, dissolved	Columbia Slough	0.11	<0.106–0.122	1/25	0
		Johnson Creek	0.11	<0.106–0.146	3/30	0
		Tualatin River	0.11	<0.106–0.875	5/20	0
		Willamette Mainstem	0.02	<0.021–0.356	15/33	0
		Willamette Tributaries	0.11	<0.106–0.275	6/25	0
	Mercury	Columbia Slough	0.00111	<0.001–0.00254	8/25	0
		Johnson Creek	0.00149	<0.00111–0.0109	24/30	0
		Tualatin River	0.00174	<0.00111–0.00421	13/20	0
		Willamette Mainstem	0.00111	<0.00111–0.00912	9/36	0
		Willamette Tributaries	0.00212	<0.00111–0.00788	18/25	0
	Zinc	Columbia Slough	4.5	0.88–22.7	25/25	
		Johnson Creek	4.3	1.3–41.4	30/30	
		Tualatin River	6.5	1.5–27.6	20/20	
		Willamette Mainstem	1.2	0.62–12.8	36/36	
		Willamette Tributaries	4.4	<0.556–95.3	22/25	
	Zinc, dissolved	Columbia Slough	3.1	0.73–18.7	25/25	0
		Johnson Creek	2.5	0.69–17.9	30/30	0
		Tualatin River	4.2	1.1–23.5	20/20	0
		Willamette Mainstem	0.6	<0.529–37.8	20/36	0
		Willamette Tributaries	1.4	<0.529–80.4	20/25	4

	Analyte	Watershed	Median	Range	Detections/ Samples	Percent above Water Quality Criteria/TMDL Limit
Nutrients (mg/L)	Ammonia-nitrogen	Columbia Slough	0.059	<0.02–0.111	24/25	0
		Johnson Creek	0.026	<0.02–0.097	23/30	0
		Tualatin River	0.020	<0.02–0.027	6/20	0
		Willamette Mainstem	0.060	0.021–0.102	36/36	0
		Willamette Tributaries	0.020	<0.02–0.038	11/25	0
	Nitrate-nitrogen	Columbia Slough	1.24	0.27–2.75	25/25	
		Johnson Creek	0.66	0.14–2.95	30/30	
		Tualatin River	0.59	0.2–4.77	20/20	
		Willamette Mainstem	0.46	0.3–1.53	36/36	
		Willamette Tributaries	0.83	0.38–4.39	25/25	
	Orthophosphate	Columbia Slough	0.050	<0.02–0.089	24/25	
		Johnson Creek	0.027	<0.02–0.077	19/30	
		Tualatin River	0.062	0.032–0.117	20/20	
		Willamette Mainstem	0.036	<0.02–0.064	33/36	
		Willamette Tributaries	0.045	0.022–0.103	25/25	
	Total phosphorus	Columbia Slough	0.085	0.036–0.148	25/25	0
		Johnson Creek	0.053	0.019–0.184	30/30	3
		Tualatin River	0.067	0.043–0.135	20/20	5
		Willamette Mainstem	0.061	0.028–0.201	36/36	6
		Willamette Tributaries	0.075	0.032–0.16	25/25	12

Notes:

(1) The water quality criterion for dissolved copper is calculated using the Biotic Ligand Model. The chronic dissolved copper criterion ranged from 0.54 to 20.96 µg/L, with a mean of 4.09 µg/L.

(2) The water quality criterion for dissolved lead is based on the hardness in the water column. The chronic dissolved lead criterion ranged from 0.36 to 3.1 µg/L, with a mean of 1.22 µg/L.

(3) The water quality criterion for dissolved zinc is based on the hardness in the water column. The chronic dissolved zinc criterion ranged from 27.11 to 138.85 µg/L, with a mean of 65.38 µg/L.

(4) There are no instream freshwater water quality criteria for total phosphorus in Oregon; however, some TMDLs include load allocations for phosphorus that vary by watershed. Samples from sites in the Tualatin watershed were evaluated and compared to the appropriate TMDL limit, and all other sites were evaluated against the 0.155 mg/L maximum instream concentration from the Columbia Slough TMDL.

3.2.1 DO

For water bodies identified by DEQ as supporting cold-water aquatic life, the 30-day mean minimum dissolved oxygen concentration may not be less than 8.0 mg/L, and the absolute minimum concentration may not drop below 6.0 mg/L (OAR 340-041-0016 – Table 21). All of the stream sites support cold-water aquatic life. Concentrations of dissolved oxygen below the absolute minimum of 6.0 mg/L were observed most frequently during the growing season in the Columbia Slough. Concentrations below the criterion were also observed in Johnson Creek during the summer.

3.2.2 pH

The numeric pH criteria for freshwater waterbodies in the Willamette Basin specifies that pH values may not fall outside the range of 6.5 to 8.5 (OAR 340-041-0345 [1][b]). No exceedances of the upper limit were observed;

however, pH values below 6.5 were measured in the Columbia Slough. While observed, these low pH readings were not common.

3.2.3 E. coli

E. coli is used by DEQ as an indicator of human pathogens to protect recreational contact. The numeric bacteria criteria include two limits for freshwater contact: (1) a 90-day geometric mean of 126 *E. coli* organisms per 100 mL and (2) no single sample may exceed 406 *E. coli* organisms per 100 mL. The City's instream sampling program does not collect samples at a sufficient frequency to evaluate exceedances of the first criteria. As such, all of the instream *E. coli* samples were evaluated against the concentration of 406 organisms per 100 mL. Exceedances of the single-sample maximum were observed in all watersheds except for the Columbia Slough. The higher *E. coli* concentrations were primarily observed under wet weather conditions.

3.2.4 Metals

The aquatic life water quality criteria for toxic pollutants (OAR 340-041-8033 – Table 30) includes acute and chronic criteria for dissolved copper, lead, and zinc. The water criteria for mercury are based on the total fraction of the metal. For each of the metals, the acute criterion is applied as a 1-hour average concentration and the chronic criterion is applied as a 96-hour average concentration. Neither the acute nor chronic criteria may be exceeded more than once every 3 years. The results presented in Table 6 include the frequency that the samples exceed the applicable chronic criteria. There is not a sufficient number of samples available to calculate a 96-hour average concentration, as such, the exceedances of the chronic criteria are based on an evaluation of each individual sample.

Median concentrations of metals did not vary substantially between watersheds; however, concentrations were typically lowest in the Columbia Slough and highest in the Tualatin River streams. Both total and dissolved copper and zinc were detected in almost all of the surface water samples; however, exceedances of the chronic water quality criteria were not frequently observed. The few exceedances that were observed occurred during the wet season. The chronic and acute water quality criteria for dissolved copper are calculated using the Biotic Ligand Model and are based on the concentration of ions, alkalinity, organic carbon, pH, and temperature of the sample. The chronic water quality criteria for dissolved lead and dissolved zinc are based on hardness in the water column. Each water quality sample is analyzed for hardness in order to calculate the appropriate water quality criterion for the sample. As such, a different calculated criterion for each metal applies to each water quality sample. No exceedances of the chronic dissolved lead criterion were observed.

Mercury was detected in approximately half of the surface water samples and did not differ substantially between watersheds. The aquatic life criteria for mercury include a chronic criterion of 0.012 µg/L (OAR 340-041-8033 - Table 30). No exceedances of the chronic mercury criterion were observed.

3.2.5 Nutrients

The toxicity of ammonia to aquatic organisms and the corresponding water quality criteria are dependent on the pH and temperature of the water body, as well as the life stage of the organism (OAR 340-041-8033 Table 30). The chronic ammonia criterion is expressed as a 30-day rolling average. No exceedances of the chronic ammonia criterion were observed in any of the watersheds.

No state-wide water quality criteria have been established for phosphorus; however, DEQ has established TMDLs for total phosphorus in the Columbia Slough (0.155 mg/L) and Tualatin (0.13 mg/L for Fanno Creek)

basins. Values over the corresponding TMDL limits were observed in all of the watersheds, with a larger portion of the samples over the limit in both the Columbia Slough and Tualatin River watersheds.

3.3 Continuous Instream Monitoring Results

Stream discharge was recorded at the eight USGS stream gauges in the Portland area. Water temperature was recorded at five of the eight gauges. The following sections present the results from the 2023–24 permit year.

3.3.1 Instream Flow

The effect of precipitation patterns during the permit year was observed in the stream discharge recorded at the USGS gauges within the city. The effects of the wetter than usual winter (Figure 1) can be seen in the instream flow recorded at the five tributary gauges. Flows in Fanno Creek rose above the historic 90th percentile high flow discharge in December, January, and May, as did flows in Tryon Creek (Figure 2).

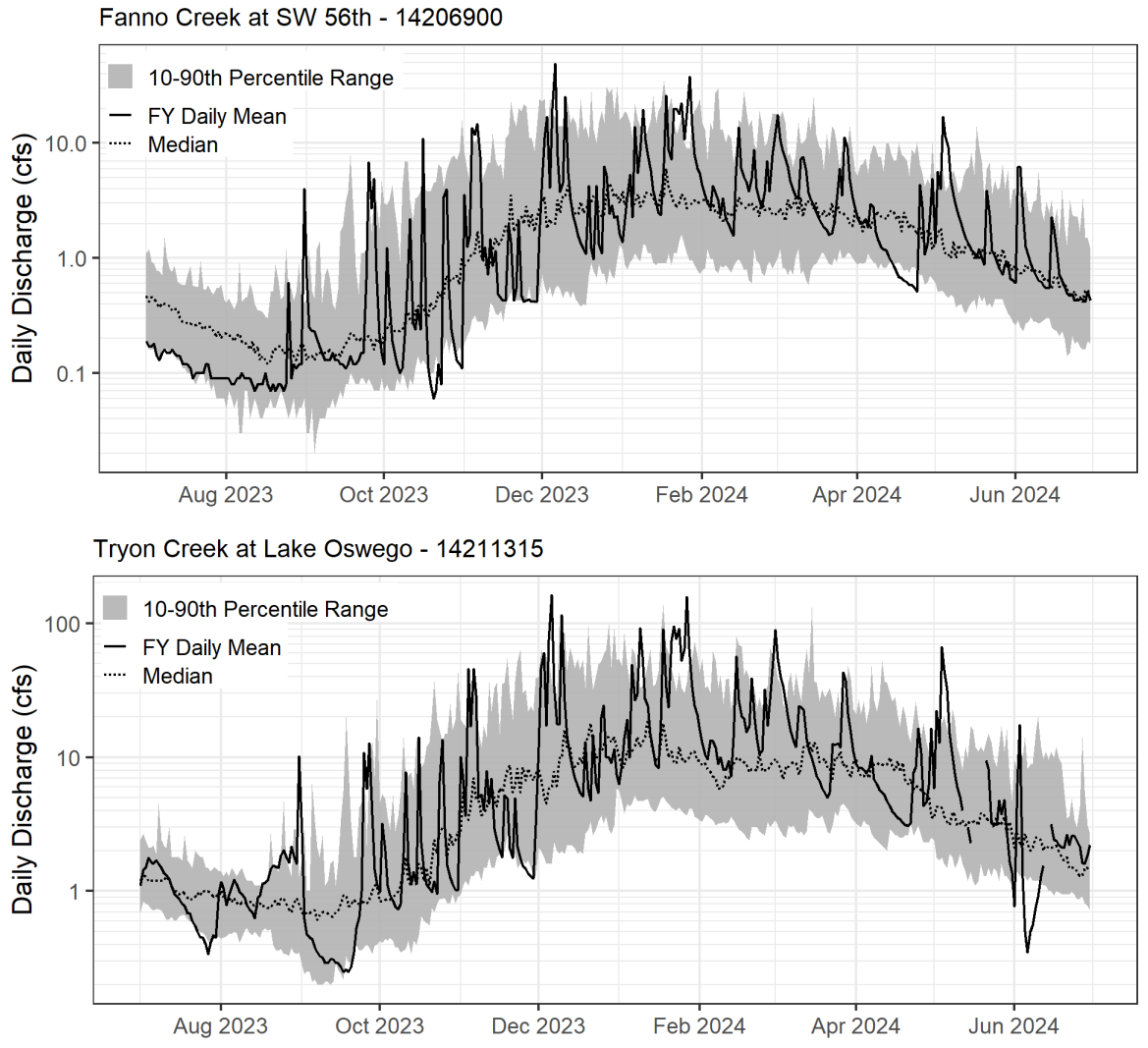

Figure 2: *Daily discharge recorded at westside USGS gages #14206900 (Fanno) and #14211315 (Tryon) during the permit year. The mean daily discharge (solid line) is plotted along with the historic median (dotted line) and 10th to 90th percentile range (grey area) of observed flows from the available period of record (30 and 19 years, respectively).*

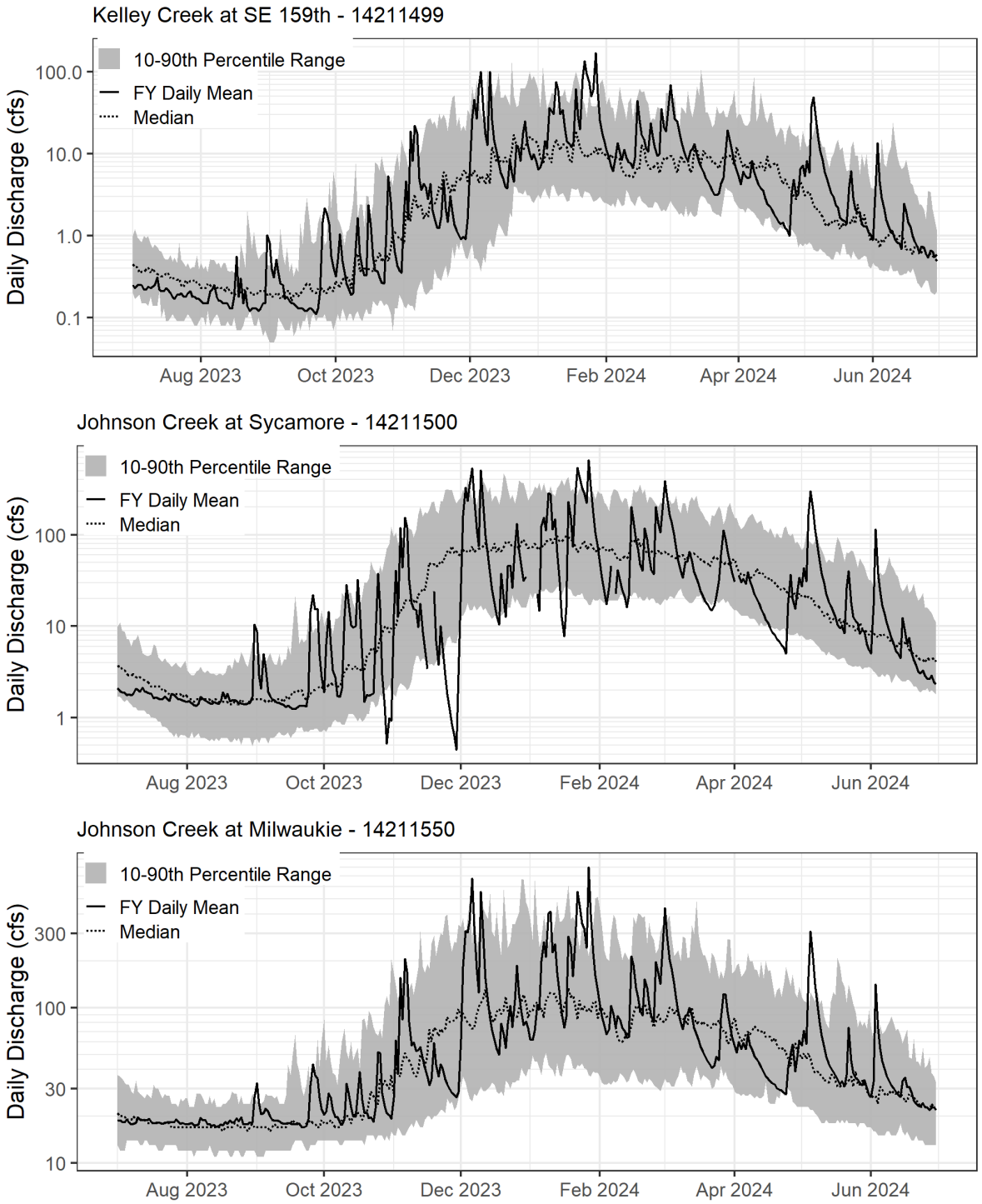

Figure 3: *Daily discharge recorded at three eastside USGS gages (#14211499, #14211500, and #14211550) during the permit year. The mean daily discharge (solid line) is plotted along with the historic median (dotted line) and 10th–90th percentile range (grey area) of observed flows from the available period of record (20, 80, and 31 years, respectively).*

Flows in the Johnson Creek watershed also responded to the precipitation patterns observed during the permit year. Discharges in Kelley and Johnson creeks decreased during the period of drier weather in November, approaching or dipping below the 10th percentile low flows (Figure 3). Low flows in the summer remained within or close to the historic 10th to 90th percentile range at all three sites, with the mainstem Johnson Creek flows close to their historic median flows.

The Columbia Slough is tidally influenced, and negative flows are routinely observed as a result of the tidal fluctuations. The substantial negative and positive flows in January and February (Figure 4) correspond to the period of elevated discharge in the Columbia River during the spring.

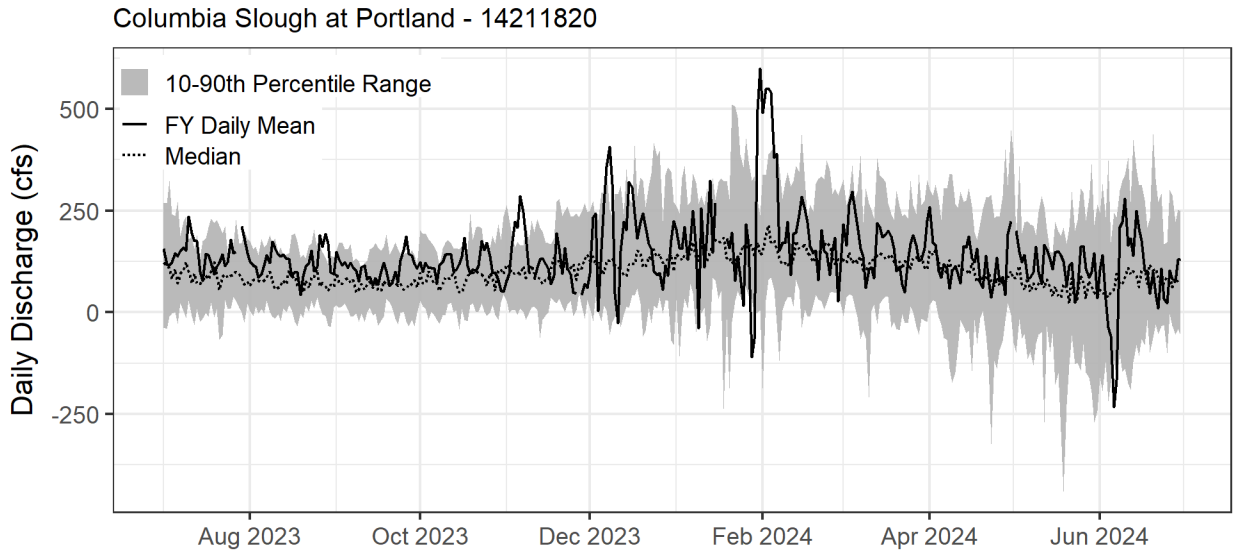

Figure 4: *Columbia Slough daily discharge recorded at USGS gage #14211820 during the permit year. The mean daily discharge (solid line) is plotted along with the historic median (dotted line) and 10th to 90th percentile range (grey area) of observed flows from the available 31-year period of record. The Columbia Slough is tidally influenced, and the data presented have not been corrected.*

Willamette River flows at Portland were lower than the historic median values and were often close to or below the 10th percentile from July through September of the permit year (Figure 5). As seen at the other sites, an increase in Willamette River flows corresponded with the increase in precipitation in December and January. The mean daily discharge peaked at 154,000 cfs on January 28.

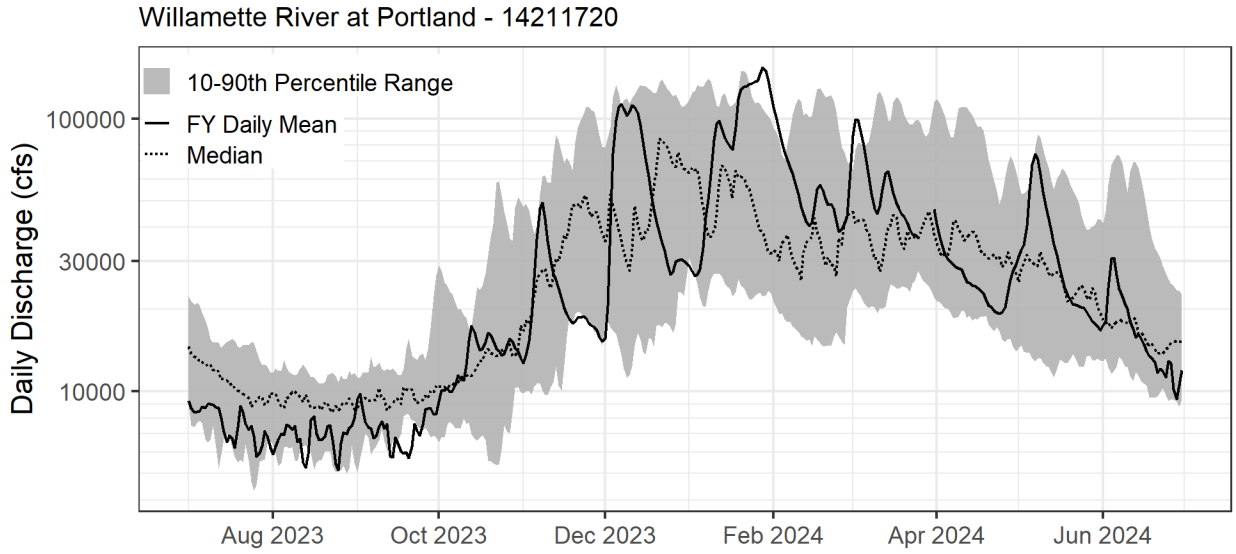

Figure 5: *Willamette daily discharge at Portland recorded at USGS gage #14211720 during the permit year. The mean daily discharge (solid line) is plotted along with the historic median (dotted line) and 10th to 90th percentile range (grey area) of observed flows from the available period of record (2007 to present). Discharge values have been corrected for tidal influences by USGS using the 2011 method for Processing and Publication of Discharge and Stage Data Collected in Tidally-Influenced Areas.[3] Unfiltered discharge values are available from 1988 to present.*

3.3.2 Temperature

Johnson Creek water temperatures at the Sycamore gauge exceeded the 7-day average daily maximum (7DADM) temperature criterion for rearing and migration (18°C) from July 1 to mid-September in 2023 (Figure 6). In 2024, water temperatures began exceeding the rearing and migration criterion in June. Water temperatures at the Sycamore gauge exceeded the spawning criterion in April and May during the 2023–24 permit year.

Johnson Creek water temperatures at the Milwaukie gauge followed a similar pattern to those recorded at the upstream Sycamore gauge. Summer temperatures exceeded the 7DADM temperature criterion for rearing and migration (18°C) from July 1 to mid-September in 2023 (Figure 6). Water temperatures exceeded the spawning temperature criterion briefly in the fall. As with the Sycamore gauge, water temperatures began increasing in March and exceeded the spawning criterion in April and May. In 2024, water temperatures began exceeding the rearing and migration criterion in mid-May.

[3] The 2011 USGS methodology is available at: https://water.usgs.gov/admin/memo/SW/sw10.08-final_tidal_policy_memo.pdf.

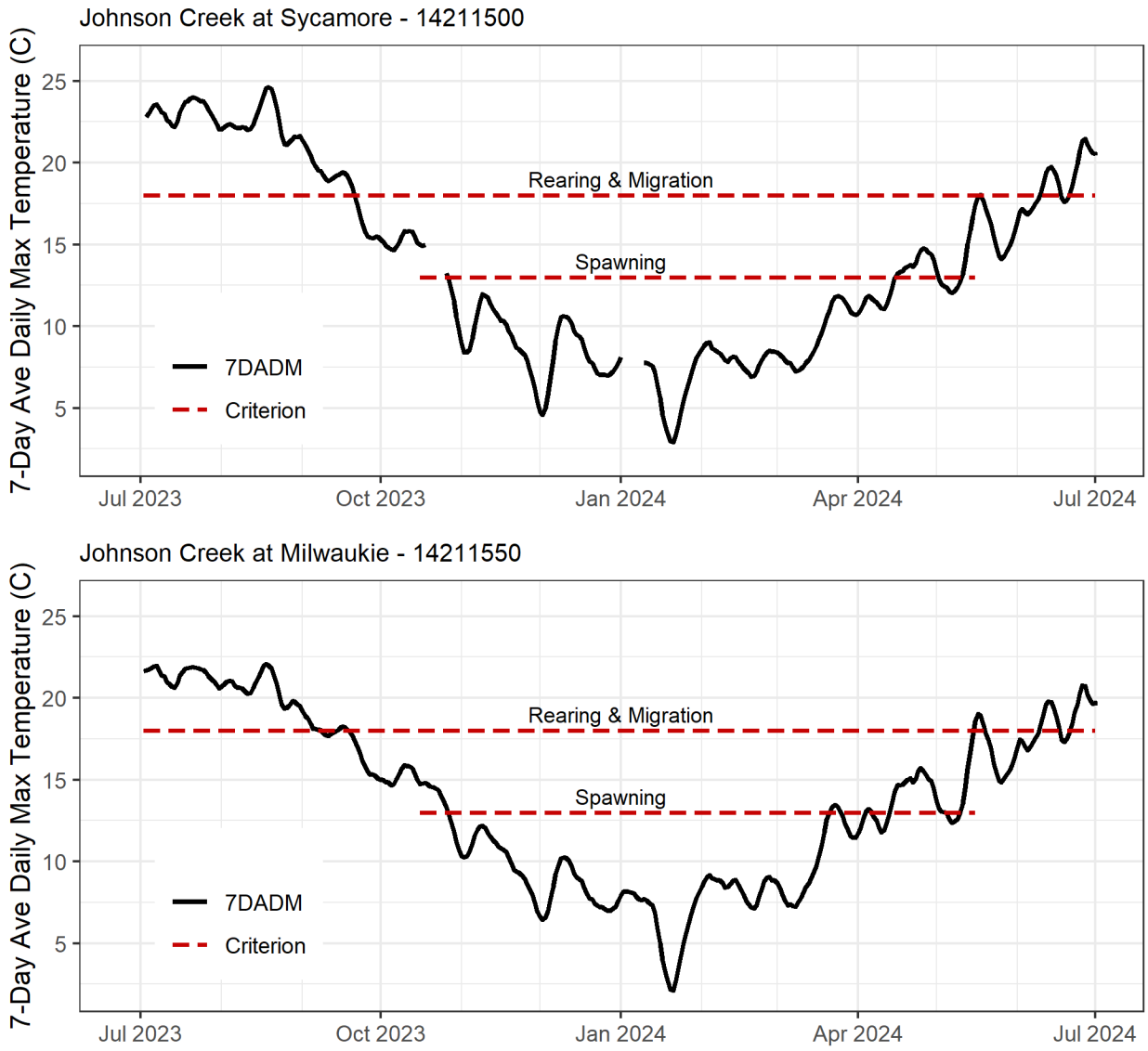

Figure 6: *Seven-day average daily maximum mainstem Johnson Creek water temperatures recorded at USGS gage #14211500 at Sycamore and USGS gage #14211550 at Milwaukie during the permit year. The dashed red lines represent the applicable temperature criteria for salmonid spawning (13°C) and rearing and migration (18°C).*

Consistent with the two other Johnson Creek gauges, summertime temperatures in Kelley Creek remained above the rearing criterion throughout most of the summer of 2023 until September. Kelley Creek water temperatures remained below the spawning criterion throughout the winter but exceeded it briefly in May. While water temperatures in Kelley Creek followed a similar warming pattern to the two Johnson Creek gauges in May and June 2024, the increase did not result in temperatures higher than the rearing criterion.

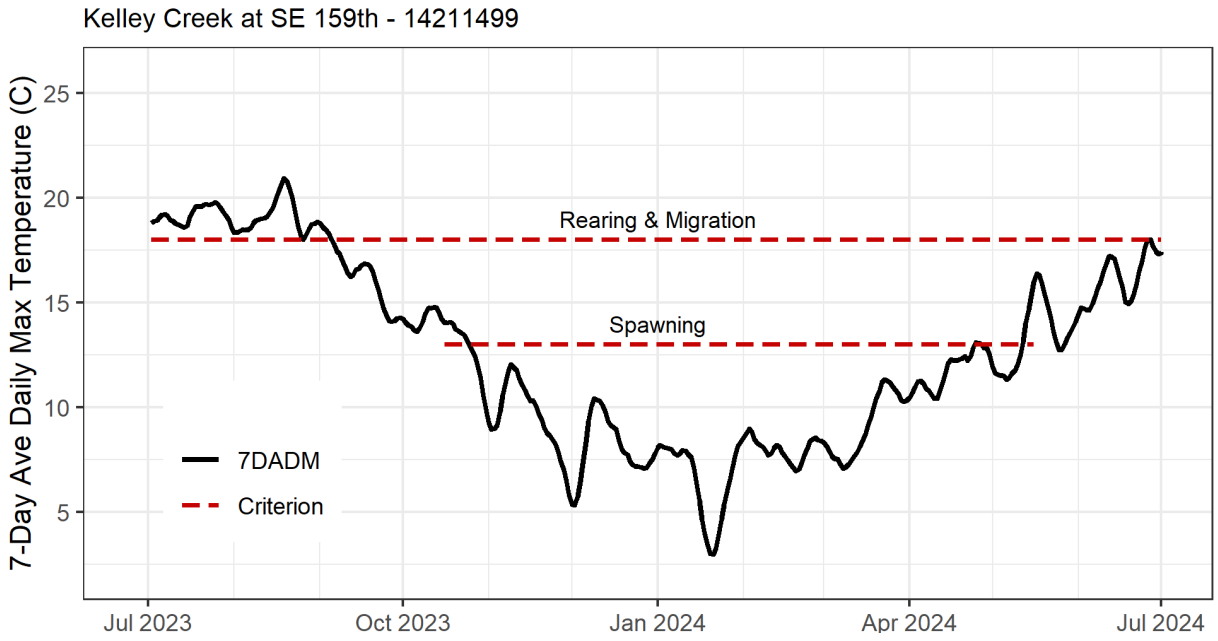

Figure 7: *Seven-day average daily maximum Kelley Creek water temperatures recorded at USGS gage #14211499 at SE 159th Ave. during the permit year. The dashed red lines represent the applicable temperature criteria for salmonid spawning (13°C) and rearing and migration (18°C).*

Water temperatures recorded at the Crystal Springs Creek gauge also followed a similar pattern (Figure 8). The temperature remained above the rearing criterion until mid-September of 2023. Water temperatures began increasing in mid-March and exceeded the spawning criterion for the remainder of the spring. Exceedances of the rearing criteria were first observed in May, and water temperatures remained above the criterion for the month of June.

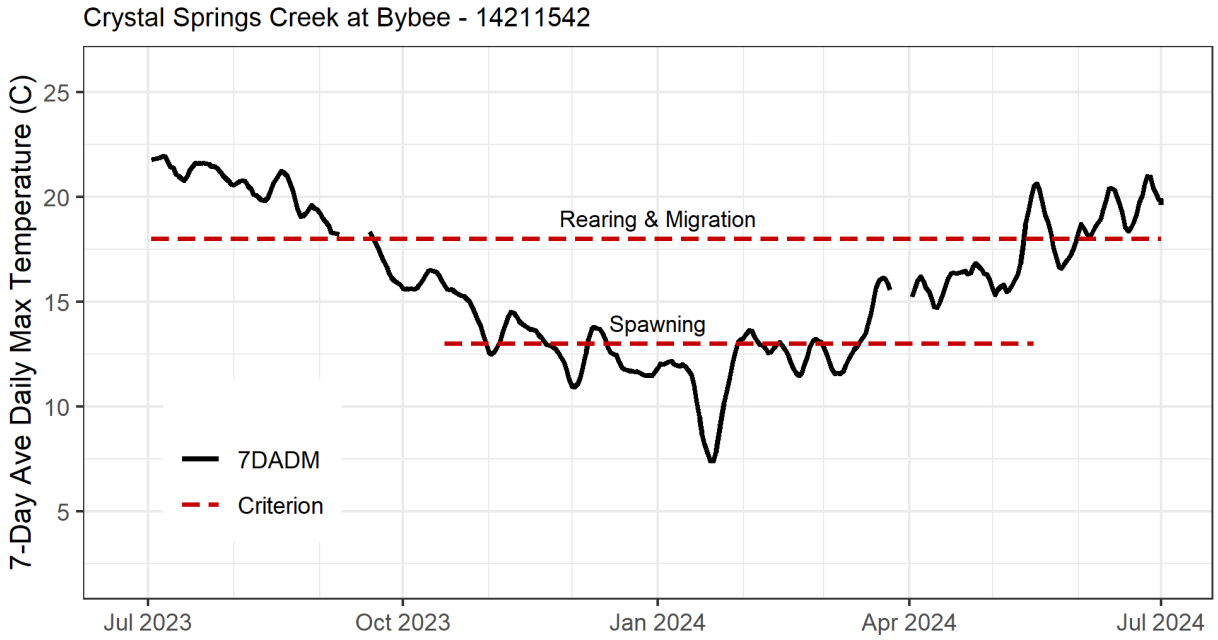

Figure 8: *Seven-day average daily maximum Crystal Springs Creek water temperatures recorded at USGS gage #14211542 at SE Bybee Street during the permit year. The dashed red lines represent the applicable temperature criteria for salmonid spawning (13°C) and rearing and migration (18°C).*

Unlike Crystal Springs and Johnson and Kelley creeks, the Willamette River in Portland is designated as a migration corridor for salmon and steelhead with no rearing or spawning uses. As such, a single temperature criterion applies for the entire year (20°C). Willamette River water temperatures exceeded the migration corridor temperature limit from mid-July to mid-September in 2023 (Figure 9). Temperatures declined quickly in the fall and remained below the temperature criterion until the last week of June.

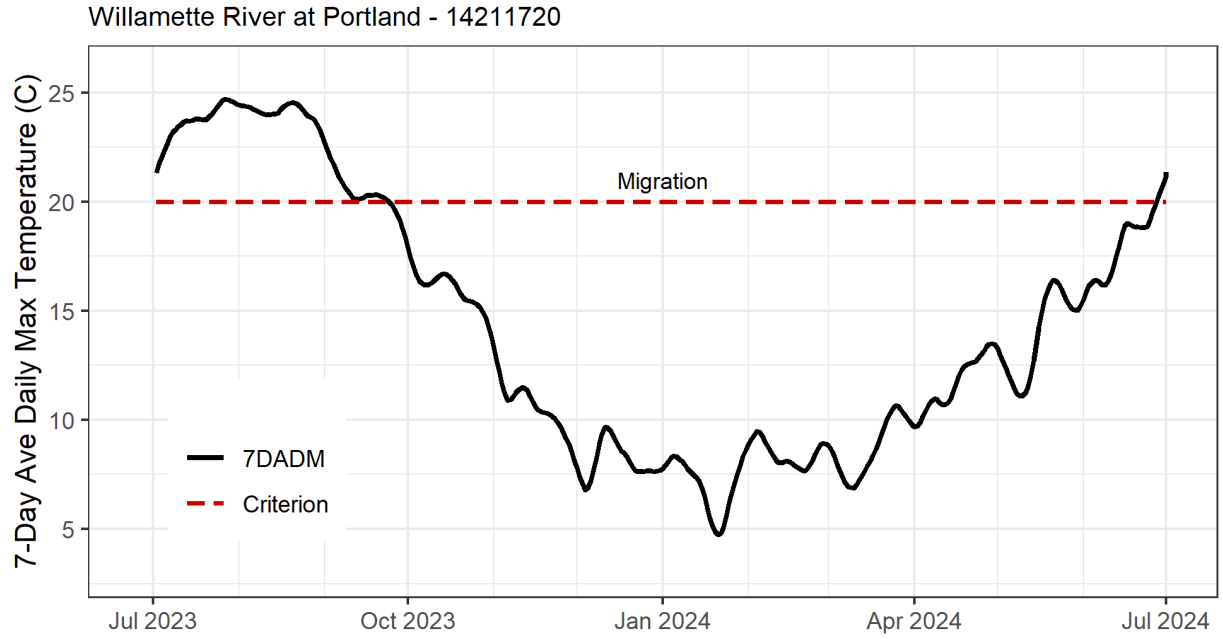

Figure 9: *Seven-day average daily maximum Willamette River water temperatures recorded at USGS gage #14211720 at the Morrison Bridge during the permit year. The dashed red line represents the applicable temperature criterion for salmonid migration (20°C).*

3.4 Macroinvertebrate Monitoring Results

Aquatic macroinvertebrate samples were collected at 15 perennial sites during the 2023–24 permit year as part of the PAWMAP monitoring program. Samples are not collected from stream sites in the Columbia Slough as these sites are not riffle-dominated wadeable systems. As described in Section 2.3, the probabilistic instream sampling included in PAWAMP is based on four rotating panels, with 20 perennial sites included in each panel. Each 4-year PAWMAP cycle includes the same 80 perennial monitoring sites. The macroinvertebrate results from prior PAWMAP sampling cycles are included in Table 7.

DEQ uses the PREDATOR model to evaluate the condition of macroinvertebrate communities. The PREDATOR model was developed by DEQ and can be used to evaluate the observed macroinvertebrate community compared to the expected macroinvertebrate community.[4] The model uses reference and site conditions to predict the expected community characteristics in the absence of human influences. The ratio between the sampled macroinvertebrate (observed) score to the predicted macroinvertebrate (expected) score provides an estimate of the level of impact. The PREDATOR model includes benchmarks to describe the biological conditions

[4] Hubler, S. (2008). *PREDATOR: Development and use of RIVPACS-type macroinvertebrate models to assess the biotic condition of wadeable Oregon streams*. Oregon Department of Environmental Quality.

of a sample that are based on the distribution of Observed/Expected (O/E) ratios from reference sites. The benchmarks are based on the 10th and 25th percentiles of reference distribution.

For the Marine Western Coastal Forest region, samples with O/E ratios above 0.91 are considered the "least impacted," and those between 0.85 and 0.91 are "minimally impacted."

Table 7: *Median Observed/Expected (O/E) macroinvertebrate ratios from the permit year.*

	Macroinvertebrate Observed/Expected Ratio				
Watershed	**Cycle 1 Median (2010-2013)**	**Cycle 2 Median (2014-2017)**	**Cycle 3 Median (2018-2021)**	**Permit Year Median**	**Permit Year Range**
Johnson Creek	0.49	0.39	0.44	0.44	0.24–0.64
Tualatin Tributaries	0.41	0.43	0.34	0.38	0.29–0.61
Willamette Tributaries	0.69	0.62	0.55	0.52	0.37–0.95

Note: Samples from the current permit year were collected in the fall of 2023. The "minimally impacted" benchmark value set by DEQ is an O/E ratio of 0.85 or higher.

O/E ratios varied across the three watersheds, with the greatest variability observed between sites in the Willamette River tributaries watershed. The highest O/E ratios during the 2023–24 permit year were observed on the sites on the Willamette River tributaries (Table 7), with the highest O/E ratio (0.95) observed on Balch Creek.

Sites in Johnson Creek and the Tualatin River tributaries watersheds had similar median O/E ratio during the permit year. Both were consistent with the median ratio from the previous three sampling cycles. The O/E ratios indicate that the macroinvertebrate communities at all of the sampled sites in the Johnson Creek and Tualatin watersheds have been impacted by activities in the watersheds. All of the samples except for the one Balch Creek sample were below the 0.85 threshold for "minimally impacted" sites.

4 Evaluation of Trends

One of the objectives of the monitoring program is to evaluate trends in water quality. The City implemented a new stormwater monitoring approach in the 2022–23 permit year; as such, it is too early in the program to evaluate any long-term trends in water quality. The spatial distribution of the outfall locations does, however, provide an opportunity to compare water quality results to basin characteristics.

The basins draining to each sampled outfall have been delineated by the City. Using GIS, the following basin characteristics were calculated: (1) total basin drainage area, (2) total basin impervious area, (3) effective impervious area, (4) land use, (5) tree canopy, and (6) abundance of roads. The outfall basins vary substantially in size. To facilitate comparisons, many of these features were adjusted by the basin area to calculate the relative proportion of a feature present within the basin (e.g., percent commercial land use). The City compared the stormwater water quality samples to the outfall basin characteristics. No clear relationships between basin land uses and measured water quality were observed.

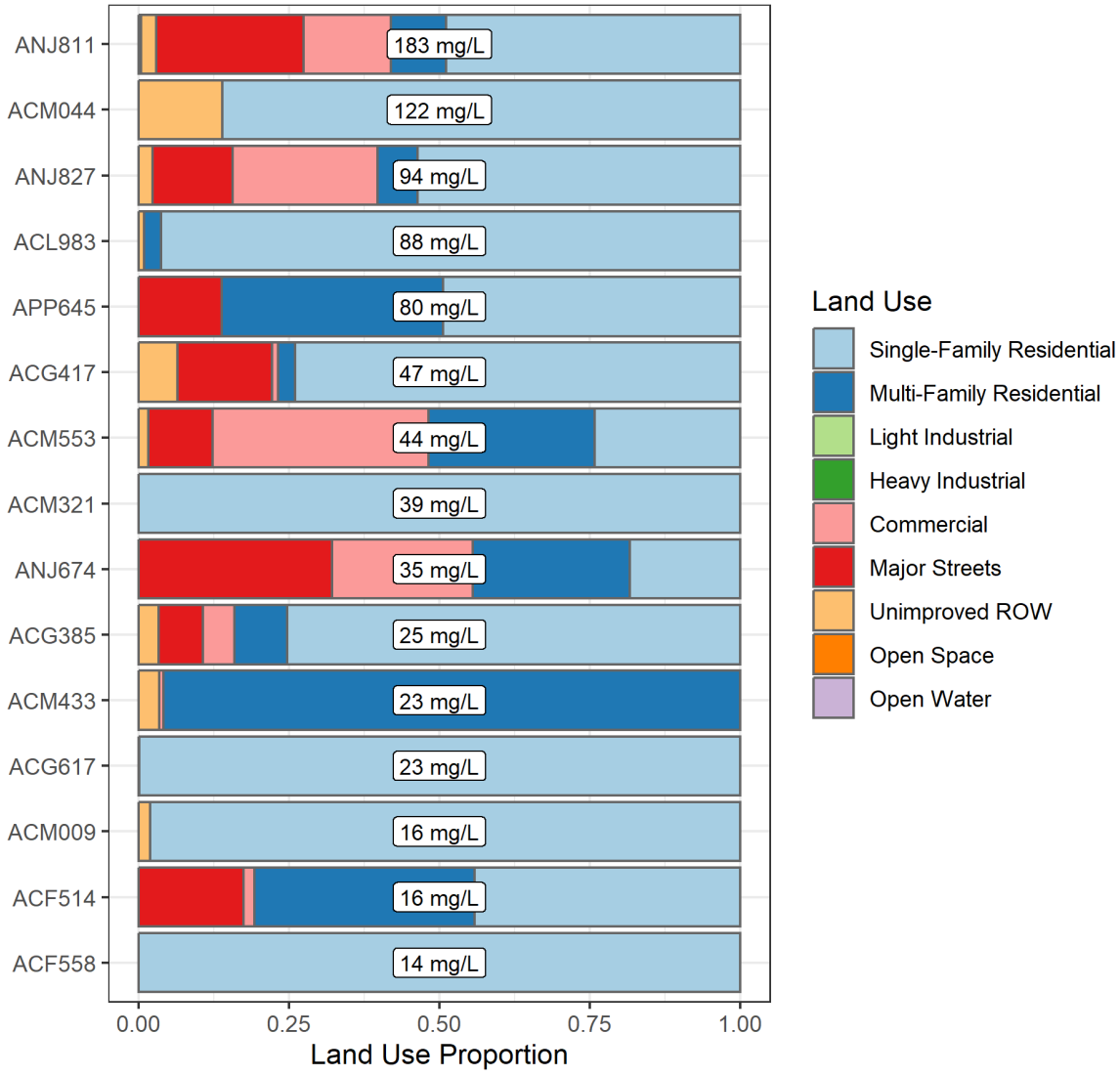

Figure 10: *Proportion of different land uses within the basins draining to the outfall locations. The mean total suspended solids concentrations from the three storm events are shown in the white boxes for each site.*

TSS is often used as a surrogate measure for other water quality parameters. The stormwater TSS concentrations were compared to the concentration of metals for each storm event. A strong relationship between TSS and total lead was observed in the stormwater grab samples (Figure 11). The water quality samples also indicated that total copper, mercury, and zinc are also positively related to TSS concentrations. No relationship between TSS and the dissolved fraction of metals was observed.

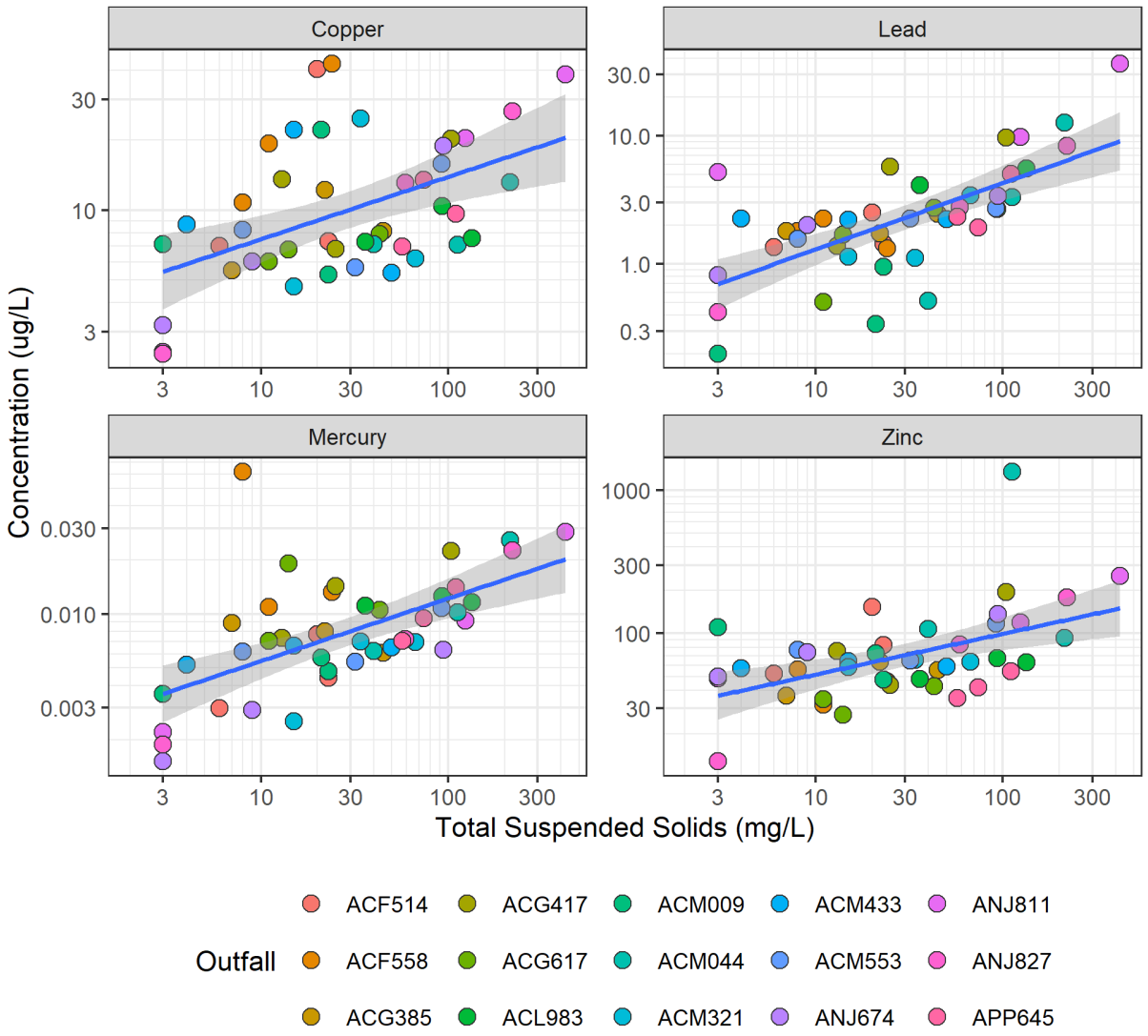

Figure 11: *Relationships between total suspended solids (TSS) and total metals at the 15 stormwater outfall sites.*

Stormwater samples were analyzed for pesticides in the 2022–23 and 2023–24 permit years as part of two separate outfall sampling panels. In 2022–23, the stormwater outfall sampling focused on collecting water quality samples from outfalls located in the Tryon Creek watershed. In 2023–24, the City targeted sample collection from outfalls draining to the Fanno Creek mainstem. Both sets of stormwater outfalls were analyzed for the same suite of pesticides; however, the pesticides detected in the stormwater samples differed substantially between the two watersheds (Table 8).

Table 8: *Comparison of pesticides detected at the stormwater outfalls in Tryon Creek watershed (2022–23) and Fanno Creek (2023–24, current permit year). Only the pesticides over the detection limit are presented.*

	Number of Outfalls with Detections	
Analyte (ug/L)	**Permit Year 2022–23 Tryon Creek**	**Permit Year 2023–24 Fanno Creek**
2,4-D	9	11
4,4'-DDE *	1	
alpha-BHC	1	
alpha-Chlordane		1
delta-BHC	1	
Dicamba		2
Dichlobenil	1	1
Dieldrin *		1
Diuron	2	
Endosulfan I	3	8
Endrin	1	2
Endrin Aldehyde		3
Ethofumesate	10	
Fipronil		1
gamma-BHC (Lindane)	6	
Glyphosate *	1	
Heptachlor	2	
Heptachlor Epoxide		1
MCPP		1
Oxyfluorfen		1
Pentachlorophenol	7	14
trans-Chlordane	1	
Triclopyr *	8	

Note: the analytes noted with an asterisk (*) were specifically targeted in the 2022 Monitoring Plan, along with DDT, dinoseb, and MCPA. All other pesticides were reported as part of the Multi-Residue Pesticide Profile using EPA 8321B/ 8270D methods.

A similar number of pesticides was detected in the two watersheds—15 pesticides in the stormwater draining to Tryon Creek and 13 in the stormwater draining to Fanno Creek; however, many of the detected pesticides were not observed in both watersheds. Ethofumesate and Triclopyr (both herbicides) were both frequently detected in the stormwater samples from the Tryon Creek outfalls, but neither were detected in the outfalls draining to Fanno Creek. Conversely, Endosulfan I (an insecticide) was observed at 8 of the 15 sampled outfalls draining to the mainstem of Fanno Creek, but at only 3 of the 15 outfalls sampled in the Tryon Creek watershed. Of the 15 pesticides detected in stormwater from Tryon Creek outfalls, only five were also detected in stormwater from Fanno Creek outfalls. Two of the more frequently detected pesticides in both watersheds were pentachlorophenol (an industrial wood preservative) and 2,4-D (a broadleaf herbicide).

5 Summary

The City completed all activities outlined in the 2022 MS4 Monitoring Plan as required by Schedule B of the City's 2021 NPDES MS4 discharge permit. The City's 2023–24 monitoring activities met all the specific requirements for monitoring types, locations, frequency, and parameters. All monitoring data collected during the 2023–24 permit year were submitted to DEQ electronically and are made available by DEQ through DEQ's Ambient Water Quality Monitoring System data portal. Key findings from the 2023–24 permit year include the following:

- Total copper, mercury, and zinc were detected in all stormwater samples, with only a few high concentration samples recorded.
- A positive relationship between TSS and total copper, lead, mercury, and zinc was noted in the stormwater samples.
- At least one type of pesticide was detected at each stormwater outfall location, with the most commonly detected pesticides being 2,4-D and pentachlorophenol.
- The pesticides detected in the stormwater outfalls draining to Fanno Creek were different from those detected in the stormwater samples in the Tryon Creek watershed during the previous permit year.
- Exceedances of the single-sample *E. coli* criterion were observed in all watersheds except for the Columbia Slough but were substantially less common at sites on the mainstem Willamette River.
- Summer instream water temperatures typically exceed the water quality temperature criteria for rearing and migration at all five continuous instream monitoring stations.
- Macroinvertebrate communities vary across watersheds, and all watersheds show signs of anthropogenic impacts.

PART IV
CONTACT INFORMATION

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