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WASHINGTON STATE DEPARTMENT OF TRANSPORTATION NATIONAL POLLUTANT DISCHARGE AND ELIMINATION SYSTEM AND STATE WASTE DISCHARGE PERMIT FOR MUNICIPAL STORMWATER

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.

Kelly Susewind, P.E., P.G.
Water Quality Program Manager
Department of Ecology

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SPECIAL CONDITIONS

S1. PERMITEE AND PERMIT COVERAGE

A. PERMITTEE

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). This National Pollutant Discharge Elimination System (NPDES) municipal stormwater and state waste discharge permit replaces and supersedes WSDOT's coverage under the 1995 Phase I municipal stormwater permits.

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 Phase I Municipal Stormwater Permit, the Eastern Washington Phase II Municipal Stormwater Permit, and the Western Washington Phase II Municipal Stormwater permit, within the Phase I and II designated boundaries that existed at the time those permits were issued in January 2007. Discharges covered include those from WSDOT's highways, maintenance facilities, ferry terminals, rest areas, and park and ride lots when the discharges are conveyed through a municipal separate storm sewer (MS4) owned or operated by WSDOT. Coverage excludes areas of federal and tribal lands.
2. This permit covers stormwater discharges 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 load allocations and associated implementation documents specifying actions for WSDOT stormwater discharges.

S2. AUTHORIZED DISCHARGES

A. This permit authorizes the discharge of stormwater to surface waters and to ground waters of the state from municipal separate storm sewers owned or operated by WSDOT in the geographic area covered by this permit pursuant to S1.B.1 and 2 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 covered under this permit.
2. Discharges to ground waters not subject to regulation under the federal Clean Water Act are covered 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 municipal separate storm sewers owned or operated by WSDOT in the geographic area covered pursuant to S1.B.1 and 2 only under the following conditions:

1. The discharge is authorized by a separate individual or general National Pollutant Discharge Elimination System (NPDES) permit; or
2. The discharge is from emergency fire fighting activities; or
3. The discharge from another illicit or non-stormwater discharge that is managed by WSDOT as provided in Section 3 of WSDOT's Stormwater Management Program Plan (Appendix 7).
4. 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 municipal separate storm sewers 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 Reservations except where authority has been specifically delegated to Ecology by the EPA. The exclusion of such discharges from this permit does not waive any rights the state may have with respect to the regulation of the discharges.

S3. RESPONSIBILITIES OF PERMITTEE

A. WSDOT shall comply with all of the conditions of this permit for the municipal separate storm sewers it owns or operates within the geographic area covered pursuant to S1.B1 and 2.

B. WSDOT may rely on another entity to meet one or more of the requirements of this permit, if the other entity implements the control measure and agrees to implement the control measure 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 a statement to the Department of Ecology (Ecology) that describes the permit requirements that will be implemented by other entities. All participating entities shall sign the statement. This permit does not establish a deadline for submitting such a statement provided that this does not alter implementation deadlines.
2. 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 RCW 90.48.520, 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 in Section S4.F., below.

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 S4A 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 municipal separate storm sewer 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, indentify 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 a municipal separate storm sewer 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 Ecology also determines that (a) the violation of Water Quality Standards is already being addressed by a Total Maximum Daily Load or other enforceable water quality cleanup plan; or (b) Ecology concludes the violation will be eliminated though 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 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 bases 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. Ecology will specify a reasonable time frame in which WSDOT shall submit a revised report to Ecology if modifications are required.

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 WAC 173-201A-510(4) and WAC 173-226-180 or other enforcement orders as Ecology deems appropriate during the term of this permit.

e. 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.

f. Whether the process in Section S4.F provides WSDOT a shield from liability under 42 U.S.C. 9601 et seq. or RCW 70.105D 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 RCW 70.105D.

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 the state AKART requirements; or
3. Control the discharge of toxicants to waters of the State of Washington.

S5. STORMWATER MANAGEMENT PROGRAM

A. General Requirements

1. WSDOT shall implement and enforce its Ecology approved Stormwater Management Program (SWMP). The SWMP is incorporated as Appendix 7 of this permit.
2. WSDOT designed the SWMP to:
   a. Reduce the discharge of pollutants from all municipal separate storm sewers and other conveyances owned or operated by WSDOT covered under this permit to the maximum extent practicable (MEP);
   b. Protect water quality and beneficial uses of water of the state from impacts which cause or contribute to loss or impairment;
   c. Satisfy appropriate requirements of the CWA.
3. WSDOT shall implement all components and requirements of its SWMP including all performance measures and milestones as enforceable conditions of this permit. See Appendix 2 for a list of the performance measures.

4. WSDOT shall apply the technical standards from the June 2008 version of the Washington State Highway Runoff Manual (HRM) for the planning, design, and operation and maintenance of stormwater facilities in Phase I, Phase II, and TMDL areas covered under this permit. One year from the effective date of this permit, projects going to advertisement (AD) shall comply with the June 2008 HRM. The exception is that projects requiring an individual Section 401 Water Quality Certification must comply with the June 2008 HRM upon execution of the February 4, 2009 Implementing Agreement between the Washington State Department of Ecology and the Washington State Department of Transportation regarding the implementation of the Highway Runoff Manual. Furthermore, 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 June 2008 HRM will not result in compliance with State Water Quality Standards.
5. WSDOT's SWMP shall require non-structural preventative actions and source reduction approaches including Low Impact Development Techniques (LID), to minimize the creation of impervious surfaces, and measures to minimize the disturbance of soils and vegetation where feasible.
   a. WSDOT shall identify barriers to implementation of LID and, in each annual report, identify actions taken to remove barriers identified.
   b. WSDOT shall adopt conditions that require the use of LID techniques where feasible in conjunction with conventional stormwater management methods.
6. WSDOT shall request adequate resources from the Legislature to maintain compliance with this permit. WSDOT shall include those portions of its annual budget request needed to comply with this permit in its annual report. WSDOT shall track the cost of development and implementation of the SWMP required by this section. Information shall be included in the annual report as stipulated in S8**.**

B. Program Assessment and Evaluation

1. WSDOT shall meet the performance measures provided in Appendix 2 to implement actions and construct, operate, and maintain facilities in accordance with this permit and the SWMP. WSDOT shall report on the performance measures in Appendix 2 in its annual report.

2. WSDOT shall report on the status of SWMP implementation activities and performance measures listed in Appendix 2 to fulfill the Annual Stormwater Management Program Progress Report.

S6. TOTAL MAXIMUM DAILY LOAD ALLOCATIONS

A. This permit requires compliance with applicable approved TMDLs. Applicable TMDLs or applicable TMDL requirements are TMDLs which have been approved by EPA on or before the issuance date of this permit. Appendix 3 of this permit lists approved TMDLs applicable to WSDOT. The following requirements apply if EPA has approved a Total Maximum Daily Load (TMDL) to address stormwater discharges from MS4s owned or operated by WSDOT.

1. WSDOT shall comply with assigned loading allocations of applicable TMDLs and/or assigned best management practices (BMPs) from associated implementation documents for applicable TMDLs.
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) using the most recent version of *Guidelines for Preparing Quality Assurance Project Plans for Environmental Studies,* Ecology Publication #04-03-030, as guidance. WSDOT shall meet the timeframes identified in either the TMDL or associated implementation documents.

B. WSDOT shall include a TMDL summary implementation report as part of the annual report for every applicable TMDL as described in S8 of this permit. The report shall include:

1. WSDOT's actions required by the applicable TMDLs.
2. Status of compliance with each action.
3. Actions or load reduction strategies assigned to WSDOT but performed by other entities.
4. WSDOT shall also include documentation of all relevant actions implemented that affect discharges to the waterbody segment that is the subject of the TMDL in the annual report.

C. At least once every eighteen months, Ecology will modify this permit and/or issue an administrative order establishing new TMDL-re1ated permit requirements for TMDLs

associated with discharges from WSDOT facilities that EPA has approved during the preceding eighteen months. Ecology strongly encourages WSDOT to participate in development of TMDLs that are associated with discharges from its MS4.

S7. MONITORING

A. Monitoring Objectives

WSDOT shall develop and implement a monitoring program to establish baseline stormwater discharge information from its highway conveyances, rest areas, maintenance facilities, and ferry terminals and develop and implement a monitoring program to evaluate Best Management Practice (BMP) effectiveness. Annual monitoring report data requirements shall be submitted as described in S8.F Stormwater Monitoring Report. WSDOT shall design the monitoring strategy to:

1. Produce scientifically credible data that represents discharges from WSDOT's various land uses;
2. Provide information that can be used by WSDOT for designing and implementing effective stormwater management strategies for WSDOT facilities; and
3. Determine the long-term effectiveness of individual facility Stormwater Pollution Prevention Plans.

B. Baseline Monitoring of WSDOT Highways

1. WSDOT shall obtain stormwater discharge quality and quantity data from the edge of pavement at highway sites. WSDOT shall collect data to allow analysis of pollutant loads and prioritize parameters of concern. WSDOT shall collect samples at each site, at the frequencies and durations, and for the parameters specified in this section.
2. Continuous flow recording of all storm events (not just sampled storm events) is necessary for at least one year to establish a baseline rainfall/runoff relationship.
3. Baseline Monitoring Site Selection

   Baseline monitoring sites shall have the conveyance system and drainage area mapped, and be suitable for permanent installation and operation of flow-weighted composite sampling equipment. WSDOT shall document the time of concentration for each selected drainage area using rainfall durations for typical seasonal storms.

WSDOT shall establish monitoring sites at locations with the following annual average daily traffic (AADT):

a. Two highly urbanized Western Washington sites (≥100,000 AADT)
b. One urbanized Western Washington site (≤100,000 and ≥30,000 AADT)
c. One rural Western Washington site (≤30,000 AADT)
d. One urbanized Eastern Washington site (≤100,000 and ≥30,000 AADT)

4. Parameters To Be Sampled and Analyzed
   a. WSDOT shall sample, analyze, and report the following parameters as indicated in order of priority if insufficient volume exists. Chemicals below method detection limits after two years of data analysis may be dropped from the list of parameters. Parameter details, analytical methods and reporting limits are included in Appendix 5.
      i. Total and dissolved metals: copper, zinc, cadmium and lead
      ii. Polycyclic Aromatic Hydrocarbons (PAHs)
      iii. Total suspended solids (TSS)
      iv. Chlorides
      v. Phthalates
      vi. Herbicides: Triclopyr (Ester formula only), 2,4-D, Clopyralid, Diuron, Dichlobenil, Picloram , and Glyphosate (only if NON aquatic formula is used). Herbicides shall be sampled and analyzed only if applied near the monitoring site vicinity.
      vii. Nutrients: Total phosphorus, orthophosphate
   b. Grab samples shall be collected as early in the runoff event as practical. If grab samples are not collected during *qualifying* storm events, non-qualifying sized storm events may be sampled. Grab samples shall be collected, analyzed and reported for the parameters listed below. The total number of grab samples collected shall be equal to the total number of storm events collected to meet the conditions in S7.B.6.a. Parameter details, analytical methods and reporting limits are included in Appendix 5.
      i. Total Petroleum Hydrocarbons (TPH): NWTPH-Dx and NWTPH-Gx
      ii. Fecal coliform

iii. Temperature (collected from runoff in-situ or as a grab sample)

iv. Visible sheen observation

5. Sampling method

WSDOT shall use flow-weighted composite samplers to sample qualifying storm events, except where this permit specifies grab samples or other sampling methods. The automated sampler shall be programmed to begin sampling as early in the runoff event as practical. Each composite sample must consist of 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 storm events and storm sizes. WSDOT shall obtain samples from the edge of the pavement or from a location within a pipe conveyance system as long as in the latter case, the stormwater has not passed through a treatment BMP, a vegetated area, or the soil column.

6. Sample timing and frequency

WSDOT shall sample storm events as early in the storm event as practical and continue sampling past the longest estimated time of concentration for the contributing drainage area. For storm events lasting less than 24 hours, samples shall be collected for at least seventy-five percent of the storm event hydrograph. For storm events lasting longer than 24 hours, samples shall be collected for at least seventy-five percent of the hydrograph of the first 24 hours of the storm.

a. WSDOT shall sample each stormwater monitoring site at the following frequency:

i. Sixty-seven percent of the forecasted qualifying storms, which result in actual *qualifying* storm events up to a maximum of 14 storm events per water year. 11 of the 14 storm events must meet the qualifying storm event criteria defined in Section S7.B.6.b.

ii. WSDOT may collect and report data from up to 3 storm events that were forecasted qualifying storms but which did not meet the qualifying storm event criteria for rainfall depth (0.2-inch minimum). These 3 non qualifying storms events may be collected and counted as part of the 14 required storm events.

iii. WSDOT shall ensure that storm samples are distributed throughout the year and approximately reflecting the distribution of rainfall between the wet and dry seasons. The goal for western Washington sites is to collect 60-80% of the

samples during the wet season and 20-40% during the dry season. For eastern Washington, the goal is to collect 80-90% of the samples in the wet season and 10-20% of the samples in the dry season.

b. Storm Event Criteria

i. A qualifying storm event during the wet season in Western Washington (October 1 through April 30) and in Eastern Washington (October 1 through June 30) shall meet the following conditions:

1) Rainfall depth: 0.20-inch minimum, no fixed maximum
2) Rainfall duration: No fixed minimum or maximum
3) Antecedent dry period: less than 0.02-inch rain or no surface runoff in the previous 24 hours
4) Inter-event dry period: 6 hours

ii. A qualifying storm event during the dry season in Western Washington (May 1 through September 30) and in Eastern Washington July 1 through September 30) shall meet the following conditions:

1) Rainfall depth: 0.20-inch minimum, no fixed maximum
2) Rainfall duration: No fixed minimum or maximum
3) Antecedent dry period: less than 0.02-inch rain in previous 72 hours
4) Inter-event dry period: 6 hours

7. Baseline Sediment Testing

WSDOT shall trap and analyze sediments at each highway sampling site or at the vicinity of each stormwater monitoring site at least annually. WSDOT shall collect sediment samples using in-line sediment traps. Similar methods or sampling of receiving water sediment deposits shall be approved by Ecology at the time of QAPP submittal.

a. WSDOT shall sample, analyze, and report the following parameters in sediments, as indicated in order of priority if insufficient volume exists. Chemicals below method detection limits after two years of data analysis may be dropped from the list of parameters. Parameter details, analytical methods and reporting limits are listed in Appendix 5.

i. Particle size (grain size)

ii. Total organic carbon

iii. Total metals: copper, zinc, cadmium and lead

iv. PAHs

v. TPH – NWTPH-Dx

vi. Phenolics

vii. Herbicides: Dichlobenil, Triclopyr, Pircloram, and Clopyralid. Herbicides shall be sampled and analyzed only if applied in the monitoring site drainage area.

viii. Phthalates

ix. Total solids

8. Reporting for Baseline Monitoring of Highways

a. The Annual Stormwater Monitoring Report shall include the following information for each sampled storm event:

i. Sample event identification (date, time, location);

ii. Tabular water quality data and summary results for each monitored parameter including sediments;

iii. Antecedent dry period, inter-event period and total precipitation depth; and

iv. A graphical representation of the storm's hyetograph and hydrograph, with aliquot collection points spatially located throughout the hydrograph; the sampled time period (% of hydrograph sampled), total runoff time period and total runoff volume.

b. WSDOT shall include in each Annual Stormwater Monitoring Report the following information for each site once sampling begins:

i. Rainfall/runoff relationship established using continuous flow records and precipitation data;

ii. For the 2013 Annual Stormwater Monitoring Report, submit the following for each parameter:

1) Mean and median Event Mean Concentrations (EMCs) only from sampled storm events; and

2) Total annual pollutant load and the seasonal pollutant load for the wet and dry seasons only from sampled storm events.

iii. For all other Annual Stormwater Monitoring Reports, WSDOT shall submit the following for each parameter:

1) Mean and median EMCs only from sampled storm events;
2) Total annual pollutant load and the seasonal pollutant load for the wet and dry seasons for both sampled and estimated unsampled storm events.
3) The method used to estimate loads for unsampled events shall be applied to previously submitted data and continue for remaining years of the permit cycle.
4) Any proposed changes to the monitoring program that could affect future data results.

c. WSDOT shall express the loadings as total pounds and as pounds per acre.

C. Seasonal First Flush Toxicity Testing

WSDOT shall test the seasonal first flush for toxicity in accordance with the criteria and procedures described in this section. This toxicity testing is for screening purposes only and is not effluent characterization or compliance monitoring under WAC 173-205.

1. Toxicity Storm Event Criteria

   WSDOT shall collect six toxicity screening samples and associated chemical analysis at least once per monitoring year in August or September. Samples shall be collected with at least a one-week antecedent dry period (or October, irrespective of antecedent dry period, if unsuccessful in August or September).

2. Toxicity Sample Collection Criteria

   WSDOT shall collect adequate sample volume to perform both the toxicity test and the chemical analysis test described below. If sample volume for the toxicity test is equal to or less than 2 liters, do not attempt a toxicity test. Priority parameters are listed in S7.C.4 and volume requirements are listed in Appendix 6.

3. Toxicity Site Selection

   a. Once each year WSDOT shall test the seasonal first flush for toxicity from 3 untreated highway runoff monitoring locations. Samples shall be collected from the edge of the pavement or from a location within a pipe conveyance system as long as in the latter case the stormwater has not passed through a treatment BMP, a vegetated area, or the soil column. The following test sites shall be sampled:

i. One highly urbanized site (≥100,000 AADT)
ii. One urbanized site (≤100,000 and ≥30,000 AADT)
iii. One rural site (≤30,000 AADT)

b. Once each year WSDOT shall test the seasonal first flush for toxicity from 3 BMP effluent locations. BMPs shall be selected and designed in accordance with the HRM. One BMP site shall be categorized as an enhanced treatment BMP for metals removal. The BMPs shall be tested at the following sites:
   i. One highly urbanized site (≥100,000 AADT)
   ii. One urbanized site (≤100,000 and ≥30,000 AADT)
   iii. One rural site (≤30,000 AADT)

4. Parameters to be Sampled and Analyzed

   At each monitoring site, WSDOT shall collect a sample for chemical analysis and a sample for the toxicity test using the same sampling methods, at the same time and location. Parameter details, analytical methods and reporting limits are presented in Appendix 5. Chemicals below reporting limits after two years of data analysis may be dropped from the list of parameters. The following parameters shall be collected and analyzed, as indicated in order of priority if insufficient volume exists:

   a. Total and dissolved metals: copper, zinc, cadmium and lead
   b. Herbicides (listed in S7.B.4 and if only applied in the monitoring site drainage area).
   c. Total suspended solids
   d. Chlorides
   e. Hardness
   f. Methylene blue activated substances (MBAS)
   g. PAHs
   h. Phthalates
   i. TPH: NWTPH-Gx and NWTPH-Dx (collected as a grab sample)

5. Sampling Method

   WSDOT shall collect time or flow-weighted composite samples. If WSDOT is unsuccessful in completing a toxicity test despite documented, good faith efforts or due to an invalid or anomalous test result, WSDOT shall make a second sampling attempt if sufficient time remains to meet the toxicity storm event criteria. If the second attempt is

also unsuccessful, WSDOT shall document its efforts in its annual stormwater monitoring report and shall not be required to conduct further sampling and analysis efforts under S7.C for that calendar year.

6. Laboratory Testing Procedures

   WSDOT shall follow toxicity testing procedures for *Hyalella azteca* 24-hour test per ASTM E1192-97. Toxicity tests must meet quality assurance criteria in the most recent versions of ASTM E1192-97 and the Department of Ecology Publication #WQ-R-95-80, Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria. The laboratory must conduct water quality measurements on all samples and test solutions for toxicity testing as specified in the most recent version of Department of Ecology publication #WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria.* Sample volume, replicates, control and concentrations and required test conditions for the 24-hour survival test (ASTM E1192-97) are included in Appendix 6.

7. Follow up Actions

   If the EC_{50} from any valid and non-anomalous test is 100% stormwater or less, WSDOT shall conduct follow-up actions. WSDOT shall prepare a study design to further refine the knowledge of toxicant concentrations in stormwater discharged to receiving waters from WSDOT's roads and highways. WSDOT shall use the findings from this study to determine which highway site(s) warrant further investigation. The study design shall include a mapping of site-specific MS4s, any installed or planned structural BMPs, proposed sampling and analysis and a description of the toxicity pathways to receiving water. If necessary to produce knowledge from the study useful in source control or BMP improvement, WSDOT shall include a toxicity identification/reduction evaluation (TI/RE) in the study design. The TI/RE shall be based upon instructions in WAC 173-205-100.

8. Reporting for Annual First Flush Toxicity Testing

   WSDOT shall submit the following information for each sampling event at each site:

   a. WSDOT shall report an EC_{50} for each test. WSDOT shall submit all reports for toxicity testing in accordance with the most recent version of Department of Ecology Publication # WQ-R-95-80, *Laboratory Guidance and Whole Effluent*

Toxicity Test Review Criteria. Toxicity reports shall be included in each Annual Stormwater Monitoring Report beginning in 2013 with the following information:

i. Reports shall contain bench sheets, and reference toxicant results if required for the protocol, for test methods.

ii. WSDOT shall submit toxicity test reports, bench sheets, and reference toxicity results in electronic format for entry into Ecology's database and shall submit a hardcopy.

iii. WSDOT shall calculate the EC_{50} by the trimmed Spearman-Karber procedure. WSDOT may apply Abbott's correction to the data before deriving this point estimate.

D. Baseline Monitoring of Rest Areas, Maintenance Facilities and Ferry Terminals

1. Monitoring Site Selection

WSDOT shall conduct stormwater discharge monitoring to collect baseline water quality data. Monitoring locations shall be located to capture runoff from most of the site and down gradient of the major pollutant generating activities for each facility. WSDOT shall sample the following land uses:

a. Two High-Use Rest Areas

b. Six Maintenance Facilities, one in each WSDOT region;

c. One High-Use Ferry Terminal

2. Parameters Sampled and Analyzed in Stormwater

The following parameters shall be sampled, analyzed and reported in untreated water. Chemicals below method detection limits after two years of data analysis may be dropped from the list of parameters. Parameter details, analytical methods and reporting limits are presented in Appendix 5.

a. Rest areas (as indicated in order of priority if insufficient volume exists):

i. TPH: NWTPH-Dx and NWTPH-Gx (grab)

ii. Total and dissolved metals: copper, zinc, cadmium and lead

iii. PAHs

iv. TSS

v. Herbicides (listed in S7.B.4 only for those that WSDOT applies on-site, stores on-site, or applies by vehicles parked on-site)

vi. Nutrients: Total phosphorus, nitrate/nitrite, ortho-phosphorus, and total Kjeldahl nitrogen

vii. Chlorides

viii. Phthalates

ix. Fecal coliform (grab)

x. Temperature (collected from runoff in-situ or as a grab sample)

b. Maintenance facilities (as indicated in order of priority if insufficient volume exists):

i. Total suspended solids

ii. TPH: NWTPH-Dx and NWTPH-Gx (grab)

iii. PAHs

iv. Herbicides (listed in S7.B.4 only for those that WSDOT applies on-site, stores on-site, or applies by vehicles parked on-site)

v. Nutrients: Total phosphorus, ortho-phosphorus, nitrate/nitrite and total Kjedahl nitrogen (where fertilizers are applied on-site, stored on-site or applied by vehicles parked on-site)

vi. Total and dissolved metals: copper, zinc, cadmium and lead

vii. Methylene blue activated substances (MBAS)

viii. Chlorides

c. Ferry Terminal (as indicated in order of priority if insufficient volume exists):

i. PAHs

ii. TPH: NWTPH-Dx and NWTPH-Gx (collected as a grab sample)

iii. Total and dissolved metals: copper, zinc, cadmium and lead

iv. MBAS

v. Total suspended solids

vi. Fecal coliform (grab)

vii. Temperature (collected from runoff in-situ)

3. Sampling Method

WSDOT shall collect samples using composite samplers or by manual compositing grab samples. A composite sample shall consist of a minimum of five individual

stormwater grab samples equally spaced in time and collected within the first hour of runoff.

4. Sample Timing and Frequency

   WSDOT shall conduct sampling as early in the runoff event as practical but not later than 20 minutes after the onset of runoff at the monitoring location.

   a. WSDOT shall collect samples from a minimum of seven storm events throughout the calendar year.

      i. WSDOT shall sample at least five qualifying storm events during the wet season. Wet season samples shall be collected over a time frame exceeding 28 consecutive days.

      ii. WSDOT shall sample at least one qualifying storm event during the dry season

      iii. Additionally, WSDOT shall collect a sample that represents the seasonal first-flush event no earlier than August 1. The seasonal first-flush sample must have a one-week antecedent dry period.

   b. Storm Event Criteria

      A qualifying storm event during the wet season in Western Washington (October 1 through April 30) and wet season in Eastern Washington (October 1 through June 30) shall meet the following conditions:

      i. Rainfall depth: 0.20-inch minimum, no fixed maximum

      ii. Rainfall duration: No fixed minimum or maximum

      iii. Antecedent dry period: less than 0.02-inch rain or no surface runoff in the previous 24 hours

      iv. Inter-event dry period: 6 hours

      A qualifying storm event during the <u>dry</u> season in Western Washington (May 1 through September 30) and dry season in Eastern Washington (July 1 through September 30) shall meet the following conditions:

      v. Rainfall depth: 0.20-inch minimum, no fixed maximum

      vi. Rainfall duration: No fixed minimum or maximum

      vii. Antecedent dry period: less than 0.02-inch rain in previous 72 hours

      viii. Inter-event dry period: 6 hours

5. Reporting requirements for Baseline Monitoring of Rest Areas, Maintenance Facilities and Ferry Terminals
    a. WSDOT shall submit an Annual Stormwater Monitoring Report with the following information for each sampled storm event beginning in 2013:
        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; and
        iv. The time period of sample collection.
    b. WSDOT shall include in each Annual Stormwater Monitoring Report any proposed changes to the monitoring program that could affect future data results for each *site.*

E. Monitoring the Effectiveness of Stormwater Treatment and Hydrologic Management Best Management Practices (BMPs)
1. WSDOT shall conduct a full-scale monitoring program to evaluate the effectiveness and operation and maintenance requirements of stormwater treatment and hydrologic management BMPs. Any BMPs listed in its Highway Runoff Manual (HRM) may be selected. Stormwater treatment and hydrologic BMPs not listed in the HRM, require engineering designs, specifications, and approval from a professional engineer.
2. WSDOT shall monitor at least two treatment BMPs, at no less than two sites per BMP. Monitoring shall continue until statistical goals are met (defined by Ecology's publication, "Guidance for Evaluating Emerging Stormwater Treatment Technologies, Technology Assessment Protocol" (TAPE). If the statistical goals are not achieved within the term of this permit, Ecology will consider continuing the monitoring effort in the next permit cycle.
    a. WSDOT may choose BMPs it has already started evaluating prior to issuance of this permit, provided the study meets the guidelines outlined below. WSDOT shall complete the evaluation during this permit cycle.
    b. WSDOT shall obtain written approval from Ecology for the BMPs WSDOT proposes to evaluate.
    c. WSDOT shall select BMPs from the following categories:
        i. Basic Treatment
        ii. Enhanced Treatment

iii. Metals/Phosphorus Treatment

iv. Oil Control

d. WSDOT shall also select one flow reduction strategy BMP (such as LID) that is in use or planned for installation. Monitoring of a flow reduction strategy shall include continuous rainfall and surface runoff monitoring. Flow reduction strategies shall be monitored through either a paired study or against a predicted outcome.

3. For BMPs monitored under this section, WSDOT shall test BMPs that have been designed and installed in accordance with HRM unless Ecology approves of an alternate design in the QAPP review.
4. WSDOT shall use appropriate sections of Ecology's TAPE (available on Ecology's website) for preparing, implementing, and reporting the results of the BMP evaluation program.
   a. WSDOT shall use USEPA publication number 821-B-02-001, "Urban Stormwater BMP Performance Monitoring," as additional guidance for preparing the BMP evaluation monitoring and shall collect information pertinent to fulfilling the "National Stormwater BMP Data Base Requirements" in section 3.4.3. of that document.
   b. WSDOT shall determine mean and median effluent concentrations, and shall determine percent removals for each BMP type with a statistical goal of 90-95% confidence and 75-80% power for the parameters for which the facility is approved in the HRM. The initial QAPP shall commit to a monitoring program designed to achieve the statistical goal, but shall target collection of at least 12 influent and 12 effluent samples per year.
5. WSDOT shall monitor the following parameters at each test site:
   a. For Basic, Enhanced, or Phosphorus Treatment BMPs: total suspended solids, particle size distribution, pH, total phosphorus, ortho-phosphate, hardness, and total and dissolved copper and zinc.
   b. For Oil Control BMPs: pH, NWTPH-Dx and –Gx, and visible oil sheen
6. WSDOT shall sample the accumulated sediment at each test site for Basic, Enhanced, Phosphorus treatment, or Oil Control BMPs for the following parameters: total solids,

particle size (grain size), total volatile solids, NWTPH-Dx, total phosphorous, and total cadmium, copper, lead, and zinc.

7. Reporting requirements for Stormwater Treatment and Hydrologic Management Best Management Practice (BMP) Evaluation Monitoring beginning with the 2013 Stormwater Monitoring Report WSDOT shall include the following information for *each sampling event from each site*:
    a. Sample event identification (date, time, location)
    b. Tabular water quality data and summary results for each monitored parameter;
    c. Antecedent dry period, inter-event period and total precipitation depth;
    d. 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 sampled time period (% of hydrograph sampled), total runoff time period and total runoff volume.
8. Beginning with the 2013 monitoring annual report and annually thereafter until statistical goals are met, WSDOT shall include in each Annual Report for BMP Evaluation Monitoring the following information for each *site*:
    a. Status of implementing the monitoring program and a description of Stormwater Treatment and Hydrologic Management BMP Evaluation Monitoring programs that are still in progress at the end of the reporting year
    b. WSDOT shall compute and report cumulative (including previous years) performance data for each treatment BMP test site, and for both sites of the same treatment BMP type, consistent with the guidelines in appropriate sections of Ecology's guidance for "Evaluation of Emerging Stormwater Treatment Technologies" and USEPA publication number 821-B-02-001, "Urban Stormwater BMP Performance Monitoring," including information pertinent to fulfilling the "National Stormwater BMP Data Base Requirements" in section 3.4.3. of that document.
    c. Status of cumulative (including previous years) performance data in terms of statistical goals for each test site and for both test sites of the same treatment BMP type;

d. Status of performance data concerning flow reduction performance for the hydrologic reduction BMP; and

e. Any proposed changes to the monitoring program that could affect future data results.

9. A final report on each BMP monitored shall be submitted once the monitoring statistical goals are met. The final report shall include an analysis of the performance data collected on the BMPs as described in the appropriate sections of Ecology's TAPE (available on Ecology's website).

F. Quality Assurance Project Plans

1. WSDOT shall prepare a Quality Assurance Project Plan (QAPP) in accordance with Ecology's Guidelines for Preparing Quality Assurance Project Plans for Environmental Studies (Ecology's QAPP Guidelines). WSDOT shall prepare a QAPP for the following programs:

   a. S7.B, Baseline Monitoring of Highways with inclusion of sediment sampling and toxicity sampling (if applicable).

   b. S7.C, Annual First Flush Toxicity Testing.

   c. S7.D, Baseline Monitoring of Rest Areas, Maintenance Facilities and Ferry Terminals.

   d. S7.E, Monitoring the Effectiveness of Stormwater Treatment and Hydrologic Management BMPs. WSDOT shall prepare a QAPP for each BMP type monitored and for the flow reduction strategy. Ecology requires prior approval of BMPs WSDOT proposes for monitoring.

2. WSDOT may combine any of the required QAPPs listed above 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's QAPP Guidelines

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

G. Collaborative and Independent Programs

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 depending on whether the programs are independent (1) or collaborative (2).

1. Collaborative and independent monitoring programs.
    a. If WSDOT intends to meet all or part of the monitoring requirements outlined in Sections S7.B, S7.C, S7.D and S7.E, through a collaborative process with other entities, WSDOT shall submit a statement to Ecology explaining their commitment to the collaborative process no later than September 6, 2009.
    b. For both independent and collaborative monitoring, WSDOT shall submit all required QAPPs, to Ecology no later than September 6, 2010. WSDOT shall submit the monitoring program in both paper and electronic form.
    c. Approved or final QAPPs shall be completed no later than March 6, 2011, provided that this deadline shall be extended by the number of days by which Ecology exceeds 90 days for QAPP review.
    d. WSDOT shall begin full implementation of the monitoring program no later than September 6, 2011.

S8. REPORTING REQUIREMENTS

A. WSDOT shall submit a SWMP Progress Report no later than October 31 of each year beginning in 2010. The reporting period for the first annual report shall begin on the effective date of this permit and end June 30, 2010. The reporting period for all subsequent annual reports shall be the previous fiscal year.

B. WSDOT shall submit two printed copies and an electronic (PDF) copy of the annual report to Ecology. All submittals shall be delivered to:

Department of Ecology
Water Quality Program
Municipal Stormwater Permits
P.O. Box 47696
Olympia, WA 98504-7696

C. WSDOT shall keep all records related to this permit until three years after the permit is no longer in effect. Except as required as a condition of the annual reports, records need to be submitted to Ecology only upon request.

D. 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.

E. The SWMP Progress Report

1. Each annual report shall include the following:
   a. A description of current implementation status including the required implementation deadlines. If WSDOT fails to meet permit deadlines, WSDOT shall report the reasons for its failure to meet requirements and how the requirements will be met in the future.
   b. Actions taken to implement the Table of Performance Measure in Appendix 2 of this permit.
   c. The above information shall be submitted in a format approved by Ecology.

2. WSDOT shall provide a summary of any actions taken pursuant to S4.F.
3. WSDOT shall identify barriers to implementation of LID and, in each annual report, identify actions taken to remove barriers identified and report progress on LID feasibility required in S5.A.5.
4. WSDOT shall provide a summary of the status of any TMDL implementation requirements and any associated monitoring as required by S6.B, including TMDLs WSDOT is involved with developing.
5. If WSDOT is relying on another governmental entity to satisfy any of the obligations under this permit, WSDOT shall provide the name of the other entity and a description of the permit requirements preformed by the other entity.
6. WSDOT shall include those portions of its annual budget request to the legislature needed to comply with this permit.
7. WSDOT shall include in the SWMP Annual Progress Report certifications and signatures pursuant to G19.C, and notification of any changes to authorization pursuant to G19.B.
8. WSDOT shall include in each Annual progress report a detailed accounting of all retrofitting work carried out under the permit, identifying work as falling under the project-triggered, opportunity-based, Puget Sound basin, or stand-alone retrofit categories. For each project under which retrofit work is carried out, the report shall disclose the amount of existing impervious surface area that was retrofitted. For retrofitting carried out pursuant to Section 6.2 of the WSDOT SWMP in which retrofitting all existing areas was deemed either infeasible or not cost-effective, the report shall include the cost information developed in order to ensure compliance with this requirement, and describe where and how much retrofitting took place. If money is transferred to fund stand-alone retrofit projects, these amounts will be included in the Annual progress reports.
9. WSDOT shall include in each Annual progress report a list of all projects which add new impervious surface and exceed thresholds to comply with stormwater management requirements. The list will include a description of the BMPs employed at each project.

F. Stormwater Monitoring Report

A Stormwater Monitoring Report shall be prepared and submitted with each Annual Report by October 31, as follows:

Report year	**Data required**
2010	Status report on preparations to meet requirements in S7.A through S7.E
2011	Status report on preparations to meet requirements in S7.A through S7.E
2012	Status report on preparations to meet requirements in S7.A through S7.E
2013	Detailed report on data collected from October 1, 2011 – September 30, 2012 described in S7.B.8, S7.C.8, S7.D.5 and S7.E.8.
Annually thereafter	Detailed report on data collected from October 1 – September 30 described in S7.B.8, S7.C.8 and S7.D.5

1. Data in the Stormwater Monitoring Report shall be submitted in the following formats:
   a. Excel format
   b. Reports shall be submitted in both paper and electronic format
2. A Final Water Quality Monitoring Report for each monitoring program outlined in S7 shall be submitted within one month prior to the end of the permit expiration date. This report shall include all Stormwater Monitoring Report required information from S7 of this permit in addition to the following:
   a. An estimated cost for each monitoring program component;
   b. Stormwater management actions taken or planned to reduce pollutants from WSDOT land uses;
   c. A description of the monitoring programs still in progress;
   d. A cumulative water quality and sediment quality results summary for each site;
   e. An estimated water quality loading from highway runoff sites for each pollutant based on precipitation and runoff volume;
   f. Evaluation of monitoring sites; and
   g. A cumulative analysis of parameters of concern from each of WSDOT's land use monitoring sites.

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 environment, 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 might result from broken sewer lines, WSDOT shall report immediately to the Department of Ecology and the Department of Health, Shellfish Program.

  The Department of Ecology's Regional Office 24-hr. 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

  Department of Health's Shellfish 24-hr. number is:

  - Department of Health, Shellfish Program (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 three 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 three 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. Decant from street waste vehicles resulting from cleaning stormwater facilities may be reintroduced only when other practical means are not available.

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 nonapplicability 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 date permit coverage is granted.

"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.

"Component" or "Program Component" means the elements described in the WSDOT Stormwater Management Program Plan appearing in Appendix 7 of this 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.

"Detailed Implementation Plan" means the formal TMDL implementation plan, also known as a Water Quality Improvement Plan. This term changed to: "associated implementation documents" in this permit to expand the term to include all relevant implementation documemnts.

"DIP" means detailed implementation plan.

"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.

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

"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.

"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 seasonally or year round.

"Illicit connection" means any man-made conveyance that is connected to a municipal separate storm sewer without a permit, excluding roof drains and other similar type connections. Examples include sanitary sewer connections, floor drains, channels, pipelines, conduits, inlets, or outlets that are connected directly to the municipal separate storm sewer system.

"Illicit discharge" means any discharge to a municipal separate storm sewer that is not composed entirely of storm water except discharges pursuant to a NPDES permit (other than the NPDES permit for discharges from the municipal separate storm sewer) and discharges resulting from fire fighting activities.

"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.

"Large Municipal Separate Storm Sewer System (Large MS4)" means all municipal Separate Storm Sewers located in an incorporated place with a population of 250,000 or more, a County with unincorporated urbanized areas with a population of 250,000 or more according to the 1990 decennial census by the Bureau of Census. See also 40 CFR 122.26(b)(4).

"Low Impact Development (LID)" means a stormwater management and land development strategy applied at a project scale that emphasizes conservation and use of on-site natural features integrated with engineered, small-scale hydrologic controls to more closely mimic pre-development hydrologic functions.

"MBAS" means Methylene Blue Activated Substances.

"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).

"Methylene Blue Activated Substances" are anionic surfactants, including linear alkylate sulfonate and alkyl sulfate, which react with a chemical called methylene blue to form a blue-chloroform-soluble complex; the intensity of color is proportional to concentration

"Maximum Extent Practicable (MEP)" 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.

"Municipal Separate Storm Sewer (MS3)" means a conveyance, or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains):

(a) 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 United States;

(b) designed or used for collecting or conveying stormwater;

(c) which is not a combined sewer; and

(d) which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2

"Municipal Separate Storm Sewer System (MS4)" means all separate storm sewers that are defined as large" or "medium" or "small" municipal separate storm sewer systems. See also 40 CFR 122.26(b)(18)

"National Pollutant Discharge Elimination System (NPDES)" 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 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.

"NPDES" means National Pollutant Discharge Elimination System.

"Outfall" means point source as defined by 40 CFR 122.2 at the point where a municipal separate storm sewer discharges to waters of the State and does not include open conveyances connecting two municipal separate storm sewers, or pipes, tunnels, or other conveyances which connect segments of the same stream or other waters of the State and are used to convey waters of the State.

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

"Physically Interconnected" means that one municipal separate storm sewer is connected to a second municipal separate storm sewer in such a way that it allows for direct discharges to the second system. For example, the roads with drainage systems and municipal streets of one entity are physically connected directly to a municipal separate storm sewer belonging to another entity

"Qualified Personnel" means staff members or contractors who have had professional training in the aspects of stormwater management for which they are responsible and are under the functional control of the Permittee.

"RCW" means the Revised Code of Washington State.

"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" means water that travels across the land surface, or laterally through the soil near the land surface, and discharges to water bodies either directly or through a collection and conveyance system. Runoff includes stormwater and water from other sources that travels across the land surface. See also "Stormwater."

"Shared Waterbodies" means waterbodies, including downstream segments, lakes and estuaries that receive discharges from more than one permittee.

"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 Associated with Industrial and Construction Activity" means the discharge from any conveyance which is used for collecting and conveying stormwater, which is directly related to manufacturing, processing or raw materials storage areas at an industrial plant, or associated with clearing grading and/or excavation, and is required to have an NPDES permit in accordance with 40 CFR 122.26.

"Stormwater Management Manual for Western Washington" means the 5-volume technical manual (Publication Nos. 05-10-029 through 05-10-033) published by Ecology in February 2005.

"Stormwater Management Manual for Eastern Washington" means the 5-volume technical manual (Publication Number 04-10-076) published by Ecology in September 2004.

"Stormwater Management Program (SWMP)" means a set of actions and activities designed to reduce the discharge of pollutants from the regulated small MS4 to the maximum extent practicable and to protect water quality, and comprising the components listed in the WSDOT Stormwater Management Program Plan appearing in Appendix 7 of this permit and any additional actions necessary to meet the requirements of applicable TMDLs.

"Total Maximum Daily Load (TMDL)" 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.

"Vehicle Maintenance or Storage Facility" means an uncovered area where any vehicles are regularly washed or maintained, or where at least 10 vehicles are stored.

"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.

"WSDOT" means Washington State Department of Transportation.

APPENDIX 1: HIGHWAY RUNOFF MANUAL (HRM)

The Department of Ecology completed its review of the June 2008 Highway Runoff Manual and found that it meets minimum design requirements and best management practices equivalent to those in Ecology's current Stormwater Management Manuals. The HRM can be found at:

http://www.wsdot.wa.gov/publications/manuals/fulltext/M31-16/HighwayRunoff.pdf

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APPENDIX 2: TABLE OF REPORTABLE PERFORMANCE MEASURES FROM WSDOT'S STORMWATER MANAGEMENT PROGRAM PLAN

Key Activity	Performance Indicator
Stormwater Program Management Plan Framework	
Program Development	
Develop *Stormwater Facilities Inventory Database* and related inventory and documentation procedures.	• Database operational by the end of year two of the permit. • Establish and field test a process for integrating the documentation of newly constructed stormwater facilities into the *Stormwater Facilities Inventory Database* as part of the project closeout procedure established by end of year three of the permit. • Initiate a program to map connection points between municipal separate storm sewers owned or operated by WSDOT and other municipalities or other public entities by the end of year two of the permit.
Implementation	
Continue intergovernmental coordination associated with implementation of this SWMP.	• Participate in watershed planning and TMDL development where WSDOT identifies itself as a key stakeholder.
Continue to update and revise the stormwater manuals and procedures documents associated with the stormwater management program plan as needed.	• Report annually on changes to manuals and procedures documents, including Ecology-approved post-publication updates to the *Highway Runoff Manual*.
Document newly constructed stormwater facilities into the *Stormwater Facilities Inventory Database*.	• Map and document all newly constructed stormwater facilities as part of the project closeout procedure into the *Stormwater Facilities Inventory Database* beginning in year 4 of the permit.
Inventory and document all known municipal separate storm sewer outfalls and structural stormwater treatment and flow control BMPs WSDOT owns, operates, or maintains.	• Map and document all known municipal separate storm sewer outfalls and structural stormwater treatment and flow control BMPs WSDOT owns, operates, or maintains within Phase I and II designated areas into the *Stormwater Facilities Inventory Database* by the end of year five of the permit.
Track cost of SWMP implementation.	• Estimate and report annually the cost of implementing the stormwater management program plan.
Illicit Discharge Detection and Elimination Program	
Implementation	
Track all illicit discharges and illegal connections discovered by	• Annually summarize and report on tracking/remediation activities for

Key Activity	Performance Indicator
maintenance and construction staff and contractors and seek remediation when necessary. Report unresolved problems to Ecology via the *Environmental Reporting and Tracking System* for further action.	illicit discharges and illegal connections.
Construction Stormwater Pollution Prevention Program	
Implementation	
Continue to require training for WSDOT personnel involved in design or inspection of TESC plans.	• Number of courses and participants is reported annually.
Continue *fall effectiveness assessment* of all moderate to high-risk construction sites.	• Summarize findings in annual report.
New Facilities Stormwater Management Program	
Program Development	
Work with project offices to develop a procedure for insuring field verified *as-builts* are provided to Headquarters as part of the project closeout procedure.	• Procedure in place by the end of year two of the permit.
Integrate Maintenance's involvement as part of stormwater facility design approval process.	• Integrating Maintenance's involvement is in place by the end of year two of the permit.
Implementation	
Continue to require training for staff involved in stormwater facility design.	• Annually report number of training opportunities and staff attendance for *Highway Runoff Manual* related training
Require *Highway Runoff Manual* training for WSDOT consultants and contractors involved in stormwater facility design.	• By the end of year two of the permit, conduct annual audits of 10% of contracts to assess if 100% of consultants and contractors involved in stormwater facility design received *Highway Runoff Manual* training or worked under someone who has.
Continue to track the number and type of stormwater treatment and flow control facilities built.	• Report number and type of stormwater treatment and flow control facilities built annually.
Document key features and locations of newly constructed stormwater facilities in database at project closeout.	• By the end of year five of the permit, begin annual audit of 10% of new projects to verify that all reported newly constructed stormwater facilities are entered in the database correctly.
Stormwater BMP Retrofit Program	
Implementation	
Implement *Capital Improvement Plan* for stand-alone retrofits.	• Annually report number of stand alone-retrofits completed.
Track acres of existing impervious surface retrofitted and/or reverted to pervious surface (project-triggered and opportunity-based) as part of a highway improvement or preservation projects.	• Annually report the number of acres of existing impervious surface retrofitted or reverted to pervious surface (project-triggered and opportunity-based) as part of a highway improvement or preservation

Key Activity	Performance Indicator
	project annually.
Track the amount of offsite retrofit obligation accrued and location and extent of the alternative retrofits accomplished in order to verify that an equivalent surface area of highway received retrofit based upon environmental priorities.	• Annually report the acreage of offsite project-driven retrofit obligation incurred and the acreage of alternative retrofit accomplished (this is a subset of the acreage reported in the preceding performance indicator).
Highway Maintenance	
Program Development	
Complete SWPPPs for all maintenance facilities, rest areas, and WSDOT-maintained park and ride lots for Phase I and II designated areas.	• SWPPPs within Phase I and II designated areas completed by the end of year two of the permit effective date.
Implementation	
Continue to require training of all new maintenance staff on stormwater related maintenance activities.	• 90% of those new employees slated for training complete the training course within one year of employment at WSDOT.
Continue to include spill response awareness training as part of maintenance training program.	• 90% of those slated for training complete the course within one year of employment at WSDOT or within one year of permit effective date.
Continue routine stormwater related roadway maintenance (i.e., street sweeping; catch basin cleaning; and ditch, channel, and culvert maintenance).	• Compare Level of Service data determined by random condition surveys to legislatively mandated target LOS.
Continue to support research and participate in PNS and to track statewide totals for anti-icing product use.	• Statewide totals of de-icer materials used reported annually.
Continue annual maintenance of all known permanent stormwater BMPs and correct deficiencies as applicable.	• Compare Level of Service data determined by random condition surveys in Phase I and II designated areas to legislatively mandated target Level of Service. Conduct 95% of planned inspections within Phase I and II designated areas and noted deficiencies scheduled for correction.
Train staff on SWPPP implementation and then implement SWPPPs.	• Staff slated for training receives the training within three months of SWPPP completion. • Upon SWPPP completion, document SWPPP inspections of maintenance facilities, rest areas, and WSDOT-maintained park and ride lots.
Continue litter control efforts.	• Report the amount of litter removed annually.
Continue to track herbicides used.	• Report amount of herbicides used and acres treated annually.
Ferry Terminal Maintenance	
Program Development	
Complete development of the *Environmental Management System*	• Integrate EMS with *WSF Safety Management System Manuals* by end of

Key Activity	Performance Indicator
(EMS).	year one of the permit.
Complete a generic SWPPP for all facilities through completion of EMS.	• SWPPP will be integrated into the EMS for implementation by the end of year two of the permit.
Revise *Maintenance Productivity Enhancement Tool* (MPET) as necessary to identify, schedule, and document completion of stormwater system maintenance, sweeping, and vegetation management tasks.	• Revisions completed by the end of year two of the permit.
Implementation	
Continue to train staff in initial spill containment and clean up.	• 90% of those slated for training receive the training within one year of employment at WSF or within one year of permit effective date.
Maintain trained staff in stormwater control procedures and applicable state and federal regulations.	• 90% of those slated for training receive the training within one year of employment at WSF or within one year of permit effective date.
Research and Monitoring.	
Program Development	
Develop QAPPs to meet requirements in *Section 7* of the municipal permit.	• Provide QAPPs for Ecology review and approval, per deadlines specified in the permit.
Develop a monitoring data container.	• Develop a data container for monitoring data by the end of year three of the permit.
Develop the link for monitoring data container and the *stormwater facilities inventory database.*	• Link between monitoring data container and *stormwater inventory database* established by the end of year three of the permit.
Implementation	
Maintain a tool for storing and retrieving monitoring data.	• Begin populating and maintaining monitoring data container by the end of year three of the permit.
Implement QAPPs.	• Annually report on status of research and monitoring activities. Upon research project completion, summarize findings in the annual report and post technical reports on WSDOT's website.
Education/ Outreach/Involvement Program	
Implementation	
Continue support for *Adopt-a-Highway Program*.	• Summarize outreach, knowledge, and technology transfer activities in the annual report.
Continue to provide technical assistance to local agencies and employers for the *Commute Trip Reduction Program*.	
Maintain *Highway Runoff Manual* listserv.	
Maintain and expand WSDOT's internet sites to disseminate information regarding WSDOT's SWMP.	

Key Activity	Performance Indicator
Continue to support knowledge and technology transfer related to stormwater management through presentations, publications, web telecasts, and participation on stormwater committees.	

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APPENDIX 3: APPLICABLE TMDL REQUIREMENTS

Water Body Name	WBID	TMDL Approval Date	
Stillaguamish River & Portage Creek	WA-05-1020	21-June-05 11-Sep-06	FC, Dissolved Oxygen, Turbidity, pH, Mercury, Arsenic Temperature
Issaquah Creek Basin	WA-08-1010	01-Oct-04	Fecal Coliform
Little Bear Creek • Trout Stream • Great Dane Creek • Cutthroat Creek	WA-08-1085	01-July-05	Fecal Coliform
Swamp Creek	WA-08-1060	16-Aug-06	Fecal Coliform
South Prairie Creek • Wilkeson/Gale Creek	WA-10-1085 WA-10-1085 WA-10-1087	06-Aug-03	Temperature Fecal Coliform
Nisqually Watershed • McAllister Creek • Ohop Creek • Red Salmon Creek	WA-11-1010 WA-11-2000	05-Aug-05	Fecal Coliform Dissolved Oxygen

• Lynch Creek • Wash Creek • Unnamed Tributary to West Red Salmon Creek • Little McAllister Creek • Medicine Creek mouth			
Totten/Eld Inlets Tributaries	WA-14-1100 WA-14-1190 WA-14-1195 WA-14-1200 WA-14-1400	21-June-06	Fecal Coliform Temperature
Walla Walla	WA-32-1010 WA-32-1020 WA-32-1060	09-May-06	Chlorinated Pesticide PCBs Fecal coliform
Yakima, Upper	WA-39-1010	December 2003	Suspended Sediment, Turbidity and Organochlorine Pesticide
Henderson Inlet **http://www.ecy.wa.gov/pubs/0610058.pdf** **http://www.ecy.wa.gov/pubs/0603012.pdf**	WRIA-13	08-Jan-07 March 06	Fecal coliform
South Fork Palouse River **http://www.ecy.wa.gov/pubs/0910060.pdf**	WRIA-34	Oct-09	Fecal coliform

APPENDIX 4: ANNUAL REPORT CERTIFICATION FORM

Report due date, permit number and reporting period
Two printed copies and one electronic copy of this report are due to Ecology by October 31 following the reported fiscal year. Please reference the permit number and reporting period in the cover letter for the report.

Relying on another governmental entity
If you are relying on another governmental entity to satisfy one or more of the permit obligations, list the entity and the permit obligation they are implementing on your behalf below. Attach a copy of your agreement with the other entity

Certification
The following certification statement must accompany each report and be signed by WSDOT's responsible official(s) or his or her designee.

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.

Name_____Title_____Date_____

Name_____Title_____Date_____

Submittal
Deliver two printed and signed copies and one electronic copy (MS Word format or PDF, on CD ROM of this report by September 1 to:

Department of Ecology
Water Quality Program
Municipal Stormwater Permits
P.O. Box 47696
Olympia, WA 98504-7696

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APPENDIX 5: LABORATORY METHODS

Unless alternative methods are approved by Ecology in WSDOT's QAPP the following analytical methods shall be used by WSDOT when analyzing stormwater and sediments collected from stormwater discharges as required by section S7 – *Monitoring* of this permit. Any alternative method proposed by WSDOT must have similar reporting limits, or must be justified as adequate for the likely range of concentrations. WSDOT is not guaranteed approval of their alternative methods or reporting limits.

A. Methods for Water Samples

Analyte (or surrogate)	Method in Water (SM=Standard Method, EPA=EPA Method)	Reporting Limit Target
Total suspended solids	SM 2540B or SM 2540D	1.0 mg/L
Chloride	EPA 300.0, EPA 325.2 or SM 4110B	0.2 mg/L
Particle size distribution	Coulter Counter, Laser diffraction, or comparable method - *see attached method*, or SM 2560B	NA
pH	EPA 150.2 or SM 4500H^+	0.2 units
Hardness as $CaCO_3$	EPA 200.7, SM 2340B (ICP), SM 2340C (titration) or SM 3120B	1.0 mg/L
Methylene blue activated substances (MBAS)	CHEMetrics Colorimetric or SM 5540C	0.025 mg/L
Fecal coliform	SM 9221E	2 min., 2E6 max
Total phosphorus	EPA 365.3, EPA 365.4, SM 4500- P E, or SM 4500 P F	0.01 mg P/L
Orthophosphate	EPA 365.1, 365.3, SM 4500 P E or SM 4500 P F	0.01 mg P/L
Total kjeldahl nitrogen	EPA 351.1, EPA 351.2, SM 4500-Norg B, SM 4500-Norg C, SM 4500-NH_3 D, SM 4500-NH_3 E, SM-4500 NH_3 F or SM-4500 NH_3 G	0.5 mg/L
Nitrate/Nitrite	EPA 353.2 or SM 4500-NO_3 E	0.01 mg/L
Total recoverable zinc	EPA 200.8 (ICP/MS), EPA 200.7 or SM 3125 (ICP/MS)	5.0 ug/L
Dissolved zinc	EPA 200.8 (ICP/MS) or SM 3125 (ICP/MS)	1.0 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 (ICP/MS)	0.1 ug/L

Analyte (or surrogate)	**Method in Water (SM=Standard Method, EPA=EPA Method)**	**Reporting Limit Target**
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 8310 or 8270D	0.1 ug/L
Phthalates**	EPA 8270D	1.0 ug/L
Herbicides	EPA 8270D or EPA 8151	0.01 – 1.0 ug/L
TPH	NWTPH-Dx - Ecology, 1997, (Publication No. 97-602) or EPA SW-846 method 8015B	0.25 – 0.50 mg/L
TPH	NWTPH-Gx - Ecology, 1997, (Publication No. 97-602)	0.25 mg/L

SIM = Selective Ion Monitoring – a way to get a lower detection.

B. Methods for Sediment Samples

Analyte (or surrogate)	Method in Sediment	Reporting Limit Target
Total solids (%)	SM 2540B	NA
Total volatile solids	EPA 160.4 or SM 2540E	0.1%
Total organic carbon	Puget Sound Estuary Protocols: (PSEP 1997), SM 5310 B, SM 5310 C, SM 5310 D or EPA 9060	0.1%
Particle size (Grain size)	Ecology Method Sieve and Pipet (ASTM 1997), PSEP 1986/2003, ASTM F312-97 or ASTM D422	NA
Total recoverable zinc	EPA 200.8 (ICP/MS) EPA 200.7 (ICP), EPA 6010, EPA 6020 or SM 3125 (ICP/MS)	5.0 mg/kg
Total recoverable lead	EPA 200.8 (ICP/MS), EPA 6010, EPA 6020 or SM 3125 (ICP/MS)	0.1 mg/kg
Total recoverable copper	EPA 200.8 (ICP/MS),EPA 6010, EPA 6020 or SM 3125 (ICP/MS)	0.1 mg/kg
Total recoverable cadmium	EPA 200.8 (ICP/MS), EPA 6010, EPA 6020 or SM 3125 (ICP/MS)	0.1 mg/kg
Herbicides Dichlobenil Triclopyr Picloram Clopyralid	EPA 8270D or EPA 8151	ADD to
PAH compounds*	EPA 8270D	70 ug/kg dry
Phthalates**	EPA 8270D	70 ug/kg dry
Phenolics***	EPA 8270D or PSEP 1997	70 ug/kg dry
NWTPH-Dx	Ecology, 1997 (Publication No. 97-602) or EPA SW-846 method 8015B	25.0-100.0 mg/Kg

* 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, fluorine, 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-dimethyphenol, 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 ± 2° 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 ± 2° 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).

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 ±2 degrees)
__ Analytical balance (0.01 mg accuracy)
__ Wash bottle
__ Reagent-grade water

Procedure

- Dry glass filter in drying oven at 90 ± 2° 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 ± 2° 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 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 U.S. Environmental Protection Agency and Puget Sound Water Quality Authority. Tetra Tech Inc., Bellevue, WA.

U. S. EPA. 1998. Analysis of total suspended solids by EPA Method 160.2. Region 9, Revision 1. SOP 462. 12 pp

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APPENDIX 6: TOXICITY GUIDANCE

Guidance for Sampling and Toxicity Testing Required in S.7.C. of the WSDOT Municipal Stormwater Permit (WSDOT Permit)

This guidance document provides additional information to the requirements listed in S.7.C of the WSDOT Permit. S.7.C requires first-flush toxicity sampling at six stormwater monitoring locations. This Appendix contains guidance and multiple planning steps to ensure quality toxicity data is adequately collected. This Appendix should be used *in addition* to any required QAPP content demonstrated in Ecology's *Guidelines for Preparing Quality Assurance Project Plans for Environmental Studies (2004)*. This Appendix includes guidance and references for:

- Sampling Strategies
- Attempts at toxicity
- Volume, Temperature and Holding Times
- Invalid and Anomalous Test Procedures
- Laboratory Testing Procedures and Quality Assurance
- Follow-up Actions
- Submittals
- Toxicity Identification/Reduction Evaluation Guidance
- Additional Resources and References for Toxicity Sampling

Sampling Strategies

Toxicity is required to be monitored at BMP effluent locations and from the edge of pavement. WSDOT may use the same sites for toxicity monitoring as other sites selected for monitoring throughout S7, but must meet the requirements pertinent each section. For example, if WSDOT uses an edge of pavement site to meet both S7.B and S7.C requirements, a flow-weighted sample must be collected for a first-flush storm. In this situation, WSDOT will receive credit for the sample if flow-weighted composite sampling techniques are used, the same sample stream of water is used as the sample volume and the storm event qualifies under both S7.B and S7.C. Any other variations from sampling requirements listed in S7.B or S7.C must be included in the QAPP submitted for Ecology review and approval.

In order to catch the first flush, storm forecasting models or advanced equipment should be used for adequate notification of incoming storms. WSDOT must then notify the toxicity laboratory 2 days prior to the date of the forecasted storm event. A general timeline should be well defined in the required QAPP for planning purposes to describe procedures for field staff communication with the laboratory. Any potential site constraints or logistical problems should be noted in the QAPP and documented by WSDOT.

The chemical analysis sampling requires analyzing the list of parameters specified in Section S.7.C. of the WSDOT Permit. In order to obtain the needed volume for the toxicity test and the full list of chemical parameters, WSDOT may use modified samplers, multiple samplers or establish field practices for replacing bottles. Attempts to obtain sufficient volumes should be indicated in the QAPPs. If using more than one sampler, the samplers should be programmed the same and the sample should be collected from the same representative sample stream.

Further, for the chemistry analysis sample, MBAS results are needed to determine if toxicity is due to detergents or surfactants used in pesticide mixtures. MBAS testing will detect anionic surfactants, but if toxicant identity is unknown and nonionic surfactants are possible, then a cobalt thiocyanate activating substances (CTAS) test should also be done.

Attempts at Toxicity

Toxicity sampling should be conducted using composite sampling equipment at selected stormwater monitoring locations as indicated in the WSDOT Permit. Composite samplers should be used to collect samples for both toxicity testing (*H. azteca*) and chemical analysis sampling (TSS, chlorides, hardness, MBAS, Metals, pesticides, PAHs, phthalates and TPH). Samples should be collected during the seasonal first-flush occurring between August 1st and September 30th each year. During this time period, if a sample is unattainable, or if the first attempt is found to be invalid or anomalous, a second attempt is required. A second attempt may occur later than September 30th and after this date; no antecedent dry period is required prior to sample collection.

Volume, Temperature and Holding Times

Volume for Toxicity and Chemical Analysis

A sufficient sample for toxicity consists of the following:

- Approximately 6 liters (1.5 gallons) of sample water is needed for the toxicity test, and,
- A maximum of 14 liters (3.7 gallons) of sample water is needed to analyze the chemical parameters. This estimate includes a maximum volume for herbicides; however, herbicide analysis is only required at those sites where herbicides are used.

Table 1. Volume Estimate Table

	Recommended Quantity	Suggested Container Type	Holding Time	Preservation
Hyalella azteca 24-hour acute test (ASTM E1192-97)	1.5 gallons (6 liters)	glass	36 hours	Cool to 6º
Chemical Parameters				
Metals: Total Cu, Zn, Cd, Pb	350 ml	500 ml HDPE	6 months	HNO_3
Metals: Dissolved Cu, Zn, Cd, Pb	350 ml	500 ml Teflon, polyethylene, polycarbonate or polypropylene	6 months	Filter[1], the HNO_3
Herbicides	2 gallons	1 gallon glass	7 days	Cool to 4º
Total suspended solids	1000 ml	500 ml polyethylene	7 days	Cool to 4º
Chlorides	100 ml	500 ml polyethylene	28 days	Cool to 4º
Hardness	100 ml	125 ml poly	6 months	H_2SO_4
Methylene blue activated substances	250 ml	1-liter Amber glass	48 hours	Cool to 4º
PAHs[2]	1 gallon	1-gallon glass	7 days	Cool to 4º
Phthalates[2]	1 gallon	1-gallon glass	7 days	Cool to 4º
TPH (NWTPH-Gx*)	120 ml	(3) 40- ml glass vials	14 days	HCL
TPH-(NWTPH-Dx*)	1 gallon + 40 ml	1 gallon glass jar + 1 40 ml glass vial	7 days	HCL

Notes:
[1]Samples for dissolved metals should be field filtered as soon as practical after the last aliquot is taken in the composite sampler.
[2]PAHs should include at a minimum: acenaphthene, acenaphthylene, anthracene, benzo[a]anthracene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[ghi]perylene, benzo[a]pyrene, chrysene, dibenzo[a,h]anthracene, fluoranthene, fluorine, indeno[1,2,3-cd]pyrene, naphthalene, phenanthrene and pyrene
[2]Phthalates should include at a minimum: *bis*(2-Ethylhexyl)phthalate, Butyl benzyl phthalate, Di-n-butyl phthalate, Diethyl phthalate, Dimethyl phthalate and Di-n-octyl phthalate.
*Not to be collected in the sample volume collection through a composite sampler.

Chemistry analysis volume requirements can vary between laboratories and sites (depending on whether or not herbicides are required for analysis). To reduce the estimated volumes listed in Table 1, some parameters may be combined into single containers. The data for Table 1 was provided by Manchester Environmental Laboratory and Nautilus Laboratory. For information on analytical methods and reporting limits, see Appendix 5.

Replicates, Volumes, and, Concentrations and Controls Required for H. Azteca

A minimum of 2 liters is need for the toxicity test. If a volume less than 2 liters are collected, do not proceed with the toxicity test or analysis of chemical parameters. Ideally, 6 or more liters should be attained for the toxicity test. Table 2 provides guidance on replicates, sample concentrations and control for sample volumes between 2 and 6 liters.

Table 2. Replicates, Volumes, Concentrations and Control for the H. Azteca 24-hour Acute Test

Sample Volume Obtained	**# of Replicates w/Volume**	**# of Sample Concentrations and a Control**
6000 ml	4 of 250 ml each	5
3000 ml	4 of 125 ml each	5
2400 ml	4 of 100 ml each	5
2000 ml	4 of 100 ml each	4

If the sample volume available for toxicity testing is between the values above, then the instructions for the next lower sample volume shall be followed and the excess sample shall be stored for possible use in toxicant identification if the chemical analyses above do not find a likely toxicant. WSDOT is encouraged to collect as much sample as possible so that excess is available for follow-up actions if toxicity is detected.

If the total sample volume for the toxicity sample after the qualifying storm is less than needed, the number of replicates may be dropped to 3 and the lowest test concentration (6.25% sample) dropped from the test.

Sample Temperature

During sample collection, WSDOT must cool the chemical analysis sample between 0 - 4ºC and 0 – 6ºC for the toxicity sample. The samples should be sent to the laboratory immediately after field collection procedures. For the toxicity sample, if the sample temperature exceeds 6ºC at

receipt by the laboratory, then the WET Coordinator, Randall Marshall (rmar461@ecy.wa.gov or 360-407-6445) may be contacted to propose acceptance for the sample temperature deviation. Acceptance is based on the Department of Ecology publication # WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria* and will not be given for samples warmer than 14º C unless the sample is received by the laboratory within one hour after collection.

Holding Time

If the maximum holding time of the toxicity sample is exceeded (36 hours), staff will contact Ecology's WET Coordinator (rmar461@ecy.wa.gov or 360-407-6445) for conditional acceptance. Sample holding times in excess of 72 hours will not be accepted by the laboratory or Ecology. The date and time of test initiation should be recorded on field data forms or in field notebooks.

Invalid and Anomalous Test Procedures

Invalid toxicity tests are the result of the laboratory not following the test protocol or the test results not meeting the test acceptability criteria in the test protocol. If the control has less than 90% survival, the test is invalid and needs to be repeated on an additional sample meeting the terms of S8.C. The laboratory will usually identify invalid tests and inform WSDOT of the need to repeat them. The Department of Ecology will also identify invalid tests when a laboratory does not do so and will inform WSDOT in writing to attempt to collect an additional sample meeting the terms of S8.C. and retest for toxicity.

The concentration- response relationship may also be declared anomalous in accordance with Appendix D of Ecology's *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria*. Anomalous test results happen when the laboratory has conducted the toxicity test in accordance with the test protocol, but the results are considered unreliable according to the anomalous test identification criteria in Ecology Publication # WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria*. The criteria for identification of anomalous test results help screen for adverse effects which are not caused by toxicity. Only the Department of Ecology may identify a test result as anomalous. If the Department determines the test results are anomalous, the Department may require the Permittee to attempt to collect a

second toxicity test sample if the Department believes sufficient time remains to collect a sample meeting the toxicity storm event criteria.

WSDOT will be notified in writing if it is required to attempt to collect an additional sample meeting the terms of S8.C. Additional samples must include enough volume to repeat the analyses for the list of chemical parameters or to conduct a toxicity identification evaluation (TIE) if the sample is toxic. If WSDOT wishes to do a TIE instead of chemical analysis of the additional sample, a TIE plan must be prepared and approved in advance. If WSDOT is unable to collect and test a second sample, it must document its efforts in the annual report. WSDOT shall not be required to make more than two sample attempts for toxicity testing described in S8.C.

Laboratory Testing Procedures and Quality Assurance

Laboratory Testing Procedures

Conductivity, pH, dissolved oxygen and hardness will be measured at the toxicity laboratory upon sample receipt of the toxicity sample. An additional hardness sample may be collected from the receiving water by the permittee in order for the toxicity laboratory to adjust the sample hardness to match receiving water hardness. The permittee is encouraged to monitor receiving streams for pH, dissolved organic carbon, and common ions so the biotic ligand model can be used to estimate receiving water toxicity due to metals in the storm water. For the toxicity sample collected, the following testing procedures are illustrated in the following reference:

> *ASTM E 1192-97: Standard Guide for Conducting Acute Toxicity Tests on Aqueous Ambient Samples and Effluents with Fishes, Macroinvertebrates and Amphibians.*

An EC_{50} should be calculated for each test result using the Spearman-Karber Method. Abbot's correction may be applied to the data before deriving the point estimations. A minimum of five concentrations and a control should be used. If an EC_{50} is 100% sample or less, then the permit requires follow-up actions.

Required Test Conditions for 24-Hour Survival Test (ASTM E 1192-97)

Test Organism: *Hyalella azteca*

Test Chamber: 250 - 500 mL

Volume: 100 - 250 mL

Reps: 4

Concentrations: 5 plus control, standard 0.5 dilution series. If volume collected is low, 6.25% concentration will be dropped.

Substrate: square of nitex screen

animals per rep: 10

Age: 7 - 14 days, 1 - 2 day range in age

Feeding: Feed ground cereal leaf prior to testing. No feeding during testing.

Temperature: 23 degrees

Aeration: if below 4.0 mg/L

Light: 16/8

Test Acceptability Criteria: ≥ 90% survival in control

Control and Dilution Water: moderately hard synthetic water

Hardness Modification: Storm water sample hardness may be adjusted to match

Laboratory Quality Assurance

Toxicity tests must meet quality assurance criteria in the most recent versions of:

- Department of Ecology Publication #WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria*.

Follow-up Actions

If the EC_{50} from any valid and non-anomalous test is 100% stormwater or less, the following procedures are required:

- Chemical analytical results must be compared to the EPA's EcoTox database and the science literature to determine the presence of a detected toxicant within sixty (60) days after final validation of the data
- If a possible chemical contaminant(s) of concern is determined by the EPA database and science literature review, WSDOT shall prepare and submit a report summarizing:
    - The toxicity and chemical analysis results compared to EPA's EcoTox data
    - The review of relevant sources of literature

- Summarize the possible chemical contaminant(s) of concern and explain how WSDOT's stormwater management program actions are expected to reduce stormwater toxicity

The follow-up actions when toxicity is detected should also anticipate adding a toxicity identification evaluation (TIE) to future testing events if the list of chemical analytical results did not point to a likely toxicant. Because test duration is 24 hours, any excess sample should be fresh enough for use in a TIE. WSDOT is encouraged to prepare a TIE plan in advance to allow time for review and approval by the department. The TIE plan should be based upon the relevant procedures in the EPA TIE guidance found at http://www.epa.gov/npdes/pubs/owm0330.pdf and http://www.epa.gov/npdes/pubs/owmfinaltretie.pdf

WSDOT should enter the results of the chemical analyses into a database. This database can be an important resource for follow-up actions work. Examination of results at the same outfall over time and from different outfalls from around the state may reveal patterns of chemical analytical results related to toxicity test results. The follow-up actions when toxicity is detected should take this possibility into account if identification of toxicants is not successful after two years.

The permit requires that follow-up actions results are included in the annual report. The goal of the follow-up actions is to update the annual report with progress information when toxicity is detected and to update or implement WSDOT's Stormwater Management Program to reduce toxicity. Confirmation of toxicant identity is not necessary as long as this goal is being met.

Submittals

The Permittee shall submit all reports for toxicity testing in accordance with the most recent version of Department of Ecology Publication # WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria.* The Permittee shall prepare and submit a report in each Annual Report including the following information:

- Any invalid or anomalous test results, good faith attempts to collect the required volume, and any unsuccessful second attempts

- Bench sheets for toxicity tests
- An analytical report for the chemistry analysis
- A toxicity data analytical report (if available in electronic format, this is the preferred submittal method to Ecology)
- Reference toxicant results for test methods
- An explanation of how WSDOT's Stormwater Management Program is expected to reduce stormwater toxicity (if applicable)
- A description of the pathway to receiving water
- A description of any existing or planned BMPs within that pathway to receiving water

Toxicity Identification/Reduction Evaluations (TI/RE) Methodology and Guidance:

Since the *Hyalella* test in the permit is only 24 hours in duration, the lab will have time to begin a TI/RE on leftover sample held at 4º C since the beginning of the test. WAC 173-205-100(2)(b) says that a TI/RE must be based upon the procedures in the EPA documents referenced below but that any procedure that is not necessary may be excluded and that any procedure may be modified or added if it will improve the ability to identify or reduce toxicity. In addition, a TI/RE plan should be implemented with flexibility so that resources can be shifted when results begin to reveal promising directions and not squandered blindly following a plan.

United States Environmental Protection Agency. 1989. Generalized methodology for conducting industrial toxicity reduction evaluations (TREs). Cincinnati OH: Risk Reduction Laboratory. EPA/600/2-88/070.

United States Environmental Protection Agency. 1991. Methods for aquatic toxicity identification evaluations: phase I toxicity characterization procedures. second edition. Duluth MN: Environmental Research Laboratory. National Effluent Toxicity Assessment Center Technical Report 18-90. EPA/600/6-91/003.

United States Environmental Protection Agency. 1993. Methods for aquatic toxicity identification evaluations. Phase II toxicity identification procedures for samples exhibiting acute and chronic toxicity. Washington DC: Office of Research and Development. EPA/600/R-92/080.

United States Environmental Protection Agency. 1993. Methods for aquatic toxicity identification evaluations. phase III toxicity confirmation procedures for samples

exhibiting acute and chronic toxicity. Washington DC: Office of Research and Development. EPA/600/R-92/081.

United States Environmental Protection Agency. 2001. Clarifications Regarding Toxicity Reduction and Identification Evaluations in the National Pollutant Discharge Elimination System Program. Washington DC: Office of Wastewater Management.

Ausley LW, Arnold RW, Denton DL, Goodfellow WL, Heber M, Hockett R, Klaine S, Mount D, Norberg-King T, Ruffier P, Waller WT. 1998. Application of TIEs/TREs to whole effluent toxicity: principles and guidance. A report by the Whole Effluent Toxicity TIE/TRE Expert Advisory Panel. Pensacola FL: Society of Environmental Toxicology and Chemistry (SETAC).

Examples of TI/REs with *Hyalella azteca* and metals toxicity information:

Anderson BS, JW Hunt, BM Phillips, PA Nicely, KD Gilbert, V de Vlaming, V Connor, N Richard, RS Tjeerdema. 2003. Ecotoxicologic impacts of agriculture drain water in the Salinas River (California, USA). *Environ Toxicol Chem* 22:2375–2384.

Borgmann U, Y Couillard, P Doyle, DG Dixon. 2005. Toxicity of sixty-three metals and metalloids to *Hyalella azteca* at two levels of water hardness. *Environ Toxicol Chem* 24:641-652

Wheelock CE, JL Miller, MJ Miller, BM Phillips, SA Huntley, SJ Gee, RS Tjeerdema, BD Hammock. 2006. Use of carboxylesterase activity to remove pyrethroid-associated toxicity to *Ceriodaphnia dubia* and *Hyalella azteca* in toxicity identification evaluations. *Environ Toxicol Chem* 25:973-984.

Schubauer-Berigan MK, JR Dierkes, PD Monson, GT Ankley. 1993. pH-dependent toxicity of Cd, Cu, Ni, Pb and Zn to *Ceriodaphnia dubia*, *Pimephales promelas*, *Hyalella azteca* and *Lumbriculus variegatus*. *Environ Toxicol Chem* 12:1261-1266.

Additional Resources/References for Toxicity Sampling

1. Ecology's Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria, June 2005, http://www.ecy.wa.gov/pubs/9580.pdf.
2. ASTM E 1192-97: Standard Guide for Conducting Acute Toxicity Tests on Aqueous Ambient Samples and Effluents with Fishes, Macroinvertebrates and Amphibians.

APPENDIX 7: STORMWATER MANAGEMENT PROGRAM PLAN

Washington State Department of Transportation

Stormwater Management Program Plan

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Section 1: Background and Overview

1.1 Introduction

On February 4, 2009, the Washington State Department of Ecology issued a National Pollutant Discharge Elimination System (NPDES) Municipal Stormwater and State Waste Discharge Permit to the Washington State Department of Transportation (WSDOT) to regulate discharges from municipal separate storm sewers on WSDOT highways and facilities. This Permit addresses all WSDOT highways and related facilities within the applicable areas requiring permit coverage by Ecology.

The Permit requires WSDOT to develop and implement a stormwater management program (SWMP). WSDOT developed this SWMP plan to fulfill that obligation and prescribe the procedures and practices used to reduce the discharge of pollutants in stormwater runoff from storm sewer systems owned or operated by WSDOT. This SWMP plan is a full revision of the plan published in March 1997; it reflects changes in regulations, advancements in stormwater management, and the evolution of WSDOT procedures and practices.

The methods used by WSDOT to manage stormwater runoff from its facilities evolved concurrently with changes required for core functions. Originally, WSDOT only managed highway stormwater to maintain safe-driving conditions, using engineering techniques designed to prevent stormwater from ponding on road surfaces.

Maintaining safe driving conditions continues to be essential for any functional highway drainage system. However, WSDOT also acknowledges the state's vital interests in protecting and preserving natural resources and other environmental assets as well as its citizens' health and safety. These interests have become integrated with other vital interests committed to WSDOT, including the cost-effective delivery and operation of transportation systems and services that meet public needs. Thus, WSDOT's stormwater management objectives have expanded to include:

1. Protecting the functions of the transportation facility; and
2. Protecting ecosystem functions and beneficial uses of Washington State receiving waters.

While WSDOT implements pollution prevention activities statewide, the SWMP strategically targets resources to address priority stormwater management and water resource issues. It takes into consideration a number of circumstances or characteristics particular to WSDOT's facilities, operations, and approaches to addressing compliance under this Permit.

First, it is often inefficient, and in some instances ineffective, for WSDOT to attempt to emulate how local jurisdictions manage runoff from urban land uses as its highway facilities are linear in nature and, as such, are faced with practical limitations in terms of locating and maintaining stormwater treatment facilities within state owned right-of-way. For example:

a) Site-specific factors often making infeasible the construction of stormwater facilities adjacent to the highway or within the right-of-way include: 1) geographic and geotechnical limitations (e.g., topography/steep slopes, proximity to wetlands and

water bodies), 2) hydraulic limitations (e.g., lack of hydraulic head, high groundwater), 3) environmental and health-risk limitations (e.g., critical habitat for Endangered Species Act-listed species, floodplain, contaminated soils), and 4) existing utilities and development.

b) WSDOT needs an approach for managing stormwater that recognizes the differences in climate, soils, and adjacent land uses in eastern and western Washington.
c) WSDOT's highway facilities often cross jurisdictional boundaries and drainage basins.
d) WSDOT's stormwater system drains to a great variety of receiving waters.

Second, WSDOT's approach to addressing compliance with Permit provisions differs in some manner from that of the other parties as WSDOT has:

a) A set of programs, staffing, and funding levels for addressing the various programmatic requirements of the Permit tailored to the demands, needs, and physical characteristics of WSDOT's facilities and operations;
b) A water quality monitoring program tailored specifically to WSDOT's activities, projects, facilities, operations and pollutants of concern; and
c) A set of programs, policies, procedures, and expertise in promoting compliance with stormwater management best management practices for WSDOT facilities.

In addition, most of WSDOT's highways and facilities were built before the federal Clean Water Act and the Washington Water Pollution Control Act were enacted.

Third, WSDOT's management of stormwater runoff from transportation infrastructure in the Puget Sound Basin is uniquely governed by the Puget Sound Highway Runoff Program (Chapter 173-270 WAC). This regulation established the basis for the management of stormwater runoff from transportation infrastructure to protect water quality in the Puget Sound basin.

Finally, in making decisions regarding actions required by stormwater permit provisions, WSDOT needs to follow an approach that ensures it does not circumvent the Legislature's authority to determine where to invest financial resources. Thus, the state's vital interests in protecting and restoring clean water need to be integrated with the other vital interests committed to the WSDOT, including the cost-effective delivery and operation of transportation systems and services that meet public needs.

1.2 Organization of the SWMP

Section 1: Background and Overview provides an introduction/overview of WSDOT's stormwater management program, the area and facilities that are affected, and the regulations that govern WSDOT operations. The remainder of this document describes the essential program elements.

Section 2: Stormwater Program Management Framework describes WSDOT's organizational framework and management responsibilities for overall permit compliance and program implementation. *Section 2* also describes interagency coordination, key WSDOT stormwater-

related guidance and procedures, WSDOT's legal authority to control discharges into its storm drainage systems, program planning, and the SWMP revision process.

Section 3: Illicit Discharge Detection and Elimination describes procedures to identify and eliminate illicit discharges and illegal connections to WSDOT's MS4.

Section 4: Construction Stormwater Pollution Prevention describes construction-related stormwater pollution prevention. These elements include WSDOT's erosion control program and its spill prevention, control and countermeasures.

Section 5: Stormwater Management for New Facilities describes post-construction stormwater management controls as prescribed by the *Highway Runoff Manual*.

Section 6: Stormwater Management for Existing Facilities describes stormwater BMP retrofit program to address existing impervious surfaces that do not have treatment or flow control, or for which treatment or flow control is substandard.

Section 7: Maintenance describes maintenance-related stormwater controls.

Section 8: Research/Monitoring addresses WSDOT's stormwater-related research and monitoring programs to assist in refining the Department's stormwater management program over time.

Section 9: Education/Training/Public Involvement Programs describes educations programs for WSDOT employees and contractors, and the WSDOT permit's and SWMP's public involvement process.

Section 10: Program Assessment and Reporting describes how WSDOT will assess and report on the effectiveness of the SWMP as well as its implementation progress of the SWMP.

1.3 Area and Facilities Covered

Except where noted, this SWMP applies to all discharge stormwater runoff from municipal separate storm sewer systems (MS4)[1] serving the state highways, rest areas, ferry terminals, maintenance areas, and other associated facilities within the applicable areas requiring municipal permit coverage by Ecology. Elements of the SWMP also apply to all discharges into WSDOT's stormwater facilities governed by Washington State's *Underground Injection Control Program*. In addition, *Section 1.5.2* of the SWMP describes the obligations applicable to stormwater discharges to any water body segment in Washington State for which there is a U.S. EPA

[1] M*unicipal Separate Storm Sewer Systems* (MS4s) is a conveyance or system of conveyances (including roads, with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains):

i. Owned or operated by a state, county, city, town, or other public entity (created by or pursuant to state law) that discharges to waters of the state;
ii. Designed or used for collecting or conveying stormwater;
iii. Which is not a combined sewer; and
iv. Which is not part of a Publicly Owned Treatment Works (POTW)

approved total maximum daily load with waste load allocations and a *Detailed Implementation Plan* specifying actions for WSDOT stormwater discharges.

1.4 Applicable Regulations

WSDOT is subject to several regulations related to stormwater discharges at both the federal and state level. These regulations are briefly described below.

1.4.1 Federal Water Pollution Control Act (33 U.S.C. §1251 et seq.)

Major amendments to the Federal Water Pollution Control Act (commonly known as the Clean Water Act) in 1987 addressed stormwater pollution by extending the National Pollutant Discharge Elimination System (NPDES) permit program to include stormwater discharges. The primary objective of the Clean Water Act (CWA) is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. Section 402 of the CWA governs the NPDES permit program and is the U.S. Environmental Protection Agency's (EPA) primary enforcement mechanism to ensure compliance with the CWA's provisions. EPA developed rules to implement the stormwater requirements in two phases. Phase I, promulgated in 1990, addresses stormwater runoff from: 1) MS4s generally serving populations of 100,000 or greater; 2) construction activity disturbing 5 acres of land or greater; and 3) ten categories of industrial activity. In 1999, Phase II expanded the program by requiring operators of MS4s in urbanized areas[2] and operators of small construction sites (1 to 5 acres) to implement programs and practices to control polluted stormwater runoff.

EPA regulations require NPDES permits for discharges from three broad categories of stormwater discharges:

- Municipal separate storm sewer systems (MS4s)
- Stormwater discharges associated with industrial activity
- Stormwater discharges associated with construction activity

WSDOT is required to obtain permits under all three of these categories. This SWMP addresses WSDOT activities as an operator of a MS4 (primarily drainage systems associated with highways and transportation-related facilities). Previous MS4 permits only addressed WSDOT activities in the Puget Sound basin (these previous permits are described in *Section 1.6.1* below). Changes to EPA regulations in 1999 required WSDOT to expand the areas regulated.

As an MS4, WSDOT is required to develop and implement a stormwater management program to the "maximum extent practicable" (MEP). MEP is a technology-based control standard under the Clean Water Act used in municipal stormwater permits. This standard is used by permit writers and permittees to assess whether or not an adequate level of control has been achieved. EPA has not defined the MEP standard, however in EPA's Phase II regulation, the agency described the MEP standard as an iterative process whereby the permittee implements best management practices (BMPs); control techniques, system, design, and engineering methods; and other management practices described in their SWMP, evaluates the effectiveness of the

[2] Minimum residential population of 50,000 and minimum average density of 1,000 people per square mile.

SWMP, and modifies it as necessary to meet MEP. WSDOT's implementation of this SWMP in accordance with the NPDES permit is intended to meet the MEP standard.

The only WSDOT facility required to obtain an industrial stormwater permit is the Washington State Ferries Division's Eagle Harbor Repair Facility (permit number SO3001066). This facility has developed and is implementing a stormwater pollution prevention plan and a monitoring plan.

WSDOT is also required to obtain permit coverage under the sand and gravel general permit issued by Ecology. This permit applies to sand and gravel operations, rock quarries, and similar mining activities, including stockpiles of mined materials, concrete batch operations, and hot mix asphalt operations.

All WSDOT construction projects disturbing at least one acre of land and have a potential stormwater discharge to surface waters are required to obtain coverage under an NPDES construction stormwater permit issued from Ecology. This permit requires the construction project to develop and implement a stormwater pollution prevention plan. To fulfill this requirement, *Temporary Erosion and Sediment Control* and *Spill Prevention, Control, and Countermeasures* plans are developed individually for each project, but generally follow the program outlined in *Section 4* of this SWMP.

The CWA allows EPA to delegate NPDES permitting authority to states that have approved regulatory programs. In Washington State, EPA delegated administration of the federal NPDES program to the Department of Ecology, which serves as the permitting authority. However, EPA retains authority to approve, amend, reject, issue, monitor, and enforce NPDES permits in Washington.

1.4.2 Endangered Species Act

The Endangered Species Act (ESA) requires that a biological evaluation be conducted to determine potential project impacts on threatened or endangered species, including impacts associated with stormwater. Stormwater management measures implemented at many WSDOT sites have been shaped by requirements necessary to avoid, minimize, or reduce potential impact to threatened and endangered species under the ESA. The ESA's Section 7 consultation process requires federally funded or authorized actions to be evaluated to determine the level of effect it will have on listed species. This process serves as the primary ESA compliance tool for WSDOT projects.

The *Highway Runoff Manual* includes guidance to support WSDOT in its efforts to comply with ESA requirements. The manual's guidance includes a stormwater design checklist to assist WSDOT project designers in providing pertinent information about a project's stormwater management facilities and erosion control measures to biologists preparing biological assessments required for consultation under Section 7.

NOAA's National Marine Fisheries Service (NOAA Fisheries) has approved WSDOT Maintenance application for Limit 10 (Routine Road Maintenance) under the 4(d) Rule.

Therefore, NOAA Fisheries finds that this program will adequately conserve the listed species. This approval does not apply to pesticide, herbicide, or fertilizer applications.

1.4.3 Washington State Stormwater Regulations

Puget Sound Highway Runoff Program (WAC 173-270)
In 1987, the Puget Sound Water Quality Authority issued the Puget Sound Water Quality Management Plan. This plan called for developing a Highway Runoff Program, which was subsequently developed in detail by Ecology and codified in Chapter 173-270 of the Washington Administrative Code (WAC). This regulation established the basis for the management of stormwater runoff from transportation infrastructure to protect water quality in the Puget Sound basin. It required the WSDOT to develop its *Highway Runoff Manual* consistent with Ecology's stormwater management manuals. In most instances, local stormwater management requirements will not override the requirements in the *Highway Runoff Manual*. Refer to *Section 1.5* for instances where more stringent stormwater management requirements may apply.

The regulation also requires the maintenance of a Vegetation Management Program that addresses the operational, public health, environmental and economic concerns related to roadside application of pesticides and fertilizers. The Vegetation Management Program includes best management practices such as integrated pest management, spill prevention plans, employee training, and monitoring and reporting procedures.

The regulation requires WSDOT to implement BMPs on new construction projects and inventory existing facilities to determine where BMPs need to be installed. BMP effectiveness and pesticide monitoring are also provisions under this regulation. This regulation also requires WSDOT to report monitoring results to Ecology along with a description of WSDOT's BMP maintenance activities, pesticide and deicing chemical use, and any cleanup requirements for soil or water contamination resulting from pesticide use.

Waste Discharge General Permits (WAC 173-226)
This state regulation establishes a state general permit program in Washington applicable to the discharge of pollutants, wastes and other materials to waters of the state. General permits issued are designed to satisfy the requirements of both the federal CWA and the state law governing water pollution control (90.48 RCW). WAC 173-226-020 states that: "no pollutants shall be discharged to waters of the state from any point source, except as authorized by an individual permit or a general permit."

General permits are available for groups of discharges within an area, and may be issued either to stormwater sources or to categories of discharges that are deemed sufficiently similar. The permit requires compliance with technology-based treatment requirements and, where applicable, water quality-based effluent limitations. Additional measures may be required as necessary to meet water quality standards, meet total maximum daily load (TMDL) reductions, or fulfill other regulatory requirements.

Permittees are subject to monitoring, recording, and reporting requirements. Permits authorize a specific level and frequency of discharge, and require that modifications to facilities that result in an increase in that discharge be reported.

Definition of AKART (WAC 173-201A-020)
"AKART" is described in the Waste Discharge General Permit regulation as an acronym for "all known, available, and reasonable methods of prevention, control, and treatment." It is defined as "the most current methodology that can be reasonably required for preventing, controlling, or abating the pollutants associated with a discharge" and applies to both point and non-point sources of pollution.

Additional State Regulations

Additional state regulations applicable to stormwater include:

- Implementation of Total Maximum Daily Load (TMDL) plans by Ecology and local partners, resulting in limitations on pollutants in stormwater discharges. (TMDLs are addressed in Section 303(d) of the Clean Water Act.)
- Conditions of the underground injection control (UIC) program (Chapter 173-218 WAC). The UIC program, administered by Ecology to implement provisions of the federal Safe Drinking Water Act, applies to subsurface drainage facilities that discharge water to the ground (e.g., drywells).

- Site-specific Section 401 (of the Clean Water Act) Water Quality Certifications issued by Ecology in relation to projects that require federal Section 404 permits for in-water work or projects subject to Section 9 and 10 of the Rivers and Harbors Act (i.e., Coast Guard permits). Section 404 of the Clean Water Act provides federal regulatory protection for wetlands and other waters of the United States.[3]

- Conditions of aquatic lands use authorizations. The aquatic lands use authorization is administered by the Washington State Department of Natural Resources and may apply to stormwater outfalls (Chapter 79.90 through 96 RCW and Chapter 332-30 WAC).

- State Surface Water Quality Standards (Chapter 173-201A WAC).

- Model Toxics Control Act Statute and Regulation - Model Toxics Control Act Chapter 70.105D RCW, Uniform Environmental Covenants Act Chapter 64.70 RCW, MTCA Cleanup Regulation Chapter 173-340 WAC

- Water Quality Standards for Ground Waters of the State of Washington, (Chapter 173-200 WAC).

- Sediment Management Standards, (Chapter 173-204 WAC).

[3] Ecology has determined that in most circumstances the 401 Water Quality Certifications will refer to WSDOT's statewide 402 municipal stormwater permit for post-construction stormwater requirements.

1.5 Local/Area Specific Requirements

In most instances, local stormwater management standards will not override the requirements in the *Highway Runoff Manual*. The Revise Code of Washington (RCW) 47.01.260(1) grants WSDOT plenary power in planning, locating, designing, constructing, improving, repairing, operating, and maintaining state highways, including drainage facilities and channel changes necessary for the protection of such highways. This grant of authority means that, absent express legislative direction, WSDOT is not subject to local ordinances in areas within WSDOT's purview. The following are major local/area specific requirements that WSDOT will comply with through coordination with this SWMP.

1.5.1 Puget Sound Basin

With respect to all state highway right-of-way in the Puget Sound basin under WSDOT control, Washington Administrative Code (WAC) 173-270-030(1) requires WSDOT to use the *Highway Runoff Manual* to direct stormwater management for its existing and new facilities and rights-of-way [WAC 173-270-030(1)]. Stated exceptions where more stringent stormwater management requirements may apply are addressed in WAC 173-270-030(3)(b) which state that:

> *When a state highway is located in the jurisdiction of a local government that is required by ecology to use more stringent standards to protect the quality of receiving waters, WSDOT will comply with the same standards to promote uniform stormwater treatment.*

Examples of where local governments could have more stringent standards would include projects and/or discharges located within a geographic area governed by an Ecology-approved basin plan or TMDL-triggered water quality cleanup plan that establishes more stringent stormwater management targets.

Other instances where more stringent local stormwater standards can apply are projects subject to tribal government standards and local stormwater management-related permit conditions associated with critical area ordinances (under the Growth Management Act) and shoreline master programs (under the Shoreline Management Act). In addition, WSDOT needs to comply with local jurisdiction stormwater standards when WSDOT elects, and is granted permission, to discharge stormwater runoff into a municipality's stormwater system through utility agreements and permits.

1.5.2 Total Maximum Daily Loads

The Total Maximum Daily Load (TMDL) or Water Cleanup Plan process, established by Section 303(d) of the Clean Water Act (CWA), requires states to identify sources of pollution in waters failing to meet state water quality standards and to develop Water Cleanup Plans to address those pollutants. The Water Cleanup Plan establishes limits on pollutants that can be discharged to the water body and still meet state water quality standards. At the time of issuance, Ecology may establish specific NPDES permit requirements in association with an EPA-approved TMDL involving stormwater discharges from MS4s owned and operated by WSDOT. For TMDLs approved by EPA after permit issuance, Ecology may establish TMDL-related permit

requirement through future permit modifications, administrative orders, or upon permit reissuance.

1.5.3 Shoreline Management Act

The Shoreline Management Act (SMA), RCW 90.58, requires local governments to develop "shoreline master programs" that regulate rivers and larger streams, lakes larger than 20 acres, and marine waterfronts. These local programs include both plans and regulations for achieving the level of protection of shorelines based on state guidelines, but tailored to meet specific community needs. The plans are a comprehensive vision of how shoreline areas will be used and developed over time. Regulations are the standards that shoreline projects and uses must meet. WSDOT's compliance with SMA rules and the conditions of local shoreline master programs is achieved during the project planning and design phase and through submittal of the required permits.

1.5.4 Critical Area Ordinances

The Growth Management Act (RCW 36.70A.060) requires all local governments to adopt and enforce *critical areas ordinances* and, more recently, to meld these with SMA requirements. Critical areas ordinances are a set of development regulations that protect wetlands, stream corridors, fish and wildlife habitat, potable water groundwater recharge areas, flood plains, and geological hazards. WSDOT's compliance with critical area ordinances is achieved during the project planning and design phase through submittal of the required permits and negotiations in project design and mitigation measures.

1.6 Permit History

1.6.1 Previous Phase I Municipal Stormwater General Permits

WSDOT was previously covered under three separate MS4 stormwater permits in the Puget Sound Basin. These permits, issued in 1995, were administratively extended until WSDOT's municipal NPDES permit was issued. These permits apply to stormwater discharges from WSDOT facilities located in the following areas:

- Cedar/Green Water Quality Management Area
  - WSDOT facilities in the City of Seattle and portions of King, Snohomish, and Kitsap County.

- Island/Snohomish Water Quality Management Area
  - WSDOT facilities in portions of King and Snohomish County.

- South Puget Sound Water Quality Management Area
  - WSDOT facilities in City of Tacoma and portions of Pierce and King County.

WSDOT developed a stormwater management plan in March 1997 to meet the requirements of these general permits. WSDOT also submitted annual reports to Ecology describing WSDOT activities to implement and comply with the general permits.

1.6.2 WSDOT's Municipal Stormwater Permit

To replace WSDOT's Phase I general permits described above and to address requirements under Phase II of the stormwater program, On February 4th, 2009, Ecology issued a municipal stormwater permit to WSDOT. The newly issued Permit requires WSDOT to implement the actions outline in this stormwater management program (SWMP) plan.

1.6.3 Construction Stormwater General Permit

Beginning in 1995, WSDOT construction projects were also required to comply with the Ecology NPDES requirements that applied to construction activities. The threshold for a site disturbance area that typically triggered a NPDES Construction Stormwater General Permit was five acres. Some larger WSDOT projects with particularly sensitive environmental concerns may be required to obtain individual NPDES construction stormwater permits from Ecology. NPDES construction stormwater permits require detailed documentation and implementation of temporary erosion and sediment control measures and other pollution prevention and control measures.

On November 16, 2005, Ecology issued a new construction stormwater general permit that dropped the permitting threshold from five acres down to one acre of soil disturbance. This permit also includes new monitoring and reporting requirements for construction projects. WSDOT will continue to apply for coverage under the construction stormwater general permit for all projects disturbing at least one acre and have a potential discharge to surface waters.

1.6.4 Industrial Stormwater General Permit

Currently, the only WSDOT facility covered under Ecology's Industrial Stormwater General Permit is the Washington State Ferries Division (WSF) Eagle Harbor maintenance facility located on Bainbridge Island. The facility provides maintenance services for WSF including twenty-four vessels and 19 terminals. The five-acre site consists entirely of impervious surfaces with approximately 15 percent of the area under the cover of roofs.

The General Permit requires WSDOT to develop and maintain a current Stormwater Pollution Prevention Plan (SWPPP) and a Water Quality Monitoring Plan (WQMP) for this facility. The goal of these two management plans is to identify, prevent, reduce, or eliminate the pollution of receiving waters through the application of best management practices (BMPs) as well as develop and implement a stormwater monitoring program for the facility. The SWPPP summarizes the operational, source control, and treatment BMPs that are in place at the facility. The WQMP describes the analytical and visual stormwater monitoring objectives, procedures, and requirements for the facility. This includes:

1. Selecting sampling locations, sampling equipment, and conditions for sampling;
2. Detailed sampling procedures;
3. Requirements for sample analysis and data reporting; and
4. Description of dry season inspections and visual monitoring to be conducted.

1.6.5 Sand and Gravel General Permit

WSDOT is also subject to the *Sand and Gravel General Permit* issued by Ecology on January 5, 2005. This permit controls the discharge of pollutants from sand and gravel mining operations and related facilities into waters of the state.

Section 2: Stormwater Program Management Framework

2.1 Internal Coordination and Stormwater Management Responsibilities

The Department's Headquarter Offices, its six Regions, the Urban Corridors Office (UCO), and the Washington State Ferries Division have been assigned functional responsibilities associated with the stormwater management program. Directives from Headquarter Offices, in consultation with WSDOT's Stormwater Policy Committee (SPC), are responsible for initiating implementation of the SWMP.

The SPC was created to assist WSDOT regarding stormwater management policy issues as well as provide a framework for communication, coordination, and cooperation in the development and implementation of the SWMP. Chaired by the Environmental Services Office Resources Programs Branch Manager, the SPC meets at least quarterly. The SPC members include representatives from WSDOT Regional Offices, UCO, WSF, and Headquarters Offices committing or expending resources related to stormwater management. SPC duties and responsibilities include:

1. Guiding WSDOT in conducting deliberations with permitting agencies and making decisions regarding stormwater management policy (e.g., NPDES permit development, stormwater/Endangered Species Act consultation issues, etc.).
2. Providing recommendations to executive management on preferred approaches to meet regulatory obligations.
3. Guiding preparation of the Stormwater Management Program (SWMP) and the biannual stormwater work plan by making recommendations regarding:

    - Funding, staffing, and other resources necessary to support their development and implementation.
    - The roles and responsibilities of all regions, transportation modes, and WSDOT offices that will be essential for their successful implementation.
    - How WSDOT will carry out stormwater-related work or, if that is not possible, suggest priorities on what should be done so the risks and downsides are understood.

4. Promoting and providing ongoing evaluation of the SWMP's effectiveness.
5. Improving communication among affected workgroups in regions, modes, and WSDOT offices required to commit or expend resources on stormwater.
6. Assisting in the resolution of stormwater-related problems and conflicts.

Headquarters' responsibilities include areas of program and policy development, oversight, technical assistance, research, and monitoring and reporting. The Environmental Services Office's (ESO) Water Quality Program has the overall responsibility for managing the stormwater management program (SWMP). This program has responsibility for guiding and coordinating SWMP program policy development, monitoring, and reporting and is primarily responsible for compliance with the NPDES stormwater permit. The Design Office's Hydraulics

Branch is primarily responsible for providing technical support on hydraulics and hydrology issues to WSDOT headquarters and regional offices. Environmental support staff in the Maintenance and Operations Division are responsible for technical support and implementing stormwater-related maintenance activities, in coordination with the regions.

The Regions and the Washington State Ferries Division are responsible for implementing the SWMP in the field. The Washington State Ferries Division is responsible for all stormwater management activities at ferry terminals. The Region's primary stormwater management implementation responsibilities fall in the areas of meeting stormwater-related construction- and post-construction requirements including related ongoing operations and maintenance.

2.2 Intergovernmental Coordination

The following section describes how WSDOT coordinates with local governments (i.e., cities, counties, and tribes) and various groups in areas where highway and municipal separate storm system runoff commingle. Improved intergovernmental coordination will help identify areas for retrofit, maintenance, illicit connection removal, spill response, and education. As appropriate, WSDOT will work with these groups to help coordinate the implementation of this SWMP. In addition, WSDOT pays stormwater utility fees that help finance development and implementation of local government stormwater management programs.

2.2.1 Maintenance Coordination

WSDOT allocates maintenance responsibilities between WSDOT and Washington cities according to a memorandum of understanding (MOU) signed with the Association of Washington Cities (*City Streets as Part of State Highways – Guidelines reached by WSDOT and AWC on the Interpretation of Selected Topics of RCW 47.24 and Figures of WAC 468-18-050 for the Construction, Operation, and Maintenance responsibilities of WSDOT and Cities for such streets*, April 30 1997). The full text of this MOU is available at: http://www.wsdot.wa.gov/TA/Operations/LAG/citystreets.html. WSDOT's maintenance program and activities are described in greater detail in *Section 7*.

2.2.2 Total Maximum Daily Load Processes

TMDL Development

WSDOT actively participates in the TMDL process in cases where WSDOT facilities or operations are identified as important contributing sources to the pollutant being characterized as outlined in the following steps:

1. WSDOT will review annual TMDL project list which contains information regarding:
    - The pollutant(s) to be addressed by each TMDL;
    - Probable sources of pollution, including stormwater; and
    - Ecology Region Office contact information for each TMDL.
2. After reviewing this list, WSDOT establishes priorities and make decisions regarding their level of involvement in the various TMDL project development processes (i.e., the level of detail and effort greater than those found in WSDOT's SWMP). WSDOT then

transmits their decision by notifying the appropriate TMDL lead at the Ecology regional office about its intent to participate as well as providing the name, email address, and telephone number of the WSDOT representative.

3. WSDOT participates as a member of Ecology's TMDL advisory committees for those TMDL *Water Quality Improvement Plans* and associated TMDL implementation documents identified by WSDOT as priorities in *Step 2*.

4. WSDOT may participate when invited in adaptive management meetings convened to document implementation efforts in those areas where TMDL implementation actions have been assigned to WSDOT.

TMDL Implementation
Once each year, WSDOT shall meet with Ecology to discuss actions WSDOT will take during the following fiscal year to implement TMDLs. WSDOT shall provide Ecology with an annual report detailing accomplishments. Refer to *S6. Total Maximum Daily Load Allocations* and *Appendix 3. Applicable TMDL Requirements* in the *WSDOT NPDES Municipal Stormwater Permit* for the listing of WSDOT's permit-related TMDL permit obligations.

2.2.3 Resource/Regulatory Agency Staff Liaisons

Placing staff in resource agencies is a collaborative effort between WSDOT and the Federal Highway Administration to improve planning, permitting, and delivery of transportation projects. Since 1999, the Resource Agency Project Liaison Program has provided staff dedicated to transportation projects at several state and federal resource agencies. This program provides specialists (liaisons) dedicated to work solely on WSDOT and local agency transportation projects. They provide assistance on issues such as early coordination on transportation permits, Endangered Species Act (ESA) concurrence, and environmental review. Some liaison positions are filled with WSDOT staff based at the resource agency while others are resource agency staff funded by WSDOT.

WSDOT has project liaisons in the following agencies:

- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- U.S. National Oceanic and Atmospheric Administration Fisheries Service
- Washington State Department of Ecology
- Washington State Department of Fish & Wildlife

2.2.4 Tribal Liaisons

The WSDOT's Tribal Liaison Office was established in 2001 and is responsible for assisting tribes and the department with implementing effective government-to-government relations.

2.2.5 Utility Agreements

WSDOT's *Utilities Manual* (i.e., Chapter 1, Section 18 – *Storm Drainage*) includes procedures regarding discharges into WSDOT's municipal stormwater systems. The manual specifies that surface runoff from property outside of the state right-of-way can only be discharged into WSDOT's highway drainage system if it meets certain conditions. Refer to the *Utility Manual, Section 2.3.6* for more detail regarding these conditions.

WSDOT's *Highway Runoff Manual* (i.e., *Chapter 2, Section 2-7.2 – Local Requirement*) includes procedures for seeking approval from a local jurisdiction when WSDOT wants to discharge stormwater into the municipality's storm sewer system and/or for projects in which a portion of the local system will be replaced and turned over to the local jurisdiction for operation and maintenance.

As described in *Section 3*, WSDOT coordinates directly with local jurisdictions and Ecology in the identification and elimination of *illicit discharges* and *illegal connections*.

2.2.6 Implementing Agreement Regarding the *Highway Runoff Manual*

This implementing agreement was adopted in accordance with the *Memorandum of Understanding between the Washington State Departments of Ecology and Transportation Regarding Environmental Issues under Department of Ecology Jurisdiction*, executed August 4, 1988. Under this agreement, WSDOT will apply the *Highway Runoff Manual* statewide to direct the planning, design, construction, and maintenance of stormwater management facilities for new and redeveloped Washington State highways, rest areas, park-and-ride lots, ferry terminals, and highway maintenance facilities. The agreement remains in effect for five years beginning at the date of issuance of WSDOT's NPDES municipal stormwater permit.

2.2.7 Watershed-based Approach to Stormwater Management

The major goal of WSDOT's watershed approach is to ensure the integration of transportation planning and project delivery into statewide watershed recovery efforts. The watershed approach has facilitated partnerships with other agencies and community organizations as well as participation by WSDOT in the rulemaking process and in interagency committees. WSDOT staff participates in the 2514 Watershed Planning Act processes in watersheds where WSDOT is a stakeholder.

2.2.8 Puget Sound Partnership

The Puget Sound Partnership works collaboratively with all levels of government, tribes businesses, and citizen groups in its charge to lead and coordinate efforts to protect and restore Puget Sound. Additional information on the Puget Sound Partnership can be found on the following Internet site: http://www.psp.wa.gov/

2.3 Key WSDOT Stormwater Guidance and Procedures

The following provides a summary description of the key tools and guidance documents used by WSDOT for stormwater management.

2.3.1 Highway Runoff Manual

The *Highway Runoff Manual* (HRM) directs the planning and design of stormwater management facilities for new and redeveloped state highways, rest areas, park-and-ride lots, ferry terminals, and highway maintenance facilities throughout Washington State. The HRM establishes minimum requirements and provides uniform technical guidance for:

1. The avoidance and minimization of water resource impacts associated with the development of state-owned and operated transportation infrastructure systems; and
2. Reducing and minimizing water resource impacts associated with the redevelopment of those facilities.
3. Low impact development (LID) approaches, including a method to assist in determining site specific feasibility for LID techniques.

Conformance to Ecology-approved manual provisions results in consistent design procedures statewide and to meet the level of stormwater management set forth by Ecology in the stormwater management manuals for eastern and western Washington. The manual receives periodic updates (submitted for review and approval by Ecology) to reflect changes in regulations, advances in the stormwater management, and improvements in design tools. Additional information on the *Highway Runoff Manual* is included in *Section 5* of this SWMP.

2.3.2 Hydraulics Manual

Many aspects of managing stormwater to protect the environment relate to drainage collection and conveyance systems, culverts, drainage outfalls, and a variety of other hydraulic features. The *Hydraulics Manual* is dedicated in large part to addressing analysis and design of those hydraulic features. The *Hydraulics Manual* and *Highway Runoff Manual* are used together for analyzing and designing stormwater facilities for roadway and other transportation infrastructure projects.

2.3.3 Maintenance Manual

This manual provides WSDOT maintenance personnel with procedures on how to conduct the wide variety of activities performed within the Maintenance Program. The primary activities described that are related to stormwater concerns include: roadside maintenance, drainage facilities (e.g., ditches, dry wells, culverts and detention ponds), snow and ice control, and pavement repair.

2.3.4 Environmental Procedures Manual

The *Environmental Procedures Manual* (EPM) provides procedures for complying with federal, state, and local environmental laws and regulations during the planning, designing, constructing, and maintaining of transportation facilities in Washington State. The manual is primarily a technical resource focused on the “how to” of environmental review under various laws and regulations. The manual also provides background information on environmental laws and WSDOT policy statements to assist in interpreting the mandates.

2.3.5 Washington State Ferries Division Safety Management System Manuals

At the Washington State Ferries Division (WSF), the *Safety Management System* (SMS) manuals provide policy and procedures for complying with international, federal, state, and local laws and regulations during the maintenance and operations of WSF facilities. The SMS covers the four major program areas of safety, security, environmental protection, and emergency preparedness and response. Integration of a comprehensive *Environmental Management System* (EMS) within the SMS framework is in progress. The SMS currently describes WSF environmental policy, procedures, roles and responsibilities, the management review process, internal and external communications, documentation, tracking, corrective actions and training.

2.3.6 Utilities Manual

The *Utilities Manual* provides procedures relating to work associated with utilities located within the state right-of-way so as to not interfere with the traffic flow and safety or impair the highway visual quality for the motorist. Chapter 1, Section 18 – *Storm Drainage* specifies that surface runoff from property outside of the state right-of-way can only be discharged into WSDOT's highway drainage system if it meets certain conditions. One of these conditions include the obligations that discharges meet the requirements in the *Highway Runoff Manual* as well as that the utility agrees to comply with existing and future state and local requirements and assume all costs and liabilities associated with the design, construction, maintenance and operation of stormwater management facilities. WSDOT regional offices review utility permit applications to ensure they meet these requirements are met.

2.3.7 Construction Manual

The *Construction Manual* provides the objectives, procedures, and methods associated with transportation construction projects and assists in identifying laws and policies that may affect the construction administration work. This manual is typically used in conjunction with the contract, contract provisions, and the *Standard Specifications*. Chapter 7 entitled *Drainage Structures, Storm Sewers, and Conduits* provides information regarding general instructions, designs, installation, and/or measurements and payments for drains, culverts, storm sewers, manholes and catch basins, and structural plate pipes, pipe arches, arches, and underpasses. The following chapters of the manual also provide reference material related to stormwater management:

Chapter 1 – Administration (Environmental Compliance Procedures are referenced in the Construction Manual in Sections 1 – 2.2J and 1 – 2.2 K)
Chapter 8 – Miscellaneous Construction (Erosion Control in Section 8-1)
Chapter 9 – Materials
Chapter 10 – Documentation

2.3.8 Design Manual

The *Design Manual* provides standard policies, procedures, and methods to be used while developing and documenting the design improvements to the transportation infrastructure. This manual may be used to assist in defining the scope and level of effort for each WSDOT design project. The following divisions of the manual contain chapters that may be used as reference material for stormwater management:

Division 1 – General Information
Division 2 – Hearings, Environmental, and Permits
Division 3 – Project Documentation
Division 4 – Project Design Criteria
Division 5 – Soils and Paving
Division 11 – Structures
Division 12 – Hydraulics
Division 13 – Roadside Development

2.3.9 Instructional Letters

Instructional letters (IL) are used when interim guidance is required between updates of WSDOT's guidance manuals. While there are currently no IL's related to stormwater management, this tool is available to communicate amendments to policies or procedures related to stormwater.

2.3.10 Standard Specifications for Road, Bridge, and Municipal Construction

WSDOT's *Standard Specifications* provides the default contract language for all WSDOT construction projects. It describes established standards and engineering practices for WSDOT construction activities and addresses stormwater management related activities associated with earthwork, drainage structures, and erosion control. *The Standard Specification* reflects years of refinement based on performance and legal decisions. All new *Standard Specifications* are reviewed by WSDOT staff as well as our Industry partners, through the Joint WSDOT/Associated General Contractors Standing Committees.

2.4 Information Management

WSDOT works with appropriate federal, state, and other agencies to maintain a collection of the best available data for statewide environmental analysis.

WSDOT's *Geographic Information System (GIS) Workbench* provides users with simplified access to analysis tools and geospatial data useful in stormwater management. Project scoping staff can use the *GIS Workbench* to quickly identify a wide variety of environmental features such as impaired water bodies, contaminated sites, historic sites, or wellhead protection zones and inform the project design team of mitigation or permits needs. The *GIS Workbench* allows WSDOT staff to easily locate proposed projects, highlight buffer areas within or around the project, and display relevant environmental information near the project.

WSDOT also provides GIS information to the public through its *GeoData Distribution Catalog* (http://www.wsdot.wa.gov/mapsdata/geodatacatalog/default.htm). Geospatial data available include transportation features, political and administrative features, and environmental features such as stormwater outfalls along state routes.

State Route View (*SRView*) is another tool for gathering information used in developing preliminary site assessments. It allows the user to view digital images of the state highway system at 1/100th mile increments. With *SRView*, WSDOT staff can virtually travel on the road and view information in the *State Highway Log* (http://www.wsdot.wa.gov/mapsdata/tdo/statehighwaylog.htm).

Additional databases with stormwater-related information include the *Highway Maintenance Management System*, the *ESA Compliance Database*, and the *Integrated Vegetative Management Database* developed by Maintenance and Operations. The *Stormwater Facilities Inventory Database* collects information for the retrofit program. The *Qualified Products List* is a database of materials and devices that can be used by WSDOT and WSDOT contractors. The erosion control program participates on the New Products Committee and evaluates the suitability of products that could either impact or improve water quality. The erosion control program also maintains a *Water Quality Monitoring* database, *TESC Planning Tool* database, and *Erosion Assessment* database used by WSDOT staff throughout the state. Each of these databases and information management tools are described in more detail in subsequent sections.

WSDOT has initiated the *Roadside Features Inventory Program* as a long-term effort to catalog all roadway features into a linked database. This Program includes stormwater facilities as a component by integrating all stormwater management-related databases into this master database.

2.5 Stormwater Facilities Inventory and Documentation

WSDOT inventories its stormwater-related facilities to aid in documenting their location, setting levels of maintenance service, identifying deficiencies and illicit discharges, and addressing deficiencies by prioritizing retrofits. In 1993, WSDOT began inventorying its stormwater management infrastructure in the Puget Sound Basin. Inventory efforts involve identifying stormwater management facilities by researching construction plans, as-builts, and supporting documents; interviewing WSDOT regional personnel; reviewing geographic overlays and aerial photographs; and performing field investigations.

No later than five years from the effective date of this permit, WSDOT will map all known municipal separate storm sewer outfalls and structural stormwater treatment and flow control BMPs it owns, operates, or maintains. Mapping of outfalls and structural BMPs must continue on an on-going basis as additional outfalls are found, and as new BMPs are constructed or installed. An on-going program for mapping and documenting WSDOT's stormwater outfalls and corresponding conveyance system and treatment/control facilities must include:

- Receiving water or area served by WSDOT's stormwater treatment/control facilities that do not discharge stormwater to surfaces waters (e.g., dispersion areas, dry wells, infiltration BMP, etc.)

- Land use of the associated drainage area (i.e., highway, park and ride, maintenance facility, ferry terminal)
- Pipes, culverts, channels or ditches that convey water off WSDOT ROW or to water bodies located within the ROW.
- Stormwater runoff treatment facilities and flow control structures.

No later than two years from the effective date of this permit WSDOT will initiate a program to map connection points between municipal separate storm sewers owned or operated by WSDOT and other municipalities or other public entities, including:

- Interconnections of municipal storm drain systems with WSDOT's drainage, including ditches and pipes where local jurisdictions' drainage conveyances discharge onto or pass through without surfacing the highway ROW.
- Private property connections off the ROW. In some cases, the site will be an open channel conveying stormwater onto the ROW.

To the extent consistent with national security laws and directives, WSDOT must make available to Ecology, upon request, available maps depicting the information required. The preferred format of submission will be an electronic format with fully described mapping standards. An example description is available on Ecology's website. Notification of updated GIS data layers will be included in annual reports.

To the extent appropriate, WSDOT must provide mapping information to municipal stormwater Phase I, Phase II permittees, and tribal governments upon request. This permit does not preclude WSDOT from recovering reasonable costs associated with fulfilling mapping information requests.

Efforts underway expand the data gathering to facilitate WSDOT's compliance with Underground Injection Control (UIC) Program (Chapter 173-218 WAC) registration and assessment requirements. UIC facilities will be registered with Ecology as required and entered into the *Stormwater management Facilities Inventory Database*. WSDOT will ensure that UIC facilities meet the non-endangerment standard by implementing the practices and activities described in the *Highway Runoff Manual*.

2.6 Legal Authority

Title 47 of the Revised Code of Washington, Public Highways and Transportation, provides the Department with legal authority adequate to meet the requirements of 40 CFR § 122.26(d)(1)(ii) to control discharges to municipal separate storm sewer systems WSDOT owns or operates. RCW 47.01.260 provides that:

> *The department of transportation shall exercise all powers and perform all duties necessary, convenient, or incidental to the planning, locating, designing, constructing, improving, repairing, operating, and maintaining state highways, including bridges and other structures, culverts, and drainage facilities and channel changes necessary for the protection of state highways….*

RCW 47.04.040 vests in the State of Washington all right, title, and interest to the rights-of-way of state highways, including the roadway and ditches and existing drainage facilities, together with all appurtenances thereto.

WSDOT possesses the legal authority adequate to prohibit illicit discharges to its storm sewer system. Chapter 47.32 RCW empowers the WSDOT to operate state highways free from all obstructions, encroachments, occupancy, and public nuisances. RCW 47.32.010 authorizes WSDOT, upon due notice, to order obstructions, encroachments, structures, buildings, improvements, or other means of occupancy of any right-of-way to the state highway to be removed within ten days. Failure to so remove the offending property results in the property becoming unlawful property, which WSDOT may confiscate, remove, sell, or destroy.

RCW 47.32.130(1) provides:

> *Whenever there exists upon the right-of-way of any state highway or off the right–of-way thereof in sufficiently close proximity thereto, any structure, device, or natural or artificial thing that threatens or endangers the state highway or portion thereof, or that tends to endanger persons traveling thereon, or obstructs or tends to obstruct or constitutes a hazard to vehicles or persons traveling thereon, the structure, device, or natural or artificial thing is declared to be a public nuisance, and the department is empowered to take such action as may be necessary to effect its abatement. Any such structure, device, or natural or artificial thing considered by the department to be immediately or eminently dangerous to travel upon a state highway may be forthwith removed, and the removal in no event constitutes a breach of the peace or trespass.*

Thus, illicit discharges to WSDOT's storm sewers would constitute encroachments that WSDOT can remove. Discharge of pollutants into the WSDOT's storm sewer system, even if emanating off the right-of-way if in sufficiently close proximity to jeopardize WSDOT's system, would constitute a public nuisance that WSDOT is empowered to abate.

The Washington State Patrol (WSP) has general authority for the administration and enforcement of traffic and other laws on state highways. RCW 46.48.170 authorizes the WSP to adopt and enforce regulations concerning the transportation of hazardous materials. Chapter 446-50 WAC contains these regulations, consistent with those promulgated by the United States Department of Transportation, Title 49 CFR parts 100 through 199, designed to protect persons and property from unreasonable risk of harm or danger. WSDOT can solicit WSP's authority to address spills, dumping, or disposal of materials other than stormwater on state highways.

WSDOT controls construction work through contract provisions. Standard provisions and specifications require that contractors comply with all applicable federal, state, and local regulations, including obtaining required permits and licenses. WSDOT requires contractors to submit and implement erosion and sediment control plans and spill prevention, control, and countermeasures plans.

WSDOT lacks general authority to regulate activities occurring outside its right-of-way. However, where a proposed development requires a utility permit or franchise from WSDOT or an access connection permit to the state highway, WSDOT may add conditions to the permit regarding stormwater flow and quality. WSDOT can also request the help of local and state agencies, which have legal enforcement authority to conduct inspections and investigations outside of the right-of-way, if necessary, to detect and eliminate illicit discharges.

Furthermore, WSDOT requires a utility permit and/or franchise for all stormwater drainage or utility connections from private and public property onto state highway right-of-way. WSDOT's *Utilities Manual* outlines procedures for obtaining such permits. Utilities or jurisdictions which have pipes, culverts, or ditches conveying sources other than stormwater or natural base flow will not be granted a utility permit or franchise for conveyances using WSDOT storm sewer systems, including roadside ditches. Those utilities or jurisdictions discharging to WSDOT storm sewer systems or natural base flow originating off the right-of-way must provide WSDOT water quantity and quality controls, including conveyances which conform with requirements and specifications in the *Highway Runoff Manual;* Department of Ecology requirements; or local rules, regulations, ordinances, and resolutions, whichever is more stringent.

2.7 Program Planning

The Stormwater Policy Committee will assist in preparing a biennial stormwater work plan, which will include an implementation timeline along with an assessment of the resources necessary (e.g., funding, staffing, equipment, etc.) to support implementation of the SWMP. The Stormwater Policy Committee will also assist in reviewing implementation progress as well as ongoing development and refinement of the SWMP.

2.8 SWMP Revision Process

The Stormwater Policy Committee will promote and provide ongoing evaluation of the SWMP's effectiveness. In the process of compiling and evaluating information for the Annual Report, the ESO's Water Quality Program may identify trends, common problems, or solutions that may spur the need to revise the SWMP and amend its NPDES municipal stormwater permit. Upon Ecology's approval, the SWMP would be revised, as necessary, to maintain an effective stormwater management program that incorporates advancements in stormwater management and lessons learned. NPDES municipal stormwater permit amendments and revisions to the SWMP may also be initiated at the request of the Department of Ecology. Annual Reports submitted to Ecology will serve as the vehicle for describing and justifying WSDOT-proposed SWMP changes. *Section 10* of the SWMP contains additional detail on program assessment and reporting.

2.9 Stormwater Program Management Framework Evaluation

Table 2.1 summarizes the key activities identified in the SWMP associated with this program section along with applicable performance indicators.

Table 2-1: Key Activities and applicable Performance Indicators Associated with the Stormwater Program Management Framework

Key Activity	Performance Indicator
Program Development	
Develop *Stormwater Facilities Inventory Database* and related inventory and documentation procedures.	• Database operational by the end of year two of the permit. • Establish and field test a process for integrating the documentation of newly constructed stormwater facilities into the *Stormwater Facilities Inventory Database* as part of the project closeout procedure established by end of year three of the permit. • Initiate a program to map connection points between municipal separate storm sewers owned or operated by WSDOT and other municipalities or other public entities by the end of year two of the permit.
Implementation	
Continue internal coordination activities associated with overseeing implementation of this SWMP.	Conduct quarterly meetings of the Stormwater Policy Committee.
Continue intergovernmental coordination associated with implementation of this SWMP.	▪ Continue to support liaison positions with federal and state agencies and Tribal Liaison Office. ▪ Participate in watershed planning and TMDL development where WSDOT identifies itself as a key stakeholder.
Continue to update and revise the stormwater manuals and procedures documents associated with the stormwater management program plan as needed.	Report annually on significant changes to manuals and procedures documents, including Ecology-approved post-publication updates to the *Highway Runoff Manual*.
Document newly constructed stormwater facilities into the *Stormwater Facilities Inventory Database*.	Map and document all newly constructed stormwater facilities as part of the project closeout procedure into the *Stormwater Facilities Inventory Database* beginning in year four of the permit.
Inventory and document all known municipal separate storm sewer outfalls and structural stormwater treatment and flow control BMPs WSDOT owns, operates, or maintains.	Map and document all known municipal separate storm sewer outfalls and structural stormwater treatment and flow control BMPs WSDOT owns, operates, or maintains within Phase I and II designated areas into the *Stormwater Facilities Inventory Database* by the end of year five of the permit.
Track cost of SWMP implementation.	Estimate and report annually the cost of implementing the stormwater management program plan.

Note: Shaded cells pertain to annual reporting elements contained in *Appendix 2. Table of Performance Measures* of the *WSDOT NPDES Municipal Stormwater Permit*.

Section 3: Illicit Discharge Detection and Elimination

WSDOT's illicit discharge detection and elimination program is designed to identify and eliminate illicit discharges and illegal connections to WSDOT's MS4. An *illicit discharge* is a discharge of pollutants to the MS4 that is not comprised entirely of stormwater and is not authorized under the NPDES permit. Illicit discharges can include wash water, sediment, spilled chemicals, or a sewage spill to the MS4. An *illegal connection* is a pipe or other conveyance that has illegally been connected to WSDOT's MS4.

This section only addresses procedures for illicit discharges that are not classified as hazardous. For any identified illicit discharges that are potentially hazardous, WSDOT staff shall immediately contact the ESO's Hazardous Materials Program, or in the event of an immediate threat, contact 911.

Schedule. Illicit discharges and illegal connections will be identified on an ongoing basis by maintenance, construction, and design staff as well as field staff inventorying stormwater facilities. WSDOT's efforts to identify and report illicit discharges and illegal connections are an integral part of WSDOT's stormwater maintenance inspection and facilities mapping efforts pursuant to its SWMPP, as per the following list of SWMPP sections:

- As explained in *Sections 7.2.3* and *7.2.4*, the WSDOT *Maintenance Manual* calls for the inspection of the highway drainage systems at least twice per year.
- *Section 7.2.3* dictates that catch basin inspection will occur on an annual basis within 24 months after the effective date of the NPDES permit.
- *Section 7.2.4* dictates that inspection of permanent stormwater BMPs will occur on an annual basis within 36 months after the effective date of the NPDES permit.
- *Section 2.5* specifies that WSDOT will map all known municipal separate storm sewer outfalls and structural stormwater treatment and flow control BMPs it owns, operates, or maintains no later than five years from the effective date of this permit. This section further explains that mapping of outfalls and structural BMPs must continue on an on-going basis as additional outfalls are found, and as new BMPs are constructed or installed.

During the course of all these field activities, illicit discharges and illegal connections that are discovered will be reported for remediation.

Not all external discharges to WSDOT's MS4 are illicit. Discharges from an NPDES-permitted source and discharges from emergency fire fighting activities are allowed under Environmental Protection Agency regulations. Other non-stormwater discharges are conditionally allowed unless WSDOT identifies them as a significant contributor of pollutants to the MS4. These are generally not considered illicit discharges and include:

- Diverted stream flows
- Irrigation return flow
- Rising ground waters
- Uncontaminated ground water infiltration (as defined at 40 CFR § 35.2005(20))
- Uncontaminated pumped ground water
- Springs
- Flows from riparian habitats and wetlands
- Water line flushing

- Foundation drains
- Air conditioning condensation
- Water from crawl space pumps
- Footing drains
- 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 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.
- Discharges from lawn watering and other irrigation runoff. These will be minimized through, at a minimum, education activities for WSDOT maintenance staff and water conservation efforts.
- Street and sidewalk wash water, water used to control dust, and routine external building wash down that does not use detergents. WSDOT will 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. At active construction sites, street sweeping must be performed prior to washing the street.
- Other non-stormwater discharges. The discharges must be in compliance with the requirements of the stormwater pollution prevention plan reviewed by the WSDOT, which addresses control of construction site de-watering discharges.

3.1 Illicit Discharge Identification

Illicit discharge detection and elimination programs for state transportation departments are substantially different that those for municipalities since:

- Fewer opportunities exist for cross connections between stormwater systems and sanitary sewer systems;
- Access to the right of way is generally controlled; and
- Department field crews and contractors provide on-going presence in the field to identify and report illicit discharges and illegal connections.

While public reporting plays a role, the identification of illicit discharges and illegal connections relies primarily on field observations reported from maintenance, construction, and design staff as well as crews inventorying and documenting stormwater management facilities and connection points. WSDOT staff will use the following indicators in the field to identify potential illicit discharges:

- Visible signs of staining, residues, or oily substances in the water or detained within ditches, channels, catch basins, or surrounding pavement and soils
- Pungent odors coming from the drainage system (e.g., discharge smells like sewage, sulfide, petroleum/gas, rancid, etc.)
- Discoloration or oily substances in the water
- Abnormal water flow during the dry weather season
- Excessive sediment deposits or turbid waters, particularly near active off-site construction sites
- Floatables (e.g., discharge includes sewage, an oil sheen, suds, etc.)

- Broken concrete or other disturbances at or near junction structures

For reporting purposes, these observations shall be documented along with the date, time, location of discharge, and estimated quantity of the discharge along with any additional information describing the discharge. Refer to *Sections 7.2.1 and 7.3.1* for additional information.

In carrying out the SWMPP's stormwater facility mapping and documentation efforts (refer to *Section 2.5* for more information), stormwater drainages and connections emanating off the right-of-way will be assessed to determine whether they have a valid WSDOT utility permit and/or franchise authorizing the connection/discharge (refer to *Section 2.2.5* for more information).

3.2 Notification Procedures

WSDOT staff who discover an illicit discharge or illegal connection shall notify their regions Illicit Discharge Detection Elimination (IDDE) contact. Depending on the severity of the discharge, the IDDE contact may notify the Regional Environmental Manager, Regional Administrator, Washington State Patrol, or local officials such as the fire department. The region IDDE contact will determine the ultimate actions when an illicit discharge is identified. A record will be completed for all discovered IDDEs.

In all instances, illicit discharges shall be immediately reported to Ecology at (360) 407-6300 so that they can be entered into the *Environmental Report Tracking System*. Within 30 days upon the effective date of WSDOT's Municipal Stormwater Permit, this phone number will appear on WSDOT's stormwater internet site to facilitate public reporting of pollution sources they witness along the roadside or at rest areas. This action ensures that Ecology has a record of all known illicit discharges and can immediately act upon reported discharges when appropriate as well as track corrective measures. If the discharge is suspected to be from a site with an NPDES permit, that information will be provided during the call to set up an *Environmental Report Tracking System* record.

WSDOT will report oil and hazardous spills into state waters, oil and hazardous spills onto land with a potential for entry into state waters, or other significant water quality impacts such as distressed or dead fish noticed in the project vicinity immediately to the Ecology Regional Office. The 24-hour telephone reporting numbers for each Ecology Regional Office are:

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

3.3 Illicit Discharge Remediation

Where possible, WSDOT staff will identify the source of the illicit discharge. This could involve following the discharge upstream in the drainage system or identifying the storm drainpipe from which the discharge is occurring. If the source is unknown and originating outside of WSDOT right-of-way, then staff shall identify and contact the local jurisdiction responsible for the area where the discharge is originating.

WSDOT will seek remediation and clean up of illicit discharges by the responsible party, if known. If the responsible party is unknown or is unresponsive to WSDOT's remediation requests, WSDOT will solicit enforcement action by contacting the local governmental jurisdiction in the area where the discharge is originating. If the discharger or local jurisdiction fails to correct the discharge in a timely manner, WSDOT will contact Ecology to update the *Environmental Report Tracking System* record. If practical, WSDOT staff should place sand bags or other barriers to try to contain the discharge and prevent the discharge from entering waters of the State.

3.4 Illicit Discharge Detection and Elimination Training

WSDOT maintenance personnel receive training to support effective implementation of environmental protection BMPs for a variety of maintenance activities. Refer to *Section 7.2.9* for more information on roads operations and maintenance training. Endangered Species Act (ESA) related training is a substantial component of this instruction and supports WSDOT's water quality protection efforts. This ESA training also includes identification and procedures for reporting illicit discharges (including spills). SWPPP-related training for maintenance staff includes identification, procedures for reporting, and methods for cleaning up and eliminating illicit discharges (including spills). As described in *Section 4.2.3*, WSDOT also provides educational programs for employees in reviewing spill prevention control and countermeasure (SPCC) plans.

3.5 Illicit Discharge Detection and Elimination Program Evaluation

Table 3.1 summarizes the key activities identified in the SWMP associated with this program section along with applicable performance indicators.

Table 3-1: Key Activities and Performance Indicators Associated with the Illicit Discharge Detection and Elimination Program

Key Activity	Performance Indicator
Program Development	
Facilitate public reporting of pollution sources they witness along the roadside or at rest areas.	Post phone number on WSDOT's internet site within 30 days from the effective date of the permit..
Implementation	
Continue to require training of maintenance and construction staff and contractors on illicit discharge identification and notification procedures.	Information continues to be included and distributed in ESA-maintenance related training and SWPPP training materials.
Track all illicit discharges and illegal connections discovered by maintenance and construction staff and contractors and seek remediation when necessary. Report unresolved problems to Ecology via the *Environmental Reporting and Tracking System* for further action.	Annually summarize and report on tracking/ remediation activities for illicit discharges and illegal connections.

Note: The shaded cell pertains to annual reporting elements contained in *Appendix 2. Table of Performance Measures* of the *WSDOT NPDES Municipal Stormwater Permit*.

Section 4: Construction Stormwater Pollution Prevention

4.1 Erosion Control Program

As is compliance with all environmental regulations, preventing and controlling erosion from construction sites is a high priority for WSDOT. The primary focus of construction stormwater planning is to prevent sediment and other pollutants associated with construction activity from impacting soil, air, and water quality to comply with *NPDES Construction Stormwater Permit* requirements. The Erosion Control Program maintains an Internet site describing training, technical assistance and compliance assurance information available at: http://www.wsdot.wa.gov/Environment/WaterQuality/ErosionControl.htm.

4.1.1 Technical Guidance and Standards

Highway Runoff Manual

WSDOT has developed a comprehensive program to address stormwater runoff from construction activity primarily through the *Highway Runoff Manual*. WSDOT's construction stormwater pollution prevention planning components consist of Spill Prevention, Control, and Countermeasures (SPCC) plans and Temporary Erosion and Sediment Control (TESC) plans. Chapter 6 of the *Highway Runoff Manual* is used for preparing temporary erosion and sediment control (TESC) plans and for selecting appropriate erosion and sediment control (ESC) BMPs. Operation and maintenance requirements for these BMPs are also included. Chapter 6 also provides guidance on water quality sampling and reporting procedures for those projects required to monitor runoff quality and/or receiving water effects during construction.

Appendix 6A of the *Highway Runoff Manual* includes BMP descriptions, applicable contract specifications and standards plans, design criteria and other pertinent information. Designers will use *Appendix 6A* of the HRM in selecting the best combination of erosion and sediment control BMPs for a given project.

Construction Manual

The *Construction Manual* provides guidance as to the objectives, procedures, and methods for construction administration at WSDOT. *Section 8-1, Erosion Control*, addresses general requirements relating to erosion control and contractor work and payment.

Standard Specifications

Section 8-01 of the WSDOT's *Standard Specifications* includes the language used to enforce contractual erosion control and water quality protection requirements. The specifications include general construction requirements like seasonal limits on clearing and grading, training and inspections requirements for Erosion and Sediment Control Leads, and detailed specifications for erosion control BMPs. *Section 9-14* of the *Standard Specifications* contains erosion control BMP material requirements.

Qualified Products List
The Qualified Products List (QPL) contains approved erosion and sediment control products available to WSDOT engineers. The list provided by the Materials Laboratory is a resource of available commercial products, however the final selection of the product(s) used in field must be based on site conditions and constraints. Information on the QPL is available at: http://www.wsdot.wa.gov/biz/mats/QPL/QPl.cfm.

4.1.2 Contractor Certification

WSDOT Standard Specification 8-01.3(1)B requires all its contractors to have Ecology-certified Erosion and Sediment Control (ESC) Leads. The ESC Lead is responsible for erosion and sediment control activities on WSDOT projects. Certification status is checked by WSDOT when construction contracts are let. WSDOT also performs annual statewide verifications to ensure that all contractor certifications remain current. Contractor staff seeking certification to perform ESC Lead activities must receive training from an Ecology approved training provider.

Information on the certification requirements is available at: http://www.wsdot.wa.gov/Environment/WaterQuality/ErosionControl.htm - training.

4.1.3 Inspections

WSDOT requires that contractors inspect BMPs in accordance with the *NPDES Construction Stormwater Permits*. The inspection requirements are specified in Section *8-01.3(1)B* of the *Standard Specifications*. WSDOT has created a standard TESC Inspection Report to ensure compliance with *NPDES Construction Stormwater General Permit* requirements. Contractor ESC Leads must complete this form and provide it to the Project Engineer. A copy of each inspection report is kept on-site in the Site Log Book.

4.1.4 Information Management

Training Tracking
WSDOT's Human Resource Office's Staff Development Program maintains a training matrix and database to track training needs and accomplishments. The Erosion Control program uses the database to ensure that all project offices have qualified staff to write, review, approve, and implement TESC plans.

Statewide Erosion Plan Implementation and Effectiveness Assessment
Each October WSDOT's ESO Water Quality Program performs a statewide erosion control plan implementation and effectiveness assessment for all active construction projects with moderate to high-risk of erosion. Performance measures evaluated include: thoroughness of original erosion control plans, implementation of the erosion control plan elements, responsiveness to changing field conditions, and BMP effectiveness. Water quality data collected, in accordance with Chapter 6 of the *Highway Runoff Manual*, is used to track how effectively erosion control plans and BMPs protect water quality. Erosion control plan implementation and water quality monitoring data are collected and evaluated jointly using a database. This provides a mechanism to help continually improve and enhance the effectiveness of the Erosion Control Program.

4.1.5 Construction Stormwater Pollution Prevention Training

WSDOT's *Construction Site Erosion & Sediment Control Course* is required for WSDOT personnel responsible for designing or inspecting a Temporary Erosion and Sediment Control (TESC) plan and for consultant personnel designing these plans. In addition, WSDOT personnel have access to training on construction site erosion and sediment control BMP selection and design process. WSDOT's Internet site contains more information on these training programs (http://www.wsdot.wa.gov/Environment/WaterQuality/ErosionControl.htm#training). WSDOT contractor staff responsible for performing *Erosion and Sediment Control Lead* activities must receive training from an Ecology-approved training provider prior to performing these duties (http://www.ecy.wa.gov/programs/wq/stormwater/cescl.htm).

4.2 Spill Prevention, Control, and Countermeasures

Contractors are required to prepare Spill Prevention Control and Countermeasures (SPCC) plan for all construction projects. SPCC plans must meet the requirements prescribed in *WSDOT Standard Specifications 1-07.15(1) – Spill Prevention, Control and Control and Countermeasures Plan*. SPCC plans are reviewed and approved by the WSDOT project engineer prior to beginning construction. Guidance documents and templates to assist contractors in developing a site specific SPCC Plan are available on the Internet at: http://www.wsdot.wa.gov/Environment/HazMat/SpillPrevention.htm.

4.2.1 Technical Guidance and Standards

Highway Runoff Manual

Chapter 6 of the *Highway Runoff Manual* is used for preparing spill SPCC plans and for selecting appropriate Spill Prevention, Containment, and Countermeasures (SPCC) BMPs. HRM operation and maintenance requirements for these BMPs are also included.

Standard Specifications

Section 1-07.15(1) of the WSDOT's *Standard Specifications* includes the language used to enforce contractual obligations to prepare and implement the SPCC plans. The specifications also require the contractor to submit the plan to the Engineer prior to the commencement of any on-site construction activities; maintain a copy of the plan on site; and in the event hazardous materials are encountered, do everything possible to control and contain the material until appropriate measures can be taken. WSDOT's Hazardous Materials Program developed a number of documents and guidance materials to assist contractors in developing a SPCC Plan to satisfy the requirements of *Standard Specification 1-07.15(1)*.

4.2.2 Certification

Spill prevention training is a component of the Construction Site Erosion and Sedimentation Control course described *Section 4.1.2*.

4.2.3 Spill Prevention, Control, and Counter Measures Training

WSDOT provides educational programs for employees in reviewing spill prevention control and countermeasure (SPCC) plans for compliance with the *Standard Specification 1-07.15(1)*. (http://www.wsdot.wa.gov/Environment/HazMat/SpillPrevention.htm).

4.3 Construction Stormwater Pollution Prevention Program Evaluation

Table 4.1 summarizes the key activities identified in the SWMP associated with this program section along with applicable performance indicators. Note that these reporting indicators are in addition to reporting WSDOT does to comply with NPDES construction stormwater permit reporting requirements.

Table 4-1: Key Activities and Performance Indicators Associated with the Construction Stormwater Pollution Prevention Program

Key Activity	Performance Indicator
Implementation	
Continue to require TESC certification for WSDOT contractors.	Verify TESC certification during fall construction site assessment review.
Continue to require training for WSDOT personnel involved in design or inspection of TESC plans.	Number of courses and participants is reported annually.
Continue to require SPCC plans for all construction projects.	SPCC plan availability is verified during fall construction site assessment review.
Continue *fall effectiveness assessment* of all moderate to high-risk construction sites.	Summarize findings in annual report.

Note: Shaded cells pertain to annual reporting elements contained in *Appendix 2. Table of Performance Measures* of the *WSDOT NPDES Municipal Stormwater Permit*.

Section 5: Stormwater Management for New Facilities

5.1 Stormwater Controls for New Facilities

The construction of new or modified Washington State highways, rest areas, park-and-ride lots, ferry terminals, and highway maintenance facilities requires the planning and design of stormwater management facilities in order to minimize impacts to water resources. WSDOT manages stormwater discharges from these areas using the *Highway Runoff Manual* and the *Hydraulics Manual* to provide consistent design procedures statewide. These manuals reflect the best available science in stormwater management and represent the best practicable engineering approaches to stormwater management currently available for WSDOT facilities.

This section of the SWMP focuses on post-construction stormwater management controls. Maintenance-related stormwater controls described in *Section 7* are used to manage post-construction sites.

5.1.1 Highway Runoff Manual

The *Highway Runoff Manual* (HRM), available on the Internet at: http://www.wsdot.wa.gov/publications/manuals/index.htm, directs the planning and design of WSDOT stormwater management facilities. This manual meets the level of stormwater management established by the Washington Department of Ecology's stormwater management manuals. Stormwater management requirements in Washington State were developed to protect receiving waters from adverse hydrologic change and water quality degradation that can occur with project development. The HRM establishes minimum requirements and provides uniform technical guidance for avoiding and mitigating impacts to water resources associated with the development of state-owned and operated transportation infrastructure systems, and for reducing and minimizing water resource impacts associated with the redevelopment of those facilities. The HRM is used for: 1) integrating the planning and design of stormwater-related project elements into the context of the WSDOT project development process, 2) hydrologic analyses required to design stormwater BMPs, and 3) designing temporary erosion and sediment control BMP (Note: erosion control elements are described in *Section 4 – Construction Site Erosion and Sediment Control*).

The Highway Runoff Manual also includes a Stormwater Facility Design Strategy (HRM Section 2-5.2), and includes steps that would be achieved through the use of low impact development methods. The strategy emphasizes steps to use for minimizing impervious surfaces, conserving or restoring natural areas, and mimicking natural drainage patterns when possible. In carrying out the strategy, HRM section 2-5.2 instructs designers to always investigate the feasibility of using LID methods.

The HRM receives periodic updates (submitted for review and approval by Ecology) to enhance content clarity as well as reflect changes in regulations, advancements in stormwater management, and improvements in design tools. Information on post-publication updates is available on the Internet at:

http://www.wsdot.wa.gov/Environment/WaterQuality/Runoff/HighwayRunoffManual.htm. Those interested in receiving emails announcements of post-publication updates are instructed to send a blank email to: subscribe-stormwater_list@lists.wsdot.wa.gov.

5.1.2 Hydraulics Manual

The *Hydraulics Manual*, available on the Internet at: http://www.wsdot.wa.gov/publications/manuals/index.htm, is used in conjunction with the *Highway Runoff Manual* for analysis and design of stormwater facilities. This manual describes the preparation of project Hydraulic Reports as well as provides detailed information on hydraulic and hydrologic analysis related to drainage collection and conveyance systems, culverts, drainage outfalls, and a variety of other hydraulic features of highway design.

5.2 Stormwater Controls for New Facilities Training

Training for hydrologic analysis and hydraulic modeling as well as other aspects supporting effective implementation of the *Highway Runoff Manual* (HRM) are incorporated into the Hydraulics Branch's curriculum (http://www.wsdot.wa.gov/Design/Hydraulics). The HRM-related training is also provided WSDOT's consultants as well as local jurisdictions (including their consultants and contractors) who use WSDOT's HRM. All WSDOT consultants, contractors, and design engineers are required to have this training prior to working on new facilities or work under the direction of someone with this training.

5.3 New Facilities Stormwater Management Program Evaluation

Table 5.1 summarizes key activities identified in the SWMP along with applicable performance indicators for this program section.

Table 5.1: Key Activities and Performance Indicators Associated with the New Facilities Stormwater Management Program

Key Activity	Performance Indicator
Program Development	
Work with project offices to develop a procedure for insuring field verified *as-builts* are provided to Headquarters as part of the project closeout procedure.	Procedure in place by the end of year two of the permit.
Integrate Maintenance's involvement as part of stormwater facility design approval process.	Integrating Maintenance's involvement is in place by the end of year two of the permit.
Implementation	
Continue to require training for staff involved in stormwater facility design.	Annually report number of training opportunities and staff attendance for *Highway Runoff Manual* related training
Require *Highway Runoff Manual* training for WSDOT consultants and contractors involved in stormwater facility design.	By the end of year two of the permit, conduct annual audits of 10% of contracts to assess if 100% of consultants and contractors involved in stormwater facility design received *Highway Runoff Manual* training or worked under someone who has.
Continue to track the number and type of stormwater treatment and flow control facilities built.	Report number and type of stormwater treatment and flow control facilities built annually.
Document key features and locations of newly constructed stormwater facilities in database at project closeout.	By the end of year five of the permit, begin annual audit of 10% of new projects to verify that all reported newly constructed stormwater facilities are entered in the database correctly.

Note: Shaded cells pertain to annual reporting elements contained in *Appendix 2. Table of Performance Measures* of the *WSDOT NPDES Municipal Stormwater Permit*.

5.4 Consultation with the Services

WSDOT will continue to ensure compliance with Endangered Species Act ("ESA") requirements intended to protect fish species through participation in ESA § 7 consultation with NOAA Fisheries and U.S. Fish and Wildlife Service ("Services") where required. Where § 7 consultation is not required due to the absence of federal funding or other nexus, WSDOT will consult, in writing, with the Services on projects with potential stormwater impacts to listed fish species. WSDOT will provide the Services with all available information developed by WSDOT to determine biological effects, and seek concurrence in an effects determination before proceeding with construction of the project.

This consultation requirement will apply only to those projects in western Washington that construct new impervious surfaces, and are located in geographic areas where there are listed fish species present. WSDOT will provide its information used to make an effects determination to the Service[s] for a 30-day review period. If the Services do not concur within 30 days of

receipt of the project information, WSDOT will either (a) continue consultation in order to attempt to reach concurrence; or (b) adjust project funding and initiate ESA § 7 consultation. If the Service[s] do not respond within 30 days of receipt of the project information, WSDOT may proceed to construction.

WSDOT will provide in each annual report a list of projects for which WSDOT consulted with the Services pursuant to this section and the outcome of that consultation.

Section 6: Stormwater BMP Retrofit for Existing Facilities

WSDOT's ultimate goal is to provide practicable stormwater management for runoff from all existing impervious surfaces that either do not have treatment or flow control, or have treatment or flow control that is substandard. In making those retrofit decisions, WSDOT follows an approach that ensures it does not circumvent Legislative authority to determine where to invest financial resources.

WSDOT's stormwater facilities retrofit program consists of the following three elements:

1. Stand-alone: The amount the State Legislature appropriates for stand-alone stormwater retrofits.

2. Project-triggered: Stormwater retrofit to existing and replaced pavement as part of transportation improvement projects per requirement triggers prescribed in the *Highway Runoff Manual*.

3. Opportunity-based: Stormwater retrofit of existing and replaced pavement that occurs as part of transportation improvement projects when WSDOT determines that it is cost-effective to provide retrofits beyond those required to comply with the project-triggered retrofits requirements prescribed in the *Highway Runoff Manual*.

6.1 Stand-alone stormwater retrofits

WSDOT has adopted a departmental budget structure with a specific category for retrofitting existing impervious surfaces in order to meet one of the requirements of Washington Administrative Code (WAC) 173-270-060. Construction of stand-alone BMP retrofits is accomplished through funding of WSDOT's I4 Environmental Retrofit Project stormwater category. I4 stormwater BMP retrofits requires specific allocations through the Washington State Legislature with selection of individual stand-alone retrofit projects identified through WSDOT's stormwater retrofit prioritization process, described in *Section 6.2* below.

6.2 Requirements for Stormwater Retrofit in the Puget Sound Basin

a) On highway projects in the Puget Sound basin in **medium to high priority locations** for stormwater retrofit that add new impervious surfaces and exceed the threshold to comply with stormwater management requirements (per the Highway Runoff Manual), all existing impervious surfaces within the project limits must be retrofitted if feasible and cost effective.

   - Retrofitting is *feasible* if there are no physical site limitations such as geographic or geologic constraints, steep slopes, soil instability, proximity to water bodies, presence of significant cultural resources, or shallow water tables (or other applicable factors contained in Appendix 2A of the Highway Runoff Manual –

Engineering and Economic Feasibility for Construction of Stormwater Management Facilities).

- Retrofitting is *cost-effective* if the cost to retrofit all the existing impervious surfaces does not exceed 20% of the cost to meet stormwater requirements for the new impervious surfaces. The WSDOT region may request a variance from this limit for extenuating circumstances, such as the project is in a high priority location for retrofit, the project has realized reduced costs in other project elements, and/or the cost is not significantly above 20%.

If retrofitting is not feasible or cost-effective, one of the following must occur:

i. Retrofit the amount of existing impervious surface within the project limits that can be retrofitted for the amount of money equal to 20% of the cost to meet stormwater requirements for the new impervious surfaces;
ii. An equivalent amount of existing impervious surface will be retrofitted off-site, at a cost up to 20% of the cost to meet stormwater requirements for the new impervious surfaces; or
iii. An amount of money equal to 20% of the cost to meet stormwater requirements for the new impervious surfaces will be transferred to fund stand-alone stormwater retrofit projects.

b) On highway projects in the Puget Sound basin in **low priority locations** for stormwater retrofit that add new impervious surfaces and exceed the threshold to comply with stormwater management requirements, an amount of money equal to 20% of the cost to meet stormwater requirements for the new impervious surfaces will be transferred to fund stand-alone stormwater retrofit projects.

6.3 Opportunity–based Retrofits Outside of the Puget Sound Basin

Consistent with WSDOT's goal to retrofit existing impervious surfaces where a significant amount of pavement is added on a project, the WSDOT's budget structure allows the Department to include the work from one project category in another category provided it does not add significant cost to the project. In accordance with this guideline, which is reflected in *Section 3-4.1* of the *Highway Runoff Manual*, WSDOT Strategic Planning and Programming established the following guidelines when making decisions about adding the stormwater retrofits of existing impervious surfaces into new improvement and preservation projects:

1. Mobility projects (I-1 subprogram) can always consider including the cost of retrofitting existing impervious surfaces.

2. Safety projects (I-2 subprogram) can include the retrofitting of existing impervious surfaces only if the cost to retrofit all existing impervious surfaces does not exceed an additional 20% of the cost of treating new impervious surfaces. The Region may request a variance from this limit for extenuating circumstances.

3. Economic Initiatives (I-3 subprogram, *except for* Four-Lane Trunk projects) can include the retrofitting of existing impervious surfaces only if the cost to retrofit

all existing impervious surfaces does not exceed an additional 20% of the cost of treating new impervious surfaces. The Region may request a variance from this limit for extenuating circumstances.

4. Four-Lane Trunk projects in the I-3 subprogram can always consider including the retrofitting of existing impervious surfaces.
5. Environmental Retrofit projects (I-4 subprogram, *except for* the Stormwater Retrofit category) do not add new impervious surfaces and cannot retrofit existing impervious surfaces. The Region may request a variance from this limit for extenuating circumstances.
6. For those safety and economic initiative projects that exceed the 20% limit, and where the HQ Project Control and Reporting Office and Region concur, the Region can submit a request for funding from the I-4 Stormwater Retrofit category. These requests will be prioritized along with the other stormwater retrofit needs already identified for funding by the Legislature.
7. Paving projects (P-1 subprogram) can only consider retrofitting existing impervious surfaces for projects involving the total replacement of existing concrete lanes (i.e., on projects that only replace the existing asphalt shoulder with concrete, retrofitting is not required).

Budget implications and Department of Ecology-approved basin plan status are considered prior to including retrofit as part of a project's scope.

In general, most preservation projects do not add any new impervious surface and therefore the guidelines above will generally have minimal impact for this category of projects. However, if a stormwater outfall/deficiency is located within the limits of a preservation project, the region may develop a companion project proposal for the I-4 Environmental Retrofit Projects' stormwater category if the deficiency is considered a priority, generally considered as being in the 6-year program. These retrofit projects will be prioritized along with the other stormwater retrofit needs already identified.

6.4 Project-triggered Stormwater Improvements

In the context of highway projects, the project retrofit triggers contained in Ecology's stormwater management manuals give rise to transportation deficiencies acting as the driving force to initiate stormwater retrofits, rather than environmental priorities. These Ecology manual retrofit triggers arise from requirements to use the western Washington historic condition presumption flow control standard, and to retrofit existing pavement when the area of new impervious is 50% or more of the replaced pavement within the project limits. The alternative options described in *Sections 3-4.2, 3-4.3,* and *3-4.4* of the *Highway Runoff Manual* aims to amplify environmental benefits while improving highway project delivery by targeting project-driven stormwater retrofit investments based on environmental priorities. Applicable runoff treatment and flow control requirements will always be provided for new impervious surfaces. *Figure 3.4* in the *Highway Runoff Manual* provides guidelines to assess whether project-driven stormwater retrofit

obligations can be met off-site by retrofitting an equivalent area of state highway in targeted environmental priority locations.

6.4.1 Mechanics

The alternative option allows WSDOT's project-driven stormwater retrofit obligations to be met by retrofitting an equivalent area of state highway in targeted environmental priority locations so as to achieve an equivalent amount of runoff treatment and flow control. Since the retrofits are targeted to locations that can realize the greatest environmental benefit from those investments, this approach results in substantially greater environmental benefit over the traditional option available in Ecology's stormwater management manuals.

Stormwater retrofit priorities[4] located within project boundaries must be retrofitted as part of that highway project. Otherwise, the sequence for selecting alternative offsite environmental priority locations takes place as follows, looking:

1. Within the same sub-*Water Resource Inventory Area* (WRIA) basin as where the project obligation was incurred.
2. Within the same WRIA as where the project obligation was incurred.
3. Within the same region as where the project obligation was incurred.[5]

Retrofit priorities identified in local basin plans, comprehensive plans, and applicable TMDLs areas must be considered in making these alternative retrofit site selection decisions.

Thus, the alternative options differ from the Ecology manuals' project-driven retrofit approach (i.e., *50% or more new impervious/existing pavement* trigger and the western Washington *historic condition presumption flow control standard*) by directing stormwater retrofit investments programmatically based on environmental driven priorities identified though a prioritization scheme.

The highway project proponents are responsible for developing and funding project-triggered retrofits regardless of whether they occurred within the project limits or outside the project's boundary. These projects are subject to the State Environmental Policy Act (SEPA) and therefore there will be opportunity for review by the public and local agencies as part of that process.

6.4.2 Accounting and Reporting

As described in detail in the *Highway Runoff Manual Section 3.4*, implementation of this approach requires an accounting and reporting system to track the amount of retrofit obligation accrued as well as accomplished in order to verify that an equivalent surface area of highway received retrofit based upon environmental priorities. Similarly, WSDOT will track the location and extent of the alternative retrofitted sites. The project-driven retrofit obligation incurred and

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[4] Identified by WSDOT Headquarters using the criteria contained in SWMP *Table 6-1: Stormwater Retrofit Prioritization Scheme*.

[5] For implementation purposes, the state is divided into the following three regions: eastern Washington, the Puget Sound Basin, and the rest of western Washington outside the Puget Sound Basin.

alternative retrofit achieved will be reported annually in WSDOT's NPDES municipal permit progress report.

6.4.3 Legacy Retrofit Deficiencies

In regard to those project sites in western Washington designing flow control facilities based on actual pre-project land cover conditions (rather than historic land cover conditions), use of this alternative option will result in highway sections considered by Ecology to be deficiencies with respect to the western Washington flow duration (i.e., *historic condition*) standard. WSDOT will keep a record of such deficiencies by state route number and milepost.

6.5 Stormwater Retrofit Prioritization Process

WSDOT's stormwater retrofit prioritization scheme (*Table 6-1*) is the qualitative process for assigning a retrofit priority index value to a specific outfall location. The stormwater retrofit prioritization scheme:

1. Focuses data collection on areas where stormwater retrofit needs are the greatest;
2. Targets urban fringe areas before costs escalate;
3. Reduces costs by identifying opportunities to combine stormwater retrofits with construction projects; and
4. Maximizes immediate benefits by first targeting areas with highest benefits relative to cost.

Table 6-1 describes the criteria and rationale for each prioritization factor encompassed in this approach. The first phase in the prioritization process involves screening the entire state using Geographical Information Systems (GIS) map tools. This screening identifies areas having predefined conditions that are known to present greater than average risks for highway stormwater impacts. Phase 2 of the prioritization process involves a rapid field inventory of high scoring Phase 1 retrofit candidates (i.e., sites receiving scores of 8 to 16) to identify those with closed conveyance systems, know high habitat value, and known or observable erosion or pollution problems. The third and final prioritization phase is only performed for the best Phase 2 retrofit candidates. This step involves collecting detailed site information to determine drainage areas and estimate retrofit costs. The results of Phase 3 are then posted on WSDOT's GIS workbench so that WSDOT's Program Management can readily evaluate whether the potential exists to bundle any of these retrofit priorities with programmed highway projects. Those priorities not falling within a programmed highway project boundary will be completed in order of their priority ranking score for each of the three regions of the state, as alternatives to project-driven retrofits and as stand-alone retrofits.

Table 6-1: Stormwater Retrofit Prioritization Scheme

Prioritization Factor	Criteria	Rationale	Point Weighting
Phase 1: ***GIS Screen***			
Large, frequently traveled highways	Traffic level >30,000 average daily traffic (ADT)	For a variety of reasons, larger, frequently traveled highways are associated with greater pollutant generating potential	1
Drinking water supply source	Mapped wellhead protection zones, sole sources aquifers, and drinking water source-protected watersheds	Protect drinking water supplies	2
Fish bearing streams	Waters identified by the Department of Fish and Wildlife as *fish bearing*	Protect fish resources	2
Summer spawning areas	Waters identified in state water quality standards as summer spawning areas	Summer spawning areas provide critically important habitat for summer chum and summer steelhead	2
Small streams	Waters with mean annual flows less than 20 cubic feet per second (i.e., waters that are not shorelines of the state)	Small streams are less able to assimilate runoff and more vulnerable to changes in flow	3
High quality receiving waters	Waters identified in State water quality standards as *Char* and *Core salmon spawning and rearing*	High quality streams provide important habitat	3
Urban fringe	Urban fringe areas within designated *Urban Growth Areas*	More economical to retrofit prior to development which significantly reduces stormwater management options and increases capital and operational costs	3
Phase 2: ***Field Reconnaissance***			
Closed conveyance systems	Water conveyed by curbs, culverts, and/or pipes	Closed conveyance systems have greater pollutant discharge potential than open drainage systems which have treatment and flow attenuation properties	2
Observed erosion or pollution problems at the outfall	Eroded channels and visual observation of water pollution	Gives consideration for known problems.	2
Discharges to 303(d) listed water bodies for certain pollutants of concern	303(d) listed water bodies for: PAH, metals (zinc and copper), turbidity, and herbicides used by WSDOT	Gives consideration to known problems that could be exacerbated by discharges of untreated highway runoff.	2
Locally identified erosion or pollution problems	Consult local basin plans, recovery plans, and associated TMDL implementation documents for identified problems associated with stormwater runoff	Factors in well informed local knowledge	3
Habitat suitability and value	Waters identified by the WDFW area habitat and Tribal biologist as important small stream habitat	Factors in well informed local knowledge	3
Phase 3: ***Detail Site Assessment***			
Phase 2 synthesis	Sites receiving a Phase 2 Field Reconnaissance score of 8 to 12 are high priority. Those with a score of 7 are medium priority, and those with next Phase 2 highest score are the next priorities.	Gives higher priority to factors evaluated in Phase 2	1
Large highway drainage area	Draining area > 5 acres of pavement	Larger drainage areas generate more runoff	1

6.6 Stormwater BMP Retrofit Program Evaluation

Table 6.2 summarizes key activities identified in the SWMP along with applicable performance indicators for this program section.

Table 6-2: Key Activities and Performance Indicators Associated with the Stormwater BMP Retrofit Program

Key Activity	Performance Indicator
Program Development	
Develop a procedure to track acres retrofitted and/or reverted to pervious surfaces (stand-alone, project-triggered, and opportunity-based).	Procedure operational by the end of year five of the permit.
Develop *Capital Improvement Plan* for stand-alone stormwater retrofits.	Submit biennial budget request for stand-alone stormwater retrofits to legislature.
Implementation	
Implement *Capital Improvement Plan* for stand-alone retrofits.	Annually report number of stand alone-retrofits completed.
Track acres of existing impervious surface retrofitted and/or reverted to pervious surface (project-triggered and opportunity-based) as part of a highway improvement or preservation projects.	Annually report the number of acres of existing impervious surface retrofitted or reverted to pervious surface (project-triggered and opportunity-based) as part of a highway improvement or preservation project annually.
Track the amount of offsite retrofit obligation accrued and location and extent of the alternative retrofits accomplished in order to verify that an equivalent surface area of highway received retrofit based upon environmental priorities.	Annually report the acreage of offsite project-driven retrofit obligation incurred and the acreage of alternative retrofit accomplished (this is a subset of the acreage reported in the preceding performance indicator).

Note: Shaded cells are related to annual reporting elements contained in *Appendix 2. Table of Performance Measures* of the *WSDOT NPDES Municipal Stormwater Permit*.

Section 7: Maintenance

7.1 Technical Guidance and Standards

A brief summary of the technical guidance, manuals, and standards used by WSDOT's Maintenance program is provided below. Additional details on how these manuals are used by specific maintenance programs are provided in *Sections 7.2 – 7.4*.

7.1.1 Maintenance Manual

The *Maintenance Manual* provides maintenance personnel with guidance on how to conduct and perform a wide variety of maintenance activities. The manual focuses on equipment, materials, techniques, and other information needed to properly carry out basic maintenance activities such as patching a pothole or removing snow from a roadway. The *Maintenance Manual* was developed as a guide for maintenance activities, but does not establish absolute standards. Guidelines detailed in the *Maintenance Manual* supplement the judgments of the trained maintenance personnel to facilitate uniform operating procedures and performance guidelines. The primary activities described that are related to stormwater concerns are roadside maintenance, drainage facilities (e.g., ditches, dry wells, culverts and detention ponds), snow and ice control, and pavement repair.

7.1.2 Highway Runoff Manual

The *Highway Runoff Manual* was developed to direct the planning and design of stormwater management facilities for existing and new Washington State highways, rest areas, park-and-ride lots, ferry terminals, and highway maintenance facilities throughout the state. *Section 5-5* of the *Highway Runoff Manual* describes BMP-specific maintenance standards that are used during inspections to determine when maintenance actions are required.

The Department of Ecology reviewed the June 2008 version of the HRM and determined that it met the minimum design standards and best management practices equivalent to those in Ecology's Stormwater Manuals. WSDOT shall apply the HRM technical standards for the planning, design, and operation and maintenance of facilities in areas covered under WSDOT's stormwater permit.

7.1.3 Regional Road Maintenance Endangered Species Act Program Guidelines

WSDOT developed the *Regional Road Maintenance ESA Program Guidelines* (RRMP) in response to the listing of Chinook salmon and bull trout as "threatened" under the Endangered Species Act (ESA). The RRMP applies statewide and provides a consistent, regional program that any agency can use to limit, reduce, or eliminate the prohibition on take of threatened species under the 4(d) Rule (NMFS), special 4(d) rule and/or Section 7 "take" exemption (USFWS). The National Oceanic and Atmospheric Administration's Fisheries Service has approved WSDOT's *Routine Road Maintenance Program and Plan* for compliance with ESA requirements. The *Best Management Practices Field Guide for ESA Section 4 (d) Habitat*

Protection was written to provide field staff with written field guidelines to implement the RRMP. This field guide is available at: http://www.wsdot.wa.gov/maintenance/pdf/BMP_Field_Guide.pdf. The ESA guidelines apply stormwater source control BMPs to routine road maintenance activities.

WSDOT's *Best Management Practices Field Guide for ESA 4(d) Habitat Protection* helps maintenance field staff document compliance with the *Regional Road Maintenance ESA Program Guidelines*. Additional information on Highway Maintenance's compliance with ESA is available at: http://www.wsdot.wa.gov/maintenance/roadside/esa.htm.

7.1.4 Integrated Vegetation Management for Roadsides

Vegetation management involves caring for and/or controlling plants 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. WSDOT uses an Integrated Vegetation Management (IVM) program to achieve roadside vegetation stability via this environmentally responsible and economically sound approach. IVM is defined as a coordinated decision making process that uses the most appropriate long-term vegetation management strategy on a site-specific basis.

IVM on roadsides throughout the state is described in Integrated Vegetation Management Plans for each of WSDOT's twenty maintenance areas. http://www.wsdot.wa.gov/maintenance/vegetation/mgmt_plans.htm.

7.1.5 Snow and Ice Plan

WSDOT developed the *Snow and Ice Plan* to obtain consistent, agreed-upon approaches to snow and ice control across the state. This plan describes the snow and ice roadway treatment goals and level of service. Due to the inherent differences in winter climate between eastern and western Washington, the plan establishes two different sets of road treatment levels for each half of the state. This WSDOT program is based on history and the expected average conditions of winter for eastern and western Washington. The plan also describes WSDOT's snow and ice training plan, operational guidelines, and chemical application guidelines. Additional information on WSDOT's Snow and Ice Plan is available at: http://www.wsdot.wa.gov/maintenance/pdf/Snow_and_Ice_plan06.pdf.

7.2 Maintenance Practices for Operating Highways

7.2.1 Spill Prevention and Containment

Maintenance crews sometimes encounter emergencies associated with transportation accidents and less frequently with natural disasters (e.g., landslides, floods, fires, and washouts). Traffic accidents on highways occasionally result in the release of hazardous materials. If those responsible for the hazardous materials release cannot be identified or made to contain and clean up the release, WSDOT coordinates cleanup with Ecology.

WSDOT staff are instructed to take only the emergency actions required to protect human life and property until the Washington State Patrol (WSP) has gained control of the situation. The WSP has the responsibility for safety measures and coordination of the clean-up of spilled substances. The role of WSDOT maintenance personnel is to manage traffic at incidents on state highways. This is conducted in support of the overall incident management effort. WSDOT personnel can also provide technical information (i.e., information on drainage system characteristics) in support of the incident response. However, maintenance personnel who are trained to do so will take control actions when necessary and feasible to prevent a release of small quantities of petroleum products into surface waters.

7.2.2 Spills and Hazardous Materials Data

Ecology maintains a database for tracking spills reported by the public or other agencies. This database is utilized by WSDOT to assist in identifying high-risk spill sites along state routes. Ecology forwards database information related to highway accidents to WSDOT's Transit Research and Intermodal Planning Section (TRIPS) for their comprehensive database on accidents. In addition, safety improvements can be made at sites where frequent accidents occur.

Efforts to track hazardous material spills are conducted in conjunction with the Washington State Patrol and/or the local law enforcement agency responding to the accident scene. The accident form records whether a hazardous material was involved, and if so, if a release occurred. It does not document the material involved, the quantity released, or the clean-up status.

7.2.3 Road Operation and Maintenance BMPs

Street Sweeping

Sweeping operations are conducted to keep road surface clean and remove sediment, leaves, paper, and other debris before it enters the storm drain systems or surface waters. Debris accumulation may require sweeping to occur as frequently as twice a month. The extent of debris accumulation and the level of service prescribe by the State Legislature dictates scheduling. The State Legislature currently funds sweeping operations at a B level which, on a scale for A to F, is a high level of maintenance (i.e., on average, 6.7% to 8.3% of the paved shoulder has visible sand and debris).

WSDOT Maintenance records sweeping operations in ESA sensitive areas.

Collected street sweepings shall be managed in a two-step process: 1) interim and 2) final reuse. For the interim, sweepings are stored at WSDOT Region "pit site" properties or at maintenance facilities. Placement of sweepings does not occur within 100 feet of surface or drinking water sources, or in areas of designated geologic sensitivity. Final reuse may involve the screening of sweepings at the management facility. Highest priority is given to recycling, reuse, and permanent solutions rather than landfill disposal. WSDOT is permitted to reuse screened street sweepings in several counties and continues to work with other local health departments toward this goal. WSDOT considers the following areas as inappropriate sites for street sweeping reuse:

- Within 300 feet of Endangered Species Act (ESA) sensitive areas.
- Within 100 feet of a private drinking water well.

- In areas prone to flooding.
- Within stormwater drainage areas.

Snow and Ice Control

WSDOT's *Snow and Ice Plan* provides guidance and specific goals for WSDOT Maintenance's snow and ice control program. The WSDOT program is based on previous studies and experience and the expected average conditions of winter for eastern and western Washington. Due to the dynamic nature of winter weather and resultant road condition variations, WSDOT maintenance personnel use a variety of treatments to control snow and ice at different times in different places. Due to the inherent differences in winter climate between eastern and western Washington, two different sets of road treatment levels are established for each half of the state. The plan describes treatment levels and provides maps that show treatment goals for all state highways.

The WSDOT anti-icing chemical application guideline provided in WSDOT's *Snow and Ice Plan* guides WSDOT highway anti-icing operations for maintenance field personnel. These guidelines describe maintenance actions for preventing the formation or development of packed and bonded snow or bonded ice during a variety of winter weather events. The guidance complements the decision-making and management practices of a systematic anti-icing program. This guidance is based upon the Federal Highway Administration's *Manual of Practice for an Effective Anti-Icing Program* and the National Cooperative Highway Research Program 6-13. Both manuals provide application rates for Sodium Chloride (NaCl). This Guide has been prepared to show equivalent application rates for Calcium Chloride (CaCl2), Magnesium Chloride (MgCl2), and Calcium Magnesium Acetate (CMA).

WSDOT only uses anti-icing products that are on the approved *Pacific Northwest Snowfighters* (PNS) *Association's* list of approved products. Transportation agencies within the states of Washington, Oregon, Montana and Idaho and the province of British Columbia formed PNS to develop specifications for chemicals related to snow and ice control. The mission of the PNS is to provide specifications for the highest quality products balancing quality of environment with providing the safest possible transportation system and maximum mobility for the traveling public during snow and ice conditions, within reasonable budgetary, product performance and environmental constraints. Additional information PNS is available at: http://www.wsdot.wa.gov/partners/pns/default.htm.

The *Winter Operations Database* provides an automated process to collect field data for WSDOT's Winter Operations. This database will track the location, weather conditions, and the amount of product being use. WSDOT will provide Ecology with statewide totals for anti-icing products applied to the roadway on an annual basis.

Catch Basin and Inlet Maintenance

Currently, catch basin and inlet maintenance is dictated by debris accumulation and level of service prescribed by the State Legislature. The *Maintenance Manual* dictates inspection of the highway drainage systems at least twice per year. This process includes inspection of catch basins and inlets. Known problem areas are inspected and cleaned more often. The State Legislature currently funds catch basin and inlet cleaning operations at a C+ level (i.e., an of

average 7.1% - 9.7% of the inlets blocked or catch basin silt buildup greater than 50% of the catch basin depth as measured from the bottom of basin to invert of the pipe).

Within 24 months after the effective date of the NPDES permit a program will be implemented where all catch basins owned by WSDOT will be inspected on an annual basis.

- Inspections may be conducted on a *circuit basis* whereby a sampling 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 system outfall. All catch basins within a given circuit will be cleaned if the inspection indicates cleaning is needed (Refer to *Section 7.4* for Stormwater conveyance liquids disposal procedures).
- As an alternative to inspecting catch basins on a *circuit basis*, WSDOT may inspect all catch basins, and clean only catch basins where cleaning is needed to comply with maintenance standards.
- The length of time between catch basin inspections may be increased as long as *Highway Runoff Manual* catch basin maintenance standards are being met. This catch basin inspection schedule change must be based on maintenance records of double the length of time of the proposed inspection frequency. For example, if Maintenance wants to inspect a catch basin only once every three years then maintenance records for six consecutive years must be available showing that maintenance standards can be met with this less frequent inspection schedule. In the absence of maintenance records for catch basins, WSDOT Maintenance may substitute a written statement. Written statements must be based on actual inspection and maintenance experience.

Ditch, Channel, and Culvert Maintenance

Open ditches are routinely checked and maintained to the line, grade, depth, and cross section to which they were constructed. The State Legislature currently funds ditch maintenance at a C level (i.e., an average of 6.7% - 8.3% of the ditches contained sediment greater then 50% full). The State Legislature currently funds culvert maintenance at a D+ level (i.e., an average of 10.1% - 13.4% of pipes/culverts greater than 50% full). Vegetation removal occurs when flow is blocked or excess sediments have accumulated. Work is performed in accordance with the *BMP Field Guide for ESA 4(d) Habitat Protection*. Culvert inspection occurs at least twice a year to ensure they are clean and in good operating condition.

7.2.4 Maintenance of Stormwater Treatment and Flow Control BMPs

Currently, treatment and flow control BMP maintenance is dictated by trash/debris/oil/sediment accumulation and level of service prescribed by the State legislature. The *Maintenance Manual* recommends inspection of the highway drainage system at least twice per year. WSDOT shall correct deficiencies when they are discovered. Additional inspections are also conducted as needed during or following heavy storms and periods of high runoff. This process includes inspection of stormwater treatment and flow control BMPs. Known problem areas are inspected and maintained more often. Work in sensitive areas must be performed in accordance with the *BMP Field Guide for ESA 4(d) Habitat Protection*. Refer to *Section 7.4* for Stormwater conveyance liquids disposal procedures.

Within 36 months after the effective permit date, WSDOT will annually inspect permanent stormwater BMPs in Phase I and II areas using *Highway Runoff Manual* maintenance standards. Based upon inspection observations, WSDOT will adjust the inspection schedules to minimize the length of time that a facility is in a condition that requires a maintenance action. The annual inspection requirement may be reduced based on inspection records. Changing the inspection frequency to less frequently than annually must be based on maintenance records of double the length of time of the proposed inspection frequency. In the absence of maintenance records, Maintenance may substitute written statements to document a specific less frequent inspection schedule. Compliance with the annual inspection requirements must be determined by the presence of an established inspection program designed to inspect all sites, and achieving inspection of 95% of all sites. Records of inspections and maintenance activities will be made available to Ecology upon request.

WSDOT shall correct stormwater BMP deficiencies as discovered. WSDOT will continue to request new funding for the maintenance of stormwater ponds, open concrete tanks, and underground detention vaults based on a five year sediment removal cycle. If inspections determine that more than 20% of these structures require sediment removal to meet maintenance standards, then each Region will prioritize the cleaning of these structures. A few older stormwater BMPs have been constructed without sufficient maintenance access and may require the construction of maintenance access roads. WSDOT Maintenance will request additional funding to build access roads as needed. WSDOT will notify Ecology in cases where it is not possible to maintain specific stormwater BMPS, due to the manner in which they were constructed.

The State Legislature currently funds the maintenance of detention/retention ponds at a C level (i.e., an average of 6.7% to 8.3% of the basins with greater than 25% filled with sediment).

7.2.5 Regional Road Maintenance ESA Program

The *Regional Road Maintenance ESA Program* (additional information available at: http://www.metrokc.gov/kcdot/roads/esa/index.cfm) is WSDOT's mechanism to employ a road maintenance program that appropriately protects aquatic habitat conditions statewide. The ESA program guidelines apply stormwater source control BMPs to routine road maintenance activities. WSDOT maintenance crews and regional maintenance environmental coordinators who work within sensitive priority areas and ditches utilize this program. In addition to aiding in the conservation of listed salmonids, the program helps protect water quality and quantity, aquatic and shoreline habitats, and the traveling public safety.

Program elements combining policy, management, and field practices comprise the fifteen maintenance categories listed below and include stormwater control structures and facilities maintenance activities.

1. Roadway Surface.
2. Enclosed Drainage Systems.
3. Cleaning Enclosed Drainage Systems.
4. Open Drainage Systems.
5. Watercourses and Streams.

6. Stream Crossings.
7. Gravel Shoulders.
8. Street Surface Cleaning.
9. Bridge Maintenance.
10. Snow and Ice Control.
11. Emergency Slide/Washout Repair.
12. Concrete.
13. Sewer Systems.
14. Water Systems.
15. Vegetation.

Highway Maintenance uses the *BMP Field Guide for ESA 4(d) Habitat Protection* to guide staff on appropriate BMPs for the fifteen maintenance categories. Maintenance staff identifies ESA-sensitive areas using *Roadside Sensitive Management Area Atlases* and roadside sensitive area markers. These ESA-sensitive areas have been identified by biologist and sensitive-area markers have been placed a minimum of 300 feet away from surface water or potential riparian habitat. Staff uses a Personal Data Assistant (PDA) to document WSDOT compliance with ESA 4(d) "take" limits, use of source control BMPs, and temporary erosion and sediment control BMPs. Information from the PDA is entered into the ESA Compliance Database.

Further information on maintenance guidelines for ESA compliance can be found at: http://www.wsdot.wa.gov/maintenance/roadside/esa.htm.

7.2.6 Stormwater Pollution Prevention Plans

WSDOT maintenance facilities located within Phase I and II areas are regulated under the NPDES permit. These facilities are classified as section maintenance facilities (SMF), area maintenance facilities (AMF), and region headquarters sites. Maintenance crews operate out of SMFs, AMFs, or region headquarter complex, and perform maintenance on assigned areas of state highway. A SMF will typically house a crew of four to eight maintenance personnel, and include a small office, crew room, four vehicle storage bays, herbicide storage bay, fueling station, salt shed, anti-icer above ground storage tank, truck/heavy equipment prewash area, diesel fueling station, and a gravel storage area. An AMF will staff 18 to 25 personnel, and typically include a single story office building to house area administrative staff, permit counter, crew room, lunch room, a four to six bay vehicle shop, covered vehicle storage, covered wash bay, herbicide storage bay, a fueling station, salt shed, anti-icer above ground tank, truck/heavy equipment prewash area, and a gravel storage area. A region headquarters complex typically will include a multi-story office building to house regional administrative staff and a shop complex of light industrial buildings, a fueling station, and radio tower. The shop complex will house the regions vehicle equipment shop, stores, parts, radio, carpenter shop, road striping, signals, materials lab, work zone safety, and bridge maintenance.

Within 24 months after the effective date of the NPDES permit, WSDOT will have fully developed individual stormwater pollution prevention plans (SWPPPs) in Phase I and II areas covered by the permit for:

- Maintenance facilities that store equipment, fuel vehicles, and conduct heavy equipment and vehicle repair.
- Rest areas.

These SWPPPs will:

- Identify measures to prevent and control the contamination of discharges of stormwater to surface and groundwater.
- Include a site map showing significant features, stormwater drainage, sources of possible stormwater pollutant, and locations of stormwater off site discharge.
- Apply applicable source control BMPs listed in Ecology's stormwater management manuals, or equivalent manual.
- Identify necessary capital structural control and treatment BMPs for each facility. These capital improvements and treatment BMPs will be ranked and constructed on a priority basis.

WSDOT will:

- Train maintenance crews for each facility on the SWPPP within three months of development. WSDOT will document and maintain records of training in its *Automated Training Management System* (ATMS).
- Begin implementing operational best management practices immediately after training is completed.
- Perform site inspections twice a year by facility staff to insure implementation, which can include visual inspection of facility discharges to evaluate effectiveness of the program. The Headquarters Maintenance Office will periodically conduct site inspections to verify implementation of the plan.
- Keep each SWPPP on site or within reasonable access to the site.

The other land uses covered under this permit are park and ride lots and ferry terminals. Within 24 months after the effective date of the NPDES permit WSDOT will have fully developed a generic stormwater pollution prevention plan that covers the park and ride lots that WSDOT operates in Phase I and II areas. The contents of the Park and Ride Lot SWPPPs will be the same as above.

7.2.7 Litter Control

WSDOT maintenance staff removes a significant amount of litter along state highways. Litter control for state highways primarily consists of the following activities:

- Pick up and disposal of litter bags;
- Pick up and disposal of large debris, such as furniture, tires, and dead animals;
- Department of Corrections work release program;
- Adopt-A-Highway program; and
- Ecology Youth Corps – funded by Department of Ecology.

Washington State Patrol is responsible for enforcement of litter-control laws on state highways.

Additional information on the Adopt-A-Highway program can be found in *Section 9.1.1* of this SWMP.

7.2.8 Vegetation Management

Roadside Integrated Vegetation Management (IVM) Program

WSDOT has developed locally-based roadside vegetation management plans to facilitate the use of Integrated Vegetation Management (IVM) by the local area maintenance crews. The goal in developing and implementing these plans is to achieve the best and most consistent roadside maintenance throughout each area, and to maximize the efficiency and effectiveness of maintenance program delivery over time. Success in meeting this goal will be measured by the improvement of the overall health of the roadside, a resulting minimization of roadside vegetation maintenance costs and a corresponding minimization of herbicide use over time. These plans include an inventory of routine maintenance activities, weed infestations, and sensitive areas together with prescriptions for the most effective methods for consistent and low-cost roadside vegetation management. They also include the use of a record keeping system to document site-specific IVM methods for control of weeds, together with a follow-up evaluation of treatments and ongoing control measures in succeeding years. Roadside Vegetation Management Plans have been developed for all Washington State highways. There is a process whereby each area plan will be reviewed and updated on an annual basis. Information on the status of specific Roadside Management Plans are available at: http://www.wsdot.wa.gov/maintenance/vegetation/mgmt_plans.htm.

WSDOT maintains a networked database that includes individual records for each herbicide application conducted by WSDOT. This recordkeeping complies with related Washington State Department of Agriculture recordkeeping requirements. WSDOT has expanded this recordkeeping system to include additional information (i.e., outcome of treatment) to support the ongoing evaluation of vegetation treatments per the IVM program.

Locations have been identified, mapped, and marked in the field where the highway right-of-way lies within 300 feet of waters where aquatic species listed as *threatened* or *endangered* under ESA inhabit. Where applicable, sixty foot buffers are observed in compliance with the court ruling restricting certain herbicide uses. WSDOT has also conducted an independent scientific risk assessment on all herbicides used on state right-of-way and implemented agency policy and procedures which limit application for products and locations with potential to impact aquatic systems.

Information on the IVM program can be viewed at: http://www.wsdot.wa.gov/maintenance/vegetation/default.htm

Pesticide Applicators Certification

Prior to handling pesticides or giving recommendations on the use of pesticides, WSDOT employees engaged in pesticide application obtain a pesticide applicator's license from the Washington State Department of Agriculture (DOA). DOA's licensing program requires employees to attend 16 hours of training and completion of an examination in a DOA approved

training course. Recertification is accomplished through 40 hours of accredited training courses completed in a five-year period.

Pesticide Application Database
State law requires that records be kept for a seven-year period following all pesticide applications. WSDOT has developed a system of pesticide accountability for all pesticides stored, issued and used by WSDOT. There are two different computer-based record keeping systems. The *Stores Issue Form* records the WSDOT region material inventory, amount of material ordered, and designates to whom the material was issued. The *Pesticide Application Record* provides a detail documentation of information including: state road, county, date, location of application, "pest" to be controlled, method of control, weather condition (start and finish), material name, type, EPA registration number, lot number, product applied per acre, total daily usage, application information (including equipment number, calibration date, vehicle speed, nozzle pressure, width of spray pattern, and method of application), operator name and license number, and pesticide sensitivity registration area.

7.2.9 Road Operation and Maintenance Training

WSDOT maintenance program personnel receive training to support effective implementation of environmental protection BMPs for a variety of maintenance activities. Endangered Species Act (ESA) related training is a substantial component of this instruction and supports WSDOT's water quality protection efforts. *ESA 102 "Field Maintenance Crew Overview"* provides the foundation upon which other, more activity-specific training builds upon. This course includes an overview of protected species in Washington State, how maintenance activities are affected by listings, and measures for environmental protection and ESA compliance. All maintenance field personnel take *ESA 102* and *103 BMP Field Training*. *BMP Field Training* provides hands-on training to understand when and how to apply Regional Road Maintenance ESA BMPs. *ESA 103* is taken by maintenance field personnel once every three years. This training is supplemented with other ESA-related training courses maintenance personnel need to attend in connection with their individual job duties. These supplemental courses include:

> *ESA 103B, Field Training for Bridge Maintenance* – Provides hands-on training on the proper use of approved materials and BMPs employed during routine maintenance activities on or near bridges that pass over rivers, streams, and other waterways.
>
> *ESA 103W, BMPs for in Water Work* – Provides employees with field experience in applying in-water BMPs to a variety of maintenance situations. Participants learn how to conduct maintenance activities in an around streams and ditches with minimum impacts to the aquatic environment.
>
> *ESA 104, Emergency Response* – Training to differentiate between emergency and unscheduled routine road maintenance and the BMPs needed for these activities.
>
> *ESA 105, Roadway Surface Maintenance and Operations* – Provides in-depth understanding of patching, repairing, crack sealing, shoulder maintenance, sweeping and cleaning, and miscellaneous roadway maintenance BMPs.

ESA 106, Roadside Vegetation Maintenance – Provides in-depth understanding of litter pickup, control of noxious weeds (Class A or B), and nuisance and obstructive vegetation BMPs.

ESA 107, Drainage Facilities – Provides in-depth understanding of ditches, channels, culverts, catch basins and inlets, detention and retention basins, and slope repair BMPs.

ESA 108, Reporting Requirements – Provides in-depth understanding of *BMP Field Guide for ESA 4(d) Habitat Protection*, including when and where to apply BMPs, how to report implementation of the Regional Road Maintenance Program ESA BMPs, and instructions for completing checklists.

ESA 109, Snow and Ice Control – Provides in-depth understanding of snow and ice control BMPs, stressing proper procedures to avoid adverse impact on receiving waters.

ESA 110, Bridge Maintenance – Provides in-depth understanding of deck and structural repair, cleaning and painting, and movable and floating bridges BMPs to minimize the amount of materials entering waterways.

Disaster Workshop – Addresses ESA-related emergency repair countermeasures and associated BMPs.

Annual Snow and Ice Training (Pass Areas) - Addresses snow and ice removal considerations under the ESA.

Annual Road & Street Maintenance School (Washington State University) - Provides updates to state and local roadway maintenance personnel on ESA and water quality-related issues.

The ESA training also includes identification and procedures for reporting illicit discharges, including spills, as part of the illicit discharge and elimination program described in *Section 3*. The Ecology approved University of Washington TRANSPEED program provides ESA training to meet the requirements for Certified Erosion and Sediment Control Lead (CESCL). ESA training is tracked in the *Automated Training Management System* (ATMS).

In addition to WSDOT's on-going maintenance training programs, additional opportunities for stormwater-related outreach and training are provided on an annual basis via such venues as WSDOT's Design and Maintenance Academies; regional Design and Construction conferences; Project Development Engineers', Statewide Maintenance Engineers', and Bridge Maintenance Supervisors' meetings; and the Maintenance Leadership Forum. More frequent venues available for maintenance staff include Bi-monthly Regional Maintenance Superintendent and Monthly Crew Safety meetings.

7.2.10 Maintenance Accountability Program

The Maintenance Accountability Process (MAP) is a tool that measures and communicates the outcomes of the maintenance activities. It provides the tools to link strategic planning, the budget, and maintenance service delivery. Twice a year, field inspections are made of randomly selected sections of highway. The results are measured, recorded and compared to the MAP criteria to determine the level of service (LOS) delivered.

There are a number of activities related to stormwater tracked by the MAP that relate to the stormwater management program:

- Sweeping and Cleaning
- Maintain Ditches
- Maintain Culverts
- Maintain Catch Basins and Inlets
- Maintain Detention/Retention Basins
- Slope repair
- Litter Pickup
- Vegetation Control
- Snow and Ice Control

Information on the *Maintenance Accountability Process* can be found at:
http://www.wsdot.wa.gov/maintenance/mgmt/accountability.htm

7.2.11 Highway Maintenance Management System

WSDOT's Highway Maintenance Management System will be comprised of many stand-alone databases that eventually will be linked together. Currently, the following databases are being used.

- ESA Compliance
- Winter Operations
- Northwest Region Highway Feature Inventory

Winter Operations Database

The *Winter Operations Database* provides an automated process to collect field data, for WSDOT's winter operations. This database tracks the location, weather conditions, and the amount of product being use.

ESA Compliance Database

The *ESA Compliance Database* tracks maintenance activities that have the potential to impact water quality within priority sensitive areas, which are the areas within the right-of-way and within 300 lineal feet of a water body or wetland. The database provides a detailed record of

activities in these sensitive areas including: state road, location of work, date, type of work, whether there was impact to the environment, permits obtained, and BMP used.

Building Operations Database
The *Computerized Maintenance Management System* (CMMS) module is used for the tracking and planning of all facility maintenance. Regional Facility Managers and crew maintain data through a web-based interface for tracking corrective and preventative maintenance work on facilities and support equipment. This, in turn, is used for cost analysis for equipment replacement and other maintenance functions. All regions are developing preventive maintenance schedules that will identify what work will be performed and how often it will be done for all the equipment in the inventory.

The following databases will be available by the end of the permit term:

- Stormwater Facility BMP – Identifies the facility's location as well as tracking its inspections and associated maintenance activities. This database will be linked to the Stormwater Management Facilities Inventory Database.
- SWPPP inspection database
- Catch basin inspection database

7.3 Maintenance Practices for Operating Washington State Ferries Division Terminals

Washington State Ferries Division (WSF) is developing a comprehensive *Environmental Management System (EMS)* that will be integrated with the WSF Safety Management System (SMS). Refer to *Section 2.3.1, Washington State Ferries Safety Management System Manuals*. The SMS currently describes WSF environmental policy, procedures, roles and responsibilities, the management review process, internal and external communications, documentation, tracking, corrective actions, training, and system audits. In addition, the following activities related to stormwater management are, or soon will be, described in the SMS documentation:

- Spill prevention and containment,
- Stormwater system maintenance,
- Deicing,
- Sweeping, and
- Vegetation and landscape maintenance.

7.3.1 Spill Prevention and Containment

WSF has previously developed Stormwater Pollution Prevention Plans (SWPPPs) for nine of the systems ferry terminals. Currently, the EMS that is under development will serve as a SWPPP for ferry terminals and the Eagle Harbor vessel maintenance facility (which is covered by Ecology's *Industrial Stormwater General Permit* as described in *Section 1.6.4*). WSF has committed to integrating the requirements of the SWPPP into the procedural documentation of the EMS. This EMS addresses both illicit discharges and potential discharges of hazardous materials.

The following potential pollution generating sources pose risk of spill for WSF terminal operations:

- Storage and transfer of very limited quantities of potentially hazardous liquids on site, most of which come from the vessels;
- The hydraulic systems used to operate the passenger and vehicle loading spans; and
- Vehicles transiting the terminal on their way to board or leave a ferry.

To minimize risks to human health and the natural environment, in accordance with the Department of Ecology's hazardous waste storage and transfer regulations, WSF stores small quantities of potentially hazardous fluids temporarily in *hazardous materials lockers* or *flammable liquid storage cabinets* at the terminals. These temporary storage facilities are inspected regularly by facilities staff and audited annually by environmental and safely management staff.

In addition, WSF conducts regular inspections of the terminal hydraulic system and has constructed secondary containment where feasible to minimize risk of pollution generating spills.

In the event of a spill, the terminals are equipped with spill kits and the staff is trained to take initial spill containment and clean up actions. WSF maintenance crews also have spill clean up supplies in the event a spill occurs during maintenance activities. At terminals where WSF received bulk mobile transfers of fuel to vessels, WSF has pre-staged containment boom. WSF staff are trained to call 911 for help and notify the 24-hour operations center for help in the event of a large spill at a terminal. WSF has contracts in place with spill response contractors who are equipped to respond to spills. In addition, WSF is an active member of the Washington State Maritime Cooperative (WSMC), with a member on the Board of Directors. WSMC has a Washington State Department of Ecology-approved contingency plan with associated oil spill response contract in place in case of a spill from a WSF passenger/auto ferry.

7.3.2 Stormwater Collection System Maintenance

As with the size and complexity of WSF terminal facilities, stormwater management control structures vary significantly from location to location. Stormwater management control structures include oil-water separators with 90° elbows in catch basins to structures with coalescing plates, catch basin inserts; Gullywashers® with absorbing pads; biofiltration swales; and a control structure maintained by the City of Bremerton as part of a contractual agreement between the City of Bremerton, Port of Bremerton, Kitsap Transit, and WSF. As a result of the proximity of the WSF terminal facilities on and adjacent to Puget Sound (a flow control exempt water body), WSF does not have any stormwater flow control structures at its facilities.

7.3.3 Stormwater BMP Facility Maintenance

WSF uses a maintenance management program, Maintenance Productivity Enhancement Tool (MPET) to track, monitor, and facilitate completion of all maintenance activities. There are three types of Work Requisitions (WR): corrective, preventative maintenance, and standard jobs.

Terminal Maintenance primarily uses the corrective and preventative maintenance WRs. The preventative maintenance WRs are automatically generated by the program at a set schedule.

Ferry Terminals have two types of maintenance features regarding stormwater systems: storm drains and oil-water separators. Preventative maintenance schedules are set up to inspect the storm drain system annually, clean oil-water separators, and clean some catch basins with inserts. From the inspection, WRs are generated to clean catch basins and manholes on an as need basis. Refer to *Section 7.4* for Stormwater conveyance liquids disposal procedures.

Preventative maintenance WRs are generated 45 days prior to the scheduled start date. The WR is assigned to a person to perform the work. Upon completion of the preventative maintenance, the data is inputted into the program and the WR is posted to document the history. MPET generates a report that documents the history for each maintenance object or type of maintenance object. From inspections, corrective WRs are generated to perform corrective maintenance work. Records of inspections and maintenance activities will be made available to Ecology upon request.

7.3.4 Deicing

WSF only uses sand and salt deicing materials at their terminals. WSF stores these materials at their terminal locations.

7.3.5 Sweeping

Ferry Terminal supervisors are responsible for ensuring that contractual sweeping services are conducted on a monthly basis. Traffic attendants do not usually sweep the lots, but they do sweep the passenger walk-on areas on a daily basis or as needed.

7.3.6 Vegetation and Landscape Maintenance

WSF maintains landscaping where needed, but not all terminals have landscaping. Landscaped areas, if present, are mowed, trimmed, and weeded by hand. Contractors perform all landscape maintenance. Minimal spot-spraying of weeds is performed at a few terminals and noxious weed removal occurs as directed by the counties. Pesticide spray application activities are only conducted at the Anacortes terminal through contracted services. The Anacortes, Southworth, and Tahlequah terminals have biofiltration swales. Biofiltration swale vegetation is trimmed as part of the landscape maintenance, a minimum of two times a year.

7.3.7 Industrial Activity and Operations

WSF has one maintenance and repair facility, the Eagle Harbor Maintenance and Repair Facility, which is covered by Ecology's Industrial Stormwater General Permit as described in *Section 1.6.4*.

7.3.8 Training and Education

WSF utilizes multiple venues to inform, train, and educate WSF employees. These venues include, but are not limited to: fleet advisories, new employee orientation, annual operational

staff training, on-site fleet and terminal training, applicable WSDOT training/educational materials (refer to *Section 9.1.7*), and third party professional training. Training to ensure regulatory compliance of applicable federal and state laws and regulations is a component of the SMS training. As procedures are revised and new procedures are developed, the WSF Training and Development Office creates and gives training modules for the revised or new procedures.

7.3.9 Audits and Corrective Actions

Integral to the SMS is an internal auditing process to identify what is working and what needs improvement within the system. Audits are conducted annually and cover environment, safety, security, and emergency management aspects of the SMS. Weaknesses identified in the system undergo evaluation to determine the appropriate corrective action(s). Corrective actions could include additional training, changes to procedures, and/or changes to materials or equipment.

7.4 Stormwater Conveyance Liquids Disposal

7.4.1 General Procedures

1. Stormwater conveyance system cleaning should emphasize retention of solids in preference to liquids. Solids removal is the principal objective in the maintenance of stormwater conveyance systems and solids are substantially easier to store and treat than liquids.

2. Liquids removed from catch basins require treatment before their discharge. Catch basin liquids usually contain high amounts of suspended and total solids and adsorbed metals. Treatment requirements depend on the discharge location.

3. 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 manuals or Ecology-approved equivalent manuals such as the *Highway Runoff Manual*.

7.4.2 Order of Preference for Disposal

The following order of preference for disposal of catch basin decant liquids 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. Following the POTW conditions for discharge is a permit requirement.

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 wet vaults 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 treatment facility will accommodate the increased loading. Pretreatment conditions to protect the treatment BMP may be issued as part of the approval process. Following local pretreatment conditions is a requirement of this permit.
   - Flocculents 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 materials 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:
     1) 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
     2) 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.

7.5 Capital Improvement Assistance to Local Governments

Beginning in 1993, WSDOT Maintenance has been distributing funds to local governments for the construction of street waste management facilities. These facilities serve as eductor truck dewatering facilities as well as for the stockpiling and screening of sweepings. Local governments provide the site, design and operation of the facilities, while WSDOT provides the funding. It is good public policy to manage the wastes responsibly, and construct facilities for multi-users.

7.6 Maintenance Program Evaluation

Tables 7-1 and *7-2* summarize key activities identified in the SWMP along with applicable performance indicators for this program section. *Table 7-1* pertains to the highway maintenance and *Table 7-2* pertains to the ferry terminal maintenance.

Table 7-1: Key Activities and Performance Indicators Associated with Highway Maintenance

Key Activity	Performance Indicator
Program Development	
Develop annual catch basin and permanent stormwater BMP inspection program for Phase I and II designated areas.	Routine inspection program in place by the end of year two of the permit effective date.
Complete SWPPPs for all maintenance facilities, rest areas, and WSDOT-maintained park and ride lots for Phase I and II designated areas.	SWPPPs within Phase I and II designated areas completed by the end of year two of the permit effective date.
Implementation	
Continue to require training of all new maintenance staff on stormwater related maintenance activities.	90% of those new employees slated for training complete the training course within one year of employment at WSDOT.
Continue to include spill response awareness training as part of maintenance training program.	90% of those slated for training complete the course within one year of employment at WSDOT or within one year of permit effective date.
Continue routine stormwater related roadway maintenance (i.e., street sweeping; catch basin cleaning; and ditch, channel, and culvert maintenance).	Compare Level of Service data determined by random condition surveys to legislatively mandated target LOS.
Continue to support research and participate in PNS and to track statewide totals for anti-icing product use.	Statewide totals of de-icer materials used reported annually.
Continue annual maintenance of all known permanent stormwater BMPs and correct deficiencies as applicable.	Compare Level of Service data determined by random condition surveys in Phase I and II designated areas to legislatively mandated target Level of Service. Conduct 95% of planned inspections within Phase I and II designated areas and noted deficiencies scheduled for correction.
Train staff on SWPPP implementation and then implement SWPPPs.	• Staff slated for training receives the training within three months of SWPPP completion. • Upon SWPPP completion, document SWPPP

Key Activity	Performance Indicator
	inspections of maintenance facilities, rest areas, and WSDOT-maintained park and ride lots.
Continue litter control efforts.	Report the amount of litter removed annually.
Continue to track herbicides used.	Report amount of herbicides used and acres treated annually.

Note: Shaded cells pertain to annual reporting elements contained in *Appendix 2. Table of Performance Measures* of the *WSDOT NPDES Municipal Stormwater Permit*.

Table 7-2: Key Activities and Performance Indicators associated with Ferry Terminal Maintenance

Key Activity	Performance Indicator
Program Development	
Complete development of the *Environmental Management System* (EMS).	Integrate EMS with *WSF Safety Management System Manuals* by end of year one of the permit.
Complete a generic SWPPP for all facilities through completion of EMS.	SWPPP will be integrated into the EMS for implementation by the end of year two of the permit.
Revise *Maintenance Productivity Enhancement Tool* (MPET) as necessary to identify, schedule, and document completion of stormwater system maintenance, sweeping, and vegetation management tasks.	Revisions completed by the end of year two of the permit.
Implementation	
Continue to train staff in initial spill containment and clean up.	90% of those slated for training receive the training within one year of employment at WSF or within one year of permit effective date.
Maintain trained staff in stormwater control procedures and applicable state and federal regulations.	90% of those slated for training receive the training within one year of employment at WSF or within one year of permit effective date.

Note: Shaded cells pertain to annual reporting elements contained in *Appendix 2. Table of Performance Measures* of the *WSDOT NPDES Municipal Stormwater Permit*.

Section 8: Research and Monitoring

8.1 Stormwater Research Strategy

Stormwater management is a complex task with a variety of regulatory drivers and constraints. It spans numerous technical disciplines including hydraulics, hydrology, geology, and water quality. For transportation projects, the linear nature of the highway network often creates citing constraints to using conventional stormwater management approaches, in addition to considerations required for providing safe access to maintain stormwater management facilities. To help meet these challenges, the WSDOT relies on research efforts to help identify state-of-the-art, cost-effective solutions for designing, constructing, and maintaining stormwater management systems.

The Stormwater Research Strategy is a tool for directing and communicating WSDOT's stormwater-related research needs and priorities. The Strategy provides the framework to:

- Coordinate and build partnerships within WSDOT and at regional, state, and federal levels to leverage stormwater research resources
- Provide a clear process for soliciting, submitting, prioritizing, and implementing stormwater-related research proposals
- Find solutions that improve the design, constructability, maintainability, cost effectiveness, hydraulic performance, and treatment efficiency of stormwater facilities, as well as stormwater management operations and maintenance practices
- Improve the compilation, tracking, and dissemination of stormwater research findings

The remaining sections describe how WSDOT promotes and implements stormwater research and interact with other research programs; lists priority stormwater-related research needs; describes how stormwater proposals are developed, evaluated, and prioritized; and how research findings are disseminated. The current list of stormwater research proposals can be viewed at: http://www.wsdot.wa.gov/Environment/WaterQuality/Research/Proposals.htm. In addition, *Special Condition S7* of the *WSDOT NPDES Municipal Stormwater Permit* prescribes monitoring requirements for WSDOT. However, several of the permit requirements do not necessarily reflect stormwater-related research needs and priorities identified by WSDOT.

8.2 Communication and Coordination

Effective internal and external communication and coordination is essential to supporting, promoting, and executing stormwater research. This section outlines the plans and processes for coordinating internal and external stormwater research-related efforts as well as for sharing and promoting research-related information.

8.2.1 WSDOT Research Office

WSDOT's Research Office organizes, manages, and disseminates the results of research (stormwater-related and other) conducted within WSDOT. The Research Office coordinates the

identification, selection, and management of research projects funded through the Federal State Planning and Research Program, and helps develop and manage research funded by other agency programs or by legislative direction. This includes identifying, investigating, and providing coordination of environmental-related research efforts. A successful stormwater-specific research strategy requires ongoing communication and coordination with WSDOT's Research Office.

8.2.2 Stormwater Technical Review Committee

The Stormwater Technical Review Committee (STRC) reviews stormwater-related research proposals, including those related to investigating performance of new stormwater BMP designs. The STRC is an ad hoc WSDOT technical team convened and chaired by Environmental Services Office (ESO) Water Quality Program staff. In addition to the chair, the STRC consists of a core group made of representatives with best management practice (BMP) design and evaluation expertise (e.g., a regional hydraulics design engineer, a modeler from the Hydraulics Office, and ESO's Water Quality Team Leader). Additional disciplines will be called upon as needed.

The STRC reviews research proposals for applicability, potential overlap with other research proposals, and potential for partnering on a given proposal. The STRC also prioritizes the research proposals, setting the direction and focus for stormwater research. Proposals for research on new stormwater BMPs that are not included in the *Highway Runoff Manual* are handled in the same process as other stormwater research.

The STRC selects stormwater research projects to submit to the WSDOT Research Office and other entities for possible funding. Thus the STRC functions as one of the Research Advisory Committees as defined in the WSDOT *Research Procedures Manual* (page 2-2). The ranking by the STRC sets a direction and focus that advances WSDOT's stormwater research goals. However, funding sources and NPDES municipal stormwater permit obligations significantly controls which STRC-recommended proposals get funded.

8.2.3 New Products Committee

WSDOT's New Products Committee (NPC) evaluates new products and procedures for potential use on construction and maintenance projects. Evaluators use a wide variety of information to better understand new products or procedures, including regulatory and testing institutions such as American Association of State Highway and Transportation Officials (AASHTO), the Highway Innovative Technology Evaluation Center (HITEC), and others. Many products also require field-testing to fully evaluate their performance and benefits. After an evaluation, WSDOT's NPC findings and recommendation for action typically falls into one of the following categories:

- Approved
- Not Approved
- Product Meets Current Specifications
- Non-Interest Or Limited Use Item

Because the evaluation of new products and procedures may drive, influence, or complement stormwater research, it is important for ESO's Water Quality Program to communicate and coordinate with the New Products Committee. In order to ensure this, cross-committee attendance between the NPC and the STRC is encouraged.

8.2.4 Local, State, and National Programs Coordination

To facilitate research partnerships and information sharing, ESO's Water Quality Program will coordinate with local, state, and national programs to promote or conduct stormwater research. Maintaining communication and coordination with these and other stormwater programs ensures that WSDOT stays abreast of the latest stormwater developments and priorities, and that state and local agencies leverage resources through shared stormwater research efforts and information sharing.

8.2.5 Research Program Resource Web Site

WSDOT's stormwater research web site (http://www.wsdot.wa.gov/Environment/WaterQuality/Research/default.htm) publicizes the Stormwater Research Strategy, summarizes and communicates WSDOT's stormwater-related research activities and findings, and provides guidance on proposal development and review. The intended audience includes WSDOT staff interested in proposing research or reviewing current research priorities, affiliated research partners (e.g., universities, municipalities, state and federal agencies, etc.), and any citizens or public interest groups interested in stormwater research. The Stormwater Research Program web site includes the following elements:

- Overview of the stormwater research program including strategies and objectives
- List of current and past research efforts
- Reports and findings on stormwater-related research
- List of current research priorities
- Assistance with proposal development and submittal
- Links to research resources
- Contacts within the program

8.3 Information Management

An important goal of the Stormwater Research Program is to ensure that the information developed through research is easily available to interested parties. In addition to the website, information will be disseminated through existing libraries and databases.

8.3.1 WSDOT Library

The WSDOT Research Office includes the WSDOT Library, which manages a collection of books, manuals, technical reports, legal reference materials, standards, journals, and online resources on virtually every transportation-related subject. The WSDOT Research Office collaborates with the Library to catalog WSDOT research reports and to make national and state research documents available to WSDOT employees, university researchers, consultants, other government entities, and the public. Stormwater-related research results and findings will be included in the WSDOT Library in coordination with the Research Office.

8.3.2 Research and Monitoring Data

Monitoring data that are produced from a given research effort will be linked with the *Stormwater Management Facilities Inventory Database* to the greatest extent feasible. This will enhance the ability to evaluate water quality and quantity monitoring data in relation to other cataloged data such as average daily traffic (ADT) and drainage area.

8.4 Research Areas and Needs

Stormwater management operates in a dynamic arena of rapidly evolving public policy and advancements in management and design methods. Although these changes and advancements tend to shift stormwater research priorities every few years, WSDOT's core research areas will likely remain the same. Currently, WSDOT's stormwater-related research needs fall into the four categories outlined below.

8.4.1 Characterization of the properties of runoff

The extensive data collected by other states and local governments, along with WSDOT's own data gathering efforts during the past NPDES permit cycle, has reduced the need for additional data to characterize highway runoff. However, runoff characterization from maintenance facilities, rest areas, and ferry terminals has emerged as new areas of interest for regulators. Collection of highway runoff characterization data will continue, largely as a by-product of other monitoring efforts. For example, BMP effectiveness research requires evaluating untreated highway runoff (i.e., control samples) to allow before and after treatment comparisons. Characterization data is also an integral component of policy related research efforts (i.e., defining or refining treatment thresholds, or developing waste load allocations) and NPDES municipal stormwater permit requirements.

8.4.2 Characterization of the environmental effects of runoff

Although the character of highway runoff is generally known, the effects of highway, ferry terminal, park and ride lot, and maintenance facility runoff on the water quality, ecology, hydrology, and geomorphology of downstream systems is still a priority research area for some regulatory agencies. Research on the effects of highway runoff will help further refine policy and management of highway runoff.

8.4.3 Methods to avoid, minimize, buffer, or mitigate runoff effects

WSDOT currently sees long-term benefits in pursuing and evaluating stormwater dispersion methods, infiltration systems, watershed-based mitigation approaches, and other cost-effective stormwater management options applicable for constrained highway right-of-way settings. However, WSDOT also recognizes the need to ensure that surface water quality protection efforts achieved through dispersion and infiltration do not come at the expense of soil or groundwater contamination.

8.4.4 Procedures and design tool development

Regulations or regulatory guidance may spawn the need for research to either verify appropriateness of regulatory triggers or assess its implications for WSDOT project and service delivery. The emergence of new stormwater approaches and technologies developed to comply with regulations often spurs the need for research to flush out design and maintenance questions associated with those new management options. Findings from such research are incorporated into WSDOT's business practices through its updates to WSDOT technical procedures, guidance manuals (e.g., *Highway Runoff*, *Hydraulics*, *Design*, *Environmental Procedures*, and *Maintenance Manuals*), design tools (e.g., hydrologic models), and standard specifications (e.g., erosion and water pollution control).

8.5 Research Proposal Development and Evaluation Process

This section outlines the development and review process for stormwater research proposals. *Figure 8-1* depicts the process that a research idea goes through from conception to a fully developed and prioritized proposal. This is a collaborative effort between the proponent generating the idea and WSDOT's technical support staff, who will assist in shepherding the concept through the process. The amount of technical staff support needed in this iterative process will depend on the level and area of expertise of the individual(s) submitting the idea.

Instructions for preparing proposals and the submittal form are available at: http://www.wsdot.wa.gov/Environment/WaterQuality/Research/Process.htm. Proponents may wish to consult with ESO's Water Quality Program staff for advice and assistance while preparing their proposal. To avoid expending energy in pursuing research ideas that have been adequately investigated, a literature search should be conducted very early in the process.

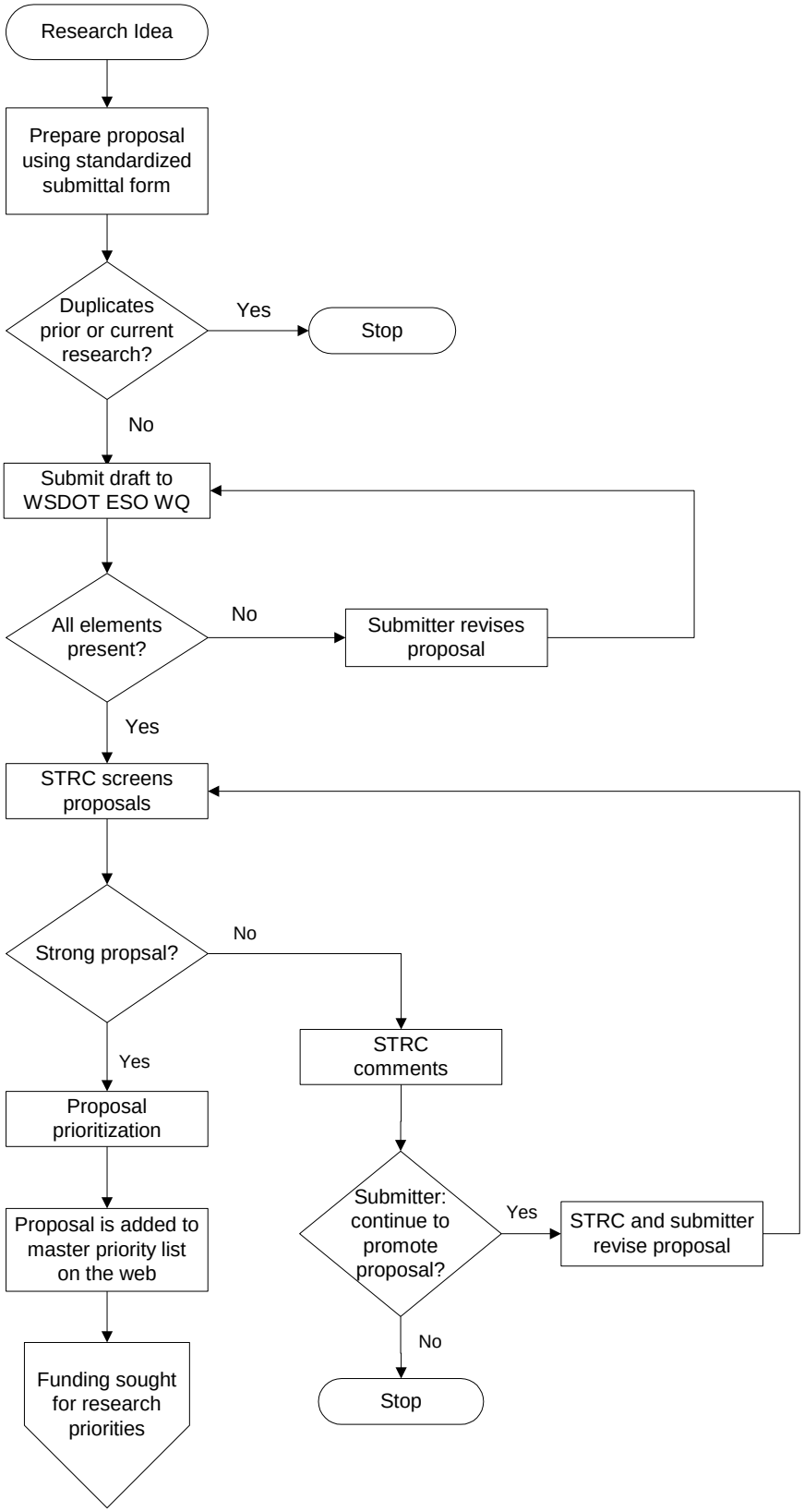

Figure 8-1 Research idea development process

Upon submittal, ESO's Water Quality Program staff checks the proposal to ensure it contains all the required information. Then the proposal is sent to the Stormwater Technical Research Committee (STRC). The STRC's initial screening evaluates whether:

- The proposal addresses key concern(s) for WSDOT operations.
- WSDOT or other researchers have already adequately investigated the topic.
- It overlaps with other existing research proposals or can be combined with other proposals.
- Potential funding partners exist.

The purpose of the preliminary screening is not to rank the research proposals, but to:

- Screen out proposals too far removed from WSDOT's interests and responsibilities, or that have already been covered in existing proposals or by previous research efforts.
- Strengthen the proposal by suggesting refinements, re-directions, or additions to the proposed study.
- Strengthen the proposal by integrating it with similar proposals or partnering with others interested in the same topic.

Screened proposals may be returned, with comments, to the submitter; integrated with other proposals; or kept as written. In the event that the SRTC fails to embrace the proposal, a submitter may elect to either abandon the proposal or work collaboratively to refine the proposal to adequately respond to the STRC's feedback.

The STRC prioritizes promising proposals based on the following criteria:

- *Applicability and Practicality.* Research having practical application statewide or regionally will rank higher than those with limited applicability, or less practical applications.
- *Time-Sensitivity.* Research filling an immediate critical need will rank higher than proposals for more general or "pure" research.
- *Cost Considerations and Potential for Partnerships.* A qualitative cost-benefit evaluation will be performed for each proposal to determine whether the investment in the research effort will provide a valuable benefit to WSDOT. Proposal reviewers will also consider the availability of funds and funding partners.
- *Study Design Feasibility and Quality.* Proposal reviewers will evaluate whether the research method could be successfully deployed to yield useful results.
- *Degree of Knowledge Gap.* Research proposals may address topics that have been investigated to some degree by others. A high rank for this criterion will be applied to proposals where insufficient information exists or prior investigation has yielded inadequate knowledge.

Proposals are selected, funded, and implemented, based on WSDOT priorities and available funding opportunities. Because funding criteria and restrictions vary from source to source, proposals may not necessarily be implemented solely based on the priority ranking. Thus while

the strategy sets the research priorities, it can only influence the funding and implementation of individual research efforts.

8.6 Research and Monitoring Program Evaluation

Table 8-1 summarize key activities identified in the SWMP along with applicable performance indicators for this program section.

Table 8-1: Key Activities and Performance Indicators Associated with Research and Monitoring.

Key Activity	Performance Indicator
Program Development	
Develop QAPPs to meet requirements in *Section 7* of the municipal permit.	Provide QAPPs for Ecology review and approval, per deadlines specified in the permit.
Develop monitoring data container.	Develop monitoring data container by the end of year three of the permit.
Develop the link for monitoring data container and the *stormwater facilities inventory database.*	Link between monitoring data container and *stormwater inventory database* established by the end of year three of the permit.
Implementation	
Maintain a tool for storing and retrieving monitoring data.	Begin populating and maintaining monitoring data container by the end of year three of the permit.
Implement QAPPs.	Annually report on status of research and monitoring activities. Upon research project completion, summarize findings in the annual report and post technical reports on WSDOT's website.

Note: Shaded cells pertain to annual reporting elements contained in *Appendix 2. Table of Performance Measures* of the *WSDOT NPDES Municipal Stormwater Permit*.

Section 9: Education/Training/Public Involvement Programs

9.1 Education

WSDOT utilizes a variety of programs to help educate the public, consultants, contractors, and WSDOT personnel on stormwater issues. Several of the major education efforts include the Adopt-A-Highway Program, WSDOT's environment Internet site, and *Highway Runoff Manual*-related training curriculum.

9.1.1 Adopt-A-Highway Program and Litter Prevention Campaign

Litter and debris deposited on WSDOT right-of-way can become a stormwater pollutant during wet weather events and clog drainage and stormwater management facilities. WSDOT's Adopt-A-Highway Program is an anti-litter and roadside enhancement campaign that allows individuals and organized groups of citizens and/or businesses to work in partnership with the Department by "adopting" a section of state highway and agreeing to help take care of it. Participating groups or sponsors agree to take care of an "adopted" section of highway for at least two years. In return, the Department of Transportation erects a sign(s) at the beginning of the section identifying the adopting group. For volunteer groups, the WSDOT also provides the necessary traffic control equipment, safety equipment, safety training, litterbags, and disposal of filled bags. WSDOT's Adopt-A-Highway Program in done in partnership with Ecology's litter prevention campaign, which was launched as a result of Washington State's 1998 Litter Act. As a participant in this program, WSDOT has also installed highway road signs featuring the campaign slogan, "Litter and it will hurt," and the toll-free number to report littering.

In addition to administering the Adopt-a-Highway Program, WSDOT is responsible for picking up litter along state roads. WSDOT personnel pick up litter and the bags of litter collected by any group working on state roadways. These groups primarily include the Ecology Youth Corps, Department of Corrections, Adopt-a-Highway groups, and some Community Litter Cleanup Program crews.

Additional information on the Adopt-A-Highway program can be found on WSDOT's Internet site at: http://www.wsdot.wa.gov/operations/adoptahwy/.

9.1.2 Commute Trip Reduction Program

The goals of the Commute Trip Reduction (CTR) program are to reduce traffic congestion, reduce air pollution, and petroleum consumption through employer-based programs that decrease the number of commute trips made by people driving alone. In essence the CTR program provides water quality benefits through source control.

The CTR program's results are achieved through collaboration between local jurisdictions, employers, and WSDOT. The state's nine most populated counties, and the cities within those counties, are required to adopt CTR ordinances and support local employers in implementing CTR. Employers are required to develop a commuter program designed to achieve reductions in vehicle trips and may offer benefits such as subsidies for transit fares, flexible work schedules,

and telework opportunities. WSDOT provides technical assistance to jurisdictions and employers to help implement the program. Technical assistance includes training, support with data collection and analysis, and maintaining networks of partners and documentation on best practices. WSDOT maintains CTR data that WSDOT, local jurisdictions, and transit systems use to conduct planning. WSDOT also staffs the CTR Task Force. More information on the Commute Trip Reduction program appears on the WSDOT internet site at: http://www.wsdot.wa.gov/TDM/CTR/default.htm.

9.1.3 WSDOT's Internet Site

The Environmental Services Office Internet site, among other things, disseminates information to the public regarding WSDOT's stormwater and water quality program (http://www.wsdot.wa.gov/Environment/waterquality/). Information available on the site includes a listing of NPDES permits WSDOT operates under as well as downloadable versions of its NPDES annual progress reports. Links to WSDOT's stormwater-related guidance manuals, procedures, design tools, and related resources are also available. Efforts are underway to post WSDOT's stormwater research strategy as well as reports on WSDOT's stormwater-related research activities. In addition, the Internet site provides an effective resource that the public can use for contacting WSDOT staff regarding water quality/stormwater inquiries.

WSDOT's Maintenance and Operations Internet site (http://www.wsdot.wa.gov/maintenance/) disseminates information regarding stormwater management topics such as: Integrated Vegetation Management Program, Regional Road Maintenance Endangered Species Act Program, and steps WSDOT takes to control litter and the spread of West Nile virus.

9.1.4 Highway Runoff Manual Electronic Mailing List

WSDOT uses this electronic mailing list (i.e., listserv) to announce *Highway Runoff Manual*-related updates, training opportunities, and improvements in design tools. The listserv is an effective tool to getting timely announcements to WSDOT staff and their consultants, regulators, and local municipalities whose road departments utilize the manual. Those interested in receiving these email announcements are instructed to send a blank email to: subscribe-stormwater_list@lists.wsdot.wa.gov.

9.1.5 Customer Service

WSDOT's Customer Service Office responds to inquiries from the public through e-mail, as well as by telephone, and by referring questions to the many experts within WSDOT. Inquires received are logged and tracked using an internal database, and responses are monitored for clarity and content.

WSDOT's Ombudsman is responsible for investigating whether the WSDOT's decision-making may have been unreasonable, unfair, arbitrary or improper, and if it has, helping to correct matters. The Ombudsman conducts inquiries and investigations in an impartial manner, free from initial bias and conflicts of interest. Outcomes of the Ombudsman's activities may include:

- Making recommendations to persons within WSDOT with authority to act;

- Facilitating or mediating the resolution of complaints or disputes; and
- Submitting reports or findings to appropriate authorities.

9.1.6 Knowledge and Technology Transfer

As a recognized leader in stormwater management amongst state and local transportation agencies, WSDOT's expertise is continually sought at the national, state, and local levels by many government agencies as well as non-profit organizations and areas of the private sector.

WSDOT expends significant resources on an ongoing basis on research devoted to developing and improving stormwater management techniques, guidance manual, training, and design tools. Municipal transportation organizations around the state often adopt WSDOT's manuals, standard specifications, and general contracting provisions. These and other stormwater-related innovations are promoted by WSDOT through a variety of venues including: publication of research reports; ad hoc presentations and web telecasts; and participation in the American Public Waterworks Association's Stormwater Managers Committee, National Highway Institute, Transportation Research Board Committee on Environmental Analysis in Transportation, the Puget Sound Action Team, Regional Road Maintenance Technical Working Group, and Department of Ecology's Stormwater Treatment Technical Review Committees.

9.1.7 Employee, Consultant, and Contractor Training and Education

WSDOT provides education and training to ensure that its employees (and its consultants and contractors) have the knowledge and skills necessary to perform their functions effectively and efficiently. WSDOT develops and presents employee-training programs with curricula and materials tailored to specific topics and personnel levels. These programs are evaluated and refined periodically to ensure the educational messages are both current and effective.

Many courses are held in response to updates in WSDOT's manuals. Outreach activities extend far beyond in-house training. For example, WSDOT offers erosion control, bioengineering, wetlands, and hydraulics courses that include attendees from the private sector and other state and local agencies. A large thrust of WSDOT's stormwater-related training is to support the effective implementation of its *Highway Runoff Manual* (HRM) and maintenance activity-related BMPs to protect environmental quality. Additional information on various training programs is provided in the corresponding sections of this SWMP plan. Refer to *Sections 3.4*, *4.1.2*, *4.1.5*, *4.2.2*, *4.2.3*, *5.2*, *7.2.8*, *7.2.9*, and *7.3.8* for more information on the various training programs.

WSDOT's *Graduate Fellowship Program* offers opportunities for advance training for key disciplines in areas of significant need that will benefit WSDOT and also provide career growth and development for WSDOT employees. The program requires a high level of participant commitment. During this assignment, participants are expected to contribute extensively to work assignments that complement the program area of study. If applicable, research work will also complement the program area of study and will be coordinated through WSDOT's Research Office. After graduation, participants are assigned to a position that makes direct use of their enhanced capabilities and knowledge.

9.2 Public Involvement in Permit/Program Development

Ecology convened an advisory group to assist in the WSDOT permit and stormwater management program development process. The role of this group was to serve as a forum:

1. For Ecology and WSDOT to provide information about the permit and SWMP;
2. For stakeholders to provide input on the scope of issues to be considered in the permit development process; and
3. To serve as external reviewers of the preliminary draft permit and Stormwater Management Program.

In addition to WSDOT, the committee included representatives invited from:

- Association of Washington Cities
- City of Tacoma Public Works Environmental Services
- Eastern Washington Stormwater Group Representatives (City of Richland and Benton County)
- Federal Highway Administration
- National Oceanic and Atmospheric Administration Fisheries
- People for Puget Sound
- Puget Sound Action Team
- Puget Soundkeeper Alliance
- Snohomish County Department of Public Works
- Tribal representative
- United States Environmental Protection Agency
- United States Fish and Wildlife Service
- Washington State Chapter of the America Pubic Works Association Stormwater Managers Committee
- Washington State County Roads Administration Board
- Washington State Department of Fish and Wildlife
- Washington State Division of Natural Resources Aquatic Resources Division
- Senate Highways and Transportation Committee
- House Transportation Committee

9.2.1 Highway Runoff Manual

Ongoing refinement of the *Highway Runoff Manual* involves an interdisciplinary technical team that includes several county representatives and benefits from a close working relationship with Ecology staff as well as contributions from outside reviewers. The March 2004 HRM update process included an extensive solicitation for comments and feedback on a draft iteration of the manual. Solicitation for comments and feedback on the May 2008 draft was accomplished during the public review of the draft WSDOT Municipal Stormwater Permit.

9.2.2 Integrated Vegetation Management Plans

As WSDOT developed roadside vegetation management plans for all Washington State highways, the public was invited to review and comment on the plans. Copies of the plans are posted on WSDOT's Roadside Maintenance website.

9.2.3 Transportation Projects

WSDOT regularly holds public meetings and/or hearings for specific transportation projects. Combined with project-specific advisory groups and open houses, these meetings provide the public opportunities for early, continuous, and meaningful involvement in projects in their local area. The public also has an opportunity to review environmental impact statements or environmental assessments that are developed for projects, which include water quality discipline reports that describe alternatives for stormwater management.

9.3 Education/Outreach/Involvement Program Evaluation

Table 9-1 summarizes key activities identified in the SWMP along with applicable performance indicators for this program section.

Table 9-1: Key Activities and Performance Indicators Associated with the Education/ Outreach/Involvement Program

Key Activity	Performance Indicator
Implementation	
Continue support for *Adopt-a-Highway Program*.	Summarize outreach, knowledge, and technology transfer activities in the annual report.
Continue to provide technical assistance to local agencies and employers for the *Commute Trip Reduction Program*.	
Maintain *Highway Runoff Manual* listserv.	
Maintain and expand WSDOT's internet sites to disseminate information regarding WSDOT's SWMP.	
Continue to support knowledge and technology transfer related to stormwater management through presentations, publications, web telecasts, and participation on stormwater committees.	

Note: Shaded cells pertain to annual reporting elements contained in *Appendix 2. Table of Performance Measures* of the *WSDOT NPDES Municipal Stormwater Permit*.

Section 10: Program Assessment and Reporting

WSDOT's SWMP strategy includes a process for continuous program improvement and refinement. WSDOT's review of its activities, inspection of its stormwater management facilities, oversight and guidance of its personnel, and research to obtain information to help guide responsible stormwater management will support this process. This section of the SWMP describes how WSDOT evaluates the effectiveness of the SWMP Plan, collects data and information for reporting purposes, and prepares annual report submittals.

10.1 Program Assessment

WSDOT's assessment of its SWMP effectiveness combines knowledge gained from stormwater-related research with SWMP program implementation assessments. This allows WSDOT to more comprehensively evaluate the effectiveness of the overall stormwater program. Program effectiveness will be based primarily on compliance with the permit requirements as measured by each of program evaluation components described as part of each of the SWMP evaluative sections and in *Appendix 2. Table of Performance Measures* in the *WSDOT NPDES Municipal Stormwater Permit*.

10.2 Annual Reporting

The Annual Report serves as a reporting mechanism to not only Ecology, but also a wider audience including policy makers (i.e., legislators and WSDOT management), public advocacy groups, and the general public. The Annual Report:

- Serves as a self-audit for WSDOT to evaluate and assess the appropriateness and effectiveness of various programs and activities described in the SWMP.
- Reports on the findings of WSDOT's stormwater-related monitoring and research program.
- Reports on WSDOT's compliance with activities required in the municipal stormwater permit.

Per conditions in *S8.* of the *WSDOT Municipal Stormwater Permit*, WSDOT submits an Annual Report to Ecology by October 31 each year addressing activities required under the WSDOT municipal stormwater permit in the previous fiscal year (July 1 – June 30). The Annual Report provides a brief status on permit compliance and SWMP implementation.

In the process of compiling and evaluating information for the annual report, WSDOT may identify trends, common problems, or solutions that may spur the need to revise the SWMP. The annual report will also will serve as the vehicle for describing and justifying any WSDOT-proposed stormwater management program modifications. For inclusion in the 4th annual report (i.e., during last year of the permit), WSDOT will prepare an evaluation of extending the geographic scope of permit coverage to statewide, including processes needed to map conveyance systems, illicit discharges, and other program elements.

An electronic and hardcopy of the annual report are submitted to Ecology. the most recent annual report is available to the public via WSDOT's Internet site at: http://www.wsdot.wa.gov/Environment/WaterQuality/#reports.

In addition to annual reporting associated with the NPDES permit, the Annual Report also provides a mechanism that can feed into WSDOT's *Measures, Markers, and Mileposts* (a.k.a. *Gray Notebook*), the Department's quarterly performance measures report. These quarterly reports document and disseminate in-depth reports on the Department's performance as part of the commitment to keep WSDOT accountable to the Transportation Commission, legislators, transportation organizations, and the public (http://www.wsdot.wa.gov/accountability/graynotebook/default.htm). The *Grey Notebook* also serves as an important internal management and integration tool.

In addition, as a result of amendments to RCW 47.01.012, WSDOT reports on benchmarks with in an *Attainment Report* to the Legislature and the Governor for five policy goals, one of which pertains to the *environment*. The Annual Report will help to provide some of the information needed to satisfy the benchmark on *environment* for the *Attainment Report*. More background about the *Attainment Report* can be found on the Internet at: http://www.wsdot.wa.gov/Accountability/PerformanceReporting/Benchmarks.htm.