CITY OF **MILWAUKIE**

National Pollutant Discharge Elimination System Phase I Stormwater Management Program Document

December 1, 2022









City of Milwaukie

Stormwater Management Program Document

National Pollutant Discharge Elimination System (NPDES)
Municipal Separate Storm Sewer System (MS4) Discharge Permit

Permit Number: 101348

Submitted to:
Oregon Department of Environmental Quality

December 1, 2022

Public Comment Period:
October 21st - November 21st

Table of Contents

List of Figures ii
List of Tables ii
List of Abbreviations iii
Section 1: SWMP Overview 1
1.1 Introduction 1
1.2 Background 1
1.2.1 City Overview 1
1.2.2 Coverage Area 2
1.2.3 Relationship to TMDLs 4
1.3 Stormwater Program Overview 4
1.3.1 Stormwater Program Organization 5
1.3.2 Stormwater Program Partners 5
1.3.3 SWMP Organization 5
1.3.4 SWMP Development 6
1.4 SWMP Reference Library 6
Section 2: SWMP Control Measures 7
2.1 Public Education and Outreach 8
2.2 Public Involvement and Participation 11
2.3 Illicit Discharge Detection and Elimination 15
2.3 Construction Site Runoff Control 20
2.4 Post-Construction Site Runoff for New Development and Redevelopment 26
2.5 Pollution Prevention and Good Housekeeping for Municipal Operations 31
2.6 Industrial and Commercial Facilities 42
2.7 Monitoring and Reporting 45
Appendix A Municipal Staff Training Strategy Table A-1

List of Figures

Figure 1. Map of Milwaukie Boundary 3

List of Tables

Table 1-1. Stormwater Program Organizational Categories 6
Table 2-1. Public Education and Outreach 8
Table 2-2. Public Involvement and Participation 11
Table 2-3. Illicit Discharge Detection and Elimination 15
Table 2-4. Construction Site Runoff Control 20
Table 2-5. Post-Construction Site Runoff for New Development and Redevelopment 26
Table 2-6. Pollution Prevention and Good Housekeeping for Municipal Operations 31
Table 2-7. Industrial and Commercial Facilities 42

List of Abbreviations

BMP	Best Management Practice
CWA	Clean Water Act
DEQ	Department of Environmental Quality
ESC	Erosion and Sediment Control
EPA	Environmental Protection Agency
IDDE	Illicit Discharge Detention and Elimination
IGA	Intergovernmental Agreement
GI	Green Infrastructure
I/C	Industrial and Commercial
LA	Load Allocations
LID	Low Impact Development
NPDES	National Pollutant Discharge Elimination System
MEP	Maximum Extent Practicable
MILMC	Milwaukie Municipal Code
MOU	Memorandum of Understanding
MS4	Municipal Separate Storm Sewer System
O&M	Operations and Maintenance
OERS	Oregon Emergency Response System
NAICS	North American Industrial Classification System
PI	Public Involvement
ROW	Right-of-Way
SF	Square Feet
SIC	Standard Industrial Classification
SOP	Standard Operating Procedure
SWMP	Stormwater Management Plan
SWMM	Stormwater Management Manual
TMDL	Total Maximum Daily Load
UIC	Underground Injection Control
WLA	Waste Load Allocations
WPCF	Water Pollution Control Facility

This page intentionally left blank.

Section 1: SWMP Overview

1.1 Introduction

Under the federal Clean Water Act (CWA) and Oregon Revised Statute 468B.050, Oregon Department of Environmental Quality (DEQ) has issued the City of Milwaukie (City) a renewed National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Phase I Discharge Permit, effective October 1, 2021.

This Stormwater Management Program Document (SWMP) describes activities related to implementation of the City's NPDES MS4 Permit. The SWMP contains best management practices (BMPs), which outline the specific tasks that the City will conduct to prevent and reduce stormwater pollution to the maximum extent practicable (MEP) to protect water quality and satisfy the requirements of the NPDES MS4 Permit and the CWA.

Milwaukie is a co-permittee on the Clackamas County NPDES MS4 Permit, along with 11 other agencies. The first permit (101348) was issued in 1995. The second permit was issued in 2005 after an appeal and modification. A third permit was issued in 2012, expired in 2017 and went into administrative extension until a renewed permit was issued September 15, 2021, with an effective date of October 1, 2021.

This 2022 version of the City's SWMP was developed based on a review and evaluation of the City's stormwater management program, including activities and accomplishments implemented during the previous permit term and during the administrative extension period. The City has used an adaptive management process to assess and modify, if necessary, BMPs to achieve reductions in stormwater pollutants to the MEP. This SWMP update considers available technologies and practices; review of SWMP measurable goals and tracking measures; and evaluation of City resources available to implement programs.

The BMPs outlined in this plan will be evaluated annually during the preparation of the NPDES MS4 Annual Report. The annual reports will include the status of implementing each BMP and any proposed modifications or adaptations of the program.

1.2 Background

This section documents the permit coverage area and the relationship between the NPDES MS4 Permit, SWMP, and Total Maximum Daily Load (TMDL) obligations.

1.2.1 City Overview

Milwaukie is located in Clackamas County, approximately 12 miles south of the City of Portland, with a small portion extending into Multnomah County. Milwaukie is bound on the west by the Willamette River and Johnson Creek, which runs north-south along the City's boundary; on the north by the City of Portland; on the south by the Oak Lodge; and, to the east by unincorporated Clackamas County– see Figure 1.

The City of Milwaukie provides water, sanitary sewer, and surface water management services to approximately 21,000 residents (as of 2020) and covers a total of 4.85 square miles. Milwaukie takes pride in providing a livable, safe environment, including preservation and enhancement of both built and natural environments. The City serves a mature, primarily developed community, and most new development occurs as in-fill with a few small subdivisions and residential partitions. Land use is primarily residential, commercial, and industrial; with most commercial and industrial development located along the Oregon Highway 99-E corridor, which runs north-south in the western edge of the City and the Milwaukie Expressway

(Oregon 224) on the southern end of the City. Residential land use is distributed throughout the City, and there are also numerous areas of public use, including several parks and open space areas.

1.2.2 Coverage Area

The City's NPDES MS4 Permit area or "service area" is defined as the area included within the City limits for which the City has responsibility for implementing its stormwater management program. Historically, this area has excluded open water bodies and waterways and areas operated by another NPDES MS4 permitted entity.

The Oregon Department of Transportation (ODOT) has its own NPDES MS4 Permit covering right-of-way (ROW) associated with state highways and freeways. Therefore, the City's service area excludes ODOT ROW.

The City contains two major watersheds: Johnson Creek and Kellogg Creek and is comprised 4 drainage basins: Johnson Creek, Lower Kellogg Creek, Middle Mt. Scott, and the Willamette River. Other tributaries include Minthorn Creek, Mt. Scott Creek, and Spring Creek. The eastern portion of the City is not hydraulically connected to the major drainages and drainage mainly achieved through Underground Injection Control Program (UIC) facilities in these areas. Figure 1 illustrates the total area within the representative watersheds as well as the surrounding jurisdictions. Additional maps related to the City's stormwater system and stormwater program are included on the City's MS4 website.

The BMPs described within this SWMP are applied throughout the City's urban services boundary. The programs operate on a city-wide basis, working to reduce the discharge of pollutants to natural waterways.

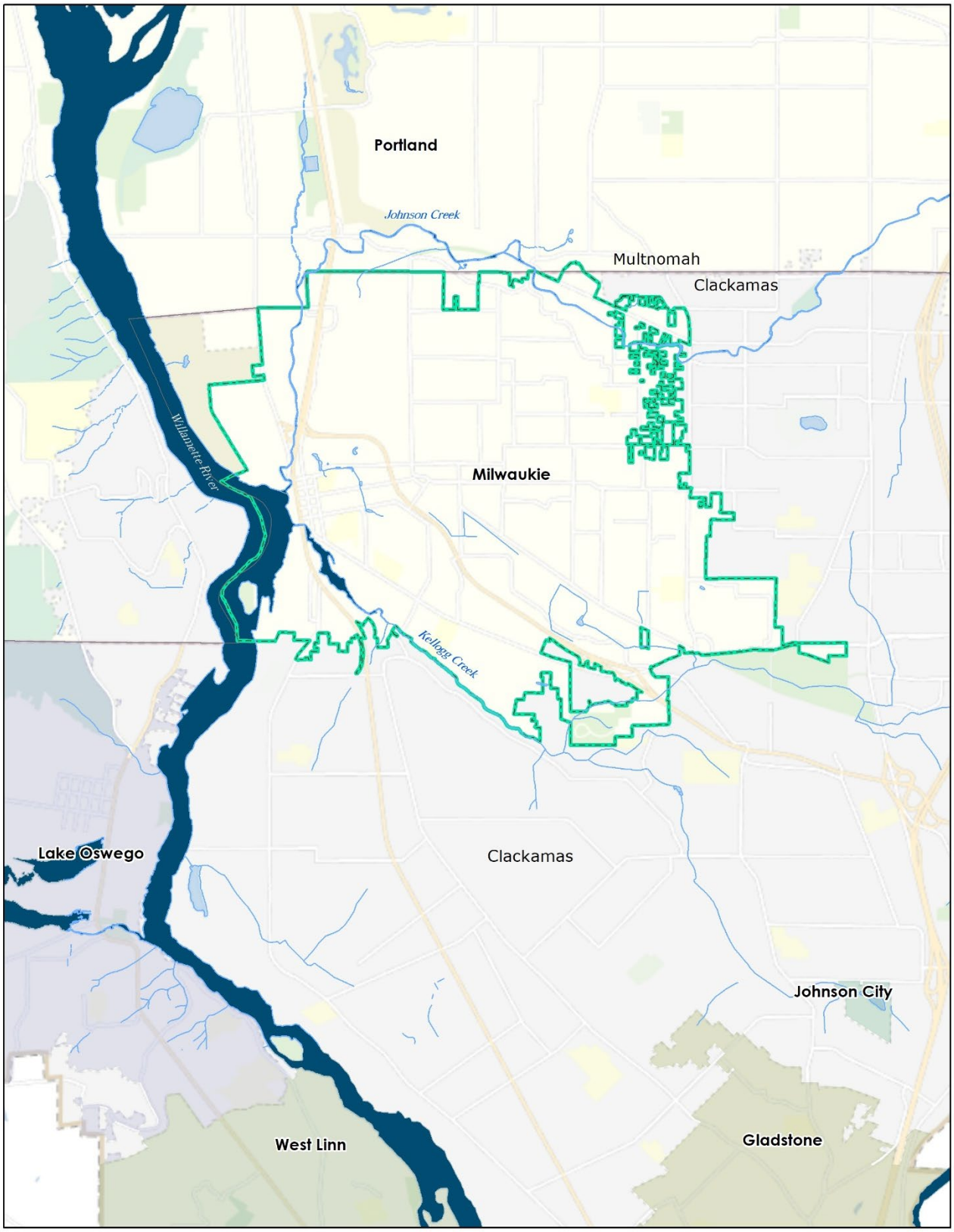


Figure 1. Map of Milwaukie Boundary

1.2.3 Relationship to TMDLs

In addition to the NPDES MS4 Permit requirements, the City is subject to TMDL regulations under the CWA. TMDLs serve as plans for restoring impaired or polluted waters. They identify the maximum amount of a specific pollutant that a body of water can receive while still meeting water quality standards. These allowable loads are then allocated among dischargers which are referred to as Designated Management Agencies (DMA). In Oregon, DEQ identifies load allocations (LAs) for nonpoint sources of pollution and waste load allocations (WLAs) for point sources. Municipal stormwater discharges are regulated as point sources if they are covered by a NPDES MS4 Permit.

The City is a DMA for the following TMDLs for municipal stormwater in the Lower Willamette Basin:

- Bacteria (*E. coli*)
- DDT and dieldrin
- Mercury per the Water Quality Management Plan issued by EPA on December 30, 2019 and reissued with modification on February 4, 2021.

Point sources of pollutants and associated WLAs are regulated under the NPDES permitting program and nonpoint sources are managed by TMDL implementation Plans. As City implements their NPDES MS4 Permit jurisdiction-wide, the NPDES MS4 Permit addresses the City's TMDL obligations under Schedule D.3, which states:

> *"DEQ incorporated performance measures in Schedule A.3.c, d, e, and f to address water quality impairments and EPA-approved or issued TMDL allocations issued to date. Compliance with the permit's terms and conditions is presumed to be in compliance with TMDL Waste Load Allocations (WLAs) issued before the effective date of this permit…"*
>
> Clackamas Group Phase I NPDES MS4 Permit, Schedule D.3.a

This SWMP is the City's plan to control pollutant runoff to address TMDL WLAs for bacteria, DDT/dieldrin, and total mercury (TSS as a surrogate for DDT/dieldrin and total mercury). Schedule D.3.b also requires the City to conduct and submit a mercury minimization assessment with the annual report due December 1, 2022. To facilitate addressing this requirement, BMPs outlined in this SWMP include reference to the targeted TMDL pollutants addressed with implementation of BMPs. In addition, Schedule D.3.c of the NPDES MS4 Permit requires the City to conduct a TMDL pollutant load reduction evaluation and Schedule D.3.d requires the City to establish pollution load reduction benchmarks for relevant TMDL pollutants in conjunction with the NPDES MS4 Permit renewal application.

Given the SWMP is implemented city-wide, it is used to cover both point and non-point sources of the TMDL pollutants listed above except for temperature. As stated in the 2006 Willamette River TMDL, temperature is generally not considered to be a significant contributor to stormwater pollution and thus is not addressed through a stormwater permit. DMAs are expected to address temperature as a non-point source pollutant in a TMDL Implementation Plan. The City's TMDL Implementation Plan compliments this SWMP.

1.3 Stormwater Program Overview

The activities outlined in this SWMP impact and are implemented by multiple City departments. This section provides an overview of the participating departments and the City's organizational structure as well as an outline of the SWMP organization in relation to Phase I NPDES MS4 Permit requirements.

1.3.1 Stormwater Program Organization

Stormwater program activities in the City are implemented by staff in many groups and departments. The Public Works Natural Resources Division is the lead group responsible for planning and tracking activities related to this SWMP. The following departments/groups participate in stormwater program operations or implement programs that reduce pollutant sources before they can enter stormwater runoff:

- Public Works Department
  - Natural Resources Division
  - Stormwater Division
- Engineering Department
- Community Development

1.3.2 Stormwater Program Partners

As in previous permit terms, several activities related to meeting specific permit requirements may be conducted by another jurisdiction on behalf of the City through IGAs. Currently, the City does not have an IGAs to aid in implementation of BMPs outlined in this SWMP. The City currently has an IGA with USGS to conduct continuous instream monitoring efforts on behalf of the City. Additional information related to environmental monitoring activities can be found in the Comprehensive Clackamas County Stormwater Monitoring Plan (CCCSMP).

To clarify the City's permit responsibilities, areas of responsibility are outlined specific to each BMP.

1.3.3 SWMP Organization

The SWMP is organized into the major stormwater program categories listed in Table 1-1 below. The categories closely correspond to the Schedule A.3 control measures per the NPDES MS4 Permit. Within each stormwater program category, this SWMP outlines best management practices (BMPs) to address the NPDES MS4 Permit requirements to reduce the discharge of pollutants to the maximum extent practicable. The BMPs are organized with numbering and titles based on the program categories. The BMPs listed in this summary are only those that address the explicit requirements of the SWMP as described in Schedule D.2.c of the 2021 NPDES MS4 Permit. Additional activities within the City's stormwater program that do not specifically align with permit requirements may not be included in this document.

The BMPs include measurable goals and tracking measures that will be used to report progress to DEQ on an annual basis. The reporting period is July 1 through June 30 of each year, with annual reports on activities due to DEQ by December 1st each year.

Table 1-1. Stormwater Program Organizational Categories		
Category Title	**NPDES MS4 Permit Requirement**	**BMP Naming Abbreviation**
Public Education and Outreach	Schedule A.3.a	PEO
Public Involvement	Schedule A.3.b	PI
Illicit Discharge Detection and Elimination	Schedule A.3.c	ILL
Erosion and Sediment Control	Schedule A.3.d	EC
Post Construction	Schedule A.3.e	PC
Municipal Operations and Maintenance*	Schedule A.3.f	OM
Industrial and Commercial Program	Schedule A.3.g	IND

**BMP OM-4 includes activities related to Schedule A.3.h.*

1.3.4 SWMP Development

Since the City received its first NPDES MS4 Permit from DEQ in 1995, their SWMP has been through numerous iterations to align with reissuance of the NPDES MS4 Permits and meet the respective permit renewal requirements. With each iteration, the city conducts an evaluation to identify areas where modifications to the SWMP are appropriate. Existing BMPs are reviewed by those responsible for implementing the BMP to propose changes to the BMP that enhance effectiveness. BMP revisions are reviewed internally to ensure that commitments and activities are accurate and achievable.

In 2022, the City conducted a detailed evaluation of the existing SWMP using a gap analysis strategy to compare City proposed SWMP changes (per their 2017 NPDES MS4 Permit renewal) to the 2021 NPDES MS4 Permit requirements. The evaluation also reviewed the City's annual reports and considered input from City staff responsible for implementing each BMP. Based on City experience, some BMPs were streamlined to reflect work previously completed and other BMPs were adjusted to better reflect the way the City operates. New BMPs were identified to increase program effectiveness and accommodate new NPDES MS4 Permit requirements. Measurable goals and tracking measures were developed or adjusted (if needed) for each BMP.

1.4 SWMP Reference Library

Stormwater program implementation requires numerous codes, ordinances policies, procedures, guidance manuals, checklists, forms, mapping, and other related documents. Throughout this SWMP the relevant documents (reference documents) are noted within each program category or BMP. The referenced documents have been compiled into an MS4 Program Reference Library. The website location is:

https://www.milwaukieoregon.gov/publicworks/ms4-program-reference-library

In accordance with the NPDES MS4 Permit requirements, the City also prepares a report of stormwater program activities each year. The annual report is submitted to DEQ by December 1 each year and posted on the City's stormwater program website for public access. The website location is

https://www.milwaukieoregon.gov/publicworks/npdes-ms4-stormwater-permit

Section 2: SWMP Control Measures

The following sections detail the BMPs applicable to the Schedule A.3 Stormwater Management Program Control Measures. The control measures being addressed are separated into the following categories:

A. Public Education and Outreach
B. Public Involvement and Participation
C. Illicit Discharge Detection and Elimination
D. Construction Site Runoff Control
E. Post-Construction Site Runoff for New Development and Redevelopment
F. Pollution Prevention and Good Housekeeping for Municipal Operations
G. Industrial and Commercial Facilities

Tables 2A-2G, included in each respective category, identify which of the City's BMPs correspond to the individual components of the Schedule A.3 permit requirements to meet the stormwater management program control measures.

2.1 Public Education and Outreach

Public education and outreach are an integral component of a successful stormwater pollution prevention program. Increasing public knowledge on local water quality issues is key to obtaining public support and ownership for stormwater programs. The City partners with multiple agencies and non-profits to support public outreach and experiential education focused on stormwater, as well as maintains a separate public outreach efforts.

The City's key education messages per their documented education and outreach strategy are to:

- Keep the Storm System Clean and Clear
- Healthy Watersheds Help Stormwater Systems
- Follow Rules for Development and Discharge

Activities related to education and training for Municipal staff are described in Appendix A.

Table 2-1 outlines the City's BMPs to address the permit requirements for Schedule A.3.a.

Table 2-1. Public Education and Outreach

Schedule A.3.a Permit Requirements	Applicable BMPs		
	PEO-1	PEO-2	EC-2
i. Education and Outreach Program	✓		✓
ii. Stormwater Education Activities	✓	✓	
iii. Priority Audiences and Topics	✓		✓
iv. Tracking and Assessment	✓	✓	✓

Each of the Public Education and Outreach centered BMPs are described in detail in the following **Category A** BMP table:

- PEO-1: Provide Public Education and Outreach Materials Regarding Stormwater Management
- PEO-2: Conduct Annual Staff Training

Supporting BMPs that assist in meeting the requirements of this permit language can be found in the following section:

- EC-2: Provide Educational Information to Construction Site Operators

The following Category A table provides a description, implementation schedule, measurable goals, annual tracking measures, and TMDL pollutants (or surrogate) addressed for each public education and outreach BMP. Measurable goals and tracking measures will be evaluated annually to assess the impact of the BMPs and to inform future education and outreach activities.

Category A. Education and Outreach BMPs		
PEO-1: Provide Public Education and Outreach Regarding Stormwater Management	**City BMP Number**	PEO-1
	City BMP Name	Provide Public Education and Outreach Regarding Stormwater Management
	BMP Implementation Responsibility	City of Milwaukie Public Works Department
	Reference Document(s)	City of Milwaukie Public Education and Outreach Strategy
	Permit Year	Ongoing
	BMP Description	The City implements a documented education and outreach program as outlined in the City of Milwaukie Public Education and Outreach Strategy for the Stormwater Utility. The Public Outreach and Education Strategy outlines goals, objectives, priority audiences and topics, messaging methods, and evaluation strategies to address stormwater issues of significance in the community. The City's communication platforms include monthly newsletters, website and social media, newsletter publications, brochures, bill inserts, and City newsletter to promote public awareness of water quality issues related to the City's key education messages. Targeted audiences for this permit term will include residents, the business community (small businesses) and the development community. Additionally, as documented in the strategy, the City coordinates with other local jurisdictions and organizations (i.e., ACWA, Regional Coalition for Clean Rivers and Streams, Clean Rivers Coalition) to promote public awareness of water quality issues in accordance with their established campaigns.
	Measurable Goal(s)	• Maintain and periodically update the City of Milwaukie Public Education and Outreach Strategy document. • Utilize identified communication platforms to promote public awareness of stormwater quality issues and to public reporting. Translate at least one public outreach document or online content into additional languages each year. • Annually present on stormwater issues and environmental compliance requirements at a council meeting or work session. • Provide targeted outreach (or training) for the development community regarding updated construction and/or post-construction standards to be implemented over the permit term.
	Tracking Measure(s)	1. Track the number, types, and topics of public educational materials dispersed to the public annually. 2. Indicate any large-scale public educational campaigns initiated during a given year. 3. Track coordinated public outreach activities with local co-permittees. 4. Track updates to the Public Education and Outreach Strategy document.
	TMDL Pollutant(s) Addressed	• Bacteria (*E. coli*) • Total Mercury • Pesticides (DDT/dieldrin)

Category A . Education and Outreach BMPs		
PEO-2: Conduct Annual Staff Training	City BMP Number	PEO-2
	City BMP Name	Conduct Annual Staff Training
	BMP Implementation Responsibility	City of Milwaukie Public Works Department and Engineering Department
	Reference Document(s)	Appendix A: Municipal Staff MS4 Training Strategy
	Permit Year	Ongoing
	BMP Description	The City of Milwaukie provides annual training for the City's Public Works staff (storm crews) on a variety of topics associated with stormwater quality in accordance with the City's Municipal Staff Training Strategy Table (Appendix A). The training sessions are provided to educate crews on illicit discharge and elimination procedures including dry weather screening, proper spill response procedures, appropriate erosion control measures, plan review, and inspections, post construction design standard updates, plan review, and inspections, operation, and maintenance BMPs for stormwater facilities and municipal activities, industrial and commercial inspection procedures, safe work practices, and record keeping. Training sessions will be used to present training type materials related to stormwater quality and the MS4 NPDES permit requirements. Training activities include internal trainings based on various SOPs and reference materials, external trainings (CESEL, HAZWOPER, and others), and joint agency trainings. City of Milwaukie Public Works and Engineering Staff also attend a variety of educational presentations and conferences throughout the year geared towards water resources and stormwater management.
	Measurable Goal(s)	• Implement and update, as necessary, the City's Municipal Staff MS4 Training Strategy. • Provide approximately 40 hours of stormwater-related training per year to City Storm crews. • Discuss stormwater-related topics during Engineering Department meetings.
	Tracking Measure(s)	1. Track the hours of stormwater related training provided to city staff each year. 2. Track number and responsibilities of staff participating in training each year. 3. Track conference attendance and participation annually.
	TMDL Pollutant(s) Addressed	• Bacteria (*E. coli*) • Total Mercury • Pesticides (DDT/dieldrin)

2.2 Public Involvement and Participation

The public provides valuable input and assistance to City' stormwater pollution prevention program. The goal of the public involvement is to effectively engage a diverse cross-section of people who can participate in stormwater pollution prevention activities. The City conducts a variety of public involvement programs to provide opportunities for the public to effectively participate in the development of the SWMP control measures. The public involvement efforts is closely tied with the public education and outreach efforts.

Table 2-2 outlines the City's BMPs to address the permit requirements for Schedule A.3.b.

Table 2-2. Public Involvement and Participation

Schedule A.3.b Permit Requirements	Applicable BMPs			
	PI-1	PI-2	PI-3	PEO-1
i. Publicly Accessible Website	✓			
ii. Stewardship Opportunity		✓	✓	✓
iii. Tracking and Assessment	✓	✓	✓	✓

The Public Involvement and Participation BMPs are described in detail in the following **Category B** Table:

- PI-1: Public Involvement and Participation
- PI-2 Stewardship Activities
- PI-3 Participate in Intergovernmental Coordination Efforts

Supporting BMPs that assist in meeting the requirements of this permit language can be found in the following section:

- PEO-1: Provide Public Education and Outreach Regarding Stormwater Management

The following Category B Table provides a description, implementation schedule, measurable goals, annual tracking measures, and TMDL pollutants addressed for each public involvement and participation BMP. Measurable goals and tracking measures will be evaluated annually to assess the impact of the BMPs and to inform future education and outreach activities.

Category B. Public Involvement and Participation BMPs		
PI-1: Provide for Public Participation with Submittals	City BMP Number	PI-1
	City BMP Name	Provide for Public Participation with Submittals
	BMP Implementation Responsibility	City of Milwaukie Public Works Department
	Reference Document(s)	City of Milwaukie MS4 Program website
	Permit Year	Ongoing
	BMP Description	Schedule A.3.b of the City's MS4 NPDES permit requires the City to provide opportunities for public participation in the development and modification of the City's stormwater management program. This includes providing a 30-day comment period for the updated monitoring plan, which was due to DEQ December 1, 2022; a 30-day comment period for this SWMP, also due December 1, 2022, and the other strategy documents as required (i.e., Industrial and Commercial Facilities Strategy due 12/1/23). The City's MS4 Program webpage is a publicly accessible website that is used to make available applicable documentation for public review, as well as provides contact information, educational materials, and reporting requirements for illicit discharges. Links are provided to ordinances, policies and/or guidance documents related to construction, post construction, and industrial/commercial programs, including education, training, licensing, and permitting.
	Measurable Goal(s)	• Maintain a publicly accessible website with the SWMP, Monitoring Plan, annual reports, contact information, educational materials and standard operating procedures, and reporting requirements for illicit discharges. • Provide a 30-day public comment period, and consider comments received for updates to the Monitoring Plan, the SWMP, and other strategy documents as required.
	Tracking Measure(s)	1. Track comments/questions received from the public on documents submitted for 30-day public review. 2. Track updates to the publicly accessible website annually and revise content and links as needed.
	TMDL Pollutant(s) Addressed	• Bacteria (*E. coli*) • Total Mercury • Pesticides (DDT/dieldrin)

Category B. Public Involvement and Participation BMPs		
PI-2 Stewardship Activities	**City BMP Number**	PI-2
	City BMP Name	Stewardship Activities
	BMP Implementation Responsibility	Public Works Department
	Reference Document(s)	City of Milwaukie Public Education and Outreach Strategy
	Permit Year	Ongoing
	BMP Description	The City sponsors and participates in stewardship activities as described in the City of Milwaukie Public Education and Outreach Strategy document. The City will continue to install catch basin markings with the message “Only Rain in the Drain”, “No Dumping, Drains to Waterway” or similar. City staff will continue to work with local stewardship groups (JCWC and NCWC) to locate stormwater retrofit opportunities and GI projects within city limits.
	Measurable Goal(s)	• Continue implementing a catch basin marking program, with a goal of 10 catch basins per year. • During the permit term, identify and implement a stormwater retrofit project in accordance with school-age residents or other local stewardship group.
	Tracking Measure(s)	1. Number of catch basins marked. 2. Status of stewardship activities targeting a stormwater retrofit.
	TMDL Pollutant(s) Addressed	• Bacteria • Mercury • Pesticides (DDT/dieldrin)

Category B. Public Involvement and Participation BMPs		
PI-3: Participate in Intergovernmental Coordination Efforts	**City BMP Number**	PI-3
	City BMP Name	Participate in Intergovernmental Coordination Efforts
	BMP Implementation Responsibility	City of Milwaukie Public Works Department and Engineering Department
	Permit Year	Ongoing
	BMP Description	The City of Milwaukie will continue to meet periodically to coordinate with other Clackamas County co-permittees regarding regional water quality efforts. Areas for coordination include monitoring, public education, and BMP effectiveness studies. The City of Milwaukie also participates with a variety of local agencies and groups involved with a broad range of water quality issues including stormwater. Currently, representatives from the Milwaukie Engineering and Public Works Departments are involved in various activities and organizations including the coordinated UIC monitoring program, ACWA, and the Johnson Creek Watershed Council.
	Measurable Goal(s)	• Annually coordinate with other Clackamas County co-permittees regarding regional water quality efforts. • Annually participate with local agencies involved in water quality issues.
	Tracking Measure(s)	1. Indicate groups, committees, and organizations with which the City is currently participating.
	TMDL Pollutant(s) Addressed	• Bacteria (*E. coli*) • Total Mercury • Pesticides (DDT/dieldrin)

2.3 Illicit Discharge Detection and Elimination

An illicit discharge is defined in EPA's stormwater regulations as any discharge to an MS4 that is not composed entirely of stormwater unless exempt by the permit. Stormwater is defined as the portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, channels, or pipes into a defined surface water channel or a constructed infiltration facility. Illegal discharges to the storm sewer from industrial facilities, commercial businesses, and residents can be a significant source of water pollution. Deteriorating piping in the sanitary sewer and storm drain systems may also be a source of pollution if sanitary sewage seeps into the stormwater system.

The goal of the Illicit Discharge Detection and Elimination (IDDE) Program is to detect and eliminate illegal discharges and illicit connections to the storm drain system. City accomplishes this implementation of ordinances and enforcement procedures, MS4 mapping, a dry weather screening program, a spill response program, and staff training. Additional information on the IDDE program can be found in the IDDE SOP (see SWMP Reference Library on City's website), Spill Response SOP, and the Spill Response Investigation Form.

Table 2-3 outlines the City's BMPs to address the permit requirements for Schedule A.3.c.

Table 2-3. Illicit Discharge Detection and Elimination

Schedule A.3.c Permit Requirements	Applicable BMPs				
	ILL-1	ILL-2	ILL-3	ILL-4	PEO-2
i. MS4 Map	✓				
ii. Ordinance and/or Other Regulatory Mechanisms		✓			
iii. Enforcement Procedures		✓			
iv. Program to Detect and Eliminate Illicit Discharges		✓	✓	✓	
v. Dry Weather Screening Program			✓		
vi. Illicit Discharge Detection and Elimination Training and Education					✓
vii. Tracking and Assessment		✓	✓	✓	✓

Each of the Illicit Discharge Detection and Elimination centered BMPs are described in detail in the following **Category C** BMP Table:

- ILL-1: MS4 Mapping
- ILL-2: Implement the Illicit Discharges Elimination Program
- ILL-3: Conduct Annual Dry Weather Field Screening
- ILL 4-: Implement the Spill Response Program

Supporting BMPs that assist in meeting the requirements of this permit language can be found in the following section:

- PEO-2: Conduct Annual Staff Training

The Category C Table provides a description, implementation schedule, measurable goals, annual tracking measures, and TMDL pollutants addressed for each IDDE BMP. Measurable goals and tracking measures will be evaluated annually to assess the impact of the BMPs and to inform future IDDE priority areas and activities.

Category C. Illicit Discharge Detection and Elimination BMPs		
ILL-1: MS4 Mapping	City BMP Number	ILL-1
	City BMP Name	MS4 Mapping
	BMP Implementation Responsibility	Public Works Department
	Reference Document(s)	• MS4 Storymap: https://milwaukie.maps.arcgis.com/apps/MapJournal/index.html?appid=5a5d0675675f4c27985cda01d1d51460 • MS4 Utility Map: https://milwaukie.maps.arcgis.com/apps/webappviewer/index.html?id=d10dfffd77104a17a5100c1cf39508ba
	Permit Year	Ongoing
	BMP Description	The City maintains public online GIS mapping of their stormwater collection system including the location of outfalls, conveyance system components, and structural stormwater controls (rain gardens, dry wells, detention ponds). Online mapping updates are made annually at a minimum. Additional information is available per the City's digital GIS inventory (available internally and upon request). The City's IDDE SOP (available on the City's MS4 website) includes a map of dry weather field screening locations. Outfalls are identified by number. Currently, there are no chronic illicit discharges to report or map.
	Measurable Goal(s)	• Maintain the online GIS mapping and digital GIS inventory on an ongoing basis. • Annually maintain mapping of outfall locations including dry weather field screening priority locations (i.e., priority outfalls). • By 12/1/23, create a tracking system to readily map identified illicit discharges to track repeat illicit discharges. • Add municipal stormwater management facilities and privately-owned stormwater management facilities to the online GIS mapping within one year of construction completion.
	Tracking Measure(s)	1. Number of municipal stormwater management facilities in the digital GIS inventory. 2. Number of privately owned stormwater management facilities in the digital GIS inventory.
	TMDL Pollutant(s) Addressed	N/A

Category C. Illicit Discharge Detection and Elimination BMPs		
ILL-2: Implement the Illicit Discharges Elimination Program	**City BMP Number**	ILL-2
	City BMP Name	Implement the Illicit Discharges Elimination Program
	BMP Implementation Responsibility	City of Milwaukie Public Works Department
	Reference Document(s)	• Spill Response SOP #60.01 • Illicit Discharge Detection and Elimination Standard Operating Procedures (IDDE SOP) • MILMC 13.14 • Spill Hotline: https://www.milwaukieoregon.gov/publicworks/report-environmental-concern-or-illegal-dumping
	Permit Year	Ongoing
	BMP Description	The City of Milwaukie prohibits illicit discharges to their MS4 system in conjunction with their Milwaukie Municipal Code (MMC) 13.14.025, MMC 13.14.100, and MMC 13.14.105. The City has the authority to conduct appropriate response procedures and enforce against responsible parties per MMC 13.14.115. The City maintains a spill hotline as a public reporting mechanism that residents can call in to report suspected illicit discharges or connections. City staff contact information is provided on the City's spill hotline website listed above. Illicit discharges suspected and/or identified by City staff (either independently or in conjunction with public reporting) are responded to in accordance with the City's Spill Response SOP and IDDE SOP and recorded in a tracking database. The Public Works director is notified of all positive identifications of illicit connections. The City conducts appropriate actions to remove the illicit discharge in accordance with the timeframes and escalating enforcement outlined in the City's IDDE SOP.
	Measurable Goal(s)	• For identified illicit discharges, conduct appropriate actions to remove the discharge in conjunction with time frames outlined in the City's MS4 NPDES Permit, and procedures documented in the City's IDDE SOP. • Track and record all identified illicit discharges and how such discharges were removed. • By 12/1/23, update IDDE SOP to clarify required response and notification timeframes per the NPDES MS4 Permit. • By 12/1/24, update the MILMC 13.14.105 to align the code with the prohibitions and allowable discharges listed in Schedule A.1.d to ensure legal authority against illegal dumping.
	Tracking Measure(s)	1. Track any updates to the IDDE SOP. 2. Track the number, location, resolution, and enforcement activities related to any identified illicit discharge. 3. Track the number of calls to spill reporting hotline. 4. Track the number of illicit discharges referred to the proper authorities for identified illicit discharges that originate outside the City jurisdictional area.
	TMDL Pollutant(s) Addressed	• Bacteria (*E. coli*) • Total Mercury

Category C. Illicit Discharge Detection and Elimination BMPs		
ILL-3: Conduct Annual Dry Weather Field Screening	**City BMP Number**	ILL-3
	City BMP Name	Conduct Annual Dry Weather Field Screening
	BMP Implementation Responsibility	City of Milwaukie Public Works Department
	Reference Document(s)	• IDDE SOP • Appendix A: Municipal Staff Training Strategy
	Permit Year	Ongoing
	BMP Description	The City conducts illicit discharge inspections, monitoring, and investigations annually during dry-weather conditions (typically between July and September) at all priority stormwater outfall locations in accordance with procedures outlined in the IDDE SOP. Priority stormwater outfall locations are determined according to the size of the outfall's drainage area and the relative land uses in the drainage area. Trained personnel complete data inspection forms, which are kept on file at the City. Dry weather flows are inspected for a variety of visual characteristics, and sources of flows are characterized as either permissible (listed in Schedule A.1.d of the MS4 NPDES permit) or non-permissible. If non-permissible discharges are suspected, sampling, analysis, and investigation are conducted according to the following procedures as outlined in the IDDE SOP: 1. Estimate the volume/flow rate of discharge. 2. Collect a sample(s) and conduct field analyses in conjunction with defined pollutant parameter action levels. 3. If field analyses indicate pollutant parameter levels are outside defined action levels, staff will use a drainage map and other source identification data to conduct an upstream investigation and locate the potential pollutant sources. 4. In some cases, where deemed necessary, a water sample is taken and analyzed for the suspected contaminant group.
	Measurable Goal(s)	• Conduct annual dry-weather illicit discharge inspections at all priority stormwater outfalls, as well as investigations on all suspected non-permissible discharges in accordance with the IDDE SOP. • By 12/1/23, review and update dry weather field screening prioritization criteria and identify a new list of priority screening sites. Update the IDDE SOP to reflect any changes in locations being inspected for dry weather flows.
	Tracking Measure(s)	1. Track the number and location of high priority stormwater outfalls inspected during dry weather illicit discharge inspection activities. 2. Summarize inspection results and indicate outfalls requiring sampling and/or investigations. 3. Indicate the outcome and resolution of any investigation activities conducted. 4. Track updates to the mapping of outfall locations, if applicable. 5. Track progress of updates to the IDDE SOP.
	TMDL Pollutant(s) Addressed	• Bacteria (*E. coli*) • Total Mercury

Category C. Illicit Discharge Detection and Elimination BMPs		
ILL 4-: Implement the Spill Response Program	**City BMP Number**	ILL-4
	City BMP Name	Implement the Spill Response Program
	BMP Implementation Responsibility	City of Milwaukie Public Works Department and Clackamas County Fire District No. 1 Hazardous Materials Team
	Reference Document(s)	• IDDE SOP • Spill Response SOP #60.01 • Spill and Illicit Discharge Investigation Report Form • Milwaukie Emergency Operations Plan
	Permit Year	Ongoing
	BMP Description	The Milwaukie Public Works Department responds to non-hazardous spills within the City. For non-hazardous materials (oil and grease, paint, sewage), spills are generally reported by citizens or observed by Public Works staff. Response to spills follows the procedures listed in the Spill Response SOP. Spill response associated with non-hazardous materials generally involves application of absorbent pads and booms to prevent discharges from entering the stormwater conveyance system and to dispose of all contained materials. All Public Works vehicles are currently equipped with containment materials so that in the event a spill is discovered, the vehicles can respond promptly. In addition, a Spill and Illicit Discharge Investigation Report Form is also in each Public Works vehicle, which outlines the procedures for collecting information pertaining to a spill. If necessary, the Public Works Department will report the incident to the Oregon Emergency Response System (OERS). Clackamas County Fire District No. 1 Hazardous Materials Team responds to chemical and hazardous waste spills within the City. Generally, all emergency calls reporting a spill are forwarded to the Fire Department. Procedures for response are outlined in the City's Emergency Operations Plan.
	Measurable Goal(s)	• Respond to all reported non-hazardous material spills. • Equip all Public Works vehicles with spill response equipment, the Spill and Illicit Discharge Investigation Form, and spill response procedures continuously during the permit term. • Investigate all spills and respond as necessary following the Spill Response SOP. • Report all qualifying spills to DEQ.
	Tracking Measure(s)	1. Indicate the number of spills reported to the Public Works Department. 2. Indicate the number of spills responded to by the Public Works Department. 3. Indicate sources, causes, and resulting types of discharges resulting from spill activities.
	TMDL Pollutant(s) Addressed	• Bacteria (*E. coli*) • Total Mercury

2.3 Construction Site Runoff Control

Construction projects often involve the removal of vegetation and excavation of soils. When vegetation is removed velocity from stormwater runoff typically increases and disturbed soils can be carried offsite to storm inlets or receiving waters. Soil particles can transport nutrients to waterways, contribute to increases in stream temperature, reduce channel capacity, and have negative impacts to aquatic habitat. Other potential pollutant causing activities conducted at construction sites, include materials storage, fueling, and vehicle and equipment use. Staging areas and equipment use to lead to soil compaction further increasing stormwater runoff from the site. A robust and enforceable construction site runoff control program is a vital piece in reducing pollution in stormwater runoff.

The goal of the construction site runoff control program is to prevent sediment from leaving construction sites through the implementation of properly selected and installed BMPs. The City maintains a 1200-CN permit from DEQ to regulate construction sites up to 5-acres. The City implements the Clackamas County Erosion Prevention and Sediment Control Planning and Design Manual as well as provisions City's Rules and Regulations and Design and Construction Standards. Education is provided for both municipal staff and members of the design/engineering/construction community. Construction site runoff controls are accomplished through regulatory requirements, plan review and permitting, construction site inspections, enforcement procedures, training, education, inspections, and tracking.

Table 2-4 outlines the City's BMPs to address the permit requirements for Schedule A.3.d.

Table 2-4. Construction Site Runoff Control

Schedule A.3.d Permit Requirements	Applicable BMPs			
	EC-1	EC-2	EC-3	PEO-2
i. Ordinance and/or Other Regulatory Mechanisms	✓			
ii. Erosion and Sediment Control Plans (ESCPs)	✓			
iii. Erosion and Sediment Control Plans Review	✓			
iv. Construction Site Inspections			✓	
v. Enforcement Procedures			✓	
vi. Construction Runoff Control and Training Education		✓		✓
vii. Tracking and Assessment	✓	✓	✓	

Each of the Construction Site Runoff Control centered BMPs are described in detail in the following Category D BMP Table:

- EC-1: Implement Erosion Control for New and Redevelopment
- EC-2: Provide Educational Information to Construction Site Operators
- EC-3: Conduct Erosion Control Inspections and Enforcement

While the supporting BMP that assist in meeting the requirements of this permit language can be found in the following section:

- PEO-2: Annual Staff Training

The Category D Table provides a description, implementation schedule, measurable goals, annual tracking measures, and TMDL pollutants addressed for each construction site runoff control BMP. Measurable goals and tracking measures will be evaluated annually to assess the impact of the BMPs and to inform future construction site runoff control BMPs.

Category D. Construction Site Runoff Control BMPs		
EC-1: Implement Erosion Control for New and Redevelopment	**City BMP Number**	EC-1
	City BMP Name	Implement Erosion Control for New and Redevelopment
	BMP Implementation Responsibility	City of Milwaukie Public Works and Engineering Department
	Reference Document(s)	• MILMC 16.28 • Clackamas County Erosion Prevention and Sediment Control Planning and Design Manual (Clackamas ESCP Manual) 2020 • Milwaukie Erosion Prevention and Sediment Control Requirements (Technical Guidance) • Milwaukie Standard Notes for Erosion Control Plans
	Permit Year	Ongoing
	BMP Description	The City reviews all site plans for new and redevelopment using an internal review checklist for compliance with the City's Erosion Control Standards, which define requirements for erosion control plans including the implementation of structural and non-structural BMPs for all sites disturbing an area over 500 ft^2. The City has developed the Milwaukie Erosion Prevention and Sediment Control Requirements as a technical guidance handbook for erosion and sediment control plans, which is based on the Clackamas ESCP Manual. The technical guidance includes City-specific erosion control submittal requirements and recommended structural and non-structural erosion control measures. Both the technical guidance and Clackamas EPSC Manual include measures related to good housekeeping and addressing non-stormwater related waste. As an agent for DEQ's 1200-CN program, the City is authorized to review and permit projects up to 5 acres of disturbance. For sites disturbing five acres or greater, a 1200-C permit is also required in addition to meeting City requirements. The 1200-C is issued by DEQ and must be consistent with the requirements of DEQ's 1200-C Guidance Manual. The City refers applicable sites to DEQ for 1200-C permitting process. While the IGA and/or 1200CN permit have the potential to change, and hence the need to obtain 1200-C permits may change, the City's erosion control standards will continue to apply to sites that are 500 ft^2 or greater. During the plan review process, new and redevelopment will be assessed for compliance with the City erosion control standards. Plans not in compliance with those documents will not be approved and will be required to implement appropriate erosion control techniques prior to approval and issuance of a City erosion control permit/site development permit. The City requires copies of all issued 1200-C permits and approved erosion control plans. Approved site plans must include notes requiring that the ESCP be maintained and updated as site conditions change. Plumbing and electrical permits are not issued until an erosion control permit/site development permit is issued.

Category D. Construction Site Runoff Control BMPs		
EC-1: Implement Erosion Control for New and Redevelopment	**Measurable Goal(s)**	• Require sites disturbing over 500 ft^2 to acquire a City-issued Erosion Control Permit/Site Development Permit prior to issuing a plumbing and electrical permit. Refer all sites with greater than 5-acres of disturbance to DEQ's 1200-C permitting process. • Require a copy of all 1200-C permit applications for development resulting in land disturbance of greater than or equal to five acres. • Conduct site plan reviews for applicable new and re-development to ensure compliance with the City's erosion control standards in accordance with the City's internal review checklist. Require erosion and sediment control plans not in compliance to be amended prior to approval in conjunction with provisions outlined in the Clackamas ESCP Manual (2020). • By 12/1/23, update the City's technical guidance to incorporate the standard notes and internal plan review checklist, as well as outline how the City permitting and DEQ 1200-C process overlaps, specific to the implementation of erosion control for public works and capital projects.
	Tracking Measure(s)	1. Report any updates or modifications to the MILMC, Clackamas ESPC Manual and City's technical guidance. 2. Record the number of erosion control plan applications submitted, reviewed, and approved annually. 3. Number of sites referred obtaining a 1200-C permit annually.
	TMDL Pollutant(s) Addressed	• Bacteria (*E. coli*) • Total Mercury • Pesticides (DDT/dieldrin)

Category D. Construction Site Runoff Control BMPs		
EC-2: Provide Educational Information to Construction Site Operators	**City BMP Number**	EC-2
	City BMP Name	Provide Educational Information to Construction Site Operators
	BMP Implementation Responsibility	City of Milwaukie Public Works Department and Engineering Department
	Reference Document(s)	• Clackamas County Erosion Prevention and Sediment Control Planning and Design Manual (Clackamas ESPC Manual) 2020 • Milwaukie Erosion Prevention and Sediment Control Requirements (Technical Guidance)
	Permit Year	Ongoing
	BMP Description	The City of Milwaukie refers engineers, contractors, and the public to the Milwaukie Erosion Prevention and Sediment Control Requirements (Technical Guidance), available online, as well as the Clackamas EPSC for guidance in developing erosion control plans and effective erosion control techniques. Additional erosion control information is available on the City website.
	Measurable Goal(s)	• Give discounts on erosion control permit/site development permit fees to contractors that have received their Erosion Control Certification.
	Tracking Measure(s)	1. Track the number of contractors receiving a discount on erosion control permit/site development permit fees.
	TMDL Pollutant(s) Addressed	• Bacteria (*E. coli*) • Total Mercury • Pesticides (DDT/dieldrin)

Category D. Construction Site Runoff Control BMPs		
EC-3: Conduct Erosion Control Inspections and Enforcement	**City BMP Number**	EC-3
	City BMP Name	Conduct Erosion Control Inspections and Enforcement
	BMP Implementation Responsibility	City of Milwaukie Public Works Department and Engineering Department
	Reference Document(s)	• Clackamas County Erosion Prevention and Sediment Control Planning and Design Manual 2020 • City of Milwaukie Construction Site Inspections SOP (#10.04) • Erosion Control Inspection Report Form • MILMC 16.28
	Permit Year	Ongoing
	BMP Description	The City requires an approved erosion control plan to be in place prior to issuance of a plumbing and/or building permit. All sites that include greater than or equal to 1,000 ft^2 of disturbance are required to have an erosion and sediment control plan on record and are inspected during construction activities. The City inspects all new and redevelopment sites (of 500 ft^2 or greater) for proper implementation of erosion control measures in accordance with City Construction Site Inspections SOP (#10.04). An initial and final inspection are scheduled and conducted. The City may conduct mid-construction inspections at random or if a site has visible sediment and/or turbidity in stormwater discharges, have received complaints or reports, or meet other triggers of the City's inspection program. Results of the erosion control inspections are recorded on the Erosion Control Inspection Report and logged in the City's compliance tracking database (Accela or other). Enforcement authority is provided in Milwaukie's Municipal Code (MILMC 16.28) and outlined in the Construction Site Inspections SOP. For sites with an erosion control violation or where ineffective erosion control is observed, a Notice of Non-compliance may be issued, and contractors are required to install effective control measures. If not resolved within the required time frame, fines or Stop Work Orders are issued.

Category D. Construction Site Runoff Control BMPs		
EC-3: Conduct Erosion Control Inspections and Enforcement	**Measurable Goal(s)**	• Inspect all sites disturbing over 500 ft^2 at least twice during construction activities. • Implement the inspection and enforcement process as outlined in the Construction Site Inspection SOP for all active construction sites in the City. • By 12/1/23, update the MILMC Section 16.28 and Construction Site Inspection SOP to ensure escalating enforcement provisions and timelines as outlined in the City's technical guidance are reflected. • By 12/1/24, update the MILMC 16.28 to directly reflect escalating enforcement provisions as outlined in the Construction Site Inspection SOP.
	Tracking Measure(s)	1. Record the number of erosion control inspections conducted annually. 2. Report the number of written notices of non-compliance issued during inspections and the number of stop work orders issued annually. 3. Report the number of 1200-C sites referred to DEQ for additional enforcement of erosion control violations annually. 4. Track status of updates to code and SOP.
	TMDL Pollutant(s) Addressed	• Bacteria *(E. coli)* • Total Mercury • Pesticides (DDT/dieldrin)

2.4 Post-Construction Site Runoff for New Development and Redevelopment

Stormwater runoff from new development and redevelopment of urban areas impacts the quality and quantity of stormwater discharges. Stormwater that flows through developed areas has the potential to carry pollutants such as sediment, nutrients, hydrocarbons, and litter to water bodies degrading the water quality. Degraded water quality negatively impacts aquatic habitats and threatens human uses. Increases in impervious area associated with development decreases the amount of stormwater that can percolate into the ground which increases the flow rate and quantity of stormwater discharged to receiving waters. An increase to the quantity and flow rate of stormwater discharge can cause streambank scouring, channel incising, and downstream flooding, which could lead to a loss of aquatic habitats and damage to property.

The NPDES MS4 Permit requires that City develop a site performance standard based on a numeric stormwater retention requirement (NSRR). The site performance standards should target natural surface or predevelopment hydrologic function and encourage a retention first approach to stormwater control designs. If onsite retention is not feasible for a given site, City may establish alternative site performance standards that result in treatment of a design storm representing at least 80% of average annual runoff. The permit requires City to continue to prioritize Low Impact Development (LID) and Green Stormwater Infrastructure (GI) to reduce pollution by retaining and treating stormwater near where it falls. City' codes and standards will be evaluated and updated as needed during the permit term to align with required performance standards.

Table 2-5 outlines the City's BMPs to address the permit requirements for Schedule A.3.e.

Table 2-5. Post-Construction Site Runoff for New Development and Redevelopment

Schedule A.3.e Permit Requirements	Applicable BMPs			
	PC-1	PC-2	PC-3	PEO-2
i. Ordinance and/or Other Regulatory Mechanisms	✓			
ii. Prioritization of Low Impact Development & Green Infrastructure	✓			
iii. Post-Construction Stormwater Management Requirements	✓			
iv. Water Quality Benefit Offset Programs*	✓			
v. Post-Construction Site Runoff Plan Review	✓			
vi. Long-Term Operation and Maintenance (O&M)		✓	✓	
vii. Training and Education				✓
viii. Tracking and Assessment	✓	✓	✓	✓

Each of the Post-Construction Site Runoff for New Development and Redevelopment centered BMPs are described in detail in the following **Category E** BMP Table:

- PC-1: Implement Municipal Development Codes
- PC-2: Private Water Quality Facility Maintenance Program
- PC-3: Public Structural Control Facility Cleaning and Maintenance

While the supporting BMPs that assist in meeting the requirements of this permit language can be found in the following sections:

- PEO-2: Annual Staff Training

The Category E Table provides a description, implementation schedule, measurable goals, annual tracking measures, and TMDL pollutants addressed for each post-construction site runoff for new development and redevelopment BMP. Measurable goals and tracking measures will be evaluated annually to assess the impact of the BMPs and to inform construction and education/outreach activities.

Category E. Post-Construction Site Runoff BMPs		
PC-1: Implement Municipal Development Codes for Post-Construction Site Runoff Controls	**City BMP Number**	PC-1
	City BMP Name	Implement Municipal Development Codes for Post-Construction Site Runoff Controls
	BMP Implementation Responsibility	City of Milwaukie Engineering Department
	Reference Document(s)	• MILMC 13.14 Stormwater Management. • City of Portland Stormwater Management Manual (SWMM) • City of Milwaukie Public Works Standards (revised March 1, 2021) • Appendix A: Municipal Staff MS4 Training Strategy
	Permit Year	Ongoing
	BMP Description	The City reviews all new and redevelopment plans through the building permit process. Plans are reviewed for conformance with the City's Development Standards (Chapter 13.14), as outlined in the City's Municipal Code, and the City's Public Works Standards (Section 2) using an internal review checklist. The City implements water quality standards using an impervious area threshold of 1,000 ft^2 as well as engineering design criteria to minimize flood potential and clauses prohibiting pollutant discharge into the stormwater system. Section 2.0051 of the City's Public Works Standards outline development factors that limit use of an on-site stormwater treatment facility and outline the equivalent measures that a developer would have to implement if on-site treatment cannot be provided. As referenced in the Public Works Standards, the City has adopted the Portland's SWMM for design of water quality facilities. Updates to the City's Public Works Standards and MILMC may be required to align current standards with the City's ultimate strategy for use of LID/ GI, as well address site performance and treatment standards as outlined in the City's NPDES MS4 Permit. Findings and recommendations stemming from the review of code and standards will be documented in a technical review memo in accordance with permit deadlines. Post-Construction specific training is outlined in Appendix A: Municipal Staff MS4 Training Strategy.
	Measurable Goal(s)	• Review all new and redevelopment plans for conformance with the City's Development Standards and provisions of the Portland SWMM. • By 12/1/23, review current standards and applications of LID/ GI and refine the City's strategy for use of LID/ GI for stormwater management. • By December 1, 2024, review and update the Public Works Standards and MILMC (if necessary) to specifically identify elements of the Portland manual relevant to City applications, including but not limited to fee-in-lieu or alternative compliance strategies to meet post construction requirements for the permit. • Update internal review checklists to comply with updated standards.
	Tracking Measure(s)	1. Track status of completion of an LID/GI strategy and other post-construction updates per permit deadlines. 2. Track the number of development applications reviewed and approved for compliance with the stormwater regulations. *Note: The number and type of water quality facilities constructed/implemented to address these requirements will be tracked and mapped under BMP ILL-1 MS4 Mapping.*
	TMDL Pollutant(s) Addressed	• Bacteria (*E. coli*) • Total Mercury • Pesticides (DDT/dieldrin)

Category E. Post-Construction Site Runoff BMPs		
PC-2: Private Water Quality Facility Maintenance Program	**City BMP Number**	PC-2
	City BMP Name	Private Water Quality Facility Maintenance Program
	BMP Implementation Responsibility	City of Milwaukie Public Works Department
	Reference Document(s)	• MILMC 13.14.115 (Inspection and Enforcement) • City of Milwaukie Public Works Standards (revised March 1, 2021) • Private Stormwater Quality Facilities Submittal Requirements
	Permit Year	Ongoing
	BMP Description	The City maintains a digital inventory of privately owned stormwater treatment and management facilities, reflecting location, facility type, ownership, contact/mailing information, and maintenance responsibility. The information is stored in GIS and CityWorks asset management program. Facility locations are mapped (see BMP ILL-1) and as-builts and O&M plans are linked to the stormwater facility inventory per the City's asset management program. Under Municipal Code (Chapter 13.14), the City requires privately owned facilities to submit an approved maintenance plan for their new stormwater facilities upon construction. Annually, letters are mailed to private facility owners with request to confirm maintenance inspections and actions. Private facilities are subject to inspections to ensure proper maintenance and performance.
	Measurable Goal(s)	• Annually inspect approximately 10% of private stormwater facilities with a registered maintenance plan to ensure maintenance has been conducted. Identify outstanding maintenance needs and send follow-up letters to private owners to document needed maintenance actions. • Continue to update the digital inventory and MS4 mapping reflecting privately owned stormwater treatment and management facilities, as well as their drainage areas. • Continue to require maintenance agreements for newly constructed private stormwater management facilities. • Annually mail maintenance reminder letters to private facility owners with request to confirm maintenance inspections and actions. • By 12/1/23 provide informational brochures that explain the maintenance needs for various types of stormwater facilities. These brochures could be shared with private property owners during private stormwater facility inspections.
	Tracking Measure(s)	1. Track the number of private stormwater quality facility inspections conducted by City staff annually. 2. Track the number of new maintenance agreements submitted to the City each year. 3. Track the number of private stormwater management facilities reflected in the digital inventory and MS4 mapping. 4. Track the number of maintenance reminder letters mailed and returned each year.
	TMDL Pollutant(s) Addressed	• Bacteria • Mercury • Pesticides (DDT/dieldrin)

Category E . Post-Construction Site Runoff BMPs		
PC-3: Public Water Quality Facility Maintenance	**City BMP Number**	PC-3
	City BMP Name	Public Water Quality Facility Maintenance
	BMP Implementation Responsibility	City of Milwaukie Public Works Department
	Reference Document(s)	• MILMC 13.14.115 (Inspection and Enforcement) • City of Milwaukie Public Works Standards (revised March 1, 2021) • Storm Rain Garden SOP (#10.01.006) • Appendix A: Municipal Staff Training Strategy Table
	Permit Year	Ongoing
	BMP Description	The City inspects public structural water quality facilities annually. Such public structural facilities include retention ponds, swales, raingardens and planters, oil/sediment vaults, pollution control manholes and various proprietary systems. Facility inspections generally occur in accordance with the City's Storm Rain Garden SOP and include inspection for accumulated sediment and debris, indication of illegal dumping and disposal in the facility, and any broken or non-functioning structures in need of repair and/or replacement. Facility maintenance is conducted in conjunction with the inspection and generally includes the removal of sediment, trash, and debris, the replacement of proprietary system components (e.g., filter cartridges), and replacement and removal of vegetation as necessary. Maintenance staff identify mapping updates when conducting maintenance activities. If a discrepancy in the map is discovered during maintenance activities, the MS4 map will be updated accordingly.
	Measurable Goal(s)	• Inspect and maintain up to 25% of public water quality facilities annually. • Maintain public water quality facilities in accordance with documented frequencies and procedures. Update SOPs as needed. • Update the public structural control facility inventory as needed.
	Tracking Measure(s)	1. Track the number and percent of total structural water quality facilities inspected and maintained each year. 2. Track the number of public stormwater management facilities in the digital inventory. 3. Track updates to maintenance protocols and SOPs annually
	TMDL Pollutant(s) Addressed	• Bacteria *(E. coli)* • Total Mercury • Pesticides (DDT/dieldrin)

2.5 Pollution Prevention and Good Housekeeping for Municipal Operations

The goal of the pollution prevention program is to reduce discharge of pollutants to receiving waters by properly operating and maintaining City facilities using good housekeeping BMPs. Municipal operations include a wide variety of activities conducted to maintain City-owned and operated property and facilities. These activities can lead to pollutants-- such as sediment, chemicals from pesticide, nutrients from fertilizers, and litter-- reaching the MS4 system and receiving waters.

During this permit term, City will work to develop/update written pollution prevention policies, strategies, and agreements to document the procedures that are already in place for many municipal operations.

Table 2-6 outlines the City's BMPs to address the permit requirements for Schedule A.3.f.

Table 2-6. Pollution Prevention and Good Housekeeping for Municipal Operations

Schedule A.3.f Permit Requirements	Applicable BMPs											
	OM-1	OM-2	OM-3	OM-4	OM-5	OM-6	OM-7	OM-8	OM-9	PC-2	PC-3	PEO-2
i. Operation and Maintenance Strategy for Existing Controls										✓	✓	
ii. Inspection, Maintenance, and Cleaning of the MS4					✓	✓						
iii. Pollution Prevention in Facilities and Operations**	✓	✓	✓		✓	✓		✓				
iv. Co-permittee-owned NPDES Industrial Stormwater Permit Facilities	Not applicable.											
v. Winter Operations and Maintenance Program*									✓			
vi. Requirements for Pesticide and Fertilizer Applications		✓										
vii. Litter Control*							✓					
viii. Materials Disposal*	✓				✓	✓						
ix. Flood Control, Transportation, and Other Infrastructure				✓								
x. Operations & Maintenance Staff Training												✓
xi. Tracking and Assessment	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓

* Items are new permit requirements that have not historically been measured or tracked by the City.

**Firefighting activities are conducted by Clackamas County therefore the City of Milwaukie does not include BMPs for practices that prevent or control the release of materials related to fire-fighting training activities.

Each of the Pollution Prevention and Good Housekeeping for Municipal Operations centered BMPs are described in detail in the following **Category F** BMP Table:

- OM-1: Conduct Street Sweeping and Roadway Repair Activities
- OM-2: Minimize Water Quality Impacts Associated with Landscape Management Practices
- OM-3: Control Infiltration and Cross Connections to the Stormwater Conveyance System
- OM-4: Develop and Implement Planning Documents in Support of Water Quality
- OM-5: Conduct Stormwater Conveyance System Cleaning and Maintenance
- OM-6: Conduct Catch Basin Cleaning and Maintenance
- OM-7: Litter Control
- OM-8: Minimize Water Quality Impacts Related to Water Line Flushing
- OM-9: Winter Road Maintenance

Supporting BMPs that assist in meeting the requirements of this permit language can be found in the following sections:

- PC-2: Private Water Quality Facility Maintenance Program
- PC-3: Public Structural Control Facility Cleaning and Maintenance
- PEO-2: Annual Staff Training

The Category F Table provides a description, implementation schedule, measurable goals, annual tracking measures, and TMDL pollutants addressed for each pollution prevention and good housekeeping for municipal operations BMP. Measurable goals and tracking measures will be evaluated annually to assess the impact of the BMPs and to inform future pollution prevention and good housekeeping BMPs.

Category F. Pollution Prevention for Municipal Operations and Stormwater Management Facilities Operation and Maintenance BMPs		
OM-1: Conduct Street Sweeping and Roadway Repair Activities	**City BMP Number**	OM-1
	City BMP Name	Conduct Street Sweeping and Roadway Repair Activities
	BMP Implementation Responsibility	City of Milwaukie Public Works Department
	Reference Document(s)	• Street Sweeping SOP (#40.01) • Decant Facility Use and Maintenance SOP (#50.10) • Recycling & Disposal of Materials SOP (#70.01)
	Permit Year	Ongoing
	BMP Description	The City conducts road maintenance and repair activities continuously throughout the year to prevent erosion and excessive transport of sediment and organics into the stormwater system. The City sweeps curbed streets once per month, at a minimum. The City increases this frequency during heavy leaf shedding season, after major construction, after winter deicing activities, and at other times when circumstances dictate the need to minimize the discharge of stormwater pollutants to the MS4. Miscellaneous uncurbed streets (e.g., bike lanes and intersections) are periodically swept as well. Waste from street sweeping operations is dewatered at the Decant Facility following procedures outline in the Decant Facility Use and Maintenance SOP. Wastewater evaporates or is directed to sanitary sewer. The City disposes collected waste materials in accordance with the Recycling and Disposal SOP. Road maintenance and repair work is generally scheduled and conducted during the dry season, when possible, to minimize polluted discharges from entering the stormwater conveyance system. Grading activities meet requirements as stated in the erosion control regulations. Leaf and yard debris pick up occurs weekly within the City limits. Additionally, the City operates a leaf drop program annually so residents can dispose of their leaves during heavy leaf season at no charge. Notification of the leaf pick up program is sent to residents via the City website.
	Measurable Goal(s)	• Sweep curbed streets once per month. • Schedule and conduct routine road repair activities during the dry-weather conditions, as possible. • Update SOPs to reflect changes to procedures.
	Tracking Measure(s)	1. Track the number of miles swept per year. 2. Track the volume of debris removed during sweeping activities. 3. Track status of updates to SOPs.
	TMDL Pollutant(s) Addressed	• Bacteria (*E. coli*) • Total Mercury • Pesticides (DDT/dieldrin)

Category F. Pollution Prevention for Municipal Operations and Stormwater Management Facilities Operation and Maintenance BMPs		
OM-2: Minimize Water Quality Impacts Associated with Landscape Management Practices	**City BMP Number**	OM-2
	City BMP Name	Minimize Water Quality Impacts Associated with Landscape Management Practices
	BMP Implementation Responsibility	City of Milwaukie Public Works Department and Clackamas County Parks Department
	Reference Document(s)	City of Portland Integrated Pest Management Program IPM (2019)
	Permit Year	Ongoing
	BMP Description	The City conducts a variety of activities to minimize water quality impacts associated with conducting pest management activities on public properties. The City minimizes the use of pesticides by conducting the manual removal of vegetation at detention facilities and at all outfall locations. The City installs native vegetation whenever possible to avoid use of fertilizers. Herbicides are only applied along fence lines and in areas where access must be maintained. The City maintains copies of all Material Safety Data Sheets (MSDS), to be made available upon request, to public and commercial pesticide and fertilizer applicators All chemical applicators (both City employees and City contractors) are licensed and certified and will refer to the City of Portland Integrated Pest management Program (IPM) as a guideline for applying pesticides, herbicides, and fertilizers. Specific education measures and staff training related to pest management activities are discussed under the Municipal Staff Training Strategy Table in Appendix A.
	Measurable Goal(s)	• Require all chemical applicators (both City employees and City contractors) to be licensed and certified. • Use the City of Portland Integrated Pest management Program (IPM) as a guide for appropriate pesticide, herbicide, and fertilizer application procedures along roadways, within public rights-of-ways, and around water quality facilities.
	Tracking Measure(s)	1. Track any policy and/or procedural changes associated with pest management activities within the City, including development of a city specific IPM or addendums to the City of Portland IPM specific to the city. 2. Track current number of staff licensed and certified for chemical application.
	TMDL Pollutant(s) Addressed	• Total Mercury • Pesticides (DDT/dieldrin)

Category F. Pollution Prevention for Municipal Operations and Stormwater Management Facilities Operation and Maintenance BMPs		
OM-3: Control Infiltration and Cross Connections to the Stormwater Conveyance System	**City BMP Number**	OM-3
	City BMP Name	Control Infiltration and Cross Connections to the Stormwater Conveyance System
	BMP Implementation Responsibility	City of Milwaukie Public Works Department and Engineering Department
	Permit Year	Ongoing
	BMP Description	The City implements an inflow and infiltration (I&I) abatement program for the sanitary sewer system. This program investigates sanitary lines every five to six years, using T.V. techniques, dye testing, and flow metering for any cracking or breakage that would possibly result in exfiltration from the sanitary to the storm system. The City's Engineering Department reviews new and re-development plans for possible cross-connections, and if cross connections are discovered, they are eliminated. The City's illicit discharge program also works to control and prevent any cross-connections during their outfall inspections and dry-weather field screening activities.
	Measurable Goal(s)	• Investigate sanitary lines for damage every five to six years. • Review all new and re-development plans associated with new building permits for possible cross-connections; eliminate them upon discovery.
	Tracking Measure(s)	1. Indicate whether any cross-connections were discovered and describe mitigation activities.
	TMDL Pollutant(s) Addressed	• Bacteria

Category F. Pollution Prevention for Municipal Operations and Stormwater Management Facilities Operation and Maintenance BMPs		
OM-4: Develop and Implement Planning Documents in Support of Water Quality	**City BMP Number**	OM-4
	City BMP Name	Develop and Implement Planning Documents in Support of Water Quality
	BMP Implementation Responsibility	City of Milwaukie Engineering Department
	Reference Document(s)	• City of Milwaukie Stormwater Master Plan (SMP) • Hydromodification Assessment (2015)
	Permit Year	Ongoing
	BMP Description	The City completed their SMP update in 2014, which resulted in the identification and prioritization of future capital improvement projects (CIPs) for flood control and water quality benefits. In 2015, the City developed their Hydromodification Assessment and submitted to DEQ. The City's current SMP includes 17 CIPs worth approximately $9 million to be implemented over an approximately 10-year period. Development of the SMP addressed the 2012 NPDES MS4 Permit requirement to develop a Retrofit Strategy. Seven of the CIPs identified are specifically for water quality purposes or have a water quality element integrated with flood-focused project elements, and documentation was submitted to DEQ in the form of a letter and copy of the SMP. The City is actively implementing CIPs in conjunction with the prioritization and implementation schedule outlined in the SMP. An update to the City's SMP is anticipated during the 2021-2026 MS4 Permit term. Maps are updated to include the location and drainage area of new CIPs as they are constructed.
	Measurable Goal(s)	• Allocate funding and implement CIPs as outlined in the effective SMP over the permit term. • During the permit term, initiate updates to the City's 2014 SMP, integrating results of the 2015 retrofit strategy and hydromodification assessment efforts as applicable.
	Tracking Measure(s)	1. Track the number of stormwater CIP projects implemented each year and discuss the added benefit (water quality, habitat restoration, etc.) of each project. 2. Map the location and drainage area of CIPs. 3. Track the amount contributed to the CIP reserve fund each year. 4. Document and submit a summary of status and outcomes related to the City's 2015 Retrofit Strategy and 2015 Hydromodification Assessment by 12/1/23.
	TMDL Pollutant(s) Addressed	• Bacteria (*E. coli*) • Total Mercury • Pesticides (DDT/dieldrin)

Category F. Pollution Prevention for Municipal Operations and Stormwater Management Facilities Operation and Maintenance BMPs		
OM-5: Conduct Stormwater Conveyance System Cleaning and Maintenance	**City BMP Number**	OM-5
	City BMP Name	Conduct Stormwater Conveyance System Cleaning and Maintenance
	BMP Implementation Responsibility	City of Milwaukie Public Works Department
	Reference Document(s)	• Storm Ditch Maintenance SOP (#10.01.05) • Storm Drywell Cleaning SOP (#10.01.002) • Storm Main Line TVing SOP (#10.01.004) • Storm Pipe Cleaning SOP (#10.01.007) • Recycling and Disposal of Materials SOP (#70.01)
	Permit Year	Ongoing
	BMP Description	The City inspects public culverts and ditches every two years in accordance with various maintenance SOPs. Culverts and ditches are inspected for accumulated sediment and debris that may prompt flooding and broken system components in need of repair. Cleaning occurs as needed, based on the results of inspections and citizen referrals. Ditches are maintained in accordance with the Storm Ditch Maintenance SOP. Pipelines are inspected in accordance with the Storm Main Line TVing SOP. Pipelines are maintained as necessary in accordance with the Storm Pipe Cleaning SOP to remove accumulated sediment, debris, and pollutants from the pipe. Drywells are maintained in accordance with the Storm Dry Well Cleaning SOP. Type 1 drywells are cleaned every 2 years and type 2 drywells are cleaned every 6 months. Repair or replacement of public conveyance system components are scheduled following inspection of the system. The City disposes of all collected waste materials in accordance with the Recycling and Disposal of Materials SOP. If repair or replacement of private system components (e.g., culverts) is required, Public Works informs the owner of the need. A map showing the location of the stormwater conveyance system and structural controls is used for scheduling maintenance activities. If a discrepancy on the map is discovered during maintenance, the map will be updated accordingly.
	Measurable Goal(s)	• Inspect stormwater conveyance system components (i.e., culverts and ditches) every two years and perform maintenance based on inspection results. • Inspect stormwater ditches and pipelines in accordance with the respective SOPs. • Inspect and maintain Type 1 drywells every 2 years and type 2 drywells every 6 months. • Update SOPs to coincide with adaptive management goals related to facility inspection and maintenance frequencies.
	Tracking Measure(s)	1. Track length or percent of conveyance system inspected each year. 2. Estimate the volume of debris removed during conveyance system cleaning activities. 3. Track the conveyance system repair efforts conducted. 4. Track updates to SOPs.
	TMDL Pollutant(s) Addressed	• Bacteria (*E. coli*) • Total Mercury • Pesticides (DDT/dieldrin)

Category F. Pollution Prevention for Municipal Operations and Stormwater Management Facilities Operation and Maintenance BMPs		
OM-6: Conduct Catch Basin and Manhole Cleaning and Maintenance	**City BMP Number**	OM-6
	City BMP Name	Conduct Catch Basin and Manhole Cleaning and Maintenance
	BMP Implementation Responsibility	City of Milwaukie Public Works Department
	Reference Document(s)	• Storm Catch Basin Cleaning SOP (#10.01.001) • Storm Sedimentation Manhole Cleaning SOP (#10.01.003) • Decant Facility Use and Maintenance SOP (#50.01) • Recycling & Disposal of Materials SOP (#70.01)
	Permit Year	Ongoing
	BMP Description	The City cleans all public catch basins once every two years following procedures listed in the Storm Catch Basin Cleaning SOP and the Storm Sedimentation Manhole Cleaning SOP. Catch basin cleaning activities primarily occur during the dry weather season, but during the fall, certain catch basins may be cleaned more frequently if needed. Utility crews utilize a database to document inspection and maintenance activities. Repair or replacement of public catch basins is scheduled following inspection. Waste from catch basin cleaning is dewatered at the Decant Facility following procedures outline in the Decant Facility Use and Maintenance SOP. The City disposes of all collected waste materials in accordance with the Recycling and Disposal of Materials SOP.
	Measurable Goal(s)	• Clean all public catch basins each year every 2 years. • Schedule repair or replacement of catch basins based on inspection results.
	Tracking Measure(s)	1. Track the percent of total public catch basins cleaned per year. 2. Track the volume of debris removed during cleaning activities. 3. Track updates to SOPs as applicable.
	TMDL Pollutant(s) Addressed	• Bacteria (*E. coli*) • Total Mercury • Pesticides (DDT/dieldrin)

Category F. Pollution Prevention for Municipal Operations and Stormwater Management Facilities Operation and Maintenance BMPs		
OM-7: Litter Control	City BMP Number	OM-7
	City BMP Name	Litter Control
	BMP Implementation Responsibility	Office of the City Manager and Public Works Department
	Reference Document(s)	City of Milwaukie Temporary Event Permit Application
	Permit Year	2023
	BMP Description	The City includes litter control provisions in contract language for Public facility rentals and public outdoor events. The City is in the process of adopting an illegal camping ordinance to outline protections, enforcement, and mediation actions associated with unpermitted camp sites. This code is expected to establish boundaries prohibiting unpermitted camp sites within mapped natural resource areas, water quality resource areas, and public water and stormwater utility facilities.
	Measurable Goal(s)	• Adopt an illegal camping ordinance with boundaries to protect water quality. • Develop an SOP related to campsite cleanup to minimize negative water quality impacts.
	Tracking Measure(s)	1. Track progress of ordinance adoption. 2. Track development of an SOP related to campsite cleanup.
	TMDL Pollutant(s) Addressed	• Bacteria

Category F. Pollution Prevention for Municipal Operations and Stormwater Management Facilities Operation and Maintenance BMPs		
OM-8: Minimize Water Quality Impacts Related to Water Line Flushing	**City BMP Number**	OM-8
	City BMP Name	Minimize Water Quality Impacts Related to Water Line Flushing
	BMP Implementation Responsibility	City of Milwaukie Public Works Department and Engineering Department
	Reference Document(s)	Water Line Flushing SOP #30.02
	Permit Year	Ongoing
	BMP Description	The City conducts periodic water line flushing throughout the City to ensure the quality of the water system. Depending on the size of the discharge, the capacity of the receiving stream, and the level of chlorination required, discharges from water line flushing could potentially have an impact on streams with respect to concentrations of chlorine. The City requires all chlorinated water associated with the flushing of new and existing waterlines to be dechlorinated to a maximum allowable residual chlorine concentration of 0.1 mg/L or less, in accordance with DEQ's requirements for discharge. Chlorine residual is constantly monitored at all entry points to the City's distribution system and always monitored during water line flushing by Public Works staff (or Engineering staff if needed). Dechlorinated water is land disposed when practicable. If land disposal is not feasible, the City discharges dechlorinated waters to the storm sewer. Prior to discharge in the receiving waters, the City ensures that adequate travel distance (1000' per DEQ guidance) is achieved, even after dechlorination, to minimize any additional impacts associated with surface disposal of water from water line flushing. The chlorination/dechlorination requirements are covered in pre-construction meetings and called out in contract documents. Public Works or Engineering staff monitor chlorine residual. Microbial sampling logs and daily logs document the water system chlorine levels, and the telemetry SCADA system documents chlorine residual at distribution system entry points.
	Measurable Goal(s)	• When chlorinated water is discharged to the City's stormwater distribution system, the City will test the chlorine residual at all entry points to the storm sewer for a maximum allowable concentration of 0.10 PPM. • Requirements for chlorination/dechlorination will be discussed at all pre-construction meetings and requirements are referenced in applicable contract documents.
	Tracking Measure(s)	1. Chlorine test data is tracked in monitoring sampling logs and daily logs and data is kept on file at the City.
	TMDL Pollutant(s) Addressed	N/A

Category F. Pollution Prevention for Municipal Operations and Stormwater Management Facilities Operation and Maintenance BMPs		
OM-9: Winter Road Maintenance	**City BMP Number**	OM-9
	City BMP Name	Winter Road Maintenance
	BMP Implementation Responsibility	Public Works - Streets Division
	Reference Document(s)	Winter Weather Response Webpage https://www.milwaukieoregon.gov/publicworks/city-plow-route-frequently-asked-questions
	Permit Year	Ongoing
	BMP Description	The City conducts minimal deicing activities. In the event of icy conditions, fine gravel, salt, and/or liquid deicer may be applied to public roadways and public walkways near public buildings. Following the icy weather conditions, roads are promptly swept to remove the residual fine gravel. The City's current winter weather response program is documented on their webpage (see reference link above). The City conducts annual inspections and training to ensure proper operation of the deicing chemical storage facility.
	Measurable Goal(s)	• Continue current deicing operations to prevent stormwater pollution. • By December 2023 , develop a standalone Winter Road Maintenance SOP with current storage practices and winter management materials.
	Tracking Measure(s)	1. Dates of annual inspections of the deicing chemical storage facility. 2. Annually, track quantities and application areas of deicing materials used and the number of winter weather events. 3. Track updates to the website or Winter Road Maintenance SOP.
	TMDL Pollutant(s) Addressed	• Mercury

2.6 Industrial and Commercial Facilities

The City's stormwater management program tracks industrial and commercial facilities to reduce pollutants in stormwater discharges to the MS4. These facilities include sites subject to the DEQ-issued 1200-Z industrial stormwater NPDES general permit, as well as commercial and industrial properties that potentially contribute pollutants to the MS4. City does not have any hazardous waste treatment, disposal, and recovery facilities; industrial facilities subject to section 313 of title III of the Superfund Amendments and Reauthorization Act of 1986; or facilities subject to Section 313 of the Emergency Planning and Community Right-to-Know Act, 42 U.S.C. 11023;

Table 2-7 outlines the City's BMPs to address the permit requirements for Schedule A.3.g.

Table 2-7. Industrial and Commercial Facilities

Schedule A.3.g Permit Requirements	Applicable BMPs		
	IND-1	IND-2	PEO-2
i. Screening for Industrial Stormwater Permitting	✓		
ii. Strategy to Reduce Pollutants from Industrial and Commercial Facilities	✓	✓	
iii. Commercial & Industrial Facility Inspection Staff Training			✓
iv. Tracking and Assessment	✓	✓	✓

Each of the Industrial and Commercial Facilities centered BMPs are described in detail in the following Category G BMP Table:

- IND-1: Screen Existing and New Industrial Facilities
- IND-2: Conduct Industrial and Commercial Facility Inspections

While the supporting BMP that assist in meeting the requirements of this permit language can be found in the following section:

- PEO-2: Annual Staff Training

The following Category G Table provides a description, implementation schedule, measurable goals, annual tracking measures, and TMDL pollutants addressed for each industrial and commercial BMP. Measurable goals and tracking measures will be evaluated annually to assess the impact of the BMPs and to inform future industrial and commercial facilities requirements and training.

Category G. Industrial and Commercial Facilities BMPs		
IND-1: Screen Existing and New Industrial Facilities	**City BMP Number**	IND-1
	City BMP Name	Screen Existing and New Industrial Facilities
	BMP Implementation Responsibility	City of Milwaukie Public Works Department
	Reference Document(s)	High Priority Industrial Facility Stormwater Inspections SOP (#10.05)
	Permit Year	Ongoing
	BMP Description	Once in the permit term, the City of Milwaukie will review their existing business license inventory within the City limits, to determine whether any existing facilities would be subject to an industrial stormwater NPDES permit. Additionally, annually at a minimum, the City's Environmental Coordinator reviews new business license applications to determine whether new facilities would be subject to an industrial stormwater permit. Determination of the need to obtain an industrial stormwater permit is based on onsite activities and the applicable SIC or NAICS codes related to the 1200-series NPDES permit. If a facility is identified that would be subject to an industrial stormwater NPDES permit, the facility and DEQ will be notified within 30 days in accordance with the procedure outlined in the City's High Priority Industrial Facility Stormwater Inspections SOP (#10.05).
	Measurable Goal(s)	Review the existing business license inventory and new industrial development applications annually to identify additional facilities needing to obtain 1200-Z permits. If facilities are identified, the City will notify DEQ and the facility within 30 days.
	Tracking Measure(s)	1. Track the number of existing or new facilities subject to a stormwater industrial NPDES permit annually. 2. Track the number of facilities holding active 1200-Z permits.
	TMDL Pollutant(s) Addressed	• Bacteria (*E. coli*) • Total Mercury • Pesticides (DDT/dieldrin)

Category G. Industrial and Commercial Facilities BMPs		
IND-2: Conduct Industrial and Commercial Facility Inspections	**City BMP Number**	IND-2
	City BMP Name	Conduct Industrial and Commercial Facility Inspections
	BMP Implementation Responsibility	City of Milwaukie Public Works Department
	Reference Document(s)	High Priority Industrial Facility Stormwater Inspections SOP (#10.05)
	Permit Year	Ongoing
	BMP Description	The City reviews DEQ's 1200-Z database annually and updates their inventory of industrial facilities in the permit area that are covered by a 1200-Z permit. Onsite industrial inspections will occur at each 1200-Z permitted facility that discharges to the City's MS4 a minimum of once over the permit term. The City conducts periodic inspections of other high priority facilities if specific concerns arise or are reported through citizen complaints or if the facility has been identified as having the potential to contribute a significant pollutant load to the MS4. The inspection procedure is outlined in the City's High Priority Industrial Facility Stormwater Inspections SOP (#10.05). Inspection forms will be filled out, documenting the results of each inspection. Revisions to SOP will be conducted to ensure that inspection schedules are consistent with City needs and priorities. Industrial and Commercial Facilities specific training is outlined in Appendix A: Municipal Staff MS4 Training Strategy.
	Measurable Goal(s)	• Inspect facilities with 1200-Z permit a minimum of once over the permit term. • By 12/1/23, update the High Priority Industrial Facility Inspection SOP to refine criteria related to the definition of a high priority facility as well as inspection and tracking procedures. Post on the City's website for 30 days and consider public comments prior to submission to DEQ. • Inspect any other high priority facilities if identified as potentially contributing a significant pollutant load as needed. • Require abatement measures for any industry found to be inappropriately discharging to the municipal stormwater system.
	Tracking Measure(s)	1. Track the number of high priority industrial facility inspections conducted annually. 2. Report status and abatement measures required for any industry or food service facility found to be inappropriately discharging to the municipal stormwater system. 3. Track updates to the SOPs in accordance with inspection needs and procedures.
	TMDL Pollutant(s) Addressed	• Bacteria (*E. coli*) • Total Mercury • Pesticides (DDT/dieldrin)

2.7 Monitoring and Reporting

The City is required to conduct monitoring that includes the collection and analysis of stormwater, instream surface water and macroinvertebrate samples. The monitoring requirements and objectives are outlined in Schedule B of the MS4 permit. The City participates in a joint monitoring plan with other Clackamas co-permittees. This joint monitoring plan (i.e., the Comprehensive Clackamas County NPDES MS4 Stormwater Monitoring Plan or CCCSMP) was updated to address the 2021 permit requirements and submitted to DEQ as required with the submittal of this SWMP (December 1, 2022). The new Monitoring Plan describes monitoring objectives, strategy, and procedures for the collection and analysis of stormwater, instream, and macroinvertebrate samples. Objectives of the monitoring program include the evaluation of pollution sources, characterization of stormwater runoff quality, assessment of water quality trends, and assessment of the effectiveness of our stormwater programs. The Monitoring Plan strategy includes both new and existing monitoring locations, sampling frequencies, updated pollutant parameters, analytical methods, quality control procedures, staffing resources, and a summary of field operating procedures. Monitoring data will be submitted to DEQ annually on December 1.

In accordance with the NPDES MS4 Permit requirements, the City also submits annual reports to DEQ to evaluate the City's progress towards implementing the SWMP control measures and associated BMPs. Beginning in 2023, the annual reports will be compiled using the annual report form provided by DEQ. The tracking measures outlined in each BMP table will be used to assess the effectiveness of the BMPs and inform future priorities and actions.

Records of data and information used in the development and implementation of the SWMP will be retained by the City for 5 years or for the permit term, whichever is longer. Annual reports are posted on the City's website and are made available to the public and to DEQ upon request.

Appendix A
Municipal Staff Training Strategy Table

The Municipal Staff Training Strategy Table (Table A-1) presents the City's multi-year and multi-topic training strategy to address stormwater education for municipal staff. The City's 2021 NPDES MS4 Permit requires training for municipal staff in several stormwater-related areas. In general, new staff will be trained in the duties of their position upon hire. Existing staff will be trained in the duties of their position on an annual basis. All staff will be trained on updated or changed procedures throughout the permit term, as those changes or updates occur.

This strategy covers training in the following categories:

- Illicit discharge detection and elimination
- Erosion and sediment control for construction sites
- Post construction stormwater management
- Operations and maintenance of stormwater management facilities
- Stormwater pollution prevention for municipal facilities and operations
- Stormwater pollution prevention for winter operations and maintenance
- Industrial and commercial facilities

The following table outlines the City's strategy for conducting the required stormwater training for municipal staff. This strategy is specific to NPDES MS4 Permit requirements. City staff participate in trainings for topics and programs beyond those listed in this strategy, including field safety training and equipment training. General Employee Training is included as BMP PEO-2: Annual Staff Training in the SWMP BMPs.

Reference Permit Language

Schedule A.3.c.vi - Illicit Discharge Detection and Elimination Training and Education 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 to conduct 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.

Schedule A.3.d.vi – Construction Runoff Control Training and Education The co-permittees must ensure that all staff responsible for ESCP reviews, site inspections, and enforcement of the co-permittees' requirements are trained or otherwise qualified to conduct such activities, and training strategies and frequencies must be described or referenced in the SWMP.

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 O&M practices or evaluating compliance with long-term O&M requirements, are trained or otherwise qualified to conduct such activities, and training strategies and frequencies for staff must be described or referenced in the SWMP.

Schedule A.3.f.v - Pollution Prevention and Good Housekeeping for Municipal Operations – Winter Operations and Maintenance Program. The co-permittees must document and include with or reference in the SWMP the jurisdiction's Winter Maintenance and Operations Program that limits impacts to water quality to the degree practicable.

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.

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, and training strategies, and frequencies for staff must be described in the SWMP.

Table A-1. Municipal Staff Training Strategy

Category	Permit Section	Stormwater Training Topic	Target Groups	Frequency/ Years for Training	Potential Resources	Notes
Illicit Discharge Detection and Elimination	A.3.c.vi	Identifying and reporting illicit discharges (including procedures for enforcement and follow-up actions)	• Public Works Field Staff	Annually Once per permit term	• HAZWOPER Training • Internal training • Illicit Discharge Detection and Elimination (IDDE) SOP • Spill Response SOP • MILMC 13.14 • Spill and Illicit Discharge Investigation Report Form	
		Dry weather screening procedures, documentation, reporting, and follow-up actions	• Environmental Services Coordinator	Annually	• Annual review of City's IDDE SOP • Milwaukie Emergency Operations Plan • Online IDDE Modules	
Erosion and Sediment Control	A.3.d.vi	Best practices and new technologies for erosion prevention and sediment control	• Engineering Staff • ESC site inspectors	Annually	• Online trainings • Joint agency workshop or professional group presentation • Clackamas Country Erosion Prevention and Sediment Control Planning and Design Manual 2020 • MILMC 16.28	
		Plan Review	• ESC site inspectors • Engineering Staff	Once in permit term	• Review Plan Checklist and update as necessary	
		Construction site ESC inspection processes and documentation procedures (including violations enforcement processes)	• ESC site inspectors	Annually Every 3 years	• Internal training • Construction Site Inspections SOP #10.04 • Erosion Control Inspection Report Form • Erosion Control Requirements Form • CESCL Certification	
Post Construction Stormwater Management	A.3.e.vii	Proposed or adopted changes to stormwater design standards and stormwater related land use policies.	• Engineering Staff • Planning/Community Development staff involved with land use reviews and approvals • Site inspectors • Field operations staff responsible for maintaining stormwater management facilities	Once in permit term	• Internal training • Public Works Standards • City of Portland Stormwater Management Manual	Training should be conducted during development (or following adoption) of new or updated stormwater design standards or stormwater related land use policies
		Plan Review	• Engineering Staff • Environmental Services Coordinator	Once in permit term	• Review Plan Checklist and update as necessary • Public Works Standards • City of Portland Stormwater Management Manual	
		City site inspection processes and documentation procedures (including violations enforcement processes)	• Site inspectors	Annually	• Joint agency workshop or professional group presentation • Internal training • MILMC 13.14 • Public Works Standards	

Table A-1. Municipal Staff Training Strategy

Category	Permit Section	Stormwater Training Topic	Target Groups	Frequency/ Years for Training	Potential Resources	Notes
Operations and Maintenance of Stormwater Management Facilities	A.3.e.vii A.3.f.x	Operation and maintenance best practices for stormwater management facilities	• Field operations staff responsible for maintaining stormwater facilities • Engineering staff • Environmental Services Coordinator • Private property owners with Operation and Maintenance agreements and maintenance contractors	Once in permit term Annually	• Internal training • MILMC 13.14.115 Inspection and Enforcement • Public Works Standards • Storm Rain Garden SOP (#10.01.006) • Joint agency workshop or professional group presentation • Private entities responsible for maintenance receive education material via an annual inspection	Training is required under two different permit elements.
Stormwater Pollution Prevention for Municipal Facilities and Operations	A.3.f.x	Inspection, cleaning, and documentation/tracking procedures for MS4 related structures (catch basins, storm drains inlets, pipes)	• Public Works field staff	Once in permit term or with onboarding of new staff	• Internal training • Street Sweeping SOP #40.01 • Decant Facility Use and Maintenance SOP (#50.10) • Recycling & Disposal of Materials SOP (#70.01) • Storm Ditch Maintenance SOP (#10.01.05) • Storm Drywell Cleaning SOP (#10.01.002) • Storm Main Line TVing SOP (#10.01.004) • Storm Pipe Cleaning SOP (#10.01.007) • Storm Catch Basin Cleaning SOP (#10.01.001) • Storm Sedimentation Manhole Cleaning SOP (#10.01.003)	Training should be conducted after development of the revised CB inspection and cleaning schedule.
		Stormwater pollution prevention and good housekeeping practices for field operations	• Public Works field staff • ESC site inspectors	Once in permit term or with onboarding of new staff	• Internal training • HAZWOPER • City of Portland Integrated Pest Management Program IPM	Conduct in 2024, after update to municipal pollution prevention plan Opportunity to offer training for staff from franchise utilities or other groups that conduct field operations in the City.
		Johnson Creek Campus stormwater pollution prevention plan and best practices	• Public Works field staff	Once in permit term or with onboarding of new staff	• Internal training based on the City's SWPPP	
		Integrated pest management and proper application of pesticides and fertilizers	• Public Works field staff	Annually	• ODA Public Pesticide Applicator License • Internal Training • City of Portland Integrated Pest Management Program IPM	
		Winter Operations Maintenance	• Public Works field staff	Annually	• Winter Weather Response/Snow Event Training	
Industrial and Commercial Facilities		Industrial/Commercial facility inspection procedures (including	• Environmental Services Coordinator	Once in permit term	• Internal training • High Priority Industrial Facility Stormwater Inspections SOP (#10.05) • Facility Inspections for Fats, Oils, and Grease Program SOP (#20.04) • Joint agency workshop or professional group presentation	Training should be conducted after the City reviews and updates the Industrial and Commercial Facilities Strategy