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**Permit Evaluation Report for
National Pollutant Discharge Elimination System
Municipal Separate Storm Sewer System
Phase I Individual Permit
City of Salem**

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Final Action

Issuance of National Pollutant Discharge Elimination System (NPDES) individual permit for stormwater discharges from municipal separate storm sewer systems (MS4) to surface waters of the state.

Permit Category

MS4 Phase I Individual Permit, per Oregon Administrative Rule 340-045-0027, Category III.

Activities Covered Under the Permit

The permit covers the regulated Phase I MS4 of the City of Salem for all existing and new discharges of stormwater from the MS4 to surface waters of the state. It includes all permittee-owned and/or operated road and street systems, maintenance yards, and other facilities for the City of Salem.

Source Location

The jurisdictional boundaries and properties owned or operated by the City of Salem.

Coverage

The effective date of the permit is October 1, 2021. This permit is issued in accordance with Oregon Administrative Rule 340-045-0040. The permit covers all existing and new discharges of stormwater from the MS4 within the City of Salem that have a potential to discharge pollutants to waters of the state, or conveyance systems that eventually discharge to waters of the state, in accordance with the requirements, limitations, and conditions set forth therein. The permittee must submit a renewal application with the fourth year Annual Report, to maintain coverage under this permit.

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SUMMARY OF PERMIT ACTION

This permit action renews the NPDES MS4 Phase I Individual Permit for the City of Salem to allow and regulate the discharge of stormwater runoff from the area within its jurisdiction.

This Permit Evaluation Report describes the basis and methodology used in developing the permit.

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1.0 Introduction

This Permit Evaluation Report (PER) explains DEQ's rationale for the permit conditions in the NPDES MS4 Phase I Individual Permit (hereafter "permit") for the City of Salem (hereafter "permittee").

DEQ issued this permit for stormwater discharges from permittee's MS4 systems to waters of the state. In order to reduce pollutants from urban stormwater runoff discharging to receiving waters, the permit establishes conditions, prohibitions, and management practices applicable to discharges from the permittee's MS4. Specifically, the permittee must continue to implement a comprehensive stormwater management program to reduce the discharge of pollutants from the MS4 to the maximum extent practicable (MEP), protect water quality and to satisfy the appropriate water quality requirements of the Clean Water Act.

The MS4 permit program is an important element of DEQ's water quality program. The requirements are based on Section 402(p) of the Clean Water Act, 33.U.S.C. §1342(p), and the U.S. Environmental Protection Agency's regulations permitting municipal stormwater discharges (40 CFR § 122.28; see also 64 FR 68722 [Dec. 8, 1999]).

This permit covers all existing and new stormwater discharges from the permittee's MS4 system, in accordance with the requirements, limitations, and conditions therein.

1.1 Overview and History

The City of Salem owns and/or operates a storm sewer system that serves a population of 167,400, an area of 47 square miles and associated facilities and maintenance yards.

The permittee's owned and/or operated facilities drain into one major drainage area; this is subdivided further into a specific subbasin. The major receiving waters that accept stormwater drainage from the permit area are the Willamette River, Little Pudding River, Claggett Creek, Pringle Creek, Battle Creek, Clark Creek, Croisan Creek, Gibson Gulch (Creek), Glenn Creek, Laurel Creek, Mill Creek, Pettijohn Creek, Shelton Ditch, and Willamette Slough.

The initial permit was issued on December 18, 1997, was renewed on March 2, 2004 and December 30, 2010. The permit has been administratively extended since its expiration on December 29, 2015. The permittee submitted a renewal application on December 29, 2015, which aided in the formation of this permit. In addition, the Department of Environmental Quality (DEQ) coordinated with the permittee[s] and other stakeholders in preparation for this permit.

This permit renews the permittee's December 30, 2010 NPDES MS4 Phase I permit. This is the fourth iteration of the permittee's municipal NPDES MS4 Phase I permit. The permit is issued pursuant to state law and implements applicable federal and state law. The federal requirements specific to NPDES permits for municipal stormwater systems are set out in 33 USC § 1342(p)(3)(B) and 40 CFR § 122.26. ORS 468.065 and ORS 468B.050 provide specific state authority for the permits. In addition, ORS 468B.035 authorizes the implementation of the federal Clean Water Act and regulations adopted under the Act.

1.2 Legal and Policy Analysis

1.2.1 Anti-backsliding Review

This NPDES permit, like its previous iterations, requires the permittee to control pollutants discharged through their MS4 to the MEP, to protect water quality, and to satisfy the appropriate water quality requirements of the Clean Water Act. This permit requires the permittee to implement a comprehensive Stormwater Management

Program (SWMP) Document as the primary mechanism to achieve the MEP standard to reduce pollutants in their respective MS4 discharges.¹

This permit contains clear, specific, and measurable provisions to prescribe the continued implementation of specific tasks, BMPs, BMP design requirements, performance requirements, adaptive management requirements, schedules for implementation, as well as maintenance, and frequency of actions as required minimum control measures that must be met. Although such provisions are expressed differently than the comparable provisions in DEQ's previously issued individual permits, DEQ has determined that the provisions in this permit are, in all cases, at least as stringent as those established in the previous individual permits, given the nature and scope of new and/or enhanced conditions included in the permit for each program element

1.2.2 Antidegradation Review

Under Oregon's Antidegradation Policy for Surface Waters in Oregon Administrative Rule (OAR) 340-041-0004, DEQ is required to demonstrate that, when issuing a permit, the discharge will not result in a lowering of water quality from the ambient condition and that it protects existing and designated uses. Therefore, in waters where existing uses are more sensitive than the uses specifically designated for the waterbody, the permit limits and requirements will protect the more sensitive existing beneficial uses, as well as other designated uses.

The controls required in this MS4 Phase I permit are expected to result in discharges to the permittee's MS4s that reduce pollutants to the maximum extent practicable. The Clean Water Act provides that the level of pollutant reduction for MS4s is limited to the "maximum extent practicable" because federal law recognizes the unique nature of municipal stormwater runoff².

The law recognizes that stormwater discharges are highly variable in nature and difficult to control due to topography, land use and weather differences (e.g., intensity and duration of storms). The goal of the permit is a net reduction in pollutant loadings over the five-year permit term. Over the five-year permit term, the permittee will implement and/or enhance an identified range of stormwater management control programs to minimize stormwater pollution discharges in stormwater runoff to and from the MS4, including from existing and new residential, commercial, and industrial developments and permittee owned and/or operated facilities.

Section 301(b)(1)(C) of the Clean Water Act and regulations at 40 CFR § 122.44 require the NPDES permitting authority to develop limitations in permits necessary to meet water quality standards, subject to the MEP standard described above. A state's water quality standards are composed of use classifications, numeric and/or narrative water quality criteria, and an anti-degradation policy. The use classification system designates the beneficial uses for each waterbody, such as drinking water supply, contact recreation, and aquatic life. The numeric and narrative water quality criteria are the amount of any pollutant deemed necessary by the state to support the beneficial use classification of each waterbody. The anti-degradation policy represents a three-tiered approach to maintain and protect various levels of water quality and uses.

DEQ has determined that existing water quality would not be degraded by the issuance of this permit. The stormwater discharges authorized by this permit have been ongoing since the federal regulations requiring an NPDES permit were adopted. This permit is expected to reduce the current level of pollution discharged from the permittee's stormwater-related conveyance system and facilities. DEQ expects the pollution reduction measures implemented by the permittee in accordance with this permit to offset any expansion of stormwater conveyances

¹ See 40 CFR § 122.44(k).

² See Clean Water Act § 402(p), 33.U.S.C. §1342(p), the U.S. EPA's regulations permitting municipal stormwater discharges at 40 CFR § 122.28, and 64 FR 68722 [Dec. 8, 1999]

systems and outfalls because of the permit requirement to implement a broad range of pollution reduction measures, including measures to address impacts from new development and significant redevelopment. In short, this permit is expected to reduce the current level of pollution discharged from the permittee's stormwater-related facilities at a level greater than projections for growth impacts. Therefore, the issuance of this permit will protect and improve existing water quality and is consistent with DEQ's antidegradation policy.

1.2.3 Water Quality Limited Waters and Total Maximum Daily Loads

Section 303(d) of the CWA requires states to identify their impaired waterbodies. Impaired waterbodies are water quality limited and do not meet water quality standards. In Oregon, the responsibility to delegate water quality limited waterbodies rests with DEQ. The list of these waterbodies is referred to as the 303(d) list.

DEQ is also responsible for developing pollutant reduction plans for water quality limited waterbodies. Total Maximum Daily Loads (TMDLs) are pollutant load reduction plans that define wasteload allocations (WLAs) for point sources and load allocations (LAs) for non-point sources of pollutants. TMDLs also specify how much of a particular pollutant can be discharged to a specific stream or segment and still meet water quality standards. Oregon's 2018/2020 Integrated Report and 303(d) list contain the water quality limited waterbodies with and without a TMDL.³ The 2018/2020 Integrated Report was approved by the U.S. Environmental Protection Agency on Nov. 12, 2020 and is now current and in effect.

For MS4 discharges to waterbodies subject to a TMDL and/or listed on DEQ's 303(d) list, the permittee must comply with the more stringent requirements in the *Special Conditions in Schedule D* in accordance with 40 CFR § 122.34(e)(1) and 122.44(d)(1)(vii)(A)-(B).

1.2.4 State Statutory Permit Requirements

All water quality permits must meet the requirements of state law. Oregon statutes in general give the Environmental Quality Commission and DEQ broad authority to impose permit requirements needed to prevent, abate, or control water pollution. See ORS 468B.010, 468B.015, 468B.020, and 468B.110. However, direct statutory requirements applicable to discharge permits are more limited. ORS 468B.020 (2)(b) directs DEQ to require the use of all available and reasonable methods necessary to protect water quality and beneficial uses. At a minimum, NPDES permits for regulated MS4s must require the permittee to develop, implement, and enforce a SWMP designed to reduce the discharge of pollutants from the MS4 to the MEP, to protect water quality, and to satisfy the appropriate water quality requirements under the Clean Water Act. The SWMP must include, at a minimum, the stormwater control measures set forth in the federal regulations at 40 CFR § 122.26(d)(2)(iv), and program elements must be documented, described, or referenced in the SWMP Document as described in Schedule A.2 of the permit.

³ Oregon DEQ's 2018/2020 Integrated Report is available online at: <https://www.oregon.gov/deq/wq/Pages/2018-Integrated-Report.aspx>

2.0 Permit Coverage and Exclusions

2.1 Cover Page

The cover page provides information about the permittee, description of the sources covered by the permit, major receiving stream information, relevant TMDL WLAs, and permit approval authority. As described, the permit covers all existing and new discharges of stormwater from the MS4. With the exception of the allowable non-stormwater discharges identified in Schedule A.1.d, the permit prohibits all non-stormwater discharges unless otherwise approved by DEQ.

In accordance with state and federal law, NPDES permits will be effective for a fixed term not to exceed five years. This permit will be effective October 1, 2021 and expire on September 30, 2026.

2.1.1 Receiving Water Information

The front page of the permit includes information about the receiving stream(s) to which the permittee's MS4 discharges stormwater. In addition, a reference is made to the TMDL that establishes WLAs for urban stormwater in the Middle Willamette and Molalla-Pudding subbasins. This reference does not create any permit requirements or represent numeric effluent limits. Rather, it simply acknowledges the existence of the EPA-approved TMDLs and associated stormwater WLAs. The methods by which the permittee is required to address applicable TMDLs will be described once the statewide TMDL Water Quality Management Plan has been updated.

DEQ authorizes MS4 discharges to surface waters of the state from facilities owned and/or operated by the permittee subject to the requirements of the permit.

2.1.2 Sources Covered by this Permit

The permit covers all existing and new discharges of stormwater from the Municipal Separate Storm Sewer System (MS4) within the defined coverage area.

2.1.3 Permitted Activities

See cover page.

3.0 Schedule A – Effluent Limitations, Conditions, & Stormwater Management Program

3.1 Condition A.1- Authorized Discharges

This MS4 Phase I Individual Permit (“permit”) conditionally authorizes municipal stormwater discharges, and certain types of non-stormwater discharges, provided the permittee complies with the terms and conditions of the permit.

3.1.1 Condition A.1.a - Requirement to Reduce the Discharge of Pollutants

The permit for MS4 discharges must include terms and conditions to reduce the discharge of pollutants from the MS4 to the MEP, to protect water quality, and to satisfy the appropriate water quality requirements of the Clean Water Act. The permittee must control pollutants in their MS4 discharges to the MEP by addressing the following stormwater control measures outlined in the permit: public education and outreach, public participation and involvement, illicit discharge detection and elimination, construction site runoff control, post construction runoff control, pollution prevention and good housekeeping for municipal operations, and industrial and commercial controls. In addition, this permit also addresses the permittee’s infrastructure retrofit planning, hydromodification assessment, and data compilation and mapping as they relate to stormwater discharges. Implementation of the DEQ-approved SWMP Document, which will outline the details of how the permittee will meet the requirements of the permit, will establish compliance with the MEP standard.

3.1.2 Condition A.1.b - Water Quality Standards

This permit does not require compliance with water quality standards. Compliance with all permit requirements constitutes compliance with applicable water quality standards as established in OAR 340-041. The permit includes a framework for documenting, communicating, developing and submitting a plan with corrective actions for circumstances when DEQ or the permittee determine that a pollutant in the MS4 discharge is causing or contributing to an exceedance of an applicable water quality standard not already addressed by the illicit discharge and elimination (IDDE) program or covered by activities described in TMDL Implementation Plan(s). The actions implemented by the permittee will be based on the specifics of each situation that causes the exceedance. This framework is appropriate to ensure any MS4 discharges that are causing or contributing to an exceedance of an applicable water quality standard are documented, investigated, and managed appropriately.

3.1.3 Condition A.1.c – Limitations of Coverage

The permit does not authorize the permittee to discharge stormwater associated with industrial or construction activity (as defined in 40 CFR § 122.26(b)(14) and (15)). Such discharges are only authorized upon DEQ’s issuance of the appropriate general NPDES permit, or a separate individual NPDES permit (as necessary).

DEQ encourages infiltration of stormwater, but this permit does not authorize the discharge of stormwater to an Underground Injection Control (UIC) system. Any owner or operator of any type of Class V underground injection control system must obtain permit coverage through Rule Authorization, a General Permit, or through a Water Pollution Control Facilities (individual) permit, and must comply with 40 CFR § 144-146, and other measures required in Oregon’s UIC rules (see OAR 340-044).

3.1.4 Condition A.1.d – Allowable Non-Stormwater Discharges

Certain types of discharges unrelated to precipitation events (i.e., non-stormwater discharges), listed in permit Schedule A.1d, are conditionally allowed to enter and discharge from the MS4s. Such allowable non-stormwater

discharges cannot be significant sources of pollution to the waters of the state. The permittee must prohibit all other non-stormwater discharges into the MS4(s).

The permittee is responsible for the quality of the discharge from their MS4, and therefore have an interest in locating and discontinuing, or ensuring the local, state, or federal permitting of any uncontrolled non-stormwater discharges into their MS4, and are required to implement illicit discharge detection and elimination programs (Schedule A.3.c).

3.2 Condition A.2- Permittee's Responsibilities

3.2.1 Condition A.2.a – Coordination Among Other Public Entities and Joint Agreements

The permittee is responsible for compliance with the terms and conditions outlined in the MS4 Phase I Individual Permit related to their MS4 and associated discharges. Implementation of the permit can be shared with other entities. For instance, the permittee may develop agreements with entities or jurisdictions adjacent to their MS4 system to implement certain minimum measures within the permittee's or that entity's jurisdiction. Similarly, the permittee may coordinate and/or pool resources with regional partners on stormwater education and outreach messaging to meet relevant requirements of Schedule A.3.a.

The permittee, if relinquishing implementation responsibility to another entity, must ensure that the minimum measures (or portions thereof) are at least as stringent as required by the permit. Additionally, the permittee must develop and maintain a written record of agreements with other entities, as a record of accountability. The permittee remains ultimately responsible for compliance with the permit obligations in the event the other entity fails to implement the control measure (or any component thereof).

3.2.2 Condition A.2.b – Maintain Adequate Legal Authority

The permit requires the permittee to maintain adequate legal authority to implement and enforce the required SWMP control measures as allowed and authorized pursuant to applicable state law.⁴ Without adequate legal authority or other mechanisms to control what enters or discharges from the MS4s, the permittee cannot perform vital stormwater management functions, such as performing inspections, requiring installation and proper operation of pollutant control measures within its jurisdiction, and/or enforcing such requirements. The permittee must utilize all relevant regulatory mechanisms available to them in accordance with applicable state and federal laws to control pollutants into and from the MS4s, to the MEP. DEQ expects the permittee to exercise their legal authority in six specific ways:

1. Effectively prohibit and eliminate pollutants to the MS4 from illicit discharges and connections.
2. Effectively respond to and control spills, dumping or disposal of unauthorized non-stormwater materials into the MS4.
3. Maintain the ability to control pollutants discharged into the MS4 from land disturbance and new and re-development activities occurring within their jurisdiction.
4. Control the contribution of pollutants from one MS4 into another, through interagency agreements as necessary or appropriate.
5. Require compliance with applicable rules within their jurisdiction using public education, technical assistance, or enforcement, as applicable.

⁴ 40 CFR § 122.34(b)(3)(ii)(B), (b)(4)(ii)(A), and (b)(5)(ii)(B)); *MS4 Permit Improvement Guide*, April 2010. EPA 833-R-10-001.

6. Carry out inspections, surveillance, and monitoring procedures necessary to determine compliance with the permit.

The permittee must summarize and reference their legal authorities necessary to meet the conditions of the permit in their SWMP Document as required in *Schedule A.2.b*. The SWMP Document must also describe how the permittee will impose their requirements, and/or use cooperative agreements with other jurisdictions or entities, to implement the required stormwater control measures based on their unique legal powers under state law.

3.2.3 Condition A.2.c – SWMP Document

NPDES permits for MS4 discharges require the operator to implement and enforce a SWMP designed to reduce the discharge of pollutants from the MS4 to the MEP, to protect water quality, and to satisfy the appropriate water quality requirements of the Clean Water Act.

The permittee is required to develop and update as necessary, a written Stormwater Management Program (SWMP) Document.⁵ The SWMP Document is a separate and distinct submission from the Stormwater Management Plan submitted under the previous permit; the SWMP Document serves similar purposes but also has a different scope and greater flexibility than the previous permit's Stormwater Management Plan. The SWMP Document summarizes the physical characteristics of the MS4, and describes how the permittee conducts the required SWMP control measures within its jurisdiction, including descriptions or summaries of BMPs implemented. Throughout this permit, a variety of supporting documents are described as required for inclusion in the SWMP Document; this inclusion may be as subsections of the document, as appendices, or as citations or links that will be updated as supporting program documents are updated. DEQ is allowing supporting documents and strategies to be referenced in the SWMP rather than directly included due to the varying level of detail that may be too voluminous to incorporate. However, supporting documents and strategies, to the extent practicable, must be accessible to the public and clearly referenced in the SWMP Document. The intent of this requirement is to provide DEQ and the public with access to documentation of detailed strategies and guidance documents describing how the permittee will meet permit conditions. DEQ recognizes that Standard Operating Procedures (SOPs) may change more frequently than Ordinance, or Code, or documents like a Stormwater Manual. Where SOPs are important to the SWMP Document, they should at a minimum be summarized and be available upon request. The SWMP Document should also describe the permittee's unique implementation elements such as cooperative or shared responsibilities with other entities. The SWMP Document is intended to address three audiences:

General Public – The SWMP Document serves to inform and involve the public in the local stormwater management program.

Elected officials and permittee staff - The SWMP Document can be used by the permittee as an internal planning or briefing document.

DEQ - The SWMP Document provides DEQ with a discrete document to review and approve how the permittee will comply with permit requirements and implement its stormwater management program.

⁵ 40 CFR § 122.34(b) and *NPDES Municipal Separate Storm Sewer System General Permit Remand, Final Rule* (81 FR 89320, Dec. 9, 2016). *The final rule at § 122.34(b) requires each permit to require the permittee to develop a "written storm water management program document or documents that, at a minimum, describes in detail how the permittee intends to comply with the permit's requirements for each minimum control measure."*

The requirement for the permittee to develop a SWMP Document is an enforceable condition of the permit. The contents of the SWMP Document are not directly enforceable as effluent limitations of the permit. In general, because the details within a SWMP Document (e.g., measurable goals set by the permittee, program strategies, BMPs, etc.) are not enforceable permit terms unless specified by the permit, the permittee may create and revise the SWMP Document and its supporting documentation as necessary to support adaptive management and provide up-to-date descriptions of how they will meet any permit requirements during the permit term. Updates to the SWMP Document may therefore occur without DEQ review and approval of each change as a permit modification.⁶ However, because the SWMP Document is required to be an adaptive management tool that works with each successive iteration toward improvement of MS4 management and water quality, and must provide rationales for changes according to Schedule A.2.f., the SWMP Document is subject to DEQ review and approval on initial submission. DEQ reviewed MS4 permits from other states as well as guidance from EPA in establishing this framework, and though certain guidance from EPA is directed towards Phase II (small) MS4 communities, the framework is valid for application to Phase I communities.

The first iteration of the permittee's SWMP Document must be developed with opportunity for public input, and submitted to DEQ and posted on their publicly available website no later than November 1, 2022. The SWMP Document must thenceforward be updated as needed with changes submitted for review by DEQ with the Annual Report. DEQ will make every effort to review and respond to the permittee's SWMP Document submission within 60 days of submission, whenever that occurs, and permittee may begin implementation upon approval.

3.2.4 Condition A.2.d, e – SWMP Information, Metrics, and Resources

The permittee is required to track indicator metrics and information to document and report on SWMP implementation progress. The permittee demonstrates compliance with *Schedule A.2.d* by fully implementing the requirements of this permit. Not every tracking measure must be reported annually in its entirety, but records must be maintained for audits, inspections and/or evaluation by DEQ. The specific tracking measures that are required to be reported annually have been described in the relevant sections.

The permit does not specify staffing or funding levels, thus providing flexibility and incentive for the permittee to adopt the most efficient methods to comply with the permit requirements within the MEP framework.

3.2.5 Condition A.2.f – Review and Modification of the SWMP Document

The SWMP Document itself is a requirement of the permit, and like other permit requirements, is subject to DEQ approval. However, as described above in Section 3.2.3, because the SWMP Document is not incorporated by reference into the permit, modifications to the contents of the SWMP Document are not modifications to the permit. For this reason, changes may be made to the SWMP Document at any time, though modifications to delete, adjust, or replace elements of the approved SWMP Document must be supported with a rationale to be submitted with the next Annual Report after the change. The rationale must support the value of the change in terms of effectiveness at pollutant removal from or to the MS4, or overall effectiveness of the program illustrating or demonstrating how the change will not adversely impact water quality. In this way, DEQ maintains oversight to ensure that changes to the SWMP Document are justifiable and supported by evidence or data, while allowing the permittee greater flexibility to shift resources, adjust prioritization, and improve their programs as needed, for continued improvement of program effectiveness. DEQ recognizes that updates to the SWMP Document may be made or requested by multiple municipal departments in a given year, and recommends tracking documentation for updates in the form of a "change log" or "version notes" sheet that can be maintained between the cover page

⁶ NPDES Municipal Separate Storm Sewer System General Permit Remand, Final Rule (81 FR 89320, Dec. 9, 2016).

and table of contents, in order to simplify reporting. Increased flexibility with SWMP Document updates does not in any way exempt the permittee from the requirement to meet permit conditions.

3.3 Condition A.3- Stormwater Management Program Control Measures

Schedule A.3 of the permit contains clear, specific, and measurable requirements. For each minimum control measure, specific tasks, BMPs, design requirements, performance requirements, adaptive management requirements, schedules for implementation and maintenance, and/or frequency of actions are outlined. The specific actions and ongoing activities that comprise the minimum control measure are referred to as SWMP program components. The permit balances implementation flexibility while establishing clear, specific, and measurable permit requirements in accordance with the MS4 MEP standard.

The permittee must demonstrate that they have met the respective compliance dates through the submittal of the Annual Reports (see Schedule B), and through submittal of the permit renewal application.

The permittee must continue to conduct their current SWMP controls. Upon the permit effective date, the permittee is expected to begin to integrate/develop the conditions of the permit.

3.3.1 Condition A.3.a – Public Education and Outreach

The permittee is required to address the public education and outreach requirements. The permittee has conducted public education and outreach programs, as part of their compliance efforts with all prior MS4 permits. DEQ encourages cooperative outreach efforts between other communities to continue this effort, and intends for the terms and conditions of the permit to inspire additional cross-area or collaborative outreach and education efforts to reach stakeholders within their coverage areas.

Once the permit is effective, the permittee must update or continue their existing public education and outreach program strategy, and incorporate new program components as necessary.

The goal of the education and outreach strategy is to reduce or change behaviors and practices among the public that cause or contribute to adverse stormwater impacts on receiving waters. The strategy should promote specific actions to increase community and stakeholder understanding of how to reduce pollutant discharges in stormwater runoff and prevent illicit discharge from entering the MS4 or impacting receiving waters, and incorporate strategies to remove barriers to taking these actions.

The permit includes specific requirements to engage key stakeholder groups with topic-specific content. The permit further requires the permittee to consider equity and environmental justice as a component of their education and outreach strategy, which is an important advancement from previous permit iterations. The public education strategy should inform individuals, households, and businesses about the steps each can take to reduce stormwater pollution, including, but not limited to: avoiding the use of products or chemicals known to cause water quality concerns for humans and wildlife in Oregon; and the proper handling, use and disposal of fertilizers, pesticides, motor oil, and other household hazardous wastes; protecting and restoring riparian vegetation.

The educational materials and activities the permittee is required to provide must address the priority audiences listed, and a selection of the prioritized topics, specific behaviors, and removal of barriers to change, to maximize

success⁷. The permit allows some flexibility within each stakeholder group for the permittee to adjust their approach based on local demographics and needs. The permit also specifies a list of priority topics to be addressed by the education and outreach materials but allows flexibility for the permittee to deviate from the list based on issues of significance in their respective community. Examples of strategies include distributing door hangers, brochures or fact sheets, promoting website information, using social media, sponsoring speaking engagements before community groups, providing public service announcements, implementing educational programs for K-12 students, and conducting community-based projects such as storm drain stenciling, and watershed and stream/beach cleanups. Where appropriate for the permittee's community demographics and the presence of community-based organizations that serve diverse audiences and/or work on environmental justice⁸, outreach must include messaging in languages and communication methodologies used in the community to ensure diversity, equity, and inclusion in the permittee's program⁹. DEQ understands that not all priority groups can be engaged at the same depth and does not have an expectation that all will receive the same amount of outreach. The permittee is expected to prioritize based on an understanding of their own communities, and to shift priorities, conduct pilot testing, and engage in adaptive management as the permit cycle proceeds to make the most effective use of their budget capacity and engagement.

The permittee must track and evaluate the success of public education activities during the permit term with, for example, measures of total reach, proportion of a priority audience reached, and engagement, surveys assessing impact on behaviors of the public, or other qualitative and quantitative assessment methods. The intent is to generate behavioral changes in the community with a positive impact on water quality, and the permittee is encouraged to select tracking measures that aid in evaluation of progress toward that goal. The permittee is required to maintain records of educational and outreach activities. The intent of this measurable goal is to document and evaluate the success of the program, by both the permittee and by DEQ, to continually adaptively manage and enhance future education and outreach in subsequent permits.

3.3.2 Condition A.3.b – Public Involvement and Participation

This section of the permit addresses the public involvement and participation requirements consistent with 40 CFR § 122.26. Federal regulations require MS4 permittees to comply with State, Tribal and local public notice requirements when implementing a public involvement/participation program. The objective of a public involvement and participation program is to provide opportunities for residents from all economic and ethnic backgrounds to participate in the maintenance, further development, or adaptive management of the permittee's stormwater management programs. This might involve, for example, establishment of a citizen advisory committee, a volunteer monitoring program, and/or other community engagement activity specifically designed for the permittee to receive feedback from local stakeholders that informs stormwater program development or hands-on volunteer assistance that supports existing programs. Public involvement and participation can also be implemented via measures such as surveys of public opinion and attitudes, working with local civic organizations to install medallions or to stencil catch basins to remind the public that pollutants entering the storm sewer system reach local water, or other stewardship opportunities.

Public involvement in planning of stormwater management programs was required for the initial application for NPDES MS4 permit coverage, but there is not an explicit public involvement requirement in the federal

⁷ Many valuable resources exist to help create strategies for public education & outreach, such as Doug McKenzie-Mohr's *Fostering Sustainable Behavior - An Introduction to Community-Based Social Marketing (Third Edition)*, available at <https://cbsm.com/book>

⁸ Recommended readings on Environmental Justice are available at <https://www.epa.gov/environmentaljustice>

⁹ DEQ Recommends EPA's EJSCREEN Tool for reports and maps combining environmental and demographic indicators that would be of use to permittees in evaluating how to organize prioritization of public education & outreach efforts

regulations regarding the ongoing adaptive management decisions of the stormwater management program.¹⁰ For this reason, public involvement/participation/comment is not required for adaptive management updates to the SWMP Document, but rather only for its initial submission. However, the permittee is encouraged to use updates to the SWMP Document as an opportunity for public involvement, by advisory committee, public comment, or other means as appropriate to the permittee's processes and precedent. The permittee must update or continue their existing public involvement and participation program and impose the specified new program components.

The permittee is required to maintain and promote at least one publicly accessible website to provide all relevant SWMP information to the public. Relevant SWMP information includes the permittee's SWMP Document, links to ordinances, policies, or guidance documents related to the stormwater management programs required by this permit, relevant public education material, MS4 and other Annual Reports, and easily identifiable (and up to date) contact information such that members of the public may easily call or email to report spills or illicit discharges, and/or ask questions, etc. The website must also include the posting of draft documents noted in the permit as requiring public review.

The permittee is also required to create or participate in the establishment of stewardship opportunities over the permit term to foster participation by the public. The permittee must also maintain records of their public involvement participation activities, and report on participation metrics in every Annual Report through the permit term.

3.3.3 Condition A.3.c – Illicit Discharge Detection and Elimination

This section of the permit addresses the Illicit Discharge Detection and Elimination (IDDE) requirements consistent with 40 CFR § 122.26 (d)(2)(iv) and spill response within the MS4 coverage area. At a minimum, the permit requires the permittee to maintain the ability to prohibit, detect, and eliminate illicit discharges from the MS4, and respond to spills of prohibited materials within the MS4 coverage area. Stormwater discharges are different from illicit discharges. Stormwater runoff conveys pollutants that stormwater picks up from upland sources, then flows to the MS4. Illicit discharges are not from precipitation events. Illicit discharges are the addition of pollutants to the MS4 or surface waters from intentional or unintentional human dumping or disposal activities, and may involve sources such as a restaurant dumping mop water outside, or a contractor dumping paint rinsate into a parking lot catch basin, or a resident dumping RV wastes into a stormdrain. The permittee must continue to prohibit non-stormwater discharges into the MS4 (except those conditionally allowed by Schedule A.1.d) to the extent allowable under state law (meaning that these programs and procedures are only required to the extent they are permitted under federal and state laws). The permittee must implement follow-up procedures as appropriate and actions to ensure compliance.

The permittee has implemented IDDE and spill response programs since the initial issuance of the individual MS4 permit.

The permit prohibits the discharge of non-precipitation flows ("illicit" or "non-stormwater" flows) to the MS4 with very specific exceptions conditionally allowed by Schedule A.1.d. The permittee must continue to conduct timely, thorough, and systematic illicit discharge investigations and removal of illicit connections. The permittee is required to update and maintain written IDDE protocols that include specific procedures for implementation of the IDDE program. Examples of these requirements are a detailed MS4 map and digital inventory, a written prioritization for dry-weather screening activities of areas with a potential of illicit discharges, enforcement protocols, and record keeping.

¹⁰ 40 CFR § 122.26 (d)(2)(iv)

An IDDE program, including the enforcement and tracking of such a program, is necessary to avoid illicit discharges or improper disposal of waste materials to surface waters. The permittee is expected to coordinate with DEQ when illicit discharges occur that may involve DEQ's jurisdictional authority, or as required by the Oregon Emergency Response System reportable quantities standards. The permittee is also required to report to other entities, if a spill enters another permittee's or agency's system (e.g., neighboring city, county, etc.). DEQ also encourage the permittee to establish or maintain communication channels with local stakeholders such as watershed councils, conservation districts, etc., regarding concerns with water quality from spills, dumping or accidents that may be cause for concern from the public, as appropriate.

The permittee is required to develop or continue to maintain a current MS4 map, including any new components of stormwater infrastructure that must be included in the MS4 map and digital inventory. The purpose of the MS4 map and digital inventory, outfall inventory, conveyance system and stormwater control locations, and locations of chronic discharges is to record and verify MS4 outfall locations and include other relevant descriptive characteristics of the system. DEQ expects that the permittee know the locations and characteristics of all outfalls that it owns/operates through mapping their infrastructure and associated assets. DEQ also recognizes that such databases of infrastructure and assets are living chronicles of systems that change and grow as more information comes to light, as old assets are removed, as new areas are developed, and as new technologies are implemented.

The MS4 mapping and digital inventory must be current and made available to DEQ upon request and must also be updated and provided as part of each permit renewal package. The associated inventory must be in a digitized format, with a tabulation of the attributes identified in Schedule A.3.c.i.A-D. To the extent data are available, the mapping and outfall inventory should also include acreages of land uses in the catchment area leading to each outfall, as well as other relevant attributes such as impermeable surface area, percentage of tree cover, etc. While the permittee must maintain a current MS4 map and a digital inventory, the permit does not specify their required format. DEQ encourages permittees to utilize a digital MS4 mapping system, such as an electronic geographic information system format, which enables sharing of data and can more easily utilize public tools and sources of information such as Oregon Metro's Data Resource Center or the Oregon Explorer Natural Resources Digital Library.¹¹ The permittee is encouraged to couple this mapping requirement and its products with other control measures, such as their Dry Weather Screening Programs and associated investigations requirements in the Schedule A.3.c.v, and to use it for decision making and adaptive management.. For example, attributes or characteristics associated with the outfall inventory could greatly influence the selection of priority locations for annual field screening. The intent is to require the permittee to conduct a GIS exercise (or similar data-oriented system) to tap existing data sets where available, and indicate where further data may be needed, and allow for better adaptive management system-wide. Other relevant factors that are also useful to maintain mapping of for association with outfalls and for IDDE investigation purposes, according to the Center for Watershed Protection, include:

- Presence of certain industries by SIC code
- Historic complaints
- Sanitary and storm sewers in close or in common manholes
- "Gaps" in sanitary mapping
- Licensed businesses, SIC codes, industrial permittees
- Areas with businesses with night hours (e.g., bars and restaurants)

Further uses of mapping the above types of information in association with outfalls may include assessing where to prioritize capital improvement projects (e.g., rain gardens, pervious pavement, etc.), where community tree

¹¹ See: <https://www.oregonmetro.gov/tools-partners/data-resource-center> and https://oregonexplorer.info/topics/watersheds?qt-subtopic_quicktab=4&ptopic=98

plantings can be focused for maximum effect, and where industrial or utility facilities may be contributing pollutants. The complex interactions among land-covers have several direct implications for the ongoing management of urban watersheds, and the permittee is required to gather this information in order to better understand their infrastructure and landscape and the effect of each on stormwater.¹²

The permittee must continue to effectively prohibit non-stormwater discharges to their MS4s through enforcement of an ordinance or other legal mechanism to the extent allowable under state law (meaning these programs and procedures are only required to the extent they are permitted under federal and state laws). Section A.3.c.iii identifies the minimum requirements for enforcement procedures that DEQ expects the permittee to be able to practice within their jurisdictions, if necessary, consistent with requirements of the previous permit. The ordinance/legal mechanism does not need to cite each individual prohibition, provided that the permittee's legal mechanism would or could address illicit non-stormwater discharges into the MS4, whether from commercial or individual sources. This provision provides a minimum expectation for the local ordinance/legal mechanism to fully prohibit the breadth of possible non-stormwater discharges that could negatively impact receiving water quality.

Permit condition A.3.c.iii requires the permittee to maintain a written enforcement response policy or plan to support their IDDE Program efforts to detect and eliminate illicit discharges into the MS4 and is consistent with requirements of the previous permit. The enforcement program must include mechanisms to effectively compel compliance from chronic violators that repeatedly violate the illicit discharge requirements. The enforcement program must also consider factors related to the severity of the illicit discharge to inform the selection of associated penalties and/or corrective actions required by the responsible party.

Permit Condition A.3.c.iv establishes DEQ's expectations for the permittee's minimum Illicit Discharge Complaint Report and Response program and is consistent with requirements of the previous permit. The permittee must maintain, and advertise, a publicly accessible and available means for the public to report illicit discharges, such as a phone number, webpage, and/or other communication channel. On average, complaints must be answered within two working days and records regarding actions taken must be maintained. This condition also establishes timelines for the permittee when responding to complaints and illicit discharges identified through field investigations.

Sources of illicit discharges may be fixed or mobile, intermittent or continuous, yet the frequency or severity of such discharges can have lasting effects on water quality. The nature, extent, actions, and conclusions of each investigation should be recorded with the original complaint to provide a full picture of each incident. This record provides detailed information about the types and locations of discharges, their possible sources, and other information pertinent to targeting future investigations, inspections, outreach, and education activities. Additionally, accurate and complete documentation of incidents provides evidence to support potential citation or civil penalty cases when needed.

The permittee must have systems and protocols in place so that they may track and appropriately respond to reports of illicit discharges from the public and permittee staff. The permittee must ensure that illicit discharges are referred to appropriate response staff and/or emergency response authorities. Staff assigned to handle calls should be trained in stormwater issues and emergency response to gather and transfer accurate information to responders. Conducting an investigation as soon as possible after the initial complaint report is crucial to the success of this program. DEQ recognizes that not all reported illicit discharges may be found and tracked to the

¹² Beck, S. M., McHale, M. R., & Hess, G. R. (2016). Beyond Impervious: Urban Land-Cover Pattern Variation and Implications for Watershed Management. *Environmental Management*, 58(1), 15–30. <https://doi.org/10.1007/s00267-016-0700-8>

source upon detection, and so the permit also includes a new requirement to track “chronic illicit discharges,” as defined in Schedule D. This information is intended to assist in risk mapping, investigations of new reports, prioritization of dry weather screening locations, and other adaptive management.

The permittee is required to continue to conduct dry weather screening to identify illicit non-stormwater flows and DEQ recommends they review the Center for Watershed Protection’s IDDE Manual.¹³ The Manual includes instructions for maximizing the effectiveness of IDDE programs, including dry-weather screening (AKA the “Outfall Reconnaissance Inventory,”) and lays out a process for auditing existing IDDE resources and programs. Such an audit may benefit a permittee immensely given the time spent in administrative extension and the new programmatic flexibility granted by the SWMP Document structure. Permit condition A.3.c.v establishes a minimum system evaluation and dry weather screening requirement to comply with this section of the permit, and is consistent with requirements of the previous permit. However, the science continues to evolve, and new research has emerged in the time since the last permit renewal.¹⁴ This is why the permit requires an update to the criteria for dry weather screening location selection, and sharing of information with those who perform the routine inspection, maintenance, and cleaning schedule required in Schedule A.3.f.ii (Inspection, Maintenance, and Cleaning, in Pollution Prevention for Municipal Operations), assuming different departments or staff are utilized. The SWMP Document should describe how dry weather screening location selection is based in mapped data. This information will help the permittee make informed program enhancement decisions related to potential risks posed by factors such as land use, density, impervious area, and age of infrastructure.

This section of the permit requires the permittee to continue to use dry-weather field screening pollutant parameter ‘action levels’ that, if exceeded, will trigger the permittee to conduct further investigation to identify sources of illicit discharges. DEQ recommends that the permittee review illicit discharge detection and elimination program guidance developed by the Center for Watershed Protection and referenced by the United States Environmental Protection Agency (http://www.epa.gov/npdes/pubs/idde_chapter-12.pdf).

The permittee is required to maintain and update written procedures for conducting investigations, source tracking, field screening and characterizing illicit discharges such as described in the Center for Watershed Protection manual. DEQ has also established the minimum documentation, screening and laboratory analysis procedure for identifying the illicit discharge, when it is not known. Suspected sources of discharge include, but are not limited to, sanitary cross-connections or leaks, spills, seepage from storage containers, non-stormwater discharges or other residential, commercial, industrial or transportation-related activities.

This section of the permit also includes the requirement that the dry weather screening inspection activities take place annually, specifically at identified priority locations documented by the permittee. The annual field screening must include a portion or all of the permittee’s identified priority locations. Priority locations must, where possible, be located at an accessible location downstream of any source of suspected illegal or illicit activity or other location as identified by the permittee, and DEQ recommends the permittee review the related resources referenced herein at footnote 14, above. Priority locations must be based on an equitable consideration of hydrological conditions, total drainage area of the location, population density of the location, traffic density, age of the structures or buildings in the area, history of the area, land use types, personnel safety, accessibility,

¹³ Available at https://www3.epa.gov/npdes/pubs/idde_manualwithappendices.pdf

¹⁴ See, for example, *Development of Effective Procedures for Illicit-Discharge Risk Mapping* by P.R. Bender, et al. (2016), available at [https://ascelibrary.org/doi/abs/10.1061/\(ASCE\)WR.1943-5452.0000747](https://ascelibrary.org/doi/abs/10.1061/(ASCE)WR.1943-5452.0000747) ; *A low cost method to detect polluted surface water outfalls and misconnected drainage* by D.M. Chandler and D.N. Lerner (2015), available at <https://onlinelibrary.wiley.com/doi/abs/10.1111/wej.12112> ; and *Analysis and determination of optimum risk factors to prioritize illegal discharge potential in urban catchments*, by Y. Owusu-Asante (2019), available at <https://doi.org/10.1016/j.pce.2019.04.007>

and historical complaints or other appropriate factors as identified by the permittee. DEQ encourages the use of risk analyses based on these factors, as described in recent scientific literature cited above in footnote 14.

DEQ maintains that ongoing field screening activities play an important role in a comprehensive illicit discharge detection and elimination program. Each employee involved in the program must have training in screening for their respective duties in the IDDE program. The training approach and frequencies must be described or referenced in the SWMP Document.

The IDDE program's activities must be tracked and documented. Each MS4 Annual Report should include a summary of all activities involving or relating to illicit discharge.

3.3.4 Condition A.3.d – Construction Site Runoff Control

The permittee must continue to implement a program that prevents and/or controls the discharge of pollutants in stormwater runoff from construction sites. Construction sites that disturb one acre or more of land are covered by DEQ's 1200-C construction stormwater general NPDES permit. However, the construction site runoff control requirements in this permit are needed to reflect that the permittee controls construction site discharges into their MS4 system for all construction projects that cause ground disturbance, regardless of size (if dirt/turbid water is moving off site via discovery or complaint), otherwise a minimum threshold for inspection is defined.

The requirements in Conditions A.3.d.i through A.3.d.vii describe DEQ's minimum expectations for the permittee's construction stormwater program. The requirements are similar to those in the previous permit, but are more specific about certain actions that the permittee is required to perform. The new elements added to this section will increase effectiveness as well as flexibility in program implementation and tracking of outcomes, which will improve transparency and accountability as well as adaptive management capacity. The main elements include having an ordinance to require controls and impose sanctions, requiring implementation and maintenance of BMPs, preventing or controlling site construction wastes from impacting water quality, site plan review procedures, site inspection procedures, and enforcement procedures.

DEQ expects the permittee will describe within its site plan review, site inspection, and enforcement procedures the actions and activities the permittee will implement to ensure the discharge of pollutants in stormwater runoff from construction sites is prevented and controlled accordingly. The permit language allows for simplified ESCPs or a description of required outcomes with prescribed BMPs for small, low-risk construction sites, provided that the permittee's criteria and specifications for such activities, as for ESCPs, are documented or referenced in the SWMP Document, and that construction operators are required to keep a copy of their erosion & sediment control obligations on site or electronically accessible onsite for reference and updating as needed during operations, maintenance of controls, and inspections. These procedures should include the approach the permittee will follow to ensure proper installation of erosion control BMPs and the oversight of the installation of stormwater facilities to ensure proper function. All procedures must be referenced in or described in the SWMP Document.

Employees or contractors of the permittee involved in the Construction Site Runoff program must be trained in the appropriate program elements related to their work (i.e., ESCP review, site inspections, and compliance and enforcement of the permittee's requirements). Training should be conducted for every employee within 60 days of assignment to the program, but before each individual is assigned to conduct activities associated with this section individually (i.e., without guidance/oversite from colleagues) and once per permit term, or every five years, at a minimum.

The program's activities must be tracked and documented. Each Annual Report should include a summary of all activities involving the Construction Site Runoff Control program.

3.3.5 Condition A.3.e – Post-Construction Site Runoff Control

This permit condition requires the permittee to continue to control and enforce a post-construction site runoff program applicable to new and redevelopment of sites within their jurisdiction.

Urbanization's impact on water quality with its creation of impervious surfaces is well established.¹⁵ EPA's research shows a linkage between low total or effective impervious surface area and changes in stream biotic assemblages. This permit includes requirements that the permittee look for opportunities to include both non-structural and structural stormwater controls in existing development when redevelopment occurs.

The permittee developed a post-construction stormwater design standards manual to address post-construction site runoff under a previous iteration of the permit, or implemented one developed by another entity. DEQ recognizes that time and resources will be necessary to update, refine, and issue post-construction site requirements within a permittee's jurisdictional boundaries in response to this permit condition. As a result, this condition requires the permittee to continue implementing current requirements until these new requirements can be reflected and incorporated into their post-construction program in accordance with this permit schedule. DEQ recognizes that many factors are outside permittee control and DEQ purview, including land use laws and other state and federal regulations, as well as other local considerations such as policy goals and land use or zoning regulations particular to the permittee or their region. These factors are unaffected by stormwater considerations and will affect site design, therefore these permit conditions are not intended to be applied where it would be inappropriate to do so.

Where the previous permit included a condition that required the permittee to optimize onsite retention based on site conditions, this permit condition expands on the previous requirements by identifying specific minimum performance standards, or minimum requirements for the development of the permittee's own standards, in Schedule A.3.e.iii. DEQ's basis for the permit's new performance standards includes the following:

- Review of the post-construction stormwater requirements of Phase I and Phase II permits in other states
- Oregon's approach for managing post-construction stormwater in the TMDL and Coastal Nonpoint Pollution Control Programs
- The approaches required of Oregon's Phase II general permit registrants
- EPA's guidance provided in the 1999 NPDES MS4 Phase II rules
- EPA's guidance for improving MS4 Permits and its compendium of NPDES permit examples
- Recent scientific literature

The information below presents the rationale for the post-construction site runoff management requirements in this permit condition and highlights the information used in formulating this condition.

The Post-Construction Site Runoff Control program permit language was drafted with the goal of providing clear, specific, and measurable permit conditions. The permit includes enforceable narrative and numeric conditions, such as the site performance standard and treatment requirement.

Where the previous permit emphasized the removal of obstacles to Low Impact Development/Green Infrastructure (LID/GI) (or equivalent) condition A.3.e.ii explicitly requires the permittee to prioritize it through requirements or provision of incentives. The use of the LID/GI (or equivalent) approach to stormwater

¹⁵ U.S. EPA. The Causal Analysis/Diagnosis Decision Information System Volume 2: Sources, Stressors and Responses.

management, prioritizing non-structural stormwater controls to minimize the creation of impervious surfaces and minimize stormwater volume is an important element in addressing other program conditions, such as optimizing onsite retention (i.e., infiltration, evapotranspiration, and water capture and reuse), targeting natural surface or predevelopment hydrologic functions, and minimizing hydrological and water quality impacts from stormwater runoff from impervious surfaces and compacted pervious cover such as gravel parking lots. This condition requires the permittee to prioritize green infrastructure when structural stormwater controls are needed to remove pollutants from stormwater or to further reduce stormwater volume prior to discharging. The intent is to make LID/GI the preferred and commonly used approach to site development, and to require extended filtration where LID/GI or other onsite retention is not feasible. There are many methods of incentivizing and prioritizing LID/GI (or equivalent) approaches in local code and practice.¹⁶¹⁷

This permit condition requires the permittee to maintain or establish a regulatory trigger for post-construction site runoff when a development or redevelopment creates or replaces either 1,300 square feet or more of impervious surface for single family residential projects or 5,000 square feet or more of impervious surface for all other development projects. The intent of this impervious area threshold is to prevent the further degradation of water quality in waterbodies receiving the permittee's stormwater discharge. DEQ has established this threshold for post-construction stormwater controls to reduce stormwater volume and to treat stormwater discharges to ensure the permittee's stormwater management efforts will contribute significantly to collective efforts to attain water quality standards as a community experiences further urbanization. Thresholds are based on a variety of MEP factors relevant to the permittee's jurisdictions.

As highlighted in EPA's National Menu of BMPs for post-construction stormwater requirements, the application of non-structural stormwater controls as a first step in meeting this requirement has broad applicability nationwide as a practice that can successfully achieve the post-construction minimum control measure. As an initial approach, the "Runoff Reduction Method" is appropriate for all municipalities subject to this condition and can be used to create an economic incentive by providing a mechanism to credit the volume reduction associated with better site design and creating a reduction in the overall size and footprint necessary for structural treatment and detention practices.¹⁸ For information on the broad applicability of the runoff reduction method, DEQ encourages the permittee to review sources cited in the National Menu of Stormwater BMPs, including EPA's *Using Smart Growth Techniques as Stormwater Best Management Practices* and the National Association of Home Builders Research Center's *The Practice of Low Impact Development* prepared for the U.S. Department of Housing and Urban Development.¹⁹²⁰ EPA developed this menu of BMPs "to reduce the risk that MS4 permittees will develop inadequate BMPs" as they develop their stormwater programs.

Permit condition A.3.e.iii outlines two options for developing site performance standards. The first option, building on the approach established in the previous Phase I and II permits, requires that the permittee establish a numeric site performance standard with an on-site stormwater retention requirement, referred to in Schedule A.3.e.iii.(A) of the permit as the Numeric Stormwater Retention Requirement (NSRR). This condition strives to be more clear, specific, and measurable in its requirement for the retention of stormwater on-site and the treatment of stormwater discharged off-site when, due to site constraints, full compliance with this retention requirement is

¹⁶ AHBL. 2012. Integrating LID into Local Codes: A Guidebook for Local Governments, prepared by AHBL for the Puget Sound Partnership, July 2012.

¹⁷ Wulkan, Bruce. 2007. Promoting Low Impact Development in Puget Sound through Regulatory Assistance and Other Measures. Low Impact Development, 1–10. [https://doi.org/10.1061/41007\(331\)1](https://doi.org/10.1061/41007(331)1)

¹⁸ Battiata, Joseph, Kelly Collins, David Hirschman, and Greg Hoffmann. 2010. The Runoff Reduction Method. Journal of Contemporary Water Research & Education, Issue 146

¹⁹ EPA. 2005. Using Smart Growth Techniques as Stormwater Best Management Practices (EPA 231-B-05-002)

²⁰ National Association of Home Builders Research Center. 2003. The Practice of Low Impact Development. Prepared for the U.S. Department of Housing and Urban Development Office of Policy Development and Research, Washington, D.C.

not practicable. The intent is to establish an appropriate retention requirement methodology, so that the permittee may add a compatible and practicable retention requirement to their existing post-construction program if one is not already in place, tailor their program to better accommodate local conditions and watershed priorities, and reduce discharges of pollutants and control stormwater runoff from new development and redevelopment project sites. The permittee may include evapotranspiration and reuse of stormwater in accounting for retention volumes, but are not required to exhaust those options prior to allowing treatment or offsite options. The permittee may collaborate with other entities to implement this condition in an effort to leverage their collective resources and establish uniform requirements in a region for the regional development community. Further guidance for leveraging limited resources to develop post-construction site runoff requirements in compliance with this condition may also be found in the *Western Oregon Low Impact Development Guidance Manual*, in the EPA publication of the Center for Watershed Protection's *Managing Stormwater in Your Community; a Guide for Building An Effective Post-Construction Program*, and in sources cited on the previous page.^{21,22}

When site constraints prevent the on-site retention of the stormwater volume specified in the NSRR, the permittee must require treatment of the runoff volume up to a specified water quality design storm prior to its discharge off-site using one or more structural stormwater controls. Discharge offsite must target natural surface or predevelopment hydrologic function as much as practical using one of several methods. Given the requirement to retain a portion of the stormwater from a rain event on-site, the size of the treatment structural stormwater control(s) will be reduced, generating cost savings in material and the space needed for this control. On its webpage for the Cost-Benefit of Green Infrastructure, EPA has compiled several studies analyzing the costs as well as presenting cost-benefit analyses of green infrastructure and a design approach using better site design early in the process of planning for stormwater management.²³

Compliance with the stormwater treatment requirement is necessary when designing a structural stormwater control to treat the stormwater runoff volume specified in the permittee' design standards prior to its discharge off-site. Specifically, this condition requires that the permittee establish treatment standards for structural stormwater controls in order to ensure effective removal of total suspended solids (TSS) prior to discharge, and the permittee may include an upper and lower bound on the effluent TSS concentration that reflects the practical limitation of an engineered control (e.g., 80% removal of TSS for typical influent concentrations ranging from 20 mg/L to greater than 200 mg/L). The runoff discharged off-site must target predevelopment hydrologic function in terms of rate, duration, and volume in order to minimize the potential for hydromodification impacts off-site. The permittee may adopt treatment standards for other targeted pollutants such as a TMDL or 303(d) listed pollutant but, at minimum, TSS is the required design pollutant for structural stormwater controls because it serves as a surrogate for other pollutants. Pollutants such as mercury, and nutrients will likely be captured when using the TSS treatment standard.²⁴ More importantly, when evaluating options for a structural stormwater control, this condition requires the permittee to prioritize the use of green infrastructure, because research (cited here and in Section 4.3.9) emphasizes the value to urban stream ecology of treatment, even with simple and

²¹ <https://www.oregon.gov/deq/wq/tmdls/Pages/TMDLs-LID.aspx>

²² EPA. 2008. *Managing Stormwater in Your Community; a Guide for Building An Effective Post-Construction Program* (EPA 833-R-08-001)

²³ U.S. EPA Green Infrastructure Cost-Benefit Resources Webpage <https://www.epa.gov/green-infrastructure/green-infrastructure-cost-benefit-resources>

²⁴ National Research Council. 2009. *Urban Stormwater Management in the United States*. The National Academies Press, Washington, D.C.

inexpensive soil columns, especially in terms of the survivability of salmon and invertebrate populations in urban streams.^{25 26}

This permit condition's numeric site performance standard involving a retention and treatment requirement is consistent with national trends in post-construction stormwater management. In 2005, the State of Minnesota conducted a review of trends in stormwater management in the previous decade.²⁷ The Minnesota review noted shifts in statewide post-construction stormwater managements reflected in the stormwater requirements in Wisconsin, Pennsylvania, New York, Vermont, Maryland, and Washington. These shifts included increased emphasis for on-site runoff reduction using better site design practices and increased emphasis for runoff retention volume requirements for pollutant reduction. Moreover, the Association of Clean Water Administrators' post-construction workgroup indicated that 50 percent of the states in 2016 used a numeric retention standard, 28 percent use a narrative retention standard, and 22 percent used numeric treatment standards to address specific pollutants.²⁸ This is a 32 percent increase from the number of states using a numeric retention standard in 2014.²⁹ The site performance standard in this condition brings Oregon's permit in line with standards across the country and EPA's guidance.

The other option under Schedule A.3.e.iii, Option B, is for the permittee to establish their own narrative site performance standards. This is because, given the history of stormwater management in Oregon, the establishment of numerical site performance standards may represent technical challenges conflicting with existing design and construction standards and practices. If this option is selected, the permittee must demonstrate how equivalent benefits are achieved, how LID/GI practices and BMPs are still prioritized, how treatment is achieved to remove TSS before stormwater is discharged, and how pre-development site hydrology is achieved. GI approaches to treating stormwater under this option must infiltrate where soils allow, and may discharge after extended filtration (as defined in Schedule D) where infiltration is infeasible. This option requires the permittee's site design measures and planning procedures to require projects to consider site layout options that optimize for retention of stormwater, to the extent allowable by state and federal law (meaning these programs and procedures are only required to the extent they are permitted under federal and state laws). Such site optimization options may include:

- Defining development and protected areas, identifying areas that are most suitable for development and areas to be left undisturbed.
- Concentrating development on portions of the site with less permeable soils and preserving areas that can promote infiltration.
- Limiting overall impervious coverage of the site with paving and roofs.
- Setting back development from creeks, wetlands, and riparian habitats.
- Preservation of significant trees.
- Conforming the site layout along natural landforms.

²⁵ McIntyre, J. K., Edmunds, R. C., Redig, M. G., Mudrock, E. M., Davis, J. W., Incardona, J. P., Stark, J. D., and Scholz, N. L. (2016). Confirmation of Stormwater Bioretention Treatment Effectiveness Using Molecular Indicators of Cardiovascular Toxicity in Developing Fish. *Environmental Science & Technology*, 50(3), 1561–1569. <https://doi.org/10.1021/acs.est.5b04786>

²⁶ Spromberg, J. A., Baldwin, D. H., Damm, S. E., McIntyre, J. K., Huff, M., Sloan, C. A., Scholz, N. L. (2016). Coho salmon spawner mortality in western US urban watersheds: Bioinfiltration prevents lethal storm water impacts. *Journal of Applied Ecology*, 53(2), 398–407. <https://doi.org/10.1111/1365-2664.12534>

²⁷ Minnesota Stormwater Manual. 2005. Issue Paper D: *Unified Stormwater Sizing Criteria for Minnesota* V.6 Final

²⁸ Association of Clean Water Administrators. March 21, 2016. *The Weekly Wrap*. Volume VII., Issue 10

²⁹ Sawyers, Andrew D. and Best-Wong, Benita. 2014. Memorandum: Revisions to the November 22, 2002 Memorandum *Establishing TMDL Wasteload Allocations (WLA) for Stormwater Sources and NPDES Permit Requirements Based on Those WLAs*. U.S. EPA

- Avoiding excessive grading and disturbance of vegetation and soils.
- Replicating the site's natural drainage patterns.
- Detaining and retaining runoff throughout the site.

Option B also requires the permittee to establish a minimum set of defined onsite stormwater controls or site design measures to reduce project runoff. Such controls or measures may include:

- Soil Quality Improvement and Maintenance
- Tree Planting and Preservation
- Rooftop and Impervious Area Disconnection
- Porous Pavement
- Green Roofs
- Vegetated Swales
- Rain Barrels and Cisterns

Condition A.3.e.iv sets requirements for the establishment of Water Quality Benefit Offset Programs in order to allow stormwater mitigation off-site when site-specific conditions make full compliance with either Site Performance Standard option infeasible. This condition is not mandatory if the permittee chooses not to offer such benefit offset programs. The intent of this condition is to provide the permittee with multiple pathways to mitigate the water quality impacts associated with the increase in stormwater arising from urban development, should the permittee choose to provide those options for developers. DEQ has concluded that providing more options will give the permittee and the development community greater flexibility to achieve permit compliance. The development of such program options not only maximizes opportunities to mitigate water quality impacts but increase the flexibility in reducing pollutant loading.

The option of off-site mitigation or other such programs at another location offers the permittee as well as the development community an alternative compliance approach when site constraints make compliance with the retention or treatment requirements infeasible. Stormwater mitigation may provide a more economical path toward compliance that is equally protective of water quality. To ensure appropriate sites or projects are ultimately selected, the option of off-site mitigation at another location would benefit from an inventory of appropriate alternative projects or sites as well as standards to account for how these projects or sites will meet the stormwater retention or treatment requirements in the site performance standard. This inventory would serve as a preliminary assessment of opportunities for alternative compliance and should not preclude the pursuit of more effective opportunities that may arise unexpectedly.

This inventory of alternative sites may be provided by the development community or be generated by the permittee. The permittee can integrate or leverage compliance with this requirement using other inventories or assessments, such as a buildable lands inventory, a statewide planning Goal 5 inventory, or a statewide planning Goal 11 public facilities inventory for the permittee's stormwater systems. Moreover, to minimize additional administrative costs, the Operations & Maintenance (O&M) tracking mechanism could be used by the permittee to record performance of mitigation projects and water quality impacts of development at another location.

This condition offers two other off-site mitigation options that, if utilized by the permittee, require the establishment of a stormwater mitigation bank program or a stormwater payment-in-lieu program. The development of a stormwater mitigation bank necessitates an analysis of the market for off-site mitigation to evaluate the supply as well as demand for off-site mitigation credits to determine if there is a viable market to support this program. It also involves the establishment of a trade currency based on the unmet stormwater retention or treatment requirement at the development site. However, as noted below, the administrative burden in implementing a stormwater mitigation-banking program is likely to be offset by its future cost savings.

Additionally, the permittee may again choose to collaborate with other MS4 entities to implement this condition as a group in an effort to leverage their collective resources and establish more uniform requirements in a region for the development community.

The cost savings from stormwater mitigation banking is typically achieved when a permittee or developer meets the retention requirement for a constrained property at another location where the stormwater can more cost-effectively be retained on-site. Stormwater mitigation banking generates savings using market forces to identify low-cost mitigation opportunities and, therefore, attracting limited resources to the most cost-effective mitigation opportunities within a subwatershed. Off-site mitigation credit can be derived on a site already owned by the permittee or by a developer by using existing resources as long as the mitigation site's existing capacity to retain stormwater is enhanced in the mitigation process.

This condition also includes, as an alternative for compliance an off-site mitigation option involving a stormwater payment-in-lieu program. As with a stormwater mitigation bank program, this option will entail some administrative burden in establishing the currency or unit used to compare the unmet stormwater volume retention or treatment requirement with the future opportunity to meet this requirement at an off-site location. An in-lieu program involves establishing a rate based on this currency such as a dollar amount per volume of runoff retained, impervious area, site usage, or other factors. Additionally, if the permittee develops a payment-in-lieu program, the permittee will need to develop a rubric or set of trading ratios and the scale of trading, in order to define the value of the payment to be required in lieu of compliance with retention or treatment requirements for a given impervious area. The rubric or trading ratios would establish the runoff reduction volume that a non-structural or a structural stormwater control such as an infiltration basin must be designed to infiltrate off-site, or the dollar amount due for such offsite mitigation for a given project. The scale of trading defines the geographic boundary linking the development or redevelopment site to eligible alternative locations for compliance with the retention requirement.

The payment-in-lieu option provides the site owner or operator with flexibility while leveraging the permittee's limited resources to strategically locate stormwater controls for greater environmental impact. The permittee may aggregate fees and apply them to a stormwater structural or non-structural control at a later point in time. This compliance flexibility and additional funding provided by a payment-in-lieu program will likely, over time, offset the administrative costs of establishing a pay-in-lieu program.

The groundwater replenishment project option allows the permittee to meet the unmet portion of the retention requirements in the site performance standard with groundwater replenishment. This opens up yet another opportunity to identify a lower cost compliance approach. The mitigation option can be combined with the permittee's stormwater mitigation bank program. In this example, commercial systems designed to efficiently infiltrate and store underground large volumes of stormwater within a small footprint lend themselves to creating opportunities to supply stormwater volume credits within the permittee's jurisdiction. The opportunity to generate these credits by maximizing the stormwater retained on a site, in turn, creates an incentive for the permittee or developer to pursue groundwater replenishment projects. This requirement will also help support the permittee's efforts to implement a "one water" approach to municipal water management with its goal of integrating the management of stormwater, drinking water, and wastewater for not only cost efficiencies but better water resource management. For more information, DEQ recommends Water Environment Foundation's 2015 report, *Pathways to One Water – A Guide for Institutional Innovation*.

This permit condition also requires the permittee to review and approve site plans to verify proper implementation of post-construction site runoff plans for all new development and redevelopment projects, at a minimum, at sites that develop or replace impervious area exceeding the established impervious area threshold. Specific standards are a critical component of this program, but even the best local requirements must be supported by a review

component to ensure that the locally established performance standards are met. To comply with this requirement, the permittee must have the authority to deny projects when it determines that the controls at a specific site are not designed to meet the established standards.

DEQ expects that the permittee will establish submittal requirements for post-construction site runoff plans, and requirements for documentation of site-specific circumstances requiring deviation from adherence to the NSRR or alternative site retention standard, including a description of circumstances in which a written justification by an Oregon Registered Professional Engineer or Oregon Certified Engineering Geologist would be required for approval. Economic considerations alone are insufficient reason for allowing deviation from adherence to the retention and treatment standards. Providing clear submittal requirements for plans will also meet the education requirements for developers.

The permittee must ensure the long-term operation and maintenance of structural stormwater controls.³⁰ The permit requires the permittee to use a database type inventory to track and manage the operational condition of structural stormwater controls within its coverage area. This can take the form of a computerized maintenance management system or asset management system that allows for the electronic logging of operation and maintenance tasks. Ongoing maintenance is necessary to ensure that the BMPs will perform as designed over time, especially with LID/GI, as these often include landscaping work and maintenance of plant communities, which is not always well considered in engineering design and long-term cost estimations. Ongoing maintenance of existing stormwater management controls is a primary challenge for many local stormwater management programs across the country. This is why, for example, the permit includes a requirement to ensure that operation & maintenance procedures for controls that include soil must be designed to maintain permeability of those soils, though it does not require testing to verify. As with any infrastructure, deferred maintenance can increase costs and negatively affect receiving waters. Unmaintained BMPs will ultimately fail to perform their design functions, and can become a nuisance and/or pose safety problems. The permittee must track those permanent controls which are known to them, or for which they accept ownership, beginning no later than the permit effective date.

Each permittee employee or contractor involved in the program must be trained in their respective area of practice, e.g., site plan reviews, inspections, and O&M practices. More specialized training may be required for the permittee's employees and contractors that conduct reviews of plans or evaluate compliance with long-term operation and maintenance requirements. The permittee's training approach and frequencies must be described or referenced in the SWMP Document. DEQ recommends that training should be conducted for each type of participant at least once per permit term.

The program's progress must be tracked and documented. Each MS4 Annual Report should include a summary of activities involving Post-Construction Site Runoff Controls.

3.3.6 Condition A.3.f – Pollution Prevention and Good Housekeeping for Municipal Operations

Operation and maintenance of municipal facilities is an integral part of any SWMP, and, when coupled with good housekeeping and pollution prevention principles, reduces the risk of water quality problems from MS4 discharges. These provisions require the implementation of an operation and maintenance program that includes a staff training component, and articulates as its goal the prevention or reduction of pollutant runoff from municipal operations.

³⁰ See resources at <https://www.epa.gov/green-infrastructure/green-infrastructure-operations-and-maintenance> , and <https://www.epa.gov/npdes/stormwater-maintenance> ,

The permit requires the permittee to reduce the discharge of pollutants from permittee owned or operated streets, roads and highways and in the management of operating or closed municipal landfills or other treatment, storage or disposal facilities for municipal waste. In addition, controls for application of pesticides, herbicides and fertilizers in public rights-of-way and at permittee-owned facilities are required. DEQ encourages the adoption of Integrated Pest Management (IPM)³¹ approaches through policy or ordinance as well as SOPs for permittee staff and contractors.

These permit conditions clarify and expand the conditions under the pollution prevention for municipal operations program element relative to the previous permit, and include specific requirements intended to prevent or reduce pollutants from properties owned or operated by the permittee. The types of properties or facilities DEQ envisions to be included under this program include parks and open spaces, fleet and building maintenance facilities, transportation systems and fire-fighting training facilities for which the permittee has authority, as well as other facilities and activities as described in Schedule A.3.f.iv. The actions, activities and approaches related to this permit condition are important because the permittee has direct control of these types of operations, and the actions, activities and approaches may play a role as a broader example of the type of efforts that can be implemented.

Permit condition A.3.f.ii requires the permittee to establish a program for the systematic inspection, maintenance, and cleaning of the permittee's MS4, designed to maximize debris and pollutant removal, and verify proper operation of all its municipal structural treatment controls designed to reduce pollutants (including floatables) in stormwater discharges to or from its MS4s and related drainage structures. An Asset Management strategy that supports permittee-determined cleaning frequencies, based on our levels-of-service and other relevant factors, must be included or referenced in the SWMP. DEQ encourages the use of integrated asset management and field data collection software, such as GIS applications for use in phones that import field updates back to the permittee's database, for tracking and adaptive management purposes. Keeping accurate records of maintenance, cleaning, and inspection activities is a vital part of such a program, and many options exist to facilitate record keeping such as ESRI Collector, Survey123, and Explorer. Such recordkeeping allows for flexibility in adaptive management, such that the permittee may change the inspection process every year to complement or reflect the findings of the previous year's inspections. The permittee may establish an inspection prioritization system for catch basins and other structural MS4 elements, and establish alternate inspection frequency every year, provided the permittee describes all relevant factors it uses to target and prioritize its inspections to specific areas of its MS4 in the SWMP Document or another document cited/referenced therein. DEQ recognizes that it may not be feasible to inspect all catch basins in a system within the permit term, which is why the permit allows for the permittee to prioritize appropriate levels of service, which may be based on a multitude of factors (e.g., "hot spots," land use, equity metrics, age of infrastructure, etc.), so long as the permittee describes or includes by reference its rationale in the SWMP Document.

Schedule A.3.f.v requires controls for winter maintenance activities. As climate conditions continue to change, so must the approaches taken to ensure the safety and security of people and the environment. The permittee will

³¹ IPM is an ecosystem-based strategy that focuses on long-term prevention of pests or their damage through a combination of techniques such as biological control, habitat manipulation, modification of cultural practices, and use of resistant plant varieties. Pesticides are used only after monitoring indicates they are needed according to established guidelines, and treatments are made with the goal of removing only the target organism. Pest control materials are selected and applied in a manner that minimizes risks to human health, beneficial and non-target organisms, and the environment. IPM techniques could include biological controls (e.g., ladybugs and other natural enemies or predators); physical or mechanical controls (e.g., hand labor or mowing, caulking entry points to buildings); cultural controls (e.g., mulching, alternative plant type selection, and enhanced cleaning and containment of food sources in buildings); and reduced risk chemical controls (e.g., soaps or oils). For more information on IPM in Oregon, visit <https://agsci.oregonstate.edu/oipmc/resources>.

continue to implement a winter maintenance program to provide safe roadways for commuters. DEQ is establishing reporting requirements for winter maintenance material use and storage, as a way to begin to understand if, how and where they impact water resources in Oregon. The permittee must ensure that materials used for winter maintenance activities in municipal operations are stored and used appropriately, and develop a Winter Maintenance Strategy specifically for maintenance of roads and streets if one does not already exist.

DEQ recognizes that the use of de-icers and anti-icing materials is not restricted to municipalities, and that as with pesticides, private use of de-icing and anti-icing materials may outweigh the amounts used by the MS4 permittee. The goal of the winter maintenance condition in the permit is to document how the permittee uses and stores materials for winter management. As more information is available, DEQ will be able to analyze trends and impacts as it relates to road maintenance programs. DEQ will use that information to make future policy decisions about this activity and/or assess related impacts to surface waters.

This permit condition is not intended to conflict with other NPDES permit conditions or regulatory mechanisms. The permittee must implement the condition while still in accordance with the O&M Strategy for stormwater controls, described in Schedule A.3.e.v (Long Term Operations & Maintenance, in Post Construction) and other elements of this Pollution Prevention for Municipal Operations section.

This permit condition requires employees of the permittee to receive appropriate training, such that operation and maintenance activities are conducted properly and with attention to potential water quality impacts.

This permit condition requires the permittee to maintain records of their Pollution Prevention and Good Housekeeping for Municipal Operations programs and summarize activities in the MS4 Annual Report.

3.3.7 Condition A.3.g – Industrial and Commercial Facilities

Federal stormwater regulations envision states and municipal permittees cooperating in addressing pollutants in stormwater discharges to municipal storm sewers from industrial facilities.

Currently, Clean Water Services and the cities of Eugene and Portland, through an Inter-Governmental Agreement (IGA) with DEQ, act as DEQ's agents for 1200-Z NPDES industrial stormwater permits within their jurisdictions. The IGA outlines both DEQ's and the agent's responsibilities in carrying out permit administration and compliance, including a fee-sharing agreement. An Agents' major responsibilities typically include processing new industrial NPDES permit applications and making permit registration recommendations; reviewing stormwater discharge monitoring reports; reviewing action plans; inspecting sites; and being the first-responder for complaints and permit compliance.

For permittees that do not act as DEQ's agent, this permit condition requires the permittee to screen existing and new businesses, and notify the facility and DEQ when they identify businesses that may require NPDES industrial stormwater general permit coverage. Industrial activities that are subject to permitting requirements are determined by SIC codes listed in the federal regulations and by the location of the discharge. This requirement assists DEQ in identifying businesses that need NPDES permit coverage and will assist the permittee in evaluating industrial stormwater discharges within their jurisdictions. Copying DEQ on the correspondence with the business meets this requirement. A list of all businesses that were contacted during the prior year should be included in each annual report.

This condition also requires that priorities and procedures for inspection and implementation be established, and be described, referenced, or cited in the SWMP Document for industrial and commercial facilities where site-specific information has identified a discharge that contributes a significant pollutant load to the MS4. The terms

“significant pollutant load,” “pollutants of concern,” and significant pollutants” are intended to reflect the concerns identified in the permittee’s community. Although this condition does not specifically require the permittee to evaluate all commercial and industrial sources within their jurisdiction, DEQ anticipates the current IDDE program, monitoring, pollution prevention activities, and the evaluations required by this section will identify the appropriate commercial and industrial sources of pollutant load to the MS4 so that the permittee may focus their efforts where they’ll be most effective. Coordination of stormwater evaluation with other programs, such as a commercial/industrial pre-treatment program’s Industrial User Survey or business licensing questionnaire, is encouraged, but not required. The permittee is also encouraged to examine other DEQ resources for useful program elements they may choose to incorporate, including DEQ’s 1200-Z stormwater permit’s Stormwater Pollution Control Plan template and Check List, and the Industrial Stormwater BMP Manual³².

Included in this condition is an update to the Industrial/Commercial Facilities Strategy developed in the previous permit term, including development of an inventory of businesses with the potential to discharge a significant pollutant load to the MS4, inspection and enforcement requirements, and provision of education on stormwater management to inspected facilities as appropriate (e.g., as follow up to or part of an inspection, or as part of the public education and outreach program). DEQ anticipates this requirement will further strengthen and complement related stormwater management efforts, such as IDDE, education and outreach, operations and maintenance of structural controls, and/or the identification of priority retrofit approaches or areas.

This condition also requires training of staff, tracking of activities conducted to fulfill the requirements of this section, and a summary of the data collected to be included in the annual reporting.

3.3.8 Condition A.3.h – Infrastructure Retrofit and Hydromodification Assessment Update

The historic focus of stormwater management in urban areas in Oregon was generally related to drainage problems and flooding. As a result, water quality impacts caused by urbanization and the related stormwater quality management issues have increasingly been documented. Stormwater retrofits help improve water quality by providing stormwater treatment in locations where practices previously did not exist or were ineffective. DEQ acknowledges that it may take decades or longer to address the water quality impacts from existing infrastructure, and the application of strategies based on new research can speed progress.

Recent research, for example, has suggested that despite much lower impervious surface area, roads with a higher volume of traffic are more closely correlated than other land uses with higher pollutant loads and with Coho salmon mortality regardless of antecedent dry period duration, indicating that motor vehicles may be more of a pollutant source than impervious areas, and that Coho in more urbanized areas are more vulnerable to nonpoint source pollution irrespective of the timing, intensity, or frequency of storms³³. Other work found that although untreated highway runoff was often lethal to salmon and invertebrates, this lethality was eliminated when the runoff was filtered through soil media in bioretention columns³⁴. Findings like these may inform shifts in strategies and priorities for retrofits in the future, so it is important to re-evaluate retrofit and hydromodification strategies periodically, and to share with DEQ and the municipal stormwater community how priorities have

³² Available at <https://www.oregon.gov/deq/FilterPermitsDocs/1200zguide.pdf> and <https://www.oregon.gov/deq/FilterDocs/IndBMP021413.pdf>, respectively.

³³ Feist, B. E., Buhle, E. R., Baldwin, D. H., Spromberg, J. A., Damm, S. E., Davis, J. W., & Scholz, N. L. (2017). Roads to ruin: Conservation threats to a sentinel species across an urban gradient. *Ecological Applications*, 27(8), 2382–2396. <https://doi.org/10.1002/eap.1615>

³⁴ McIntyre, J. K., Davis, J. W., Hinman, C., Macneale, K. H., Anulacion, B. F., Scholz, N. L., & Stark, J. D. (2015). Soil bioretention protects juvenile salmon and their prey from the toxic impacts of urban stormwater runoff. *Chemosphere*, 132, 213–219. <https://doi.org/10.1016/j.chemosphere.2014.12.052>

already shifted to improve effectiveness.

In the most recent permit cycle, the permittee developed a retrofit strategy and a hydromodification assessment that evaluated their system and established priorities for progress toward improvements in water quality. This permit condition requires a status update on these efforts and an evaluation of any changes in priorities since initial development and implementation. DEQ expects that the permittee's efforts initiated in the previous permit term to assess, understand, and address hydromodification impacts and retrofit planning require an ongoing, systematic evaluation, modification, and implementation over multiple NPDES permit cycles, and the update is simply intended to reflect the current status. The information that is identified in the update report will be used in the development of requirements in subsequent permits.

3.3.9 Condition A.3.i – Summary of SWMP Document Requirements and Deadlines

DEQ has included a schedule summarizing the due dates for completion of new program element activities or tasks required in Schedule A or the submittal date for information or reports related to these activities or tasks. The deadlines reflect DEQ's consideration and analysis of the resources (personnel, financial, time) needed to complete each action or activity, the current status and future capacity of the local MS4 stormwater management programs, and DEQ's municipal stormwater program.

4.0 Schedule B — Monitoring and Reporting Requirements

4.1 Condition B.1 – Monitoring Program

This permit condition describes the Monitoring Objectives, as well as the requirements for the Monitoring Plan, for the Sampling & Analysis procedures, and for collaboration among permittees or where a third party is conducting monitoring for the permittee.

The results of the monitoring program are used to evaluate the effectiveness of the stormwater management program in reducing the discharge of pollutants to the maximum extent practicable. Although knowledge of stormwater management is continually increasing, significant knowledge gaps remain. In an ongoing effort to reduce the knowledge gaps as they relate to MS4 program management in Oregon, the requirements in Schedule B provide flexibility for implementing a monitoring program to improve adaptive program management while identifying an appropriate monitoring approach for gathering specific information about stormwater program effectiveness.

DEQ also considered the extensive resources necessary to conduct a monitoring program to produce quality data, and the importance of appropriately balancing the expenditure of limited program resources between implementation and verification of program effectiveness. DEQ expects a suitable level of environmental monitoring (i.e., field monitoring) be conducted, along with the identification and evaluation of supplemental data/information, in order to continue to build datasets and knowledge for the adaptive management of the stormwater programs.

This permit condition continues to require that the monitoring programs incorporate the listed monitoring objectives similar to the monitoring objectives listed in the existing permits. The monitoring objectives establish the foundation for a broad monitoring program intended to address complex issues related to stormwater management, including source evaluation, best management practice effectiveness, pollutant discharge characterization, and the related status and trends in water quality.

This permit condition also continues to require an appropriate level of environmental monitoring be conducted during the permit term to ensure ongoing collection of monitoring data to support effective stormwater management decision-making and the identification of water quality improvements. This monitoring will be used to inform future monitoring needs and requirements. DEQ acknowledges that urban stormwater runoff in Oregon has, in many ways, been adequately characterized, and that more emphasis is needed around BMP effectiveness. DEQ intends to foster an intentional, collaborative, and ongoing dialogue with MS4 entities over the course of the permit term with the intent to increase monitoring effectiveness and decrease costs.

The environmental monitoring requirements identified in Table 2 are based on the requirements of the previous permit term, with modifications accounting for changes since the previous permit's issuance in the body of knowledge about urban stormwater in Oregon, and reflect a commitment that the environmental monitoring activities will contribute to addressing select monitoring objectives. For example the pesticide parameters included in the monitoring requirements table reflect information gathered from multiple Oregon data sets and analysis of multiple sources, including the 2015 USGS Willamette Basin monitoring study, Oregon Pesticide Stewardship Partnership (PSP) program data, and MS4 and UIC permit-related pesticide monitoring data.³⁵ Decisions for pesticide inclusion were based on detected pesticide concentrations relative to EPA aquatic life benchmarks or Oregon water quality criteria, and pesticide detection frequency in urban watersheds. The use of a

³⁵ See resources at <https://www.oregon.gov/ODA/programs/Pesticides/Water/Pages/AboutWaterPesticides.aspx> and <https://pubs.usgs.gov/fs/2015/3020/pdf/fs2015-3020.pdf>

decision matrix developed by the Oregon inter-agency Water Quality Pesticide Team determined the top pesticides for inclusion by detection frequency and by concentration relative to a benchmark.

Table 2 also ensures that data collection for applicable 303(d) and TMDL pollutant parameters is continued, monitoring approaches and collection methods that will allow for appropriate statistical analysis are utilized, and data related to pesticides in urban stormwater is collected. Table 2 includes instream biological monitoring (e.g., macroinvertebrate survey) to provide a more comprehensive assessment of water quality.

The development and implementation of a comprehensive monitoring plan is required by this permit condition. The monitoring plan must be designed to guide the permittee in addressing the monitoring program objectives and serve as a key component in the adaptive management of the stormwater program. Addressing the monitoring objectives will typically require a different monitoring strategy or project design, and resource availability often limits the number of sample events, sample locations and pollutant parameters that can be reasonably and cost-effectively collected and analyzed during a permit term. The monitoring plan submitted previously may serve as an acting document until the requirements of Schedule B take full effect.

In the development of this condition, DEQ determined the permittee will need additional time immediately following permit issuance to incorporate the new monitoring requirements and added operational flexibility into the monitoring plan. The monitoring plan must be submitted to DEQ by November 1, 2022 for review, and DEQ expects that monitoring plans that incorporate the applicable monitoring plan requirements will be approved accordingly within 90 days. This permit condition outlines the specific information that must be included in the monitoring plan for each environmental monitoring project or task, including those necessitated by the requirements identified in Table 2. This permit condition generally requires documentation of the planning, implementation, and assessment procedures, including specific quality assurance and quality control activities, which are necessary to obtain the type and quality of environmental data and information needed for its intended use.

This permit condition specifically requires the identification of how each of the six monitoring objectives is addressed. For example, the permittee must document in the monitoring plan the sources of information and stormwater program best management practices or environmental monitoring projects or tasks that will be used to address the monitoring objectives. Modifications to the permittee's monitoring plan will still require the permittee to request and receive DEQ approval unless the specific conditions highlighted in this section are met. This permitting approach will result in more detailed monitoring plans, which will provide additional transparency into the collection, analysis, assessment, and use of monitoring data.

The sampling and analytical requirements presented in this permit condition establish the provisions for collection and analysis of environmental monitoring data to ensure appropriate data are available to support adaptive stormwater management. With DEQ approval, deviations from prescribed sampling and analysis procedures may also be permitted, as needed.

Although the permit allows in-stream monitoring during the dry season in western Oregon, which is useful for seasonal comparisons, this permit condition requires at least 50% of all instream monitoring will be conducted during the wet-season, when discharges from the MS4s are more prevalent. A minimum time period between in-stream monitoring events has also been established to address potential correlation in the monitoring data. The intent of this requirement is not to discourage continuous or frequent sampling, but to ensure that sampling events are spread out to represent varying conditions when sampling is less frequent. Similarly, the stormwater sampling requirements specify what conditions qualify as an acceptable storm event. Due to the cost associated with mobilizing for stormwater monitoring, and considering the type of rainfall events in western Oregon, DEQ is providing the permittee with flexibility to target a variety of rainfall events. The rainfall events that are targeted

should include those which may yield high pollutant loads/concentrations by representing a range in types of expected events based on factors such as rainfall intensity and duration, and antecedent dry period. DEQ will require the permittee to use the data submission template for all monitoring results for the permit term.

This permit condition also specifies the requirements that must be met for the permittee to use coordinated monitoring as a means to address their environmental monitoring requirements. The environmental monitoring requirements are identified in Table 2. In light of the fact that environmental monitoring data must be collected and analyzed in accordance with a monitoring plan that reflects the requirements in Schedule B.1.c, DEQ requires that an agreement is established prior to the coordinated environmental monitoring being conducted. DEQ does not, however, expect the agreement to be formal, such as a signed contract or intergovernmental agreement, as long as each party participating in the coordinated monitoring activity understands its roles and responsibilities, and the agreement is documented.

DEQ recognizes that scientific literature, EPA guidance, and trends in urban stormwater monitoring across the country continue to make the case that coordinated monitoring on larger, watershed scales is the most effective way to answer questions about the impacts of urban stormwater on receiving waters and anticipates that the requirements of Schedule B may need to change in future permit terms. DEQ anticipates convening discussions to consider regional monitoring program(s), and encourages MS4 co-/permittees to engage in larger coordinated efforts to conduct studies and share data with entities not subject to the permit, whether those entities have MS4 permits of their own or not. Such a regional program(s) would likely reduce costs and produce more actionable data to inform future permits.

4.2 Condition B.2, 3 – Compliance Evaluation and Annual Report

The permittee is required to submit an evaluation of their progress toward implementing the control measures of the SWMP Document and their conditions described in Schedule A, as well as any applicable Special Conditions described in Schedule D. This will be included in the Annual Report submitted to DEQ by November 1 each year, beginning in 2021, for the time period July 1 of the previous year through June 30 of the same year.

One printed copy and an electronic copy must be submitted to DEQ at the locations listed in the permit until DEQ requires the permittee to submit all of the elements electronically. This section lists the requirements for the contents of the annual report.

The annual reporting requirements are similar to the previous permit requirements and are largely derived from the federal stormwater regulations³⁶. This permit condition has been modified to add clarity and reflect updated permit language, such as reporting progress towards meeting measurable goals. The permit condition requires the annual report be made available electronically as part of the formal submittal to DEQ and on the permittee's website to further enhance the transparency of the stormwater programs. The annual reporting requirement also includes a summary of adaptive management implementation, both in terms of changes made to the SWMP Document or stormwater management programs within the reporting year, and reflecting on what the findings from the reporting year have shown about adaptive management modifications made in prior (recent) years.

³⁶ 40 CFR § 122.42(c)

4.3 Condition B.4 – MS4 Renewal Application Package

The permittee must submit a permit renewal application package no later than 180 days prior to the expiration date of this permit in order to continue permit coverage for MS4 stormwater discharges in the event the permit has not been renewed prior to expiration. This permit condition describes the information that must be provided in the renewal application. Renewal applications must contain any proposed modifications to the stormwater program, including proposed alterations to the SWMP Document. In the interest of transparency, the renewal application is an opportunity to solicit public input from the permittee's community, separate from the periodic updates to the SWMP Document between renewals that do not require public review. DEQ will evaluate the programs based upon the information submitted with the permit renewal application and all other relevant information, such as annual reports, Total Maximum Daily Load (TMDL) pollutant load reduction evaluation, applicable scientific studies, and federal requirements and guidance.

As in the previous permit, this condition includes a requirement for the permittee to provide DEQ with the information and analysis necessary to support DEQ's independent determination that the permittee's stormwater management program reduce pollutants in stormwater discharges to the MEP, including an evaluation of the management practices, control techniques and other provisions using three MEP general evaluation factors (i.e., effectiveness, local applicability, and program resources). Since each MS4 stormwater management program is unique in how they achieve the MEP standard, often employing different BMPs or emphasizing different program areas, this requirement calls for the use of a defined set of standardized and objective criteria for each of the three MEP evaluation factors. Using a permittee-defined set of objective criteria will ensure a consistent application and equitable assessment of the stormwater programs, and a reasonable certainty that the stormwater program is achieving the MEP standard. DEQ encourages the permittee to coordinate the identification and development of the objective criteria with other MS4 permittees, and involve DEQ early in the permit term to guarantee the appropriateness and usefulness of the objective criteria for DEQ's independent evaluation.

The MS4 permit renewal package must also include a proposed monitoring program objectives matrix with proposed changes to the monitoring plan. The monitoring objectives matrix and proposed changes to the monitoring plan should complement the long-term monitoring strategy identified in the existing monitoring plan, as required in the monitoring plan permit conditions, and should consider the type of additional environmental monitoring data that is needed in the implementation of the adaptive management process. DEQ anticipates rigorous engagement with the permittee and stakeholders during the permit term about monitoring approaches, pollutants of concern, a watershed-scale monitoring collaboration, or other factors that the permittee should consider when updating their monitoring objectives matrix and proposed changes to the monitoring plan. DEQ anticipates the proposal will be used in future development of the specific monitoring requirements.

4.4 Condition B.5 —Submissions

The permittee will submit their MS4 Annual Reports and renewal application in both hard copy with a wet signature, and electronic copy. Once the permittee receives instructions to submit electronically they will not be required to submit a hard copy, but may be required to adjust the format at a later date. The current address to submit the MS4 Annual Reports and related submittals is provided in the permit.

4.5 Condition B.6 —Recordkeeping

This section describes the permittee's responsibility to retain information regarding this permit. Records must be retained for a period of at least five years from the permit compliance action date, or for the term of the permit, whichever is longer. The permittee must have these records made available to DEQ and the public.

5.0 Schedule C – Compliance Schedule

A compliance schedule was not specified for this permit.

6.0 Schedule D – Special Conditions

6.1 Condition D.1 – Legal Authority

The language in this condition requires the permittee to maintain adequate legal authority to implement and enforce the provisions of the permit. DEQ considers the general permit language adequate to reflect the complexity of this fourth-generation permit and captures the objective of this condition.

6.2 303(d) Listed Pollutants

This permit condition requires the permittee to evaluate 303(d) listed pollutants for those waterbodies for which TMDLs have not yet been approved by USEPA and to which the MS4 discharges. The requirements of this condition are similar to the existing permit requirements, and include an evaluation to determine the likelihood that discharges from the MS4 cause or contribute to the water quality degradation, an assessment of the effectiveness of the permittee's BMPs in addressing and reducing the applicable 303(d) listed pollutants, and an identification of SWMP revisions that may be necessary to address and reduce the 303(d) pollutants to the MEP.

If the permittee or DEQ identifies that stormwater discharges from the MS4 continue to cause or contribute to water quality degradation based on the updated evaluation required by this condition, the permittee must review existing BMPs or identify new BMPs effective in reducing the discharge of the identified pollutants to the maximum extent practicable, and make appropriate changes to their stormwater management program and/or SWMP. This condition ensures that MS4s will consider and undertake actions to address pollutants of concern in the short term for those waterbodies that are water quality limited, as required by an adaptive management approach.

DEQ expects that many of the modifications the permittee make to their stormwater management programs and SWMP Documents to address the 303(d) pollutants may be similar to modifications made in response to the TMDL conditions of this permit. Where applicable, DEQ anticipates the permittee may be "credited" for the reductions of 303(d) pollutants for new or modified BMPs implemented between the approval date of new TMDLs and the incorporation of new TMDL pollutant reduction permit requirements if the permittee identifies a 303(d) pollutant loading baseline and completes a pollutant load reduction estimate representing the new or modified BMPs that have been implemented. In this instance, the TMDL benchmarks established in the following permit cycle will reflect the reductions made in previous years.

6.3 Condition D.3 – Total Maximum Daily Loads

A Total Maximum Daily Load is used to calculate the amount of pollutant that a waterbody can receive and still meet the applicable water quality standard. This is referred to as the "loading" or "assimilative capacity" of the waterbody. The TMDL pollutant load includes point sources, non-point sources, background sources, and a margin of safety.

Wasteload allocations are portions of the TMDL pollutant load that are allocated to point sources including municipal stormwater discharges. Federal regulations require qualified municipalities, such as cities, counties, and special districts, to obtain NPDES permit coverage for their stormwater discharges. The NPDES MS4 permits serve as the mechanism to address TMDL WLAs for municipal stormwater.

DEQ has determined that implementation of the permit conditions, BMPs identified in the SWMP Document, and the adaptive management process will meet TMDL WLAs for municipal stormwater. The permittee will

likely need to begin a comprehensive program evaluation to address specific pollutants or pollutant sources identified in applicable TMDLs and develop appropriate revisions to the stormwater management programs several years in advance of permit expiration.

As with the previous iteration of the permit, DEQ has determined that permit conditions with both numeric and narrative criteria continue to be the appropriate approach for addressing TMDL WLAs in the MS4 permits at this time.

This permit condition also applies to receiving waters to which a jurisdiction discharges where TMDLs have been approved by USEPA at the time of permit issuance, or within three years of the date of issuance of this permit. If a new or modified TMDL is approved after the beginning of the fourth year of this permit cycle, the subsequent permit will include specific requirements to address the TMDL WLAs. In addition, it is important to note that TMDLs currently are issued as Department orders. Should DEQ determine that other implementation requirements or time frames are appropriate and incorporated into the TMDL, this permit may be subsequently re-opened during the permit cycle.

Applicable TMDLs for the permittee include those developed for the Middle Willamette (2006) and Molalla-Pudding (2008) Sub-basins, as well as the Willamette River Mercury TMDL (2019), which is addressed individually in this permit condition. The pollutants identified with a wasteload allocation for the permittee are mercury, iron, pesticides (with TSS as a surrogate) and bacteria.

This permit condition also repeats the requirements from the last permit term for reporting on TMDL Pollutant Load Reduction Evaluation and TMDL Benchmarks. In the previous permit term, the permittee developed reasonable estimates of the number, type, pollutant load reduction, and associated cost information related to the BMPs identified by the permittee as part of the wasteload allocation attainment assessment (WLAAA). DEQ anticipates that this WLAAA from the previous permit term will continue to inform the permittee's program in terms of choices of retrofit projects and percent of additional effective impervious area to be removed or receiving treatment by structural stormwater controls, pollutant reduction models, and GIS analysis. For this reason, DEQ did not determine that a repeat of the WLAAA exercise was necessary for this permit term. However, given known and likely changes in socio-economic, technological, and environmental factors, such an analysis may be required again in a future permit term.

The TMDL pollutant load reduction evaluation must be conducted at least once during the permit term, and submitted with the permit renewal application package. The evaluation must be based on an empirical pollutant load reduction model, water quality status and trends analysis, and other applicable and acceptable quantitative and qualitative assessment approaches. The evaluation should reasonably estimate and reflect the land use, stormwater runoff, pollutant loading, and effectiveness of stormwater control measures implemented at the time when the evaluation is conducted.

The TMDL pollutant load reduction evaluation must incorporate an estimate of the load reduction achieved through the implementation of structural stormwater control measures (e.g., vegetative filter swale, rain garden), and an estimation or consideration of non-structural BMPs (e.g., education and outreach). The pollutant reduction model used by the permittee to estimate pollutant load reductions must reflect generally accepted scientific modeling practices and approaches (e.g., Simple Method, Stormwater Management Model 'SWMM'). The methodology and rationale for the model must be described in the evaluation report, including any data or model limitations, data input assumptions, the estimated effectiveness of structural BMPs, and the estimation or consideration of non-structural BMPs. The permittee may incorporate pollutant reduction credit for any structural BMPs in this evaluation if operation and maintenance of the structural BMP is covered by their structural stormwater control operation and maintenance programs as required in Schedule A.3.e.v (Long Term Operation &

Maintenance, Post-Construction) and A.3.f (Pollution Prevention & Good Housekeeping for Municipal Operations).

The TMDL pollutant load reduction evaluation must also incorporate the results of a water quality trends analysis and summarize the relationship of this analysis and municipal stormwater discharges. The water quality trends analysis must be completed for each waterbody for which sufficient data have been collected. The waterbodies must reflect a reasonable representation of all of the waterbodies the permittee discharges to with applicable TMDLs, and include a consideration of the resources that are required to collect adequate monitoring data to complete a water quality statistical trends analysis.

Finally, as part of the TMDL pollutant load reduction evaluation, the permittee is required to provide a narrative summarizing progress towards applicable WLAs and TMDL benchmark(s). If the permittee estimates that TMDL WLAs are currently achieved with existing BMP implementation, a statement supporting this conclusion must be provided as well.

DEQ will evaluate the TMDL pollutant load reduction evaluation, and the conclusions therein whether the TMDL WLAs have been achieved based on the submitted information and implementation of existing BMPs. If the TMDL WLAs are met for certain parameters, the permittee does not need to set pollutant load reduction benchmarks for those parameters for the next permit cycle, though the TMDL remains active and BMPs that contributed to such success should be maintained. DEQ anticipates it will notify the permittee within 90 days of receiving the TMDL pollutant load reduction evaluation whether DEQ concurs with the permittee's conclusion that the existing BMP implementation achieves the applicable TMDL WLAs.

If the TMDL pollutant load reduction evaluation demonstrates that TMDL WLAs are not met for certain parameters, the permittee must develop pollutant load reduction benchmarks for those parameters as part of the permit renewal submittal. The benchmarks should reflect structural and, where effectiveness information is available, non-structural controls implemented as part of the permittee's current stormwater management program, as well as any additional reductions expected to result from BMPs proposed for the five-year permit term.

The TMDL benchmarks are not numeric effluent limits, and DEQ expects the TMDL benchmarks to be permit-cycle (i.e., 5-year) targets used to assess progress towards meeting the WLA. DEQ anticipates the MS4 permittee will continue to iteratively manage their MS4 stormwater program to reduce pollutants, and identify the TMDL benchmarks accordingly.

6.4 Condition D.4 – Definitions

The definitions provided in this permit condition provide additional clarification related to MS4- related terms, and generally reflect definitions in the Clean Water Act, Oregon Administrative Rules or based upon EPA and DEQ program language that describe municipal stormwater concepts.

7.0 Schedule F – Standard Conditions

The general conditions that are applicable to all NPDES permits are included in this section. They address operation and maintenance, monitoring and record-keeping, and reporting requirements. DEQ recognizes that some of these conditions do not readily apply to municipal stormwater discharges. However, the stormwater permits are NPDES permits, and these conditions are required for all such permits. Where a conflict exists, the general conditions included in this section are superseded by the conditions in Schedules A and D.