

Permit Number: WAR043000A

Issuance Date: March 6, 2019

Effective Date: April 5, 2019

Expiration Date: April 5, 2024

**Washington State Department of Transportation
National Pollutant Discharge Elimination System and
State Waste Discharge Municipal Stormwater
General Permit**

**State of Washington
Department of Ecology**

Olympia, Washington 98504-7600

In compliance with the provisions of
The State of Washington Water Pollution Control Law Chapter 90.48 Revised Code of
Washington
and

The Federal Water Pollution Control Act (The Clean Water Act)

Title 33 United States Code, Section 1251 et seq.

Until this permit expires, is modified, or revoked, Permittee is authorized to discharge to waters of the state in accordance with the special and general conditions which follow.



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Water Quality Program Manager
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SPECIAL CONDITIONS

S1. PERMITEE AND PERMIT COVERAGE

A. PERMITEE

This permit regulates stormwater discharges from state highways and related facilities contributing to discharges from separate storm sewers owned or operated by the Washington State Department of Transportation (WSDOT).

B. PERMIT COVERAGE AREA

1. This permit covers stormwater discharges from municipal separate storm sewer systems (MS4s) owned or operated by WSDOT in areas covered by the 2019 Phase I Municipal Stormwater Permit, the 2019 Eastern Washington Phase II Municipal Stormwater Permit, and the 2019 Western Washington Phase II Municipal Stormwater Permit (2019 Permits) on the date the 2019 Permits are effective. Prior to the effective dates of 2019 Permits, the coverage areas are the same as in WSDOT 2014 permit. Discharges covered include those from WSDOT’s highways, ferry terminals, rest areas, park and ride lots, maintenance facilities, vector decant and street sweepings facilities, and winter chemical storage facilities when the discharges are conveyed through a municipal separate storm sewer system (MS4) owned or operated by WSDOT. Coverage excludes areas of Indian Country as stated in S2.E.
2. This permit covers stormwater discharges from MS4s owned or operated by WSDOT to any water body in Washington State for which there is a U.S. Environmental Protection Agency (EPA) approved Total Maximum Daily Load (TMDL) with wasteload allocations and associated implementation documents specifying actions for WSDOT stormwater discharges. For TMDL areas that are not within the areas described in S1.B.1 above WSDOT shall be responsible for the TMDL implementation actions found in Appendix 3.

S2. AUTHORIZED DISCHARGES

- A. This permit authorizes the discharge of stormwater to surface waters and to ground waters of the state from MS4s owned or operated by WSDOT in the geographic area covered by this permit pursuant to S1.B. subject to the following limitations:
 1. Discharges to ground waters of the state through facilities regulated under the Underground Injection Control (UIC) program, chapter 173-218 Washington Administrative Code (WAC), are not authorized under this permit.
 2. Discharges to ground waters not subject to regulation under the federal Clean Water Act are authorized in this permit only under state authorities, chapter 90.48 Revised Code of Washington (RCW), Washington’s Water Pollution Control Act.
- B. This permit authorizes discharges of non-stormwater flows to surface waters and ground waters of the state from MS4s owned or operated by WSDOT in the

geographic area covered pursuant to S1.B. only under one or more of the following conditions:

1. The discharge is authorized by a separate NPDES permit or State Waste Discharge permit.
2. The discharge is from emergency firefighting activities.
3. The discharge is from another illicit or non-stormwater discharge that is managed by WSDOT as provided in the following sections S2.B.3.a or S2.B.3.b.
 - a. Allowable Discharges - The following categories of non-stormwater discharges does not need to be prohibited:
 - i. Diverted stream flow
 - ii. Rising ground water
 - iii. Uncontaminated ground water infiltration (as defined at 40 CFR 35.2005(b)(20))
 - iv. Uncontaminated pumped ground water
 - v. Foundation drains
 - vi. Air conditioning condensation
 - vii. Irrigation return flow
 - viii. Springs
 - ix. Uncontaminated water from crawl space pumps
 - x. Footing drains
 - xi. Flows from riparian habitats and wetlands
 - b. Conditionally Allowable Discharges - The following non-stormwater discharges are conditionally allowed if the stated conditions are met, unless WSDOT identifies them as a significant contributor of pollutants to the MS4:
 - i. Discharges from potable water sources, including water line flushing, hyperchlorinated water line flushing, fire hydrant system flushing, and pipeline hydrostatic test water. Planned discharges to a conveyance system or surface water will be de-chlorinated to a total residual chlorine concentration of 0.1 ppm or less, pH-adjusted, if necessary, and volumetrically and velocity controlled to prevent re-suspension of sediments in the MS4.
 - ii. Discharges from lawn watering and other irrigation runoff. WSDOT shall minimize these discharges through, at a minimum, education activities for WSDOT maintenance staff and water conservation efforts.
 - iii. Street and sidewalk wash water, water used to control dust, and routine external building wash-down that does not use detergents. WSDOT shall reduce these discharges through, at a minimum, education activities and/or water conservation efforts. To avoid washing pollutants into the

MS4, WSDOT must minimize the amount of street wash and dust control water used.

- iv. Other non-stormwater discharges. The discharges must comply with the requirements of a stormwater pollution prevention plan, reviewed by WSDOT, which addresses control of such discharges.

These discharges are also subject to the limitations in S2.A.1 and 2 above.

- C. This permit does not relieve WSDOT from responsibilities and liabilities under state and federal laws and regulations pertaining to illicit discharges, including spills of oil or hazardous substances.
- D. Discharges from MS4s constructed after the effective date of this permit shall receive all applicable state and local permits and use authorizations, including compliance with chapter 43.21C RCW (the State Environmental Policy Act).
- E. This permit does not authorize discharges of stormwater to waters within Indian Country as defined in 18 U.S.C. §1151, except portions of the Puyallup Reservation as noted below.

Indian Country includes:

- All land within any Indian Reservation notwithstanding the issuance of any patent, and, including rights-of-way running through the reservation. This includes all federal, tribal, and Indian and non-Indian privately owned land within the reservation.
- All off-reservation Indian allotments, the Indian titles to which have not been extinguished, including rights-of-way running through the same.
- All off-reservation federal trust lands held for Native American Tribes.

Puyallup Exception: Following the Puyallup Tribes of Indians Land Settlement Act of 1989, 25 U.S.C. §1773; the permit applies to land within Puyallup Reservation except for discharges to surface water on land held in trust by the federal government.

S3. RESPONSIBILITIES OF PERMITTEE

- A. WSDOT shall comply with all of the conditions of this permit for the regulated MS4s it owns or operates within the geographic area covered pursuant to S1.B.
- B. WSDOT may rely on another entity to satisfy one or more of the requirements of this permit, if the other entity implements the permit conditions and agrees to implement the permit conditions on WSDOT's behalf. If WSDOT relies on another entity to satisfy one or more of its permit obligations, WSDOT remains responsible for permit compliance if the other entity fails to implement the permit conditions.

Where permit responsibilities are shared:

- 1. WSDOT shall submit, upon Ecology's request, shared responsibilities statement(s) to Ecology that describes the permit requirements that will be implemented by other entities. All participating entities shall sign the statement.

2. WSDOT may amend its shared responsibilities statement(s) during the term of the permit to establish, terminate, or amend shared responsibilities. Upon Ecology's request, WSDOT shall submit the amended statement(s) to Ecology.
- C. Unless otherwise noted, all appendices to this permit are incorporated by this reference as if set forth fully within this permit.

S4. COMPLIANCE WITH STANDARDS

- A. In accordance with chapter 90.48.520 RCW, the discharge of toxicants to waters of the state of Washington which would violate any water quality standard, including toxicant standards, sediment criteria, and dilution zone criteria is prohibited. The required response to such discharges is defined below in Section S4.F.
- B. This permit does not authorize a discharge which would be a violation of Washington State surface water quality standards (chapter 173-201A WAC), ground water quality standards (chapter 173-200 WAC), sediment management standards (chapter 173-204 WAC), or human health-based criteria in the national Toxics Rule (Federal Register, Vol. 57, No. 246, Dec. 22, 1992, pages 60848-60923). The required response to such discharges is defined in Section S4.F below.
- C. WSDOT shall reduce the discharge of pollutants to the maximum extent practicable (MEP).
- D. WSDOT shall use all known, available, and reasonable methods of prevention, control and treatment (AKART) to prevent and control pollution of waters of the State of Washington.
- E. WSDOT shall comply with all of the applicable requirements of this permit as defined in Section S3, Responsibilities of Permittee in order to meet the goals of the Clean Water Act, and comply with S4.A through S4.D.
- F. WSDOT remains in compliance with S4 despite any discharges prohibited by S4.A or S4.B when WSDOT undertakes the following response toward long-term water quality improvements.
 1. WSDOT shall notify Ecology in writing within 30 days of becoming aware, based on credible site-specific information that a discharge from the MS4 owned or operated by WSDOT is causing or contributing to a known or likely violation of Water Quality Standards in the receiving water. Written notification provided under this subsection shall, at a minimum, identify the source of the site-specific information, describe the nature and extent of the known or likely violation in the receiving water and explain the reasons why the MS4 discharge is believed to be causing or contributing to the problem. For ongoing or continuing violations, a single written notification to Ecology will fulfill this requirement.
 2. In the event that Ecology determines, based on a notification provided under S4.F.1 or through any other means, that a discharge from an MS4 owned or operated by WSDOT is causing or contributing to a violation of water quality standards in a receiving water, Ecology will notify WSDOT in writing that an adaptive management response outlined in S4.F.3 below is required, unless:

- a. Ecology also determines that the violation of Water Quality Standards is already being addressed by a TMDL or other enforceable water quality cleanup plan; or
 - b. Ecology concludes the MS4 contribution to the violation will be eliminated through implementation of other permit requirements.
3. Adaptive Management Response.
- a. WSDOT shall review its Stormwater Management Program and submit a report to Ecology within 60 days of receiving the notification under S4.F.2, or by an alternative date established by Ecology. The report shall include:
 - i. A description of the operational and/or structural Best Management Practices (BMPs) that are currently being implemented to prevent or reduce any pollutants that are causing or contributing to the violation of Water Quality Standards and a qualitative assessment of the effectiveness of each BMP.
 - ii. A description of potential additional operational and/or structural BMPs that will or may be implemented in order to apply AKART on a site-specific basis to prevent or reduce any pollutants that are causing or contributing to the violation of Water Quality Standards.
 - iii. A description of the potential monitoring or other assessment and evaluation efforts that will or may be implemented to monitor, assess, or evaluate the effectiveness of the additional BMPs.
 - iv. A schedule for implementing the additional BMPs including, as appropriate: funding, training, purchasing, construction, monitoring, and other assessment and evaluation components of implementation.
 - b. Ecology will, in writing, acknowledge receipt of the report within a reasonable time and notify WSDOT when it expects to complete its review of the report. Ecology will either approve the additional BMPs and implementation schedule or require WSDOT to modify the report as needed to meet AKART on a site-specific basis. If modifications are required, Ecology will specify a reasonable time frame in which WSDOT shall submit and Ecology will review the revised report.
 - c. WSDOT shall implement the additional BMPs, pursuant to the schedule approved by Ecology, beginning immediately upon receipt of written notification of approval.
 - d. WSDOT shall include with each subsequent annual report a summary of the status of implementation, and the results of any monitoring, assessment or evaluation efforts conducted during the reporting period. If, based on the information provided under this subsection, Ecology determines that modification of the BMPs or implementation schedule is necessary to meet AKART on a site-specific basis, WSDOT shall make such modifications as Ecology directs. In the event there are on-going violations of water quality standards despite the implementation of the BMP approach of this section, WSDOT may be subject to compliance schedules to eliminate the violation under chapter 173-201A-510(4) WAC and chapter 173-226-180 WAC or other enforcement orders as Ecology deems appropriate during the term of this permit.

- e. A TMDL or other enforceable water quality cleanup plan that has been approved and is being implemented to address WSDOT MS4's contribution to the Water Quality Standards violation supersedes and terminates the S4.F.3 implementation plan.
 - f. Provided WSDOT is implementing the approved adaptive management response under this section, WSDOT remains in compliance with Condition S4, despite any on-going violations of Water Quality Standards identified under S4.A or B above.
 - g. Whether the process in Section S4.F provides WSDOT a shield from liability under 42 U.S.C. 9601 et seq. or chapter 70.105D RCW is a matter of state and federal law which Ecology does not intend to alter. The adaptive management process provided under section S4.F is not intended to create a shield for WSDOT from any liability it may face under 42 U.S.C. 9601 et seq. or chapter 70.105D RCW.
- G. Ecology may modify or revoke and reissue this General Permit in accordance with G14 *General Permit Modification and Revocation*, if Ecology becomes aware of additional control measures, management practices or other actions beyond that required in this permit, that are necessary to:
- 1. Reduce the discharge of pollutants to the MEP.
 - 2. Comply with Washington State AKART requirements.
 - 3. Control the discharge of toxicants to waters of Washington State.

S5. STORMWATER MANAGEMENT PROGRAM

- A. WSDOT shall implement a Stormwater Management Program (SWMP) during the term of this permit. A SWMP is a documented set of actions and activities comprising the components listed in S5.
- 1. WSDOT shall organize their SWMP according to the program components and requirements listed in S5.C and shall update it at least annually for submittal with the annual report to Ecology.
 - a. The SWMP shall be designed to:
 - i. Reduce the discharge of pollutants from all municipal MS4s and other conveyances owned or operated by WSDOT covered under this permit to the maximum extent practicable (MEP) and meet state AKART requirements.
 - ii. Protect water quality and beneficial uses of waters of the State from impacts which cause or contribute to loss or impairment.
 - iii. Satisfy appropriate requirements of the Clean Water Act (CWA).
 - iv. Describe how WSDOT implements the program components and requirements listed in S5 Stormwater Management Program, S6 Compliance with TMDL Requirements, and S7 Monitoring.

2. WSDOT shall request adequate resources to maintain compliance with this permit and implement its SWMP in its proposed budget submittals to the Governor's Office. WSDOT shall track the estimated cost of permit implementation. This information shall be provided to Ecology upon request.
- B. WSDOT shall continue implementation of its existing (2014) SWMP until they begin implementation of the updated SWMP in accordance with terms of this permit, including implementation schedules.
- C. The SWMP shall include the components listed below.

1. Legal Authority

- a. Within the limitations of state law and federal law, WSDOT shall demonstrate that they can operate pursuant to legal authority which authorizes or enables WSDOT to control discharges to and from MS4s owned or operated by WSDOT. This legal authority may be a combination of statutes, ordinances, permits, contracts, orders, interagency agreements, or similar instruments.

2. Coordination

The SWMP shall include coordination mechanisms among departments within WSDOT to eliminate barriers to compliance with the terms of this permit.

The SWMP shall also include coordination mechanisms among entities covered under a municipal stormwater NPDES permit to encourage coordinated stormwater-related policies, programs, and projects within a watershed.

3. MS4 Asset Mapping

The SWMP shall include an ongoing program for mapping WSDOT's MS4 assets.

- a. WSDOT shall maintain mapping data for the features listed below.
 - i. Newly constructed, modified, and identified outfalls, discharge points, and stormwater treatment/control facilities (including UIC facilities).
 - ii. Connection points between MS4s owned or operated by WSDOT and other public entities (outside city limits for managed access highways).
 - iii. Associated drainage features conveying highway runoff to WSDOT outfall and discharge point locations.
- b. Meet the pace of 79.5 centerline miles per year of complete conveyance mapping until all WSDOT owned or operated highways within areas described in S1.B are mapped.
- c. No later than three years from the effective date of this permit, WSDOT shall develop a process and an implementation plan to map drainage areas associated with known WSDOT owned or operated stormwater outfalls and discharge points within areas described in S1.B.
- d. The required format for mapping is electronic with fully described mapping standards.

- e. To the extent consistent with national security laws and directives, WSDOT shall make available to Ecology, upon request, maps depicting the information required in S5.C.3a., b., and c., above.
 - f. WSDOT shall provide mapping information to municipal stormwater permittees and federally recognized Indian Tribes upon request. This permit does not preclude WSDOT from recovering reasonable costs associated with fulfilling mapping information requests from municipal stormwater permittees and federally recognized Indian Tribes.
4. Traffic Collision Related Spills, Illicit Discharges, and Illicit Connections
- a. The SWMP shall include a program to ensure consistent, timely notification and response to traffic collision related spills.
 - i. This program shall include:
 - (1) Procedures for coordination between WSDOT, Washington State Patrol (WSP), Ecology, local jurisdictions, and first responders.
 - (2) Utilization of Ecology's spill tracking information to assist in the identification of high-risk spill locations on state routes.
 - b. The SWMP shall include a program designed to identify and eliminate illicit discharges and illicit connections (ID/IC) to WSDOT's MS4.
 - ii. This program shall include procedures for identifying, reporting, and correcting or removing illicit connections and illicit discharges when they are suspected or identified. The program shall also include procedures for addressing pollutants entering the MS4 from an interconnected, adjoining MS4.
 - c. Compliance with the provisions in S5.C.4.a, and b, above, shall be achieved by meeting the following timelines:
 - i. Immediately take appropriate action for all illicit discharges, including spills, which could constitute a threat to human health, welfare, or the environment consistent with General Condition G3.
 - ii. Initiate an investigation (or refer to the appropriate agency with authority to act) within 7 days, on average, any complaints, reports or monitoring information that indicates a potential illicit discharge.
 - iii. Initiate an investigation within 21 days of any report or discovery of a suspected illicit connection to determine whether it is illicit.
 - iv. Upon confirmation of an illicit connection, use enforcement authority in a documented effort to eliminate the illicit connection within 6 months. All known illicit connections to the MS4 shall be eliminated.
 - d. WSDOT shall maintain records of the activities to meet the requirements of this section including tracking traffic collision related spills, illicit discharges, and illicit connections that were found by, reported to, or investigated by WSDOT. The data shall include the information specified in

Appendix 2 and WQWebIDDE. WSDOT may either use its own system or WQWebIDDE for recording this data. Final submittal shall be compatible with and follow the format and data schema described in Appendix 2 and WQWebIDDE.

- e. WSDOT shall provide required training pursuant to S5.C.8.b.i.
 - f. WSDOT shall include reporting hotline telephone numbers on its internet site to facilitate public reporting of spills and other illicit discharges.
5. Controlling Runoff from New Development, Redevelopment, and Construction Sites

The SWMP shall include a program to prevent and control the impacts of runoff from new development, redevelopment, and construction activities.

- a. WSDOT shall apply the minimum requirements, thresholds, adjustments, and definitions in the Washington State Highway Runoff Manual (HRM) as specified in Appendix 1 to the planning and design of stormwater management facilities and best management practices for construction activities and new and existing Washington State highways, rest areas, park and ride lots, ferry terminals, and highway maintenance facilities
- b. WSDOT shall apply the technical standards including the minimum requirements, thresholds, adjustments, and definitions in the HRM or an Ecology approved alternative approach demonstrating compliance with Washington State Water Quality Standards on a site and project specific basis for the planning, design, and operation and maintenance of stormwater facilities within areas described in S1.B. One year from the effective date of this permit (i.e., April 5, 2019), projects going to advertisement (AD) shall comply with the 2019 HRM except as follows:
 - i. Projects requiring an individual Section 401 Water Quality Certification may be subject to additional stormwater requirements if, based on site specific information, the use of the 2019 HRM will not result in compliance with State Water Quality Standards.
 - ii. Projects receiving Design Approval before July 1, 2019 may use the 2014 HRM on the condition that the projects go to AD by June 30, 2022.
- c. WSDOT shall provide required training pursuant to S5.C.8.b.ii.
- d. The program shall include procedures designed to control erosion and prevent sediment and other pollutants associated with construction activity from impacting water quality.
 - i. WSDOT shall provide required training pursuant to S5.C.8.b.iii.
- e. WSDOT shall perform statewide erosion control fall assessments for all active construction projects with moderate to high-risk of erosion. Performance measurements include:
 - i. Thoroughness of original erosion control plans
 - ii. Implementation of the erosion control plan elements

iii. Responsiveness to changing field conditions

6. Stormwater Retrofit for Existing Highways

The SWMP shall include a program to retrofit existing highways lacking stormwater treatment or flow control, or for which treatment or flow control is not to current standards as specified in the Highway Runoff Manual.

- a. WSDOT shall maintain a list of highway segments prioritized for stormwater retrofits.
- b. WSDOT shall retrofit (i.e. provide stormwater treatment or flow control to) existing highways if a project triggers runoff treatment or flow control requirements as defined in the HRM.
- c. For projects located within the Puget Sound Basin that trigger runoff treatment or flow control requirements as defined in the HRM, WSDOT shall either:
 - i. Retrofit, at a minimum, the amount of existing impervious surface and existing pollutant generating impervious surface within the project limits that equates to 20% of the cost to meet stormwater requirements for the new impervious surfaces and new pollutant generating impervious surface (i.e., 20% cost obligation);
 - ii. Transfer an amount of money equal to the 20% cost obligation to fund stand-alone stormwater retrofit projects within the Puget Sound Basin; however, projects with high priority retrofit areas falling within their project boundaries cannot use this option; OR
 - iii. Meet the 20% cost obligation within the project site to the extent feasible and transfer funds equivalent to the unmet balance to fund stand-alone stormwater retrofit projects within the Puget Sound Basin.
- d. WSDOT shall track the number of stand-alone stormwater retrofits completed as well as acres of existing impervious surface retrofitted or reverted to pervious surface through the stormwater retrofit program. WSDOT shall also track the amount of funds transferred to fund stand-alone stormwater retrofit projects within the Puget Sound Basin pursuant to S5.C.6.c.ii.

7. Maintenance

WSDOT shall implement a program to regulate and conduct maintenance activities to prevent or reduce stormwater impacts.

- a. Maintenance Standards. WSDOT shall implement maintenance standards in accordance with the 2019 HRM. For facilities which do not have maintenance standards, WSDOT shall develop a maintenance standard. The purpose of the maintenance standard is to determine if maintenance is required. The maintenance standard is not a measure of the facility's required condition at all times between inspections. Exceeding the maintenance standard between inspections and/or maintenance is not a permit violation.
- b. Maintenance of stormwater treatment and flow control BMPs:

- i. WSDOT shall implement a program to annually inspect all permanent stormwater treatment and flow control BMPs/facilities owned or operated by WSDOT within areas described in S1.B.

WSDOT may reduce the inspection frequency based on maintenance records of double the length of time of the proposed inspection frequency. In the absence of maintenance records, WSDOT may substitute written statements to document a specific less frequent inspection schedule. Written statements shall be based on actual inspection and maintenance experience and shall be certified in accordance with G19 Certification and Signature.

- ii. Compliance with the inspection requirements of S5.8.b.i shall be determined by the presence of an established inspection program designed to inspect all sites and achieving an annual rate of at least 95% of planned inspections.
- iii. Unless there are circumstances beyond WSDOT's control, when an inspection identifies an exceedance of the maintenance standard, maintenance shall be performed:
 - (1) Within 1 year for typical maintenance of facilities and
 - (2) Within 2 years for BMPs requiring non-typical maintenance amounting to less than \$25,000.
 - (3) WSDOT shall prioritize repairs to BMPs amounting to more than \$25,000 as well as building access roads to stormwater BMPs that were built without access roads and address them as funding becomes available.

Circumstances beyond WSDOT's control include denial or delay of access by property owners, denial or delay of necessary permit approvals, and unexpected reallocations of maintenance staff to perform emergency work. In the event of an exceedance, WSDOT shall document the circumstances and how they were beyond WSDOT's control.

- c. Maintenance of catch basins and inlets:

- i. WSDOT shall implement a program to annually inspect catch basins owned or operated by WSDOT within areas described in S1.B and clean catch basins where cleaning is needed, or implement an alternative below.

Alternatives to the standard approach of inspecting catch basins annually and cleaning only catch basins where cleaning is needed: WSDOT may apply the following alternatives to all or portions of their system.

- (1) WSDOT may reduce the inspection frequency based on maintenance records of double the length of time of the proposed inspection frequency. In the absence of maintenance records, WSDOT may substitute written statements to document a specific less frequent inspection schedule. Written statements shall be based on actual inspection and maintenance experience and shall be certified in accordance with G19 Certification and Signature.

- (2) Annual inspections may be conducted on a “circuit basis” whereby a sampling of 25% of catch basins within each circuit is inspected to identify maintenance needs. Included in the sampling is an inspection of the catch basin immediately upstream of any MS4 outfall or discharge point. Clean all catch basins within a given circuit if the inspection indicates cleaning is needed.
- (3) WSDOT may clean all pipes, ditches, catch basins, and inlets within a circuit once during the permit term. Circuits selected for this alternative must drain to a single point.
- ii. Compliance with the inspection requirements of S5.C.8.c.i shall be determined by the presence of an established program designed to inspect all catch basins and achieving an annual rate of at least 95% of planned inspections.
- iii. Unless there are circumstances beyond WSDOT’s control, when an inspection identifies an exceedance of the maintenance standards, maintenance shall be performed within 6 months for at least 95% of catch basins needing maintenance and within one year for at least 98% of catch basins needing maintenance.

Circumstances beyond WSDOT’s control include denial or delay of access by property owners, denial or delay of necessary permit approvals, and unexpected reallocations of maintenance staff to perform emergency work. In the event of an exceedance, WSDOT shall document the circumstances and how they were beyond WSDOT’s control.

- iv. The disposal of decant water shall be in accordance with the requirements in Appendix 5.
- d. WSDOT shall implement practices, policies, and procedures to reduce stormwater impacts associated with MS4s owned or operated by WSDOT in areas covered by the Phase I Municipal Stormwater Permit, the Eastern Washington Phase II Municipal Stormwater Permit, and the Western Washington Phase II Municipal Stormwater permit, and as applicable for TMDL areas covered under this permit.

The following activities shall be addressed:

- i. Cleaning of culverts that convey stormwater in ditch systems
- ii. Ditch maintenance
- iii. Street sweeping
- iv. Road repair and resurfacing, including pavement grinding
- v. Snow and ice control
- vi. Utility installation
- vii. Maintaining roadside areas, including vegetation management
- viii. Dust control

- ix. Pavement striping maintenance
- x. Application of fertilizers, pesticides, and herbicides according to the instructions for their use, including reducing nutrients and pesticides using alternatives that minimize environmental impacts
- xi. Sediment and erosion control
- xii. Landscape maintenance
- xiii. Trash and pet waste management
- xiv. Building exterior cleaning and maintenance
- e. WSDOT shall provide training required pursuant to S5.C.8.b.iv.
- f. Implement a Stormwater Pollution Prevention Plan (SWPPP) for each ferry terminal, and for each road maintenance facility where equipment is stored, there is a fueling station, and where heavy equipment is repaired, that has an MS4 and is within areas covered by the Phase I Municipal Stormwater Permit, the Eastern Washington Phase II Municipal Stormwater Permit, or the Western Washington Phase II Municipal Stormwater Permit. Generic SWPPPs that can be applied at multiple sites may be used to comply with this requirement.
 - i. Develop new SWPPPs, as needed, within 12 months of the effective date of this permit (i.e. April 5, 2019)
 - ii. At a minimum, SWPPPS shall:
 - (1) Identify measures to prevent and control the contamination of discharges of stormwater to surface and groundwater. The prevention and control measures include sweeping activities and measures to minimize and control the discharge of deicing agents as much as safely possible.
 - (2) Include a site map showing significant features, stormwater drainage, sources of possible stormwater pollutants, and locations of stormwater off site discharge.
 - (3) Apply applicable source control BMPs listed in Ecology's stormwater management manuals, or equivalent manual approved by Ecology.
 - (4) Identify necessary capital structural control treatment BMPs for each facility. These capital improvements and treatment BMPs will be ranked and constructed on a priority basis.
 - (5) Include a spill prevention and response plan that identifies spill prevention BMPs, spill response procedures, and appropriate emergency contacts.
 - iii. WSDOT shall provide required training pursuant to S5.C.8.b.v.
 - iv. WSDOT's Washington State Ferries Division (WSF) shall provide required training pursuant to S5.C.8.b.vi.
 - v. Perform site inspections at ferry terminals and road maintenance facilities with SWPPPs twice a year, including visual inspections of facility

discharges, to ensure SWPPP implementation and evaluate effectiveness of the plan. Compliance shall be determined by achieving an annual rate of at least 95% of planned inspections.

vi. WSDOT shall keep each SWPPP on site or within reasonable access to the site.

g. Maintain records of inspections and maintenance or repair activities conducted.

8. Education, Training, and Public Involvement

The SWMP shall include a program designed to educate and involve the public, consultants, contractors, and WSDOT staff to reduce or eliminate behaviors and practices that cause or contribute to adverse stormwater impacts.

a. To involve the public, WSDOT shall:

i. Provide public involvement opportunities for stewardship activities.

ii. Provide opportunities for the public to participate in stormwater management planning and implementation including updates to WSDOT's SWMP.

iii. Post on their website their SWMP and the most recent annual report. WSDOT shall also make newly published stormwater-related research reports available for downloading for a 2-year period on WSDOT's website. All other submittals shall be available to the public upon request.

b. WSDOT shall provide the following stormwater management-related training:

i. Illicit Discharge Detection and Elimination training for WSDOT first responder personnel and WSDOT staff who, as part of their normal job responsibilities, may come into contact with or otherwise observe an illicit discharge or connection to WSDOT's MS4 or property. Training must include identification of illicit discharges and connections, as well as the proper procedures for notification, reporting, and responding.

ii. Highway Runoff Manual training for all WSDOT personnel, consultants, and contractors involved in stormwater facility design.

iii. Construction Site Erosion and Sediment Control training for WSDOT staff and consultant personnel responsible for design, implementation, or inspection of a temporary erosion and sediment control (TESC) plan during construction.

iv. Road Operation and Maintenance training for WSDOT maintenance program personnel. The training must include the importance of protecting water quality, operation and maintenance standards, selecting appropriate BMPs, and ways to perform job activities to prevent or minimize impacts to water quality.

v. SWPPP training for maintenance crews at each WSDOT facility with a SWPPP within three months of developing a new SWPPP and ongoing refresher training.

- vi. Training program for WSF terminal staff on ferry terminal SWPPPs and procedures, and stormwater-related laws and regulations.

S6. TOTAL MAXIMUM DAILY LOAD ALLOCATIONS

This permit requires compliance with implementation actions assigned to WSDOT in applicable TMDLs. Applicable TMDLs are those which have been approved by EPA on or before the issuance date of this permit or subsequent permit modifications. Appendix 3 lists applicable TMDLs and the implementation actions assigned to WSDOT.

1. WSDOT shall comply with implementation actions and timeframes listed in Appendix 3.
2. If a specific TMDL listed in Appendix 3 requires WSDOT to conduct water quality monitoring, WSDOT shall develop and implement a TMDL monitoring Quality Assurance Project Plan (QAPP) approved by Ecology. WSDOT may use the most recent versions of Guidelines for Preparing Quality Assurance Project Plans for Environmental Studies (Ecology Publication #04-03-030) or the most recent version of EPA's Guidance for Quality Assurance Project Plans, as additional guidance.

S7. MONITORING

A. Monitoring Objectives

WSDOT shall continue a monitoring program to evaluate best management practice (BMP) effectiveness at facility sites, and continue a monitoring program to evaluate BMP effectiveness at highway sites.

WSDOT shall design and implement the monitoring program to:

1. Produce scientifically credible and representative data;
2. Provide information that WSDOT can use for designing and implementing effective stormwater management strategies for WSDOT's highways and facilities; and
3. Provide information WSDOT can use to refine requirements, guidelines, and procedures contained in Stormwater Pollution Prevention Plans (SWPPPs) and the Highway Runoff Manual (HRM).

B. Monitoring the Effectiveness of Stormwater Treatment and Hydrologic Management BMPs at Rest Areas, Maintenance Facilities, or Ferry Terminals

1. WSDOT shall continue a monitoring program to evaluate the effectiveness of stormwater treatment and hydrologic management BMPs at rest areas, maintenance facilities, or ferry terminals.
2. WSDOT shall continue evaluating BMPs at its existing facilities under the 2014 issued permit.
3. WSDOT shall use appropriate sections of Ecology's 2011 or the most recent version of the *Technical Guidance Manual for Evaluating Emerging Stormwater*

Treatment Technologies: Technology Assessment Protocol – Ecology (2011 TAPE) to prepare, implement, and report results.

<http://www.ecy.wa.gov/programs/wq/stormwater/newtech/index.html>

WSDOT shall use EPA’s 2009 or most recent version of the *Urban Stormwater BMP Performance Monitoring* as additional guidance for preparing the BMP evaluation. Monitoring shall continue at the selected rest area, maintenance facility, or ferry terminal sites until statistical goals in Ecology’s 2011 or most recent version of TAPE are met. At a minimum, 12 sampling events are needed for statistically significant performance data. Regardless of statistical significance, 35 sample events is the maximum sampling effort required as defined in the QAPP.

C. Monitoring the Effectiveness of Stormwater Treatment and Hydrologic Management BMPs at Highway Monitoring Sites

1. WSDOT shall continue to evaluate the effectiveness of its vegetated filter strip (VFS) and modified-VFS stormwater treatment and hydrologic management BMPs for highway applications. BMP monitoring shall continue until statistical goals in Ecology’s 2011 *Technical Guidance Manual for Evaluating Emerging Stormwater Treatment Technologies: Technology Assessment Protocol – Ecology (2011 TAPE)* or the most recent version of TAPE are met. At a minimum, 12 sampling events are needed for statistically significant performance data. Regardless of statistical significance, 35 sample events is the maximum sampling effort required as defined in the QAPP.
2. WSDOT shall use appropriate sections of Ecology’s 2011 TAPE (link below) or most recent version of TAPE to prepare, implement, and report results.
<http://www.ecy.wa.gov/programs/wq/stormwater/newtech/index.html>
3. WSDOT shall use EPA’s 2009 Urban Stormwater BMP Performance Monitoring as additional guidance for preparing the BMP evaluation.

D. Within one year following submittals of both the facilities and highways study’s final monitoring reports or no later than October 1, 2021, WSDOT, in consultation with Ecology, shall: (1) prepare and submit an Ecology-approved QAPP; and (2) begin implementing the next facilities and highways BMP effectiveness evaluation(s). The selection of studies shall be based on WSDOT’s stormwater management research priorities, stormwater treatment needs of the agencies, and shall be at the approximate same level of monitoring effort and cost as previous effectiveness studies.

E. Regional Status and Trends Monitoring

1. WSDOT shall pay \$21,172 into the collective fund to implement regional small streams and marine nearshore areas status and trends monitoring in Puget Sound. This payment into the collective fund is due on or before October 15, 2019.
2. No later than August 15, 2019, WSDOT shall notify Ecology in writing which of the following two options for regional status and trends monitoring they choose to carry out during the duration of this permit. Either option will fully satisfy WSDOT’s obligations under this section. WSDOT shall select a single option for the duration of this permit.

- a. Pay into two collective funds to implement regional receiving water status and trends monitoring in both Puget Sound and the Lower Columbia River basin. The payments into the collective funds are due to Ecology annually. The first payment is due on or before August 15, 2020. Subsequent payments are due on or before August 15 each year thereafter for the duration of this permit. The amounts are:
 - i. \$21,172 for status and trends monitoring of small streams and marine nearshore areas in Puget Sound, and
 - ii. \$9,160 for urban streams status and trends monitoring in the Lower Columbia River basin.

Or

- b. Conduct monitoring at five independent discharge locations in accordance with Appendix 6 and an Ecology-approved QAPP as follows:
 - i. No later than February 1, 2020 submit a draft stormwater discharge monitoring QAPP to Ecology for review and approval. The QAPP shall be prepared in accordance with the requirements in Appendix 6. If Ecology does not request changes within 90 days, the draft QAPP is considered approved. The final QAPP shall be submitted to Ecology as soon as possible following finalization, and before August 15, 2020.
 - ii. Flow monitoring at the new discharge monitoring locations shall begin no later than October 1, 2020. Stormwater discharge monitoring shall be fully implemented no later October 1, 2021 and shall continue for the duration of this permit.
 - iii. Data and analyses shall be reported annually in accordance with the Ecology-approved QAPP.
3. All payments shall be by ACH, check, or money order and shall be mailed to:
Department of Ecology, Cashiering Section
Stormwater Action Monitoring
P.O. Box 47611
Olympia, WA 98504-7611

F. Quality Assurance Project Plans

1. WSDOT shall prepare Quality Assurance Project Plans (QAPP) in accordance with Ecology's *Guidelines for Preparing Quality Assurance Project Plans for Environmental Studies* (Ecology Publication #04-03-030 or the most recent version of EPA's *Guidance for Quality Assurance Project Plans* as guidance). WSDOT shall prepare QAPPs, or use updated QAPPs previously approved by Ecology, for all components of its monitoring program.
2. WSDOT may combine any required QAPPs if a single site is used to meet one or more permit monitoring requirements. The QAPPs and monitoring programs shall be developed by qualified staff or contractors with experience in writing QAPPs in accordance with Ecology or EPA QAPP Guidelines.

3. WSDOT shall obtain Ecology approval for each QAPP prior to implementation.

G. Collaborative and Independent Programs

1. WSDOT may independently develop any or all of the components of the monitoring program, conduct the monitoring, and report results; or WSDOT may choose to develop any or all of the components of the monitoring program, conduct the monitoring, and report results through an integrated, long-term, water quality monitoring program in collaboration with other entities. Collaborative monitoring programs may be developed by a third party (or parties) provided that WSDOT complies with the provisions of Special Condition S3.B and S7 (relying on another entity to meet permit requirements). WSDOT shall meet the schedule for the development of monitoring programs whether the programs are independent or collaborative. Applicable deadlines get extended by the number of days by which Ecology exceeds 90 days for QAPP review.
2. If WSDOT intends to meet all or part of the monitoring requirements outlined in Section S7 through a collaborative process with other entities, WSDOT shall submit a statement to Ecology explaining their commitment to the collaborative process.
3. For both independent and collaborative monitoring, WSDOT shall submit all required QAPPs to Ecology. WSDOT shall submit monitoring QAPPs in both paper and electronic form.
4. Approved or final QAPPs shall be completed for:
 - a. BMP effectiveness monitoring at rest areas, maintenance facilities, or ferry terminals within the one year following submittal of the facilities and highways studies final monitoring reports or no later than October 1, 2021.
 - b. BMP effectiveness monitoring at highways within the one year following submittal of the facilities and highways studies final monitoring reports or no later than October 1, 2021.
5. WSDOT shall begin full implementation of:
 - a. Facilities BMP effectiveness monitoring no later than October 1, 2021.
 - b. Highway BMP effectiveness monitoring no later than October 1, 2021.

H. Stormwater Monitoring Reporting

1. A Stormwater Monitoring Report shall be prepared and submitted with each Annual Report by October 31 per S8.
2. WSDOT shall enter into Ecology's Environmental Information Management Database (EIM) and the International Stormwater BMP Database (<http://www.bmpdatabase.org/>) all relevant data collected pursuant to S7. Data entry into EIM and the International Stormwater BMP Database shall be completed in accordance with the Ecology-approved QAPPs.

S8. REPORTING REQUIREMENTS

- A. Reports required in this permit serve as compliance reports to Ecology as well as a wider audience including policy makers (i.e., legislators and WSDOT management), public advocacy groups, and the general public.
1. WSDOT shall submit two printed copies and an electronic (PDF) copy of the annual report to Ecology.
 2. All submittals shall be delivered to:
Department of Ecology
Water Quality Program
Municipal Stormwater Permits
PO Box 47696
Olympia, WA 98504-7696
- B. WSDOT shall submit an annual report no later than October 31 of each year beginning in 2019. The reporting period shall cover the previous fiscal year (July 1 to June 30). For S7. Monitoring-related reporting, the reporting period shall cover the previous water year (October 1 to September 30).
- C. WSDOT shall submit a final report for each BMP effectiveness monitoring evaluation pursuant to S7.B., S7.C., and S7.D. within 12 months once the monitoring goals defined in the approved QAPP have been achieved.
- D. WSDOT shall keep all records related to this permit until five years after the permit is no longer in effect.
- E. WSDOT shall make all records related to this permit and the SWMP available to the public according to Washington State public disclosure requirements. WSDOT shall provide a copy of the most recent annual report to any individual or entity, upon request.
1. WSDOT may charge a reasonable amount for making photocopies of records.
 2. WSDOT may require reasonable advance notice of intent to review records related to this permit.
- F. The annual report shall include the following:
1. Certifications and signatures as described in G19.C and notification of any changes to authorization as described in G19.B.
 2. A summary of G3 notifications to Ecology regarding spills into an MS4 that WSDOT owns or operates which could have constituted a threat to human health, welfare, or the environment.
 3. A summary of G20 notifications to Ecology regarding noncompliance with permit terms and conditions.
 4. A summary of G21 notifications to Ecology regarding upsets.
 5. A copy of WSDOT's current SWMP as required by S5.A.1.
 6. A description of the status of implementation of the requirements of this permit.

7. A summary of any actions taken pursuant to S4.F, including the status of implementation and the results of monitoring, assessment, or evaluation efforts conducted as part of an adaptive management response.
8. A summary of the status of mapping the MS4 owned or operated by WSDOT and drainage areas associated with known WSDOT owned or operated stormwater outfalls and discharge points. This summary shall, include any GIS layer updates related to WSDOT's MS4 mapping, and whether WSDOT met the pace for complete conveyance mapping of the MS4 WSDOT owns or operates.
9. Documentation of response and remediation activities related to traffic collision-related spills and ID/IC.
10. A summary of findings from fall assessments.
11. Documentation of the number and types of stormwater treatment and flow control facilities built.
12. For projects in the Puget Sound Basin pursuant to S5.C.6.c report the amount of funds transferred.
13. Documentation of the number of stand-alone stormwater retrofits completed.
14. Documentation of the number of acres of existing impervious surface retrofitted or reverted to pervious surface through the stormwater retrofit program.
15. Documentation of conducting 95% of planned inspections of all known permanent stormwater treatment and flow control BMPs/facilities owned or operated by WSDOT within areas described in S1.B.
16. Documentation of performing maintenance to BMPs pursuant to S5.C.7.b.iii and the prioritized list of repairs to BMPs amounting to more than \$25,000 as well as building access roads to BMPs that were built without access roads.
17. Documentation of conducting 95% of planned inspections of catch basins owned or operated by WSDOT within areas described in S1.B.
18. Documentation of performing maintenance to catch basins pursuant to S5.C.7.c.
19. If WSDOT increased the length of time between inspections for any catch basins or permanent stormwater BMPs, based on inspection and maintenance experience and records, WSDOT shall provide a written statement in the annual report that the maintenance standards can be met with the less frequent inspection schedule. WSDOT shall make the maintenance records available to Ecology upon request.
20. Documentation of conducting 95% of planned site inspections at ferry terminals and road maintenance facilities for SWPPP implementation.
21. Documentation of public involvement opportunities for stewardship activities.
22. Documentation of opportunities for the public to participate in stormwater management planning and implementation including updates to WSDOT's SWMP.
23. Website addresses for WSDOT's SWMP, WSDOT's most recent annual report, and WSDOT's newly published stormwater-related research reports.

24. Documentation of the number of training courses WSDOT held and the number of WSDOT staff, consultants, and contractors trained on:
 - a. Illicit Discharge Detection and Elimination
 - b. Highway Runoff Manual
 - c. Construction Site Erosion and Sediment Control
25. Descriptions of the training programs and the number of WSDOT staff trained for:
 - a. Road Operation and Maintenance and Maintenance Facility SWPPPs for maintenance program personnel.
 - b. WSF SWPPPs and procedures, and stormwater-related laws and regulations for WSF terminal personnel.
26. A summary of WSDOT's participation in TMDL development.
27. A summary of the status of compliance with each action item required by applicable TMDLs and listed in Appendix 3.
28. For reporting related to facilities and highways BMP effectiveness monitoring pursuant to S7.B, S7.C, and S7.D., include:
 - a. A description of the status of preparations for new monitoring pursuant to S7.D until implementation of the new evaluation begins (no later than October 21, 2021).
 - b. Data collected from October 1 through September 30 of the previous year for BMP monitoring sites.
 - c. Stormwater management actions taken or planned to reduce pollutants.
 - d. The following information, if applicable, for each sampling event from each site:
 - i. Sample event identification (date, time, location)
 - ii. Tabular water quality data and summary results for each monitored parameter
 - iii. Antecedent dry period, inter-event period and total precipitation depth
 - iv. A graphical representation of storm hyetograph and hydrograph for both the influent and effluent, with each aliquot collection point spatially located throughout the hydrograph; the sampling time period (percent of hydrograph sampled), total runoff period and total runoff volume, as appropriate.
 - e. The following information, if applicable, for each site:
 - i. Status of implementing the program and a description of the BMP monitoring programs still in progress at the end of the reporting year
 - ii. For treatment BMPs, cumulative (including previous years) performance data for each test site consistent with guidelines in appropriate sections of Ecology's 2011 TAPE and EPA's 2009 *Urban Stormwater BMP Performance Monitoring* or the most recent version of these guidelines
 - iii. Status of cumulative (including previous years) performance data in terms of statistical goals for each test site

- iv. If applicable, status of performance data concerning flow reduction performance for any hydrologic reduction BMP
 - v. Any proposed changes to the monitoring program that could affect future data results.
- G. Final reports for BMP effectiveness monitoring evaluations pursuant to S7.B, S7.C, and S7.D shall include:
 - a. An analysis of the performance data collected on the BMPs as described in the appropriate sections of Ecology's 2011 TAPE or the most recent version of TAPE.
 - b. An estimated cost of the BMP effectiveness monitoring.

GENERAL CONDITIONS

G1. DISCHARGE VIOLATIONS

All discharges and activities authorized by this permit shall be consistent with the terms and conditions of this permit.

G2. PROPER OPERATION AND MAINTENANCE

WSDOT shall at all times properly operate and maintain all facilities and systems of collection, treatment, and control (and related appurtenances) which are installed or used by WSDOT for pollution control to achieve compliance with the terms and conditions of this permit.

G3. NOTIFICATION OF SPILL

If WSDOT has knowledge of a spill into a municipal storm sewer which could constitute a threat to human health, welfare, or the environment, WSDOT shall:

- Take appropriate action to correct or minimize the threat to human health, welfare and/or the environment¹, and
- Notify the Ecology regional office and other appropriate spill response authorities immediately but in no case later than within 24 hours of obtaining that knowledge. For spills which might cause bacterial contamination of shellfish, such as those which might result from broken sewer lines, WSDOT shall report immediately to Ecology and the Department of Health's Shellfish Program.

Ecology's Regional Office 24-hour number is:

- Northwest Regional Office (425) 649-7000
- Southwest Regional Office (360) 407-6300
- Central Regional Office (509) 575-2490
- Eastern Regional Office (509) 329-3400

¹ WSDOT staff takes the emergency actions required to protect human life and property until the WSP gains control of the situation. WSDOT staff, who received training to do so, will take control actions when necessary and feasible to prevent the release of small quantities of petroleum products into surface waters. The WSP has the responsibility for carrying out safety measures and coordinating the clean-up of spilled substances. WSDOT personnel assist in managing traffic at the scene in support of the overall incident management effort. WSDOT personnel shall also provide technical information (e.g., information on drainage system characteristics) in support of the incident.

- Department of Health's Shellfish 24-hour number is:
(360) 236-3330 during normal business hours and (360) 786-4183 outside of normal business hours.

G4. BYPASS PROHIBITED

The intentional *bypass* of stormwater from all or any portion of a stormwater treatment BMP whenever the design capacity of the treatment BMP is not exceeded, is prohibited unless the following conditions are met:

- A. Bypass is: (1) unavoidable to prevent loss of life, personal injury, or severe property damage; or (2) necessary to perform construction or maintenance-related activities essential to meet the requirements of the Clean Water Act (CWA); and
- B. There are no feasible alternatives to bypass, such as the use of auxiliary treatment facilities, retention of untreated stormwater, or maintenance during normal dry periods. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which would cause them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss.

G5. RIGHT OF ENTRY

WSDOT shall allow an authorized representative of Ecology, upon the presentation of credentials and such other documents as may be required by law at reasonable times:

- A. To enter upon WSDOT's premises where a discharge is located or where any records must be kept under the terms and conditions of this permit;
- B. To have access to, and copy at reasonable cost and at reasonable times, any records that must be kept under the terms of the permit;
- C. To inspect at reasonable times any monitoring equipment or method of monitoring required in the permit;
- D. To inspect at reasonable times any collection, treatment, pollution management, or discharge facilities; and
- E. To sample at reasonable times any discharge of pollutants.

G6. DUTY TO MITIGATE

WSDOT shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

G7. PROPERTY RIGHTS

This permit does not convey any property rights of any sort, or any exclusive privilege.

G8. COMPLIANCE WITH OTHER LAWS AND STATUTES

Nothing in the permit shall be construed as excusing WSDOT from compliance with any other applicable federal, state, or local statutes, ordinances, or regulations.

G9. MONITORING

- A. Representative Sampling: Samples and measurements taken to meet the requirements of this permit shall be representative of the volume and nature of the monitored discharge, including representative sampling of any unusual discharge or discharge condition, including bypasses, upsets, and maintenance-related conditions affecting effluent quality.
- B. Records Retention: WSDOT shall retain records of all monitoring information, including all calibration and maintenance records and all original recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for the life of this permit plus five years. This period of retention shall be extended during the course of any unresolved litigation regarding the discharge of pollutants by WSDOT or when requested by Ecology. On request, WSDOT shall provide monitoring data to Ecology.
- C. Recording of Results: For each measurement or sample taken, WSDOT shall record the following information:
 - The date, exact place and time of sampling;
 - The individual who performed the sampling or measurement;
 - The dates the analyses were performed;
 - Who performed the analyses;
 - The analytical techniques or methods used; and
 - The results of all analyses.
- D. Test Procedures: All sampling and analytical methods used to meet the monitoring requirements specified in the approved stormwater management program shall conform to the Guidelines Establishing Test Procedures for the Analysis of Pollutants contained in 40 CFR Part 136, unless otherwise specified in this permit or approved in writing by Ecology.
- E. Lab Accreditation: Where data collection is required by other conditions of this permit, WSDOT shall ensure that all monitoring data, except for flow, temperature, conductivity, pH, total residual chlorine, and other exceptions approved by Ecology, shall be prepared by a laboratory registered or accredited under the provisions of, Accreditation of Environmental Laboratories, Chapter 173-50 WAC.

- F. Flow Measurement: Where flow measurements are required by other conditions of this permit, WSDOT shall select and use appropriate flow measurement devices and methods consistent with accepted scientific practices to ensure the accuracy and reliability of measurements of the volume of monitored discharges. WSDOT shall install, calibrate, and maintain the devices to ensure that the accuracy of the measurements is consistent with the accepted industry standard for that type of device. WSDOT shall conform to the manufacturer's recommendations for calibration frequencies, or at a minimum frequency of at least one calibration per year. WSDOT shall retain calibration records for the life of this permit plus five years.
- G. Additional Monitoring: Ecology may establish specific monitoring requirements in addition to those contained in this permit by administrative order or permit modification.

G10. REMOVED SUBSTANCES

With the exception of decant from street waste vehicles, WSDOT must not allow collected screenings, grit, solids, sludge, filter backwash, or other pollutants removed in the course of treatment or control of stormwater to be resuspended or reintroduced to the storm sewer system or to waters of the state. When other practical means are not available, decant from street waste vehicles resulting from cleaning stormwater facilities may be reintroduced consistent with the management of street waste guidelines contained in the Ecology's "*Stormwater Management Manual for Western Washington*." Solids generated from maintenance of the MS4 may be reclaimed, recycled, or reused when allowed by local health department codes and local ordinances. Soils that are identified as contaminated pursuant to chapter 173-350 WAC shall be disposed at a qualified solid waste disposal facility.

G11. SEVERABILITY

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

G12. REVOCATION OF COVERAGE

The Director of the Department of Ecology (Director) may terminate coverage under this *General Permit* in accordance with Chapter 43.21B RCW and Chapter 173-226 WAC. Cases where coverage may be terminated include, but are not limited to the following:

- A. Violation of any term or condition of this general permit;
- B. Obtaining coverage under this general permit by misrepresentation or failure to disclose fully all relevant facts;
- C. A change in any condition that requires either a temporary or permanent reduction or elimination of the permitted discharge;

- D. A determination that the permitted activity endangers human health or the environment, or contributes significantly to water quality standards violations;
- E. Failure or refusal of the Permittee to allow entry as required in RCW 90.48.090;
- F. Nonpayment of permit fees assessed pursuant to RCW 90.48.465;

Revocation of coverage under this general permit may be initiated by Ecology or requested by any interested person.

G13. TRANSFER OF COVERAGE

The director may require any discharger authorized by this general permit to apply for and obtain an individual permit in accordance with Chapter 43.21B RCW and Chapter 173-226 WAC.

G14. GENERAL PERMIT MODIFICATION AND REVOCATION

This general permit may be modified, revoked and reissued, or terminated in accordance with the provisions of WAC 173-226-230. Grounds for modification, revocation and reissuance, or termination include, but are not limited to the following:

- A. A change occurs in the technology or practices for control or abatement of pollutants applicable to the category of dischargers covered under this general permit;
- B. Effluent limitation guidelines or standards are promulgated pursuant to the CWA or chapter 90.48RCW, for the category of dischargers covered under this general permit;
- C. A water quality management plan containing requirements applicable to the category of dischargers covered under this general permit is approved;
- D. Information is obtained which indicates that cumulative effects on the environment from dischargers covered under this general permit are unacceptable; or
- E. Changes made to State law reference this permit.

G15. REPORTING A CAUSE FOR MODIFICATION OR REVOCATION

If WSDOT knows or has reason to believe that any activity has occurred or will occur which would constitute cause for modification or revocation and reissuance under Condition G12, G14, or 40 CFR 122.62 WSDOT shall report such plans, or such information, to Ecology so Ecology can decide to modify, revoke, or reissue this permit. Ecology may then require submission of a new or amended application. Submission of such application does not relieve WSDOT of the duty to comply with this permit until it is modified or reissued.

G16. APPEALS

- A. The terms and conditions of this general permit are subject to appeal within 30 days of issuance of this general permit, in accordance with Chapter 43.21B RCW, and Chapter 173-226 WAC.
- B. The terms and conditions of this general permit, as they apply to an individual discharger are subject to appeals, in accordance with Chapter 43.21B RCW, within thirty days of the effective date of coverage of that discharger. Consideration of an appeal of general permit coverage of an individual discharger is limited to the general permit's applicability or non-applicability to that individual discharger.
- C. The appeal of general permit coverage of an individual discharger does not affect any other dischargers covered under this general permit. If the terms and conditions of this general permit are found to be inapplicable to any individual discharger(s), the matter shall be remanded to Ecology for consideration of issuance of an individual permit or permits.
- D. Modifications of this permit are subject to appeals in accordance with Chapter 43.21B RCW and Chapter 173-226 WAC.

G17. PENALTIES

40 CFR 122.41(a)(2) and (3), 40 CFR 122.41(j)(5), and 40 CFR 122.41(k)(2) are hereby incorporated into this permit by reference.

G18. DUTY TO REAPPLY

WSDOT shall apply for permit renewal at least 180 days prior to the specified expiration date of this permit.

G19. CERTIFICATION AND SIGNATURE

WSDOT shall sign and certify all applications, reports, or information submitted to Ecology.

- A. All reports required by this permit and other information requested by Ecology shall be signed by the Secretary of Transportation or by a duly authorized representative of that person. A person is a duly authorized representative only if:
 - 1. The authorization is made in writing by a person described above and submitted to Ecology, and
 - 2. The authorization specifies either an individual or a position having responsibility for the overall development and implementation of the stormwater management program. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.)
- B. Changes to authorization. If an authorization under General Condition G19.A.2 is no longer accurate because a different individual or position has responsibility for the

overall development and implementation of the stormwater management program, a new authorization satisfying the requirements of General Condition G19.A.2 must be submitted to Ecology prior to or together with any reports, information, or applications to be signed by an authorized representative.

- C. Certification. Any person signing a document under this permit must make the following certification:

"I certify under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for willful violations."

G20. NON-COMPLIANCE NOTIFICATION

In the event that WSDOT is unable to comply with any of the terms and conditions of this permit, WSDOT must notify Ecology of the failure to comply with the permit terms and conditions within 30 days of becoming aware of the non-compliance and take appropriate action to stop or correct the condition of noncompliance. The notification must include a description of the noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and the steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

G21. UPSETS

WSDOT shall meet the conditions of 40 CFR 122.41(n) regarding "Upsets," as described below:

- A. Definition. "Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of WSDOT. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.
- B. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the requirements of paragraph (C) of this condition are met. Any determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, will not constitute final administrative action subject to judicial review.
- C. Conditions necessary for demonstration of upset. If WSDOT wishes to establish the affirmative defense of upset, WSDOT shall demonstrate, through properly signed contemporaneous operating logs, or other relevant evidence that:

1. An upset occurred and that WSDOT can identify the cause(s) of the upset;
 2. The permitted facility was at the time being properly operated; and
 3. WSDOT submitted notice of the upset as required in 40 CFR 122.41(l)(6)(ii)(B) (24-hour notice of noncompliance).
 4. WSDOT complied with any remedial measures required under 40 CFR 122.41(d) (Duty to Mitigate).
- D. Burden of proof. In any enforcement proceeding, WSDOT has the burden of proof to establish the occurrence of an upset.

DEFINITIONS AND ACRONYMS

40 CFR means Title 40 of the Code of Federal Regulations, which is the codification of the general and permanent rules published in the Federal Register by the executive departments and agencies of the federal government.

AADT means “annual average daily traffic.”

AD means advertisement date.

AKART means All Known, Available and Reasonable methods of prevention, control and Treatment. See also State Water Pollution Control Act, Chapter 90.48.010 and 90.48.520 RCW.

All Known, Available and Reasonable methods of prevention, control and Treatment refers to the State Water Pollution Control Act, Chapter 90.48.010 and 90.48.520 RCW.

Applicable TMDL means a TMDL which has been approved by EPA on or before the issuance date of this Permit, or prior to the date that Ecology issues coverage under this Permit, whichever is later.

Beneficial Uses means uses of waters of the state, which include but are not limited to: use for domestic, stock watering, industrial, commercial, agriculture, irrigation, mining, fish and wildlife maintenance and enhancement, recreation, generation of electric power and preservation of environmental and aesthetic values, and all other uses compatible with the enjoyment of the public waters of the state.

Best Management Practices are the schedules of activities, prohibitions of practices, maintenance procedures, and structural and/or managerial practices approved by Ecology that, when used singly or in combination, prevent or reduce the release of pollutants and other adverse impacts to waters of Washington State.

BMP means Best Management Practice.

Bypass means the diversion of stormwater from any portion of a stormwater treatment facility.

Circuit means a portion of a MS4 discharging to a single point or serving a discrete area determined by traffic volumes, land use, topography, or the configuration of the MS4.

Component or **Program Component** means the elements described in the WSDOT Stormwater Management Program Plan appearing in Appendix 5 of the 2014 permit.

CWA means the federal Clean Water Act (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972) Pub. L. 92-500, as amended Pub. L. 95-217, Pub. L. 95-576, Pub. L. (6-483 and Pub. L. 97-117, 33 U.S.C. 1251 et.seq).

Director means the Director of the Washington State Department of Ecology, or an authorized representative.

Discharge for the purpose of this permit, unless indicated otherwise, refers to discharges from municipal separate storm sewers. See also 40 CFR 122.2.

Discharge point means the location where a discharge leaves the permittee’s MS4 to another permittee’s MS4 or a private or public stormwater conveyance. “Discharge point” also includes the location where a discharge leaves the permittee’s MS4 and discharges to ground, except where such discharge occurs via an outfall.

EIM means Ecology’s Environmental Information Management Database

Entity means a governmental body or a public or private organization.

EPA means the U.S. Environmental Protection Agency.

General Permit means a permit which covers multiple dischargers of a point source category within a designated geographical area, in lieu of individual permits being issued to each discharger.

Ground water means water in a saturated zone or stratum beneath the surface of the land or below a surface water body. Refer to chapter 173-200 WAC.

HRM means the *Highway Runoff Manual* published by WSDOT (2019).

Heavy equipment maintenance or storage yard means an uncovered area where any heavy equipment, such as mowing equipment, excavators, dump trucks, backhoes, or bulldozers are washed or maintained, or where at least five pieces of heavy equipment are stored on a long-term basis.

Illicit connection means any man-made conveyance to the MS4 that is not intended, permitted, or used for collecting and conveying stormwater or non-stormwater discharges allowed as specified in this permit. Examples include sanitary sewer connections, floor drains, channels, pipelines, conduits, inlets, or outlets that are connected directly to the MS4.

Illicit discharge means any discharge to a MS4 that is not composed entirely of storm water or non-stormwater discharges allowed as specified in this permit.

Integrated vegetation management (IVM) means a coordinated decision-making and action process that uses the most appropriate long-term vegetation management strategy on a site-specific basis. Vegetation management involves caring for and/or controlling foliage within the highway right-of-way. If managed properly, roadside vegetation can become naturally self-sustaining over time and require less intervention from maintenance crews as it grows and matures.

Impervious surface means a non-vegetated surface area that either prevents or retards the entry of water into the soil mantle as under natural conditions prior to development. A nonvegetated surface area which causes water to run off the surface in greater quantities or at an increased rate of flow from the flow present under natural conditions prior to development. Common impervious surfaces include, but are not limited to, rooftops, walkways, patios, driveways, parking lots or stormwater areas, concrete or asphalt paving, gravel roads, packed earthen materials, and oiled, macadam or other surfaces which similarly impede the natural infiltration of stormwater.

Low Impact Development (LID) means a stormwater and land use management strategy that strives to mimic pre-disturbance hydrologic processes of infiltration, filtration, storage, evaporation, and transpiration by emphasizing conservation, use of on-site natural features, site planning, and distributed stormwater management practices that are integrated into a project design.

Low Impact Development Best Management Practices (LID BMPs) means distributed stormwater management practices, integrated into a project design, that emphasize pre-disturbance hydrologic processes of infiltration, filtration, storage, evaporation, and transpiration. LID BMPs include, but are not limited to, bioretention/rain gardens, permeable pavements, roof downspout controls, dispersion, soil quality and depth, vegetated roofs, minimum excavation foundations, and water re-use.

Method Detection Limit (MDL) is the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero, and is determined from analysis of a sample in a given matrix containing the analyte. Appendix A contains the necessary equations for calculating method detection limits. (40 CFR part 136, Appendix B).

Maximum Extent Practicable refers to paragraph 402(p)(3)(B)(iii) of the federal Clean Water Act which reads as follows: Permits for discharges from municipal storm sewers shall require controls to reduce the discharge of pollutants to the maximum extent practicable, including management practices, control techniques, and system, design, and engineering methods, and other such provisions as the Administrator or the State determines appropriate for the control of such pollutants.

MEP means Maximum Extent Practicable.

MS4 means Municipal Separate Storm Sewer System.

Municipal Separate Storm Sewer System means a conveyance, or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains):

- owned or operated by a state, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State Law) having jurisdiction over disposal of wastes, storm water, or other wastes, including special districts under State Law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to waters of the States;
- designed or used for collecting or conveying stormwater;
- which is not a combined sewer; and
- which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.
- which is defined as large” or “medium” or “small” or otherwise designated by Ecology pursuant to 40 CFR 122.26.

National Pollutant Discharge Elimination System means the national program for issuing, modifying, revoking, and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under sections 307, 402, 318, and 405 of the Federal Clean Water Act, for the discharge of pollutants to surface waters of the state from point sources. These permits are referred to as NPDES permits and, in Washington State, are administered by the Washington State Department of Ecology.

Notice of Intent means the application for, or a request for coverage under a General NPDES Permit pursuant to WAC 173-226-200.

NOI means Notice of Intent.

NPDES means National Pollutant Discharge Elimination System.

Outfall means point source as defined by 40 CFR 122.2 at the point where a discharge leaves the permittee's MS4 and enters a receiving waterbody or receiving waters. Outfall also includes the permittee's MS4 facilities/BMPs designed to infiltrate stormwater.

PAH means polycyclic aromatic hydrocarbons.

Permittee means the Washington State Department of Transportation (WSDOT) unless otherwise specifically stated otherwise for a particular section of this permit.

QAPP means Quality Assurance Project Plan.

Qualified Personnel means someone who has had professional training in the aspects of stormwater management for which they are responsible and are under the functional control of the Permittee. Qualified Personnel may be staff members, contractors, or volunteers.

Quality Assurance Project Plan means a document that describes the objectives of an environmental study and the procedures to be followed to achieve those objectives.

RCW means the Revised Code of Washington State.

Receiving waterbody or **receiving waters** means naturally and/or reconstructed naturally occurring surface water bodies, such as creeks, streams, rivers, lakes, wetlands, estuaries, and marine waters, to which a discharge occurs via an outfall or via sheet/dispersed flow.

Receiving waters may also include ground water to which a discharge occurs via facilities/BMPs designed to infiltrate stormwater.

Regional Stormwater Monitoring Program means for all of western Washington, a stormwater- focused monitoring and assessment program consisting of these components: status and trends monitoring in small streams and marine nearshore areas, stormwater management program effectiveness studies, and a source identification information repository (SIDIR).

The priorities and scope for the RSMP are set by a formal stakeholder group. For this permit term, RSMP status and trends monitoring will be conducted in the Puget Sound basin and the Lower Columbia River basin.

RSMP means Regional Stormwater Monitoring Program.

Reporting Limit means minimum concentration at which detection of an analyte is reported usually chosen by the laboratory and usually above an analyte’s method detection limit.

Runoff is water that travels across the land surface and discharges to water bodies either directly or through a collection and conveyance system. See also “Stormwater.”

SAM means Stormwater Action Monitoring

Significant contributor means a discharge contributes a loading of pollutants considered to be sufficient to cause or exacerbate the deterioration of receiving water quality or instream habitat conditions.

Stormwater means runoff during and following precipitation and snowmelt events, including surface runoff, drainage, and interflow.

Stormwater Management Manual for Western Washington means the 5-volume technical manual (Publication No 12-10-030) published by Ecology in 2019.

Stormwater Management Manual for Eastern Washington means the 5-volume technical manual (Publication Number 04-10-076) published by Ecology in 2019.

Stormwater Management Program (SWMP) means a set of actions and activities designed to reduce the discharge of pollutants from the MS4 to the MEP and to protect water quality, and comprising the components listed in the WSDOT Stormwater Management Program Plan appearing in Appendix 5 of the 2014 permit and any additional actions necessary to meet the requirements of applicable TMDLs.

SWMP means Stormwater Management Program

SWPPP means stormwater pollution prevention plan.

TAPE means the *Technical Guidance Manual for Evaluating Emerging Stormwater Treatment Technologies: Technology Assessment Protocol – Ecology*.

TMDL means Total Maximum Daily Load.

Total Maximum Daily Load means a water cleanup plan. A TMDL is a calculation of the maximum amount of a pollutant that a water body can receive and still meet water quality standards, and an allocation of that amount to the pollutant’s sources. A TMDL is the sum of the allowable loads of a single pollutant from all contributing point and nonpoint sources.

The calculation must include a margin of safety to ensure that the water body can be used for the purposes the state has designated. The calculation must also account for seasonable variation in water quality. Water quality standards are set by states, territories, and tribes.

They identify the uses for each water body, for example, drinking water supply, contact recreation (swimming), and aquatic life support (fishing), and the scientific criteria to support that use. The Clean Water Act, section 303, establishes the water quality standards and TMDL programs.

TOC means total organic carbon.

TP means total phosphorus.

TPH means total petroleum hydrocarbons.

TSS means total suspended solids.

Urban Growth Area means those areas designated by a county pursuant to RCW 36.70A.110.

VFS means the vegetative filter strip.

WAC means Washington Administrative Code.

Water Quality Standards means Surface Water Quality Standards, Chapter 173-201A WAC, Ground Water Quality Standards, Chapter 173-200 WAC, and Sediment Management Standards, Chapter 173-204 WAC.

Waters of the State includes those waters as defined as "waters of the United States" in 40 CFR Subpart 122.2 within the geographic boundaries of Washington State and "waters of the state" as defined in Chapter 90.48 RCW which includes lakes, rivers, ponds, streams, inland waters, underground waters, salt waters and all other surface waters and water courses within the jurisdiction of the State of Washington.

Waters of the United States refers to the definition in 40 CFR 122.2.

WY means water year.

WSDOT means Washington State Department of Transportation.

APPENDIX 1: HIGHWAY RUNOFF MANUAL (HRM) EQUIVALENCY

The Washington State Department of Ecology completed its review of the 2019 *Highway Runoff Manual* and found that it meets minimum design requirements and best management practices equivalent to those in Ecology's 2019 Stormwater Management Manuals. A link to WSDOT's 2019 HRM can be found on Ecology's website at:

<https://ecology.wa.gov/Regulations-Permits/Permits-certifications/Stormwater-general-permits/Municipal-stormwater-general-permits/WSDOT-Municipal-Stormwater-Permit>

APPENDIX 2: IDDE REPORTING DATA AND FORMAT

WSDOT is required to submit the following information with the annual report, or an alternative format provided by Ecology if requested, pursuant to Special Condition S8.

This is the complete list of information that WSDOT is required to report for each IDDE incident found, reported to, or investigated by the Permittee. WSDOT may either use its own system or the WQWebIDDE form for recording this data. If using its own tracking system, this information must be provided in an electronic format that follows the data schema provided at the end of this document and is easily transferred to a database. Ecology prefers a zipped .xml. An excel spreadsheet or space- or tab-delimited file that follows the data schema is acceptable.

A complete report will include a separate entry (even if left blank) for every line below and must use the precise verbiage and spelling below. For all incidents where the answer to #7 is no, #8 is required but #9-15 are not required. Each field that ends in a colon (":") is followed by a text answer. All dates are in MM/DD/YYYY format.

1. Jurisdiction name:

- Permit Number:

2. Incident ID assigned by jurisdiction:

3. Date of incident:

4. Date incident was reported to you:

5. Date to begin your response:

6. Date to end your response:

- Final resolution?
 - Yes
 - No
- Transferred to another party?
 - Specify:

7. Discharge to MS4?

- Yes
 - Estimated Quantity (select one)
 - Unknown
 - Sheen
 - Gallons:
 - Pounds:

- Cubic feet:
- Discharge Frequency (select one)
 - Continuous or ongoing
 - Intermittent
 - One-time
- Receiving water:
- No (select one)
 - No problem found
 - Cleaned up
 - Discharge to combined or sanitary sewer
 - Discharge to private or other sewer
 - Discharge to ground
 - Other
 - Explain:
- Unknown

8. How was the incident discovered or reported to you?

- Referral
 - Pollution hotline
 - Direct report to your staff
 - Staff referral
 - Other agency referral
 - ERTS
- IDDE field observation
- Inspection
 - Business
 - Construction
 - MS4
 - Catch basin or manhole
 - Outfall
 - Stormwater BMP
 - Other MS4
 - Explain:
 - Other

- Explain:

- Other

- Explain:

9. G3 notification?

- Yes

- ERTS case number:

- No

10. Incident location (provide at least one)

- Address

- Street:

- City:

- State:

- Zip:

- Nearest Intersection:

- Tax Parcel:

- Latitude/Longitude

- Latitude:

- Longitude:

11. Pollutants identified (select all that apply)

- None found

- Unconfirmed, unspecified, or not identified

- Solid waste

- Trash

- Sediment/soil

- Cement, concrete, lime, or plaster

- Yard waste or other plant or wood waste

- Food waste

- Pet waste or human waste

- Carpet cleaning waste

- Roofing materials

- Road tar

- Liquid waste

- Vehicle oil, fuel, or other lubricant
- Antifreeze or other coolant
- Paint
- Sewage/septage
- Oil
 - Vehicle oil, fuel, or other lubricant
 - Food preparation oil
 - Heating oil or kerosene
- Chemical
 - Household or industrial chemical
 - Explain
 - Pesticide or herbicide
 - Fertilizer
- Foam
 - Soap/detergent
 - Fire-fighting foam
 - Other or unknown foam
- Other
 - PCBs
 - Refrigerant
 - Chlorinated water
 - Bacteria
- Other not listed
 - Explain:

12. Source or cause (select all that apply)

- Not applicable
- Not identified
- Illicit connection
- Dumping
- Spill
- Construction activity
 - Construction BMP failure
- Structural BMP failure

- Vehicle related
 - Fueling
 - Vehicle collision/accident
 - Auto repair
 - Vehicle washing
 - Vehicle leakage/fluids
- Improper business operation or activity
 - Equipment cleaning
 - Pressure washing
 - Leaking or abandoned container/dumpster
 - Drive-thru
 - Mobile business
 - Explain:
 - Retail operations
 - Restaurant
 - Non-emergency firefighting or training
 - Logging
 - Livestock
 - Other
 - Explain:
- Allowable discharge
 - Diverted stream flow
 - Flow from riparian habitat or wetland
 - Uncontaminated ground water or spring water
 - Foundation or footing drain
 - Uncontaminated water from crawl space pump
 - Air conditioning condensation
 - Irrigation water from agricultural source
 - Emergency firefighting
- Conditionally allowed discharge
 - Potable water
 - Water line flushing or testing
 - Lawn watering or other irrigation
 - Dechlorinated pool/spa water

- Street/sidewalk wash water
- Surface runoff
 - Due to drainage or grade conditions
 - Stormwater or flood water
 - Groundwater pumping
 - Broken or clogged water or sewer line
 - Other
 - Explain:
- Septic system
- Other
 - Explain:

13. Source tracing approach used (select all that apply)

- Not applicable
- Visual observation
- Smell/odor
- Map analysis
- Further inspection or reconnaissance
- Indicator testing
 - Flow/discharge
 - Sheen/oil
 - Floatables
 - Detergent or surfactants
 - Ammonia
 - Color
 - Odor
 - pH
 - Temperature
 - Turbidity
 - Hardness
 - Nitrates
 - Potassium
 - Specific conductivity
 - Bacteria

- Chloride/chlorine
- Fluoride
- Carbon monoxide
- Hydrogen sulfide
- Other
 - Explain:
- Dye testing
- Pressure testing
- Smoke testing
- Video inspection
- Canine detection
- Optical brightener
- Sand bagging
- Other
 - Explain:

14. Correction/elimination methods used (select all that apply)

- No action needed
 - Explain:
- Clean-up
- Education/technical assistance
- Add or modify operational BMP
- Add or modify structural BMP
- Enforcement:
 - Verbal notice
 - Written warning
 - Correction notice
 - Stop work order
 - Legal notice
 - Penalty or fine
- Referred to other agency or department
- Follow-up or further investigation
- Problem not abated
 - Explain:

- Other
 - Explain:

15. Field notes, explanations, and/or other comments:

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      <xs:attribute name="type" type="TraceType"/>
    </xs:complexType>
  </xs:element>
</xs:sequence>
</xs:complexType>
<xs:complexType name="Correction">
  <xs:sequence>
    <xs:element maxOccurs="unbounded" name="Correction">
      <xs:complexType>
        <xs:sequence>
          <xs:element maxOccurs="1" minOccurs="0" name="Explain"
type="xs:string"/>
        </xs:sequence>
        <xs:attribute name="type" type="CorrectionType"/>
      </xs:complexType>
    </xs:element>
  </xs:sequence>
</xs:complexType>
<xs:complexType name="NoMS4Discharge">
  <xs:annotation>
    <xs:documentation>No discharge reached MS4</xs:documentation>
  </xs:annotation>
  <xs:sequence>
    <xs:element maxOccurs="1" minOccurs="0" name="Explain" type="xs:string"/>
  </xs:sequence>
  <xs:attribute name="reason" type="NoMs4Reason"/>
</xs:complexType>
<xs:complexType name="YesMS4Discharge">
  <xs:annotation>
    <xs:documentation>Discharge reached MS4</xs:documentation>
  </xs:annotation>
  <xs:attribute name="type" type="DischargeType"/>
  <xs:attribute name="frequency" type="DischargeFrequency"/>
  <xs:attribute name="waterbody" type="xs:string">
    <xs:annotation>
      <xs:documentation>Receiving waterbody</xs:documentation>
    </xs:annotation>
  </xs:attribute>
  <xs:attribute name="volume" type="xs:integer">
    <xs:annotation>
      <xs:documentation>Number of gallons, pounds, or cubic feet</xs:documentation>
    </xs:annotation>
  </xs:attribute>

```

```

</xs:complexType>
<xs:complexType name="UnknownMS4Discharge">
  <xs:annotation>
    <xs:documentation>Unknown if discharge reached MS4</xs:documentation>
  </xs:annotation>
</xs:complexType>
<xs:simpleType name="NoMs4Reason">
  <xs:annotation>
    <xs:documentation>Reason there was no discharge to MS4</xs:documentation>
  </xs:annotation>
  <xs:restriction base="xs:string">
    <xs:enumeration value="1">
      <xs:annotation>
        <xs:documentation>No problem found</xs:documentation>
      </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="2">
      <xs:annotation>
        <xs:documentation>Cleaned up</xs:documentation>
      </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="3">
      <xs:annotation>
        <xs:documentation>Discharge to combined or sanitary
sewer</xs:documentation>
      </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="4">
      <xs:annotation>
        <xs:documentation>Discharge to private or other sewer</xs:documentation>
      </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="5">
      <xs:annotation>
        <xs:documentation>Discharge to ground</xs:documentation>
      </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="6">
      <xs:annotation>
        <xs:documentation>Other</xs:documentation>
        <xs:appinfo>Explain</xs:appinfo>
      </xs:annotation>
    </xs:enumeration>
  </xs:restriction>
</xs:simpleType>
<xs:simpleType name="DischargeType">
  <xs:annotation>
    <xs:documentation>Type of discharge to MS4</xs:documentation>
  </xs:annotation>

```

```

</xs:annotation>
<xs:restriction base="xs:string">
  <xs:enumeration value="1">
    <xs:annotation>
      <xs:documentation>Unknown</xs:documentation>
    </xs:annotation>
  </xs:enumeration>
  <xs:enumeration value="2">
    <xs:annotation>
      <xs:documentation>Sheen</xs:documentation>
    </xs:annotation>
  </xs:enumeration>
  <xs:enumeration value="3">
    <xs:annotation>
      <xs:documentation>## Gallons</xs:documentation>
      <xs:appinfo>Explain</xs:appinfo>
    </xs:annotation>
  </xs:enumeration>
  <xs:enumeration value="4">
    <xs:annotation>
      <xs:documentation>## Pounds</xs:documentation>
      <xs:appinfo>Explain</xs:appinfo>
    </xs:annotation>
  </xs:enumeration>
  <xs:enumeration value="5">
    <xs:annotation>
      <xs:documentation>## Cubic Feet</xs:documentation>
      <xs:appinfo>Explain</xs:appinfo>
    </xs:annotation>
  </xs:enumeration>
</xs:restriction>
</xs:simpleType>
<xs:simpleType name="DischargeFrequency">
  <xs:annotation>
    <xs:documentation>Frequency of discharge to MS4</xs:documentation>
  </xs:annotation>
  <xs:restriction base="xs:string">
    <xs:enumeration value="0">
      <xs:annotation>
        <xs:documentation>Unknown</xs:documentation>
      </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="1">
      <xs:annotation>
        <xs:documentation>Continuous or Ongoing</xs:documentation>
      </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="2">

```

```

    <xs:annotation>
      <xs:documentation>Intermittent</xs:documentation>
    </xs:annotation>
  </xs:enumeration>
  <xs:enumeration value="3">
    <xs:annotation>
      <xs:documentation>One-Time</xs:documentation>
    </xs:annotation>
  </xs:enumeration>
</xs:restriction>
</xs:simpleType>
<xs:simpleType name="LatNumber">
  <xs:annotation>
    <xs:documentation>Latitude, 6 decimal digits.</xs:documentation>
  </xs:annotation>
  <xs:restriction base="xs:decimal">
    <xs:totalDigits value="8" />
    <xs:fractionDigits value="6" />
    <xs:minInclusive value="-90" />
    <xs:maxInclusive value="90" />
  </xs:restriction>
</xs:simpleType>
<xs:simpleType name="LongNumber">
  <xs:annotation>
    <xs:documentation>Longitude, 6 decimal digits.</xs:documentation>
  </xs:annotation>
  <xs:restriction base="xs:decimal">
    <xs:totalDigits value="9" />
    <xs:fractionDigits value="6" />
    <xs:minInclusive value="-180" />
    <xs:maxInclusive value="180" />
  </xs:restriction>
</xs:simpleType>
<xs:complexType name="LatLongType">
  <xs:annotation>
    <xs:documentation>Latitude Longitude pair, 6 decimal digits.</xs:documentation>
  </xs:annotation>
  <xs:sequence>
    <xs:element name="Latitude" type="LatNumber" />
    <xs:element name="Longitude" type="LongNumber" />
  </xs:sequence>
</xs:complexType>
<xs:simpleType name="TaxParcelType">
  <xs:annotation>
    <xs:documentation>Tax Parcel</xs:documentation>
  </xs:annotation>
  <xs:restriction base="xs:string" />
</xs:simpleType>

```

```

<xs:simpleType name="IntersectionType">
  <xs:annotation>
    <xs:documentation>Intersection, Cross streets</xs:documentation>
  </xs:annotation>
  <xs:restriction base="xs:string" />
</xs:simpleType>
<xs:complexType name="AddressType">
  <xs:annotation>
    <xs:documentation>Conventional Street Address</xs:documentation>
  </xs:annotation>
  <xs:sequence>
    <xs:element name="Address" type="xs:string" />
    <xs:element name="City" type="xs:string" />
    <xs:element name="State" type="xs:string" />
    <xs:element name="PostalCode" type="xs:string" />
  </xs:sequence>
</xs:complexType>
<xs:simpleType name="LocationType">
  <xs:annotation>
    <xs:documentation>Responses for Type of location reference</xs:documentation>
  </xs:annotation>
  <xs:restriction base="xs:string">
    <xs:enumeration value="1">
      <xs:annotation>
        <xs:documentation>Address</xs:documentation>
      </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="2">
      <xs:annotation>
        <xs:documentation>Tax Parcel</xs:documentation>
      </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="3">
      <xs:annotation>
        <xs:documentation>Intersection</xs:documentation>
      </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="4">
      <xs:annotation>
        <xs:documentation>Latitude Longitude</xs:documentation>
      </xs:annotation>
    </xs:enumeration>
  </xs:restriction>
</xs:simpleType>
<xs:simpleType name="DiscoveredType">
  <xs:annotation>
    <xs:documentation>Responses for How was this incident discovered or reported to
you?</xs:documentation>

```

```

</xs:annotation>
<xs:restriction base="xs:string">
  <xs:enumeration value="1">
    <xs:annotation>
      <xs:appinfo>Referral</xs:appinfo>
      <xs:documentation>Pollution hotline</xs:documentation>
    </xs:annotation>
  </xs:enumeration>
  <xs:enumeration value="2">
    <xs:annotation>
      <xs:appinfo>Referral</xs:appinfo>
      <xs:documentation>Direct report to your staff</xs:documentation>
    </xs:annotation>
  </xs:enumeration>
  <xs:enumeration value="3">
    <xs:annotation>
      <xs:appinfo>Referral</xs:appinfo>
      <xs:documentation>Staff referral</xs:documentation>
    </xs:annotation>
  </xs:enumeration>
  <xs:enumeration value="4">
    <xs:annotation>
      <xs:appinfo>Referral</xs:appinfo>
      <xs:documentation>Other agency referral</xs:documentation>
    </xs:annotation>
  </xs:enumeration>
  <xs:enumeration value="5">
    <xs:annotation>
      <xs:appinfo>Referral</xs:appinfo>
      <xs:documentation>ERTS</xs:documentation>
    </xs:annotation>
  </xs:enumeration>
  <xs:enumeration value="6">
    <xs:annotation>
      <xs:documentation>IDDE field observation</xs:documentation>
    </xs:annotation>
  </xs:enumeration>
  <xs:enumeration value="7">
    <xs:annotation>
      <xs:appinfo>Inspection</xs:appinfo>
      <xs:documentation>Business</xs:documentation>
    </xs:annotation>
  </xs:enumeration>
  <xs:enumeration value="8">
    <xs:annotation>
      <xs:appinfo>Inspection</xs:appinfo>
      <xs:documentation>Construction</xs:documentation>
    </xs:annotation>
  </xs:enumeration>

```

```

</xs:enumeration>
<xs:enumeration value="9">
  <xs:annotation>
    <xs:appinfo>MS4 Inspection</xs:appinfo>
    <xs:documentation>Catch basin or manhole</xs:documentation>
  </xs:annotation>
</xs:enumeration>
<xs:enumeration value="10">
  <xs:annotation>
    <xs:appinfo>MS4 Inspection</xs:appinfo>
    <xs:documentation>Outfall</xs:documentation>
  </xs:annotation>
</xs:enumeration>
<xs:enumeration value="11">
  <xs:annotation>
    <xs:appinfo>MS4 Inspection</xs:appinfo>
    <xs:documentation>Stormwater BMP </xs:documentation>
  </xs:annotation>
</xs:enumeration>
<xs:enumeration value="12">
  <xs:annotation>
    <xs:appinfo>MS4 Inspection</xs:appinfo>
    <xs:documentation>Other</xs:documentation>
    <xs:appinfo>Explain</xs:appinfo>
  </xs:annotation>
</xs:enumeration>
<xs:enumeration value="13">
  <xs:annotation>
    <xs:appinfo>Inspection</xs:appinfo>
    <xs:documentation>Other</xs:documentation>
    <xs:appinfo>Explain</xs:appinfo>
  </xs:annotation>
</xs:enumeration>
<xs:enumeration value="14">
  <xs:annotation>
    <xs:documentation>Other</xs:documentation>
    <xs:appinfo>Explain</xs:appinfo>
  </xs:annotation>
</xs:enumeration>
</xs:restriction>
</xs:simpleType>
<xs:simpleType name="PollutantType">
  <xs:restriction base="xs:string">
    <xs:enumeration value="1">
      <xs:annotation>
        <xs:documentation>None found</xs:documentation>
      </xs:annotation>
    </xs:enumeration>

```

```

<xs:enumeration value="2">
  <xs:annotation>
    <xs:documentation>Unconfirmed, unspecified, or not
identified</xs:documentation>
  </xs:annotation>
</xs:enumeration>
<xs:enumeration value="3">
  <xs:annotation>
    <xs:appinfo>Solid waste</xs:appinfo>
    <xs:documentation>Trash</xs:documentation>
  </xs:annotation>
</xs:enumeration>
<xs:enumeration value="4">
  <xs:annotation>
    <xs:appinfo>Solid waste</xs:appinfo>
    <xs:documentation>Sediment/soil</xs:documentation>
  </xs:annotation>
</xs:enumeration>
<xs:enumeration value="5">
  <xs:annotation>
    <xs:appinfo>Solid waste</xs:appinfo>
    <xs:documentation>Cement, concrete, lime, or plaster</xs:documentation>
  </xs:annotation>
</xs:enumeration>
<xs:enumeration value="6">
  <xs:annotation>
    <xs:appinfo>Solid waste</xs:appinfo>
    <xs:documentation>Yard waste or other plant or wood
waste</xs:documentation>
  </xs:annotation>
</xs:enumeration>
<xs:enumeration value="7">
  <xs:annotation>
    <xs:appinfo>Solid waste</xs:appinfo>
    <xs:documentation>Food waste </xs:documentation>
  </xs:annotation>
</xs:enumeration>
<xs:enumeration value="8">
  <xs:annotation>
    <xs:appinfo>Solid waste</xs:appinfo>
    <xs:documentation>Pet waste or human waste</xs:documentation>
  </xs:annotation>
</xs:enumeration>
<xs:enumeration value="9">
  <xs:annotation>
    <xs:appinfo>Solid waste</xs:appinfo>
    <xs:documentation>Carpet cleaning waste </xs:documentation>
  </xs:annotation>

```

```

</xs:enumeration>
<xs:enumeration value="10">
  <xs:annotation>
    <xs:appinfo>Solid waste</xs:appinfo>
    <xs:documentation>Roofing materials </xs:documentation>
  </xs:annotation>
</xs:enumeration>
<xs:enumeration value="11">
  <xs:annotation>
    <xs:appinfo>Solid waste</xs:appinfo>
    <xs:documentation>Road tar</xs:documentation>
  </xs:annotation>
</xs:enumeration>
<xs:enumeration value="12">
  <xs:annotation>
    <xs:appinfo>Liquid waste</xs:appinfo>
    <xs:documentation>Vehicle oil, fuel, or other lubricant</xs:documentation>
  </xs:annotation>
</xs:enumeration>
<xs:enumeration value="13">
  <xs:annotation>
    <xs:appinfo>Liquid waste</xs:appinfo>
    <xs:documentation>Antifreeze or other coolant</xs:documentation>
  </xs:annotation>
</xs:enumeration>
<xs:enumeration value="14">
  <xs:annotation>
    <xs:appinfo>Liquid waste</xs:appinfo>
    <xs:documentation>Paint </xs:documentation>
  </xs:annotation>
</xs:enumeration>
<xs:enumeration value="15">
  <xs:annotation>
    <xs:documentation>Sewage/septage</xs:documentation>
  </xs:annotation>
</xs:enumeration>
<xs:enumeration value="16">
  <xs:annotation>
    <xs:appinfo>Oil</xs:appinfo>
    <xs:documentation>Vehicle oil, fuel, or other lubricant</xs:documentation>
  </xs:annotation>
</xs:enumeration>
<xs:enumeration value="17">
  <xs:annotation>
    <xs:appinfo>Oil</xs:appinfo>
    <xs:documentation>Food preparation oil</xs:documentation>
  </xs:annotation>
</xs:enumeration>

```

```

<xs:enumeration value="18">
  <xs:annotation>
    <xs:appinfo>Oil</xs:appinfo>
    <xs:documentation>Heating oil or kerosene</xs:documentation>
  </xs:annotation>
</xs:enumeration>
<xs:enumeration value="19">
  <xs:annotation>
    <xs:appinfo>Chemical</xs:appinfo>
    <xs:documentation>Household or industrial chemical </xs:documentation>
    <xs:appinfo>Explain</xs:appinfo>
  </xs:annotation>
</xs:enumeration>
<xs:enumeration value="20">
  <xs:annotation>
    <xs:appinfo>Chemical</xs:appinfo>
    <xs:documentation>Pesticide or herbicide</xs:documentation>
  </xs:annotation>
</xs:enumeration>
<xs:enumeration value="21">
  <xs:annotation>
    <xs:appinfo>Chemical</xs:appinfo>
    <xs:documentation>Fertilizer</xs:documentation>
  </xs:annotation>
</xs:enumeration>
<xs:enumeration value="22">
  <xs:annotation>
    <xs:appinfo>Foam</xs:appinfo>
    <xs:documentation>Soap/detergent</xs:documentation>
  </xs:annotation>
</xs:enumeration>
<xs:enumeration value="23">
  <xs:annotation>
    <xs:appinfo>Foam</xs:appinfo>
    <xs:documentation>Fire-fighting foam</xs:documentation>
  </xs:annotation>
</xs:enumeration>
<xs:enumeration value="24">
  <xs:annotation>
    <xs:appinfo>Foam</xs:appinfo>
    <xs:documentation>Other or unknown foam </xs:documentation>
  </xs:annotation>
</xs:enumeration>
<xs:enumeration value="25">
  <xs:annotation>
    <xs:appinfo>Other</xs:appinfo>
    <xs:documentation>PCBs</xs:documentation>
  </xs:annotation>

```

```

</xs:enumeration>
<xs:enumeration value="26">
  <xs:annotation>
    <xs:appinfo>Other</xs:appinfo>
    <xs:documentation>Refrigerant</xs:documentation>
  </xs:annotation>
</xs:enumeration>
<xs:enumeration value="27">
  <xs:annotation>
    <xs:appinfo>Other</xs:appinfo>
    <xs:documentation>Chlorinated water</xs:documentation>
  </xs:annotation>
</xs:enumeration>
<xs:enumeration value="28">
  <xs:annotation>
    <xs:appinfo>Other</xs:appinfo>
    <xs:documentation>Bacteria</xs:documentation>
  </xs:annotation>
</xs:enumeration>
<xs:enumeration value="29">
  <xs:annotation>
    <xs:documentation>Other not listed</xs:documentation>
    <xs:appinfo>Explain</xs:appinfo>
  </xs:annotation>
</xs:enumeration>
</xs:restriction>
</xs:simpleType>
<xs:simpleType name="SourceType">
  <xs:restriction base="xs:string">
    <xs:enumeration value="1">
      <xs:annotation>
        <xs:documentation>Not applicable</xs:documentation>
      </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="2">
      <xs:annotation>
        <xs:documentation>Not identified</xs:documentation>
      </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="3">
      <xs:annotation>
        <xs:documentation>Illicit connection</xs:documentation>
      </xs:annotation>
    </xs:enumeration>
    <xs:enumeration value="4">
      <xs:annotation>
        <xs:documentation>Dumping</xs:documentation>
      </xs:annotation>
    </xs:enumeration>
  </xs:restriction>
</xs:simpleType>

```

```

</xs:enumeration>
<xs:enumeration value="5">
  <xs:annotation>
    <xs:documentation>Spill</xs:documentation>
  </xs:annotation>
</xs:enumeration>
<xs:enumeration value="6">
  <xs:annotation>
    <xs:appinfo>Construction activity</xs:appinfo>
    <xs:documentation>Construction BMP failure</xs:documentation>
  </xs:annotation>
</xs:enumeration>
<xs:enumeration value="7">
  <xs:annotation>
    <xs:documentation>Structural BMP failure</xs:documentation>
  </xs:annotation>
</xs:enumeration>
<xs:enumeration value="8">
  <xs:annotation>
    <xs:appinfo>Vehicle related</xs:appinfo>
    <xs:documentation>Fueling</xs:documentation>
  </xs:annotation>
</xs:enumeration>
<xs:enumeration value="9">
  <xs:annotation>
    <xs:appinfo>Vehicle related</xs:appinfo>
    <xs:documentation>Vehicle collision/accident </xs:documentation>
  </xs:annotation>
</xs:enumeration>
<xs:enumeration value="10">
  <xs:annotation>
    <xs:appinfo>Vehicle related</xs:appinfo>
    <xs:documentation>Auto repair</xs:documentation>
  </xs:annotation>
</xs:enumeration>
<xs:enumeration value="11">
  <xs:annotation>
    <xs:appinfo>Vehicle related</xs:appinfo>
    <xs:documentation>Vehicle washing</xs:documentation>
  </xs:annotation>
</xs:enumeration>
<xs:enumeration value="12">
  <xs:annotation>
    <xs:appinfo>Vehicle related</xs:appinfo>
    <xs:documentation>Vehicle leakage/fluids</xs:documentation>
  </xs:annotation>
</xs:enumeration>
<xs:enumeration value="13">

```

```

<xs:annotation>
  <xs:appinfo>Improper business operation or activity</xs:appinfo>
  <xs:documentation>Equipment cleaning</xs:documentation>
</xs:annotation>
</xs:enumeration>
<xs:enumeration value="14">
  <xs:annotation>
    <xs:appinfo>Improper business operation or activity</xs:appinfo>
    <xs:documentation>Pressure washing</xs:documentation>
  </xs:annotation>
</xs:enumeration>
<xs:enumeration value="15">
  <xs:annotation>
    <xs:appinfo>Improper business operation or activity</xs:appinfo>
    <xs:documentation>Leaking or abandoned
container/dumpster</xs:documentation>
  </xs:annotation>
</xs:enumeration>
<xs:enumeration value="16">
  <xs:annotation>
    <xs:appinfo>Improper business operation or activity</xs:appinfo>
    <xs:documentation>Drive-thru</xs:documentation>
  </xs:annotation>
</xs:enumeration>
<xs:enumeration value="17">
  <xs:annotation>
    <xs:appinfo>Improper business operation or activity</xs:appinfo>
    <xs:documentation>Mobile business</xs:documentation>
    <xs:appinfo>Explain</xs:appinfo>
  </xs:annotation>
</xs:enumeration>
<xs:enumeration value="18">
  <xs:annotation>
    <xs:appinfo>Improper business operation or activity</xs:appinfo>
    <xs:documentation>Retail operations</xs:documentation>
  </xs:annotation>
</xs:enumeration>
<xs:enumeration value="19">
  <xs:annotation>
    <xs:appinfo>Improper business operation or activity</xs:appinfo>
    <xs:documentation>Restaurant</xs:documentation>
  </xs:annotation>
</xs:enumeration>
<xs:enumeration value="20">
  <xs:annotation>
    <xs:appinfo>Improper business operation or activity</xs:appinfo>
    <xs:documentation>Non-emergency firefighting or training</xs:documentation>
  </xs:annotation>
</xs:enumeration>

```

```

</xs:enumeration>
<xs:enumeration value="21">
  <xs:annotation>
    <xs:appinfo>Improper business operation or activity</xs:appinfo>
    <xs:documentation>Logging</xs:documentation>
  </xs:annotation>
</xs:enumeration>
<xs:enumeration value="22">
  <xs:annotation>
    <xs:appinfo>Improper business operation or activity</xs:appinfo>
    <xs:documentation>Livestock</xs:documentation>
  </xs:annotation>
</xs:enumeration>
<xs:enumeration value="23">
  <xs:annotation>
    <xs:appinfo>Improper business operation or activity</xs:appinfo>
    <xs:documentation>Other </xs:documentation>
    <xs:appinfo>Explain</xs:appinfo>
  </xs:annotation>
</xs:enumeration>
<xs:enumeration value="24">
  <xs:annotation>
    <xs:appinfo>Allowable discharge</xs:appinfo>
    <xs:documentation>Diverted stream flow</xs:documentation>
  </xs:annotation>
</xs:enumeration>
<xs:enumeration value="25">
  <xs:annotation>
    <xs:appinfo>Allowable discharge</xs:appinfo>
    <xs:documentation>Flow from riparian habitat or wetland</xs:documentation>
  </xs:annotation>
</xs:enumeration>
<xs:enumeration value="26">
  <xs:annotation>
    <xs:appinfo>Allowable discharge</xs:appinfo>
    <xs:documentation>Uncontaminated ground water or spring
water</xs:documentation>
  </xs:annotation>
</xs:enumeration>
<xs:enumeration value="27">
  <xs:annotation>
    <xs:appinfo>Allowable discharge</xs:appinfo>
    <xs:documentation>Foundation or footing drain</xs:documentation>
  </xs:annotation>
</xs:enumeration>
<xs:enumeration value="28">
  <xs:annotation>
    <xs:appinfo>Allowable discharge</xs:appinfo>

```

```

    <xs:documentation>Uncontaminated water from crawl space
    pump</xs:documentation>
  </xs:annotation>
</xs:enumeration>
<xs:enumeration value="29">
  <xs:annotation>
    <xs:appinfo>Allowable discharge</xs:appinfo>
    <xs:documentation>Air conditioning condensation</xs:documentation>
  </xs:annotation>
</xs:enumeration>
<xs:enumeration value="30">
  <xs:annotation>
    <xs:appinfo>Allowable discharge</xs:appinfo>
    <xs:documentation>Irrigation water from agricultural
    source</xs:documentation>
  </xs:annotation>
</xs:enumeration>
<xs:enumeration value="31">
  <xs:annotation>
    <xs:appinfo>Allowable discharge</xs:appinfo>
    <xs:documentation>Emergency firefighting</xs:documentation>
  </xs:annotation>
</xs:enumeration>
<xs:enumeration value="32">
  <xs:annotation>
    <xs:appinfo>Conditionally allowed discharge</xs:appinfo>
    <xs:documentation>Potable water</xs:documentation>
  </xs:annotation>
</xs:enumeration>
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Example (IDDE.xml)

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        </Trace>
      </Traces>
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        </Source>
      </Sources>
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      </Pollutants>
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    </Location>
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    <Discharge>
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    <DateResponseBegin>2018-08-10</DateResponseBegin>
    <DateReported>2018-08-09</DateReported>
    <DateIncident>2018-08-08</DateIncident>
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```

<IDDEvent>
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APPENDIX 3: APPLICABLE TMDL REQUIREMENTS

This appendix identifies the action items for WSDOT associated with the applicable TMDLs. Action items with due dates which have already been completed during the 2014 permit cycle have been removed in the 2019 permit. Where TMDLs have determined Waste Load Allocations (WLAs) for WSDOT stormwater discharges, compliance with the action items listed below constitutes compliance with the WLAs. This appendix lists the applicable TMDLs in two parts. Part 1 includes TMDLs that require specific action items. Part 2 lists TMDLs that require WSDOT to implement the permit obligations that address the TMDL-listed pollutant in the TMDL areas.

Part 1 – For TMDLs listed in this part, in addition to applying the Highway Runoff Manual (HRM), compliance with the action items identified below shall constitute compliance with the TMDL WLAs.

1. Deschutes River, Percival Creek, and Budd Inlet Tributaries Temperature, Fecal Coliform Bacteria, Dissolved Oxygen, pH, and Fine Sediment TMDL (Ecology publication # 15-10-012):
 - Within NPDES Phase II areas:
 - Implement permit obligations that address the TMDL-listed pollutants.
 - Participate in adaptive management process.
(As needed)

2. Hangman Creek Fecal Coliform, Temperature and TSS/Turbidity TMDL (Ecology publication #11-10-012 and #09-10-030):
 - If stormwater discharges that transport bacteria over natural background levels to listed receiving waters are found from sources within WSDOT's right-of-way and control, WSDOT will apply BMPs from their SWMP or perform remediation to correct bacteria discharges.
(As needed)
 - To address TSS/turbidity associated with adjacent erosion (run-on) including delivery that results from farming activities, WSDOT will work cooperatively with Ecology, the local jurisdiction, and other parties involved to prevent sediment from entering area waterways. At a minimum, WSDOT will:
 - Spend one day annually performing a highway evaluation with Ecology regional staff to document up to 15 erosion problem sites.
 - Collaborate with Ecology on developing a map of the problems sites.
 - Refer up to three (3) priority sites annually to Ecology (letter or e-mail) for follow-up.
 - Adaptively manage with Ecology as needed.

3. Issaquah Creek Basin Fecal Coliform TMDL (Ecology publication #04-10-055):
 - If stormwater discharges that transport bacteria over natural background levels to listed receiving waters are found from sources within WSDOT's right-of-way and control, WSDOT will apply BMPs from their SWMP or perform remediation to correct bacteria discharges. For run-on sources of bacteria identified by WSDOT that are from outside of WSDOT's right-of-way, WSDOT will notify Ecology and work cooperatively with Ecology, the local jurisdiction, and other parties involved for their resolution.
(As needed)

4. Little Bear Creek Watershed Fecal Coliform TMDL (Ecology publication #05-10-024):

- If stormwater discharges that transport bacteria over natural background levels to listed receiving waters are found from sources within WSDOT's right-of-way and control, WSDOT will apply BMPs from their SWMP or perform remediation to correct bacteria discharges. For run-on sources of bacteria identified by WSDOT that are from outside of WSDOT's right-of-way, WSDOT will notify Ecology and work cooperatively with Ecology, the local jurisdiction, and other parties involved for their resolution.
(As needed)
5. Nisqually River Tributaries Fecal Coliform and Dissolved Oxygen TMDL (Ecology publication #07-10-016 and #05-10-040):
- Provide replacement bags at pet waste station on the dike at McAllister Creek or close public access to the dike.
(As needed)
 - Participate in adaptive management meetings.
(As needed)
6. North Fork Palouse River Dissolved Oxygen and pH TMDL (Ecology publication # 15-10-029)
- If stormwater discharges that transport nitrogen over natural background levels to listed receiving waters are found from sources within WSDOT's right-of-way and control, WSDOT will apply BMPs from their SWMP or perform remediation to correct nitrogen discharges.
(As needed)
 - WSDOT will implement their IDDE program.
(On-going)
 - WSDOT will minimize the potential nitrogen impacts from hydro-seed and chemical treatments within the TMDL boundary.
(On-going)
 - To address nitrogen delivery associated with adjacent erosion (run-on) including delivery that results from farming activities, WSDOT will work cooperatively with Ecology, the local jurisdiction, and other parties involved to prevent sediment from entering area waterways. At a minimum, WSDOT will:
 - Spend one day annually performing a highway evaluation with Ecology regional staff to document up to 15 problem sites.
 - Collaborate with Ecology on developing a map of the problems sites.
 - Refer up to three (3) priority sites annually to Ecology (letter or e-mail) for follow-up.
 - Adaptively manage with Ecology as needed.
7. Oakland Bay Tributaries/Hammersley Inlet Fecal Coliform and Temperature TMDL (Ecology publication No. 11-10-039, <http://www.ecy.wa.gov/biblio/1110039.html>):
- WSDOT will work with Ecology, Squaxin Island Tribe, and Mason County to determine potential sources of fecal coliform within WSDOT's right-of-way and control on a limited number of high priority Highway 3 stormwater discharge locations to Oakland bay. This work may include but is not limited to site visits, data review, and collaborative problem solving. If sources are identified within WSDOT's control, WSDOT will develop a plan and initiate efforts to apply best management practices from their SWMP or perform remediation to correct the situations.
(On-going)
 - If stormwater discharges that transport bacteria over natural background levels to listed receiving waters are found from sources within WSDOT's right-of-way and control, WSDOT will apply

BMPs from their SWMP or perform remediation to correct bacteria discharges. For run-on sources of bacteria identified by WSDOT that are from outside of WSDOT's right-of-way, WSDOT will notify Ecology and work cooperatively with Ecology, the local jurisdiction, and other parties involved for their resolution.
(As needed)

8. Palouse River Watershed Fecal Coliform TMDL (Ecology publication #10-10-067):

- If stormwater discharges that transport bacteria over natural background levels to listed receiving waters are found from sources within WSDOT's right-of-way and control, WSDOT will apply BMPs from their SWMP or perform remediation to correct bacteria discharges. For run-on sources of bacteria identified by WSDOT that are from outside of WSDOT's right-of-way, WSDOT will notify Ecology and work cooperatively with Ecology, the local jurisdiction, and other parties involved for their resolution.
(As needed)

9. Samish Bay Watershed Fecal Coliform TMDL (Ecology publication #09-10-019):

- Participate in TMDL adaptive management process.
(On-going)

10. South Fork Palouse River Fecal Coliform TMDL (Ecology publication #11-10-074 and #09-10-060):

- If stormwater discharges that transport bacteria over natural background levels to listed receiving waters are found from sources within WSDOT's right-of-way and control, WSDOT will apply BMPs from their SWMP or perform remediation to correct bacteria discharges. For run-on sources of bacteria identified by WSDOT that are from outside of WSDOT's right-of-way, WSDOT will notify Ecology and work cooperatively with Ecology, the local jurisdiction, and other parties involved for their resolution.
(As needed)
- WSDOT will annually inspect under the Highway 195 Bridge in Colfax and take any necessary action to prevent pigeons from roosting there.
(Within 90 days of the annual inspection)

11. South Prairie Creek Watershed Fecal Coliform and Temperature TMDL (Ecology publication #06-10-018 and #03-10-055):

- If stormwater discharges that transport bacteria over natural background levels to listed receiving waters are found from sources within WSDOT's right-of-way and control, WSDOT will apply BMPs from their SWMP or perform remediation to correct bacteria discharges. For run-on sources of bacteria identified by WSDOT that are from outside of WSDOT's right-of-way, WSDOT will notify Ecology and work cooperatively with Ecology, the local jurisdiction, and other parties involved for their resolution.
(As needed)
- Participate in adaptive management meetings.
(As needed)

12. Spokane River Watershed Dissolved Oxygen TMDL (Ecology publication #07-10-073):

- If stormwater discharges that transport phosphorus and ammonia over natural background levels to listed receiving waters are found from sources within WSDOT's right-of-way and control, WSDOT will apply BMPs from their SWMP or perform remediation to correct the

situation. For run-on sources of phosphorus and ammonia identified by WSDOT that are from outside of WSDOT's right-of-way, WSDOT will notify Ecology and work cooperatively with Ecology, the local jurisdiction, and other parties involved for their resolution.
(As needed)

13. Stillaguamish River Watershed Fecal Coliform, Dissolved Oxygen, Turbidity, pH, Mercury, Arsenic and Temperature TMDL (Ecology publication #06-10-057):
 - If stormwater discharges that transport bacteria over natural background levels to listed receiving waters are found from sources within WSDOT's right-of-way and control, WSDOT will apply BMPs from their SWMP or perform remediation to correct bacteria discharges. For run-on sources of bacteria identified by WSDOT that are from outside of WSDOT's right-of-way, WSDOT will notify Ecology and work cooperatively with Ecology, the local jurisdiction, and other parties involved for their resolution.
(As needed)
 - Provide replacement bags and maintain educational signage at pet waste management stations at I-5 rest areas.
(As needed)
14. Swamp Creek Basin Fecal Coliform TMDL (Ecology publication #06-10-021):
 - If stormwater discharges that transport bacteria over natural background levels to listed receiving waters are found from sources within WSDOT's right-of-way and control, WSDOT will apply BMPs from their SWMP or perform remediation to correct bacteria discharges. For run-on sources of bacteria identified by WSDOT that are from outside of WSDOT's right-of-way, WSDOT will notify Ecology and work cooperatively with Ecology, the local jurisdiction, and other parties involved for their resolution.
(As needed)
15. Teanaway River Temperature TMDL (Ecology publication #03-10-025 and #01-10-019)
 - Maintain roads and roadside stormwater conveyance ditches to prevent entry of sediment into area waterways.
(On-going)
16. Totten, Eld, and Skookum Inlets Tributaries Fecal Coliform and Temperature TMDL (Ecology publication #06-03-007):
 - If stormwater discharges that transport bacteria over natural background levels to listed receiving waters are found from sources within WSDOT's right-of-way and control, WSDOT will apply BMPs from their SWMP or perform remediation to correct bacteria discharges. For run-on sources of bacteria identified by WSDOT that are from outside of WSDOT's right-of-way, WSDOT will notify Ecology and work cooperatively with Ecology, the local jurisdiction, and other parties involved for their resolution.
(As needed)
17. Tucannon River Watershed Temperature TMDL (Ecology publication #10-10-019):
 - Maintain roads and roadside stormwater conveyance ditches to prevent entry of sediment into area waterways.
(On-going)
18. Upper Yakima River Basin Suspended Sediment, Turbidity and Organochlorine Pesticide TMDL (Ecology publication #02-10-047 and #03-10-058):
 - Maintain roads and roadside stormwater conveyance ditches to prevent sediment from entering

area waterways.
(On-going)

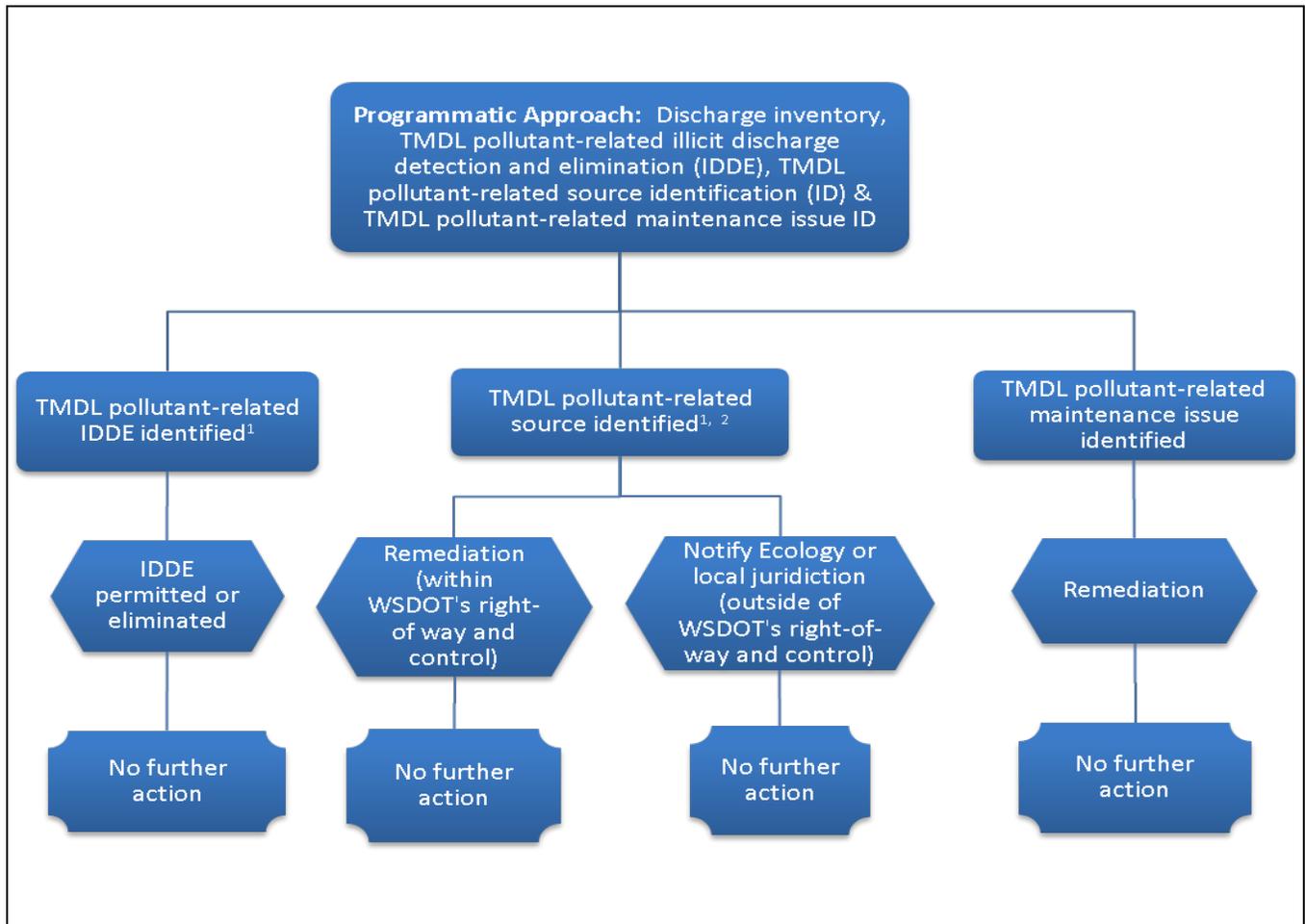
19. Walla Walla River Watershed Fecal Coliform, PCBs, Chlorinated Pesticide, Temperature, pH and Dissolved Oxygen TMDL (Ecology publication #06-10-074 (Bacteria), #05-10-079 (Toxics), #07-10-030 (Temperature), and #07-03-010 (DO and pH)):

- The US 12 project will re-route 97 percent of the highway's traffic volume to the plateau located well above the Walla Walla River.
(Dependent on funding)
- WSDOT will implement infiltration and/or dispersion to address the pollutants covered under this TMDL, where feasible.
(On-going)
- WSDOT will follow the current Integrated Roadside Vegetation Management Plan (South Central Region, Area 4) within the Walla Walla TMDL boundary.
(On-going)

Part 2 – For the TMDLs listed in this part, in addition to applying the Highway Runoff Manual (HRM), compliance with permit obligations that address the TMDL-listed pollutants shall constitute compliance with these TMDLs and prescribed WLAs.

1. Bear-Evans Fecal Coliform, Dissolved Oxygen and Temperature TMDL (Ecology publication #08-10-026 and 08-10-058)
2. Clarks Creek Dissolved Oxygen and Sediment TMDL (Ecology publication #14-10-030)
3. Green River Temperature TMDL (Ecology publication #11-10-046)
4. Henderson Inlet Watershed Fecal Coliform TMDL (Ecology publication #08-10-040 and #06-10-058)
5. Liberty Bay Watershed Fecal Coliform Bacteria TMDL (Ecology publication # 13-10-014)
 - WSDOT's obligations apply to Phase II municipal stormwater permit areas only.
6. Newaukum Creek Temperature TMDL (Ecology publication #11-10-047)
7. Puyallup River Watershed Fecal Coliform TMDL (Ecology publication #11-10-040)
8. Salmon Creek Watershed Temperature TMDL (Ecology publication #11-10-044)
9. Sinclair and Dyes Inlets Fecal Coliform Bacteria TMDL (Ecology publication #11-10-051)
10. Snoqualmie River Temperature TMDL (Ecology publication #11-10-041)
11. Upper Naches River and Cowiche Creek Temperature TMDL (publication #10-10-068):
 - WSDOT's obligations apply to Phase II municipal stormwater permit areas only.
12. Whatcom, Squalicum, and Padden Creeks Temperature TMDL (Ecology publication #11-10-019)

WSDOT's Programmatic Approach flow chart



¹ Based on visual observation

² Only sources that enter a WSDOT conveyance and discharge to a surface water body included in the TMDL.

APPENDIX 4 - LABORATORY METHODS

Unless alternative methods are approved by Ecology in WSDOT's QAPPs, WSDOT shall use the following analytical methods when analyzing stormwater and sediments as required by section S7 – *Monitoring* of this permit. For consideration of Ecology's approval, any alternative method proposed by WSDOT must have similar reporting limits, or provide adequate justification for the likely range of concentrations. WSDOT must receive Ecology approval of alternative methods or reporting limits prior to implementation.

A. Methods for Water Samples

Analyte	Method in Water (SM=Standard Method, EPA=EPA Method)	Reporting Limit Target ^a
Total Suspended Solids (TSS)	SM 2540B or SM 2540D	1.0 mg/L
Total Chloride	EPA 300.0 Rev. 2.1, EPA 325.2 or SM 4110B	0.2 mg/L
Particle Size Distribution (PSD)	ASTM D3977-97/TAPE; Coulter Counter, laser diffraction; or comparable method - <i>see attached method</i> , or SM 2560B	NA
pH	EPA 150.2 or SM 4500H ⁺ B	0.2 units
Hardness as CaCO ₃	EPA 200.7, SM 2340B (ICP), SM	1.0 mg/L
Fecal coliform	SM 9221E; SM 9222D	2 min., 2E6 max CFU/100 mL
Total Phosphorus (TP)	EPA 365.3, EPA 365.4, SM 4500- P E, or SM 4500-P F	0.01 mg P/L
Orthophosphate (OP)	EPA 365.1, 365.3, SM 4500-P E, or SM 4500-P F, SM 4500-P G	0.01 mg P/L
Total Recoverable Zinc	EPA 200.8 (ICP/MS), EPA 200.7 or	5.0 ug/L
Dissolved Zinc	EPA 200.8 (ICP/MS) or SM 3125 (ICP/MS)	5.0 ug/L
Total Recoverable Lead	EPA 200.8 (ICP/MS) or SM 3125 (ICP/MS)	0.1 ug/L

Dissolved Lead	EPA 200.8 (ICP/MS) or SM 3125 (ICP/MS)	0.1 ug/L
Total Recoverable Copper	EPA 200.8 (ICP/MS) or SM 3125	0.1 ug/L

Analyte	Method in Water (SM=Standard Method, EPA=EPA Method)	Reporting Limit Target ^a
Dissolved Copper	EPA 200.8 (ICP/MS) or SM 3125 (ICP/MS)	0.1 ug/L
Total Recoverable Cadmium	EPA 200.8 (ICP/MS) or SM 3125 (ICP/MS)	0.2 ug/L
Dissolved Cadmium	EPA 200.8 (ICP/MS) or SM 3125 (ICP/MS)	0.1 ug/L
PAH Compounds*	EPA SW-846 8310 or 8270D	0.1 ug/L
Phthalates**	EPA SW-846 8270D	1.0 ug/L
Herbicides - Dichlobenil, 2,4-D, Clopyralid, Picloram, Triclopyr (Ester formula only)	EPA SW-846 Method 8270D or EPA SW-846 8151A	0.01-1.0 ug/L
Herbicides - Diuron	EPA SW-846 Method 8270D, SW- 846 Method 8321B, EPA SW-846 8151A	0.01-1.0 ug/L
Herbicides – Glyphosate (non- aquatic formula)	EPA 547, EPA SW-846 Method 8270D,EPA SW-846 8151A	25 ug/L
Total Petroleum Hydrocarbons- Diesel (NWTPH-Dx)	NWTPH-Dx - Ecology 1997 (Publication No. 97-602) or EPA SW-846 Method 8015C(B)	0.25 – 0.50 mg/L
Total Petroleum Hydrocarbons- Gasoline (NWTPH-Gx)	NWTPH-Gx - Ecology 1997 (Publication No. 97-602)	0.25 mg/L

a. The QAPP shall identify Ecology- or EPA-approved methods with appropriate reporting limits. An individual sample that could not be run at a reporting limit because of matrix interference or other such reasons would not be called into question for compliance purposes. The QAPP shall also identify and define data qualification criteria for values resulting below the reporting limit.

NA – Not applicable

SM – Standard Methods

* PAH compounds including at a minimum, but not limited to: acenaphthene, acenaphthylene, anthracene, benzo[a]anthracene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[ghi]perylene, benzo[a]pyrene, chrysene, dibenzo[a,h]anthracene, fluoranthene, fluorene, indeno[1,2,3-cd]pyrene, naphthalene, phenanthrene, and pyrene

** Phthalates including, at a minimum, but not limited to: *bis* (2-Ethylhexyl)phthalate, Butyl benzyl phthalate, Di- n-butyl phthalate, Diethyl phthalate, Dimethyl phthalate, and Di-n-octyl phthalate.

B. Methods for Sediment Samples

Analyte	Method in Sediment	Reporting Limit Target ^a
Total Solids (%)	SM 2540G; SM 2540B	N/A
Total Volatile Solids (%)	EPA 160.4 or SM 2540E	0.1%
Total Organic Carbon (TOC)	Puget Sound Estuary Protocols (PSEP 1997), SM 5310C, SM 5310D or EPA 9060A	0.1%
Particle Size (grain size)	Ecology Method Sieve and Pipet (ASTM 1997), PSEP 1986/2003, ASTM F312-97 or ASTM D422	N/A
Total Recoverable Zinc	EPA 200.8 (ICP/MS), EPA 200.7 (ICP), EPA SW-846 6010C, EPA SW-846 6020A or SM 3125	5.0 mg/kg dry
Total Recoverable Lead	EPA 200.8 (ICP/MS), EPA SW-846 6010C, EPA SW-846 6020A or SM 3125 (ICP/MS)	0.1 mg/kg dry
Total Recoverable Copper	EPA 200.8 (ICP/MS), EPA SW-846 6010C, EPA SW-846 6020A or SM 3125 (ICP/MS)	0.1 mg/kg dry
Total Recoverable Cadmium	EPA 200.8 (ICP/MS), EPA SW-846 6010C, EPA SW-846 6020A or SM 3125 (ICP/MS)	0.1 mg/kg dry
Total Recoverable Arsenic	EPA 200.8 (ICP/MS), EPA SW-846 6010C, EPA SW-846 6020A or SM 3125 (ICP/MS)	0.1 mg/kg dry
Total Phosphorus (TP)	EPA 200.7, SW-846 6020 A	0.01 mg/kg dry

Herbicides Dichlobenil, Triclopyr, Picloram, Clopyralid	EPA SW-846 8270D or EPA 8151A	70 ug/Kg dry
PCB-Aroclors	EPA Method 8082A	1.25-2.5 ug/kg dry
PAH compounds*	EPA SW-846 Method 8270D	70 ug/kg dry
Phthalates**	EPA SW-846 Method 8270D	70 ug/kg dry
Phenolics***	EPA SW-846 Method 8270D or PSEP 1997	70 ug/kg dry
Total Petroleum Hydrocarbons- Diesel (NWTPH-Dx)	Ecology 1997 (Publication No. 97- 602) or EPA SW-846 Method 8015C(B)	25.0-100.0 mg/Kg dry

a. The QAPP shall identify Ecology- or EPA-approved methods with appropriate reporting limits. An individual sample that could not be run at a reporting limit because of matrix interference or other such reasons would not be called into question for compliance purposes. All results shall be reported. The QAPP shall also identify and define data qualification criteria for values resulting below the reporting limit.

NA – Not applicable

SM – Standard Methods

*PAH compounds including at a minimum, but not limited to: acenaphthene, acenaphthylene, anthracene, benzo[a]anthracene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[ghi]perylene, benzo[a]pyrene, chrysene, dibenzo[a,h]anthracene, fluoranthene, fluorene, indeno[1,2,3-cd]pyrene, naphthalene, phenanthrene, and pyrene.

**Phthalates including, at a minimum, but not limited to: *bis*(2-Ethylhexyl)phthalate, Butyl benzyl phthalate, Di- n-butyl phthalate, Diethyl phthalate, Dimethyl phthalate, and Di-n-octyl phthalate.

***Phenolics including, at a minimum, but not limited to: phenol, 2-methylphenol, 4-methylphenol, 2,4-dimethylphenol, pentachlorophenol, benzyl alcohol, and benzoic acid.

C. Wet Sieving Mass Measurement for Laser Diffraction Analysis

Sample Collection/Handling

Samples should be collected in HDPE or Teflon containers and held at 4 degrees C during the collection process. If organic compounds are being collected, the sample containers should be glass or Teflon.

Preservation/Holding Time

Samples should be stored at 4° C and must be analyzed within 7 days (EPA, 1998). Samples may not be frozen or dried prior to analysis, as either process may change the particle size distribution.

Sonication

Do not sonicate samples prior to analysis to preserve particle integrity and representativeness. Laboratories using laser diffraction will have to be notified not to sonicate these samples at any time during the analysis. It is recommended that this request also be written on the chain-of-custody form that the analytical laboratory receives in order to assure that sonication is omitted.

LABORATORY PROCEDURES

Equipment

- 2 Liters of stormwater sample water [total sample required for analysis (ASTM D 3977)]
- Drying oven (90 degrees C \pm 2 degrees)
- Analytical balance (0.01 mg accuracy)
- Desiccator (large enough diameter to accommodate sieve)
- Standard sieves – larger than 2” diameter may be desirable
- 500 um (Tyler 32, US Standard 35)
- 250 um (Tyler 60, US Standard 60)
- Beakers – plastic (HDPE)
- Funnel (HDPE – Large enough diameter to accommodate sieve)
- Wash bottle
- Pre-measured reagent-grade water

Sample Processing

- Dry 250 um and 500 um mesh sieves in a drying oven to a constant weight at $90 \pm 2^\circ$ C.
- Cool the sieves to room temperature in a desiccator.
- Weigh each sieve to the nearest 0.01 mg.
- Record the initial weight of each dry sieve.
- Measure the volume of sample water and record.
- Pour the sample through a nested sieve stack (the 500 um sieve should be on the top and the sieve stack should be stabilized in a funnel and the funnel should be resting above/inside a collection beaker).
- Use some of the pre-measured reagent-grade water in wash bottle to thoroughly rinse all soil particles from sample container so that all soil particles are rinsed through the sieve.
- Thoroughly rinse the soil particles in the sieve using a pre-measured volume of reagent-grade water.

- The particles that pass through the sieve stack will be analyzed by laser diffraction Particle Size Distribution (PSD) analysis using the manufacturers recommended protocols (with the exception of no sonication).
- Particles retained on the sieve (>250 um) will not be analyzed with the laser diffraction PSD.
- Dry each sieve (500 um and 250 um) with the material it retained in a drying oven to a constant weight at $90 \pm 2^\circ$ C. The drying temperature should be less than 100° C to prevent boiling and potential loss of sample (PSEP, 1986).
- Cool the samples to room temperature in a desiccator.
- Weigh the cooled sample with each sieve to the nearest 0.01 mg.
- Subtract initial dry weight of each sieve from final dry weight of the sample and sieve together.
- Record weight of particles/debris separately for each size fraction (> 500 um and 499 - 250 um).
- Document the dominant types of particles/debris found in this each size fraction.

Laser Diffraction (PSD)

PSD results are reported in mg/L for each particle size range. Particle size gradations should match the Wentworth grade scale (Wentworth, 1922).

Mass Measurement

Equipment

- Glass filter - 0.45 um (pore size) glass fiber filter disk (Standard Method D 3977) (larger diameter sized filter is preferable)
- Drying oven (90 degrees C \pm 2 degrees)
- Analytical balance (0.01 mg accuracy)
- Wash bottle
- Reagent-grade water

Procedure

- Dry glass filter in drying oven at $90 \pm 2^\circ$ C to a constant weight.
- Cool the glass filter to room temperature in a desiccator.
- Weigh the 0.45 um glass filter to the nearest 0.01mg.
- Record the initial weight of the glass filter.
- Slowly pour the laser diffraction sample water (after analysis) through the previously weighed 0.45 um glass filter and discard the water.
- Use reagent-grade water in wash bottle to rinse particles adhering to the analysis container onto glass filter
- Dry glass filter with particles in a drying oven at $90 \pm 2^\circ$ C to a constant weight.

- Cool the glass filter and dried particles to room temperature in a desiccator. Weigh the glass filter and particles to the nearest 0.01mg.
- Subtract the initial glass filter weight from the final glass filter and particle sample weight.
- Record the final sample weight for particles <250 um in size.

Quality Assurance

- Dried samples should be cooled in a desiccator and held there until they are weighed. If a desiccator is not used, the particles will accumulate ambient moisture and the sample weight will be overestimated. A color-indicating desiccant is recommended so that spent desiccant can be detected easily. In addition, the seal on the desiccator should be checked periodically, and, if necessary, the ground glass rims should be greased or the "O" rings should be replaced.
- Handle sieves with clean gloves to avoid adding oils or other products that could increase the weight. The weighing room should not have fluctuating temperatures or changing humidity. Any conditions that could affect results such as doors opening and closing should be minimized as much as possible.
- After the initial weight of the sieve is measured, the sieve should be kept covered and dust free. Duplicate samples should be analyzed on 10% of the samples for both wet sieving and mass measurements.

Reporting

Visual observations should be made on all wet sieved fractions and recorded. For example if the very coarse sand fraction (2,000-1,000 um) is composed primarily of beauty bark, or cigarette butts, or other organic debris this should be noted. An option might also be for a professional geologist to record the geological composition of the sediment as well.

REFERENCES

- ASTM. 1997. Standard test methods for determining sediment concentration in water samples.
- Method D 3977. American Society for Testing and Materials, Philadelphia, PA.
- PSEP. 1986. *Recommended Protocols for measuring conventional sediment variables in Puget Sound*. Prepared by Tetra Tech, Inc. for EPA and Puget Sound Water Quality Authority. Tetra Tech Inc., Bellevue, WA.
- EPA. 1998. Analysis of total suspended solids by EPA Method 160.2. Region 9, Revision 1. SOP 462. 12 pp.
- Wentworth, C.K. 1922. A scale of grade and class terms for clastic sediments. *Journal of Geology*. 30:377-39.

APPENDIX 5 - STREET WASTE DISPOSAL

Street Waste Liquids

General Procedures:

Street waste collection should emphasize retention of solids in preference to liquids. Street waste solids are the principal objective in street waste collection and are substantially easier to store and treat than liquids.

Street waste liquids require treatment before their discharge. Street waste liquids usually contain high amounts of suspended and total solids and adsorbed metals. Treatment requirements depend on the discharge location.

Discharges to sanitary sewer and storm sewer systems must be approved by the entity responsible for operation and maintenance of the system. Ecology will not generally require waste discharge permits for discharge of stormwater decant to sanitary sewers or to stormwater treatment BMPs constructed and maintained in accordance with Ecology's Stormwater Management Manual for Western Washington.

The following order of preference, for disposal of catch basin decant liquid and water removed from stormwater treatment facilities, is *required*.

1. Discharge of catch basin decant liquids to a municipal sanitary sewer connected to a Public Owned Treatment Works (POTW) is the preferred disposal option. Discharge to a municipal sanitary sewer requires the approval of the sewer authority. Approvals for discharge to a POTW will likely contain pretreatment, quantity and location conditions to protect the POTW.

2. Discharge of catch basin decant liquids may be allowed into a Basic or Enhanced Stormwater Treatment BMP, if option 1 is not available. Decant liquid collected from cleaning catch basins and stormwater treatment wetvaults may be discharged back into the storm sewer system under the following conditions:

- The preferred disposal option of discharge to sanitary sewer is not reasonably available, *and*
- The discharge is to a Basic or Enhanced Stormwater Treatment Facility. If pretreatment does not remove visible sheen from oils, the treatment facility must be able to prevent the discharge of oils causing a visible sheen, *and*
- The discharge is as near to the treatment facility as is practical, to minimize contamination or recontamination of the collection system, *and*
- The storm sewer system owner/operator has granted approval and has determined that the stormwater treatment facility will accommodate the increased loading. Pretreatment conditions to protect the stormwater treatment BMP may be issued as part of the approval process. Following local pretreatment conditions is a requirement of this permit.

- Flocculants for the pretreatment of catch basin decant liquids must be non-toxic under the circumstances of use and must be approved in advance by the Department of Ecology.

The reasonable availability of sanitary sewer discharge will be determined by the Permittee, by evaluating such factors as distance, time of travel, load restrictions, and capacity of the stormwater treatment facility.

3. Water removed from stormwater ponds, vaults and oversized catch basins may be returned to the storm sewer system. Stormwater ponds, vaults and oversized catch basins contain substantial amounts of liquid, which hampers the collection of solids and pose problems if the removed waste must be hauled away from the site. Water removed from these facilities may be discharged back into the pond, vault or catch basin provided:

- Clear water removed from a stormwater treatment structure may be discharged directly to a down gradient cell of a treatment pond or into the storm sewer system.
- Turbid water may be discharged back into the structure it was removed from if:
 - the removed water has been stored in a clean container (eductor truck, Baker tank or other appropriate container used specifically for handling stormwater or clean water); and
 - there will be no discharge from the treatment structure for at least 24 hours.
- The discharge must be approved by the storm sewer system owner/operator.

Street Waste Solids

Soils generated from maintenance of the MS4 may be reclaimed, recycled or reused when allowed by local codes and ordinances. Soils that are identified as contaminated pursuant to Chapter 173-350 WAC shall be disposed at a qualified solid waste disposal facility.

APPENDIX 6 – STORMWATER DISCHARGE MONITORING

This Appendix applies to WSDOT (the Permittee) monitoring activities under Regional Status and Trends Monitoring sub-section Section S7.E.2.b.

Stormwater discharge monitoring is intended to characterize stormwater runoff quantity and quality at a limited number of locations in a manner that allows analysis of loadings and changes in conditions over time and generalization across the Permittee's jurisdiction.

QAPP Preparation

Permittees shall prepare a Quality Assurance Project Plan (QAPP) in accordance with *Quality Assurance Project Plan Guidance, Special Condition S8.D, Phase I Municipal Stormwater Permit*, December 2010 (Ecology Publication no. 10-10-075 <https://fortress.wa.gov/ecy/publications/publications/1010075.pdf>). The QAPP shall be developed by qualified staff or contractors with experience in applying Ecology or U.S. Environmental Protection Agency (EPA) QAPP Guidelines. Ecology guidelines can be found at <https://ecology.wa.gov/>; search 'QA project plan.'

A stormwater discharge monitoring QAPP shall be submitted to Ecology in accordance with the deadlines in S8.C. The QAPP shall describe field collection methods and sample preparation methods appropriate to each group of analytes, reporting limits, and field conditions.

Permittees are responsible for maintaining an up-to-date approved QAPP for stormwater discharge monitoring. Significant changes shall be reviewed by Ecology and reflected in a revised QAPP. Significant changes include, but are not limited to:

- Land disturbing activities over 10 acres in size within the sampled drainage area.
- Relocating a monitoring station.
- Introducing new sampling equipment.
- Unanticipated back water conditions, base flow, or tidal influences.
- Changes in laboratories, analytical methods, or reporting limits.

Discharge Monitoring Location Selection

Stormwater monitoring discharge monitoring locations shall have mapped tributary conveyance systems and drainage areas, and be suitable for permanent installation and operation of flow-weighted composite sampling equipment. Additional monitoring location selection guidance and information about how to estimate a rainfall to runoff relationship is available in *Standard Operating Procedure for Automatic Sampling for Stormwater Monitoring, WQP002*, <https://fortress.wa.gov/ecy/publications/SummaryPages/1810024.html>.

Permittees may identify a discharge monitoring location upstream in the conveyance system (*i.e.*, up-gradient of the outfall) in order to achieve the desired land use, to accommodate the installation of sampling equipment, and/or to avoid or minimize back water or tidal interference.

The QAPP shall describe each stormwater discharge monitoring location and associated drainage basin in detail. The QAPP must describe how each discharge monitoring location was selected, the size of the drainage basin, and the percentage of area in the drainage basin representing the following land uses: high density residential, low density residential, commercial, industrial, agriculture, and transportation right-of-way. Table A6-1 below provides characteristics to consider for some of these land uses. However, density definitions can vary from jurisdiction to jurisdiction and may be defined locally in codes and comprehensive plans. Report the residential density definitions used if they differ from these.

Table A6-1 Land Use Selection Characteristics

Land use category	Characteristics
High density residential	4 dwelling units per acre or greater
Medium to high density residential	2 to 4 dwelling units per acre
Low density residential	1 to 2 dwelling units per acre
Commercial	Includes multi-family residential
Industrial	Not predominated by one facility with a few operators

Flow Monitoring

Discharge monitoring locations must be evaluated for a rainfall to runoff relationship in order to ensure that the discharge monitoring location will receive enough runoff for sufficient sample volume. This rainfall to runoff relationship will also assist in programming the automatic sampling equipment. In order to establish the rainfall to runoff relationship, one year of continuous flow recording (including base flow and all storm events) is necessary.

Monitoring Frequency

Permittees shall sample each stormwater discharge monitoring location according to the frequency described below. Documented good faith efforts with good professional practice by the Permittee which do not result in collecting a successful sample for the full number of required storms may be considered as contributing toward compliance with this requirement.

For each location, the Permittee shall sample and analyze a minimum of eleven (11) qualifying storm events per water year. Qualifying storm event sampling must be distributed throughout the year, approximately reflecting the distribution of rainfall between the wet and dry seasons (with a goal of 60-80% of the samples collected during the wet season and a goal of 20-40% of the samples collected in the dry season).

Ecology may approve a reduced sampling frequency if the Permittee provides a statistical analysis demonstrating that monitoring goals can be met with fewer samples.

Qualifying Storm Event Criteria

The wet season is from October 1 through April 30. A qualifying wet season storm event is defined as follows:

- Rainfall volume: 0.20” minimum, no fixed maximum
- Rainfall duration: No fixed minimum or maximum
- Antecedent dry period: Less than or equal to 0.05” rain in the previous 6 hours
- Inter-event dry period: 6 hours

The dry season is from May 1 through September 30. A qualifying dry season storm event is defined as follows:

- Rainfall volume: 0.20” minimum, no fixed maximum
- Rainfall duration: No fixed minimum or maximum
- Antecedent dry period: less than or equal to 0.02” rain in the previous 24 hours
- Inter-event dry period: 6 hours

Types of Sampling

Storm events shall be sampled using flow-weighted composite sampling techniques. Automatic samplers shall be programmed to begin sampling as early in the runoff event as practical and to continue sampling past the longest estimated time of concentration for the tributary area. Refer to *Standard Operating Procedure for Automatic Sampling for Stormwater Monitoring v 1.1*, WQP002, <https://fortress.wa.gov/ecy/publications/SummaryPages/1810024.html>.

For storm events lasting less than 24 hours, samples shall be collected for at least 75% of the storm event hydrograph. For storm events lasting longer than 24 hours, samples shall be collected for at least 75% of the hydrograph of the first 24 hours of the storm.

Each composite sample shall be targeted to contain at least 10 aliquots. Composite samples with 7 to 9 aliquots are acceptable if they meet the other sampling criteria and help achieve a representative balance of wet season/dry season events and storm sizes.

Continuous flow recording of all storm events (not just sampled storm events) is necessary for at least one complete water year to establish a baseline rainfall/runoff relationship. Ongoing continuous flow monitoring is required for each of the sampled storm events as necessary to properly conduct the flow-weighted composite sampling. Precipitation data shall be collected from the nearest rain gauge reporting at least hourly rainfall amounts.

Grab samples are necessary for some parameters (Table A6-2) and shall be collected early in the storm event. Refer to *Standard Operating Procedure for Grab Sampling for Stormwater Monitoring v 1.1*, WQP001, <https://fortress.wa.gov/ecy/publications/SummaryPages/1810023.html>. Stormwater solids samples shall be collected twice per water year at each stormwater discharge monitoring location, or in the vicinity of each stormwater monitoring location. Ecology may approve reducing this requirement to a once per year frequency if the Permittee provides evidence

demonstrating that insufficient material is present in the conveyance. In-line conveyance system locations are the target for stormwater solids sampling (e.g. catch basin sumps), not receiving waters nor BMPs where soils could be inadvertently sampled.

Use of in-line traps or similar collection system is needed for stormwater solids sampling; refer to *Standard Operating Procedure for Collection of Stormwater Solids using In-Line Traps, WQP003*, <https://fortress.wa.gov/ecy/publications/SummaryPages/1810025.html>. The QAPP will need to specify the sampling approach for the selected sampling sites.

Parameters

Flow-weighted composite samples shall be analyzed for the following parameters utilizing an Ecology- or EPA-accredited laboratory and the methods and reporting limits as provided in table A6-2 or otherwise approved by Ecology.

- Conventional parameters
- Methylene blue activating substances (MBAS)
- Nutrients
- Metals
- Organics:
 - Polycyclic aromatic hydrocarbons (PAHs)
 - Pesticides
 - Phthalates

If the volume of the stormwater sample collected from a qualifying storm is insufficient to allow analysis for all of the parameters listed above, the sample shall be analyzed for as many parameters as possible in the following priority order: (1) metals and hardness; (2) conductivity; (3) TSS; (4) nutrients; (5) organics: PAHs, phthalates, insecticide, and herbicides; (6) BOD₅; and (7) remaining conventional parameters. If insufficient sample exists to run the next highest priority pollutant, that analysis may be bypassed and analyses run on lower priority pollutants in accordance with the remaining priority order to the extent possible. Parameters that are below reporting limits after two years of data may be dropped from the analysis.

Grab samples shall be analyzed for the following parameters utilizing an Ecology- or EPA-accredited laboratory and the methods and reporting limits listed in Table A6-2 at the end of this Appendix.

- Fecal coliform bacteria
- Total petroleum hydrocarbons – diesel fraction

Stormwater solids samples shall be analyzed for the following parameters utilizing an Ecology- or EPA-accredited laboratory and the methods and reporting limits listed in table A6-3 or otherwise approved by Ecology.

- Conventional parameters

- Metals
- Organics:
 - Pesticides
 - PAHs
 - Phthalates
 - Phenolics
 - Polychlorinated biphenyls (PCBs)
 - Polybrominated diphenyl ethers (PBDEs)
 - Total petroleum hydrocarbon – diesel fraction (TPH-Dx)

If the stormwater solids sample volume is insufficient to analyze for all of the parameters listed below, the sample shall be analyzed for as many parameters as possible in the following priority order: (1) conventional parameters; (2) metals; (3) TPH-Dx (4) Phenolics; (5) PAHs and phthalates; (6) pesticides; (7) PBDEs; and (8) PCBs. If insufficient sample exists to run the next highest priority pollutant, that analysis may be bypassed and analyses run on lower priority pollutants in accordance with the remaining priority order to the extent possible. Additional samples shall be collected if insufficient sample exists from a single sample to run all of the organic pollutants listed above. A visual, qualitative determination of grain size shall be reported for all stormwater solids samples (in addition to the quantitative analysis for all samples with sufficient volume). Parameters that are below reporting limits after two years of data may be dropped from the analysis.

Recordkeeping and Reporting

An “Annual Stormwater Discharge Monitoring Report” shall be submitted with each Annual Report beginning in 2021. Each report shall summarize all monitoring data collected during the preceding water year (October 1 – September 30). The first annual monitoring report submitted will include data from a partial water year. Each report shall integrate data from earlier years into the analysis of results, as appropriate.

Annual Monitoring Reports

Annual Stormwater Discharge Monitoring Reports shall provide all monitoring data collected during the preceding water year (October 1 – September 30). Concentration data shall be provided in the same units that are specified for Reporting Limits in Tables A6-2 and A6-3. Flow data shall be provided in gallons per minute. Loading data for each water year shall be provided in total pounds and in pounds per acre. Annual Stormwater Discharge Monitoring Reports shall consist of a narrative report, an Excel spreadsheet with concentration data (summary statistics: minimum, maximum, mean, median and standard deviation), pollutant loading calculations, and a submittal to Ecology’s Environmental Information Management (EIM) database for applicable data. For the Annual Stormwater Discharge Monitoring Report to be considered on time, the EIM data submission process must be initiated before November 1 of each relevant year, and completed by the following January 15 of each relevant year.

The report shall include:

- A brief summary of each monitored drainage basin (full details of the monitoring drainage basin shall be in the QAPP), including any changes within the contributing drainage area or changes to the monitoring station that could affect hydrology and/or pollutant loading.
- A description of each flow-weighted composite and grab sampled storm event, including:
 - General summary about storm event criteria, including:
 - Precipitation data (in inches) including antecedent dry period and rainfall distribution throughout the event.
 - Flow and hydrograph data including sampled and total runoff time periods and volumes.
 - Total number of qualifying storm events captured and analyzed at each monitoring location.
 - Distribution of storms collected between wet and dry seasons (permit goals include 60-80% of storms during the wet season and 20-40% of storms during the dry season).
 - Logistical problems associated with any storm event criterion.
 - A hyetograph and a hydrograph for each sampled storm event. Include properly labeled graphs that display the following:
 - Date of the storm event.
 - Time of day versus precipitation information.
 - Time versus flow rate (in gallons per minute).
 - Time versus aliquot collection.
 - Display the total duration of the storm event, not just the duration when samples were collected (remember your pollutant load calculation must include flow for the entire storm event, not just the water quality sampled portion).
 - A summary of (or in the graph) the total runoff volume in gallons.
 - A rainfall/runoff relationship table used to estimate the un-sampled storm events (when water quality samples were not collected). This is used for future estimations of annual and seasonal loads.
 - Whether or not any chemicals were removed from the list of analysis due to two years of non-detect data.
 - A brief summary with storm event dates where insufficient volumes were collected. Include the parameters analyzed.
- A description of the stormwater solids sampling event, including:
 - Timeframe for the sampling event.
 - A summary of stormwater solids sampling (including dates) where insufficient volumes were collected. Include the parameters analyzed.
 - Whether or not any chemicals were removed from the list of analysis due to two years of non-detect data.
 - Whether after 4 sampling events, a more sensitive analytical method was needed to detect PCBs.

- Event Mean Concentrations (EMCs)
- The wet and dry season pollutant loads and annual pollutant load based on water year for each discharge monitoring location expressed in total pounds, and pounds per acre. The loadings must take into account potential pollutant load from base flow. Loadings shall be calculated following *Standard Operating Procedure for Calculating Pollutant Loads for Stormwater Discharges, WQP004* <https://fortress.wa.gov/ecy/publications/SummaryPages/1810026.html>. Pollutant loading calculations and reporting are required only for the nutrients, metals, and organics parameters in stormwater. Include the following:
 - For storm events where water quality samples were collected, the load in pounds per day for each parameter for each sampled storm event, include date of storm events.
 - An estimated seasonal pollutant load for each parameter at each discharge monitoring location. This is calculated using all storm events (when water quality samples were collected and when samples were not collected).
 - A total annual pollutant load (wet season load + dry season load) for each parameter (include estimated events).
 - The rainfall/runoff relationship including your pollutant load estimates for un-sampled events.
 - Note that if any data is unavailable to effectively estimate your rainfall to runoff relationship due to an incomplete water year, submit this information in the next year's stormwater monitoring report.
- Quality Assurance/Quality Control information for each successfully sampled qualifying storm event at each discharge monitoring location and solids sample collection event at each discharge monitoring location, including:
 - A narrative summary of your field and laboratory verification, validation results and quality control checks performed.
 - A narrative analysis of your field and laboratory quality control sample results and how they compare with your data quality objectives/indicators in your QAPP.
 - Corrective actions reported/taken.
- An explanation and discussion of results from each successfully sampled qualifying storm event at each discharge monitoring location and solids sample collection event collected at each discharge monitoring location, including:
 - A statistical analysis of the event mean concentrations for each parameter and a narrative description of significant findings from this analysis.
 - Any conclusions based on data from this study including analyses of previously collected data from these discharge monitoring locations.
- A description of activities currently taking place or planned within the monitoring station's drainage area that may have affected or may potentially affect future monitoring results.

If the Permittee monitors any pollutant more frequently at the stormwater discharge monitoring locations, then the results of this monitoring shall be included in the annual monitoring report reflecting the water year in which the monitoring occurred.

After three (3) water years of data, the Annual Monitoring Report shall include:

- Trend analyses,
- An evaluation of the data as it applies to the Stormwater Management Program (SWMP), *and*
- Any stormwater management activities the Permittee has identified that can be implemented or adjusted to respond to this data.

Laboratory Methods

The Permittee’s stormwater discharge monitoring program shall use the following analytical methods or other methods approved by the U.S. Environmental Protection Agency (EPA) or Ecology with similar reporting limits, unless alternative methods are approved by Ecology. Any alternative method proposed by a Permittee must have a similar reporting limit, or must be justified as adequate for the likely, expected range of concentrations. Permittees are not guaranteed approval of alternative methods or reporting limits.

In cases where smaller volumes of water are expected to be collected, or to save analytical costs, Permittees may propose that some of the analyses be optimized for specific parameters or groups. The Permittee must, in consultation with a qualified chemist, define the exact volumes and optimization steps and include them in the QAPP.

The QAPP shall identify Ecology- or EPA-approved methods with appropriate reporting limits. An individual sample that could not be run at a reporting limit because of matrix interference or other such reasons would not be called into question for compliance purposes. All results shall be reported. This includes positive detections between the method detection limit (MDL) and the reporting limit (RL), with the appropriate lab qualifier, and the non-detected concentrations at the value of the MDL or lower limit of quantitation (LLOQ) with the appropriate lab qualifier of “U” for undetected at that concentration. Non-detections must be reported and analyzed in the dataset. Results must be evaluated and censored for blank contamination (e.g. organic parameters should consider a censor threshold of less than 5x the laboratory blank contamination). All data gathering and data handling approaches should be explained in the QAPP.

Table A6-2 Analytical Procedures in Stormwater

Analyte	Method in Water	Method Detection Limit Target ^a	Reporting Limit or Lower Limit of Quantitation (LLOQ) ^b
Conventional Parameters			
Total suspended solids ^c	SM2540B or SM2540D		1.0 mg/L
Turbidity	EPA Method 180.1 or SM 2130B		± 0.2 NTU
Conductivity	EPA Method 120.1 or SM2510		± 1 µmhos/cm

Chloride	EPA Method 300.0, EPA Method 325.2, or SM4110B or SM4500 Cl-B, SM4500 Cl-C, SM4500 Cl-D, SM4500 Cl-EPAHS		0.2 mg/L
BOD ₅	SM5210B		2.0 mg/L
Particle size distribution	Coulter Counter, Laser diffraction, or comparable method - <i>see method later in this appendix.</i>		NA
pH	EPA Method 150.2 or SM4500H ⁺ B		0.2 units
Hardness as CaCO ₃	EPA Method 200.7, SM 2340B(ICP), SM2340C (titration), or SM3120B		1.0 mg/L
Methylene blue activated substances (MBAS)	CHEMetrics Colorimetric or SM5540C		0.025 mg/L
Bacteria			
Fecal Coliform	SM9221E		2-2x10 ⁶ CFU
Nutrients			
Orthophosphate as P	EPA Method 365.3, EPA Method 365.4, SM 4500-P E, SM4500-P F, or SM4500-P G	0.003 mg/L	0.01 mg/L
Total phosphorus as P	EPA Method 365.3, EPA Method 365.4, or SM 4500-P-B followed by SM4500-P E or P F	0.003 mg/L	0.01 mg/L
Total Kjeldahl nitrogen as N	EPA Method 351.2, EPA Method 351.1, SM 4500 Norg-B, SM 4500 Norg-C, SM 4500 NH ₃ -D, SM 4500 NH ₃ -G, SM 4500 NH ₃ -E, SM4500 NH ₃ -F, SM4500 NH ₃ -G, or SM4500 NH ₃ -H		0.3 mg/L
Nitrate-Nitrite as N	EPA Method 353.2, SM 4500 -NO ₃ ⁻ E, SM 4500 -NO ₃ ⁻ F, or SM 4500 -NO ₃ ⁻ H		0.1 mg/L
Metals			
Total recoverable zinc	EPA Method 200.8 SIM or SM 3125		5.0 µg/L
Dissolved zinc	EPA Method 200.8 SIM or SM 3125		1.0 µg/L
Total recoverable lead, copper and cadmium	EPA Method 200.8 SIM or SM 3125		0.1 µg/L, 0.5 µg/L, and 0.2 µg/L
Dissolved lead, copper, and cadmium	EPA Method 200.8 SIM or SM 3125	0.05, 0.02, and 0.03 µg/L	0.1 µg/L
Organics			
PAHs ^d	EPA 8270D SIM		0.1 µg/L
Pesticides: Bifenthrin (pyrethroid insecticide) and dichlobenil (herbicide)	EPA Method 8270D SIM or EPA Method 625.1	0.02 µg/L	0.05 µg/L
Phthalates ^e	EPA Method 8270D SIM	0.5 µg/L	1 µg/L

Petroleum Hydrocarbons			
NWTPH-Dx	Ecology, 1997	0.1 mg/L	0.25-0.5 mg/L

NA – Not applicable

SM – Standard Methods

SIM – Selective Ion Monitoring mode

- If a value is not present in this column then the target MDL is not published or not different from reporting limit target.
- The QAPP shall identify Ecology- or EPA-approved methods with appropriate reporting limits. An individual sample that could not be run at a reporting limit because of matrix interference or other such reasons would not be called into question for compliance purposes.
- To ensure accurate results, Ecology recommends modifying these methods to analyze (filter) the entire field sample. Research results indicate that errors may be introduced by decanting a subsample, although using a funnel splitter may help. The analyst may also consider analyzing several premixed subsamples from the same sample container to determine if significant variability occurred due to stratification. Reports shall indicate whether the entire field sample or a subsample was used.
- Polycyclic aromatic hydrocarbons (PAH), total and these individual compounds: acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(ghi)perylene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, naphthalene, phenanthrene and pyrene. Report the individual compound concentrations, and their summed total.
- Phthalates, total and these individual compounds: bis(2-ethylhexyl)phthalate, butyl benzyl phthalate, di-n-octyl phthalate, dibutyl phthalate, and diethyl phthalate. Report the individual compound concentrations, and their summed total.

Table A6-3 Analytical Procedures in Stormwater Solids

Analyte	Method for Solid/Sediment	Reporting Limit or LLOQ ^b
Conventional Parameters		
Percent solids	SM 2540G	0.1 %
Total organic carbon	Puget Sound Estuary Protocols (PSEP 1997), SM5310B, SM5310C, SM5310D, or EPA Method 9060	0.1%
Grain size	Sieve and Pipette (ASTM 1997), ASTM F312-97, ASTM D422, or PSEP 1986/2003	Not Applicable
Total phosphorus	EPA Method 365.3, EPA Method 365.4, SM4500 P E, or SM4500 P F	0.01 mg/kg
Total volatile solids	EPA Method 160.4 or SM2540G	0.1%
Metals, dry weight		
Total recoverable zinc	EPA Method 200.8, EPA Method 6010, EPA Method 6020, or SM3125	5.0 mg/kg
Total recoverable lead	EPA Method 200.8, EPA Method 6010, EPA Method 6020, or SM 3125	0.1 mg/kg
Total recoverable copper	EPA Method 200.8, EPA Method 6010, EPA Method 6020, or SM 3125	0.1 mg/kg
Total recoverable cadmium	EPA Method 200.8, EPA Method 6010, EPA Method 6020, or SM 3125	0.1 mg/kg

Organics, dry weight		
Pesticides: Bifenthrin and dichlobenil	EPA Method 8270D or EPA Method 1660	1.0 µg/kg
PAHs ^c	EPA Method 8270D	70 µg/kg
Phthalates ^d	EPA Method 8270D	70 µg/kg Except di-n-octylphthalate (250 µg/kg)
Phenolics ^e	EPA Method 8270D	660 µg/kg
PCBs (aroclors or congeners) ^f	EPA Method 8082A or Method 1668C	0.16 µg/kg or 5-20 ng/kg
PBDEs ^g	EPA Method 1614	5-10 ng/kg Except PBDE 209: (200 ng/kg)
Petroleum Hydrocarbons		
TPH-Dx	Ecology, 1997 or EPA SW-846 method 8015B	25-100 mg/kg

NA – Not applicable

SM – Standard Methods

SIM – Selective Ion Monitoring mode

- a. The QAPP shall identify Ecology- or EPA-approved methods with appropriate reporting limits. An individual sample that could not be run at a reporting limit because of matrix interference or other such reasons would not be called into question for compliance purposes.
- b. Polycyclic aromatic hydrocarbon (PAH) compounds, total and these individual compounds: acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(ghi)perylene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, naphthalene, phenanthrene, and pyrene. Report the individual compound concentrations, and their summed total.
- c. Phthalates: bis(2-ethylhexyl)phthalate, butyl benzyl phthalate, di-n-octyl phthalate, dibutyl phthalate, and diethyl phthalate. Report the individual compound concentrations, and their summed total.
- d. Phenolics: pentachlorophenol, p-cresol, and o-cresol. Report the individual compound concentrations.
- e. PCBs. The Aroclor analytical method (EPA Method 8082A for Aroclors: 1016, 1221, 1232, 1242, 1248, 1254, 1260, 1262, 1288) is a suitable starting point for stormwater solids characterization. If 50% or more of the dataset are qualified as below the LLOQ after the first 2 samples, then the more sensitive congener analytical method (EPA Method 1668C) for 209 PCB congeners must be used for the remaining sampling period at that site. Report the individual compound concentrations, and their summed total.
- f. Polybrominated diphenyl ethers (PBDEs): congener numbers 47, 49, 66, 71, 99, 100, 138, 153, 154, 183, 184, 191, and 209. Report the individual compound concentrations, and their summed total.

WET SIEVING AND LASER DIFFRACTION MEASUREMENT PROCEDURES

WET SIEVING

Sample Collection/Handling

Samples should be collected in HDPE or Teflon containers and held at 4° C during the collection process. If organic compounds are being collected, the sample containers should be glass or Teflon.

Preservation/Holding Time

Samples should be stored at 4° C and must be analyzed within 7 days (EPA, 1998). Samples may not be frozen or dried prior to analysis, as either process may change the particle size distribution.

Sonication

Do not sonicate samples prior to analysis to preserve particle integrity and representativeness. Laboratories using laser diffraction will have to be notified not to sonicate these samples at any time during the analysis. It is recommended that this request also be written on the chain-of-custody form that the analytical laboratory receives in order to assure that sonication is omitted.

Laboratory Procedures

Equipment

- 2 Liters of stormwater sample water (total sample required for analysis (ASTM D 3977))
- Drying oven (90 degrees C +2 degrees)
- Analytical balance (0.01 mg accuracy)
- Desiccator (large enough diameter to accommodate sieve)
- Standard sieves - larger than 2" diameter may be desirable
- 500 um (Tyler 32, US Standard 35)
- 250 um (Tyler 60, US Standard 60)
- Beakers - plastic (HDPE)
- Funnel (HDPE - Large enough diameter to accommodate sieve)
- Wash bottle
- Pre-measured reagent-grade water

Sample Processing

- Dry 250 um and 500 um mesh sieves in a drying oven to a constant weight at $90 \pm 2^\circ$ C.
- Cool the sieves to room temperature in a desiccator.
- Weigh each sieve to the nearest 0.01 mg.
- Record the initial weight of each dry sieve.
- Measure the volume of sample water and record.

- Pour the sample through a nested sieve stack (the 500 um sieve should be on the top and the sieve stack should be stabilized in a funnel and the funnel should be resting above/inside a collection beaker).
- Use some of the pre-measured reagent-grade water in wash bottle to thoroughly rinse all soil particles from sample container so that all soil particles are rinsed through the sieve.
- Thoroughly rinse the soil particles in the sieve using a pre-measured volume of reagent-grade water.
- The particles that pass through the sieve stack will be analyzed by laser diffraction Particle Size Distribution (PSD) analysis using the manufacturers recommended protocols (with the exception of no sonication).
- Particles retained on the sieve (>250 um) will not be analyzed with the laser diffraction PSD.
- Dry each sieve (500 um and 250 um) with the material it retained in a drying oven to a constant weight at $90 \pm 2^\circ$ C. The drying temperature should be less than 100° C to prevent boiling and potential loss of sample (PSEP, 1986).
- Cool the samples to room temperature in a desiccator.
- Weigh the cooled sample with each sieve to the nearest 0.01 mg.
- Subtract initial dry weight of each sieve from final dry weight of the sample and sieve together.
- Record weight of particles/debris separately for each size fraction (> 500 um and 499 - 250 um).
- Document the dominant types of particles/debris found in this each size fraction.

LASER DIFFRACTION (PSD)

PSD results are reported in ml/L for each particle size range. Particle size gradations should match the Wentworth grade scale (Wentworth, 1922).

Equipment

- ___ Glass filter - 0.45 um (pore size) glass fiber filter disk (Standard Method D 3977) (larger diameter sized filter is preferable)
- ___ Drying oven (90° C +2 degrees)
- ___ Analytical balance (0.01 mg accuracy)
- ___ Wash bottle
- ___ Reagent-grade water

Procedure for mass measurement

- Dry glass filter in drying oven at $90 \pm 2^\circ$ C to a constant weight.
- Cool the glass filter to room temperature in a desiccator.
- Weigh the 0.45 um glass filter to the nearest 0.01 mg.
- Record the initial weight of the glass filter.
- Slowly pour the laser diffraction sample water (after analysis) through the previously weighed 0.45 um glass filter and discard the water.
- Use reagent-grade water in wash bottle to rinse particles adhering to the analysis container onto glass filter
- Dry glass filter with particles in a drying oven at $90 \pm 2^\circ$ C to a constant weight.

- Cool the glass filter and dried particles to room temperature in a desiccator.
- Weigh the glass filter and particles to the nearest 0.01mg.
- Subtract the initial glass filter weight from the final glass filter and particle sample weight.
- Record the final sample weight for particles <250 um in size.

Quality Assurance

Dried samples should be cooled in a desiccator and held there until they are weighed. If a desiccator is not used, the particles will accumulate ambient moisture and the sample weight will be overestimated. A color-indicating desiccant is recommended so that spent desiccant can be detected easily. Also, the seal on the desiccator should be checked periodically, and, if necessary, the ground glass rims should be greased or the "O" rings should be replaced.

Handle sieves with clean gloves to avoid adding oils or other products that could increase the weight. The weighing room should not have fluctuating temperatures or changing humidity. Any conditions that could affect results such as doors opening and closing should be minimized as much as possible.

After the initial weight of the sieve is measured, the sieve should be kept covered and dust free. Duplicate samples should be analyzed on 10% of the samples for both wet sieving and mass measurements.

Reporting

Visual observations should be made on all wet sieved fractions and recorded. For example if the very coarse sand fraction (2,000-1,000 um) is composed primarily of beauty bark, or cigarette butts, or other organic debris this should be noted. An option might also be for a professional geologist to record the geological composition of the solids as well.

REFERENCES

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- Ecology, 1997. Analytical Methods for Petroleum Hydrocarbons. Washington State Department of Ecology, Toxics Cleanup Program. Olympia, WA. Publication No. 97-602.
- Wentworth, C.K. 1922. A scale of grade and class terms for clastic sediments. Journal of Geology. 30:377-392