2010 Stormwater Report

October 2010

Washington State
Department of Transportation

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WSDOT'S Municipal NPDES 2010 Annual Report

The following document is the first annual progress report for the National Pollutant Discharge Elimination System Multiple Separate Storm Sewer System: Permit WAR043000A (Ecology, 2009).

Submitted by:

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Abstract

This report documents the progress made by the Washington State Department of Transportation (WSDOT) in protecting water quality within the National Pollutant Discharge Elimination System permit areas between March 6, 2009, and June 30, 2010. Progress is described using performance measures designed to gauge compliance with Stormwater Management Program Plan commitments and permit conditions. Major sections include a summary of stormwater-related expenditures; coordination and management activities in support of TMDLs; maintenance activities to protect water quality; effectiveness of construction site erosion control; stormwater treatment and conveyance; stormwater monitoring and research; and stormwater education, outreach, and public involvement.

Among WSDOT's achievements toward reducing the quantity of highway runoff and improving the water quality of the runoff during the current reporting period are:

- Development of an interagency agreement with the Washington State Department of Ecology's (Ecology's) Environmental Assessment Program for Ecology to provide stormwater monitoring technical assistance.
- Updates to the *Highway Runoff Manual*, *Hydraulics Manual*, *Utilities Manual*, and *Environmental Procedures Manual*.
- Increased participation with TMDL development and implementation.
- Completion of a five-year study entitled "Assessment of Alternatives in Vegetation Management at the Edge of Pavement."
- Achievement of an "excellent" or "good" rating on over 90% of stormwater erosion assessment measures.
- Retrofit of approximately 20 discharge points as stand-alone projects from 2007 to 2009.
- Prioritization of additional highway segments for standalone stormwater retrofit.
- Improvements to the Illicit Discharge Detection and Elimination program with newly assigned region contacts.
- Construction of 333 stormwater facilities in the permit area since permit reissuance in 2009.
- Significant investments toward improving the monitoring program and data management capabilities.

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List of Acronyms

AAH	Adopt-A-Highway Program
AGO	Attorney General's Office
BMP	best management practice
EAP	Environmental Assessment Program
ECAP	environmental compliance assurance procedures
Ecology	Washington State Department of Ecology
ECP	Erosion Control Program
EPA	Environmental Protection Agency
ERTS	Environmental Report Tracking System
ESA	Endangered Species Act
ESC	Erosion and Sediment Control (Lead)
FY09	Fiscal Year 2009 (7/1/2008 – 6/30/2009)
FY10	Fiscal Year 2010 (7/1/2009 – 6/30/2010)
GIS	Geographic Information Systems
HRM	Highway Runoff Manual
IDDE	Illicit Discharge Detection and Elimination
IVM	Integrated Vegetation Management
LID	low-impact development
LOS	level of service
MAP	Maintenance Accountability Process
MMFD	Modified Media Filter Drains
MPET	Maintenance Productivity Enhancement Tool
MS4	Municipal Separate Storm Sewer System
NPDES	National Pollutant Discharge Elimination System
NTU	nephelometric turbidity unit
OFM	Office of Financial Management
PGIS	pollution-generating impervious surface
PNS	Pacific Northwest Snowfighters Association
QAPP	Quality Assurance Project Plan
QPL	Quality Products List
SDDS	Stormwater Design Documentation Spreadsheet
SMS	Safety Management System
SPC	Stormwater Policy Committee
SWMPP	Stormwater Management Program Plan
SWPPP	Stormwater Pollution Prevention Plan
TESC	temporary erosion and sediment control
TMDL	Total Maximum Daily Load
UIC	Underground Injection Control
USFWS	U.S. Fish and Wildlife Service
WAC	Washington Administrative Code
WQP	Water Quality Program
WSDOT	Washington State Department of Transportation
WSF	Washington State Ferries

Chapter 1 Overview

The 2009 NPDES permit and the Stormwater Management Program Plan

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 (permit) to the Washington State Department of Transportation (WSDOT). Ecology has issued stormwater permits to WSDOT since 1995; however, the new permit contains more extensive requirements than previous permits.

This annual report informs the public, decision makers, and Ecology about WSDOT's progress in complying with its NPDES permit for municipal separate storm sewer systems (Ecology, 2009). Included is a summary of stormwater-related activities occurring within the municipal permit areas (see Exhibit 1-1) between March 6, 2009, and June 30, 2010. Each section contains updated information related to the procedures and practices used in WSDOT's Stormwater Management Program Plan (SWMPP).

How is the report organized?

The organization of this report is similar to the 2008 Stormwater Report (WSDOT, 2008a) submitted by WSDOT to Ecology. However, there are a number of new sections in the report reflecting the additional permit reporting requirements. Each section contains updated information related to the procedures and practices used to reduce the discharge of pollutants in stormwater runoff and protect waters of the state through implementation of the WSDOT SWMPP.

In 2009, Ecology did not require WSDOT to submit a Stormwater Report. However, this report also includes available information relevant to both fiscal years 2009 and 2010. Where 2009 information was not available, the information provided in the report covers the permit's first year reporting period of March 6, 2009, to June 30, 2010.

Why does WSDOT need to control stormwater?

Statewide, WSDOT oversees more than 7,000 centerline miles of highway (WSDOT, 2009b). When rest areas, ferry terminal holding lots, and park & ride lots are included, there are over 40,000 acres of paved surface. Paved surfaces do not allow water to penetrate into the ground where it can be naturally filtered and treated before entering streams or underground water supplies. This lack of infiltration results in excess stormwater running off state highway facilities each year.

> Every inch of rain that falls on an acre of pavement produces about 27,000 gallons of stormwater (assuming there is no infiltration).

Stormwater runoff carries pollutants and erodes soil and stream channels, potentially killing fish and suffocating their eggs. Federal and state regulations require WSDOT to meet clean water standards in urbanized locations where it collects, conveys, and discharges stormwater into waterways of the state or nation. Regulated facilities in these locations include:

- Highways
- Ferry terminals
- Park & ride lots
- Maintenance shops and yards
- Rest areas

The runoff discharged from highways and other parts of the transportation infrastructure represent only a portion of the runoff from surrounding land uses affecting nearby water bodies. However, runoff from WSDOT's facilities can contribute to the impairment of those waters. The impacts of stormwater runoff from state-owned rights of way vary widely, depending on surrounding land use, climate patterns, soils, receiving water characteristics, and other local factors.

A more subtle impact of development on the water cycle is reduced infiltration. Infiltration of precipitation, stormwater, and snowmelt recharges the groundwater. Reduced infiltration can dry up small streams and wetlands in the summer that would normally hold water year round and can reduce the habitat value for both native plants and animals.

The key to reducing the environmental effects of stormwater is the application of best management practices (BMPs). A BMP is a physical, structural, or operational practice that, when used individually or in combination, prevents or reduces pollution of water and reduces peak flows and volumes.

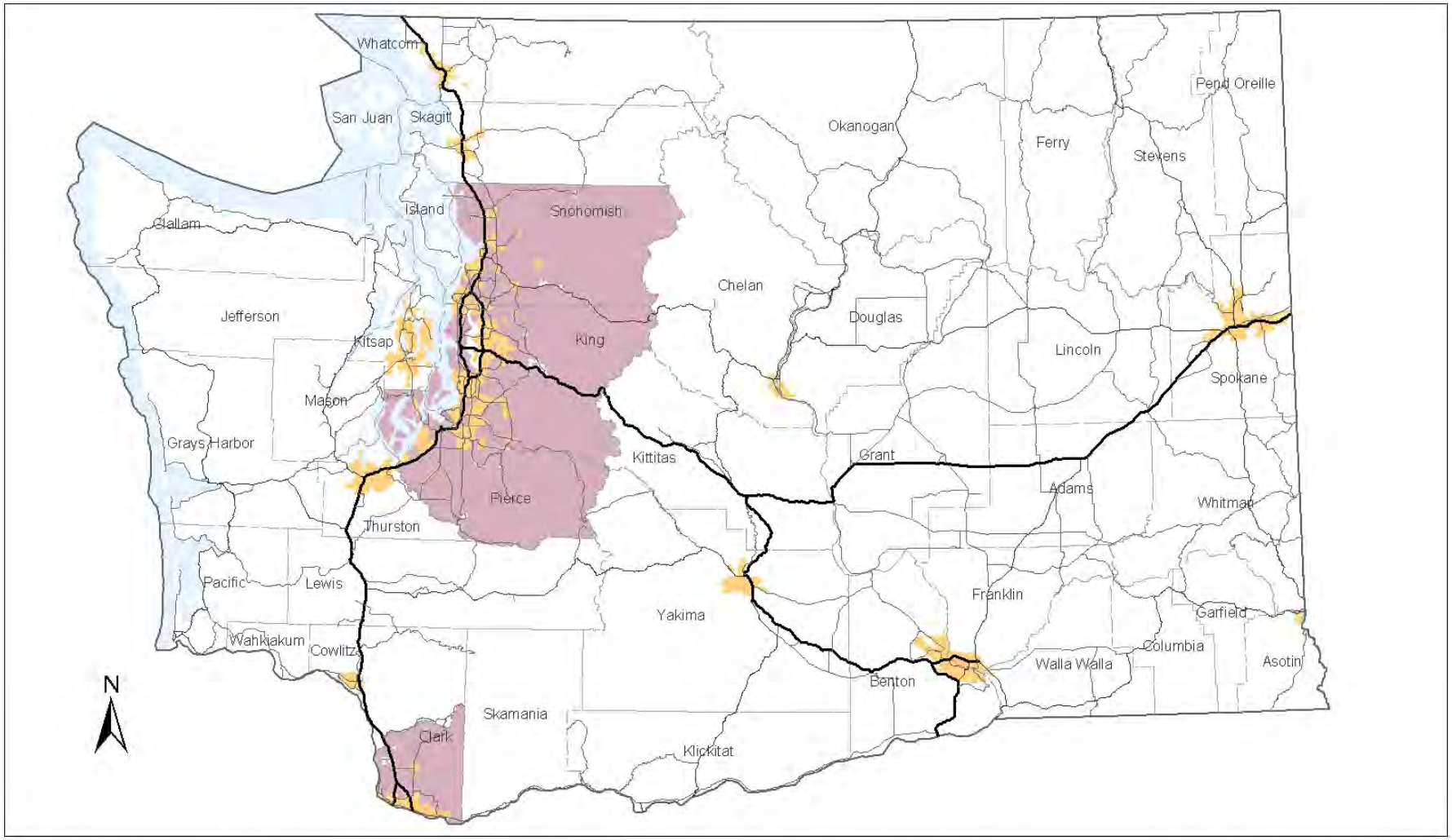
What areas and facilities does the permit cover?

Exhibit 1-1 depicts the extent of geographic coverage under WSDOT's permit. Previous permit coverage included Snohomish, King, and Pierce counties, as well as the cities of Seattle and Tacoma. The permit significantly expands coverage to areas throughout the state to include any municipality with a population density of 1,000 or more people per square mile.

The permit increases WSDOT's stormwater management responsibilities to include the following:

- Enlarges geographic coverage to 110 urbanized areas and applicable total maximum daily load (TMDL) areas, including those in eastern Washington.
- Increases the number of regulated state highway centerline miles by 40%: from 1,140 to 1,600 miles.
- Requires stormwater runoff treatment and flow control facilities to be built to standards that are more stringent.
- Mandates stormwater retrofits on most highway improvement projects in the Puget Sound Basin if feasible and cost-effective.
- Requires additional maintenance, monitoring, mapping, tracking, and reporting activities.

Exhibit 1-1 WSDOT 2009 NPDES Municipal Stormwater Permit Geographic Coverage*



Data Source: Municipal Stormwater Permit Areas from WAECY (2010)
State Routes from WSDOT at scale of 1:500K
State and County Boundaries from WADNR
Cartography: WSDOT 4/20/2010

0 5 10 20 30 40 50 Miles

1995 Coverage
2009 Expanded Coverage

Washington State Department of Transportation

*** This map does not depict the applicable TMDL areas. TMDL areas are depicted in Exhibit 3-1.**

How much did WSDOT request from the Legislature to implement the permit?

In July 2008, WSDOT prepared and submitted its 2009–2011 Stormwater Decision Package to the Office of Financial Management (see Exhibit 1-2). The Decision Package requested $19,714,000 in new funding to support permit implementation. Poor economic conditions and a major revenue shortfall restricted new funding initiatives. For the 2009–2011 Biennium, the Legislature provided $1,500,000 in new funding for permit implementation and an additional $350,000 in reappropriated funds from the FY 2008 Supplemental Budget.

In July 2009, WSDOT prepared a Decision Package for the fiscal year (FY) 2011 Supplemental Budget asking for an additional $4,960,000 to support permit implementation. Of this amount, the 2010 Legislature approved $2,425,000 for permit implementation.

Stormwater treatment facilities are referred to as best management practices (BMPs) in this report. The BMP shown in this photo is an example of a stormwater treatment wetland.

Exhibit 1-2 2009–2011 Biennial Budget and FY 2011 Supplemental Requests to and Funding from the Legislature

Program	2009–11 Request to the Legislature	2009-11 Approved Funding by the Legislature	FY 2011 Request to the Legislature	FY 2011 Approved by the Legislature
Environmental Services	$4,645000	$750,000 plus FY 2008 carry forward supplemental funding of $350,000	$2,425,000	$2,425,00
Maintenance and Operations	$14,554,000	$750,000	$2,143,000	$0.00
Ferries	$515,000	$0	$392,000	$0.00
Totals	**19,714,000**	**$1,850,000**	**4,960,000**	**2,425,000**

What were WSDOT's top stormwater priorities during this reporting period?

Consistent with the Stormwater Management Program Plan, WSDOT focused on the following activities during the first reporting period:

- Construct new stormwater management facilities.
- Support and oversee stormwater pollution prevention during construction.
- Prioritize highway segments for stormwater improvements.
- Continue stormwater management-related maintenance and operations practices.
- Plan/budget for major increase in inspection and maintenance of stormwater BMPs and catch basins.
- Work with WSDOT regions to develop and provide training for an enhanced statewide Illicit Discharge Detection and Elimination Program.
- Work to secure adequate funding from the Legislature to meet permit compliance obligations.
- Develop information management systems to collect, store, and manage stormwater data.
- Continue policy development, education, training, and public involvement.
- Identify monitoring sites and develop Quality Assurance Project Plans for all stormwater monitoring locations.
- Inventory new and existing stormwater features.
- Coordinate and implement water cleanup plans.
- Coordinate internal and intergovernmental permit implementation.
- Track permit compliance and develop reporting framework.
- Pay stormwater permit and utility fees.

Did WSDOT work with other governmental entities to satisfy any permit obligations?

In August 2009, WSDOT developed an interagency agreement with Ecology's Environmental Assessment Program (EAP) to help the agency comply with some of the requirements contained in the monitoring section (*S7*) of the permit. As required by *S7.G* of the permit, WSDOT submitted a letter describing this collaborative agreement to Ecology's Water Quality Program (WQP) in September 2009.

Under the agreement, EAP provides technical assistance to WSDOT in planning, designing, and implementing WSDOT's stormwater monitoring program. Technical assistance includes associated project planning and preparation of monitoring Quality Assurance Project Plans (QAPPs). As part of QAPP development, EAP's collaborative efforts focus on site selection, monitoring station setup, development of standard operating procedures, and analytical contracts. Draft QAPPs were submitted to Ecology's Water Quality Program on September 6, 2010.

As part of the collaborative agreement, WSDOT will provide Geographic Information Systems (GIS) analysis, geotechnical assessments and preparation of sites, status reports, and equipment purchases. To fulfill permit requirements, all communications and submittals to Ecology's WQP will come from WSDOT. This interagency agreement between WSDOT and EAP ends on June 30, 2011.

Compliance with standards

How does the permit relate to compliance with standards?

The 2009 WSDOT permit establishes a notification and response requirement under *Special Condition S4 Compliance with Standards*. Condition *S4.F* of the permit addresses discharges from municipal separate stormwater sewer systems (MS4s) that are likely to contribute to or cause a receiving water standards violation. Applicable receiving water standards include:

- Toxicant standards
- Sediment criteria
- Surface water quality standards
- Groundwater quality standards

Why is S4.F important?

When permittees report a receiving water standards violation, as long as they comply with the prescribed process under *S4.F*, Ecology considers them to comply with the discharge authorization conditions of the permit. *S4.F* provides an adaptive management compliance pathway for permittees to address those discharges.

What potential actions can S4.F trigger?

Where standards violations are known to have occurred, WSDOT remains in compliance with *S4* when the following response toward long-term improvements occurs:

- Written notification submitted to Ecology within 30 days of becoming aware, based on credible site-specific information that a discharge is causing or contributing to a known or likely violation of receiving water standards.
- Based upon the *S4.F* notification, Ecology may determine that an adaptive management response by WSDOT is required.

Did WSDOT take any actions pursuant to S4.F of the permit during this reporting period?

No *S4.F* notifications or associated actions occurred during this reporting period.

Chapter 2 Stormwater Program Management

Internal coordination and stormwater management responsibilities

WSDOT Headquarters offices, in consultation with WSDOT's Stormwater Policy Committee (SPC), are responsible for coordinating implementation of the Stormwater Management Program Plan (SWMPP). The SPC assists WSDOT with policy matters related to stormwater management and provides a framework for communication, coordination, and cooperation in the development and implementation of the SWMPP. The SPC meets at least quarterly, and its members include representatives from WSDOT regional offices, the Mega Projects Office, Washington State Ferries, and Headquarters offices that commit or expend resources related to stormwater management.

What is the purpose of the SWMPP?

The permit requires WSDOT to develop and implement an SWMPP, which prescribes the procedures and practices used to reduce the discharge of pollutants in stormwater runoff from storm sewer systems owned or operated by WSDOT. The SWMPP contained in the permit reflects changes in regulations, advancements in stormwater management, and the evolution of WSDOT's procedures and practices.

While WSDOT implements pollution prevention activities statewide, the SWMPP strategically targets resources to address priority stormwater management and water resource issues. It takes into consideration a number of circumstances specific to WSDOT's facilities, operations, and approaches to compliance under the permit. These circumstances include the following:

- It is often inefficient, and in some instances ineffective, for WSDOT to follow the processes used by local jurisdictions to manage runoff from urban land uses. Highway facilities are linear in nature and have the practical limitations of siting and maintaining stormwater treatment facilities within state-owned right of way.
- WSDOT's approach to addressing compliance with permit provisions is tailored to the demands, needs, and physical characteristics of WSDOT's facilities and operations.
- 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.
- When making decisions regarding actions required by 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.

How will WSDOT manage stormwater in the coming year?

Consistent with the SWMPP, WSDOT will continue to carry out the following activities:

- Construct stormwater management facilities
- Erosion and sediment control
- Retrofit highways with stormwater management facilities
- Maintain and operate stormwater management facilities
- Pay stormwater permit and utility fees
- Policy development, training, and public involvement
- Stormwater monitoring and research
- Illicit discharge detection and elimination
- Inventory stormwater features
- Maintain and develop stormwater related databases
- Participation in TMDL processes
- Internal and intergovernmental coordination
- Request(s) adequate funding from the State Legislature for permit implementation

Supporting documents, protocols, and other tools

Are there any proposed changes to the Stormwater Management Program Plan?

WSDOT's Stormwater Policy Committee recommends the following refinements to the SWMPP:

1. **New Products Evaluation**

   Update the SWMPP to reflect the fact that WSDOT eliminated the "New Products Committee" due to budget cuts. As a cost-cutting measure, the approval of new products is now the responsibility of WSDOT's subject matter expert.

2. **Spill Notification Procedures**

   To achieve consistency with the permit notification requirements contained in *General Condition G.3. Notification of Spills*, WSDOT recommends clarifying the procedures by adding language to require immediate notification of illicit discharges and spills in instances that "present a severe threat to human health, welfare, or the environment," "but in no case later than within 24 hours of obtaining that knowledge."

3. **Ditch, Channel, and Culvert Maintenance**

   To more accurately reflect WSDOT's culvert maintenance strategy, WSDOT recommends adding language to clarify that, as a general guideline, culverts are inspected twice a year: once before the fall/winter storms and once after the rainy season has ended. However, WSDOT may inspect culverts more or less frequently based on the culvert's maintenance history.

4. **Reorganization of Responsibilities**

   WSDOT recommends changes to several portions in *Section 8* to reflect the reorganization of stormwater-related research responsibilities within WSDOT.

For full details of WSDOT's proposed wording changes to the SWMPP, see Appendix A.

Were there any significant changes to manuals related to stormwater management?

1. ***Environmental Procedures Manual* (WSDOT, 2010d) – Updated June 2010**

   The NPDES Municipal Stormwater Permit section (540.05) includes updates to reflect the February 2009 issuance of the permit.

2. ***Highway Runoff Manual* (HRM) (WSDOT, 2008b) – Post-publication update May 2010**

   Chapter 3 includes updates in response to the settlement of the appeal of the permit filed in March 2009. The update:

   - Adds new language in *Section 3-4.2* on stormwater retrofit requirements for projects that occur within the Puget Sound Basin and that received Design Approval after July 1, 2010.
   - Makes slight changes to *Figures 3.1, 3.2,* and *3.3* that clarify *Minimum Requirement* applicability at the project and threshold discharge area level.
   - Provides additional instructions on meeting project retrofit obligations off-site.

3. ***Hydraulics Manual* (WSDOT, 2010e) – Updated June 2010**

   Chapter 1 includes the following updates:

   - Adds a schedule stating when specific HRM work should occur in the design process, as well as specifying the documents required for inclusion in the Hydraulic Report.
   - Adds a Web link to the current *Hydraulic Report Outline,* which specifies what should be included in a hydraulic report and includes references to the HRM.
   - Adds a table that specifies which hydrology model and/or programs to use for hydraulic and BMP design (BMP design references the HRM).

Chapter 2 includes the following updates:

- Specifies the appropriate uses for the MGS Flood modeling tool.
- Adds the single-event and continuous simulation methods that reside in the HRM. (In the future, WSDOT plans to remove the data from the HRM so it only resides in the *Hydraulics Manual*.)

4. ***Utilities Manual*** **(WSDOT, 2010b) – Updated March 2010**

Chapter 1, Storm Drainage and Hydraulics, Section 120.05, includes updates adding more specificity in regards to permitting stormwater discharges onto state right of way and into a highway drainage system.

Has the permit been modified or changed significantly?

An environmental advocacy group appealed the newly issued permit in March 2009. WSDOT worked with the Attorney General's Office, Ecology, the Office of Financial Management, the State Legislature (Transportation Committee staff), and the Appellant to agree on terms for settlement. Ecology issued a permit modification in May 2010, which incorporated the settlement terms. The settlement terms, which leave the majority of the original permit language intact, address the following appealed issues:

- **Illicit discharge detection and elimination:** This issue focuses on unauthorized stormwater and other illicit discharges coming from sources outside WSDOT's right of way. WSDOT agreed to make the SWMPP more explicit about its programs and procedures for detection and identification of illicit discharges and illegal connections, as well as what actions will be taken when they are identified.
- **Water cleanup plans (referred to as Total Maximum Daily Loads or TMDLs):** The original permit did not establish specific timelines to add new water cleanup plans/TMDLs to the permit. Under the settlement, Ecology will evaluate new EPA-approved cleanup plans every 18 months. If those plans address pollutants from state highway runoff and include WSDOT-assigned actions in the water cleanup plans, the requirements would be added via a permit modification or administrative order on at least an 18-month cycle.
- **Endangered Species Act (ESA) consultations in western Washington with U.S. Fish and Wildlife Service and NOAA Fisheries (Services):** Federally funded WSDOT projects currently undergo ESA Section 7 consultation with the Services. WSDOT agreed in the settlement to enlist federal Services' review of non-federally funded projects when the projects have potential for stormwater impacts in western Washington areas where ESA-listed species may be affected. The Services committed to a 30-day review and specified that if there is no response within that period, WSDOT may continue on to the construction phase.
- **Stormwater retrofits for existing highways in the Puget Sound Basin:** For highways within the Puget Sound Basin, when WSDOT has an improvement project that includes stormwater treatment for new pavement, WSDOT agreed to retrofit the existing pavement within the same project area, provided stormwater retrofit costs do not exceed 20% of the cost for treating the new pavement. If the 20% threshold is exceeded, WSDOT will retrofit up to the 20% cost threshold, retrofit an equal amount of pavement elsewhere, or transfer an amount of money equal to the 20% cost to help fund stand-alone stormwater retrofits.

How does WSDOT incorporate low-impact development (LID) techniques?

Low-impact development comprises a set of site design approaches and small-scale stormwater management practices that imitate the natural hydrology (or movement of water) of the site.

The HRM's BMP selection process guides WSDOT designers through a process that favors LID techniques over other options. For instance, HRM Figure 5.3.1 directs designers to consider the Natural Dispersion BMP and the Engineered Dispersion BMP as the *first two* BMPs to use on a project. LID techniques are also incorporated in WSDOT's policy to minimize vegetation disturbance and to restore vegetation on disturbed areas in accordance with the *Roadside Classification Plan*.

In support of these LID policy initiatives, WSDOT assembled a team to look into the feasibility of using pervious pavements. Early on, it was determined to be infeasible to use pervious pavements on state highway traffic lanes. However, it may be feasible to use pervious pavements on shoulders or other facilities such as rest areas, ferry terminal holding lanes, and park & ride lots. WSDOT installed a test section at the Anacortes Ferry Terminal to investigate pervious pavement use.

Pervious pavement test installation at the Anacortes Ferry Terminal.

Are there barriers to LID implementation?

In cooperation with the University of Washington's Evans School of Public Affairs, WSDOT sponsored a master's degree student whose thesis explored barriers to LID implementation. The thesis, entitled "Barriers to Implementing Low Impact Development Approaches in Washington State Roadways and Highways" (Miccio, 2010), identified opportunities for and barriers to using LID in a highway environment. One barrier identified was that WSDOT engineers are not familiar with LID techniques. This barrier highlights the need to develop more training to promote LID techniques in HRM training. Another barrier identified was the lack of credit (e.g., to account for flow attenuation) available to WSDOT projects for using LID techniques. We are working with Ecology to change this. We are also conducting our own LID research to improve our understanding of common roadside practices.

Annual stormwater management costs

What does WSDOT annually spend to comply with the municipal stormwater permit?

Exhibit 2-1 summarizes estimated costs associated with permit compliance and Stormwater Management Program Plan implementation based on available fiscal information. These totals represent the best estimates since WSDOT's accounting systems do not track individual costs for many stormwater-related expenditures. Furthermore, generating cost information by county is the most "geographically granular" way to query WSDOT's accounting systems. Thus, WSDOT's accounting systems cannot differentiate between permit-covered urbanized portions within any given county. The chapters that follow describe stormwater management activities in more detail.

Exhibit 2-1 Estimated Costs of Stormwater Management Implementation Activities for FY09 and FY10

Description	FY09 Costs	FY10 Costs
Section 7 ESA consultation (western Washington)	Not available	$0
TMDLs	Not available	$49,000
Maintenance and operations activities (statewide)	$11,225,000	$14,706,000
Erosion and sediment control program support (statewide)	$157,000	$96,000
Stormwater features inventory (statewide)	$371,000	$213,000
Illicit discharge detection and elimination (statewide)	Not available	$71,000
Stand-alone stormwater retrofit prioritization for roadway areas (statewide)	$363,000	$233,000
Design & construction of stand-alone stormwater retrofit projects for roadway areas (statewide)	$868,000	$551,000
Stormwater related training (statewide)	$66,000	$108,000
Updates to the *Highway Runoff Manual,* including related research (statewide)	$609,000	$307,000
Stormwater monitoring for municipal permit compliance	$342,000	$267,000
Annual NPDES municipal stormwater permit reporting	$44,000	$11,000
NPDES Municipal Stormwater Permit fees	$45,000	$46,000
Stormwater utility fees (statewide)	$2,963,000	$804,000
Estimated stormwater mitigation costs to projects[1]	On average, mitigation costs are estimated at 11.5% of the total costs for constructing highway improvement projects.	

[1] Estimate based on the assumption that stormwater-related project costs (including engineering and cost of land) on average amounts to 11.5% of total costs for constructing highway improvement projects. The 11.5% cost factor is derived from analyses contained in the 2009 *Project Environmental Mitigation Costs Case Studies* report (WSDOT, 2009c): http://www.wsdot.wa.gov/publications/fulltext/design/Mitigation/3_09_MitigationReport.pdf. Project case studies occurring in permit covered counties were used to generate the 11.5% cost factor.

Chapter 3 Total Maximum Daily Load (TMDL)

External coordination or management activities

What is a water cleanup plan or TMDL?

The federal Clean Water Act established a process to identify and clean up polluted waters. Under the Clean Water Act, each state is required to have its own water quality standards designed to protect, restore, and preserve water quality (WAC 173-201A).

Water quality data are collected throughout Washington State by local, state, and federal governments, as well as tribes, industries, and citizen's monitoring groups. If water quality data indicate that a water body does not meet the water quality standard for a specific pollutant, a TMDL may be developed.

What is the goal of a TMDL?

Total Maximum Daily Loads are developed to determine the amount of pollutants a given water body (river, marine water, wetland, stream, or lake) can receive and still meet water quality standards. The TMDL identifies pollution problems in the watershed and specifies pollution reduction or elimination targets and strategies to achieve clean water (that is, compliance with water quality standards).

A TMDL for Henderson Inlet Watershed identified this discharge as needing correction. WSDOT will be retrofitting the contributing area with stormwater BMPs.

How are TMDLs implemented?

Ecology works with local communities to plan and conduct water quality technical studies. The studies identify pollution sources and determine to what extent the pollution needs to be reduced or eliminated to meet water quality standards. Implementation strategies are prepared that describe the activities planned or underway to achieve water quality standards. Technical studies and an implementation plan are submitted to the Environmental Protection Agency (EPA) in the form of a proposed TMDL for a given water body. Once a TMDL receives approval by EPA, Ecology must develop a water quality implementation plan. This plan identifies specific tasks, responsible parties, and timelines for achieving clean water. For example, a task may be monitoring to assess the effectiveness of stormwater management activities and overall success of TMDL efforts in meeting water quality standards.

How is WSDOT involved?

WSDOT stormwater discharges covered under the permit require compliance with the 11 EPA-approved TMDLs that are included in Appendix 3 of the permit (see Exhibit 3-2). Most highways predate water quality regulations and were constructed without consideration for the treatment and control of stormwater. Therefore, most of the older surfaces have no facilities to control stormwater flows and remove pollutants.

Will Ecology add more TMDL requirements to WSDOT's permit?

Based on rulings from an appeal of the permit, Ecology issued a permit modification on May 5, 2010, that requires adding newly applicable TMDLs to the permit every 18 months.

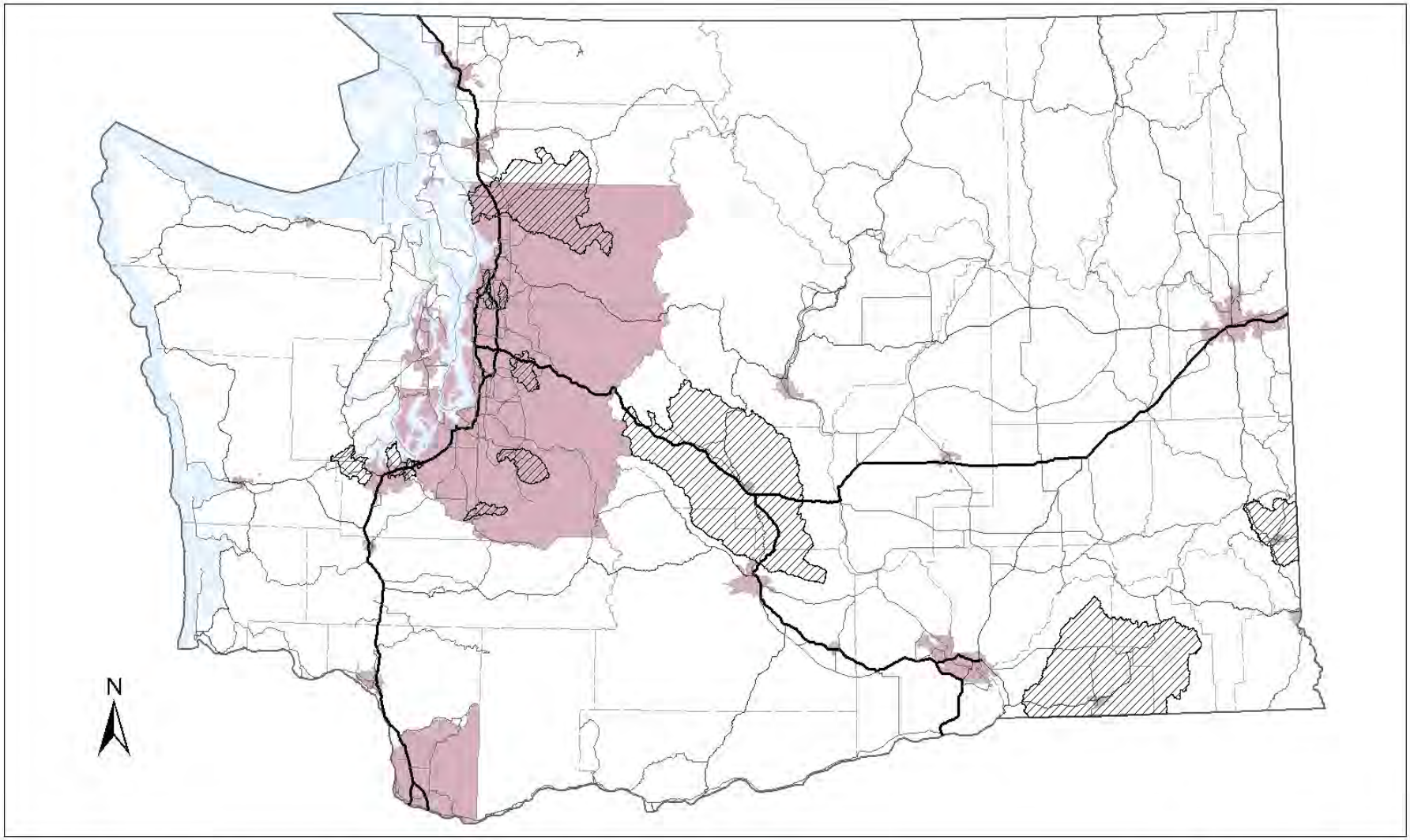
In response to action items contained in the Nisqually Watershed TMDL, WSDOT installed this pet waste station in an area where frequent pet walking on WSDOT property occurs.

What is WSDOT doing to comply with TMDL requirements?

Since permit issuance in February 2009, WSDOT has accomplished the following:

- Developed a strategy to help ensure WSDOT's compliance with TMDLs.
- Coordinated with Ecology to discuss WSDOT's TMDL implementation strategy and future actions.
- Worked with Ecology to identify the geographic scope of each TMDL and its proximity to permit coverage areas.
- Overlaid WSDOT's highway system and other related information within each TMDL's geographic scope.
- Coordinated with Ecology's TMDL Leads on WSDOT-assigned action items for each TMDL and the appropriateness/effectiveness of those action items. Where TMDL obligations appeared to be inappropriate or not effective based on the current state of knowledge, WSDOT collaborated with Ecology to develop more appropriate/effective approaches and implementation timelines.
- Sought funding from the Legislature for TMDL implementation in the 2011–2013 Biennium.
- Developed a draft fecal coliform programmatic approach to help focus WSDOT's efforts and resources on fecal coliform TMDLs.

Exhibit 3-1 Map of Ecology-Defined TMDL Boundaries



Data Source: Ecology Approved TMDL Areas and Permit Areas from WAECY
State Routes from WSDOT at scale of 1:500K
State and County Boundaries from WADNR
Cartography: WSDOT 4/20/2010

0 5 10 20 30 40 50 Miles

Permit Area
Ecology Approved TMDL Areas

Washington State Department of Transportation

Exhibit 3-2 TMDL Implementation Summary

TMDL Name	WSDOT's Required Actions	Implementation Deadlines	Status of Compliance	Other Actions Implemented That Affect Discharges[2]
Henderson Inlet Watershed TMDL	Implement WSDOT's SWMPP and the permit.	Ongoing	Ongoing	Implement pollution prevention measures for state road and highway runoff according to WSDOT's SWMPP and the permit in all applicable permit coverage areas.
	Update WSDOT stormwater facilities at I-5 (southbound I-5, milepost 110).	6/30/2017	Scoping stormwater retrofit	
Issaquah Creek Basin TMDL	Implement stormwater source control BMPs.	2004–2010 timeline	Working with Ecology's TMDL Lead to develop new, more specific action items and timelines	Implement pollution prevention measures for state road and highway runoff according to WSDOT's SWMPP and the permit in all applicable permit coverage areas.
	Implement stormwater treatment BMP.	2004–2010 timeline		
Little Bear Creek TMDL	Implement stormwater source control BMPs.	2005–2010 timeline	Working with Ecology's TMDL Lead to develop new, more specific action items and timelines	Implement pollution prevention measures for state road and highway runoff according to WSDOT's SWMPP and the permit in all applicable permit coverage areas.
	Implement stormwater treatment BMPs.	2005–2010 timeline		
Nisqually Watershed TMDL[1]	Install a pet waste station on the dike at McAllister Creek or close access to the dike.	Completed 2/08, in advance of permit issuance	Completed 3/4/10	Implement pollution prevention measures for state road and highway runoff according to WSDOT's SWMPP and the permit in all applicable permit coverage areas. The I-5/Meridian Rd to Pendleton Ave - Stormwater Retrofit project (from milepost 113.5 to 119.74) is in the process of design and will start construction in summer 2011. $127,919.45 has been spent during the reporting period on design of the stormwater retrofit project.
	Maintain tide gates 1-6 every other year per WSDOT maintenance program.	2010, 2012, 2014	Completed 2/10 and 6/22/10	
	Improve the discharge to McAllister Creek by building bioswales and placing compost on the highway shoulders.	Completed 5/06	Completed 5/06, in advance of permit issuance	

TMDL Name	WSDOT's Required Actions	Implementation Deadlines	Status of Compliance	Other Actions Implemented That Affect Discharges[2]
South Fork Palouse River TMDL[1]	Implement WSDOT's SWMPP and the permit in all Permit areas.	Ongoing	Ongoing	Implement pollution prevention measures for state road and highway runoff according to WSDOT's SWMPP and the permit in all applicable permit coverage areas. The SR 270, Pullman to Idaho State Line project (from milepost 3.69 to 9.89) widened the roadway to provide a five-lane divided highway between Pullman and the Idaho State Line. The project constructed bioinfiltration ponds and swales and created natural dispersion areas to treat stormwater.
	Inventory highway discharge locations within the South Fork Palouse River FC Bacteria TMDL boundary.	Complete by March 2014	Not started yet	
	Implement source identification for fecal coliform within the South Fork Palouse River TMDL boundary.	Complete by March 2014	Not started yet	
	Apply best management practices from SWMPP or perform remediation to correct bacteria discharges.	As needed	Will implement as needed	
	Apply fecal coliform programmatic approach within TMDL boundary.	If determined necessary	Will implement if determined necessary	
	Inspect underside of Highway 195 bridge in Colfax for pigeon nests and feces.	With annual bridge inspection	Will be included in 2011 bridge inspection	
South Prairie Creek TMDL[1]	Implement WSDOT's SWMPP and the permit.	Ongoing	Ongoing	Implement pollution prevention measures for state road and highway runoff according to WSDOT's SWMPP and the permit in all applicable permit coverage areas.
	Inventory highway discharge locations within the South Prairie Creek TMDL boundary.	2010	Work scheduled to begin in July 2010	
	Implement source identification for fecal coliform within the South Prairie Creek TMDL boundary.	2010	Work scheduled to begin after discharge inventory is complete to process data to identify potential sources	
	Apply best management practices from SWMPP or perform remediation to correct bacteria discharges.	As needed	Will implement as needed	
	Apply fecal coliform programmatic approach within TMDL boundary.	If determined necessary	Will implement if determined necessary	
	WSDOT will use $20K to implement discharge inventory, IDDE, and source identification beginning July 2010. Any remaining money will be used to remediate fecal coliform sources within the right of way or, if needed, to implement the fecal coliform programmatic approach.	2010	Work scheduled to begin in July 2010 – Funds remaining after discharge inventory will be spent on illicit discharge follow-up and source remediation	
	Participate in annual adaptive management meetings.	Annually	Completed 1/12/10	

TMDL Name	WSDOT's Required Actions	Implementation Deadlines	Status of Compliance	Other Actions Implemented That Affect Discharges[2]
Stillaguamish River & Portage Creek TMDL	Address required fecal coliform reductions in Portage Creek, Pilchuck Creek, March Creek, Armstrong Creek, and at the North Fork of the Stillaguamish River at its confluence with South Fork.	2013	Working with Ecology's TMDL Lead to develop new, more specific action items and timelines	Implement pollution prevention measures for state road and highway runoff according to WSDOT's SWMPP and the permit in all applicable permit coverage areas. The SR 9 Schloman Rd to 258th NE and 268th St NE Intersection project constructed infiltration trenches and retention/detention ponds to treat stormwater.
	Address dissolved oxygen impairments at Portage Creek, Pilchuck Creek, and March Creek.	2013		
	Take pollution prevention steps to ensure highway storm drains do not convey excessive bacteria, nutrients, and oxygen-demanding materials or that treatment occurs prior to discharge.	2013		
Swamp Creek TMDL	WSDOT is encouraged to evaluate the potential for using bioretention and other techniques in right of ways to reduce stormwater volumes in areas addressed by this TMDL. Where research shows this approach is feasible, WSDOT should work with Ecology to develop a plan to implement this strategy in areas affected by this and other bacterial TMDLs.	2007–2017	Working with Ecology's TMDL Lead to develop new, more specific action items and timelines	Implement pollution prevention measures for state road and highway runoff according to its SWMPP and the permit in all applicable permit coverage areas.
	WSDOT is encouraged to evaluate, and implement where feasible, construction techniques that promote stormwater infiltration, such as the use of permeable pavement surfaces. Both new construction and retrofit applications should be examined.	2007–2017		
Totten/Eld Inlets Tributaries TMDL[1]	WSDOT will implement pollution-prevention measures contained in its SWMPP to ensure the drainage from Hwys. 101, 108, and 8 does not convey excessive bacteria to adjacent water bodies.	2014	Working with Ecology's TMDL Lead to modify this action item and develop a new timeline	Implement pollution prevention measures for state road and highway runoff according to its SWMPP and the permit in all applicable permit coverage areas.
	Address drainage issues affecting Schneider Creek.	2014	Completed May 2006, in advance of permit issuance	

TMDL Name	WSDOT's Required Actions	Implementation Deadlines	Status of Compliance	Other Actions Implemented That Affect Discharges[2]
Upper Yakima TMDL	Continue to maintain roads and roadside ditches to prevent entry of sediment into area waterways.	Ongoing	Ongoing	Implement pollution prevention measures for state road and highway runoff according to WSDOT's SWMPP and the permit in all applicable permit coverage areas. The I-82/Selah Creek to Yakima - Paving project created natural dispersion areas to treat stormwater. The US 2/97 - Baker Flats to Orondo Paving & Passing Lane project constructed low-impact development BMPs, and created natural dispersion areas to treat stormwater.
Walla Walla TMDL	Increase infiltration along SR 12 plus an additional 5 acres.	2008–2011	Working with Ecology's TMDL Lead to modify this action item and develop a new timeline	Implement pollution prevention measures for state road and highway runoff according to WSDOT's SWMPP and the permit in all applicable permit coverage areas.
	Continue to maintain roads and roadside ditches to prevent entry of sediment into area waterways.	Ongoing	Ongoing	
	Implement SWMPP per WSDOT's permit.	Ongoing	Working with Ecology's TMDL Lead to modify this action item and develop a new timeline	

[1] See the additional information pertaining to TMDLs below.

[2] "Other actions" include project-driven BMP installation, pollution-prevention activities, post-construction stormwater monitoring information, funds provided for stormwater mitigation, independent stormwater retrofit projects where BMPs were installed, and completed roadway expansion projects with possible adverse impacts within a TMDL boundary between 3/6/09 and 6/30/10 (Ratcliff, 2010h). No completed roadway expansion projects with possible adverse impacts are listed because WSDOT policy and the interagency agreement between WSDOT and Ecology require all roadway expansion projects to mitigate adverse stormwater impacts per 2008 *Highway Runoff Manual* requirements.

Additional information pertaining to the TMDLs listed in Exhibit 3-2

- **Henderson Inlet Watershed TMDL:** Ecology added this TMDL to WSDOT's permit in the May 2010 permit modification. WSDOT met and corresponded with Ecology to modify the WSDOT action items contained in the Water Quality Implementation Plan (Hempleman, 2008). Since the TMDL boundary is completely within applicable permit areas, WSDOT implements SWMPP requirements within the whole TMDL boundary rather than just in the areas affecting the prescribed storm drains. Also, the permit requirement to "monitor to ensure water quality standards are met," which is contained in the Water Quality Implementation Plan (Hempleman, 2008), will be completed by Ecology when it performs TMDL effectiveness monitoring. Instead of conducting the actual monitoring, WSDOT will focus on constructing stormwater treatment at the specific discharge points to Woodland Creek (no treatment is currently provided) in an effort to reduce pollutants (Ratcliff, 2010a & b).

- **Nisqually Watershed TMDL:** WSDOT did not meet the timeline identified to install a pet waste station and did not attend the 2009 adaptive management meeting for reasons described in WSDOT's 2/5/10 letter to Ecology (WSDOT, 2010a) (see Appendix B). WSDOT installed the pet waste station in March 2010 (see Exhibit 3-2 and photo on page 3-2). WSDOT met with Ecology on 6/15/10 to discuss department action items and timelines. As a result of that meeting, WSDOT added an action item, "Improve the discharge to McAllister Creek by building bioswales and placing compost on the highway shoulders," which is not contained in the Nisqually TMDL Implementation Actions table of the Water Quality Implementation Plan (James, 2007), but appears elsewhere in the document (Ratcliff, 2010c). WSDOT completed this action item in May 2006 by providing treatment where none previously existed in an effort to reduce pollutants. Following the 6/15/10 WSDOT/Ecology meeting, the action item, "Discharges of stormwater conveyances owned or managed by WSDOT must meet Washington State water quality standards," was reassigned to Ecology and will occur when Ecology performs TMDL effectiveness monitoring (Ratcliff, 2010d).
- **South Fork Palouse River TMDL:** Ecology added this TMDL to WSDOT's permit in the May 2010 permit modification. WSDOT corresponded with Ecology to modify the WSDOT action items contained in the Water Quality Improvement Report (Carroll & Snouwaert, 2009). These action items will appear in the Water Quality Implementation Plan when completed (Ratcliff, 2010e).
- **South Prairie Creek TMDL:** WSDOT did not meet the action item timelines identified in the TMDL's Detailed Implementation Plan (Seabrook, 2006) for reasons described in WSDOT's 2/5/10 letter to Ecology (WSDOT, 2010a). Ecology and WSDOT met on 5/25/10 to develop more appropriate/effective action items and timelines based on the current state of knowledge. Exhibit 3-2 includes the new action items and timelines for WSDOT (Ratcliff, 2010f).
- **Totten/Eld Inlets Tributaries TMDL:** Ecology determined that the action item, "Evaluate the effectiveness of stormwater facilities at Steamboat Island Interchange," which is contained in the Water Quality Implementation Plan (Hempleman, 2007), is no longer applicable for WSDOT based on sampling being conducted by others in the area (Ratcliff, 2010g).

WSDOT has no information to report for the following items:

- No actions or load reduction strategies assigned to WSDOT were performed by other entities during the reporting period.
- To our knowledge, no post-construction monitoring occurred within TMDL areas during the reporting period.
- No monitoring associated with WSDOT's TMDL implementation occurred during the reporting period.

How is WSDOT participating in developing TMDLs?

WSDOT's permit encourages participation in developing TMDLs. WSDOT coordinated with Ecology's TMDL staff on the following TMDLs under development:

- **Burnt Bridge TMDL** (fecal coliform, dissolved oxygen [DO], & temperature): WSDOT will participate in this developing TMDL as needed and as resources allow.
- **Deschutes River TMDL** (DO, fecal coliform, PCBs, pH, phosphorus, and temperature): WSDOT attended a meeting in January 2010. WSDOT will participate in this TMDL development process as needed and as resources allow.

- **Drayton Harbor TMDL** (fecal coliform): WSDOT provided comments to Ecology on the draft Water Quality Improvement Report on 6/28/10.
- **Hangman Creek Watersheds TMDL** (fecal coliform): WSDOT worked with Ecology to develop action items that Ecology intends to assign to WSDOT in the finalized Hangman Creek Watersheds TMDL.
- **Little Klickitat TMDL** (temperature): Received confirmation in June 2010 from Ecology that it will not assign specific action items to WSDOT, but that future WSDOT projects in the area that will impact the parameter of concern should keep the TMDL goals in mind.
- **Methow River TMDL** (temperature): Ecology informed WSDOT that this TMDL is "straight to implementation," and Ecology will not assign WSDOT any implementation actions. WSDOT has been encouraged to improve stream conditions if opportunities arise in the future on a planned highway project.
- **Naches River TMDL** (temperature): WSDOT will review the draft report when available.
- **Oakland Bay TMDL** (fecal coliform & temperature): WSDOT staff attended two Oakland Bay TMDL meetings, one of which included an Illicit Discharge Detection and Elimination presentation by WSDOT staff. WSDOT will participate in this TMDL development process as needed and as resources allow.
- **Palouse River TMDL** (fecal coliform): WSDOT worked with Ecology to develop action items that Ecology intends to assign to WSDOT in the finalized Palouse River TMDL.
- **Teanaway River TMDL** (temperature): WSDOT made an inquiry to Ecology regarding the status of this TMDL in April 2010.
- **Tuccannon River & Pataha Creek TMDL** (temperature): WSDOT learned that a draft report out for public comment contained a proposed action item for WSDOT. WSDOT provided a comment letter to Ecology on 6/16/10, which included concerns about the assigned action item because the action addressed sediment rather than the pollutant of concern (temperature). The letter proposed an alternative action item for WSDOT.
- **Upper Yakima River Tributaries TMDL** (temperature): WSDOT plans to review the draft technical report when available (early 2011).
- **Wenatchee River TMDL** (temperature): WSDOT made an inquiry to Ecology as to the status of this TMDL in April 2010.
- **Whatcom Creek TMDL** (fecal coliform): WSDOT spoke to Ecology regarding the status of this TMDL in April 2010 and was given a summary of the proposed WSDOT action items. WSDOT will review the draft report when it is available.
- **Yakima River Conventionals TMDL** (temperature): Ecology informed WSDOT that a technical report for this TMDL is three to four years out.
- **Yakima Toxic Project TMDL** (pesticides & PCBs): Ecology will notify WSDOT when draft documents are ready for review.

Chapter 4 Maintenance and Operations

Why is maintenance important for stormwater management?

Maintenance and operations programs are essential for maximizing roadway safety, prolonging the life of highways, and ensuring stormwater best management practices (BMPs) perform at maximum efficiency. Roadway maintenance activities also protect water quality and wildlife habitat. For example, keeping drainage culverts clean prevents flooding that can damage highways and cause accidents. Additionally, cleaning culverts prevents sediment and debris from entering streams and degrading water quality and fish habitat. Maintenance activities are important components of WSDOT's overall program for protecting water quality.

Most maintenance activities that keep highways clean and safe also protect water quality.

What does it cost?

WSDOT spent approximately $11,214,000 in FY09 and $14,695,000 in FY10 on highway maintenance activities that protect water quality and control flow rates statewide.

Maintenance for operating highways

What stormwater maintenance activities does WSDOT perform?

WSDOT's 2009 Stormwater Management Program Plan discusses the following key stormwater-related maintenance and operations activities associated with proper management of stormwater. This chapter describes the progress toward the implementation of each of these activities.

- Road, drainage system, and stormwater facility cleaning
- Roadside and facility vegetation management
- Snow and ice control
- Non-roadway drainage system and stormwater facility cleaning
- Stormwater-related training

Several other maintenance program activities, not directly associated with implementation of the permit, are in place to enhance the protection of water quality and habitat. These include a Sensitive Area Mapping program, habitat protection guide, and training program regarding endangered species protection.

Maintenance activities prevented this material from entering waterways in the Tumwater area.

What benefits are provided by road, drainage system, and stormwater facility cleaning?

Street Cleaning

Because stormwater flows over pavement and road shoulders as well as through catch basins, culverts, ditches, ponds, and vaults on its way to receiving waters, it is important to clean these structures. General cleaning of facilities and structures:

- Prevents trash, debris, and accumulated sediments from entering receiving waters.
- Controls stormwater flow volumes and velocities by removing trash, debris, and accumulated sediments.
- Maximizes the effectiveness of the treatment system.
- Prevents roadway flooding.
- Improves driver safety by keeping road surfaces clean.

The most efficient means of keeping drainage systems clean and ensuring the effectiveness of stormwater systems is to minimize the amount of sediment entering them. Thus, the bulk of stormwater-related maintenance costs are for sweeping road surfaces and cleaning out ditches and catch basins. These activities reduce the need to clean all the other drainage and treatment structures. Exhibit 4-1 summarizes the estimated statewide costs associated with these cleaning activities during FY09 and FY10.

Exhibit 4-1 Estimated Drainage and Stormwater System Maintenance Costs

Management Strategy	Activity	FY09 Cost	FY10 Cost
Reduce amount of pollutants entering drainage systems	Sweeping	$3,345,000	$3,938,000
	Shoulder buildup removal and regrading	$1,009,000	$1,959,000
	Jersey barrier scupper cleaning	$84,000	$103,000
Maintain drainage systems to keep water clean and prevent system failures	Ditch cleaning	$2,774,000	$3,461,000
	Catch basin inspection, cleaning, and repair	$1,746,000	$2,127,000
	Culvert inspection, cleaning, and repair	$2,188,000	$2,968,000
Maintain stormwater treatment facilities to ensure optimal performance	Pond maintenance	$49,000	$102,000
	Vault maintenance	$19,000	$37,000
	Totals	**$11,214,000**	**$14,695,000**

How does WSDOT measure maintenance performance?

The Maintenance Accountability Process (MAP) tool measures and communicates the outcomes of maintenance activities. It provides the tools to link strategic planning, the budget, and maintenance service delivery. Once a year, the department conducts field inspections on randomly selected sections of highway. WSDOT measures, records, and compares the results to the MAP criteria to determine the level of service (LOS) delivered.

In this photo, a WSDOT worker scoops leaves and other debris away from a catch basin so stormwater can drain from the roadway.

What criteria does WSDOT use to determine the level of service delivered?

WSDOT reports level of service on a scale from "A" through "F." Exhibit 4-2 shows the general definition of each LOS.

Exhibit 4-2 Level of Service Definitions

LOS	General Definition
A	Very high-maintenance service level in which the roadway and associated features are in excellent condition. All systems are operational and users experience no delays.
B	High-maintenance service level in which the roadway and associated features are in good condition. All systems are operational. Users may experience occasional delays.
C	Medium-maintenance service level in which the roadway and associated features are in fair condition. Systems may occasionally be inoperable and not available to users. Short-term delays may be experienced when repairs are being made, but would not be excessive.
D	Low-maintenance service level in which the roadway and associated features are kept in generally poor condition. Systems failures occur because it is impossible to react in a timely manner to all problems. Occasionally delays may be significant.
F	Very low-maintenance service level in which the roadway and associated features are kept in poor and failing condition. A backlog of systems failures would occur because it is impossible to react in a timely manner to all problems. Significant delays occur on a regular basis.

How well did WSDOT perform?

For the 2009–11 Biennium, WSDOT modified MAP level of service targets to better align LOS expectations with the budget appropriated by the Legislature. Infrastructure added from highway construction projects, inflationary cost increases, and growing program requirements have increased the cost of program delivery, while the maintenance program budget has not kept pace. This issue was highlighted in a January 2008 State Auditor's report. MAP inspections determined that WSDOT met the LOS targets for maintaining ditches, detention/retention basins, and catch basins during calendar year 2009. However, WSDOT missed the LOS target for maintaining culverts in 2009. Culvert maintenance received funding at a D+ level, and accountability inspection showed the statewide service level delivered was a D-.

The Legislature provided an additional $1.5 million in the 2009–11 Biennium to reduce the backlog of culvert maintenance. As this additional work on culvert maintenance is completed, an increase in LOS delivery is expected. The 2009–11 maintenance backlog funding request did not include additional funding for catch basin maintenance, as money to meet permit requirements for catch basins was part of a separate 2009–11 budget request. Neither catch basin maintenance, nor most other major NPDES compliance budget requests, were funded in the 2009–11 budget.

MAP inspection data for calendar year 2010 are not yet available.

What are WSDOT's plans for future inspection and maintenance of stormwater BMPs?

WSDOT requested funding for the 2009–11 Biennium to increase inspection and maintenance of stormwater BMPs in the NPDES permit areas. However, the Legislature did not provide funding to implement this program. The requirement to annually inspect stormwater BMPs and correct deficiencies as they are discovered does not go into effect until March 2012. WSDOT intends to request funds to implement this program during the 2011–13 budget cycle.

How much did WSDOT spend to correct deficiencies?

WSDOT spent approximately $68,000 in FY09 to correct stormwater pond and vault deficiencies. In FY10, this same type of work totaled approximately $139,000.

WSDOT is exploring alternatives to using herbicides to maintain a bare-ground strip along the edge of pavement.

When grass vegetation grows unchecked along the edge of pavement, the resulting build-up traps water on the pavement and concentrates discharge at low points such as this.

Vegetation Management

How does WSDOT manage roadside and facility vegetation?

State and local laws require the control of noxious weeds.

Undesirable vegetation includes state- and county-designated noxious weeds, as well as trees, brush, and any other plants that encroach upon traffic operations. Such plants create safety concerns, can damage the roadway surface, and can create problems for surrounding land use and agriculture. Uncontrolled vegetation can quickly reduce sight distance and hide traffic signs, light poles, fog lines, and guardrails.

Herbicide use is a component in WSDOT's Integrated Vegetation Management (IVM) Plans to control vegetation. However, minimizing herbicide application is an important element of these plans to reduce the risk that these products could enter nearby waters and result in degraded water quality and wildlife habitat. WSDOT tracks herbicide use by location and date; type of herbicide used; total amount of herbicide used; and number of acres treated.

WSDOT uses Integrated Vegetated Management to manage the vegetation along highways and at rest areas, maintenance facilities, and stormwater facilities. In accordance with the IVM process, WSDOT controls undesirable roadside vegetation while establishing desirable, mostly native, low-maintenance plant communities. This process gradually improves the overall health of the roadside while reducing long-term maintenance costs and minimizing the need to use herbicides. For more information on WSDOT's IVM Program, visit: http://www.wsdot.wa.gov/maintenance/roadside/vegetation.htm

Exhibit 4-3 summarizes the acres of WSDOT property treated and the quantities (pounds of active ingredient) of herbicide used statewide in FY09 and FY10.

Exhibit 4-3 Statewide Herbicide Use and Acres Treated for FY09 and FY10

Total Acres Treated	Active Ingredients Applied
July 1, 2008 – June 30, 2009 = 22,946	July 1, 2008 – June 30, 2009 = 35,041 lbs
July 1, 2009 – June 30, 2010 = 23,986	July 1, 2009 – June 30, 2010 = 42,740 lbs

Since vegetation varies greatly across the state, local IVM plans exist for each maintenance area. The plans describe maintenance priorities, management techniques specific to local conditions, and documented methods that reduce reliance on herbicides. Each year WSDOT reviews and revises these plans based on observations and accomplishments. With the implementation of the IVM process and area IVM plans, statewide herbicide use decreased by over 70% between 2003 and 2007.

The amount of herbicide use increased slightly between FY09 and FY10 due to the expanded use of herbicides to maintain a vegetation-free strip along the edge of pavement in select locations. This shift occurred because of findings from a five-year study (completed this year) that compares the life cycle benefit-cost of different pavement edge vegetation management approaches. The report, entitled "Assessment of Alternatives in Vegetation Management at the Edge of Pavement" (WSDOT, 2010c), demonstrates that in certain situations, maintenance of a narrow vegetation-free strip is advantageous in terms of cost, efficiency, safety, and stormwater management. This is because the narrow vegetation-free strip is more conducive to generating even sheet flow of highway runoff, which results in better filtration of pollutants.

The study also found that there are design configurations of the pavement edge and nonpaved shoulder that will allow for stormwater sheet flow without the maintenance of a vegetation-free strip. WSDOT will implement these types of designs wherever possible in conjunction with new construction and pavement preservation projects.

How does WSDOT remove snow and ice from the roadway?

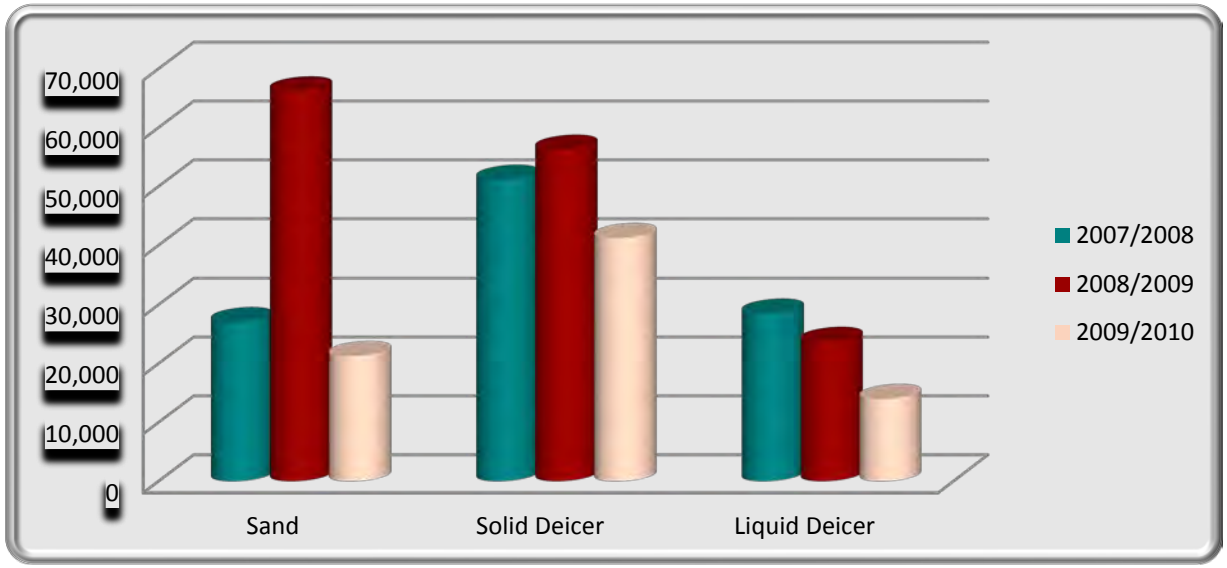
Snow and ice control involves a combination of mechanical plowing and the application of chemical deicers and/or sand to the roadway. Exhibits 4-4 and 4-5 summarize the quantities associated with chemical and sand use. WSDOT established a Chemical Priority Program for the purpose of reducing the overall application of sand into the environment. Chemical deicers work more effectively than sand and do not require cleanup.

A Mt. Baker snowplow clears the road

Exhibit 4-4 Summary Table of Deicer and Sand Use in Tons

Period	Sand	Solid Deicer	Liquid Deicer
2007/2008	27,060	51,150	28,500
2008/2009	66,175	56,261	23,709
2009/2010	21,286	41,225	13,982

Exhibit 4-5 Graph of Deicer and Sand Use in Tons



How much does it cost to control snow and ice on the roadways?

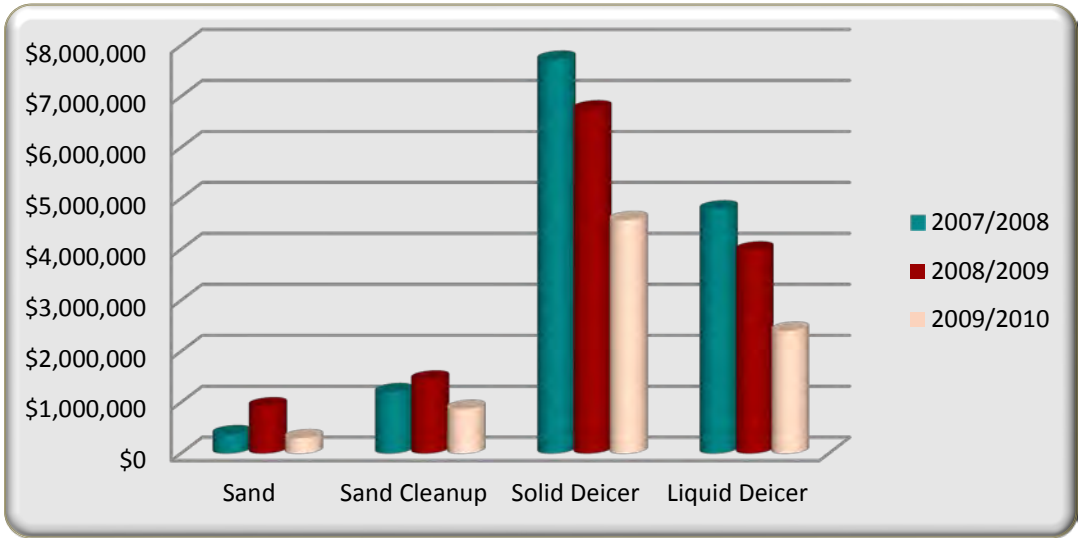
Material costs for snow and ice control vary widely with the relative severity of any given winter season. Exhibits 4-6 and 4-7 summarize the costs associated with chemical and sand use and sand cleanup. WSDOT strives to keep chemical deicer and sand use to the minimum necessary to achieve service-level goals. We accomplish this through operator training, the use of precision material controllers, accurate calibration of application equipment, and performance measurement of storm response actions. We also use only deicer products that are on the Pacific Northwest Snowfighters (PNS) Qualified Products List (QPL). PNS is a consortium of northwest states and provinces dedicated to the testing and evaluation of deicer products. Products on the QPL must meet stringent environmental standards, as detailed in the PNS General Specifications at: http://www.wsdot.wa.gov/partners/pns/pdf/PNSSPECS.pdf

For more information on the WSDOT Snow and Ice Program, visit: http://www.wsdot.wa.gov/winter/

Exhibit 4-6 Summary Table of Estimated Costs Associated with Deicer and Sand Use

Period	Sand	Sand Cleanup	Solid Deicer	Liquid Deicer
2007/2008	$379,000	$1,204,000	$7,724,000	$4,788,000
2008/2009	$926,000	$1,452,000	$6,751,000	$3,983,000
2009/2010	$298,000	$871,000	$4,576,000	$2,405,000

Exhibit 4-7 Graph of Estimated Costs Associated With Deicer and Sand Use



What does WSDOT do to clean up trash along the roadways?

This newly constructed street-sweeping/prewash area at the Mottman maintenance facility represents a capital improvement to help contain dirt & debris removed from roadways.

The WSDOT Litter Program, which includes the statewide Adopt-A-Highway (AAH) Program, helps prevent trash from entering our waterways. The AAH Program fosters greater environmental awareness and a sense of stewardship among thousands of volunteers. WSDOT also partners with the Departments of Ecology and Corrections in litter pick-up efforts by the Ecology Youth Corps and inmate labor. The department spends approximately $2 million each year to dispose of the litter collected on roadways statewide by these various groups (see Exhibit 4-8). From 2007–2009, WSDOT alone picked up and disposed of approximately 6,075 tons of litter and debris.

WSDOT and Ecology have also partnered in an effort to attract more business sponsors and volunteers to the AAH Program in order to increase the percentage of state highway miles being cleaned (currently about 33%) by the AAH Program. Business sponsors have contractors pick up litter in their adopted areas six times per year, while volunteers agree to a pick-up schedule of four times per year. An emphasis on reporting is a large part of this effort, so that WSDOT managers have accurate data to verify the results of litter pick-up activities.

For more information on WSDOT's litter cleanup programs, visit: http://www.wsdot.wa.gov/maintenance/roadside/litter.htm

Exhibit 4-8 Summary Table of Litter Collection Activities

FY09	FY10
$2,130,000	$2,415,000
3,341 tons	3,621 tons
33,411 cubic yards	36,207 cubic yards

Maintenance of non-roadway areas (rest areas, park & ride lots, and maintenance facilities)

How does WSDOT prevent pollution in areas outside the roadway?

The permit requires development of individual Stormwater Pollution Prevention Plans (SWPPPs) for maintenance facilities, rest areas, and WSDOT-maintained park & ride lots located within the permit coverage areas. A few sites without a stormwater conveyance system or those discharging into a combined sewer system do not require plans. In advance of the permit's deadlines, WSDOT developed SWPPPs for 30 of the 31 maintenance facilities and all 11 of the required park & ride lots. Where needed, the SWPPPs identified capital structural control and treatment BMPs. WSDOT ranked these capital improvements on a statewide priority basis (see Exhibit 4-9).

Exhibit 4-9 Estimated Capital Improvement Costs for Rest Areas and Maintenance Facilities During FY09 and FY10

Location	Capital Improvements Completed in Permit Coverage Areas During FY09
Smokey Point Safety Rest Area Southbound	Installed oil and water separator to existing storm drain system – $9,000
Gee Creek Safety Rest Area Southbound	Installed two oil and water separators to the existing storm drain system – $30,500
Mottman Section Maintenance Facility	Constructed new street sweeping storage pad and truck/equipment prewash area – $35,000
Pines Section Maintenance Facility	Constructed new street sweeping storage pad and expanded pavement around salt storage building – $27,500
Total	$102,000
Location	**Capital Improvements Completed in Permit Coverage Areas During FY10**
Mount Vernon Area Maintenance Facility	Constructed secondary containment around liquid deicer tanks – $13,000
Mount Vernon Area Maintenance Facility	Connected shop drains and wash bay to sanitary sewer – $11,500
Pines Section Maintenance Facility	Constructed new vehicle wash building – $40,000
Willows Section Maintenance Facility	Connected shop drains to sanitary sewer – $8,000
Willows Section Maintenance Facility	Constructed new salt shed – $30,000
Total	$102,500

When will SWPPP inspections begin?

To gain a head start on pollution prevention activities in FY10, stormwater site inspections began early and are performed approximately every six months for maintenance facilities and WSDOT-maintained park & ride lots with SWPPPs. WSDOT documents the results immediately after each inspection. Inspections occurred at all facilities with completed SWPPPs one time each between January and April 2010.

Maintenance training program for operating highways

What stormwater management training do maintenance employees receive?

WSDOT's training tracking system and Regional Seniority Report queries determined that 13 new permanent maintenance employees were hired between March 1, 2009, and July 31, 2009. The permit requires new hires to attend the Maintenance Academy within one year of employment. Maintenance Academy courses include “First Responder Awareness” and “Environmental Species Act Field Maintenance Crew Overview” (ESA 102). Records show that all 13 of the new employees attended the Maintenance Academy within one year of employment.

WSDOT also provided SWPPP training to staff at all thirty maintenance facilities with completed stormwater pollution prevention plans within three months of finalizing the SWPPPs. At those 30 facilities, we trained 517 individuals. Starting in 2011, we will conduct (as necessary) additional annual training at each facility to train existing staff and new employees who have not yet received this training.

Maintenance for operating ferry terminals

How does WSDOT's permit affect ferry terminals?

The permit regulates stormwater management at 11 ferry terminals and requires Washington State Ferries (WSF) to conduct business in a manner that prevents pollutants from contaminating stormwater. The permit expands maintenance requirements for stormwater facilities at ferry terminals and increases the resources needed for equipment, monitoring, and personnel. During FY09 and FY10, approximately $11,000 per year was spent on stormwater operation and maintenance activities at ferry terminals statewide. WSDOT will prepare and implement a generic SWPPP for the designated ferry terminal facilities. The permit requires Ferries staff to attend training in SWPPP implementation as well as spill containment and cleanup. The permit also requires WSDOT to conduct water quality monitoring at one of the terminals.

How does the Safety Management System help to manage stormwater?

The WSF Safety Management System (SMS) incorporates the programmatic components of safety, security, environmental, emergency preparedness, and response. Within the SMS is an embedded Environmental Management System (EMS), which stresses continual improvement and a systematic set of procedures and policies for activities (such as stormwater management) with associated environmental risks. The EMS contains specific procedures that protect stormwater quality. WSF integrated these procedures into the SMS manuals in FY09.

Will WSF integrate ferry terminal SWPPPs into the EMS?

WSF is currently:

- Creating a generic SWPPP for all ferry terminals.
- Working on budget and coordination for the task (which involves many different groups at WSF).
- Planning to incorporate a stormwater procedure into the *Terminal Operations Manual No. 10*.

What type of stormwater training does WSF staff receive?

Requirements contained in three NPDES (Clean Water Act) permits guide WSF's stormwater training approach: WSDOT Municipal Stormwater Permit, Eagle Harbor Industrial Stormwater Permit, and Vessel General Permit.

No one training class can meet all the training requirements of the above permits and the operational requirements of keeping nearly 500 scheduled sailings a day. As a result, WSF takes a programmatic approach to stormwater training that, over time, will fulfill permit requirements and operational needs.

How many WSF staff received training in spill containment, cleanup, and stormwater control procedures?

A Washington State Ferry pulls into Colman Dock in this photo. Stormwater generated by impervious surfaces at ferry terminals is now regulated by WSDOT's NPDES Municipal Stormwater Permit.

- 96% of Ferry Terminal staff received Spill Prevention Training and an introduction to Stormwater and the Clean Water Act.
  This percentage accounts for 339 employees identified, of which 326 actually received some form of training. The annual Human Resources Safety and Security Seminar presented this training in the "self-taught" format. The U.S. Coast Guard annually requires Spill Prevention and Control Training. This training is taught to all new employee classes. In the future, Stormwater Pollution Prevention Training will be also be taught to new classes.
- 95% of Eagle Harbor Maintenance Facility staff received Spill Prevention Training for all three of the WSF permits (Vessel General Permit, WSDOT Municipal Stormwater Permit, and Eagle Harbor Industrial Stormwater General Permit). The training consisted of an hour presentation on the concepts and a half-hour walk through the site to discuss specific areas, issues, and BMPs. The training occurred in eight separate classes between June and August of 2010. Eagle Harbor employees received this priority training because they work at all terminals.
- Over approximately 10 years, 80% of the Terminal Engineering staff has received some form of training that addresses stormwater. Terminal Engineering identified 28 staff that need SWPPP training, none of whom have had specific Stormwater Pollution Prevention Training. Terminal Engineering has not adopted the SMS, so SMS policy and procedural training on spill prevention, materials control, and management (among others) does not apply.
- Lastly, approximately 75% of the managers and administration at WSF Headquarters received WSDOT Municipal Permit Stormwater Requirements training in 2009.

Chapter 5 Construction Stormwater Pollution Prevention

Erosion is the movement of soil by water and wind. Bare soil erodes faster than soil covered with plants. Large highway construction projects expose and move significant amounts of soil, thereby greatly increasing the potential for erosion. Severe erosion increases the cost of highway construction projects and the time needed to complete them. It also damages adjacent properties and degrades the quality of water and wildlife habitat.

Construction site erosion control

Why is WSDOT concerned about erosion?

WSDOT's Erosion Control Program aims to minimize construction site erosion. The benefits of good erosion control include cleaner water, reduced construction costs, fewer delays, and reduced risk of damage to adjacent properties and fish habitats. WSDOT continually works to improve erosion control performance through implementation of our environmental management system (see Exhibit 5-1).

The Erosion Control Program is designed to:

- Train site designers and inspectors to be proactive about erosion prevention.
- Provide training and technical assistance to construction staff.
- Develop contracts to ensure construction contractors provide effective erosion control.
- Perform statewide erosion control inspections.
- Monitor water quality during construction to ensure compliance with stormwater permit requirements.
- Notify Ecology when problems occur, in accordance with WSDOT's environmental compliance assurance procedures (ECAP), so that Ecology inspectors can provide additional support.

This photo shows the most damaging form of erosion (gully erosion) occurring at the end of a bridge deck.

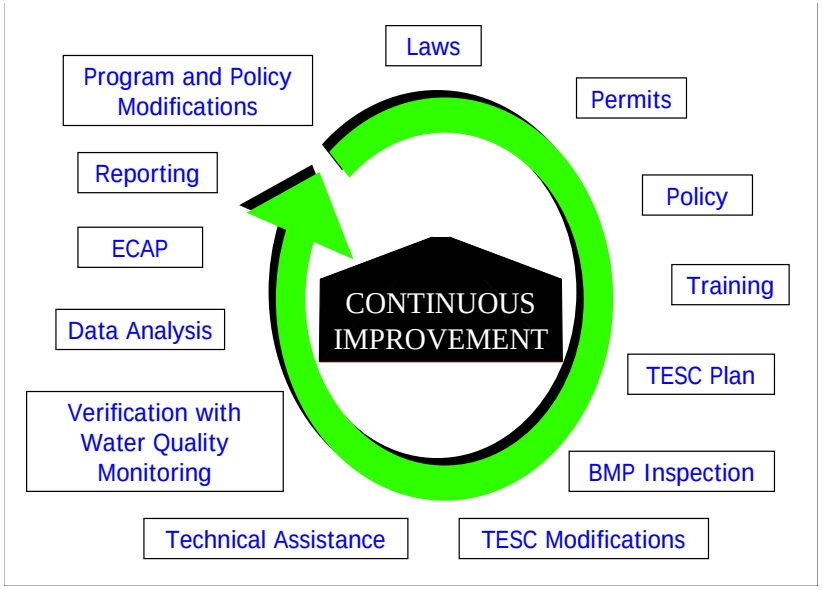
What is a TESC Plan?

WSDOT's construction stormwater permits require the development of temporary erosion and sediment control (TESC) plans. These plans establish when and where specific BMPs will be used to prevent erosion and protect water quality. Erosion control BMPs fall under three general categories:

- Design (such as minimizing disturbance)
- Procedural (such as phasing project work)
- Physical (such as silt fence and straw mulch)

WSDOT uses these BMPs in combination to prevent erosion or remove sediment from water. WSDOT developed a program to increase the effectiveness of TESC plans for construction projects. Core parts of the program are shown in Exhibit 5-1.

Exhibit 5-1 Environmental Management System



Proper control of site erosion starts with a good site design. Trained designers develop plans that include all the BMPs needed to prevent erosion. WSDOT created a TESC Planning Tool for developing TESC plans that assists designers in preparing more complete and contractually enforceable plans.

WSDOT considers it important to give contractors clear guidance on how to implement TESC plans. To this end, we developed standardized instructions (called the *Standard Specifications*) to include in contract documents. Projects requiring specialized solutions prepare more detailed contract specifications. WSDOT's erosion control specialists also help designers find solutions for unusually difficult situations.

To ensure designers and contractors are using the most effective, reliable erosion control BMPs, we routinely evaluate new products. Products that meet Ecology and WSDOT's specifications are added to a master list of approved materials called the Qualified Products List. This list helps designers and builders more quickly identify and buy effective products.

In addition to the TESC plans and mandatory site inspections performed by the contractor-provided Erosion and Sediment Control Lead (ESC Lead), each project's construction staff completes inspections. These inspections occur within 24 hours of a stormwater discharge event and include all disturbed areas, BMPs, and locations where stormwater discharges from the site.

Historically, construction projects were a significant source of erosion. However, proper erosion control reduces construction site erosion by more than 95%.

How do WSDOT construction projects prepare for the rainy season?

Every autumn WSDOT conducts detailed site inspections, called "fall assessments," on all projects that pose a moderate or high risk of erosion. Fall assessments, performed every October, determine how well we are preparing sites for the rainy season. The completion of these assessments in fall allows us time to correct any deficiencies before the heavy winter rains begin.

We select the sites to assess according to the size of the project area, slope length and gradient, soil type, and proximity to sensitive waterways. In October 2009, out of 79 total construction projects, we identified and inspected 16 project sites (12 in western Washington and 4 in eastern Washington) that were considered moderate to high risk.

Of the 16 sites inspected, WSDOT considered 9 sites very challenging because of their risk rating for potential erosion during wet winter months. We judged each site on how thoroughly the contract specifications were implemented, whether the BMPs were properly installed and maintained, and overall preparedness for the rainy season. Wherever we discovered TESC plan or BMP inadequacies, we provided technical assistance to improve preparedness for the wet weather season.

Outlet and channel stabilization can be achieved with various BMPs. This picture (SR 539) shows blankets, rocks, and check dams being used together.

Exhibit 5-2 summarizes and compares the results from the 2009 fall assessment with the annual assessment results from 2004 through 2008. The numbers represent the percentage of projects that met the particular assessment measure. For example, in 2009, acceptable measures were in place on all projects that needed to perform dewatering (removing water from soils).

In 2009, performance ratings declined for four of the twelve measures (33%). Three (25%) saw improvement, and five (42%) were considered to be stable.

WSDOT's overall performance improved from 2004 through 2008. In 2008, performance achieved an all-time high, with all measures above 80%. In 2009, we experienced slight decreases in preparedness in several measures, with a considerable decline in slope protection preparedness.

Exhibit 5-2 Results of 2009 Erosion and Sediment Control Fall Site Assessment

2009 Performance	TESC Assessment Measure	2004	2005	2006	2007	2008	2009	Status
Excellent	Conduct dewatering	100	100	100	100	100	100	Stable[1]
Excellent	Install sediment control BMPs on time	100	95	61	92	93	100	Improved
Excellent	Control other pollutants from impacting water quality	100	100	89	93	100	100	Stable[1]
Excellent	Delineate clearing limits	100	95	94	90	100	100	Stable[1]
Good	Proactively manage project erosion/sediment control BMPs	80	90	92	90	98	97	Stable[1]
Good	Prevent tracking of mud onto streets through use of access routes	91	82	94	81	86	94	Improved
Good	Install erosion control BMPs on time (stabilize soils)	67	86	56	83	80	93	Improved
Good	Control flow rates	100	95	72	93	93	93	Stable
Good	Maintain BMPs	50	67	44	81	93	88	Decreased
Good	Stabilize channels for temporary stormwater conveyance	73	87	59	92	100	87	Decreased
Good	Protect storm drain inlets	83	86	93	92	100	86	Decreased
Fair	Protect cut & fill slopes	89	79	56	83	100	64	Decreased

[1] Stable performance status achieved for measures within 5% of the previous year's rating.

Effective slope protection results from proactive TESC planning and proper installation and maintenance of appropriate BMPs. Cut and fill slopes are particularly vulnerable to erosion. In 5 of the 16 projects assessed, slope erosion developed due to a lack of preparedness in other TESC measures; for example, problems controlling flow rates and maintaining BMPs. Some projects did not employ erosion control BMPs at all or did not maintain existing controls properly.

What lessons did WSDOT learn from the 2009 fall assessments?

In 2009, WSDOT learned from the fall assessments that improvement is needed in TESC planning for slope protection. WSDOT designs all of the TESC plan measures to work together as a comprehensive plan. The BMPs associated with each TESC measure should be used in effective combinations based on site conditions.

Source control provides the first line of defense against water quality problems. Sediment control refers to efforts taken to trap displaced sediment before it leaves the site. By focusing TESC efforts on preventing soils from shifting, WSDOT plans to save resources on its second line of defense: sediment control.

In addition to recommending overall increases in proactive planning for slope protection, Erosion Control Program staff provided training and technical support in late winter/spring 2010 to focus TESC efforts on source control (preventing soil displacement). The Erosion Control Program will continue to work toward creating clearer instructions for erosion control staff on designing, installing, and maintaining BMPs and will strive for 100% performance in 2010.

How does WSDOT determine compliance during construction?

WSDOT has a monitoring program for evaluating how well we perform at keeping water clean during construction. To monitor for compliance, projects must collect water samples at all locations where stormwater discharges from the site.

Why does WSDOT monitor construction site runoff?

The NPDES Construction Stormwater General Permit (Ecology, 2005b) requires the collection of water quality samples from all earthwork projects with one or more acre of soil disturbance and the potential to discharge construction stormwater to surface waters of the state. This sampling aims to evaluate the effectiveness of the BMPs in preventing erosion and keeping loose dirt out of stormwater runoff.

Ecology designated "benchmark values" as indicators for the likelihood of compliance with water quality standards. They are also indicators of properly functioning BMPs. The following summarizes benchmark turbidity values:

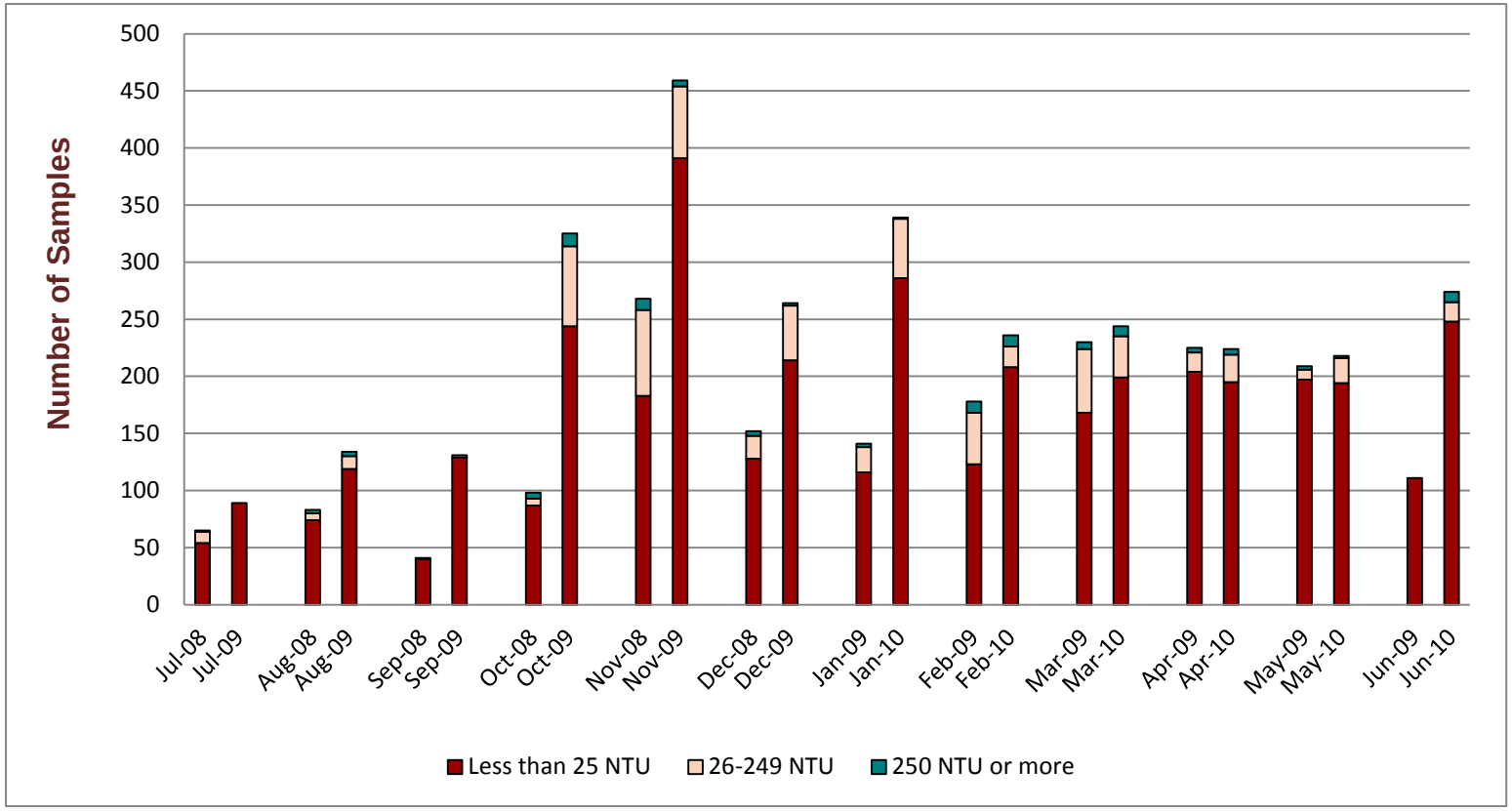
Examples of turbidity standards of 5, 50, and 500 NTU. When crews are testing the water, they are looking for changes in the clarity.

- Discharges of less than 25 nephelometric turbidity units (NTU) are considered unlikely to exceed the state water quality standards under most conditions; the BMPs are considered to be functioning well.
- Discharges of greater than 25 NTU indicate improperly functioning BMPs; therefore, action must be taken to correct the cause of the high turbidity.
- A discharge of 250 NTU or more is considered a high risk for exceeding the water quality standards; consequently, the construction permit requires Ecology notification and immediate corrective action(s).

Exhibit 5-3 summarizes the stormwater runoff data collected under the NPDES permits in FY09 and FY10. Over the past year, only 2% of the approximately 2500 turbidity samples WSDOT collected exceeded the 250 NTU benchmark.

Six projects with NPDES Construction Stormwater General Permits triggered the thresholds for collecting pH samples. Of the 22 samples collected, all but 2 met the pH benchmark of 8.5 pH units.

Exhibit 5-3 Results of Statewide Turbidity Monitoring (FY09/FY10) Compared with NPDES Construction Permit Benchmarks



Training and certification program

Which staff received training in temporary erosion and sediment control?

The permit requires all WSDOT design and construction staff that develop or implement TESC plans to attend WSDOT's Construction Site Erosion and Sediment Control course. This course ensures everyone with responsibility for erosion control knows the methods, products, and procedures for preventing erosion. WSDOT construction staff also receive training in water quality monitoring to comply with permit requirements. In 2010, WSDOT saw a precipitous increase in employees trained in erosion and sediment control and/or water quality monitoring. In 2009, approximately 92 employees received training, while in 2010, 231 WSDOT employees were trained in ten training sessions. In addition, WSDOT's construction contractors must designate an Erosion and Sediment Control (ESC) Lead for each site. The permit requires the ESC Lead to obtain certification through an Ecology-approved training provider. An audit of 16 major contractors in fall 2010 determined that all but one of the contractors' ESC Leads were certified.

Chapter 6 Stormwater Treatment and Conveyance Facilities

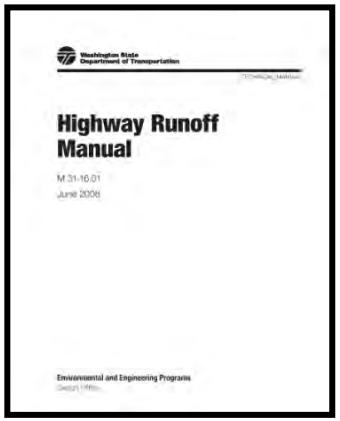
What triggers stormwater treatment or flow control requirements?

Whenever WSDOT expands or substantially renovates a highway, the permit requires implementation of a program to control stormwater runoff that incorporates the use of minimum requirements and BMPs equivalent to those found in Ecology's stormwater management manuals (Ecology, 2004 & 2005a). The *Highway Runoff Manual* (HRM) (WSDOT, 2008b) contains the triggers for stormwater treatment and flow control: www.wsdot.wa.gov/Publications/Manuals/M31-16.htm.

Stormwater management facilities are built in low points where water collects. For this reason, many of WSDOT's treatment facilities (like the treatment pond in this photo) are not readily visible to the driving public.

Highway Runoff Manual training courses and attendance

Why does WSDOT consider Highway Runoff Manual training important?



WSDOT's designers and contractors need clear policies and training in order to make the correct decisions on how to best protect water quality and attenuate flows. The *Highway Runoff Manual* (WSDOT, 2008b) and the *Hydraulics Manual* (WSDOT, 2010e) provide WSDOT's stormwater policies and design guidelines.

In order to provide designers and contractors with the latest policy guidance, the HRM must be revised on a regular basis. Updating the HRM involves much more than simply revising/updating content. It requires extensive studies to support policy changes and modifications to design criteria, and then must be submitted to Ecology for review and approval. The cost of updating the HRM during FY09 was approximately $609,000, and in FY10, it was approximately $307,000. This included the cost of training and research-related activities, as well as writing, editing, and publishing HRM updates. Prior to the permit's issuance, the HRM was deemed equivalent by Ecology to its *Stormwater Management Manual for Eastern Washington* and *Stormwater Management Manual for Western Washington* (Ecology, 2004 & 2005a, respectively).

We developed training programs for the HRM and related modeling design tools, and we provide classes to WSDOT staff, consultants, and local agency representatives who use the manual. During the current reporting period, 99 participants attended the beginner training for the Stormshed hydraulic model, and 31 participants attended the advanced Stormshed training.

How many HRM training opportunities did WSDOT provide?

WSDOT provided eight in-person classes in FY09 and issued 367 certificates of completion. In FY10, WSDOT held three live classes and issued 102 certificates of completion. Of these certificates, 279 were WSDOT staff and the rest were either consultants or local agency staff (city or county employees). Eighteen people, all of whom are consultants or local agency staff, completed WSDOT's online version of the training. WSDOT issued a certificate with a unique identification number to each participant who successfully completed the training.

Do contractors and consultants receive HRM training?

Yes, contractors and consultants receive HRM training. In July 2010, WSDOT began requiring Hydraulic Report authors to complete the 2008 HRM training. WSDOT requires that Hydraulics Report authors list their certificate number on the front cover of the Hydraulics Report before submittal and approval. For the next reporting cycle, WSDOT will cross-reference the reports produced with the authors' certification numbers.

New facilities

This I-405 stormwater pond holds water back to let pollutants settle out and reduce peak flows to prevent stream erosion.

How does WSDOT document newly built stormwater facilities?

WSDOT procedure requires project offices to submit As-Builts (field-verified contract plans) to Headquarters. We are exploring alternatives to make the process more automated and efficient.

How many and what type of stormwater BMPs did WSDOT build during FY09 and FY10?

Exhibits 6-1 and 6-2 summarize the BMPs constructed within the general permit areas during FY09 and FY10. Appendix C provides a complete list of BMPs built throughout the state, with a description and location of each**.** The number of BMPs built within the permit areas during FY09 and FY10 amounted to 333 facilities; statewide, WSDOT built 666 facilities.

Exhibit 6-1 Stormwater Facilities Built in the Permit Areas During FY09

Project Name	Number and Type of BMPs Constructed				
	Infiltration[a]	Dispersion[b]	Biofiltration[c]	Wet Pool[d]	Detention[e]
I-5 / SR502 Interchange			6	6	3
SR 20, Sidney St Vic to Scenic Heights Safety And			2		1
I-182, Road 68 Interchange Modifications		2			
Pullman to Idaho State Line	5	10	4		
I-5 48th to Pacific			1	2	1
I-90, 2-Way Transit & HOV Operations Stage 1			5		
SR 167 15th St. SW to S 180th St. Stage 3	2		16		4
SR 167/SR 161 Onramp/Off-ramp-Safety			2		
SR 202 /SR 520 to Sahalee Way Roadway Widening			4	1	4
SR 9, Schloman Rd To 258th Ne And 268th St Ne Intersection	6			3	
SR / South Everett Freeway Station 112 St. SE MP 187.23 to MP 189.21			1		4
SR202 Jct. 203 Roundabout			2		
US 395 NSC - GERLACH TO WANDERMERE	4		1		
US 395 NSC - Hawthorne Road to SR 2 Grading	3				
US 395 US395/NSC - BNSF RR TUNNEL	2				
US 395 US395/NSC - FREYA ST TO FARWELL RD - PCCP PAVING	7				
US 395 US395/NSC - FREYA TO FAIRVIEW VIC - GRADING AND STRUCTURES	4	2			
US 395 US395/NSC - SR2 LOWERING	3		1		
US 395 US395/NSC - US 2 TO WANDERMERE VICINITY	2	1	1		
US395 NSC FRANCIS AVE TO US 2 STRUCTURES REBID	1				
Vic Sultan - Wb Bus Pullout & Sidewalk Safety			1		
Wenatchee - Trail Connection	1				
Totals	**40**	**15**	**47**	**12**	**17**

a. Includes bioinfiltration pond, infiltration pond, infiltration trench, infiltration vault, drywell, and permeable pavement surfaces.

b. Includes natural dispersion and engineered dispersion.

c. Includes vegetated filter strip, biofiltration swale, wet biofiltration swale, continuous inflow biofiltration swale, and media filter drain.

d. Includes wet pond, combined wet/detention pond, constructed stormwater treatment wetland, and combined stormwater treatment wetland/detention pond.

e. Includes a detention pond.

Exhibit 6-2 Stormwater Facilities Built in the Permit Areas During FY10

Project Name	Number and Type of BMPs Constructed				
	Infiltration[a]	Dispersion[b]	Biofiltration[c]	Wet Pool[d]	Detention[e]
Anacortes truck lane pavement Project	1				
Beloit RD. to Kingsgate Way – Widen Roadway (TPA)	32				
Road 100 Interchange Vicinity – Improvements		9			
Cheney-Spokane Rd-Right Turn Lane		2			
I-405 NE 10TH ST - Bridge Crossing					1
I-405, 112th to SE 8th Street Project			9	5	1
I-405/NE 195th to SR 527 Northbound Auxiliary Lane Project			13	1	3
I-5/Fisher Cr Vic to Squalicum Cr Vic			12		
I-90 Two-Way Transit & HOV Op. Stage 1			5		
Mill Plain I/C to NE 18th Street	2	1	3		1
NACHES TO MITCHELL RD. VICINITY - PAVING		3			
SR 160- SR 16 to Long Lake Rd Vic.			3		1
SR 167 I-405/I-5 to SR 169 Stage 1- Widening			13	2	4
SR 20/Fredonia to SR 5 - Stage 2 (See A02039B for RW)			25		
SR 519 Intermodal Access Project			1		
SR 522/University of Washington Bothell/Cascadia CC Campus South Access				1	1
SR 704 Cross-base Highway- Spanaway Loop Rd to SR 7			2	3	
SR 9/176th St. SE Vic. to SR 96 to Marsh Road I/S			2		1
SR 900/SE 78th St. Vic. to Newport Way				1	
SR-519 Phase 2			1		
US 395 NSC - FARWELL ROAD LOWERING	1		1		
US 395 NSC - GERLACH TO WANDERMERE	2		1		
US 395 US395/NSC - FREYA ST TO FARWELL RD - PCCP PAVING	3	1	2		
US 395 US395/NSC - FREYA TO FAIRVIEW VIC - GRADING AND STRUCTURES	23	2	10		
US 395 US395/NSC - US 2 TO WANDERMERE VICINITY	1		1		
US395 NSC FRANCIS AVE TO US 2 STRUCTURES REBID	9				
Totals	**74**	**16**	**86**	**13**	**13**

a. Includes bioinfiltration pond, infiltration pond, infiltration trench, infiltration vault, drywell, and permeable pavement surfaces.

b. Includes natural dispersion and engineered dispersion.

c. Includes vegetated filter strip, biofiltration swale, wet biofiltration swale, continuous inflow biofiltration swale, and media filter drain.

d. Includes wet pond, combined wet/detention pond, constructed stormwater treatment wetland, and combined stormwater treatment wetland/detention pond.

e. Includes a detention pond.

Which WSDOT projects consulted with federal agencies on Endangered Species Act (ESA) impacts?

A new permit appeal settlement stipulation requires that WSDOT consult with NOAA Fisheries and/or U.S. Fish & Wildlife Service on all projects, without federal funding or other nexus, in western Washington that have potential stormwater impacts to ESA-listed fish species. There were no such projects that went to advertisement between May 5, 2010, and June 30, 2010. This time frame coincides with reissuance of the Municipal Stormwater Permit, which occurred on May 5, 2010, and the end of the reporting period.

What are underground injection controls?

The Underground Injection Control (UIC) Program (WAC 173-218) regulates the discharge of fluids into UIC wells to prevent groundwater contamination. WSDOT must make sure that current and future underground sources of groundwater are not endangered by pollutants in the discharge. This is the "nonendangerment performance standard." Under this regulation, WSDOT must:

- Register newly constructed UIC facilities and provide appropriate levels of pretreatment to comply with the nonendangerment standards. (Appendix C contains UIC facilities built in FY09 and FY10.)
- Register (by February 2011) and assess (by February 2013) all existing stormwater UIC facilities per the nonendangerment standard.
- Record the decommissioning of UIC facilities.

WSDOT registers new UIC facilities with Ecology as they are constructed. All newly constructed UIC facilities need to meet the non-endangerment standards. We expect the registration of all known existing UIC wells to occur by January 2011.

Stormwater Features Inventory Program

How does WSDOT keep track of stormwater features?

The Stormwater Features Inventory Database, currently under development, will hold information about WSDOT's stormwater system. Data will be collected from As-Built plan sheets whenever possible. Areas without available As-Built plans will be mapped using resource-grade Global Positioning System (GPS) field units. All input data will be quality-checked prior to loading to the database. Quality checks will test for technical spatial data attributes (such as topology and connectivity) and logical feature relationships; for example, every drainage feature must feed to one (primary) discharge point and every drainage inlet (other than dry well) must have at least one outlet drainage feature. Features designed and built to perform stormwater treatment and flow control functions will be identified by their HRM-defined BMP type. A new construction closeout process (under development) will allow WSDOT to update the stormwater features inventory upon the construction's completion.

What progress did WSDOT make on populating the Stormwater Features Inventory Database?

Requirements and definitions for the Stormwater Features Inventory Database are being finalized for development of a GIS database prototype in preparation for developing a fully operational data container. WSDOT identified the following feature classes (GIS layers) for inclusion in this database:

WSDOT staff using GPS to inventory stormwater features in the South Prairie Creek TMDL area.

- Discharge Points (Surface Water, Managed System, Land Surface, Subsurface, Incoming)
- Drainage Inlets (Catch Basin, Grate Inlet, Drop Inlet, Concrete Inlet, Manhole, Dry Well)
- Pipes (Drain, Under-Drain, Culvert, Storm Sewer, Sanitary Sewer)
- Ditches
- Dispersion Areas
- Roadside Slopes
- Stormwater Ponds
- Drainage Areas (where information is available)
- Portions of Concrete Barriers that direct run-off
- Portions of Curbs that direct run-off
- Cabinets containing stormwater monitoring equipment
- Debris Racks
- Energy Dissipaters
- Stormwater Vaults
- Monitoring Sites

How does WSDOT identify and map stormwater connection points?

WSDOT initiated a program to map connection points with other municipalities that begins with using available existing information supplemented by field efforts to confirm existing points and document new locations as found. This significant undertaking requires WSDOT to coordinate with every municipality that has a common boundary with our right of way. WSDOT has already begun discussions with some municipalities to coordinate the sharing and reconciliation of stormwater connections along common boundaries. These efforts will continue to expand during the next reporting period.

Illicit Discharge Detection and Elimination Program

What are illegal connections and illicit discharges?

There are many cases where stormwater discharges from adjacent landowners knowingly (without permission) or inadvertently connect to WSDOT's stormwater system. These are known as illegal connections. An "illicit discharge" is one that is not stormwater or not entirely stormwater. It is important that illegal connections and illicit discharges be permitted or eliminated because WSDOT's stormwater systems are sized to receive runoff from highways only, and WSDOT becomes responsible for water once it enters its system.

How does WSDOT control illicit discharges and connections?

WSDOT developed an Illicit Discharge and Detection Elimination (IDDE) Program to identify and eliminate illicit discharges and illegal connections that could affect a WSDOT stormwater system. Exhibit 6-3 describes the illicit discharges identified and the actions taken to eliminate them. The IDDE program primarily consists of:

- Training discharge inventory crews, along with maintenance and construction crews, to recognize illicit discharges and connections.
- WSDOT IDDE contacts and Utility Office personnel in each region investigating reported IDDEs and working through a defined process for mitigating the discharges or connections.
- Headquarters IDDE contacts and the IDDE Coordinator tracking IDDE activities statewide, assisting the regions when necessary, and coordinating with Ecology and municipalities to seek resolution to IDDE issues that cannot be solved at the region level.

High flows of muddy water from a nearby quarry site severely eroded this bioswale, destroyed a stormwater monitoring station, partially filled a treatment pond with mud, and dirtied WSDOT's runoff.

Landowners adjacent to our right or way are responsible for preventing pollution and treating their own stormwater before it leaves their property. Although WSDOT has no regulatory authority over adjacent landowners, WSDOT staff takes whatever steps possible, up to blocking and containing the flow, to prevent the polluted water from eventually entering waters of the state. They also work with Ecology and municipalities for assistance when the issue cannot be resolved with the landowner. Emergency responders are contacted if there is a pollutant of concern that is potentially hazardous or unknown.

What progress did WSDOT make in enhancing its IDDE program?

WSDOT continues to hone its IDDE program to improve its efficiency and responsiveness. Over the last year, we have:

- Developed new processes and procedures for IDDE detection and reporting.
- Designated an IDDE contact in each of WSDOT's six regions (and Headquarters) to act as points of contact for all IDDE-related issues in their regions.
- Developed training materials and started training WSDOT staff on the identification/reporting protocols for potential IDDE issues.
- Developed a standard notification system (permanent numbers, e-mails, forwarding procedures) for IDDE reporting and coordination.
- Worked on developing a database to track and document IDDE events.

For additional information on WSDOT's IDDE Program, reporting procedures, and a list of regional reporting contacts, visit: http://www.wsdot.wa.gov/Environment/WaterQuality/#IllicitDischarge

What Illicit discharges and connections did WSDOT identify?

Exhibit 6-3 Detected Illicit Discharges and the Corrective Actions Taken

Region	Date Identified	Type of Discharge	Action Taken	Current Status
Olympic	2/8/2010	Connection	The City of Bremerton reports that this business's connection has been removed and hooked up to the new sewer line.	In-Progress
Southwest	3/2/2009	Connection	An Ecology HazMat investigation determined that this IDDE did not present a HazMat situation. WSDOT requested that adjacent landowner (a log sort yard) stop discharging wood waste byproducts on WSDOT property.	Completed
Northwest	11/12/2009	Discharge/Spill	Permitted	Completed
Northwest	5/11/2010	Discharge/Spill	Discharge stopped and system cleaned	Completed
Northwest	6/7/2010	Connection	To be determined	In-Progress
Northwest	7/1/2010	Connection	To be determined	In-Progress
Northwest	8/7/2010	Connection	To be determined	In-Progress

Notification of spill

How does the permit relate to notification of spills?

The permit establishes a notification and response requirement under *General Condition G3 Notification of Spill*. Condition *G3* addresses discharges, including spills, into or from municipal separate stormwater sewer systems (MS4s) that could:

- Constitute a threat to human health, welfare, or the environment.
- Cause or contribute to a known or likely violation of receiving water standards.

What potential actions can G3 trigger?

When there is a discharge or spill into or from our MS4 that could present a threat to human health, welfare, or the environment, we will remain in compliance with *G3* when the following response occurs:

- Contact Ecology no later than 24 hours after knowledge of the discharge or spill.
- Report additional specific discharges of oil or hazardous substances (statewide) or discharges that might cause contamination of shellfish (western Washington only).
- Maintain records of the incident and associated response actions.

What actions did WSDOT take pursuant to G3 during this reporting period?

Exhibit 6-4 G3 Notifications During FY09 and FY10

Location	Date Identified	Action Taken
Ghorst Inlet IDDE on SR 16	2/2010	Due to a possible impact to shellfish, the Washington State Dept. of Health was contacted and notified of sewage draining into surface water. As part of the spill notification procedures, Ecology was also contacted and the discharge was entered into their Environmental Report Tracking System (ERTS).
Redmond Sewer Spill	5/2010	Raw sewage spilled into WSDOTs storm sewer system, coming to rest in one of WSDOTs detention ponds, which then drains to the Sammamish River. WSDOT took action to prevent sewage from leaving the detention pond, such as building up the detention berm to allow additional holding volume. WSDOT staff followed spill notification procedures and Ecology entered the discharge into ERTS. WSDOT collaborated with the City of Redmond to perform cleanup activities.

Chapter 7 Stormwater Retrofits

Retrofits of existing facilities

Why do many WSDOT facilities need stormwater retrofits?

Most highways predate water quality regulations and were built without any consideration for the treatment of stormwater. Therefore, most of the older pavement surfaces have no facilities to control stormwater flows or remove pollutants before letting the stormwater enter streams or other sensitive areas.

The term *outfall* refers to the discrete locations where concentrated stormwater flows enter surface waters. Work is continuing to inventory the location of all of WSDOT's discharge points, which includes outfalls.

A stormwater discharge point is defined as the location at which concentrated stormwater runoff (flow) is conveyed from, or to, WSDOT's stormwater management system or property.

Outfall from a wet pond on SR 500

When do stormwater retrofits occur?

WSDOT frequently retrofits for stormwater as a part of highway improvement projects. Such retrofits size the stormwater facilities to treat runoff and control flows coming off both the new and the existing highway lanes. Most of these stormwater retrofits that occurred in conjunction with highway improvement projects have not been tracked. Consequently, for those projects, it is difficult for us to account for all the areas that we may have retrofitted.

To enable WSDOT to report on retrofits accomplished as part of highway improvement projects, we have developed the Stormwater Design Documentation Spreadsheet (SDDS) to track the amount of existing and new impervious surface and existing pollution-generating impervious surface (PGIS) and new PGIS treated by a project. The SDDS also tracks whether the treatment of the existing impervious surface and existing PGIS resulted from a project requirement or an opportunity-based retrofit. In addition, the spreadsheet tracks whether any existing impervious surfaces were fully reverted to pervious surfaces. As of May 5, 2010, the permit requires WSDOT to retrofit all existing impervious surfaces on projects in the Puget Sound Basin that meet certain requirements outlined in Chapters 3–4 of the *Highway Runoff Manual* (HRM). The SDDS will capture this stormwater retrofit activity.

Occasionally, due to site constraints, WSDOT will not be able to meet its stormwater retrofit obligations within the project limits. In those cases, a project can use an equivalent area outside the project limits in a high-priority location to meet the project's stormwater retrofit requirements. (Please see the following section for an explanation of the stormwater retrofit prioritization process.) The SDDS captures information on these off-site retrofits as well. WSDOT also performs retrofits through its stand-alone stormwater retrofit program. Stand-alone stormwater retrofit projects allow WSDOT to fix higher priority stormwater management deficiencies in places where there are no highway improvement projects planned.

How does WSDOT decide which highway segments to retrofit first?

Considerable resources and time will be required to fix all the highways with stormwater deficiencies. WSDOT's stormwater retrofit prioritization strategy aims to utilize public resources to achieve the greatest environmental benefits. WSDOT's stormwater retrofit prioritization strategy consists of an analytic process for assigning a retrofit priority index value to specific highway segments. The stormwater retrofit prioritization strategy:

- Focuses data collection on areas where stormwater retrofit needs are the greatest.
- Targets urban fringe areas where significant environmental benefit can be achieved, before costs escalate.
- Reduces costs by identifying opportunities to combine stormwater retrofits with construction projects.
- Maximizes immediate benefits by first targeting areas with the highest benefits relative to cost.

The first phase in the prioritization process involves screening the entire state using Geographical Information Systems (GIS) map tools. This screening identifies stretches of highway with predefined conditions known to present greater-than-average risks for highway stormwater impacts.

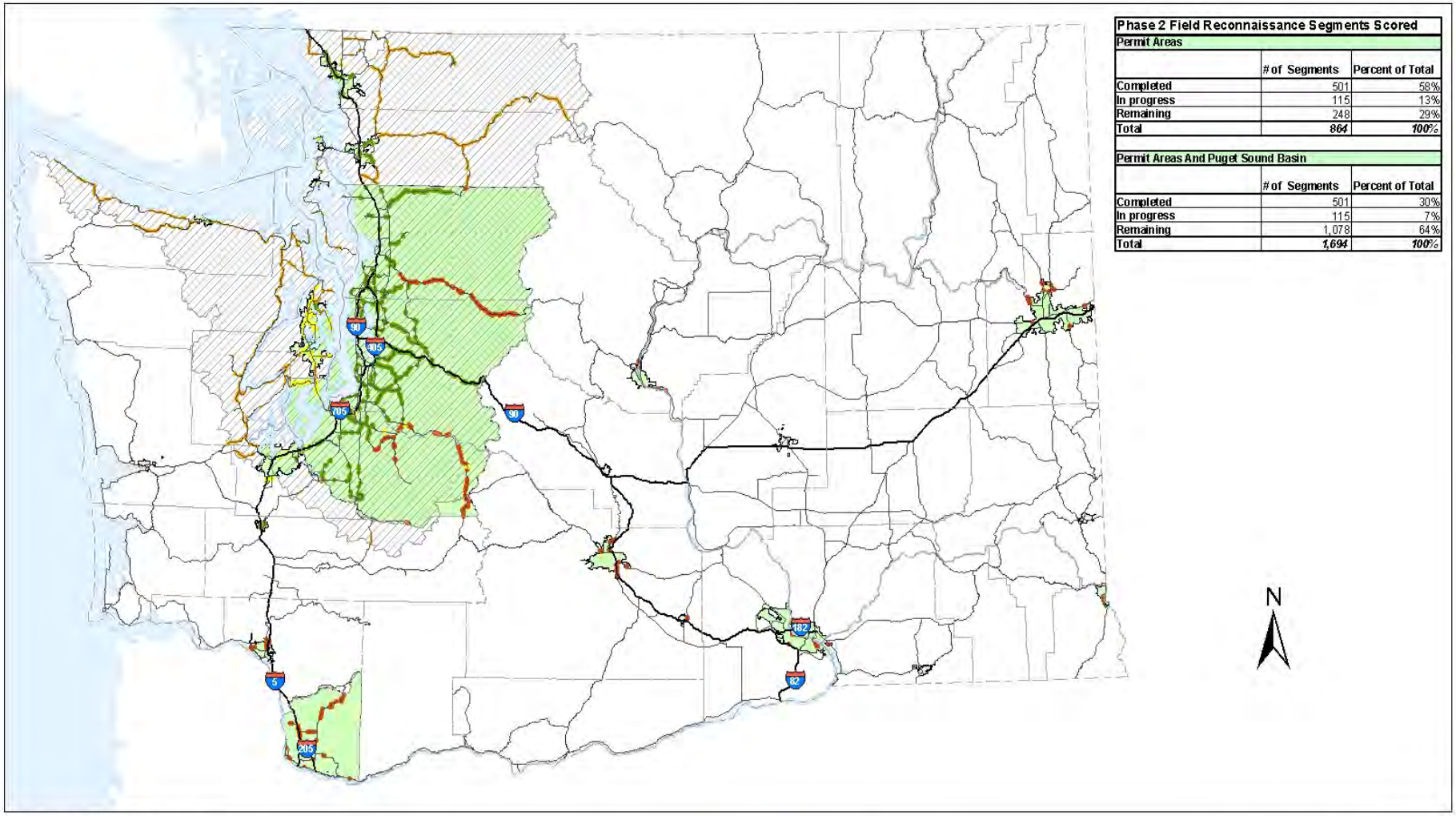
Phase 2 of the prioritization process involves a rapid field inventory of high-scoring Phase 1 retrofit candidate areas to identify the actual discharges with closed conveyance systems, known high habitat value, and known or observable erosion or pollution problems (see Exhibit 7-1).

WSDOT performs the third and final prioritization phase only for the highest-value Phase 2 retrofit candidates. This step involves collecting detailed site information to determine drainage areas and estimate retrofit costs. WSDOT completes priorities not falling within a programmed highway project boundary in order of their ranked scores as funding is provided by the legislature.

How do high-priority stand-alone stormwater retrofit projects get scoped and funded?

In 2009, a formal stormwater stand-alone retrofit process was approved by agency executives. This process defines roles, responsibilities, and steps to be taken to move high-priority stormwater retrofit highway segments through the project identification, scoping, and funding process. The approved flowchart that describes this process is available at: http://wwwi.wsdot.wa.gov/ppsc/pgmmgt/pgmdev/Stormwater.pdf. This process is part of a larger Environmental Retrofit (I4) subprogram established, in part, to fund stormwater stand-alone retrofit projects to reduce existing environmental impacts. Funding categories within the I4 subprogram include stormwater runoff, fish barrier removal, noise reduction, air quality, and chronic environmental deficiencies.

Exhibit 7-1 Stand-Alone Stormwater Retrofit Prioritization, Phase 2 Scoring Progress



Phase 2 Field Reconnaissance Segments Scored		
Permit Areas		
	# of Segments	Percent of Total
Completed	501	58%
In progress	115	13%
Remaining	248	29%
Total	864	100%
Permit Areas And Puget Sound Basin		
	# of Segments	Percent of Total
Completed	501	30%
In progress	115	7%
Remaining	1,078	64%
Total	1,694	100%

Data Source: WSDOT Regions, Major Cities,
and State Routes from WSDOT at scale of 1:500K
County Boundaries from WADNR
Puget Sound Basin from The Nature Conservancy
Municipal Stormwater Permit Areas from WAECY (2010)
Phase 2 Inventory Segments from WSDOT

Washington State Department of Transportation

0 5 10 20 30 40 50 Miles

Segments In-Progress
Segments Remaining In The Permit Area
Segments Remaining Outside Permit Area In The Puget Sound Basin
Completed Segments

PugetSoundBasin
Permit Area

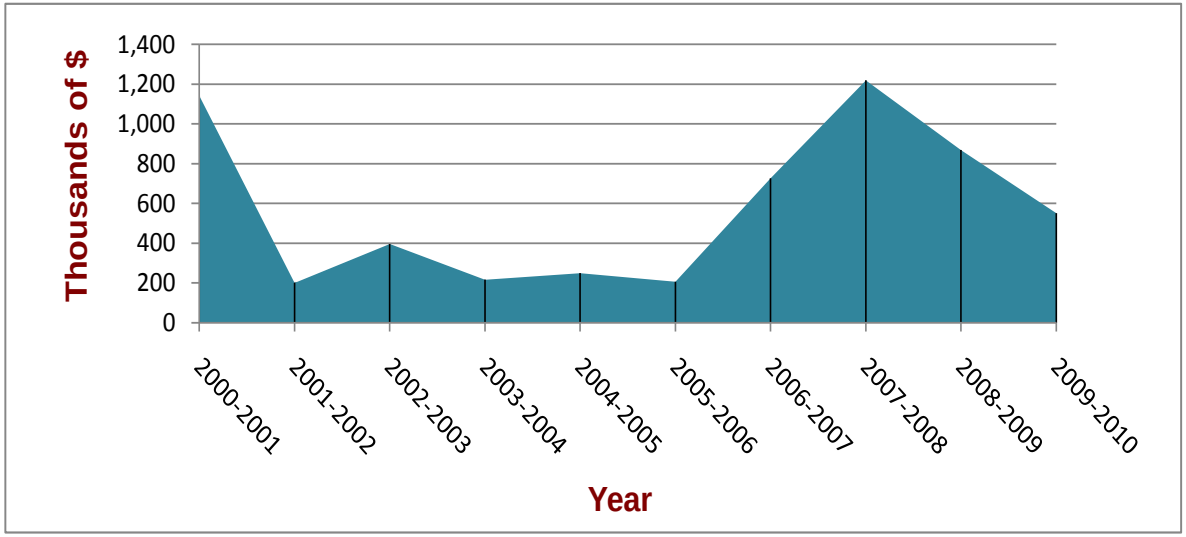
How much funding goes to stand-alone stormwater retrofit projects?

WSDOT requested $2,878,277 for stand-alone stormwater retrofit work from the Legislature during the 2009–2011 Biennium. The Legislature funded the entire amount. However, this represents a 37% decrease in retrofit funding compared to the 2007–2009 biennial funding of $4.5 million. In FY09, WSDOT spent approximately $868,000 on design and construction of stand-alone stormwater retrofit projects, and spent $551,000 in FY10.

Short-term program objectives focus on completing existing stormwater retrofit projects and scoping new projects so they will be ready when funding becomes available. WSDOT is also working on a database to track dollars transferred from large-scale mobility projects to fund I4 program retrofits. The database was not yet operational during the FY10 reporting period. Upon completion, the database will allow WSDOT to report the money transferred to fund stormwater retrofit projects.

WSDOT has tracked annual expenditures for stand-alone stormwater retrofits since 2000. Exhibit 7-2 depicts an expenditure timeline with estimated annual stand-alone stormwater retrofit costs.

Exhibit 7-2 Estimated Annual Stand-Alone Stormwater Retrofit Costs

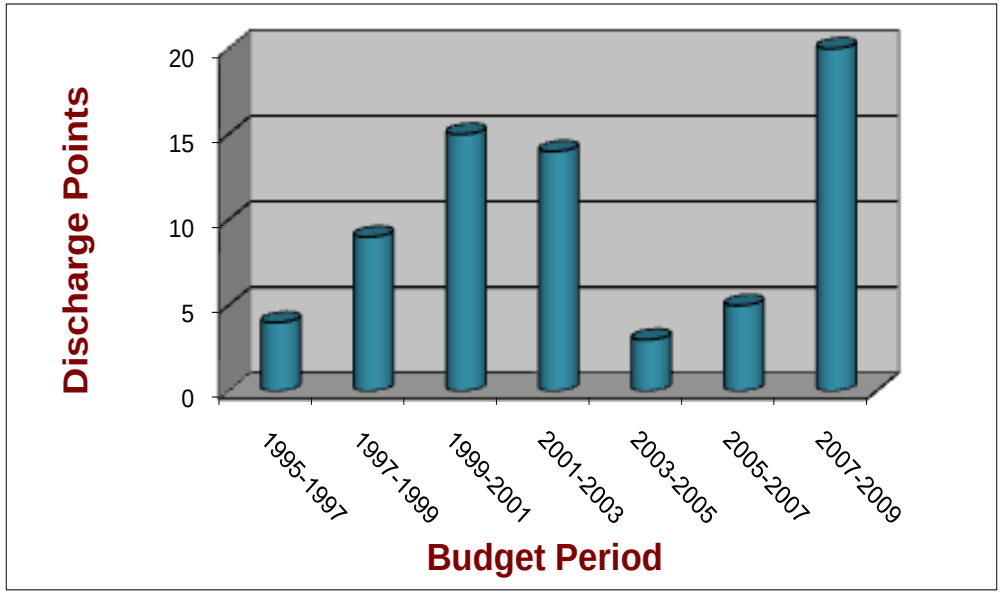


How many stand-alone retrofits were completed?

Exhibit 7-3 summarizes the stand-alone stormwater retrofit activity since 1995. During the 2007–2009 Biennium (July 1, 2007, to June 30, 2009), approximately 20 discharge points were retrofitted as stand-alone projects. Since we are halfway through the 2009–2011 Biennium, information on the number of discharge points retrofitted during this period is unavailable. A temporary increase in funding during the 1999–2001 budget period contributed to the increased number of retrofits accomplished between 1999 and 2003. Another, larger period of increased retrofits began with legislative funding of $3.8 and $4.5 million for stand-alone retrofits in 2005 and 2007, respectively. Another variable to consider is that some highway segments are more expensive to retrofit.

In the Puget Sound Basin, WSDOT completed one stand-alone retrofit project, three others are under construction, and four were in the design phase during FY09 and FY10.

Exhibit 7-3 Approximate Number of Discharge Points Retrofitted as Stand-Alone Projects



What is the current and future status of the stand-alone stormwater retrofit program?

WSDOT's Stormwater Management Program Plan establishes a process for prioritizing stormwater stand-alone retrofit projects. As of June 30, 2010, Phase I GIS screening has been completed and high-priority highway segments have been identified. Following this step, WSDOT has inventoried discharge points on well over half of the high-priority highway segments in the Puget Sound Basin. We are working to develop site-specific Phase II ranking scores that will dictate the order in which high-priority highway segments are scoped and added to the I4 subprogram funding request to the State Legislature. WSDOT plans to build a significant I4 stand-alone retrofit funding request for consideration by the Legislature.

How does WSDOT track the number of acres retrofitted and/or reverted to pervious surface?

The Stormwater Design Documentation Spreadsheet (SDDS), which WSDOT requires designers to fill out and submit with the Hydraulics Report, tracks the following:

- BMPs selected
- BMP locations
- Amount of new impervious surface
- Amount of replaced impervious surface
- Amount of reverted and converted surfaces
- Amount of existing pavement retrofitted

Development of a database will take data from the SDDS and allow WSDOT to query for any of the above parameters.

How much existing impervious surface did WSDOT retrofit?

As previously explained, determining the amount of existing retrofitted impervious surface is difficult to accurately establish. Many factors contribute to this uncertainty. For example:

- WSDOT projects routinely have long design and implementation timelines. It is common for a project to take several years to design and then several years to build.
- A large number of projects constructed during FY09 and FY10 were not required to fill out the SDDS because they went to Ad prior to the permit's March 6, 2010, trigger date.
- Many projects designed before the 2008 HRM became effective did not have project-triggered retrofit requirements. Therefore, any retrofit of existing impervious surfaces was not tracked.
- WSDOT's highway improvement projects often present an opportunity to retrofit a large number of the project's existing impervious surfaces. However, until recently, WSDOT did not track these opportunity-based retrofits.

WSDOT reviewed the projects that were required to design to the 2008 HRM standards and were substantially completed in FY09 and FY10 to determine the following:

1. **Amount of existing impervious surfaces retrofitted for each project.**
   - 28.19 acres retrofitted for flow control.
   - 71.36 acres retrofitted for runoff treatment.
2. **Amount of area infeasible or not cost-effective to retrofit.**
   - WSDOT did not track this information for FY09 and FY10 as this reporting requirement emerged later with the March 2010 permit modification. WSDOT will track this information via SDDS for inclusion in future annual reports.
3. **Number of stand-alone retrofit projects that were completed.**
   - WSDOT completed one stand-alone retrofit project within the current reporting period. That project retrofitted 0 acres of impervious surface for flow control and 8.7 acres for runoff treatment.
4. **Number of projects that added new impervious surfaces and exceeded (i.e., triggered) thresholds to comply with HRM stormwater management requirements.**
   - No projects were constructed during the applicable period in accordance with the settlement agreement because the agreement affected projects that received Design Approval after July 1, 2010.
5. **Amount of existing impervious surfaces fully reverted to pervious surface.**
   - WSDOT did not track this information for FY09 and FY10 as this reporting requirement emerged later with the March 2010 permit modification. WSDOT will track this information via the SDDS for inclusion in future reports.
6. **Amount of area where off-site and alternative retrofits were substantially completed.**
   - No projects utilized this alternative compliance pathway during FY09 and FY10.

Chapter 8 Monitoring and Research

NPDES Monitoring Program

What do the permit's monitoring requirements entail?

Special Condition S7 Monitoring of the permit requires WSDOT to develop and implement a monitoring program. In general, the required monitoring program will include the following components:

- Baseline stormwater and sediment characterization monitoring for highways
- Seasonal first-flush toxicity testing for highways
- Baseline first-flush stormwater characterization of rest areas, maintenance facilities, and ferry terminals
- Stormwater treatment and hydrologic management BMP effectiveness monitoring
- Seasonal first-flush toxicity testing for BMPs

Why did WSDOT develop a monitoring program?

In addition to the permit's monitoring requirements, research on new stormwater management techniques and innovative applications for highway areas constitutes an important component of the department's goal to provide cost-effective solutions for building highways and protecting state waters.

To the greatest extent possible, WSDOT seeks to align the permit-triggered monitoring efforts with its own stormwater research priorities. This chapter provides information related to these monitoring efforts, with in-depth discussion of the monitoring required by the permit as well as the department's additional stormwater research efforts.

How will NPDES monitoring help WSDOT manage stormwater?

The NPDES Monitoring Program's purpose is to collect high-quality information to:

- Produce scientifically credible data for discharges from WSDOT's various land uses.
- Aid in designing and implementing effective stormwater management strategies for highways.
- Help WSDOT improve aspects of its stormwater management programs.

Photo of a biofiltration swale and compost-amended biofiltration swale study site on SR 518. This site is being proposed to Ecology for use in NPDES and research monitoring.

What progress did WSDOT make with its permit monitoring requirements?

During this reporting period, WSDOT made important gains in its preparation to implement the permit's monitoring requirements. To support permit required monitoring and other stormwater-related research, WSDOT contracted with the U.S. Geological Survey (USGS) to assess the strengths and weaknesses of its NPDES Monitoring Program under the 1995 permit. As a result of those findings, WSDOT is building on our strengths and implementing many of the changes recommended in the USGS report (Sheibley et al., 2009) to correct deficiencies. WSDOT established a contract with Ecology's Environmental Assessment Program (EAP) to implement the first phase of the permit's required monitoring program, which included assisting WSDOT with the hydrological monitoring of selected sites in the 2011 water year. In support of these efforts, WSDOT expects to hire additional stormwater staff, with monitoring to begin in the fall of 2010.

EAP prepared three draft Quality Assurance Project Plans (QAPPs) for WSDOT's submittal to Ecology's Water Quality Program (WQP) per the permit's monitoring requirements. These QAPPs address:

- Monitoring of BMPs for effectiveness and toxicity.
- Characterizing stormwater runoff from WSDOT facilities
- Characterization and toxicity of highway stormwater runoff.

These monitoring plans describe the process to target storm events, monitor rainfall and runoff, collect samples, and analyze results to ensure the collection of quality data. The proposed monitoring plans are designed to monitor real-time continuous rainfall, temperature, and stormwater hydrology at each of the sites year round.

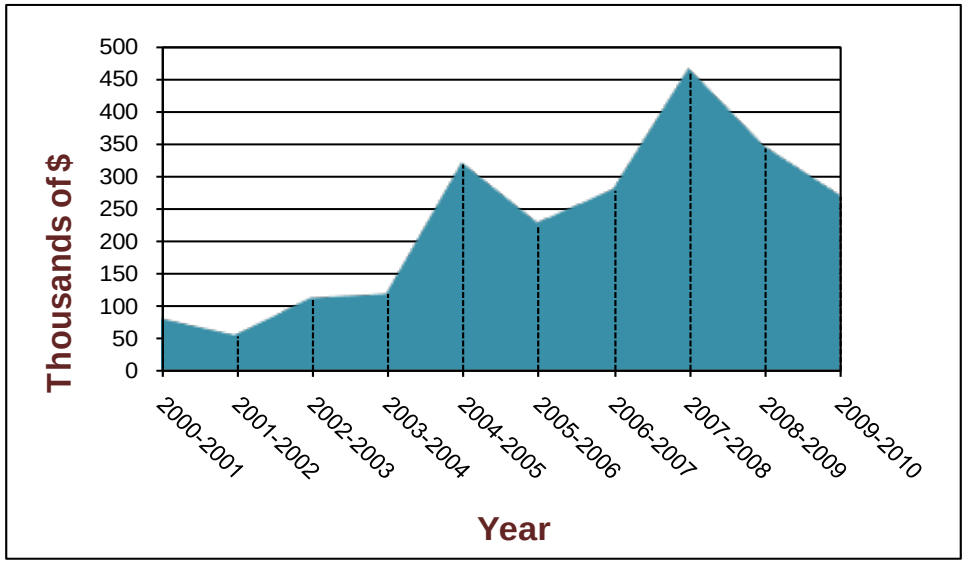
WSDOT is working to enhance the quality of its monitoring program by making improvements in the way it seeks to collect, store, and manage data. Our current efforts focus on the development of standard operating procedures, method quality objectives, and data quality objectives. These quality assurance and control measures are necessary to ensure the data collected accurately represent the monitored sites, maintain scientific credibility, and satisfy the permit's requirements. To support these efforts, WSDOT purchased a database to store environmental data related to its stormwater monitoring data collection efforts.

Outlined below are WSDOT's permit-related stormwater monitoring efforts for this reporting period:

- Prepared a strategy document for monitoring site selection (October 2009).
- Met with WSDOT facilities managers and the stormwater research staff to establish priorities for stormwater monitoring (Fall 2009).

- Performed reconnaissance visits to evaluate potential sites for permit monitoring. These included 5 rest areas, 5 ferry terminals, 15 maintenance facilities, 22 highway characterization sites, and more than 20 BMP locations (Fall and Winter 2009–2010).
- Developed a preliminary list of monitoring sites, which included 2 rest areas, 1 ferry terminal, 6 maintenance facilities, 5 highway characterization sites, and 5 BMP locations. A document describing each site was written and submitted to Ecology's WQP for its review and "conceptual" approval (April 2010).
- Made modifications to the list of BMP monitoring sites following an initial review by Ecology. WSDOT submitted a revised proposal for BMP monitoring locations to Ecology (June 2010).
- WSDOT received conceptual approval from Ecology for the rest areas, ferry terminal, and highway characterization monitoring sites. Ecology approval for the proposed BMP monitoring sites is still pending.
- Drafted QAPPs for facilities, highway characterization, and BMP monitoring (Summer 2010). Submitted draft QAPPs to Ecology on September 6, 2010.

Exhibit 8-1 Estimated Total NPDES Monitoring Costs



How much has WSDOT spent thus far for monitoring preparations?

Exhibit 8-1 shows WSDOT's recent estimated expenditures associated with permit monitoring. WSDOT spent approximately $342,000 in FY09 and $267,000 in FY10 for activities related to the permit's monitoring requirements. These totals do not include costs for conducting research monitoring. Generally, stormwater monitoring costs have increased over the years, primarily because of expanded permit monitoring efforts and preparations for more extensive permit-related monitoring requirements.

Stormwater Research Program

What are the objectives of WSDOT's stormwater research strategy?

The complexity involved in carrying out stormwater management responsibilities requires the involvement of many technical fields, including hydraulics, hydrology, geology, soil and water chemistry, microbiology, plant physiology, landscape ecology, aquatic toxicity, and water

quality. Additionally, it can involve multiple agencies at any point in the stormwater management process. It is important that stormwater issues be clearly identified to help WSDOT manage stormwater in a manner that protects the environment.

To this end, WSDOT's stormwater research strategy is a tool for directing and communicating the department's stormwater-related research needs and priorities as well as a 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.

What are the current research priorities?

The linear nature of highway systems poses unique constraints and opportunities compared with other types of development. In the highway system, ultra-urban areas often limit treatment and flow control options. However, vegetated shoulders, medians, and swales often found along much of the remainder of the highway system offer the potential to provide substantial opportunities for pollutant removal and flow attenuation by natural processes and reestablishment of natural hydrology also referred to as LID. Consequently, WSDOT focuses its stormwater research efforts on methods that involve natural dispersion and infiltration.

WSDOT uses a Guelph permeameter to measure infiltration in the field.

In 2009, WSDOT identified three primary stormwater research priorities. One of these priorities involves evaluating the appropriateness of the current guidance for natural dispersion contained in the *Highway Runoff Manual*. This evaluation requires a determination of the influence of various factors on the natural dispersion approach for managing highway runoff. It involves assessing the effects of rainfall patterns on infiltration, pollutant mobilization, and removal, as well as the effects of the following features of highway embankments:

- Side slope angle
- Water flow and travel distance down the embankment
- Contributing paved road area
- Material underlying the embankment

Evapotranspiration refers to the return of moisture to the air through evaporation or plant transpiration.

Another priority involves quantifying the degree to which BMP designs can be modified to reduce the volume of runoff discharges to surface water through infiltration and evapotranspiration. Such a design modification would allow BMPs to serve for both pollutant removal and flow control.

The third identified priority seeks to quantify the infiltration, evapotranspiration, and pollutant-removal properties of a compost-amended biofiltration swale. In regard to constraints in ultra-urban areas, WSDOT proposed research to identify BMPs that would work in these areas, which has been funded by the National Cooperative Highway Research Program (NCHRP).

In early 2009, WSDOT framed its priorities into the following research problem statements:

- Identify the pollutant-removal capacity and hydraulic performance of vegetated road shoulders, swales, and ditches not currently designated as pollutant-removal BMPs.
- Assess vegetated shoulders without compost, with compost tilled in, and with compost blankets for both water quality improvement and flow attenuation.
- Assess the pollutant-removal efficiency and flow control attenuation of compost-amended biofiltration swales compared to a normally constructed biofiltration swale.

Pictured above is an inlet slot drain used to collect stormwater runoff at an Unimproved Embankment research monitoring site.

What questions does WSDOT's research monitoring seek to answer?

Some current BMP design standards rely to one degree or another on untested assumptions. They often include margin of safety calculations to compensate for this uncertainty. This results in potentially overly conservative designs, sometimes resulting in over-design and/or limited available options in a highway setting. These design constraints can increase costs substantially, and they drive WSDOTs need to conduct further research to establish real world performance.

Roadside vegetated shoulders, medians, swales, and ditches not specifically engineered with stormwater treatment in mind provide some capacity to disperse or infiltrate runoff and may remove pollutants. WSDOT recently started evaluating such sites; however, more sites need monitoring before broadly applying lessons from this research. Business needs give rise to additional research questions, such as:

- How do BMPs perform compared to performance predictions in the design manuals?
- What modifications can occur to existing BMP designs to improve their performance?
- Do existing roadside shoulders, medians, and ditches not engineered specifically as stormwater BMPs disperse and/or infiltrate runoff and remove pollutants?
- What feasible combinations of slope, soil, subsoil, and vegetation can provide flow control and pollutant removal on shoulders and medians?
- Can soil bioengineering techniques (such as brush layers and brush wattles) enhance flow attenuation and treatment on steep slopes?

How much did it cost?

WSDOT conducted stormwater research in partnership with Ecology, the Federal Highway Administration, NCHRP, and state universities. During FY09, WSDOT spent approximately $106,000 on stormwater research, and approximately $85,000 in FY10.

What did this research reveal?

During FY09, WSDOT completed a study evaluating the performance of compost-amended vegetated filter strips (CAVFS). This research sought to help calibrate models to estimate how much water these BMPs can detain, evaporate, or infiltrate. It also evaluated the pollutant-removal performance of CAVFS compared to conventional (without compost) vegetated filter strips.

Also completed during FY09 was a Master's Degree thesis entitled "Design and Construction of a Field Test Site to Evaluate the Effectiveness of a Compost Amended Bioswale for Removing Metals from Highway Stormwater Runoff (WSDOT, 2009a)." This project constructed two biofiltration swales—one with a compost blanket and the other as a control—to evaluate the effectiveness of the addition of a compost blanket in removing dissolved metals from highway runoff. The project captures water at the edge of pavement and pipes it to the biofiltration swales where it is monitored for flow and samples are taken for analysis. The site has two years' of hydrologic data and one year of water quality data. Preliminary data show that the compost-amended swale has improved pollution-removal characteristics. Monitoring will likely continue through the end of the permit cycle to assess midterm performance.

Other stormwater research projects currently underway include:

- An Embankment Study to evaluate infiltration and pollutant removal on vegetated slopes not engineered as BMPs. When completed, we intend to continue using the study sites for a Modified Vegetated Filter Strip (VFS) Study. This research will compare two standard VFS to two modified VFS with compost applied as a blanket. We also plan to install a CAVFS for further comparison.
- WSDOT proposes extending a Compost-Amended Biofiltration Swale Study that began two years ago as one of the permit's BMP monitoring sites.
- WSDOT will evaluate modified media filter drains (MMFD) to assess pollutant-removal performance. If this research confirms performance supporting the modification, Ecology's approval would allow WSDOT to construct MMFDs in shapes and locations other than long and narrow parallel to the road, potentially adding the option of piping water to them directly for treatment.

Stormwater monitoring data management

How does WSDOT intend to manage its stormwater monitoring data?

In June 2009, WSDOT purchased EQuIS (EarthSoft, Inc.), an industry-leading database and application for storing and managing monitoring data collected in the field and analyzed by certified labs. In August 2010, we moved the database container to a production server and established the services needed to allow labs and consultants to securely submit data via the Internet. We anticipate in December 2010, to establish the protocol and format for those electronic data submittals, and by the spring of 2011, we expect to have a working data submission process in place.

By the end of 2010, WSDOT anticipates setting up the database container for real-time hydrology data that established the context for the permit's water quality sampling efforts. The key to establishing this database was determining the field equipment and a real-time telecommunications pathway. Once we made these decisions, WSDOT purchased StreamTrac (FTS, Inc.) as a cost-efficient and integrated solution for data storage and data management.

How will WSDOT link the monitoring data and the Stormwater Features Inventory Database?

WSDOT developed the following strategy for linking monitoring data with stormwater facility inventory features:

- **Map the monitoring data locations in the GIS:** The purchase of EQuIS as the primary database for monitoring data included an ArcGIS extension that allows us to map the monitoring sample locations and results in context with the Stormwater Features Inventory Database.
- **Relate the GIS location of stormwater features to the monitoring data:** Each monitoring site will be represented as a GIS polygon feature linked to the applicable stormwater drainage and BMPs at the monitoring site using the same site identifiers contained in EQuIS. EQuIS also can store the GIS feature identifiers and descriptors for monitored sampling locations (such as BMP or edge of pavement) if necessary.

Have any technical studies been posted on WSDOT's website?

The following are stormwater-related research documents recently posted to WSDOT's research website:

Title: *Design and Construction of a Field Test Site to Evaluate the Effectiveness of a Compost Amended Bioswale for Removing Metals from Highway Stormwater Runoff*
Author: Mark W. Maurer
Originator: Washington (State). Department of Transportation. Headquarters Design Office, Highway Runoff Section.
Publish Date: March, 2009
http://www.wsdot.wa.gov/research/reports/fullreports/724.1.pdf

Title: *Barriers to Implementing Low Impact Development Approaches in Washington State Roadways and Highways*
Author: Claire Miccio
Originator: Washington (State). Department of Transportation. Headquarters Environmental Services Office
Publish Date: June, 2010
http://www.wsdot.wa.gov /Research/Reports/700/756.1.htm

Title: *Assessment of Alternatives in Vegetation Management at the Edge of Pavement*
Author: Raymond G. Willard, James R. Morin, Oai K. Tang
Originator: Washington (State). Department of Transportation. Headquarters Maintenance and Operations Office
Publish Date: May, 2010
http://www.wsdot.wa.gov/research/reports/700/736.1.htm

Chapter 9 Education, Outreach, & Public Involvement

Summary of outreach, knowledge, and technology transfer activities

WSDOT uses 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, Commute Trip Reduction Program, electronic mailing lists, WSDOT's internet site, and agency participation in external meetings and workgroups. These activities are summarized below.

What role does the Adopt-A-Highway Program play?

The Adopt-A-Highway roadside cleanup program promotes pride and local ownership in Washington State. Currently, WSDOT has 1,234 Adopt-A-Highway volunteer groups and 142 sponsors that hire contactors to pick up litter. Adopt-A-Highway activity reports help WSDOT track how many hours these volunteers worked and the amount of litter they picked up. According to the 2009 activity reports turned in, volunteers spent nearly 21,000 hours and picked up over 26,000 bags of litter. These are impressive figures, especially considering that only 50% of the volunteers turned in activity reports. Sponsors that hire contractors to pick up litter reported nearly 9,000 bags turned in.

Volunteers with the Port of Camas-Washougal pick up litter twice a year along SR 500 East in Clark County. They have expressed that the program provides a way for them to give back to their community.

How does WSDOT encourage Commute Trip Reduction?

The Commute Trip Reduction Program (CTR) brings business and government together to provide solutions to help maximize the efficiency of the transportation system. In support of this program, WSDOT administers funding, guides the program with policies and procedures, and coordinates the measurement and evaluation of the program.

The state also provides tools and support to ensure efficient delivery of CTR Programs, with effectively measured results. For example, in 2009 WSDOT used federal funds to upgrade *Rideshareonline*, the statewide ride-matching system. The system, which was launched in the spring of 2010, provides a statewide comprehensive commute management system for use by employers, local governments, transit agencies, and others. This investment will help WSDOT realize local efficiencies in program delivery and greater consistency in measuring and reporting results.

In Washington State, greenhouse gas emissions from the transportation sector account for nearly half of the state's total estimated emissions. In 2009, CTR removed nearly 28,000 vehicles from the state's roadways every weekday morning. Statewide, CTR reduced 62 million vehicle miles traveled annually, which is equivalent to 27,490 metric tons of greenhouse gasses and three million gallons of fuel.

Why does WSDOT use the Highway Runoff Manual GovDelivery tool?

This electronic mailing list (GovDelivery) functions as an effective tool for getting timely announcements to WSDOT staff and consultants, regulators, and local municipalities whose road departments utilize the *Highway Runoff Manual*. During this reporting period, we used this list to announce post-publication updates to the manual, manual-related training opportunities, modeling software updates, and employment opportunities. People interested in receiving these e-mail announcements can subscribe through WSDOT's website: http://www.wsdot.wa.gov/Environment/WaterQuality/Runoff/HighwayRunoffManual.htm#mailing

How did WSDOT disseminate information regarding the SWMPP?

During this reporting period, WSDOT's internet sites included updates in many areas related to its implementation of the Stormwater Management Program Plan, including the following:

- Updates on the Erosion Control Program
- Posting the 2010 NPDES Municipal Stormwater Permit Modification
- *Highway Runoff Manual* post-publication updates and training opportunities
- Newly completed Roadside Vegetation Management Plans
- Contact information for illicit discharge reporting
- Results of WSDOT's *Maintenance Accountability Process* inspections of randomly selected sections of highway
- A *Gray Notebook* article on the WSDOT NPDES Municipal Stormwater Permit

How did WSDOT support knowledge and technology transfers related to stormwater management?

WSDOT supported knowledge and technology transfers related to stormwater management through its participation and active involvement in regional, state, and national efforts. Examples include information sharing through:

- Permit Coordination/Implementation meetings
- Phase I Permit Coordinators
- NPDES Permit Coordinators
- ROADMAP (Regional Operations and Maintenance Program)
- Standard Operating Procedures (SOP) Working Group
- Phase I Monitoring

- National Committees and Advisory Groups
- American Association of State Highway and Transportation Officials (AASHTO)
    - Standing Committee on the Environment
    - Stormwater Community of Practice
- Stormwater Practitioners Meeting
- Stormwater-Related Research
- Permeable Pavement Proviso workshops
- Hood Canal Coordinating Council TAC Stormwater and Land Use Work Group
- Presentation on WSDOT stormwater work to WRIA 16/14b Watershed Planning Unit
- Presentation on IDDE program at Northwest Region Design and Construction Conference
- Presentation on the barriers to implementing LID approaches in state roadway and highway settings
- SR 520 Innovative Stormwater Treatment Project
- Transportation Research Board's (TRB's) National Cooperative Highway Research Program (NCHRP)
- NCHRP 25-25/Task 56 – Cost and Benefit of Transportation Specific MS4 and Construction Permitting (http://apps.trb.org/cmsfeed/TRBNetProjectDisplay.asp?ProjectID=2617; http://onlinepubs.trb.org/onlinepubs/nchrp/docs/NCHRP25-25(56)_FR.pdf)
- NCHRP 25-32 [Active] – Measuring and Removing Dissolved Metals from Storm Water in Highly Urbanized Areas (http://144.171.11.40/cmsfeed/TRBNetProjectDisplay.asp?ProjectID=2737)
- State and Regional Committees and Advisory Groups
- American Public Works Association Stormwater Managers Committee
- Stormwater Technical Resource Center Advisory Committee
- Active participation in the Puget Sound Partnership/Ecology Stormwater Work Group
- TAPE Stakeholder Advisory Group
- Local Jurisdiction Stormwater Monitoring Caucus
- American Society of Civil Engineers (ASCE) Water Resources Committee

Chapter 10 Certification

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM MUNICIPAL STORMWATER PERMIT PROGRAM

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 ensure 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 there are significant penalties for submitting false information, including the possibility of fines and imprisonment for willful violations.

Megan White

Megan White, P.E.
Environmental Services Office Director
Washington State Department of Transportation

10/22/2010

Date

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Appendix A Proposed Changes to the Stormwater Management Program Plan

Proposed Changes to the Stormwater Management Program Plan

The following proposed changes to Sections 2.4 and 8.2.3 reflect WSDOT's elimination of its New Products Program due to budget cuts.

2.4 Information Management *(Page 2-8, 3rd paragraph)*

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.

8.2.3 New Products ~~Committee~~Evaluation *(Pages 8-2 and 8-3)*

~~WSDOT's New Products Committee (NPC) evaluates new products and procedures for potential use on construction and maintenance projects.~~The responsibility for approval of new products now falls on WSDOT's subject matter expert (SME) that works within the discipline covering the product submitted. The SME is either forwarded information from the Documentation engineer or is contacted directly by the product proponent.

The product information is evaluated by the SME to determine if the product is beneficial and useful to the Department. The SME also considers if the product will affect other disciplines and contact them about the product for input, if needed. The SME may also work with the product proponent if testing of the product is necessary.

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 the SME completes their ~~an~~ evaluation, ~~WSDOT's NPC findings and recommendation for action typically falls into one of the following categories~~the product may be:

- Approved
- Not Approved
- ~~Product~~Found to Meet~~s~~ Current Specifications
- ~~Non Interest Or Limited Use Item~~Considered not at all useful or beneficial to the Department

The SME then notifies the product proponent of their determination.

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

The following proposed changes to Section 3.2 will achieve consistency with the permit notification requirements contained in G.3. Notification of Spills.

3.2 Notification Procedures *(Page 3-3, 2nd paragraph)*

In ~~all~~ instances that present a severe threat to human health, welfare, or the environment, illicit discharges shall be immediately reported, but in no case later than within 24 hours of obtaining that knowledge to the appropriate Ecology regional office ~~at (360) 407-6300~~ so that they can be entered into the *Environmental Report Tracking System*. Similar notifications need to be made to other appropriate spill response authorities. For spills which might cause bacterial contamination of shellfish shall be immediately reported to the appropriate Ecology regional office and the Department of Health's Shellfish Program. The 24-hour phone numbers are provided below.

Within 30 days upon the effective date of WSDOT's Municipal Stormwater Permit, ~~this~~Ecology regional office 24-hour phone number~~s~~ 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.

The following proposed changes to Section7.2.3 more accurately reflect WSDOT's culvert maintenance strategy.

Ditch, Channel, and Culvert Maintenance *(Page 7-5)*

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 th~~e~~an 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 *BMPField Guide for ESA 4(d) Habitat Protection.* ~~Culvert inspection occurs at least twice a year~~As a general guideline, culverts are inspected twice a year, once before the fall/winter storms and once after the rainy season has ended to ensure they are clean and in good operating condition. Culverts may be inspected more or less than this frequency based on the past history of the particular culvert.

The following proposed changes to Sections 8.2.2, 8.2.4, and 8.5 reflect reorganization of responsibilities within WSDOT.

8.2.2 Stormwater Technical Review Committee *(Page 8-2,1st paragraph)*

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~~ the Design Office Highway Runoff 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, a representative from the Research Office, and ESO's Stormwater and Watersheds Program~~Water Quality Team Leader~~). Additional disciplines will be called upon as needed.

8.2.4 Local, State, and National Programs Coordination *(Page 8-3)*

To facilitate research partnerships and information sharing, ~~ESO's Water Quality Program~~the Design Office Highway Runoff 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.

8.5 Research Proposal Development and Evaluation Process *(Page 8-5, 2nd paragraph; Page 8-6, Figure 8-1; Page 8-7, 1st paragraph)*

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 Design Office Highway Runoff~~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.

Upon submittal, ~~ESO's Water Quality~~the Design Office Highway Runoff 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:

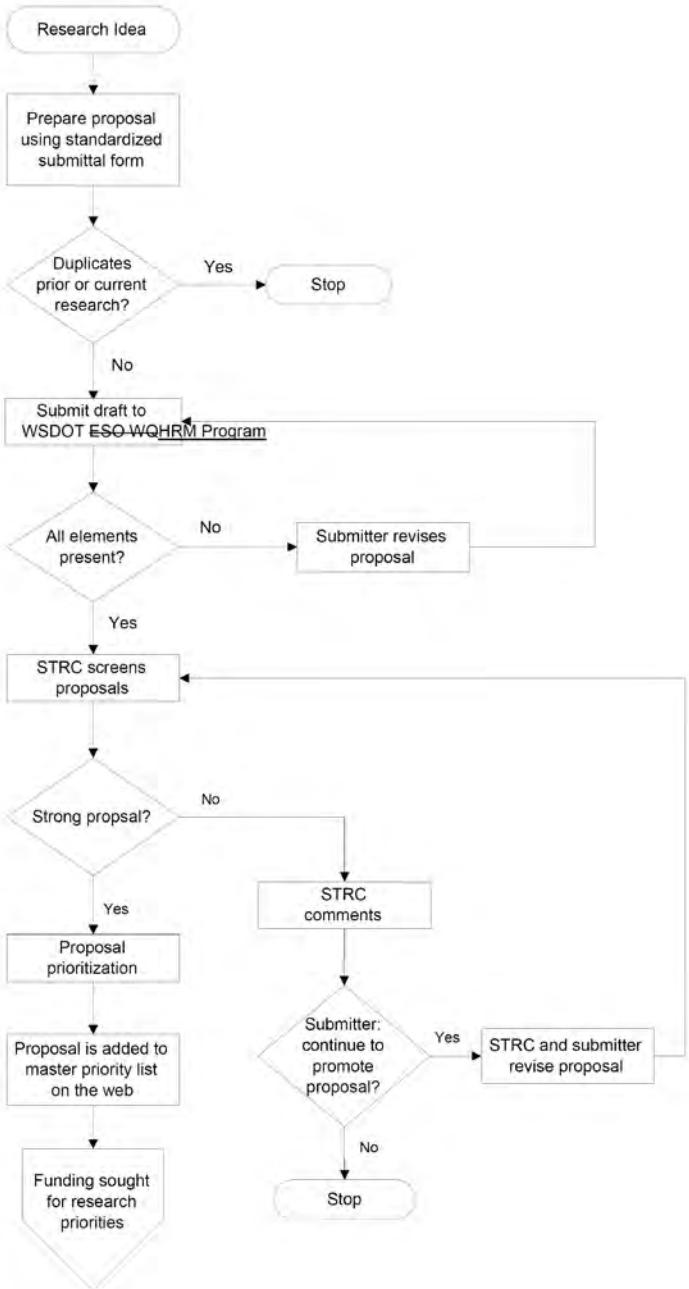

Figure 8-1 Research idea development process

Appendix B Ecology Notification

Washington State Department of Transportation
Paula J. Hammond, P.E.
Secretary of Transportation

Transportation Building
310 Maple Park Avenue SE
Olympia, WA 98504-7300
360-705-7000
TTY: 1-800-833-6388
www.wsdot.wa.gov

February 5, 2010

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

Attn.: Kathleen Emmett

RE: NPDES Municipal Stormwater Permit, TMDL Compliance Issues

Dear Ms. Emmett:

The purpose of this letter is to notify the Department of Ecology (Ecology) that the Washington State Department of Transportation (WSDOT) has compliance issues with several requirements in its NPDES municipal stormwater permit (Permit) issued on February 4, 2009.

Special Condition S6 requires WSDOT comply with applicable Environmental Protection Agency approved Total Maximum Daily Loads (TMDLs) listed in *Appendix 3* of the Permit. The information below details the issues and concerns WSDOT has relative to being in compliance with S6.

TMDL Compliance Issues

- **Lack of staff and financial resources.** In the past, WSDOT did not have any dedicated resources for implementing the Permit's TMDL obligations. In July 2009, WSDOT hired a part-time employee to focus on TMDL compliance activities.

- **Loss of key personnel and unfilled vacancies.** Due to resource constraints within WSDOT's Stormwater and Watersheds Program, the TMDL Lead position was tasked with covering another vacant position's responsibilities in addition to overseeing TMDL implementation matters, in the time period July-December 2009. As of December 2009, that vacant position has been filed and WSDOT's part-time TMDL Lead has been focusing on developing an agency TMDL strategy, overseeing TMDL permit compliance, participating in Ecology efforts to develop new TMDLs, and attending TMDL adaptive management meetings.

- **Difficulty determining WSDOT's TMDL obligations required by the Permit.** *Appendix 3* of WSDOT's Permit contains the list of TMDLs which WSDOT is required to comply with. However, the Permit does not specifically list TMDL-related requirements attributed to WSDOT, but rather references the applicable Detailed Implementation Plans (DIPs)/ Water Quality Implementation Plans (WQIPs) which presumably outline those expectations. Some of the plans clearly articulate the actions WSDOT is expected to perform. However, some of the expectations of WSDOT are buried within the plans which are commonly 50+ pages long. It has proven to be quite difficult and time consuming to determine what WSDOT's specific TMDL-related requirements are.

- **Unclear descriptions of WSDOT required actions.** Many TMDLs are written vaguely or lacking clear direction as to what is expected and/or in which locations. We will need to work with Ecology's TMDL Leads to determine WSDOT's obligations and where and when they are to be implemented.

- **Geographic scope of TMDLs are often unclear.** There has been some difficulty trying to determine the geographic scope of the TMDLs in relation to the permit coverage areas and WSDOTs highway system.

- **Many TMDL deadlines predated the effective date of the Permit or did not allow enough implementation time.** The required actions listed in the DIPs/WQIPs would require additional resources (funding, personnel, etc.) and implementation (planning, construction, etc.) that was not feasible in the timeframes provided.

Corrective Actions Taken and Proposed

WSDOT has taken and is proposing to take the following actions to address the above-listed TMDL issues:

1. Attended the 1/26/10 Ecology TMDL Videoconference to discuss WSDOT's implementation strategy and the actions that will be taken in the next year to implement TMDLs. Additionally, the need to work with Ecology TMDL Leads to determine WSDOT's obligations and where and when they are to be implemented was expressed.

2. Work with Ecology's TMDL map developer to ensure we are aware of the entire geographic scope of each TMDL and its proximity to permit coverage areas. Then, work with our GIS staff to overlay WSDOTs highway system and any discharge point or BMP information we have available, within the TMDL's geographic scope.

3. Work with Ecology TMDL Leads to confirm action items assigned to WSDOT for each TMDL. In the spirit of adaptive management, it is our hope that together we can evaluate the appropriateness/effectiveness of the DIP/WQIP action items based on our current state of knowledge. When TMDL obligations appear to be inappropriate or not effective, we will work with Ecology to develop a more appropriate and/or effective approach.

4. Work with Ecology TMDL Leads to determine new deadlines for those action items identified in No. 3 above, which had deadlines that predated the effective date of the WSDOT permit. Seek additional funding and resources to allow us to begin implementing actions where deadlines were not met.

WSDOT will follow the steps above to address TMDL compliance and will continue to work with Ecology on TMDL implementation. Please contact me at 360-570-6642 or by email if you have any questions or concerns regarding this letter.

Sincerely,

Kenneth M. Stone
Resource Programs Branch Manager
Environmental Service Office

KMS:bu
cc: Megan White, P.E. Director
Dick Gersib, Program Manager
Larry Schaffner, Municipal Permit Coordinator
Jana Ratcliff, TMDL Lead

Appendix C Stormwater Treatment Facility Construction

Statewide Stormwater Treatment Facility Construction

State Route	Milepost	Offset Direction & Distance	County	Project Name	BMP Type	Facility Size	Stand-Alone Retrofit?	Region	Data Year
2	301.81	30' RT	Spokane	N. Glen-Elk Chattaroy Intersection Improvement	Bioinfiltration Pond (IN.01)	3300 ft²	No	Eastern	2010
2	103.98 - 104.36	LT	Chelan	Peshastin East Interchange	Media Filter Drain	~2000 ft.	No	North Central	2009
2	103.98 - 104.28	RT	Chelan	Peshastin East Interchange	Media Filter Drain	~1600 ft.	No	North Central	2009
2	65.45 - 65.98	11' LT WB EDL	Chelan	Roadside Safety Improvements	Natural Dispersion (flow control only)	13 ft.	No	North Central	2009
2	21.63	32' LT	Snohomish	Vic Sultan- Wb Bus Pullout & Sidewalk Safety	Biofiltration Swale (RT.04)	107 ft.	No	Northwest	2009
3	0.05	125’ LT	Mason	US 101/SR 3 NB On-ramp	Infiltration Ditch	300 L.F.	No	Olympic	2009
5	187.74	30' RT	Snohomish	SR / South Everett Freeway Station 112 St. SE MP 187.23 to MP 189.21	Biofiltration Swale (RT.04)	100 ft.	No	Northwest	2009
5	187.15	20' RT	Snohomish	SR / South Everett Freeway Station 112 St. SE MP 187.23 to MP 189.21	Wet Detention Pond	0.763 ac-ft.	No	Northwest	2009
5	188.25	20' RT	Snohomish	SR / South Everett Freeway Station 112 St. SE MP 187.23 to MP 189.21	Wet Detention Pond	0.850 ac-ft.	No	Northwest	2009
5	187.85	50' LT	Snohomish	SR / South Everett Freeway Station 112 St. SE MP 187.23 to MP 189.21	Wet Detention Pond	0.885 ac-ft.	No	Northwest	2009
5	187.85	50' RT	Snohomish	SR / South Everett Freeway Station 112 St. SE MP 187.23 to MP 189.21	Wet Detention Pond	0.893 ac-ft.	No	Northwest	2009
5	132.3	425’ RT	Pierce	I-5 48th to Pacific	Biofiltration Swale (RT.04)	.13 acres	No	Olympic	2009
5	133.6	100’ RT	Pierce	I-5 48th to Pacific	CB Type 2 w/Flow Restr/Oil Separator	N/A	No	Olympic	2009
5	133.6	100’ RT	Pierce	I-5 48th to Pacific	Detention Tank	10’ Dia x 45’	No	Olympic	2009
5	133	260’ LT	Pierce	I-5 48th to Pacific	2 cell storm water pond	1.75 acres	No	Olympic	2009
5	133.3	340’ LT	Pierce	I-5 48th to Pacific	2 cell storm water pond	1.17 acres	No	Olympic	2009
5	11.64	70' RT	Clark	I-5 / SR502 Interchange	Media Filter Drain	1550 ft.	No	Southwest	2009
5	73.38	60' LT	Lewis	Rush Rd. to 13th St.	Media Filter Drain	160 ft.	No	Southwest	2009
5	74.23	60' LT	Lewis	Rush Rd. to 13th St.	Media Filter Drain	1675 ft.	No	Southwest	2009
5	73.16	60' RT	Lewis	Rush Rd. to 13th St.	Media Filter Drain	170 ft.	No	Southwest	2009
5	75.57	60' RT	Lewis	Rush Rd. to 13th St.	Media Filter Drain	845 ft.	No	Southwest	2009
5	74.98	280' LT	Lewis	Rush Rd. to 13th St.	Combined Stormwater Treatment Wetland / Detention Pond	1.45 ac-ft.	No	Southwest	2009
5	10.86	180' RT	Clark	I-5 / SR502 Interchange	Combined Wet / Detention Pond	0.34 ac-ft.	No	Southwest	2009
5	12.03	110' LT	Clark	I-5 / SR502 Interchange	Combined Wet / Detention Pond	2.84 ac-ft.	No	Southwest	2009
5	74.73	560' RT	Lewis	Rush Rd. to 13th St.	Combined Wet / Detention Pond	2.84 ac-ft.	No	Southwest	2009

State Route	Milepost	Offset Direction & Distance	County	Project Name	BMP Type	Facility Size	Stand-Alone Retrofit?	Region	Data Year
5	73.26	230' RT	Lewis	Rush Rd. to 13th St.	Detention Pond	.03 ac-ft.	No	Southwest	2009
5	74.02	100' LT	Lewis	Rush Rd. to 13th St.	Detention Pond	0.25 ac-ft.	No	Southwest	2009
5	73.82	100' LT	Lewis	Rush Rd. to 13th St.	Detention Pond	1.00 ac-ft.	No	Southwest	2009
5	N-EW Ramp	150' RT	Clark	I-5 / SR502 Interchange	Combined Wet / Detention Pond	1.71 ac-ft.	No	Southwest	2009
5	N-EW Ramp	23' RT	Clark	I-5 / SR502 Interchange	Media Filter Drain	1751 ft.	No	Southwest	2009
5	N-R Ramp	100’ RT	Clark	I-5 / SR502 Interchange	Detention Pond	0.13 ac-ft.	No	Southwest	2009
5	N-R Ramp	35' RT	Clark	I-5 / SR502 Interchange	Media Filter Drain	507 ft.	No	Southwest	2009
6	42.54 - 42.56	40 - 35' RT	Lewis	So. Fork Chehalis River Bridge	Media Filter Drain	120 ft.	No	Southwest	2010
6	42.42 - 42.44	30 - 35' LT	Lewis	So. Fork Chehalis River Bridge	Biofiltration Swale (RT.04)	175 x 5 ft.	No	Southwest	2010
6	42.42 - 42.44	30 - 35' LT	Lewis	So. Fork Chehalis River Bridge	Media Filter Drain	200 ft.	No	Southwest	2010
6	42.47 - 42.52	35' RT	Lewis	So. Fork Chehalis River Bridge	Media Filter Drain	245 ft.	No	Southwest	2010
6	42.48 - 42.61	35 - 25' LT	Lewis	So. Fork Chehalis River Bridge	Media Filter Drain	685 ft.	No	Southwest	2010
7	48.2	80' LT	Pierce	SR 704 Cross-base Highway- Spanaway Loop Rd to SR 7	CAVFS w/ Flow Spreader	1493 yd^2	No	Olympic	2010
9	30.12	20' RT	Snohomish	SR 9, Schloman Rd To 258th Ne And 268th St Ne Inte	Infiltration Trench	1050 ft.	No	Northwest	2009
9	30.27	20' LT	Snohomish	SR 9, Schloman Rd To 258th Ne And 268th St Ne Inte	Infiltration Trench	295 ft.	No	Northwest	2009
9	30.44	20' LT	Snohomish	SR 9, Schloman Rd To 258th Ne And 268th St Ne Inte	Infiltration Trench	297 ft.	No	Northwest	2009
9	30.33	20' LT	Snohomish	SR 9, Schloman Rd To 258th Ne And 268th St Ne Inte	Infiltration Trench	300 ft.	No	Northwest	2009
9	30.2	20' LT	Snohomish	SR 9, Schloman Rd To 258th Ne And 268th St Ne Inte	Infiltration Trench	366 ft.	No	Northwest	2009
9	30.12	20' LT	Snohomish	SR 9, Schloman Rd To 258th Ne And 268th St Ne Inte	Infiltration Trench	523 ft.	No	Northwest	2009
9	32.18	110' LT	Snohomish	SR 9, Schloman Rd To 258th Ne And 268th St Ne Inte	Retention/ Detention Pond	0.26 ac-ft.	No	Northwest	2009
9	31.41	475' LT	Snohomish	SR 9, Schloman Rd To 258th Ne And 268th St Ne Inte	Retention/ Detention Pond	0.50 ac-ft.	No	Northwest	2009
9	30.65	210' LT	Snohomish	SR 9, Schloman Rd To 258th Ne And 268th St Ne Inte	Retention/ Detention Pond	1.06 ac-ft.	No	Northwest	2009
9	5.659	86.72'	Snohomish	SR 9/176th St. SE Vic. to SR 96 to Marsh Road I/S	Detention Pond	10,083 ft^3	No	Northwest	2010
9	4.22 - 6.97	LT	Snohomish	SR 9/176th St. SE Vic. to SR 96 to Marsh Road I/S	Media Filter Drain	4443 ft.	No	Northwest	2010
9	4.22 - 6.97	RT	Snohomish	SR 9/176th St. SE Vic. to SR 96 to Marsh Road I/S	Media Filter Drain	4443 ft.	No	Northwest	2010
12	196.67 - 196.70	27' LT	Yakima	NACHES TO MITCHELL RD. VICINITY - PAVING	Dispersion	1323 ft^2	No	South Central	2010

State Route	Milepost	Offset Direction & Distance	County	Project Name	BMP Type	Facility Size	Stand-Alone Retrofit?	Region	Data Year
12	196.67 - 196.89	22' RT	Yakima	NACHES TO MITCHELL RD. VICINITY - PAVING	Dispersion	60791 ft^2	No	South Central	2010
12	196.89 - 196.98	27-16' LT	Yakima	NACHES TO MITCHELL RD. VICINITY - PAVING	Dispersion	6358 ft^2	No	South Central	2010
14	170.54 - 170.77	0 - 40' RT	Benton	SR 14 / Benton County Roadside Safety	Natural Dispersion	1200 x 20 ft.	No	South Central	2009
14	177.30 - 177.61	0 - 25' RT	Benton	SR 14 / Benton County Roadside Safety	Natural Dispersion	1626 x 20 ft.	No	South Central	2009
14	175.99 - 176.31	0 - 30' LT	Benton	SR 14 / Benton County Roadside Safety	Natural Dispersion	1700 x 25 ft.	No	South Central	2009
14	170.41 - 170.50	0 - 30' LT	Benton	SR 14 / Benton County Roadside Safety	Natural Dispersion	472 x 15 ft.	No	South Central	2009
14	173.54 - 173.68	0 - 45' RT	Benton	SR 14 / Benton County Roadside Safety	Natural Dispersion	750 x 30 ft.	No	South Central	2009
14	176.65 - 176.80	0 - 30' LT	Benton	SR 14 / Benton County Roadside Safety	Natural Dispersion	775 x 25 ft.	No	South Central	2009
14	177.01 - 177.16	0 - 40' RT	Benton	SR 14 / Benton County Roadside Safety	Natural Dispersion	788 x 30 ft.	No	South Central	2009
14	177.01 - 177.18	0 - 40' LT	Benton	SR 14 / Benton County Roadside Safety	Natural Dispersion	880 x 30 ft.	No	South Central	2009
16	20	125’ RT	Kitsap	SR 16 Burley Olalla I/C	Detention Pond	1.426 ac-ft.	No	Olympic	2010
16	19	125’ LT	Kitsap	SR 16 Burley Olalla I/C	Detention Pond	3.168 ac-ft.	No	Olympic	2010
16	20	33' RT	Kitsap	SR 16 Burley Olalla I/C	Media Filter Drain w/Gravel Dispersal Trenches	1,128 yd^2	No	Olympic	2010
16	20	35' RT	Kitsap	SR 16 Burley Olalla I/C	Media Filter Drain w/Gravel Dispersal Trenches	1,361 yd^2	No	Olympic	2010
16	20	38' RT	Kitsap	SR 16 Burley Olalla I/C	Media Filter Drain w/Gravel Dispersal Trenches	2,487 yd^2	No	Olympic	2010
16	20	24’ RT	Kitsap	SR 16 Burley Olalla I/C	Media Filter Drain w/Gravel Dispersal Trenches	200 yd^2	No	Olympic	2010
16	20	95’ LT	Kitsap	SR 16 Burley Olalla I/C	Biofiltration Swale (RT.04)	2200 ft^2	No	Olympic	2010
16	19	35' LT	Kitsap	SR 16 Burley Olalla I/C	Media Filter Drain w/Gravel Dispersal Trenches	341 yd^2	No	Olympic	2010
16	20	33' RT	Kitsap	SR 16 Burley Olalla I/C	Media Filter Drain w/Gravel Dispersal Trenches	504 yd^2	No	Olympic	2010

State Route	Milepost	Offset Direction & Distance	County	Project Name	BMP Type	Facility Size	Stand-Alone Retrofit?	Region	Data Year
16	20	35' LT	Kitsap	SR 16 Burley Olalla I/C	Media Filter Drain w/Gravel Dispersal Trenches	673 yd^2	No	Olympic	2010
16	20	37' LT	Kitsap	SR 16 Burley Olalla I/C	Media Filter Drain w/Gravel Dispersal Trenches	758 yd^2	No	Olympic	2010
16	19	35' RT	Kitsap	SR 16 Burley Olalla I/C	Media Filter Drain w/Gravel Dispersal Trenches	845 yd^2	No	Olympic	2010
17	63.34 - 65.31	34' LT	Grant	SR 17/SR 282 Moses Lake to Ephrata Paving Passing Lanes	Natural Dispersion	8 ft.	No	North Central	2010
17	59.74 - 62.58	34' RT	Grant	SR 17/SR 282 Moses Lake to Ephrata Paving Passing Lanes	Natural Dispersion	8 ft.	No	North Central	2010
20	Anacortes Terminal-Route 20 Spur	N/A	Skagit	Anacortes truck lane pavement Project	Pervious pavement (LID)	150 x 20 ft.	No	Ferries	2010
20	56.53	22' LT	Skagit	SR 20, Fredonia I-5 Widening Stage 1 Stage 1	Filter Strip	357 ft.	No	Northwest	2009
20	56.09	22' RT	Skagit	SR 20, Fredonia I-5 Widening Stage 1 Stage 1	Filter Strip	1,075 ft.	No	Northwest	2009
20	56.71	28' LT	Skagit	SR 20, Fredonia I-5 Widening Stage 1 Stage 1	Filter Strip	1,531 ft.	No	Northwest	2009
20	56.71	28' RT	Skagit	SR 20, Fredonia I-5 Widening Stage 1 Stage 1	Filter Strip	1,531 ft.	No	Northwest	2009
20	56.41	22' LT	Skagit	SR 20, Fredonia I-5 Widening Stage 1 Stage 1	Filter Strip	1,600 ft.	No	Northwest	2009
20	56.41	22' RT	Skagit	SR 20, Fredonia I-5 Widening Stage 1 Stage 1	Filter Strip	1,600 ft.	No	Northwest	2009
20	56.41	28' LT	Skagit	SR 20, Fredonia I-5 Widening Stage 1 Stage 1	Filter Strip	1,600 ft.	No	Northwest	2009
20	56.41	28' RT	Skagit	SR 20, Fredonia I-5 Widening Stage 1 Stage 1	Filter Strip	1,600 ft.	No	Northwest	2009
20	54.96	50' LT	Skagit	SR 20, Fredonia I-5 Widening Stage 1 Stage 1	Filter Strip	1,707 ft.	No	Northwest	2009
20	44.67	30' RT	Skagit	SR 20, Safety Improve Quiet Cove Rd Stg. 1	Biofiltration Swale (RT.04)	100 ft.	No	Northwest	2009
20	44.67	30' LT	Skagit	SR 20, Safety Improve Quiet Cove Rd Stg. 1	Biofiltration Swale (RT.04)	100 ft.	No	Northwest	2009
20	30.82	33' RT	Island	SR 20, Sidney St Vic To Scenic Heights Safety And	Biofiltration Swale (RT.04)	104 ft.	No	Northwest	2009
20	56.09	28' LT	Skagit	SR 20, Fredonia I-5 Widening Stage 1 Stage 1	Filter Strip	1075 ft.	No	Northwest	2009
20	55.82	22' RT	Skagit	SR 20, Fredonia I-5 Widening Stage 1 Stage 1	Filter Strip	1360 ft.	No	Northwest	2009
20	55.82	28' LT	Skagit	SR 20, Fredonia I-5 Widening Stage 1 Stage 1	Filter Strip	1360 ft.	No	Northwest	2009
20	27.39	38' RT	Island	SR 20, Sidney St Vic To Scenic Heights Safety And	Biofiltration Swale (RT.04)	147 ft.	No	Northwest	2009
20	54.96	25' LT	Skagit	SR 20, Fredonia I-5 Widening Stage 1 Stage 1	Filter Strip	1507 ft.	No	Northwest	2009
20	28.71	35' RT	Island	SR 20, Sidney St Vic To Scenic Heights Safety And	Biofiltration Swale (RT.04)	155 ft.	No	Northwest	2009
20	28.73	25' LT	Island	SR 20, Sidney St Vic To Scenic Heights Safety And	Biofiltration Swale (RT.04)	160 ft.	No	Northwest	2009
20	29.21	35' LT	Island	SR 20, Sidney St Vic To Scenic Heights Safety And	Biofiltration Swale (RT.04)	160 ft.	No	Northwest	2009

State Route	Milepost	Offset Direction & Distance	County	Project Name	BMP Type	Facility Size	Stand-Alone Retrofit?	Region	Data Year
20	28.44	45' RT	Island	SR 20, Sidney St Vic To Scenic Heights Safety And	Biofiltration Swale (RT.04)	175 ft.	No	Northwest	2009
20	30.31	40' LT	Island	SR 20, Sidney St Vic To Scenic Heights Safety And	Biofiltration Swale (RT.04)	194 ft.	No	Northwest	2009
20	55.31	25' LT	Skagit	SR 20, Fredonia I-5 Widening Stage 1 Stage 1	Filter Strip	2053 ft.	No	Northwest	2009
20	55.41	22' RT	Skagit	SR 20, Fredonia I-5 Widening Stage 1 Stage 1	Filter Strip	2080 ft.	No	Northwest	2009
20	29.36	40' RT	Island	SR 20, Sidney St Vic To Scenic Heights Safety And	Biofiltration Swale (RT.04)	225 ft.	No	Northwest	2009
20	54.6	100’ RT	Skagit	SR 20, Fredonia I-5 Widening Stage 1 Stage 1	Biofiltration Swale (RT.04)	300 ft.	No	Northwest	2009
20	29.35	40' LT	Island	SR 20, Sidney St Vic To Scenic Heights Safety And	Biofiltration Swale (RT.04)	300 ft.	No	Northwest	2009
20	55.17	27' LT	Skagit	SR 20, Fredonia I-5 Widening Stage 1 Stage 1	Filter Strip	346 ft.	No	Northwest	2009
20	56.23	22' RT	Skagit	SR 20, Fredonia I-5 Widening Stage 1 Stage 1	Filter Strip	350 ft	No	Northwest	2009
20	56.23	28' LT	Skagit	SR 20, Fredonia I-5 Widening Stage 1 Stage 1	Filter Strip	350 ft.	No	Northwest	2009
20	27.37	50' RT	Island	SR 20, Sidney St Vic To Scenic Heights Safety And	Biofiltration Swale (RT.04)	40 ft.	No	Northwest	2009
20	54.76	20' RT	Skagit	SR 20, Fredonia I-5 Widening Stage 1 Stage 1	Filter Strip	555 ft.	No	Northwest	2009
20	55.85	28' RT	Skagit	SR 20, Fredonia I-5 Widening Stage 1 Stage 1	Filter Strip	6,827 ft.	No	Northwest	2009
20	44.73	40' RT	Skagit	SR 20, Safety Improve Quiet Cove Rd Stg. 1	Detention Pond	0.20 ac-ft.	No	Northwest	2009
20	28.74	60' RT	Island	SR 20, Sidney St Vic To Scenic Heights Safety And	Detention Pond	0.11 ac-ft.	No	Northwest	2009
20	28.46	200' LT	Island	SR 20, Sidney St Vic To Scenic Heights Safety And	Detention Pond	0.27 ac-ft.	No	Northwest	2009
20	29.24	110' LT	Island	SR 20, Sidney St Vic To Scenic Heights Safety And	Detention Pond	0.36 ac-ft.	No	Northwest	2009
20	30.27	80' LT	Island	SR 20, Sidney St Vic To Scenic Heights Safety And	Detention Pond	0.55 ac-ft.	No	Northwest	2009
20	27.37	220' RT	Island	SR 20, Sidney St Vic To Scenic Heights Safety And	Detention Pond	4.45 ac-ft.	No	Northwest	2009
20	44.81	80' LT	Skagit	SR 20, Safety Improve Quiet Cove Rd Stg. 1	Retention/ Detention Pond	0.54 ac-ft.	No	Northwest	2009
20	56.82	RT	Skagit	SR 20/Fredonia to SR 5 - Stage 2 (See A02039B for RW)	Vegetated Filter Strip	750 ft.	No	Northwest	2010
20	56.97	LT	Skagit	SR 20/Fredonia to SR 5 - Stage 2 (See A02039B for RW)	Vegetated Filter Strip	725 ft.	No	Northwest	2010
20	57.16	LT	Skagit	SR 20/Fredonia to SR 5 - Stage 2 (See A02039B for RW)	Vegetated Filter Strip	870 ft.	No	Northwest	2010
20	57.33	RT	Skagit	SR 20/Fredonia to SR 5 - Stage 2 (See A02039B for RW)	Vegetated Filter Strip	780 ft.	No	Northwest	2010
20	57.48	RT	Skagit	SR 20/Fredonia to SR 5 - Stage 2 (See A02039B for RW)	Vegetated Filter Strip	100 ft.	No	Northwest	2010

State Route	Milepost	Offset Direction & Distance	County	Project Name	BMP Type	Facility Size	Stand-Alone Retrofit?	Region	Data Year
20	57.53	RT	Skagit	SR 20/Fredonia to SR 5 - Stage 2 (See A02039B for RW)	Vegetated Filter Strip	595 ft.	No	Northwest	2010
20	57.64	RT	Skagit	SR 20/Fredonia to SR 5 - Stage 2 (See A02039B for RW)	Vegetated Filter Strip	135 ft.	No	Northwest	2010
20	57.66	RT	Skagit	SR 20/Fredonia to SR 5 - Stage 2 (See A02039B for RW)	Vegetated Filter Strip	4,010 ft.	No	Northwest	2010
20	58.42	LT	Skagit	SR 20/Fredonia to SR 5 - Stage 2 (See A02039B for RW)	Vegetated Filter Strip	400 ft.	No	Northwest	2010
20	58.52	RT	Skagit	SR 20/Fredonia to SR 5 - Stage 2 (See A02039B for RW)	Vegetated Filter Strip	1,038 ft.	No	Northwest	2010
20	56.82	LT	Skagit	SR 20/Fredonia to SR 5 - Stage 2 (See A02039B for RW)	Vegetated Filter Strip	1,250 ft.	No	Northwest	2010
20	56.82	RT	Skagit	SR 20/Fredonia to SR 5 - Stage 2 (See A02039B for RW)	Vegetated Filter Strip	1,250 ft.	No	Northwest	2010
20	57.06	RT	Skagit	SR 20/Fredonia to SR 5 - Stage 2 (See A02039B for RW)	Vegetated Filter Strip	230 ft.	No	Northwest	2010
20	57.18	RT	Skagit	SR 20/Fredonia to SR 5 - Stage 2 (See A02039B for RW)	Vegetated Filter Strip	140 ft.	No	Northwest	2010
20	57.2	LT	Skagit	SR 20/Fredonia to SR 5 - Stage 2 (See A02039B for RW)	Vegetated Filter Strip	800 ft.	No	Northwest	2010
20	57.2	RT	Skagit	SR 20/Fredonia to SR 5 - Stage 2 (See A02039B for RW)	Vegetated Filter Strip	800 ft.	No	Northwest	2010
20	57.35	LT	Skagit	SR 20/Fredonia to SR 5 - Stage 2 (See A02039B for RW)	Vegetated Filter Strip	700 ft.	No	Northwest	2010
20	57.62	LT	Skagit	SR 20/Fredonia to SR 5 - Stage 2 (See A02039B for RW)	Vegetated Filter Strip	215 ft.	No	Northwest	2010
20	57.68	LT	Skagit	SR 20/Fredonia to SR 5 - Stage 2 (See A02039B for RW)	Vegetated Filter Strip	125 ft.	No	Northwest	2010
20	57.73	LT	Skagit	SR 20/Fredonia to SR 5 - Stage 2 (See A02039B for RW)	Vegetated Filter Strip	1,325 ft.	No	Northwest	2010
20	57.98	LT	Skagit	SR 20/Fredonia to SR 5 - Stage 2 (See A02039B for RW)	Vegetated Filter Strip	2,690 ft.	No	Northwest	2010
20	57.98	RT	Skagit	SR 20/Fredonia to SR 5 - Stage 2 (See A02039B for RW)	Vegetated Filter Strip	2,690 ft.	No	Northwest	2010
20	58.49	LT	Skagit	SR 20/Fredonia to SR 5 - Stage 2 (See A02039B for RW)	Vegetated Filter Strip	572 ft.	No	Northwest	2010
20	58.6	LT	Skagit	SR 20/Fredonia to SR 5 - Stage 2 (See A02039B for RW)	Vegetated Filter Strip	250 ft.	No	Northwest	2010
20	58.6	RT	Skagit	SR 20/Fredonia to SR 5 - Stage 2 (See A02039B for RW)	Vegetated Filter Strip	250 ft.	No	Northwest	2010
24	32.46 - 34.77	0 - 75' LT	Benton	SR 24 / SR 241 To Cold Creek Rd, Add Passing Lane	Natural Dispersion	12,200 x 40 ft.	No	South Central	2009

State Route	Milepost	Offset Direction & Distance	County	Project Name	BMP Type	Facility Size	Stand-Alone Retrofit?	Region	Data Year
24	30.41 - 32.74	0 - 75' RT	Benton	SR 24 / SR 241 To Cold Creek Rd, Add Passing Lane	Natural Dispersion	7,020 x 40 ft.	No	South Central	2009
26	41.5 - 41.72	20' RT	Adams	SR 26 - Reynolds Intersection & Illumination Improvements	Natural Dispersion	4 ft.	No	North Central	2010
26	41.5 - 41.72	20' LT	Adams	SR 26 - Reynolds Intersection & Illumination Improvements	Natural Dispersion	4 ft.	No	North Central	2010
26	34.53 - 35.78	32' RT	Adams	SR 26 - West of Othello Passing Lane	Natural Dispersion	8 ft.	No	North Central	2010
82	18.76 - 18.98	0 - 40' RT	Yakima	I-82 / Selah Creek to Yakima - Paving	Natural Dispersion	1,150 x 30 ft.	No	South Central	2009
82	18.76 - 18.93	0 - 20' LT	Yakima	I-82 / Selah Creek to Yakima - Paving	Natural Dispersion	900 x 20 ft.	No	South Central	2009
90	7.04	75' RT	King	I-90 Two-Way Transit & HOV Op. Stage 1	Biofiltration Swale (RT.04)	1034 C.F.	No	Mega Projects	2010
90	9.22	210' RT	King	I-90 Two-Way Transit & HOV Op. Stage 1	Biofiltration Swale (RT.04)	1440 C.F.	No	Mega Projects	2010
90	5.95	57' LT	King	I-90 Two-Way Transit & HOV Op. Stage 1	Biofiltration Swale (RT.04)	1781 C.F.	No	Mega Projects	2010
90	6.79	130' RT	King	I-90 Two-Way Transit & HOV Op. Stage 1	Biofiltration Swale (RT.04)	2918 C.F.	No	Mega Projects	2010
90	8.04	31' RT	King	I-90 Two-Way Transit & HOV Op. Stage 1	Biofiltration Swale (RT.04)	3000 C.F.	No	Mega Projects	2010
90	0.04	50' RT	King	SR 519 Intermodal Access Project	Bioswale	200 ft.	No	Northwest	2010
90	5.9	57' LT	King	I-90, 2-Way Transit & HOV Operations Stage 1	Biofiltration Swale (RT.04)	118 ft.	No	Mega Projects	2009
90	6.98	72' RT	King	I-90, 2-Way Transit & HOV Operations Stage 1	Biofiltration Swale (RT.04)	130 ft.	No	Mega Projects	2009
90	9.22	225' RT	King	I-90, 2-Way Transit & HOV Operations Stage 1	Biofiltration Swale (RT.04)	144 ft.	No	Mega Projects	2009
90	6.75	135' RT	King	I-90, 2-Way Transit & HOV Operations Stage 1	Biofiltration Swale (RT.04)	182 ft.	No	Mega Projects	2009
90	7.98	30' RT	King	I-90, 2-Way Transit & HOV Operations Stage 1	Biofiltration Swale (RT.04)	203 Lft.	No	Mega Projects	2009
97	291.25 - 291.30	26 - 40' RT	Okanogan	US 97 - SR 155 Intersection Safety Improvements	Natural Dispersion	0.4 ft.	No	North Central	2010
97	260.19 - 260.21	37.32' RT	Okanogan	Brewster and Main Ave. Pedestrian Improvements	Infiltration Trench	176 ft^3	No	North Central	2009
97	260.24 - 260.28	37.32' RT	Okanogan	Brewster and Main Ave. Pedestrian Improvements	Infiltration Trench	413 ft^3	No	North Central	2009
97	222.89 - 223.96	32' RT	Douglas	US 97 - South of Chelan Falls - Add Passing Lane	Natural Dispersion	7.4 ft.	No	North Central	2010
97	61.95	65' LT	Yakima	SR 22 & US 97 / Intersection Improvements	Infiltration Trench	30 ft.	No	South Central	2009
97	61.94 - 62.03	0 - 15' LT	Yakima	SR 22 & US 97 / Intersection Improvements	Natural Dispersion	475 x 10 ft.	No	South Central	2009
101	349.06	75’ LT	Mason	US 101/SR 3 NB On-ramp	Detention Pond w/ Flow Restrictor	.57 acres	No	Olympic	2009

State Route	Milepost	Offset Direction & Distance	County	Project Name	BMP Type	Facility Size	Stand-Alone Retrofit?	Region	Data Year
101	339.4	100' LT	Mason	US 101 Purdy Creek Bridge	Bioswale w/ Flow spreader	1650 ft^2	No	Olympic	2010
101	339.3	100' LT	Mason	US 101 Purdy Creek Bridge	Bioswale w/ Flow spreader	2250 ft^2	No	Olympic	2010
160	0.8	75' RT	Kitsap	SR 160- SR 16 to Long Lake Rd Vic.	Detention Pond	0.087 ac-ft.	No	Olympic	2010
160	0 - 1	LT	Kitsap	SR 160- SR 16 to Long Lake Rd Vic.	CAVFS	2,257 yd^2	No	Olympic	2010
160	0 - 1	RT	Kitsap	SR 160- SR 16 to Long Lake Rd Vic.	CAVFS	2,257 yd^2	No	Olympic	2010
160	0.8	75' RT	Kitsap	SR 160- SR 16 to Long Lake Rd Vic.	Biofiltration Swale (RT.04)	22 yd^2	No	Olympic	2010
167	25.20 - 25.30	LT	King	SR 167 I-405/I-5 to SR 169 Stage 1- Widening	Combined Stormwater Wetland	10525 ft^2	No	Mega Projects	2010
167	26.20	LT	King	SR 167 I-405/I-5 to SR 169 Stage 1- Widening	CAVFS	1150 ft^2	No	Mega Projects	2010
167	26.10 - 26.20	LT	King	SR 167 I-405/I-5 to SR 169 Stage 1- Widening	Media Filter Drain	1540 ft^2	No	Mega Projects	2010
167	24.80 - 25.10	LT	King	SR 167 I-405/I-5 to SR 169 Stage 1- Widening	Media Filter Drain	4612 ft^2	No	Mega Projects	2010
167	25.40 - 25.70	LT	King	SR 167 I-405/I-5 to SR 169 Stage 1- Widening	Media Filter Drain	5116 ft^2	No	Mega Projects	2010
167	25.30	LT	King	SR 167 I-405/I-5 to SR 169 Stage 1- Widening	Combination Detention/Stormwater Treatment Wetland	1.26 ac-ft.	No	Mega Projects	2010
167	24.70 - 24.80	LT	King	SR 167 I-405/I-5 to SR 169 Stage 1- Widening	Media Filter Drain	960 ft^2	No	Mega Projects	2010
167	26.20	LT	King	SR 167 I-405/I-5 to SR 169 Stage 1- Widening	Detention Pond	0.33 ac-ft.	No	Mega Projects	2010
167	24.82	27' RT	King	SR 167 15th St. SW to S 180th St. Stage 3	Detention Vault	0.52 ac-ft.	No	Northwest	2009
167	13.97	32' LT	King	SR 167 15th St. SW to S 180th St. Stage 3	Media Filter Drain	1150 ft.	No	Northwest	2009
167	13.45	85' RT	King	SR 167 15th St. SW to S 180th St. Stage 3	Media Filter Drain	1200 ft.	No	Northwest	2009
167	14.95	98' LT	King	SR 167 15th St. SW to S 180th St. Stage 3	Media Filter Drain	1375 ft.	No	Northwest	2009
167	14.17	88' RT	King	SR 167 15th St. SW to S 180th St. Stage 3	Media Filter Drain	1425 ft.	No	Northwest	2009
167	15.22	15' RT	King	SR 167 15th St. SW to S 180th St. Stage 3	Media Filter Drain	1600 ft.	No	Northwest	2009
167	24.62	50' LT	King	SR 167 15th St. SW to S 180th St. Stage 3	Ecology Ditch	200 ft.	No	Northwest	2009
167	24.61	210' RT	King	SR 167 15th St. SW to S 180th St. Stage 3	Ecology Ditch	200 ft.	No	Northwest	2009
167	15.12	96' LT	King	SR 167 15th St. SW to S 180th St. Stage 3	Media Filter Drain	325 ft.	No	Northwest	2009
167	15.01	15' RT	King	SR 167 15th St. SW to S 180th St. Stage 3	Media Filter Drain	375 ft.	No	Northwest	2009
167	13.37	32' RT	King	SR 167 15th St. SW to S 180th St. Stage 3	Media Filter Drain	400 ft.	No	Northwest	2009
167	15.52	97' LT	King	SR 167 15th St. SW to S 180th St. Stage 3	Media Filter Drain	450 ft.	No	Northwest	2009
167	15.46	15' RT	King	SR 167 15th St. SW to S 180th St. Stage 3	Media Filter Drain	500 ft.	No	Northwest	2009
167	15.67	155' RT	King	SR 167 15th St. SW to S 180th St. Stage 3	Media Filter Drain	500 ft.	No	Northwest	2009
167	14.11	100' LT	King	SR 167 15th St. SW to S 180th St. Stage 3	Media Filter Drain	600 ft.	No	Northwest	2009
167	14.6	87' LT	King	SR 167 15th St. SW to S 180th St. Stage 3	Media Filter Drain	625 ft.	No	Northwest	2009
167	14.9	103' RT	King	SR 167 15th St. SW to S 180th St. Stage 3	Media Filter Drain	750 ft.	No	Northwest	2009
167	15.28	98' LT	King	SR 167 15th St. SW to S 180th St. Stage 3	Media Filter Drain	800 ft.	No	Northwest	2009
167	13.55	850' LT	King	SR 167 15th St. SW to S 180th St. Stage 3	Media Filter Drain	850 ft.	No	Northwest	2009
167	24.56	127' LT	King	SR 167 15th St. SW to S 180th St. Stage 3	Detention Pond	0.34 ac-ft.	No	Northwest	2009
167	21.38	165' LT	King	SR 167 15th St. SW to S 180th St. Stage 3	Detention Pond	0.41 ac-ft.	No	Northwest	2009
167	15.85	135' LT	King	SR 167 15th St. SW to S 180th St. Stage 3	Detention Pond	0.83 ac-ft.	No	Northwest	2009

State Route	Milepost	Offset Direction & Distance	County	Project Name	BMP Type	Facility Size	Stand-Alone Retrofit?	Region	Data Year
167	5.26 - 5.7	LT	Pierce	SR 167/SR 161 Onramp/Off-ramp-Safety	CAVFS	3224 yd^2	No	Olympic	2009
167	5.26 - 5.7	RT	Pierce	SR 167/SR 161 Onramp/Off-ramp-Safety	CAVFS	3224 yd^2	No	Olympic	2009
182	S5 0.00 - 0.18	20' RT	Franklin	RD 100 INTERCHANGE VICINITY - IMPROVEMENTS	Dispersion	11405 ft^2	No	South Central	2010
182	S1 0.00 - 0.22	3.5' LT	Franklin	RD 100 INTERCHANGE VICINITY - IMPROVEMENTS	Dispersion	13939 ft^2	No	South Central	2010
182	S5 0.18 - 0.54	9' LT	Franklin	RD 100 INTERCHANGE VICINITY - IMPROVEMENTS	Dispersion	22810 ft^2	No	South Central	2010
182	Road 100 0.16 - 0.23	30' RT	Franklin	RD 100 INTERCHANGE VICINITY - IMPROVEMENTS	Dispersion	4805 ft^2	No	South Central	2010
182	Road 100 0.00 - 0.09	30' RT	Franklin	RD 100 INTERCHANGE VICINITY - IMPROVEMENTS	Dispersion	6178 ft^2	No	South Central	2010
182	6.72 - 7.40	50' LT	Franklin	RD 100 INTERCHANGE VICINITY - IMPROVEMENTS	Dispersion	64627 ft^2	No	South Central	2010
182	Road 68 north of I-182 WB, between On/Off Ramps and 300' north, 9.33	LT 50'	Franklin	I-182, Road 68 Interchange Modifications	Engineered Dispersion	700 yd^2	No	South Central	2009
182	Road 68 north of I-182 WB, between On/Off Ramps and 300' north, 9.33	RT 50'	Franklin	I-182, Road 68 Interchange Modifications	Engineered Dispersion	700 yd^2	No	South Central	2009
182	S1 0.22 -0.36	23' RT	Franklin	RD 100 INTERCHANGE VICINITY - IMPROVEMENTS	Dispersion	8870 ft^2	No	South Central	2010
183	Road 100 0.16 - 0.23	30' LT	Franklin	RD 100 INTERCHANGE VICINITY - IMPROVEMENTS	Dispersion	4805 ft^2	No	South Central	2010
183	Road 100 0.00 - 0.09	30' LT	Franklin	RD 100 INTERCHANGE VICINITY - IMPROVEMENTS	Dispersion	6178 ft^2	No	South Central	2010
195	93.83	25' LT	Spokane	Cheney-Spokane Rd-Right Turn Lane	Natural Dispersion	0.14 acres	No	Eastern	2010
195	93.83	60 - 300' LT	Spokane	Cheney-Spokane Rd-Right Turn Lane	Natural Dispersion	0.31 acres	No	Eastern	2010
202	9.42	22' LT	King	SR 202 /SR 520 to Sahalee Way Roadway Widening	Detention Vault	0.262 ac-ft.	No	Northwest	2009
202	9.71	38' LT	King	SR 202 /SR 520 to Sahalee Way Roadway Widening	Detention/ Retention Vault	1.14 ac-ft.	No	Northwest	2009
202	9.92	80' RT	King	SR 202 /SR 520 to Sahalee Way Roadway Widening	Wet-Biofiltration Swale	121 ft.	No	Northwest	2009
202	9.12	44' LT	King	SR 202 /SR 520 to Sahalee Way Roadway Widening	Media Filter Drain	1300 ft.	No	Northwest	2009

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202	8.81	96' RT	King	SR 202 /SR 520 to Sahalee Way Roadway Widening	Biofiltration Swale (RT.04)	143 ft.	No	Northwest	2009
202	21.74	54' RT	King	SR202 Jct. 203 Roundabout	Filter Strip	188 ft.	No	Northwest	2009
202	21.74	54' RT	King	SR202 Jct. 203 Roundabout	Filter Strip	190 ft.	No	Northwest	2009
202	7.83	100’ RT	King	SR 202 /SR 520 to Sahalee Way Roadway Widening	Biofiltration Swale (RT.04)	202 ft.	No	Northwest	2009
202	9.99	720' RT	King	SR 202 /SR 520 to Sahalee Way Roadway Widening	Detention Pond	0.444 ac-ft.	No	Northwest	2009
202	9.96	96' RT	King	SR 202 /SR 520 to Sahalee Way Roadway Widening	Detention Pond	0.745 ac-ft.	No	Northwest	2009
202	8.91	110' LT	King	SR 202 /SR 520 to Sahalee Way Roadway Widening	Retention/ Detention Pond	0.783 ac-ft.	No	Northwest	2009
205	28.32 - 28.39	120 - 440' RT	Clark	Mill Plain I/C to NE 18th Street	Natural Dispersion	0.62 acres	No	Southwest	2010
205	28.38 - 28.39	390 - 300' RT	Clark	Mill Plain I/C to NE 18th Street	Biofiltration Swale (RT.04)	100 x 2 ft.	No	Southwest	2010
205	28.42 - 28.44	495 - 455' RT	Clark	Mill Plain I/C to NE 18th Street	Infiltration Trench	100 x 4 x 4 ft.	No	Southwest	2010
205	28.42 - 28.44	495 - 455' RT	Clark	Mill Plain I/C to NE 18th Street	Biofiltration Swale (RT.04)	125 x 4 ft.	No	Southwest	2010
205	28.40 - 28.43	80 - 90' RT	Clark	Mill Plain I/C to NE 18th Street	Biofiltration Swale (RT.04)	150 x 5 ft.	No	Southwest	2010
205	28.71 - 28.79	120 - 105' RT	Clark	Mill Plain I/C to NE 18th Street	Infiltration Trench	400 x 6 x 5 ft.	No	Southwest	2010
205	28.77	70' RT	Clark	Mill Plain I/C to NE 18th Street	Vortechs System	Model 4000	No	Southwest	2010
240	24.81 - 25.14	12.9' LT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	10200 ft^2	No	South Central	2010
240	23.57 - 23.90	12.9' LT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	10500 ft^2	No	South Central	2010
240	19.42 - 19.75	12.9' LT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	10620 ft^2	No	South Central	2010
240	8.17 - 8.20	12.9' LT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	1080 ft^2	No	South Central	2010
240	8.17 - 8.20	12.9' RT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	1080 ft^2	No	South Central	2010
240	18.19 - 18.54	12.9' RT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	11040 ft^2	No	South Central	2010
240	18.10 - 18.54	12.9' LT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	13920 ft^2	No	South Central	2010
240	21.87 - 21.92	12.9' RT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	1440 ft^2	No	South Central	2010
240	21.94 - 21.99	12.9' RT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	1560 ft^2	No	South Central	2010

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240	17.55 - 17.61	12.9' RT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	1740 ft^2	No	South Central	2010
240	24.67 - 24.73	12.9' LT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	1800 ft^2	No	South Central	2010
240	24.14 - 24.21	12.9' LT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	2100 ft^2	No	South Central	2010
240	24.66 - 24.73	12.9' RT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	2100 ft^2	No	South Central	2010
240	24.35 - 24.42	12.9' RT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	2100 ft^2	No	South Central	2010
240	8.70 - 8.77	12.9' LT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	2220 ft^2	No	South Central	2010
240	24.13 - 24.20	12.9' RT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	2220 ft^2	No	South Central	2010
240	21.89 - 21.97	12.9' LT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	2280 ft^2	No	South Central	2010
240	17.76 - 17.83	12.9' RT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	2340 ft^2	No	South Central	2010
240	22.34 - 22.42	12.9' LT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	2400 ft^2	No	South Central	2010
240	17.44 - 17.51	12.9' LT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	2400 ft^2	No	South Central	2010
240	9.95 - 10.02	12.9' RT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	2400 ft^2	No	South Central	2010
240	23.09 - 23.17	12.9' RT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	2400 ft^2	No	South Central	2010
240	16.65 - 16.73	12.9' LT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	2580 ft^2	No	South Central	2010
240	16.19 - 16.27	12.9' LT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	2700 ft^2	No	South Central	2010
240	22.98 - 23.06	12.9' RT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	2760 ft^2	No	South Central	2010
240	23.09 - 23.19	12.9' LT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	3000 ft^2	No	South Central	2010
240	22.96 - 23.05	12.9' LT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	3000 ft^2	No	South Central	2010
240	25.56 - 25.66	12.9' RT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	3240 ft^2	No	South Central	2010
240	12.81 - 12.91	12.9' RT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	3240 ft^2	No	South Central	2010
240	25.55 - 25.66	12.9' LT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	3300 ft^2	No	South Central	2010

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240	24.52 - 24.62	12.9' LT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	3300 ft²	No	South Central	2010
240	22.32 - 22.43	12.9' RT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	3300 ft²	No	South Central	2010
240	19.85 - 19.96	12.9' RT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	3300 ft²	No	South Central	2010
240	16.45 - 16.56	12.9' RT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	3300 ft²	No	South Central	2010
240	15.69 - 15.80	12.9' RT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	3300 ft²	No	South Central	2010
240	19.83- 19.95	12.9' LT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	3600 ft²	No	South Central	2010
240	16.44 - 16.56	12.9' LT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	3600 ft²	No	South Central	2010
240	15.48 - 15.59	12.9' RT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	3600 ft²	No	South Central	2010
240	8.17 - 26.36	20' LT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Low Impact Development	38 acres	No	South Central	2010
240	8.17 - 26.37	20' RT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Low Impact Development	38 acres	No	South Central	2010
240	8.32 - 8.44	12.9' LT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	3960 ft²	No	South Central	2010
240	23.21 - 23.35	12.9' LT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	4200 ft²	No	South Central	2010
240	25.80 - 25.93	12.9' RT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	4200 ft²	No	South Central	2010
240	8.31 - 8.44	12.9' RT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	4260 ft²	No	South Central	2010
240	23.21 - 23.35	12.9' RT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	4260 ft²	No	South Central	2010
240	24.51 - 24.64	12.9' RT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	4380 ft²	No	South Central	2010
240	18.60 - 18.74	12.9' RT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	4380 ft²	No	South Central	2010
240	25.80 - 25.94	12.9' LT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	4500 ft²	No	South Central	2010
240	16.02 - 16.16	12.9' RT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	4500 ft²	No	South Central	2010
240	16.18 - 16.32	12.9' RT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	4560 ft²	No	South Central	2010
240	22.06 - 22.22	12.9' RT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	4920 ft²	No	South Central	2010

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240	18.57 - 18.73	12.9' LT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	5100 ft^2	No	South Central	2010
240	16.00 - 16.16	12.9' LT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	5100 ft^2	No	South Central	2010
240	9.14 - 9.30	12.9' RT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	5100 ft^2	No	South Central	2010
240	22.07 - 22.23	12.9' LT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	5280 ft^2	No	South Central	2010
240	17.18 - 17.35	12.9' RT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	5280 ft^2	No	South Central	2010
240	15.25 - 15.42	12.9' RT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	5340 ft^2	No	South Central	2010
240	18.78 - 18.95	12.9' RT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	5460 ft^2	No	South Central	2010
240	25.16 - 25.33	12.9' RT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	5580 ft^2	No	South Central	2010
240	9.13 - 9.31	12.9' LT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	5700 ft^2	No	South Central	2010
240	25.15 - 25.33	12.9' LT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	5700 ft^2	No	South Central	2010
240	17.18 - 17.36	12.9' LT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	5880 ft^2	No	South Central	2010
240	18.77 - 18.96	12.9' LT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	6000 ft^2	No	South Central	2010
240	22.55 - 22.78	12.9' LT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	7200 ft^2	No	South Central	2010
240	16.76 - 17.01	12.9' RT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	7680 ft^2	No	South Central	2010
240	8.79 - 9.04	12.9' LT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	7800 ft^2	No	South Central	2010
240	16.76 - 17.01	12.9' LT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	7800 ft^2	No	South Central	2010
240	26.09 - 26.34	12.9' LT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	7860 ft^2	No	South Central	2010
240	22.54 - 22.79	12.9' RT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	7860 ft^2	No	South Central	2010
240	26.08 - 26.34	12.9' RT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	8160 ft^2	No	South Central	2010
240	24.86 - 25.12	12.9' RT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	8340 ft^2	No	South Central	2010
240	17.53 - 17.82	12.9' LT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	9000 ft^2	No	South Central	2010

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240	23.58 - 23.87	12.9' RT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	9030 ft²	No	South Central	2010
240	8.71 - 9.02	12.9' RT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	9900 ft²	No	South Central	2010
240	19.43 - 19.74	12.9' RT	Benton	BELOIT RD. TO KINGSGATE WAY - WIDEN ROADWAY (TPA)	Infiltration Ditch	9900 ft²	No	South Central	2010
241	23.04 - 23.09	30 - 36' LT	Yakima	DRY CREEK - CONSTRUCT BOX CULVERT (TPA)	Natural Dispersion	2254 ft²	No	South Central	2010
241	20.62 - 21.19	0 - 100' LT	Yakima	SR 241 / Rattlesnake Hills Vic, Roadside Safety	Natural Dispersion	3,010 x 30 ft.	No	South Central	2009
241	20.62 - 21.19	0 - 80' RT	Yakima	SR 241 / Rattlesnake Hills Vic, Roadside Safety	Natural Dispersion	3,010 x 30 ft.	No	South Central	2009
241	23.10 - 23.17	36 - 32' LT	Yakima	DRY CREEK - CONSTRUCT BOX CULVERT (TPA)	Natural Dispersion	4668 ft²	No	South Central	2010
270	5.6	40' LT	Whitman	Pullman to Idaho State Line	Bioinfiltration Pond (IN.01)	0.16 acres	No	Eastern	2009
270	7.46	40' LT	Whitman	Pullman to Idaho State Line	Bioinfiltration Pond (IN.01)	0.29 acres	No	Eastern	2009
270	5.65	40' LT	Whitman	Pullman to Idaho State Line	Bioinfiltration Pond (IN.01)	0.34 acres	No	Eastern	2009
270	7.55	20' LT	Whitman	Pullman to Idaho State Line	Bioinfiltration Pond (IN.01)	0.42 acres	No	Eastern	2009
270	8.28	20' LT	Whitman	Pullman to Idaho State Line	Bioinfiltration Pond (IN.01)	0.42 acres	No	Eastern	2009
270	5.39	30' LT	Whitman	Pullman to Idaho State Line	Bioinfiltration Pond (IN.01)	0.43 acres	No	Eastern	2009
270	8.82	50' LT	Whitman	Pullman to Idaho State Line	Bioinfiltration Pond (IN.01)	0.48 acres	No	Eastern	2009
270	5.48	40' LT	Whitman	Pullman to Idaho State Line	Bioinfiltration Pond (IN.01)	0.61 acres	No	Eastern	2009
270	4.43	35' LT	Whitman	Pullman to Idaho State Line	Bioinfiltration Pond (IN.01)	0.8 acres	No	Eastern	2009
270	9.12	40' LT	Whitman	Pullman to Idaho State Line	Bioinfiltration Pond (IN.01)	0.83 acres	No	Eastern	2009
270	6.67	20' LT	Whitman	Pullman to Idaho State Line	Biofiltration Swale (RT.04)	0.01 acres	No	Eastern	2009
270	6.27	30' LT	Whitman	Pullman to Idaho State Line	Biofiltration Swale (RT.04)	0.01 acres	No	Eastern	2009
270	6.76	30' LT	Whitman	Pullman to Idaho State Line	Biofiltration Swale (RT.04)	0.01 acres	No	Eastern	2009
270	6.18	40' LT	Whitman	Pullman to Idaho State Line	Biofiltration Swale (RT.04)	0.01 acres	No	Eastern	2009
270	5.18	30' RT	Whitman	Pullman to Idaho State Line	Biofiltration Swale (RT.04)	0.01 acres	No	Eastern	2009
270	4.35	30' LT	Whitman	Pullman to Idaho State Line	Biofiltration Swale (RT.04)	0.02 acres	No	Eastern	2009

State Route	Milepost	Offset Direction & Distance	County	Project Name	BMP Type	Facility Size	Stand-Alone Retrofit?	Region	Data Year
270	6.41	30' LT	Whitman	Pullman to Idaho State Line	Biofiltration Swale (RT.04)	0.02 acres	No	Eastern	2009
270	6.53	30' LT	Whitman	Pullman to Idaho State Line	Biofiltration Swale (RT.04)	0.02 acres	No	Eastern	2009
270	7.81	30' LT	Whitman	Pullman to Idaho State Line	Biofiltration Swale (RT.04)	0.02 acres	No	Eastern	2009
270	8.59	30' LT	Whitman	Pullman to Idaho State Line	Biofiltration Swale (RT.04)	0.02 acres	No	Eastern	2009
270	7.72	30' LT	Whitman	Pullman to Idaho State Line	Biofiltration Swale (RT.04)	0.03 acres	No	Eastern	2009
270	9.26	30' LT	Whitman	Pullman to Idaho State Line	Biofiltration Swale (RT.04)	0.03 acres	No	Eastern	2009
270	4.79	50' LT	Whitman	Pullman to Idaho State Line	Biofiltration Swale (RT.04)	0.03 acres	No	Eastern	2009
270	9.82	20' LT	Whitman	Pullman to Idaho State Line	Biofiltration Swale (RT.04)	0.04 acres	No	Eastern	2009
270	4.1	30' LT	Whitman	Pullman to Idaho State Line	Biofiltration Swale (RT.04)	0.04 acres	No	Eastern	2009
270	7.11	30' LT	Whitman	Pullman to Idaho State Line	Biofiltration Swale (RT.04)	0.04 acres	No	Eastern	2009
270	7.6	30' LT	Whitman	Pullman to Idaho State Line	Biofiltration Swale (RT.04)	0.05 acres	No	Eastern	2009
270	7.97	30' LT	Whitman	Pullman to Idaho State Line	Biofiltration Swale (RT.04)	0.05 acres	No	Eastern	2009
270	8.14	30' LT	Whitman	Pullman to Idaho State Line	Biofiltration Swale (RT.04)	0.05 acres	No	Eastern	2009
270	9.65	30' LT	Whitman	Pullman to Idaho State Line	Biofiltration Swale (RT.04)	0.05 acres	No	Eastern	2009
270	9.72	30' LT	Whitman	Pullman to Idaho State Line	Biofiltration Swale (RT.04)	0.05 acres	No	Eastern	2009
270	4.85	17 - 19' RT	Whitman	Pullman to Idaho State Line	Natural Dispersion	0.05 acres	No	Eastern	2009
270	9.46	50' LT	Whitman	Pullman to Idaho State Line	Biofiltration Swale (RT.04)	0.06 acres	No	Eastern	2009
270	6.85	30' LT	Whitman	Pullman to Idaho State Line	Biofiltration Swale (RT.04)	0.09 acres	No	Eastern	2009
270	7.31	30' LT	Whitman	Pullman to Idaho State Line	Biofiltration Swale (RT.04)	0.09 acres	No	Eastern	2009
270	5.6	14 - 40' RT	Whitman	Pullman to Idaho State Line	Natural Dispersion	0.1 acres	No	Eastern	2009
270	9.38	24 - 30' RT	Whitman	Pullman to Idaho State Line	Natural Dispersion	0.13 acres	No	Eastern	2009
270	8.87	3 - 43' RT	Whitman	Pullman to Idaho State Line	Natural Dispersion	0.15 acres	No	Eastern	2009
270	9.78	3' LT	Whitman	Pullman to Idaho State Line	Natural Dispersion	0.17 acres	No	Eastern	2009
270	3.94	4 - 28' RT	Whitman	Pullman to Idaho State Line	Natural Dispersion	0.24 acres	No	Eastern	2009
270	9.82	3' RT	Whitman	Pullman to Idaho State Line	Natural Dispersion	0.26 acres	No	Eastern	2009

State Route	Milepost	Offset Direction & Distance	County	Project Name	BMP Type	Facility Size	Stand-Alone Retrofit?	Region	Data Year
270	6.1	8 - 32' RT	Whitman	Pullman to Idaho State Line	Natural Dispersion	0.26 acres	No	Eastern	2009
270	8.43	32 - 48' LT	Whitman	Pullman to Idaho State Line	Natural Dispersion	0.27 acres	No	Eastern	2009
270	5.5	29 - 39' RT	Whitman	Pullman to Idaho State Line	Natural Dispersion	0.31 acres	No	Eastern	2009
270	8.36	21 - 60' RT	Whitman	Pullman to Idaho State Line	Natural Dispersion	0.32 acres	No	Eastern	2009
270	7.82	30 - 50' RT	Whitman	Pullman to Idaho State Line	Natural Dispersion	0.33 acres	No	Eastern	2009
270	8.5	48 - 82' LT	Whitman	Pullman to Idaho State Line	Natural Dispersion	0.47 acres	No	Eastern	2009
270	8.82	25 - 35' RT	Whitman	Pullman to Idaho State Line	Natural Dispersion	0.47 acres	No	Eastern	2009
270	6.97	23 - 61' LT	Whitman	Pullman to Idaho State Line	Natural Dispersion	0.49 acres	No	Eastern	2009
270	8.27	24 - 34' LT	Whitman	Pullman to Idaho State Line	Natural Dispersion	0.5 acres	No	Eastern	2009
270	5.63	23 - 31' LT	Whitman	Pullman to Idaho State Line	Natural Dispersion	0.51 acres	No	Eastern	2009
270	4.58	16 - 33' RT	Whitman	Pullman to Idaho State Line	Natural Dispersion	0.58 acres	No	Eastern	2009
270	7.28	15 - 50' RT	Whitman	Pullman to Idaho State Line	Natural Dispersion	0.62 acres	No	Eastern	2009
270	4.23	10 - 53' RT	Whitman	Pullman to Idaho State Line	Natural Dispersion	0.67 acres	No	Eastern	2009
270	5.78	15 - 28' RT	Whitman	Pullman to Idaho State Line	Natural Dispersion	0.74 acres	No	Eastern	2009
270	5.51	13 - 33' LT	Whitman	Pullman to Idaho State Line	Natural Dispersion	0.81 acres	No	Eastern	2009
270	8.14	14 - 40' RT	Whitman	Pullman to Idaho State Line	Natural Dispersion	0.85 acres	No	Eastern	2009
270	7.48	19 - 53' RT	Whitman	Pullman to Idaho State Line	Natural Dispersion	1.01 acres	No	Eastern	2009
270	9	10 - 25' RT	Whitman	Pullman to Idaho State Line	Natural Dispersion	1.17 acres	No	Eastern	2009
270	8.8	22 - 59' RT	Whitman	Pullman to Idaho State Line	Natural Dispersion	1.17 acres	No	Eastern	2009
270	9.22	16 - 40' RT	Whitman	Pullman to Idaho State Line	Natural Dispersion	1.18 acres	No	Eastern	2009
270	6.22	23 - 43' RT	Whitman	Pullman to Idaho State Line	Natural Dispersion	1.26 acres	No	Eastern	2009
270	5.91	23 - 29' RT	Whitman	Pullman to Idaho State Line	Natural Dispersion	1.29 acres	No	Eastern	2009
270	9.18	23 - 31' LT	Whitman	Pullman to Idaho State Line	Natural Dispersion	1.4 acres	No	Eastern	2009
270	7.71	15 - 48' RT	Whitman	Pullman to Idaho State Line	Natural Dispersion	1.46 acres	No	Eastern	2009
270	6.77	15 - 74' RT	Whitman	Pullman to Idaho State Line	Natural Dispersion	1.5 acres	No	Eastern	2009
270	4.01	4 - 18' RT	Whitman	Pullman to Idaho State Line	Natural Dispersion	1.77 acres	No	Eastern	2009
270	4.73	11 - 22' RT	Whitman	Pullman to Idaho State Line	Natural Dispersion	1.97 acres	No	Eastern	2009
270	6.97	22 - 32' RT	Whitman	Pullman to Idaho State Line	Natural Dispersion	2.07 acres	No	Eastern	2009
290	16.92	22' LT	Spokane	SR-290/Starr Rd. Intersection	Bioinfiltration Pond (IN.01)	2425 ft^2	No	Eastern	2009
290	16.95	22' LT	Spokane	SR-290/Starr Rd. Intersection	Bioinfiltration Pond (IN.01)	475 ft^2	No	Eastern	2009
290	16.97	22' LT	Spokane	SR-290/Starr Rd. Intersection	Bioinfiltration Pond (IN.01)	700 ft^2	No	Eastern	2009
291	8.83	21'+ LT	Spokane	SR 291 - Nine Mile Falls Safety Improvement	Bioinfiltration Pond (IN.01)	0.01 acres	No	Eastern	2009
291	8.87	21'+ LT	Spokane	SR 291 - Nine Mile Falls Safety Improvement	Bioinfiltration Pond (IN.01)	0.01 acres	No	Eastern	2009
291	8.85	17' + LT	Spokane	SR 291 - Nine Mile Falls Safety Improvement	Filter Strip - BMP RT.02	0.02 acres	No	Eastern	2009
291	9.03	17' + LT	Spokane	SR 291 - Nine Mile Falls Safety Improvement	Filter Strip - BMP RT.02	0.37 acres	No	Eastern	2009
291	8.90	21' RT	Spokane	SR 291 - Nine Mile Falls Safety Improvement	Infiltration Pond (IN.02)	0.01 acres	No	Eastern	2009
291	9.25	21' RT	Spokane	SR 291 - Nine Mile Falls Safety Improvement	Infiltration Pond (IN.02)	0.03 acres	No	Eastern	2009

State Route	Milepost	Offset Direction & Distance	County	Project Name	BMP Type	Facility Size	Stand-Alone Retrofit?	Region	Data Year
395	165.89	1490' RT	Spokane	US 395 US395/NSC - SR2 LOWERING	Bioinfiltration Pond (IN.01)	.42 acres	No	Eastern	2009
395	165.9	500' LT	Spokane	US 395 US395/NSC - SR2 LOWERING	Bioinfiltration Pond (IN.01)	4900 ft²	No	Eastern	2009
395	165.89	160' LT	Spokane	US 395 US395/NSC - SR2 LOWERING	Bioinfiltration Pond (IN.01)	8020 ft²	No	Eastern	2009
395	167.29	409' LT	Spokane	US 395 US395/NSC - US 2 TO WANDERMERE VICINITY	Bioinfiltration Pond (IN.01)	.26 acres	No	Eastern	2010
395	165.98	256' RT	Spokane	US395 NSC FRANCIS AVE TO US 2 STRUCTURES REBID	Bioinfiltration Pond (IN.01)	1800 ft²	No	Eastern	2010
395	162.56 - 162.69	538' - 303' LT	Spokane	US 395 US395/NSC - FREYA TO FAIRVIEW VIC - GRADING AND STRUCTURES	Spokane County Bioinfiltration Swale	.14 acres	No	Eastern	2010
395	162.56 - 162.73	585' - 230' LT	Spokane	US 395 US395/NSC - FREYA TO FAIRVIEW VIC - GRADING AND STRUCTURES	Spokane County Bioinfiltration Swale	.20 acres	No	Eastern	2010
395	165.76	620' LT	Spokane	US 395 NSC - FARWELL ROAD LOWERING	Spokane County Bioinfiltration Swale	.22 acres	No	Eastern	2010
395	162.5 - 162.7	187 - 251' RT	Spokane	US 395 US395/NSC - FREYA TO FAIRVIEW VIC - GRADING AND STRUCTURES	Natural Dispersion (FC.01)	.27 acres	No	Eastern	2010
395	166.06	1990' LT	Spokane	US 395 US395/NSC - FREYA ST TO FARWELL RD - PCCP PAVING	Spokane County Bioinfiltration Swale	.29 acres	No	Eastern	2010
395	163.02	372' LT	Spokane	US 395 US395/NSC - FREYA TO FAIRVIEW VIC - GRADING AND STRUCTURES	Spokane County Bioinfiltration Swale	.33 acres	No	Eastern	2010
395	161.62 - 161.87	1052 - 552' RT	Spokane	US 395 US395/NSC - FREYA TO FAIRVIEW VIC - GRADING AND STRUCTURES	Engineered Dispersion (FC.02)	.34 acres	No	Eastern	2010
395	161.50 - 161.87	1232 - 573' RT	Spokane	US 395 US395/NSC - FREYA TO FAIRVIEW VIC - GRADING AND STRUCTURES	Spokane County Bioinfiltration Swale	.34 acres	No	Eastern	2010
395	165.79	540' LT	Spokane	US 395 US395/NSC - FREYA ST TO FARWELL RD - PCCP PAVING	Spokane County Bioinfiltration Swale	.34 acres	No	Eastern	2010
395	162.52	238' RT	Spokane	US 395 US395/NSC - FREYA TO FAIRVIEW VIC - GRADING AND STRUCTURES	Spokane County Bioinfiltration Swale	.49 acres	No	Eastern	2010
395	163.52 - 163.88	46' LT	Spokane	US 395 US395/NSC - FREYA ST TO FARWELL RD - PCCP PAVING	Natural Dispersion (FC.01)	.78 acres	No	Eastern	2010
395	167.27 - 167.47	1442 - 67' LT	Spokane	US 395 US395/NSC - US 2 TO WANDERMERE VICINITY	Engineered Dispersion (FC.02)	1.38 acres	No	Eastern	2009
395	162.51	172' RT	Spokane	US 395 US395/NSC - FREYA TO FAIRVIEW VIC - GRADING AND STRUCTURES	Spokane County Bioinfiltration Swale	1820 ft²	No	Eastern	2010
395	166.2	430' LT	Spokane	US 395 NSC - GERLACH TO WANDERMERE	Infiltration Pond (IN.02)	.46 acres	No	Eastern	2009
395	166.13	210' LT	Spokane	US 395 NSC - GERLACH TO WANDERMERE	Infiltration Pond (IN.02)	1.27 acres	No	Eastern	2009
395	167.52	312' RT	Spokane	US 395 US395/NSC - US 2 TO WANDERMERE VICINITY	Biofiltration Swale (RT.04)	2240 ft²	No	Eastern	2010
395	167.24	193' LT	Spokane	US 395 NSC - GERLACH TO WANDERMERE	Biofiltration Swale (RT.04)	2450 ft²	No	Eastern	2009
395	164	340' RT	Spokane	US 395 NSC - GERLACH TO WANDERMERE	Infiltration Pond (IN.02)	2.2 acres	No	Eastern	2009

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395	167.57	98' RT	Spokane	US 395 US395/NSC - US 2 TO WANDERMERE VICINITY	Biofiltration Swale (RT.04)	2530 ft²	No	Eastern	2009
395	161.39	1320' RT	Spokane	US 395 US395/NSC - FREYA TO FAIRVIEW VIC - GRADING AND STRUCTURES	Spokane City Bioinfiltration Swale	2580 ft²	No	Eastern	2010
395	161.5	1140' RT	Spokane	US 395 US395/NSC - FREYA TO FAIRVIEW VIC - GRADING AND STRUCTURES	Spokane County Bioinfiltration Swale	2700 ft²	No	Eastern	2010
395	167.3	135' LT	Spokane	US 395 NSC - GERLACH TO WANDERMERE	Infiltration Pond (IN.02)	6700 ft²	No	Eastern	2009
395	166.31	206' LT	Spokane	US 395 NSC - GERLACH TO WANDERMERE	Spokane County Bioinfiltration Swale	2970 ft²	No	Eastern	2010
395	162.03 - 162.87	95' LT	Spokane	US 395 US395/NSC - FREYA TO FAIRVIEW VIC - GRADING AND STRUCTURES	Natural Dispersion (FC.01)	3.42 acres	No	Eastern	2009
395	162.03 - 162.87	95' RT	Spokane	US 395 US395/NSC - FREYA TO FAIRVIEW VIC - GRADING AND STRUCTURES	Natural Dispersion (FC.01)	3.42 acres	No	Eastern	2009
395	164.33	300' RT	Spokane	US 395 NSC - Hawthorne Road to SR 2 Grading	Infiltration Pond (IN.02)	.50 acres	No	Eastern	2009
395	164.46	550' RT	Spokane	US 395 NSC - Hawthorne Road to SR 2 Grading	Infiltration Pond (IN.02)	4.73 acres	No	Eastern	2009
395	161.50 - 161.62	1158 - 1074' RT	Spokane	US 395 US395/NSC - FREYA TO FAIRVIEW VIC - GRADING AND STRUCTURES	Spokane County Bioinfiltration Swale	4000 ft²	No	Eastern	2010
395	162.51	237' RT	Spokane	US 395 US395/NSC - FREYA TO FAIRVIEW VIC - GRADING AND STRUCTURES	Spokane County Bioinfiltration Swale	4800 ft²	No	Eastern	2010
395	164.4	450' LT	Spokane	US 395 NSC - Hawthorne Road to SR 2 Grading	Infiltration Pond (IN.02)	5.67 acres	No	Eastern	2009
395	165.91	590' RT	Spokane	US 395 US395/NSC - SR2 LOWERING	Biofiltration Swale (RT.04)	4840 ft²	No	Eastern	2009
395	164.06	290' LT	Spokane	US 395 US395/NSC - BNSF RR TUNNEL	Infiltration Pond (IN.02)	.67 acres	No	Eastern	2009
395	164.19	215' RT	Spokane	US 395 US395/NSC - BNSF RR TUNNEL	Infiltration Pond (IN.02)	6300 ft²	No	Eastern	2009
395	165.7	310' LT	Spokane	US 395 US395/NSC - FREYA ST TO FARWELL RD - PCCP PAVING	Infiltration Pond (IN.02)	.22 acres	No	Eastern	2009
395	165.35	390' RT	Spokane	US 395 US395/NSC - FREYA ST TO FARWELL RD - PCCP PAVING	Infiltration Pond (IN.02)	.32 acres	No	Eastern	2009
395	165.08	200' RT	Spokane	US 395 US395/NSC - FREYA ST TO FARWELL RD - PCCP PAVING	Infiltration Pond (IN.02)	.34 acres	No	Eastern	2009
395	162.54	46' LT	Spokane	US 395 US395/NSC - FREYA ST TO FARWELL RD - PCCP PAVING	Infiltration Pond (IN.02)	2800 ft²	No	Eastern	2009
395	165.65	243' RT	Spokane	US 395 US395/NSC - FREYA ST TO FARWELL RD - PCCP PAVING	Infiltration Pond (IN.02)	3350 ft²	No	Eastern	2009
395	165.87	1505' LT	Spokane	US 395 US395/NSC - FREYA ST TO FARWELL RD - PCCP PAVING	Infiltration Pond (IN.02)	4900 ft²	No	Eastern	2009
395	166.08	1000' RT	Spokane	US395 NSC FRANCIS AVE TO US 2 STRUCTURES REBID	UIC Drywell	N/A	No	Eastern	2010
395	161.7	1050' RT	Spokane	US 395 US395/NSC - FREYA TO FAIRVIEW VIC - GRADING AND STRUCTURES	Drywell	N/A	No	Eastern	2010
395	161.62	1078' LT	Spokane	US 395 US395/NSC - FREYA TO FAIRVIEW VIC - GRADING AND STRUCTURES	Drywell	N/A	No	Eastern	2010

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395	161.63	1138' RT	Spokane	US 395 US395/NSC - FREYA TO FAIRVIEW VIC - GRADING AND STRUCTURES	Drywell	N/A	No	Eastern	2010
395	161.5	1140' RT	Spokane	US 395 US395/NSC - FREYA TO FAIRVIEW VIC - GRADING AND STRUCTURES	Drywell	N/A	No	Eastern	2010
395	161.53	1153' RT	Spokane	US 395 US395/NSC - FREYA TO FAIRVIEW VIC - GRADING AND STRUCTURES	Drywell	N/A	No	Eastern	2010
395	161.53	1224' RT	Spokane	US 395 US395/NSC - FREYA TO FAIRVIEW VIC - GRADING AND STRUCTURES	Drywell	N/A	No	Eastern	2010
395	161.38	1320' RT	Spokane	US 395 US395/NSC - FREYA TO FAIRVIEW VIC - GRADING AND STRUCTURES	Drywell	N/A	No	Eastern	2010
395	162.53	144' LT	Spokane	US 395 US395/NSC - FREYA TO FAIRVIEW VIC - GRADING AND STRUCTURES	UIC Drywell	N/A	No	Eastern	2009
395	162.53	146' LT	Spokane	US 395 US395/NSC - FREYA TO FAIRVIEW VIC - GRADING AND STRUCTURES	UIC Drywell	N/A	No	Eastern	2009
395	162.5	170' RT	Spokane	US 395 US395/NSC - FREYA TO FAIRVIEW VIC - GRADING AND STRUCTURES	Drywell	N/A	No	Eastern	2010
395	166.01	1930' LT	Spokane	US 395 US395/NSC - FREYA ST TO FARWELL RD - PCCP PAVING	Drywell	N/A	No	Eastern	2010
395	166.05	1988' LT	Spokane	US 395 US395/NSC - FREYA ST TO FARWELL RD - PCCP PAVING	Drywell	N/A	No	Eastern	2010
395	166.31	206' LT	Spokane	US 395 NSC - GERLACH TO WANDERMERE	Drywell	N/A	No	Eastern	2010
395	166.28	2198' LT	Spokane	US 395 NSC - GERLACH TO WANDERMERE	Drywell	N/A	No	Eastern	2010
395	162.5	227' RT	Spokane	US 395 US395/NSC - FREYA TO FAIRVIEW VIC - GRADING AND STRUCTURES	Drywell	N/A	No	Eastern	2010
395	165.98	256' RT	Spokane	US395 NSC FRANCIS AVE TO US 2 STRUCTURES REBID	Drywell	N/A	No	Eastern	2010
395	162.56	262' RT	Spokane	US 395 US395/NSC - FREYA TO FAIRVIEW VIC - GRADING AND STRUCTURES	Drywell	N/A	No	Eastern	2010
395	162.7	271' LT	Spokane	US 395 US395/NSC - FREYA TO FAIRVIEW VIC - GRADING AND STRUCTURES	Drywell	N/A	No	Eastern	2010
395	166.03	332' LT	Spokane	US395 NSC FRANCIS AVE TO US 2 STRUCTURES REBID	Drywell	N/A	No	Eastern	2010
395	165.98	350' RT	Spokane	US395 NSC FRANCIS AVE TO US 2 STRUCTURES REBID	Drywell	N/A	No	Eastern	2010
395	163.02	396' LT	Spokane	US 395 US395/NSC - FREYA TO FAIRVIEW VIC - GRADING AND STRUCTURES	Drywell	N/A	No	Eastern	2010
395	162.63	432' LT	Spokane	US 395 US395/NSC - FREYA TO FAIRVIEW VIC - GRADING AND STRUCTURES	Drywell	N/A	No	Eastern	2010
395	162.61	472' LT	Spokane	US 395 US395/NSC - FREYA TO FAIRVIEW VIC - GRADING AND STRUCTURES	Drywell	N/A	No	Eastern	2010
395	162.64	475' LT	Spokane	US 395 US395/NSC - FREYA TO FAIRVIEW VIC - GRADING AND STRUCTURES	Drywell	N/A	No	Eastern	2010

State Route	Milepost	Offset Direction & Distance	County	Project Name	BMP Type	Facility Size	Stand-Alone Retrofit?	Region	Data Year
395	165.77	480' LT	Spokane	US 395 US395/NSC - FREYA ST TO FARWELL RD - PCCP PAVING	Drywell	N/A	No	Eastern	2010
395	162.63	490' LT	Spokane	US 395 US395/NSC - FREYA TO FAIRVIEW VIC - GRADING AND STRUCTURES	Drywell	N/A	No	Eastern	2010
395	161.87	573' RT	Spokane	US 395 US395/NSC - FREYA TO FAIRVIEW VIC - GRADING AND STRUCTURES	Drywell	N/A	No	Eastern	2010
395	165.95	680' RT	Spokane	US395 NSC FRANCIS AVE TO US 2 STRUCTURES REBID	Drywell	N/A	No	Eastern	2010
395	165.76	699' LT	Spokane	US 395 NSC - FARWELL ROAD LOWERING	Drywell	N/A	No	Eastern	2010
395	161.83	748' RT	Spokane	US 395 US395/NSC - FREYA TO FAIRVIEW VIC - GRADING AND STRUCTURES	Drywell	N/A	No	Eastern	2010
395	161.76	922' RT	Spokane	US 395 US395/NSC - FREYA TO FAIRVIEW VIC - GRADING AND STRUCTURES	Drywell	N/A	No	Eastern	2010
395	164.98	207' RT	Spokane	US 395 US395/NSC - FREYA ST TO FARWELL RD - PCCP PAVING	Infiltration Pond (IN.02)	6600 ft^2	No	Eastern	2009
395	163.46	185' LT	Spokane	US 395 US395/NSC - FREYA TO FAIRVIEW VIC - GRADING AND STRUCTURES	Infiltration Pond (IN.02)	.23 ft^2	No	Eastern	2010
395	162.87	272' LT	Spokane	US 395 US395/NSC - FREYA TO FAIRVIEW VIC - GRADING AND STRUCTURES	Infiltration Pond (IN.02)	.51 acres	No	Eastern	2010
395	162.97	344' LT	Spokane	US 395 US395/NSC - FREYA TO FAIRVIEW VIC - GRADING AND STRUCTURES	Infiltration Pond (IN.02)	.53 acres	No	Eastern	2010
395	162.93	197' RT	Spokane	US 395 US395/NSC - FREYA TO FAIRVIEW VIC - GRADING AND STRUCTURES	Infiltration Pond (IN.02)	.94 acres	No	Eastern	2009
395	163.38	375' LT	Spokane	US 395 US395/NSC - FREYA TO FAIRVIEW VIC - GRADING AND STRUCTURES	Infiltration Pond (IN.02)	1000 ft^2	No	Eastern	2010
395	161.97	300' RT	Spokane	US 395 US395/NSC - FREYA TO FAIRVIEW VIC - GRADING AND STRUCTURES	Infiltration Pond (IN.02)	2.55 acres	No	Eastern	2009
395	167.32	7' LT	Spokane	US 395 US395/NSC - US 2 TO WANDERMERE VICINITY	Infiltration Pond (IN.02)	1400 ft^2	No	Eastern	2009
395	167.63	102' LT	Spokane	US 395 US395/NSC - US 2 TO WANDERMERE VICINITY	Infiltration Pond (IN.02)	1500 ft^2	No	Eastern	2009
395	165.95	660' RT	Spokane	US395 NSC FRANCIS AVE TO US 2 STRUCTURES REBID	Infiltration Pond (IN.02)	1200 ft^2	No	Eastern	2010
395	165.98	350' RT	Spokane	US395 NSC FRANCIS AVE TO US 2 STRUCTURES REBID	Infiltration Pond (IN.02)	2500 ft^2	No	Eastern	2010
395	166.04	700' RT	Spokane	US395 NSC FRANCIS AVE TO US 2 STRUCTURES REBID	Infiltration Pond (IN.02)	4800 ft^2	No	Eastern	2010
395	166	196' LT	Spokane	US395 NSC FRANCIS AVE TO US 2 STRUCTURES REBID	Infiltration Pond (IN.02)	900 ft^2	No	Eastern	2009
405	13.88	450' LT	King	I-405 NE 10TH ST - Bridge Crossing	Detention Pond	49750 ft^3	No	Mega Projects	2010
405	10.92	LT	King	I-405, 112th to SE 8th Street Project	Detention Pond	0.156 ac.	No	Mega Projects	2010
405	10.06	LT	King	I-405, 112th to SE 8th Street Project	Modified Media Filter Drain	1100 ft^2	No	Mega Projects	2010

State Route	Milepost	Offset Direction & Distance	County	Project Name	BMP Type	Facility Size	Stand-Alone Retrofit?	Region	Data Year
405	~10.50	LT	King	I-405, 112th to SE 8th Street Project	Media Filter Drain	1200 ft²	No	Mega Projects	2010
405	~10.50	LT	King	I-405, 112th to SE 8th Street Project	Media Filter Drain	1760 ft²	No	Mega Projects	2010
405	8.80	RT	King	I-405, 112th to SE 8th Street Project	Media Filter Drain	1860 ft²	No	Mega Projects	2010
405	9.26	RT	King	I-405, 112th to SE 8th Street Project	Media Filter Drain	3570 ft²	No	Mega Projects	2010
405	9.65	LT	King	I-405, 112th to SE 8th Street Project	Media Filter Drain	4200 ft²	No	Mega Projects	2010
405	~10.50	LT	King	I-405, 112th to SE 8th Street Project	Media Filter Drain	4960 ft²	No	Mega Projects	2010
405	~10.50	LT	King	I-405, 112th to SE 8th Street Project	Media Filter Drain	6480 ft²	No	Mega Projects	2010
405	10.00	RT	King	I-405, 112th to SE 8th Street Project	Biofiltration Swale (RT.04)	800 ft²	No	Mega Projects	2010
405	11.7	LT	King	I-405, 112th to SE 8th Street Project	Stormwater treatment wetland/ detention pond	12616 ft²	No	Mega Projects	2010
405	11.15	LT	King	I-405, 112th to SE 8th Street Project	Stormwater treatment wetland/ detention pond	12849 ft²	No	Mega Projects	2010
405	12.03	LT	King	I-405, 112th to SE 8th Street Project	Stormwater treatment wetland/ detention pond	7498 ft²	No	Mega Projects	2010
405	13.00	LT	King	I-405, 112th to SE 8th Street Project	Stormwater treatment with pre-settlement pond	7592 ft²	No	Mega Projects	2010
405	13.50	LT	King	I-405, 112th to SE 8th Street Project	Water quality treatment wetland with pre-settlement pond	26923 ft²	No	Mega Projects	2010
405	25.61	RT	SNOHOMISH	I-405/NE 195th to SR 527 Northbound Auxiliary Lane Project	Detention Tank	0.27 ac-ft.	No	Mega Projects	2010
405	25.02	RT	SNOHOMISH	I-405/NE 195th to SR 527 Northbound Auxiliary Lane Project	Detention Tank	0.44 ac-ft.	No	Mega Projects	2010
405	25.24	RT	SNOHOMISH	I-405/NE 195th to SR 527 Northbound Auxiliary Lane Project	Media Filter Drain	1,110 ft.	No	Mega Projects	2010
405	25.22	RT	SNOHOMISH	I-405/NE 195th to SR 527 Northbound Auxiliary Lane Project	Media Filter Drain	1,370 ft.	No	Mega Projects	2010
405	25.37	RT	SNOHOMISH	I-405/NE 195th to SR 527 Northbound Auxiliary Lane Project	Detention Tank	1.06 ac-ft.	No	Mega Projects	2010
405	25.47	RT	Snohomish	I-405/NE 195th to SR 527 Northbound Auxiliary Lane Project	Media Filter Drain	150 ft.	No	Mega Projects	2010
405	25.12	RT	Snohomish	I-405/NE 195th to SR 527 Northbound Auxiliary Lane Project	Media Filter Drain	182 ft.	No	Mega Projects	2010
405	25.42	RT	Snohomish	I-405/NE 195th to SR 527 Northbound Auxiliary Lane Project	Media Filter Drain	240 ft.	No	Mega Projects	2010
405	24.85	LT	King	I-405/NE 195th to SR 527 Northbound Auxiliary Lane Project	Media Filter Drain	360 ft.	No	Mega Projects	2010
405	25.86	LT	Snohomish	I-405/NE 195th to SR 527 Northbound Auxiliary Lane Project	Media Filter Drain	385 ft.	No	Mega Projects	2010
405	24.94	LT	King	I-405/NE 195th to SR 527 Northbound Auxiliary Lane Project	Media Filter Drain	530 ft.	No	Mega Projects	2010

State Route	Milepost	Offset Direction & Distance	County	Project Name	BMP Type	Facility Size	Stand-Alone Retrofit?	Region	Data Year
405	25.73	LT	Snohomish	I-405/NE 195th to SR 527 Northbound Auxiliary Lane Project	Media Filter Drain	576 ft.	No	Mega Projects	2010
405	25.40	RT	Snohomish	I-405/NE 195th to SR 527 Northbound Auxiliary Lane Project	Media Filter Drain	586 ft.	No	Mega Projects	2010
405	24.72	RT	King	I-405/NE 195th to SR 527 Northbound Auxiliary Lane Project	Media Filter Drain	660 ft.	No	Mega Projects	2010
405	25.16	LT	Snohomish	I-405/NE 195th to SR 527 Northbound Auxiliary Lane Project	Media Filter Drain	723 ft.	No	Mega Projects	2010
405	25.88	LT	Snohomish	I-405/NE 195th to SR 527 Northbound Auxiliary Lane Project	Media Filter Drain	918 ft.	No	Mega Projects	2010
405	25.94	RT	SNOHOMISH	I-405/NE 195th to SR 527 Northbound Auxiliary Lane Project	Stormwater treatment wetland/ detention pond	0.32 ac-ft.	No	Mega Projects	2010
405	0.90	RT	King	SR 167 I-405/I-5 to SR 169 Stage 1- Widening	Detention Pond	0.16 ac-ft.	No	Mega Projects	2010
405	0.20	Center	King	SR 167 I-405/I-5 to SR 169 Stage 1- Widening	Detention Pond	0.41 ac-ft.	No	Mega Projects	2010
405	1.90	RT	King	SR 167 I-405/I-5 to SR 169 Stage 1- Widening	Detention Pond	1.5 ac-ft.	No	Mega Projects	2010
405	0.87 - 0.93	RT	King	SR 167 I-405/I-5 to SR 169 Stage 1- Widening	Media Filter Drain	1252 ft^2	No	Mega Projects	2010
405	2.20 - 2.27	LT	King	SR 167 I-405/I-5 to SR 169 Stage 1- Widening	Media Filter Drain	1640 ft^2	No	Mega Projects	2010
405	2.18 - 2.26	RT	King	SR 167 I-405/I-5 to SR 169 Stage 1- Widening	Media Filter Drain	1796 ft^2	No	Mega Projects	2010
405	0.15 - 0.25	LT	King	SR 167 I-405/I-5 to SR 169 Stage 1- Widening	Media Filter Drain	2575 ft^2	No	Mega Projects	2010
405	0.89 - 0.93	LT	King	SR 167 I-405/I-5 to SR 169 Stage 1- Widening	Media Filter Drain	568 ft^2	No	Mega Projects	2010
405	0.90	RT	King	SR 167 I-405/I-5 to SR 169 Stage 1- Widening	Media Filter Drain	812 ft^2	No	Mega Projects	2010
405	1.20 - 1.60	200' RT	King	SR 167 I-405/I-5 to SR 169 Stage 1- Widening	Modified Media Filter Drain	9430 ft^2	No	Mega Projects	2010
405	2.27 - 2.31	300' LT	King	SR 167 I-405/I-5 to SR 169 Stage 1- Widening	Media Filter Drain	960 ft^2	No	Mega Projects	2010
502	0.54	140' LT	Clark	I-5 / SR502 Interchange	Combined Stormwater Treatment Wetland / Detention Pond	1.42 ac-ft.	No	Southwest	2009
502	0.57	50' RT	Clark	I-5 / SR502 Interchange	Combined Wet / Detention Pond	0.29 ac-ft.	No	Southwest	2009
502	0.17	110' LT	Clark	I-5 / SR502 Interchange	Combined Wet / Detention Pond	0.57 ac-ft.	No	Southwest	2009
502	0.57	700' LT	Clark	I-5 / SR502 Interchange	Detention Pond	0.26 ac-ft.	No	Southwest	2009
502	0.23	150' LT	Clark	I-5 / SR502 Interchange	Detention Pond	1.20 ac-ft.	No	Southwest	2009
502	0.57	850' LT	Clark	I-5 / SR502 Interchange	Media Filter Drain	467 ft.	No	Southwest	2009
502	0.95	30' LT	Clark	I-5 / SR502 Interchange	Media Filter Drain	500 ft.	No	Southwest	2009
502	0.31	35' LT	Clark	I-5 / SR502 Interchange	Media Filter Drain	900 ft.	No	Southwest	2009
519	0.20	200' RT	King	SR-519 Phase 2	Biofiltration Swale (RT.04)	780 ft^2	No	Mega Projects	2010
522	10.53	36' LT	King	SR 522/University of Washington Bothell/Cascadia CC Campus South Access	Vault	3570.00 ft^3	No	Northwest	2010
522	10.53	58.60 LT	King	SR 522/University of Washington Bothell/Cascadia CC Campus South Access	Stormwater Wetland	23839.00 ft^3	No	Northwest	2010
536	0.06	32' RT	Skagit	SR 20, Fredonia I-5 Widening Stage 1 Stage 1	Filter Strip	1,870 ft.	No	Northwest	2009

State Route	Milepost	Offset Direction & Distance	County	Project Name	BMP Type	Facility Size	Stand-Alone Retrofit?	Region	Data Year
536	0.04	100' LT	Skagit	SR 20, Fredonia I-5 Widening Stage 1 Stage 1	Filter Strip	225 ft.	No	Northwest	2009
542	28.19	70' RT	Whatcom	SR 542, Boulder Creek Bridge Replacement	Infiltration Pond (IN.02)	0.73 ac-ft.	No	Northwest	2009
542	28.51	56' RT	Whatcom	SR 542, Boulder Creek Bridge Replacement	Biofiltration Swale (RT.04)	100 ft.	No	Northwest	2009
542	28.11	30' RT	Whatcom	SR 542, Boulder Creek Bridge Replacement	Biofiltration Swale (RT.04)	133 ft.	No	Northwest	2009
542	28.12	30' LT	Whatcom	SR 542, Boulder Creek Bridge Replacement	Biofiltration Swale (RT.04)	171 ft.	No	Northwest	2009
542	28.23	40' LT	Whatcom	SR 542, Boulder Creek Bridge Replacement	Biofiltration Swale (RT.04)	171 ft.	No	Northwest	2009
542	28.38	52' LT	Whatcom	SR 542, Boulder Creek Bridge Replacement	Biofiltration Swale (RT.04)	171 ft.	No	Northwest	2009
542	28.37	90' RT	Whatcom	SR 542, Boulder Creek Bridge Replacement	Biofiltration Swale (RT.04)	171 ft.	No	Northwest	2009
542	28.25	67' RT	Whatcom	SR 542, Boulder Creek Bridge Replacement	Biofiltration Swale (RT.04)	199 ft.	No	Northwest	2009
542	28.31	106' RT	Whatcom	SR 542, Boulder Creek Bridge Replacement	Biofiltration Swale (RT.04)	86 ft.	No	Northwest	2009
542	28.16	45' RT	Whatcom	SR 542, Boulder Creek Bridge Replacement	Infiltration Trench	95 ft.	No	Northwest	2009
543	0.32	70' LT	Whatcom	SR 543, I-5 To International Boundary Widening & B	Detention Pond	0.32 ac-ft.	No	Northwest	2009
543	0.32	70' RT	Whatcom	SR 543, I-5 To International Boundary Widening & B	Detention Pond	0.33 ac-ft.	No	Northwest	2009
543	0.57	75' RT	Whatcom	SR 543, I-5 To International Boundary Widening & B	Detention Pond	0.55 ac-ft.	No	Northwest	2009
543	0.4	75’ LT	Whatcom	SR 543, I-5 To International Boundary Widening & B	Detention Pond	0.63 ac-ft.	No	Northwest	2009
543	1.06	275' RT	Whatcom	SR 543, I-5 To International Boundary Widening & B	Retention/ Detention Pond	1.16 ac-ft.	No	Northwest	2009
543	1.06	340' RT	Whatcom	SR 543, I-5 To International Boundary Widening & B	Retention/ Detention Pond	1.32 ac-ft.	No	Northwest	2009
543	0.6	50' LT	Whatcom	SR 543, I-5 To International Boundary Widening & B	Biofiltration Swale (RT.04)	230 ft.	No	Northwest	2009
543	0.45	75' RT	Whatcom	SR 543, I-5 To International Boundary Widening & B	Biofiltration Swale (RT.04)	300 ft.	No	Northwest	2009
543	0.35	55' RT	Whatcom	SR 543, I-5 To International Boundary Widening & B	Filter Strip	820 ft.	No	Northwest	2009
543	0.34	40' LT	Whatcom	SR 543, I-5 To International Boundary Widening & B	Filter Strip	830 ft.	No	Northwest	2009
704	5.3	800’ LT	Pierce	SR 704 Cross-base Highway- Spanaway Loop Rd to SR 7	2 cell storm water pond	0.606 ac-ft.	No	Olympic	2010
704	5.8	150' RT	Pierce	SR 704 Cross-base Highway- Spanaway Loop Rd to SR 7	3 cell storm water pond	0.679 ac-ft.	No	Olympic	2010

State Route	Milepost	Offset Direction & Distance	County	Project Name	BMP Type	Facility Size	Stand-Alone Retrofit?	Region	Data Year
704	5.5	125’ RT	Pierce	SR 704 Cross-base Highway- Spanaway Loop Rd to SR 7	3 cell storm water pond	1.300 ac-ft.	No	Olympic	2010
704	5.3	100’ RT	Pierce	SR 704 Cross-base Highway- Spanaway Loop Rd to SR 7	CAVFS w/ Flow Spreader	517 yd^2	No	Olympic	2010
900	20.09	125' RT	King	SR 900/SE 78th St. Vic. to Newport Way	Detention/Retention Pond	Detention=0.641 ac-ft. Retention=0.530 ac-ft.	No	Northwest	2010
2/97	104.67	240' RT	Chelan	Peshastin East Interchange	Infiltration Pond (IN.02)	161.400 ft^3	No	North Central	2009
2/97	135.00 - 135.20	32' RT	Douglas	US 2/97 - Baker Flats to Orondo Paving & Passing Lane	Low Impact Development	1,233 ft^3	No	North Central	2010
2/97	133.58 - 133.87	32' RT	Douglas	US 2/97 - Baker Flats to Orondo Paving & Passing Lane	Natural Dispersion	10.8 ft.	No	North Central	2010
2/97	119.68B - 119.79B	525' RT	Douglas	Wenatchee-Trail Connection	Low Impact Development	1312 ft^3	No	North Central	2009
2/97	131.94 - 132.43	32' LT	Douglas	US 2/97 - Baker Flats to Orondo Paving & Passing Lane	Natural Dispersion	26.9 ft^3	No	North Central	2010
2/97	133.87 - 134.20	32' RT	Douglas	US 2/97 - Baker Flats to Orondo Paving & Passing Lane	Low Impact Development	4,225 ft^3	No	North Central	2010
2/97	135.20 - 136.09	32' RT	Douglas	US 2/97 - Baker Flats to Orondo Paving & Passing Lane	Natural Dispersion	~4 ft.	No	North Central	2010
2/97	134.20 - 135.00	32' RT	Douglas	US 2/97 - Baker Flats to Orondo Paving & Passing Lane	Natural Dispersion	~4 ft.	No	North Central	2010
5	276.24	65' RT	Whatcom	I-5/Blaine (GSA) Design-Build Contract (GSA Lead)	Biofiltration swale	100 ft.	No	Northwest	2010
5	276.34	41' LT	Whatcom	I-5/Blaine (GSA) Design-Build Contract (GSA Lead)	Biofiltration swale	130 ft.	No	Northwest	2010
5	218.81	NB shoulder	Skagit	I-5/Fisher Cr Vic to Squalicum Cr Vic	Compost Amended Vegetated Filter Strip	2,320 ft.	Yes	Northwest	2010
5	218.89	SB median	Skagit	I-5/Fisher Cr Vic to Squalicum Cr Vic	Compost Amended Vegetated Filter Strip	1,425 ft.	Yes	Northwest	2010
5	219.16	SB median	Skagit	I-5/Fisher Cr Vic to Squalicum Cr Vic	Compost Amended Vegetated Filter Strip	317 ft.	Yes	Northwest	2010
5	219.73	SB shoulder	Skagit	I-5/Fisher Cr Vic to Squalicum Cr Vic	Compost Amended Vegetated Filter Strip	264 ft.	Yes	Northwest	2010
5	248.51	NB shoulder	Whatcom	I-5/Fisher Cr Vic to Squalicum Cr Vic	Compost Amended Vegetated Filter Strip	475 ft.	Yes	Northwest	2010
5	248.60	NB shoulder	Whatcom	I-5/Fisher Cr Vic to Squalicum Cr Vic	Compost Amended Vegetated Filter Strip	158 ft.	Yes	Northwest	2010
5	248.54	SB median	Whatcom	I-5/Fisher Cr Vic to Squalicum Cr Vic	Compost Amended Vegetated Filter Strip	1,585 ft.	Yes	Northwest	2010
5	249.09	SB shoulder	Whatcom	I-5/Fisher Cr Vic to Squalicum Cr Vic	Compost Amended Vegetated Filter Strip	210 ft.	Yes	Northwest	2010

State Route	Milepost	Offset Direction & Distance	County	Project Name	BMP Type	Facility Size	Stand-Alone Retrofit?	Region	Data Year
5	249.22	SB shoulder	Whatcom	I-5/Fisher Cr Vic to Squalicum Cr Vic	Compost Amended Vegetated Filter Strip	1215 ft.	Yes	Northwest	2010
5	249.79	NB shoulder	Whatcom	I-5/Fisher Cr Vic to Squalicum Cr Vic	Compost Amended Vegetated Filter Strip	685 ft.	Yes	Northwest	2010
5	255.07	NB median	Whatcom	I-5/Fisher Cr Vic to Squalicum Cr Vic	Compost Amended Vegetated Filter Strip	1480 ft.	Yes	Northwest	2010
5	255.07	SB median	Whatcom	I-5/Fisher Cr Vic to Squalicum Cr Vic	Compost Amended Vegetated Filter Strip	1480 ft.	Yes	Northwest	2010
20	45.07	LT	Skagit	SR 20/Quiet Cove Rd. Vic. to SR 20 Spur - Stage 2	Ecology Embankment	425 ft.	No	Northwest	2010
20	45.09	RT	Skagit	SR 20/Quiet Cove Rd. Vic. to SR 20 Spur - Stage 2	Ecology Embankment	100 ft.	No	Northwest	2010
20	45.28	RT	Skagit	SR 20/Quiet Cove Rd. Vic. to SR 20 Spur - Stage 2	Ecology Embankment	1,100 ft.	No	Northwest	2010
20	45.56	LT	Skagit	SR 20/Quiet Cove Rd. Vic. to SR 20 Spur - Stage 2	Ecology Embankment	370 ft.	No	Northwest	2010
20	45.64	LT	Skagit	SR 20/Quiet Cove Rd. Vic. to SR 20 Spur - Stage 2	Ecology Embankment	370 ft.	No	Northwest	2010
20	45.71	LT	Skagit	SR 20/Quiet Cove Rd. Vic. to SR 20 Spur - Stage 2	Ecology Embankment	130 ft.	No	Northwest	2010
20	45.72	RT	Skagit	SR 20/Quiet Cove Rd. Vic. to SR 20 Spur - Stage 2	Ecology Embankment	430 ft.	No	Northwest	2010
20	46.03	RT	Skagit	SR 20/Quiet Cove Rd. Vic. to SR 20 Spur - Stage 2	Ecology Embankment	530 ft.	No	Northwest	2010
20	46.08	LT	Skagit	SR 20/Quiet Cove Rd. Vic. to SR 20 Spur - Stage 2	Detention Pond	33,445 ft^3/ 0.768 ac-ft.	No	Northwest	2010
20	46.89	LT	Skagit	SR 20/Quiet Cove Rd. Vic. to SR 20 Spur - Stage 2	Ecology Embankment	100 ft.	No	Northwest	2010
20	47.08	LT	Skagit	SR 20/Quiet Cove Rd. Vic. to SR 20 Spur - Stage 2	Ecology Embankment	60 ft.	No	Northwest	2010
20	47.11	LT	Skagit	SR 20/Quiet Cove Rd. Vic. to SR 20 Spur - Stage 2	Ecology Embankment	205 ft.	No	Northwest	2010
20	47.08	RT	Skagit	SR 20/Quiet Cove Rd. Vic. to SR 20 Spur - Stage 2	Ecology Embankment	350 ft.	No	Northwest	2010
20	47.04	30' RT	Skagit	SR 20/Quiet Cove Rd. Vic. to SR 20 Spur - Stage 2	Detention Pond	14,450 ft^3/ 0.332 ac-ft.	No	Northwest	2010
20	47.07	30' LT	Skagit	SR 20/Quiet Cove Rd. Vic. to SR 20 Spur - Stage 2	Detention Pond	2,422 ft^3/ 0.056 ac-ft.	No	Northwest	2010
20	47.10	30' LT	Skagit	SR 20/Quiet Cove Rd. Vic. to SR 20 Spur - Stage 2	Detention Pond	6,130 c.f./ 0.141 ac-ft.	No	Northwest	2010
9	62.77	37' LT	Skagit	SR 9/Martin Rd Vic to Thunder Creek	Biofiltration swale	96 ft.	No	Northwest	2010
9	62.79	35' RT	Skagit	SR 9/Martin Rd Vic to Thunder Creek	Infiltration Trench	360 ft.	No	Northwest	2010

State Route	Milepost	Offset Direction & Distance	County	Project Name	BMP Type	Facility Size	Stand-Alone Retrofit?	Region	Data Year
9	62.81	100' LT	Skagit	SR 9/Martin Rd Vic to Thunder Creek	Detention Pond	42,481 ft^3/ 0.975 ac-ft.	No	Northwest	2010
9	62.94	50' LT	Skagit	SR 9/Martin Rd Vic to Thunder Creek	Vegetated Filter Strip	35 ft.	No	Northwest	2010
9	63.07	25' RT	Skagit	SR 9/Martin Rd Vic to Thunder Creek	Biofiltration swale	200 ft.	No	Northwest	2010
9	63.15	31' LT	Skagit	SR 9/Martin Rd Vic to Thunder Creek	Biofiltration swale	120 ft.	No	Northwest	2010
9	63.15	25' LT	Skagit	SR 9/Martin Rd Vic to Thunder Creek	Vegetated Filter Strip	120 ft.	No	Northwest	2010
9	63.20	25' LT	Skagit	SR 9/Martin Rd Vic to Thunder Creek	Vegetated Filter Strip	450 ft.	No	Northwest	2010
9	63.26	35' LT	Skagit	SR 9/Martin Rd Vic to Thunder Creek	Biofiltration swale	150 ft.	No	Northwest	2010
9	63.26	25' RT	Skagit	SR 9/Martin Rd Vic to Thunder Creek	Biofiltration swale	175 ft.	No	Northwest	2010
9	62.90	100' LT	Skagit	SR 9/Martin Rd Vic to Thunder Creek	Infiltration Trench	395 ft.	No	Northwest	2010
9	63.24	50' RT	Skagit	SR 9/Martin Rd Vic to Thunder Creek	Detention Pond	25,348 ft^3/ 0.582 ac-ft.	No	Northwest	2010
9	63.20	35' LT	Skagit	SR 9/Martin Rd Vic to Thunder Creek	Infiltration Trench	140 ft.	No	Northwest	2010
542	28.03	30' RT	Whatcom	SR542/Bruce & Baptist Creeks Culverts & Realign. & Fish. Bar. Rem. RE-AD	Compost Amended Vegetated Filter Strip	380 ft.	No	Northwest	2010
539	7.03	LT	Whatcom	Ten Mile Rd. to SR 546 - Stage 1	Ecology Embankment	1,738 ft.	No	Northwest	2010
539	7.79	LT	Whatcom	Ten Mile Rd. to SR 546 - Stage 1	Ecology Embankment	2,155 ft.	No	Northwest	2010
539	8.43	LT	Whatcom	Ten Mile Rd. to SR 546 - Stage 1	Ecology Embankment	225 ft.	No	Northwest	2010
539	8.77	LT	Whatcom	Ten Mile Rd. to SR 546 - Stage 1	Ecology Embankment	435 ft.	No	Northwest	2010
539	7.02	RT	Whatcom	Ten Mile Rd. to SR 546 - Stage 1	Ecology Embankment	300 ft.	No	Northwest	2010
539	8.00	RT	Whatcom	Ten Mile Rd. to SR 546 - Stage 1	Ecology Embankment	1,020 ft.	No	Northwest	2010
539	8.77	RT	Whatcom	Ten Mile Rd. to SR 546 - Stage 1	Ecology Embankment	1,271 ft.	No	Northwest	2010
539	5.09	LT	Whatcom	Ten Mile Rd. to SR 546 - Stage 1	Ecology Embankment	105 ft.	No	Northwest	2010
539	9.02	LT	Whatcom	Ten Mile Rd. to SR 546 - Stage 1	Ecology Embankment	650 ft.	No	Northwest	2010
539	9.75	LT	Whatcom	Ten Mile Rd. to SR 546 - Stage 1	Ecology Embankment	1,899 ft.	No	Northwest	2010
539	10.17	LT	Whatcom	Ten Mile Rd. to SR 546 - Stage 1	Ecology Embankment	390 ft.	No	Northwest	2010
539	5.90	RT	Whatcom	Ten Mile Rd. to SR 546 - Stage 1	Ecology Embankment	84 ft.	No	Northwest	2010
539	9.02	RT	Whatcom	Ten Mile Rd. to SR 546 - Stage 1	Ecology Embankment	150 ft.	No	Northwest	2010
539	9.05	RT	Whatcom	Ten Mile Rd. to SR 546 - Stage 1	Ecology Embankment	500 ft.	No	Northwest	2010
539	9.75	RT	Whatcom	Ten Mile Rd. to SR 546 - Stage 1	Ecology Embankment	1,893 ft.	No	Northwest	2010
539	10.17	RT	Whatcom	Ten Mile Rd. to SR 546 - Stage 1	Ecology Embankment	390 ft.	No	Northwest	2010
539	6.08	LT	Whatcom	Ten Mile Rd. to SR 546 - Stage 1	Ecology Embankment	1,845 ft.	No	Northwest	2010
539	6.51	LT	Whatcom	Ten Mile Rd. to SR 546 - Stage 1	Ecology Embankment	988 ft.	No	Northwest	2010
539	6.71	LT	Whatcom	Ten Mile Rd. to SR 546 - Stage 1	Ecology Embankment	1,595 ft.	No	Northwest	2010
539	8.86	LT	Whatcom	Ten Mile Rd. to SR 546 - Stage 1	Ecology Embankment	866 ft.	No	Northwest	2010
539	6.08	RT	Whatcom	Ten Mile Rd. to SR 546 - Stage 1	Ecology Embankment	1,830 ft.	No	Northwest	2010
539	6.51	RT	Whatcom	Ten Mile Rd. to SR 546 - Stage 1	Ecology Embankment	988 ft.	No	Northwest	2010
539	6.71	RT	Whatcom	Ten Mile Rd. to SR 546 - Stage 1	Ecology Embankment	200 ft.	No	Northwest	2010
539	6.75	RT	Whatcom	Ten Mile Rd. to SR 546 - Stage 1	Ecology Embankment	1,323 ft.	No	Northwest	2010
539	7.08	RT	Whatcom	Ten Mile Rd. to SR 546 - Stage 1	Ecology Embankment	1,458 ft.	No	Northwest	2010
539	7.79	RT	Whatcom	Ten Mile Rd. to SR 546 - Stage 1	Ecology Embankment	1,135 ft.	No	Northwest	2010

State Route	Milepost	Offset Direction & Distance	County	Project Name	BMP Type	Facility Size	Stand-Alone Retrofit?	Region	Data Year
539	9.51	150' LT (River Road)	Whatcom	Ten Mile Rd. to SR 546 - Stage 1	Ecology Embankment	577 ft.	No	Northwest	2010
539	7.01	75' RT (Beard Rd. lt.)	Whatcom	Ten Mile Rd. to SR 546 - Stage 1	Ecology Embankment	269 ft.	No	Northwest	2010
539	7.02	75' RT (Beard Rd.)	Whatcom	Ten Mile Rd. to SR 546 - Stage 1	Ecology Embankment	269 ft.	No	Northwest	2010
539	7.35	LT	Whatcom	Ten Mile Rd. to SR 546 - Stage 1	Ecology Embankment w/ Infiltration Trench	406 ft.	No	Northwest	2010
539	7.58	LT	Whatcom	Ten Mile Rd. to SR 546 - Stage 1	Ecology Embankment w/ Infiltration Trench	1,086 ft.	No	Northwest	2010
539	8.63	LT	Whatcom	Ten Mile Rd. to SR 546 - Stage 1	Ecology Embankment w/ Infiltration Trench	747 ft.	No	Northwest	2010
539	8.64	RT	Whatcom	Ten Mile Rd. to SR 546 - Stage 1	Ecology Embankment w/ Infiltration Trench	739 ft.	No	Northwest	2010
539	7.51	212' RT (Pole Rd.)	Whatcom	Ten Mile Rd. to SR 546 - Stage 1	Ecology Embankment w/ Infiltration Trench	130 ft.	No	Northwest	2010
539	7.51	181' LT (Pole Rd. rt.)	Whatcom	Ten Mile Rd. to SR 546 - Stage 1	Ecology Embankment w/ Infiltration Trench	103 ft.	No	Northwest	2010
539	7.52	161' RT (Pole Rd. lt.)	Whatcom	Ten Mile Rd. to SR 546 - Stage 1	Ecology Embankment w/ Infiltration Trench	182 ft.	No	Northwest	2010
539	7.52	186' LT (Pole Rd.)	Whatcom	Ten Mile Rd. to SR 546 - Stage 1	Ecology Embankment w/ Infiltration Trench	84 ft.	No	Northwest	2010
539	6.42	LT	Whatcom	Ten Mile Rd. to SR 546 - Stage 1	Ecology Embankment w/ Infiltration Trench	378 ft.	No	Northwest	2010
539	6.43	RT	Whatcom	Ten Mile Rd. to SR 546 - Stage 1	Ecology Embankment w/ Infiltration Trench	225 ft.	No	Northwest	2010
539	7.35	RT	Whatcom	Ten Mile Rd. to SR 546 - Stage 1	Ecology Embankment w/ Infiltration Trench	275 ft.	No	Northwest	2010
539	7.61	RT	Whatcom	Ten Mile Rd. to SR 546 - Stage 1	Ecology Embankment w/ Infiltration Trench	930 ft.	No	Northwest	2010
539	5.97	85' RT	Whatcom	Ten Mile Rd. to SR 546 - Stage 1	Detention Pond	20,323 ft^3/ 0.467 ac-ft.	No	Northwest	2010
539	6.03	130' RT	Whatcom	Ten Mile Rd. to SR 546 - Stage 1	Detention Pond	102,553 ft^3/ 2.354 ac-ft.	No	Northwest	2010
539	6.74	112' RT	Whatcom	Ten Mile Rd. to SR 546 - Stage 1	Detention Pond	144,859 ft^3/ 3.326 ac-ft.	No	Northwest	2010
539	7.11	90' LT	Whatcom	Ten Mile Rd. to SR 546 - Stage 1	Detention Pond	135,277 ft^3/ 3.106 ac-ft.	No	Northwest	2010
539	8.08	117' RT	Whatcom	Ten Mile Rd. to SR 546 - Stage 1	Detention Pond	72,212 ft^3/ 1.658 ac-ft.	No	Northwest	2010
539	8.23	108' LT	Whatcom	Ten Mile Rd. to SR 546 - Stage 1	Combined Stormwater Treatment Wetland/Detention Pond	60,776 ft^3/ 1.395 ac-ft.	No	Northwest	2010

State Route	Milepost	Offset Direction & Distance	County	Project Name	BMP Type	Facility Size	Stand-Alone Retrofit?	Region	Data Year
539	8.51	289' LT	Whatcom	Ten Mile Rd. to SR 546 - Stage 1	Detention / Retention Pond	34,106 ft^3/ 0.783 ac-ft.	No	Northwest	2010
539	8.60	109' LT	Whatcom	Ten Mile Rd. to SR 546 - Stage 1	Infiltration Pond	14,938 ft^3/ 0.343 ac-ft.	No	Northwest	2010
539	9.64	145' LT	Whatcom	Ten Mile Rd. to SR 546 - Stage 1	Wet Pond	22,195 ft^3/ 0.510 ac-ft.	No	Northwest	2010
539	10.25	274' LT	Whatcom	Ten Mile Rd. to SR 546 - Stage 1	Detention / Retention Pond	34,432 ft^3/ 0.790 ac-ft.	No	Northwest	2010
539	10.17	100' RT	Whatcom	Ten Mile Rd. to SR 546 - Stage 1	Bioswale	150 ft.	No	Northwest	2010