State of Washington
Joint Legislative Audit & Review Committee (JLARC)

Stormwater Permit Requirements at the Department of Transportation

Report 11-2

January 5, 2011

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The statutory authority for JLARC, established in Chapter 44.28 RCW, requires the Legislative Auditor to ensure that JLARC studies are conducted in accordance with Generally Accepted Government Auditing Standards, as applicable to the scope of the audit. This study was conducted in accordance with those applicable standards. Those standards require auditors to plan and perform audits to obtain sufficient, appropriate evidence to provide a reasonable basis for findings and conclusions based on the audit objectives. The evidence obtained for this JLARC report provides a reasonable basis for the enclosed findings and conclusions, and any exceptions to the application of audit standards have been explicitly disclosed in the body of this report.

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Committee Approval

Subsequent to the January 5, 2011 meeting, this report was approved for distribution by the Joint Legislative Audit and Review Committee.

Acknowledgements

We appreciate the assistance provided by the Department of Transportation and the Department of Ecology in conducting this study. We would like to thank the staff for their availability and responsiveness during a very busy time.

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STATE OF WASHINGTON

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REPORT SUMMARY

Stormwater runoff is rain or snow melt that flows off highways, parking lots, and other surfaces. Federal and state laws recognize stormwater runoff as a major source of water pollution. The Washington State Department of Transportation (WSDOT) and others are required to obtain permits to manage and control stormwater runoff.

The 2010 Supplemental Transportation Budget (ESSB 6381) directs JLARC to analyze options for implementing WSDOT's stormwater permit. **WSDOT requested $21.6 million in the 2011-13 Biennial Transportation Budget** to implement the requirements of a new, five-year permit issued in 2009. This permit has new and expanded requirements from WSDOT's previous permit.

WSDOT is proposing to perform almost all of the functions of the permit using its own staff and resources. The permit's requirements primarily fall into three major activities: **maintenance** of stormwater control devices, such as detention ponds; water quality **monitoring;** and **inventory** of stormwater systems. Maintenance is the single largest activity in WSDOT's budget request, accounting for 71 percent of the total estimated costs.

Viable Options Exist, But There Is No Clear Choice Due to Key Information Gaps

The Legislature directed JLARC to review the following entities performing the permit requirements: WSDOT, the Department of Ecology, a consortium of public entities, and the private sector.

JLARC considered timing needs, organizational fit, and the experience of other states and local governments when assessing the advantages and disadvantages of each option, and narrowed the viable options worth considering for each of the major activities required in the permit.

For maintenance, WSDOT and the private sector are viable options. Both have experience performing some of the maintenance functions now required. However, a large portion of the maintenance cost estimate is for an activity that has not been routinely performed in the past. There is limited experience nationally or locally to conclude whether one option is preferable to another.

For monitoring, **WSDOT, Ecology and the private sector are viable options.** Both Ecology and the private sector have experience and expertise in water quality monitoring. WSDOT has also begun to develop some in-house expertise, and a recent report by the U.S. Geological Survey recommends the agency develop some in-house expertise to manage the monitoring program.

For inventory, WSDOT and the private sector are viable options. WSDOT has contracted for some inventory services in the past. WSDOT has also used its own staff to perform similar tasks, and this activity is part of a larger agency effort to understand and manage its assets.

The consortium approach is the only one that is not feasible for the current permit. No such entity or infrastructure is currently in place to meet the permit deadlines. For the future, however, such an approach may be feasible. For example, a future consortium for monitoring is already being discussed among key stakeholders, including WSDOT, for the next round of permits.

Timing Considerations and Lack of Comparable Cost Information Complicate Choosing Among Options

Although viable options exist for performing each of the major permit functions, there are significant information gaps that make choosing among the options difficult. First, any entity that performs a major permit function must be able to meet the deadlines specified in the permit. While some options can be eliminated due to timing constraints, it is not possible to determine exactly who is best positioned to meet the permit deadlines.

Another key gap in information is a lack of comparable cost data on the options reviewed. WSDOT did not perform a comprehensive cost analysis of alternatives during the development of its budget request. JLARC was not able to obtain comparable, reliable cost data from other states and local governments for meeting stormwater requirements, either in-house or through an alternative approach. The absence of comparable cost data is consistent with the findings of recent national and local research on stormwater permit implementation.

The following recommendations seek to fill the largest information gaps so that more comprehensive information is available for future budget decision making.

Recommendation 1: To the Legislature
To obtain comparative cost information and determine whether private contractors can meet the permit deadlines, the Legislature should direct WSDOT to conduct a pilot program contracting for the maintenance of some stormwater control devices. WSDOT should report to the Legislature on the results of the pilot program.

In consultation with legislative staff, WSDOT should determine how many stormwater devices to include in the pilot, how long the pilot should be in place, and whether to pursue contracts based on the responses received. The pilot program should be designed to allow for a valid comparative cost analysis between using WSDOT staff and equipment and using contractors.

If the Legislature specifically directs WSDOT in statute or budget proviso to pilot maintenance contracting, WSDOT will not be subject to provisions of the competitive contracting law enacted through the 2002 Personnel System Reform Act (RCW 41.06.142). However, contracting could be raised as a collective bargaining issue.

Recommendation 2: To the Washington State Department of Transportation
To ensure that WSDOT is using the most cost-effective option for performing monitoring and inventory, WSDOT should prepare comparative cost information on viable options for meeting permit requirements for future budget cycles.

This should include the cost of WSDOT staff and equipment compared to the cost of those services being provided by others. In consultation with legislative staff, WSDOT should incorporate additional viable options—should any become available—in future analyses, such as a future monitoring consortium that is being discussed among multiple stakeholders for the next round of permits.

PART ONE – WHAT ARE STORMWATER PERMITS?

Stormwater Runoff Is a Major Source of Water Pollution

Stormwater runoff is rain or snow melt that flows off the landscape and paved surfaces, such as roads, sidewalks, and parking lots. Water running off these surfaces can pick up oil, fertilizers, soil, trash, and other pollutants and release them untreated into local waters. Uncontrolled stormwater, especially during the wet season, can also generate high water flows that cause erosion, flooding, and muddy waters. This can damage stream banks and suffocate salmon and other aquatic life.

Areas with large amounts of impervious surfaces (such as parking lots and roads) prevent stormwater from soaking naturally into the ground, where pollutants can be filtered out and flows reduced.

Federal and state laws recognize stormwater as a major source of water pollution. The Puget Sound Partnership, a state agency established to help protect and restore the Puget Sound, has identified improvements in the management of stormwater as one of its top Action Agenda objectives.

Federal and State Laws Require Permits to Manage and Control Stormwater Runoff

Stormwater enters into local waters either by flowing directly from the landscape or impervious surfaces, or through a system of storm sewers. Storm sewer systems may include roads with storm drains, ditches, catch basins, holding ponds, and pipes that transport and eventually release stormwater into local waters. These storm sewer systems are often operated by public entities, such as local governments and state departments of transportation.

The Federal Clean Water Act and Washington's Water Pollution Control laws (Chapter 90.48 RCW) place requirements on entities that release stormwater into the state's waterways. The federal National Pollutant Discharge Elimination System (NPDES), a program authorized by the Clean Water Act, is the driving force behind **permits** that are issued to regulate and control stormwater pollution.

The U.S. Environmental Protection Agency (EPA) issues rules and oversees the administration of the NPDES program. EPA requires permitted entities to develop and implement stormwater management programs to reduce the level of pollutants released into state waters. The stormwater management programs must include specific activities, such as a maintenance program for cleaning catch basins and holding ponds.

In all but five states, EPA delegates authority for permit issuance and compliance enforcement to state environmental regulatory agencies. In Washington, the Department of Ecology is responsible for issuing stormwater permits, and these permits are the state's primary method for regulating stormwater. In Washington and other states that administer their own NPDES programs, stormwater permit requirements also reflect state laws related to water pollution.

Several different types of entities are required to obtain stormwater permits. Ecology issues NPDES permits to certain industries and construction sites. It also issues permits to local governments and WSDOT as each is responsible for operating its own storm sewer systems.

A number of other public agencies also operate their own storm sewer systems, but these systems are on a much smaller scale than local governments and WSDOT. These entities are called "secondary permittees," and their permit requirements are included in permits issued to local governments. Secondary permittees have significantly fewer requirements than primary permit holders. Secondary permittees include certain universities, community colleges, ports, school districts, the Department of Corrections, and the Department of General Administration.

Washington's First Round of Permit Implementation Began With WSDOT and the Most Densely-Populated Counties and Cities

Ecology issued its first round of stormwater permits in 1995. Ecology wrote general permits that covered WSDOT and the state's most densely-populated counties and cities. The permits covered the unincorporated areas of King, Pierce, and Snohomish counties, the cities of Seattle and Tacoma, and WSDOT's highway and transportation facilities located in these specific counties and cities. In 1999, Clark County received a permit which closely resembled the permits issued to the others.

Second Round of Permits Resulted In a Separate Permit For WSDOT

Federal regulations state that stormwater permits should be issued every five years. EPA indicates that permit reissuance is intended to reflect the evolving and growing knowledge about how to best manage stormwater. Many states, including Washington, have issued permits that are in place for much longer.

Ecology issued new permits to King, Pierce, Snohomish, and Clark counties and a number of smaller counties and cities in 2007. These additional municipalities received permits to reflect updated EPA rules, which require expanded permit coverage to smaller urbanized areas.

EPA's rules allow state departments of transportation (DOTs) to be covered as part of a municipal permit or covered under a separate DOT-specific permit. Two years after issuing the municipal permits, Ecology issued its first WSDOT-specific permit in 2009. This change reflects Ecology and WSDOT's acknowledgment that WSDOT has some distinct management issues, such as highways that cross multiple jurisdictional boundaries. WSDOT's new permit covers an expanded geographic area, including portions of the smaller urbanized counties and cities that now have their own permits.

JLARC Directed to Review Options For Implementing WSDOT's Stormwater Permit

WSDOT has been planning for the implementation of its 2009 stormwater permit for several years. The agency began requesting funding for meeting the new permit requirements in the 2008 Supplemental Transportation Budget, and has updated those funding requests in ensuing budgets. In the 2010 Supplemental Transportation Budget, the Legislature directed JLARC to review options for meeting WSDOT's permit requirements; these options were to include WSDOT, Ecology, a consortium of public entities, and the private sector. JLARC assessed the advantages and disadvantages of each of these options.

PART TWO – WHAT ARE WSDOT'S STORMWATER PERMIT REQUIREMENTS AND HOW IS THE AGENCY PLANNING TO MEET THEM?

In order to assess options for meeting WSDOT's stormwater permit requirements, it is necessary to understand what WSDOT's requirements are under the new permit and how the agency is planning to meet them. This section of the report compares WSDOT's requirements under the new stormwater permit to its 1995 permit, and provides an analysis of WSDOT's proposal to meet each of three major permit activities. This analysis provides the basis for the comparison of options that follows in Part Three of the report.

WSDOT Responsibilities Expand Under New Permit

WSDOT's 2009 stormwater permit requires new and expanded activities from its first stormwater permit issued in 1995. According to the Department of Ecology, the new permit reflects cumulative changes in stormwater management experience and knowledge about what practices are necessary to protect water quality. It requires WSDOT to design, maintain, and monitor the state's highways and transportation facilities in order to minimize water pollution and potential damage to stream banks and other properties resulting from heavy stormwater flows.

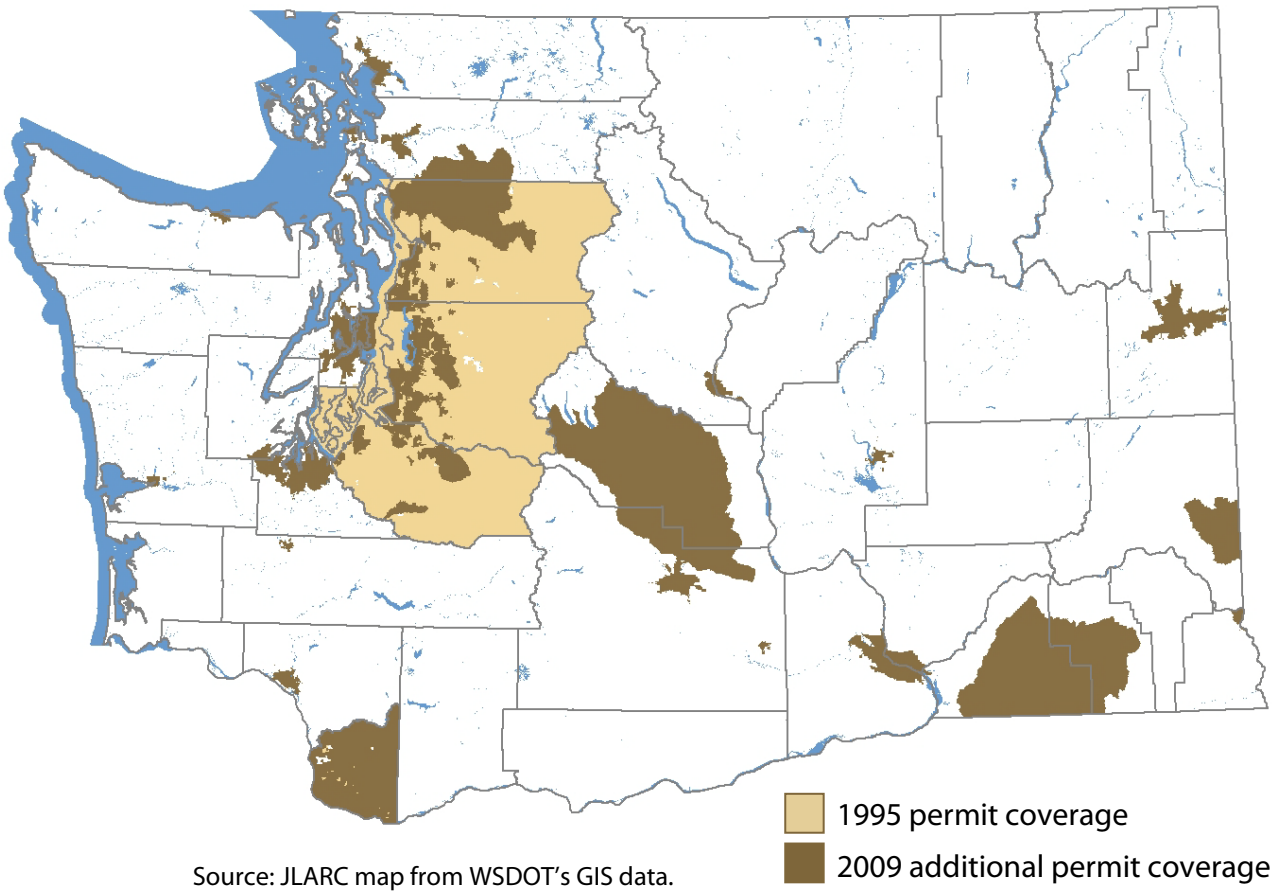
If WSDOT does not comply with the requirements of the permit, the Clean Water Act has specific enforcement provisions, including allowances for fines and citizen lawsuits. A citizen lawsuit is a lawsuit brought by a private citizen or organization to enforce a statute. For example, a citizen lawsuit was a driver behind Ecology issuing a permit to Clark County in 1999.

Growth In Coverage Area

WSDOT's new permit covers a larger geographic area than the previous permit. Coverage under the 1995 permit included highways and transportation facilities, such as rest areas, park-and-ride lots, ferry terminals, and maintenance facilities in the unincorporated areas of three counties and two cities in the Puget Sound Basin. The new permit expands coverage to an additional 100 cities and parts of 11 counties across the state. Highway centerline miles under the new permit grew from 1,140 miles to 1,600, a 40 percent increase.[1] The permit also covers nine distinct water bodies designated as not meeting state water quality standards by the Department of Ecology which require additional regulations under the Clean Water Act. Exhibit 1 illustrates the growth in coverage area under the 2009 permit.

[1] Miles are calculated using "centerline" which measures the distance rather than the area covered. One centerline mile of a two-lane highway is the same as one centerline mile of a six-lane highway.

Exhibit1 – WSDOT's 2009 Permit Covers a Number of New Locations In Addition to the 1995 Permit Area



Source: JLARC map from WSDOT's GIS data.

New and Expanded Requirements Primarily Fall Into Three Major Activities

In the areas covered by the permit, WSDOT must perform a variety of stormwater management activities to reduce the amount of pollutants and quantity of stormwater released into the state's water bodies. The permit not only specifies the type of activities required to be performed, but also provides deadlines for meeting the requirements. WSDOT's new and expanded requirements primarily relate to the following three activities:

1. **Maintenance** – WSDOT currently has approximately **30,000 catch-basins** and **1,893 other stormwater control devices** that are used to collect and treat stormwater runoff within the permit coverage area. Catch basins are drains to the storm sewer system that capture sediment, debris, and other pollutants to help prevent these materials from being transported to nearby waters. Stormwater control devices also include practices to treat and control stormwater, such as detention and infiltration ponds, underground vaults, and vegetative strips. **These stormwater control devices are commonly referred to as Best Management Practices, or BMPs.** Exhibit 2 includes pictures of these devices as well as some of the equipment used to clean them and monitor their effectiveness.

   Unlike the previous permit, WSDOT's new permit specifically requires annual inspections and maintenance of catch basins beginning in March 2011. Annual inspections of Best Management

Practices (BMPs) are to begin in March 2012. WSDOT must correct any deficiencies in BMP performance discovered by the inspections. The permit allows for a five-year cycle for sediment removal from select stormwater BMPs. Maintenance may include removing sediment, vegetation, and other materials that prevent the BMPs from working as intended.

This is a key change from the previous permit, where WSDOT was required to have a maintenance program, but no regular inspection or maintenance frequency was specified.

WSDOT reports that it maintained catch basins for safety reasons in the past, but only performed BMP maintenance when specific problems were anticipated, such as highway flooding. **WSDOT estimates that its level of expenditures related to maintaining BMPs will go from $110,000 in Fiscal Year 2011 (the current fiscal year) to $3.6 million in Fiscal Year 2012.** According to WSDOT, some of its BMPs were built up to 20 years ago and may never have been maintained to the maintenance standards. As a result, WSDOT reports a large backlog of maintenance work to be performed on BMPs.

Exhibit 2 – Stormwater Control Devices and Equipment

Detention Pond – stores water to control the rate of runoff

Bioswale and Infiltration Pond – increases natural seepage into the ground

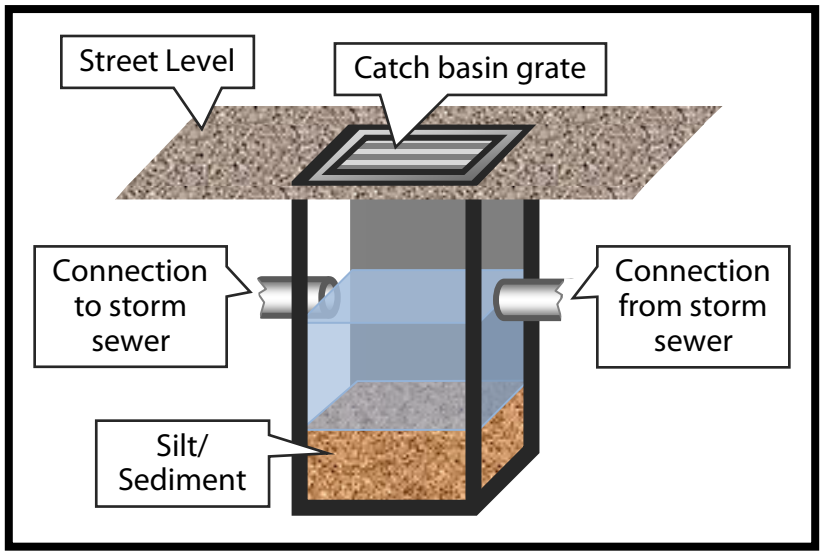
Detention Pond and Monitoring Equipment

Multiple Ponds

Vegetative Strip – filters pollutants and increases natural seepage into the ground

Vactor Truck – used to vacuum sediment from stormwater control devices

Catch Basin



Source: WSDOT and JLARC.

2. **Monitoring –** The new permit requires WSDOT to assess the type and volume of pollutants generated and transported by the highway system. Assessments must include testing the quality of water flowing into and out of WSDOT's BMPs in order to determine how effective they are at removing pollutants.

   While monitoring requirements were part of WSDOT's previous permit, they were much less specific and prescriptive than they are in the 2009 permit. New permit language provides specific guidance on the type of sites that must be selected for monitoring, samples that must be collected, and the analyses that must be run. For example, the number of samples that must be analyzed has increased from 830 at 6 sites to over 4,600 at 13 planned sites. The permit requires that all monitoring at specified sites be completed annually beginning in the fall of 2011.

3. **Inventory –** WSDOT must develop and maintain an up-to-date inventory that includes the number and location of its catch-basins and BMPs. The inventory must also identify specific

discharge points where WSDOT's storm sewer system releases stormwater into waters of the state, such as lakes, rivers, streams, and the Puget Sound. This inventory meets one of the requirements of EPA regulations to map WSDOT's storm sewer system, and provides WSDOT information to better manage its storm sewer system.

Under the previous permit, WSDOT could satisfy most of its inventory requirements by retaining construction drawings of storm drain systems from when they were first built. The 2009 permit requires a sophisticated database of information, as well as maps identifying the exact locations of all known BMPs and other features of the storm sewer system. The inventory must be completed no later than March 2014.

In addition to the three major activities described above, WSDOT is also required to develop pollution prevention plans for all of its non-highway transportation facilities, track and report its performance, and retrofit existing pavement on highway improvement projects when feasible. Exhibit 3 highlights the major differences in requirements between WSDOT's 1995 and 2009 permits.

Exhibit 3 – Increase In Major Requirements Between WSDOT's 1995 and 2009 Stormwater Permits

	1995 Permit	2009 Permit
Permit Coverage Area		
State highway centerline miles	1,140	1,600
Maintenance		
Inspect and maintain stormwater control devices known as Best Management Practices (BMPs)	Maintenance program required, but no inspections or frequency specified	Inspections required annually – currently 1,893 BMPs. Maintenance required as determined by inspections. Permit allows for a five-year cycle to complete some maintenance for select BMPs.
Inspect and maintain catch basins	Maintenance program required, but no inspections or frequency specified	Inspections required annually – currently 30,000 catch basins. Maintenance required as determined by inspections.
Monitoring		
Approval of monitoring plan	Not required	Required
Number of monitoring sites	6	13 planned sites
Number of samples to analyze	830	4,620+
Sediment and toxicity testing	Not required	Required
Inventory		
Inventory of stormwater system	Required for major BMPs	Required for all features of the stormwater system
Map stormwater system and drainage features	Not required (WSDOT could retain construction drawings)	Required

Source: JLARC analysis of WSDOT data. Centerline miles refer to the distance rather than the area covered. One centerline mile of a two-lane highway is the same as one centerline mile of a six-lane highway.

WSDOT Requested $21.6 Million In Additional Funding to Implement the Permit's Requirements

WSDOT shared with JLARC an estimate of the amount of additional funding the agency requested in the 2011-2013 Biennial Transportation Budget to meet the requirements of the 2009 stormwater permit. WSDOT requested $21.6 million in total additional funds for the 2011-13 Biennium.[2]

Seventy-One Percent of the Funding Request Is For Maintenance

Exhibit 4 displays the budget request by major permit activity, showing that 71 percent of the request is for inspecting and maintaining existing stormwater control devices, such as catch basins and stormwater detention ponds. While inspections will determine the actual maintenance needs, the majority of the effort required is for performing the maintenance tasks identified through inspections.

Exhibit 4 – 71 Percent of Budget Request Is For Maintenance of Stormwater Control Devices

Required Permit Activities	Amount of Request $ In Millions	Percent of Total Request
Maintenance	$15.4	71%
Monitoring	$2.1	10%
Inventory	$2.0	9%
Other	$2.1	10%
Total	**$21.6**	**100%**

Source: JLARC analysis of WSDOT's draft 2011-2013 Stormwater Permit Compliance budget decision package. "Other" includes eleven separate funding requests, including permit coordination and data base management.

Of the total request, 42 percent is related to employee salaries, wages, and benefits; 39 percent to goods, services, and travel; and 19 percent related to capital outlay. Exhibit 5 provides detail on these areas.

[2] WSDOT indicates that there is an existing level of funding of $3.6 million related to permit requirements, for a total effort of $25.2 million. For the purpose of this analysis, JLARC focuses on the $21.6 million amount included in the request for additional funding.

Exhibit 5 – WSDOT Budget Request Is For Additional Staff, Equipment, and Facilities

Object of Expenditure	Amount $ In Millions	% of Total	Major Items Included In Request
Salaries, Wages, and Benefits (Objects A and B)	$9.0	42%	65.5 FTEs: 42.9 for maintenance, 7.6 for monitoring, 9 for inventory, 6 for all other activities.
Goods, Services, and Travel (Objects E and G)	$8.4	39%	Comprised of many different items, including toxicity testing of stormwater and purchase, replacement and repair of monitoring equipment.
Capital Outlay (Object J)	$4.2	19%	Includes $1,050,000 for three vactor trucks, $900,000 for vactor disposal facilities, and $1,285,000 for facility capital costs to accommodate additional maintenance personnel.
Total	**$21.6**	**100%**	

Source: JLARC analysis of WSDOT's draft 2011-2013 Stormwater Permit Compliance budget decision package.

Part One of this report noted that WSDOT first requested additional funding for implementing the permit requirements in the 2008 Supplemental Budget and has continued to request additional funding in more recent budgets. The Legislature provided funding in each of those budgets, as shown in Exhibit 6. With the exception of the 2010 Supplemental, the majority of WSDOT's funding requests have been for the Maintenance Program. WSDOT indicates that funding will be required throughout the remainder of the current permit, which is expected to be in place until 2014.

Exhibit 6 – WSDOT Has Requested and Received Additional Funding For Stormwater Management In the Last Three Budgets

Budget Year	WSDOT's Request for Additional Funding $ In Millions	Actual Legislative Funding $ In Millions	Amount of Request for Maintenance Program $ In Millions	Actual Legislative Funding for Maintenance Program $ In Millions
2008 Supplemental	$10.1	$3.2	$6.3 (63% of total)	$.5 (17% of total)
2009-2011 Biennial	$19.7	$1.5 *	$12.7 (65% of total)	$.75 (50% of total)
2010 Supplemental	$5.0	$2.4	$1.1 (23% of total)	$0 (0% of total)
2011-2113 Budget Request	$21.6	To be determined	$15.4 (71% of total)	To be determined

Source: LEAP.

*The 2009-2011 appropriation total was $16 million, of which $14.5 million was contingent on a bill that did not pass. The remaining $1.5 million is shown as the level of legislative funding.

WSDOT Proposes to Implement the Majority of Permit Requirements In-House, With Some Exceptions

WSDOT is proposing to meet the requirements of the permit using its own employees, equipment, and facilities, with a few notable exceptions where WSDOT plans to contract for services or share resources with others.

The exceptions to the use of WSDOT employees, equipment, and facilities are:

- **Maintenance of Decant Facilities** – After WSDOT cleans catch-basins or BMPs such as detention ponds with its vactor trucks, it must unload waste from the full trucks at decant facilities. These facilities allow for disposal of solid materials mixed with water. WSDOT's request for additional funding includes $900,000 for constructing six additional decant facilities. According to WSDOT, four of the six sites will be shared with local jurisdictions, with both WSDOT and the local jurisdictions contributing funds for the construction of the facilities.
- **Specialized Maintenance Activities** – WSDOT states it will likely contract for some highly specialized maintenance work on stormwater BMPs when existing staff do not have the skills or when WSDOT does not have the needed equipment. WSDOT did not indicate the likely value of such contracting as it would be done on an as-needed basis.
- **Developing the Monitoring Program** – WSDOT has a $422,000 contract with the Department of Ecology to provide technical assistance for the planning and development of WSDOT's monitoring program. Assistance includes writing detailed monitoring protocols and helping with the selection of sites for conducting water quality assessments.

WSDOT Proposes a Shift From Contractors to In-House For Two of the Major Permit Activities

Under the previous permit, WSDOT contracted with consultants to meet the monitoring requirements. For inventory, WSDOT has used a mix of contractors and WSDOT employees. WSDOT is now proposing to implement its monitoring and inventory programs largely using its own staff and resources. The agency indicates the shift in approach is due to the following reasons:

- **Monitoring:** When Ecology issued WSDOT its new permit in 2009, WSDOT contracted with the U.S. Geological Survey (USGS) to review the agency's approach to monitoring in the past and to determine whether a similar approach would be sufficient to meet the expanded permit requirements. USGS recommended that, at a minimum, WSDOT should develop some in-house expertise in monitoring to provide quality control over the monitoring effort.[3]
- **Inventory:** WSDOT states that the inventory process, while a requirement of the permit, is also a fundamental asset management requirement. The agency indicates that having its own staff perform this work would allow the agency to take advantage of institutional knowledge about existing information systems, procedures, and the highway system.

[3] U.S. Geological Survey (2009) *Scientific Framework for Stormwater Monitoring by the Washington State Department of Transportation.* Open File Report 2009-1236.

WSDOT's Cost Estimates Are Well-Documented, But There Are Many Unknowns

WSDOT's process for developing its budget request was well-documented. Estimates were developed at a detailed level and often driven by specific unit cost estimates.

For instance, in the maintenance area, WSDOT used estimates of the number of hours needed for specific staff positions and specific equipment, and it calculated the costs for each of 17 different types of stormwater BMPs.

Since WSDOT has not been required to inspect and maintain its BMPs on a regular basis in the past, the agency's ***estimates*** are based on limited actual experience. The accuracy of WSDOT's assumptions will not be known until WSDOT gains experience in what it takes to maintain the structures and determines how often those structures must be maintained to function as they were designed.

For monitoring and inventory, WSDOT has past experience with both activities, but the new permit requirements are on a larger scale. WSDOT's budget request is based on the estimated costs of performing the activities in-house. It is unclear how accurate WSDOT's assumptions are, given the changes in requirements and proposed approach.

For example, WSDOT's monitoring estimate is driven in part by the total number of monitoring stations it is required to monitor, and in part on WSDOT's ability to save costs by clustering monitoring stations at several locations. At the time of JLARC's discussions with WSDOT, the agency had not yet received required approval from Ecology on the specific location of sites that need to be monitored to comply with the permit.

As experience is gained in maintaining, monitoring, and inventorying stormwater systems in Washington, more accurate estimates should be available in the future.

The next section of the report describes JLARC's analysis of the advantages and disadvantages of WSDOT's proposed approach and other options for meeting the permit requirements.

PART THREE – OPTIONS FOR MEETING THE STORMWATER PERMIT REQUIREMENTS

The Legislature directed JLARC to review the following options for implementing some or all of the permit requirements: WSDOT, the Department of Ecology, a consortium of public entities, and the private sector. JLARC looked at the advantages and disadvantages of each of these entities performing the required activities.

JLARC adopted a two-step approach to the assessment:

1. We reviewed national literature regarding stormwater permit compliance and spoke in-depth with six other state departments of transportation and four county governments in Washington to understand the **experiences of other permit holders**. Based on recommendations from the Federal Highway Administration, the American Association of State Highway and Transportation Officials, and others regarding innovative and advanced stormwater management programs, JLARC contacted California, Maryland, Minnesota, New York, North Carolina, and Oregon, as well as Clark, King, Pierce and Snohomish counties. See Appendix 4 for a more detailed description of the results of those discussions.
2. We worked with a consulting scientist to establish criteria for evaluating the **viability of options** for meeting permit requirements.

EPA regulations allow permit holders, including WSDOT, to contract with other entities to meet permit requirements. However, the permit holder retains responsibility for permit compliance.

Experiences of Other Permit Holders: Most Maintenance Performed In-House; Mix of In-House and Private Sector For Monitoring and Inventory

Based on discussions with other states and local governments, JLARC learned that approaches for implementing stormwater permit requirements varied by the major permit activity.

Maintenance

Five out of six state governments and all the local governments contacted for this review indicated that they are primarily **performing maintenance with their own employees and resources.** This applies to maintenance for both catch-basins and BMPs, though many states are still in the planning stages for BMP maintenance.

A notable exception is Maryland, which has used on-call contractors for routine and major BMP maintenance throughout the state, supplemented with public employees when needed. Maryland has also relied exclusively on private contractors to inspect and maintain state-owned BMPs in one county for a three-year period. Maryland found a competitive market in the private sector for this work. Maryland indicates it has had some preliminary challenges with contracting and needs more experience with contracting before concluding whether this is a recommended practice.

New York and Oregon also indicated that they are evaluating using contractors for maintenance of their stormwater control devices.

In Washington, public agencies formed a consortium in 2007 to discuss the maintenance requirements in stormwater permits, as well as to explore collaboration among permit holders. State and local permit holders, the Department of Ecology and the Puget Sound Partnership initiated a maintenance forum called ROAD MAP (Regional Operations and Maintenance Program) to identify, discuss, and develop strategies for implementing maintenance related permit requirements. To date, this effort has primarily resulted in a method for sharing information among local governments.

Monitoring

Four of six state DOTs contacted indicated that they are **contracting for their monitoring activities** with private firms. The two states that were not contracting for this work did not have specific monitoring requirements in their permits.

In contrast, the **four Washington counties,** while contracting for monitoring in the past, reported that they **are currently performing the majority of their monitoring requirements with their own staff and resources**.

JLARC identified two exceptions to the contracting with the private sector and in-house approaches:

- California's Department of Transportation reported using a consortium approach for monitoring in some instances; and
- WSDOT was unique among the entities interviewed in terms of contracting with the Department of Ecology to help design its monitoring program. None of the other states or local governments reported using a regulatory agency to meet their permit requirements.

Inventory

Inventory work has been performed by a mix of different entities among other permit holders. State DOTs reported using a combination of interns, consultants, and public employees to perform this work. Two states reported that their use of consultants was largely driven by a lack of in-house expertise in the development phase of the inventory database. **Three of the four Washington counties reported performing this work in-house.**

Summary of Other Permit Holders' Experiences

Overall, the experiences of other permit holders indicate:

- Concerns about the cost of implementing their stormwater permits.
- No additional options for meeting the permit requirements were identified beyond those JLARC was asked to review.
- No other permit holders are using their environmental regulatory agency to perform permit functions.
- For those permit holders not using their own staff and resources, no clear financial or other benefits were identified for one option over another.

Criteria For Assessing the Viability of Options

After reviewing practices of other permit holders, JLARC worked with our consulting scientist to establish criteria for evaluating the **viability of options** for performing WSDOT's major permit activities. Our assessment of the viability of an option is based on understanding three key issues:

1. **Timing Needs:** Does the organization have the potential to meet the deadlines established in the permit? How fast can an organization get an activity up and running? Is the need short- or long-term?
2. **Organizational Fit:** Does an organization have the technical expertise or knowledge to meet the permit requirements? Does it have the capacity in terms of staff and/or equipment? Is the function aligned with the organization's mission and other existing programs or functions?
3. **Experience of Others:** What does the experience of other local or state governments tell us about how to best meet the requirements of the permit? What does national literature have to say about permit implementation or the options in general?

While cost is a key consideration when reviewing options, a lack of comparable, reliable cost information precluded JLARC from including cost as a criterion in determining viability. Costs are discussed in the section following this review.

There Are Viable Options For Each of the Major Permit Activities

Based on the three criteria described above, JLARC found there are several viable options for performing the major permit activities. While no option is necessarily a clear "winner," there are viable options for each major activity:

- **Maintenance**: WSDOT and the private sector are viable options.
- **Monitoring:** WSDOT, the Department of Ecology, and the private sector are viable options.
- **Inventory**: WSDOT and the private sector are viable options.

Exhibit 7 presents a summary of JLARC's evaluation of options, illustrating that there are advantages and disadvantages to most options, including WSDOT performing the permit activities. However, while there are viable options, there is not a clear "winner" in terms of which entity is best suited to conduct a particular activity. Additional detail on JLARC's analysis of options is contained in Appendix 3.

Based on permit timelines, the consortium was not considered a viable option in the current permit cycle and is not included in Exhibit 7. Additional discussion on the consortium is included under the "Timing" heading in the section following the exhibit.

Exhibit 7 – WSDOT and the Private Sector Are Viable Options For All Three Major Activities; Ecology a Viable Option For Monitoring

	Advantages	Disadvantages
Maintenance		
WSDOT	✓ Builds on existing maintenance capacity and experience maintaining catch-basins ✓ Has developed a plan to meet permit deadlines	× Requires hiring and training 42.9 additional FTEs × Requires capital expenditures for trucks and facilities
Private Contractors	✓ Contractors have experience maintaining privately owned BMPs ✓ Contractors built catch-basins and BMPs on highway projects	× All other maintenance functions are generally performed in-house × Unknown time requirements for bidding process and collective bargaining
Ecology		× No existing staff , equipment, or experience in maintaining stormwater control devices on highways makes it unlikely Ecology could meet permit deadlines
Monitoring		
WSDOT	✓ Has developed a plan to meet permit deadlines ✓ USGS report recommends some in-house monitoring expertise	× Requires hiring and training 7.6 additional FTEs × Lack experience designing and implementing stormwater monitoring program in-house
Private Contractors	✓ Contractors performed monitoring for WSDOT in the past ✓ Likely to have available expertise and capacity	× USGS report recommends WSDOT develop some in-house expertise to provide quality control over the monitoring effort × Local governments are currently performing monitoring in-house rather than contracting
Ecology	✓ Technical expertise likely available in-house ✓ Ecology currently under contract to assist in developing monitoring program	× Requires hiring and training additional Ecology staff to meet permit requirements × Potential conflict of interest to have regulatory agency performing compliance duties
Inventory		
WSDOT	✓ Builds on existing efforts ✓ Part of broader asset management	× Requires hiring and training 9 additional staff
Private Contractors	✓ Experience/expertise in inventory and mapping ✓ Specific experience with WSDOT's inventory and mapping	× Some level of in-house expertise needed at WSDOT to ensure data quality and usability × Less able to leverage WSDOT knowledge of asset location
Ecology		× No existing staff or direct experience with road features and interpreting highway plans which will make it difficult to meet permit deadlines × Potential conflict of interest to have regulatory agency performing compliance duties

Source: JLARC analysis.

While there is no clear "winner," there are some options which are clearly not viable at this time. These are:

- **Maintenance**: Due to timing concerns and a poor organizational fit, the Department of Ecology is not a viable option for performing maintenance.
- **Inventory**: Due to timing concerns and a poor organizational fit, the Department of Ecology is not a viable option for completing the inventory.

Choosing Among Options Is Complicated By Timing and Lack of Comparable Cost Information

Timing

One key consideration in choosing among options is timing. WSDOT is currently in its second year of a five-year permit. Any option for performing the major permit activities, whether it is WSDOT or another entity, must meet the deadlines established in the permit. JLARC was able to eliminate some options due to timing constraints.

WSDOT has been developing a plan to meet the new permit requirements with its own staff and resources over the last several years. To some extent, this does place the agency at an advantage as plans are already in place. However, given limited experience under the new permit requirements, the extent of the advantage is not clear and does not necessarily preclude others from meeting the permit deadlines.

Because of timing issues, the consortium approach is not considered viable for the current permit. No entity or infrastructure is currently in place to meet the permit deadlines. While a consortium is not realistic for the current permit cycle, such an approach may be feasible for the future. For example, a consortium for monitoring is already being discussed among key stakeholders, including WSDOT, for the next round of permits. This is discussed in more detail under the last section of Part Three.

Comparable Cost Information

JLARC sought to obtain comparable unit cost information for performing permit activities in-house or through one of the other options. However, comparable data is not readily available.

WSDOT did not perform a comprehensive cost analysis of alternatives during the development of its budget request.

For maintenance, WSDOT has traditionally performed all highway maintenance functions in-house, and the agency has not performed a comprehensive comparative cost analysis of using WSDOT resources versus contracting for services for the maintenance of stormwater control devices.

For monitoring and the inventory activities, WSDOT supplied JLARC with information on previous contractor costs which the agency believes demonstrates that using WSDOT staff will be less expensive, but these cost comparisons were not at the same detailed level as WSDOT's own estimates for performing the activities in-house.

Further, JLARC was not able to obtain comparable, reliable cost data from other states and local governments for meeting stormwater requirements, either in-house or through an alternative approach. JLARC's review of other states and local governments found limited experiences using alternative approaches to meeting the most costly permit requirements, such as maintenance of BMPs. Therefore, JLARC could not determine whether one approach is more cost-effective than another.

The absence of comparable cost data is consistent with the findings of a 2007 General Accountability Office report and two National Academy of Sciences reports published within the last year which indicate that costs of stormwater permit implementation are not tracked consistently or, in some cases, tracked at all by permit holders.[4]

The absence of such cost data is also consistent with a recent draft report prepared for the Puget Sound Partnership which concluded that "No jurisdiction calculates its Maintenance & Operating costs [for stormwater maintenance] in the same manner."[5]

Without comparable cost information, it is not possible to determine whether one option is more cost-effective than another.

Regardless of Approach, Some In-House Expertise Needed For Oversight and Management

National literature on outsourcing and asset management indicates the need for some in-house expertise to oversee and manage major permit activities. Regardless of whether WSDOT uses its own staff or contracts for services, some in-house expertise would ensure a comprehensive understanding of WSDOT's stormwater assets and better position the agency to identify potential efficiencies as it gains more experience with new permit requirements.

- For maintenance, WSDOT's inventory of stormwater control devices continues to grow with each new construction and retrofit project. Some in-house expertise is needed to understand the condition and maintenance needs of these assets in order to make more informed decisions in the future about which type of stormwater control devices to construct for major projects.
- For monitoring, some in-house expertise is recommended by a recent U.S. Geological Survey (USGS) review of WSDOT's monitoring program. The new requirements are more prescriptive than in the past, and the USGS found that WSDOT needs staff with expertise in monitoring to oversee permit compliance.

[4] National Cooperative Highway Research Program (August 2010) *Final Report: Cost and Benefit of Transportation Specific MS4 and Construction Permitting*; *25-25 Task 56;* National Cooperative Highway Research Program (December 2009) *Scan 08-03: Best Practices In Addressing NPDES And Other Water Quality Issues In Highway System Management*; General Accountability Office (May 2007) *Further Implementation and Better Cost Data Needed to Determine Impact of EPA's Storm Water Program on Communities.*

[5] Bissonnette Environmental Solutions, LLC, in partnership with Parametrix (August 2010) *Final Review Draft: Task 1: Urban Stormwater Runoff Preliminary Needs Assessment Technical Memorandum*. Prepared for The Puget Sound Partnership.

- For inventory, WSDOT views this requirement as part of a larger effort in the agency to understand and manage its assets. Some in-house expertise is needed to ensure data usability and compatibility with other information technology efforts currently taking place at WSDOT, and to identify opportunities for leveraging other agency staff and resources to fulfill the permit requirements.

WSDOT Will Need to Remain Flexible to Adapt to Future Changes

WSDOT's stormwater permit is scheduled for renewal in 2014. Some permit requirements are likely to change at that time, and some additional options for meeting permit requirements, such as a consortium, may become viable:

- The EPA is expected to issue NPDES stormwater rule changes in 2012. One of the topics being considered is an expansion of permit coverage to non-urban/rural areas.
- The Department of Ecology indicates that monitoring requirements will change with Ecology's issuance of new permits, although there is no certainty yet on what those changes will be.
- There is debate on whether or not the current approach for managing stormwater is the most cost-effective. Some scientists, including authors of a 2008 National Research Council report, argue for state prioritization and strategic replacement or retrofitting of BMPs on highways where stormwater has caused the most damage to nearby water bodies; the authors also advocate replicating natural conditions to manage stormwater closer to where it falls rather than conveying it to storm ponds or vaults.[6]
- The Department of Ecology, WSDOT, local governments, and others are currently involved in discussions about how to implement a coordinated monitoring effort for the next round of permits. Ecology is leading a Stormwater Working Group, made up of federal, state (including WSDOT), and local agencies and other stakeholders, to develop a regional strategy for monitoring in the Puget Sound region. The group is developing a plan to ensure consistent monitoring protocols among stormwater permit holders in order to assess regional impacts of stormwater management efforts. The plan will likely include an option for permit holders to pay into a collective regional monitoring fund. The Group submitted a report with recommendations to the Department of Ecology in October 2010.

Regardless of which options are pursued for meeting WSDOT's 2009 permit requirements, it is important for the agency to maintain the flexibility to adapt to any changes in future permit requirements and options for meeting them, while also retaining sufficient internal expertise to assure the long-term success of the program.

[6] Committee on Reducing Stormwater Discharge Contributions to Water Pollution, National Research Council (2008) *Urban Stormwater Management in the United States*. Washington D.C.: National Academies Press.

PART FOUR – CONCLUSIONS AND RECOMMENDATIONS

Viable Options Exist, But There Is No Clear Choice Due to Key Information Gaps

The second generation National Pollution Discharge Elimination System stormwater permit includes a number of new and expanded requirements for WSDOT, with the largest cost driver being the requirement to routinely inspect and maintain stormwater best management practices (BMPs) and catch-basins. Indications are that the scope and the requirements of stormwater permits will change in the future.

Several different entities are viable options for implementing the current permit; however, there are large gaps in the information needed to answer a number of key questions about meeting the 2009 permit requirements. These include:

- What are the maintenance needs of WSDOT's stormwater control devices and how frequently must they be maintained?
- Can permit deadlines be met by all the viable options?
- What are the actual costs of WSDOT and other entities performing the permit requirements?

The recommendations below seek to fill the largest information gaps so that more comprehensive information is available for future budget decision making related to WSDOT's current permit. Filling these gaps should also better position the State to respond to anticipated changes in federal and state permit requirements in the next round of permits, and any additional permit implementation options that may become viable in future years.

Maintenance

An inspection program and experience in maintaining BMPs and catch-basins will help answer the questions about the level and frequency of maintenance needs.

The costs and timing needs for maintenance are more difficult to estimate. This JLARC report concludes that using private contractors to perform BMP and catch-basin maintenance is a viable alternative to WSDOT's proposed approach of relying almost solely on WSDOT employees and equipment. Yet accurate comparative cost and timing information is not available. WSDOT did not complete a detailed, comparative cost analysis, and JLARC's review of other states and local governments did not yield comparable, reliable information on the costs of alternative approaches. Further, since routine maintenance of stormwater control devices on highways and transportation facilities has not been required in the past, there is limited information on Washington's private sector market for performing these tasks or on contractors' ability to meet permit deadlines.

Given the large portion of the agency's budget request devoted to maintenance, comparable cost and timing information is necessary to ensure state resources are being used efficiently.

Recommendation 1: To the Legislature

To obtain comparative cost information and determine whether private contractors can meet the permit deadlines, the Legislature should direct WSDOT to conduct a pilot program contracting for the maintenance of some stormwater control devices. WSDOT should report to the Legislature on the results of the pilot program.

In consultation with legislative staff, WSDOT should determine how many stormwater devices to include in the pilot, how long the pilot should be in place, and whether to pursue contracts based on the responses received. Because there are many different types of stormwater control devices, consideration should be given to contracting for enough maintenance to recognize economies of scale and represent a variety of types of stormwater control devices. The pilot program should be designed to allow for a valid comparative cost analysis between using WSDOT staff and equipment and using contractors.

One of the challenges expressed by state agencies to contracting for services, even limited amounts of services, is the state's competitive contracting laws enacted through the 2002 Personnel System Reform Act. RCW 41.06.142 defines the processes that are to be used when contracting for services, including services that have been customarily and historically provided by state employees. RCW 41.06.142 states that contracting for services expressly mandated by the Legislature are not subject to the competitive contracting provisions. If the Legislature specifically directs WSDOT in statute or budget proviso to pilot maintenance contracting, WSDOT will not be subject to provisions of the competitive contracting law. However, any such pilot contracting may be raised as a possible issue for collective bargaining.

Legislation Required:	A budget proviso or specific statute directing WSDOT to pilot maintenance of stormwater control devices for the purposes of developing comparative cost information would be required to exempt WSDOT from the provisions of RCW 41.06.142.
Fiscal Impact:	WSDOT's maintenance and contracting staff will be required to solicit bids, award and monitor the performance of the pilot contracts. In addition, WSDOT staff will be required to complete the comparative cost analysis.
Implementation Date:	August 2012 and August 2013. Reports on comparative cost information should be prepared for the development of the 2013-2015 Biennial Budget, and the 2014 Supplemental Budget.

Monitoring and Inventory

To meet the requirements of its previous stormwater permit, WSDOT contracted for the required monitoring. To develop its inventory of stormwater control devices and begin the detailed mapping that is required to understand its assets, WSDOT has used a combination of its own staff and contractors.

Under the new permit, WSDOT is proposing a shift in approach to primarily use WSDOT staff and equipment for both monitoring and inventory.

WSDOT supplied JLARC with information on previous contractor costs. The agency believes that using its own staff will be less expensive than using contractors, but WSDOT's cost comparisons were not at the same detailed level as its own estimates for performing the activities in-house.

The 2009 permit requirements are on a larger scale than the previous permit; more experience in conducting the monitoring and inventory required by this permit will assist in understanding costs and collecting the information needed to develop accurate comparative cost information.

Recommendation 2: To the Washington State Department of Transportation

To ensure that WSDOT is using the most cost-effective option for performing monitoring and inventory, WSDOT should prepare comparative cost information on viable options for meeting permit requirements for future budget cycles.

This information should include the cost of WSDOT staff and equipment compared to the cost of those services being provided by others identified as viable options in this report. In consultation with legislative staff, WSDOT should incorporate additional viable options—should any become available—in future analyses, such as a future monitoring consortium that is being discussed among multiple stakeholders for the next round of permits.

Every effort should be made to "normalize" such costs so that equivalent staff types and costs are compared. For instance, WSDOT indicated to JLARC that for monitoring, much of the field work will be done by mid-level staff. When comparing costs for contracting such services, a comparable level of staff should be used.

Detailed, comparable cost information will enable WSDOT to continually benchmark its costs against other entities. This information may also assist the State in responding to any future changes in permit requirements and viable options for meeting them.

Legislation Required:	None.
Fiscal Impact:	Some staff effort will be required to collect and report on the comparative costs.
Implementation Date:	August 2012 and August 2013. Reports on comparative cost information should be prepared for the development of the 2013-2015 Biennial Budget, and the 2014 Supplemental Budget.

APPENDIX 1 – SCOPE AND OBJECTIVES

STORMWATER PERMIT REQUIREMENTS STUDY

SCOPE AND OBJECTIVES

JULY 21, 2010

STATE OF WASHINGTON

JOINT LEGISLATIVE AUDIT AND REVIEW COMMITTEE

STUDY TEAM

Stephanie Hoffman

John Woolley

PROJECT SUPERVISOR

David Dean

LEGISLATIVE AUDITOR

Ruta Fanning

Joint Legislative Audit & Review Committee
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Why a JLARC Study of the Department of Transportation's Stormwater Permit Requirements?

The 2010 Supplemental Transportation Budget (ESSB 6381 §108) directs JLARC to analyze options for implementing the Washington State Department of Transportation's (WSDOT) stormwater discharge permit issued in February 2009 by the Department of Ecology. JLARC was asked to assess the advantages and disadvantages of WSDOT's planned approach and of potential alternative approaches to meeting the new permit requirements.

Stormwater Runoff Causes Water Pollution

Stormwater runoff is rain and snow melt that flows off landscape and surfaces such as paved sidewalks, streets, highways, and parking lots. Water running off these surfaces can pick up oil, fertilizers, pesticides, trash, and other pollutants. Areas with large amounts of impervious surfaces prevent stormwater runoff from soaking naturally into the ground, where the pollutants can be filtered out. Untreated stormwater can release these pollutants into local waterways. Uncontrolled stormwater can also cause erosion, flooding, and muddy waters that may suffocate salmon and other aquatic life.

Stormwater runoff is often transported to local waters through conveyance systems owned by public entities, such as WSDOT. Conveyance systems include the roads, catch basins, ditches, pipes, and channels that move water from road surfaces into waterways.

Both Federal and State Pollution Laws Address Stormwater

Both the federal Clean Water Act and the state's Water Pollution Control law (Chapter 90.48 RCW) place requirements on entities discharging stormwater into the state's waterways. The Department of Ecology is responsible for issuing stormwater permits required under these federal and state laws. WSDOT is one of the entities that has to obtain a permit to discharge stormwater into waters of the state. WSDOT's permit covers stormwater discharges from its highways, ferry terminals, park and ride lots, maintenance shops and yards, and rest areas located in several counties and all urban areas throughout the state.

New Stormwater Permit Expands WSDOT Responsibilities and Costs

In 2009, Ecology issued a new stormwater permit to WSDOT, replacing a permit that had been in place since 1995. The 2009 permit covers a significantly larger geographic area than the previous permit, and adds new stormwater management responsibilities for WSDOT. These responsibilities include annual inspections and maintenance of all stormwater facilities and increased monitoring and reporting on permit compliance. Many of these responsibilities

have implementation deadlines between 2011-2013. A preliminary estimate from WSDOT indicates that it may require approximately $22 million in additional operating funds in the 2011-13 Biennium to meet the permit requirements.

Study Scope

This JLARC study will focus on how WSDOT will meet the requirements of the 2009 stormwater discharge permit issued by the Department of Ecology. JLARC will describe the approach WSDOT is taking to meet the permit's requirements and determine whether there are alternatives to WSDOT's planned approach. JLARC will assess the advantages and disadvantages of WSDOT's planned approach against any alternative approaches identified.

Study Objectives

This study will analyze WSDOT's 2009 permit requirements and different approaches to meeting those requirements by answering the following questions:

1) What are the major requirements in WSDOT's 2009 stormwater discharge permit?
2) What are the major changes in requirements between WSDOT's 1995 permit and the 2009 permit?
3) What is WSDOT's current plan for implementing the 2009 permit requirements?
4) Are there alternative approaches to implementing some or all of the permit requirements? For example,
    - Can other entities (public or private) implement stormwater permit requirements, both for WSDOT and for other public agencies with stormwater permits?
    - Specifically, can the Department of Ecology implement the permit requirements?
5) What are the advantages and disadvantages of WSDOT's planned approach and any alternative approaches identified to meeting the permit requirements?

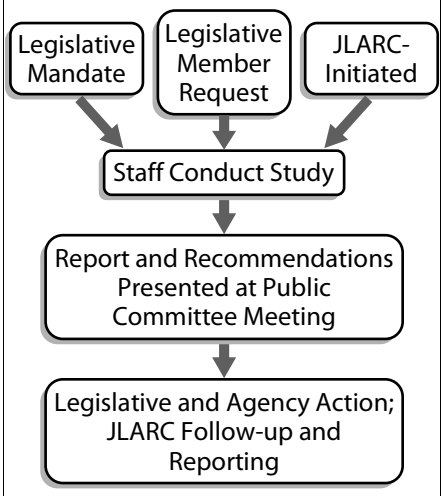
Timeframe for the Study

Staff will present the preliminary report at the December 2010 JLARC meeting and the final report at the January 2011 JLARC meeting.

JLARC Staff Contact for the Study

Stephanie Hoffman	(360) 786-5297	hoffman.stephanie@leg.wa.gov
John Woolley	(360) 786-5184	woolley.john@leg.wa.gov

JLARC Study Process



Criteria for Establishing JLARC Work Program Priorities

- Is study consistent with JLARC mission? Is it mandated?
- Is this an area of significant fiscal or program impact, a major policy issue facing the state, or otherwise of compelling public interest?
- Will there likely be substantive findings and recommendations?
- Is this the best use of JLARC resources? For example:
    - Is JLARC the most appropriate agency to perform the work?
    - Would the study be nonduplicating?
    - Would this study be cost-effective compared to other projects (e.g., larger, more substantive studies take longer and cost more, but might also yield more useful results)?
- Is funding available to carry out the project?

APPENDIX 2 – AGENCY RESPONSES

- Department of Transportation
- Department of Ecology
- Office of Financial Management

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

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310 Maple Park Avenue S.E.
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December 7, 2010

Ms. Ruta Fanning, Legislative Auditor
Joint Legislative Audit and Review Committee
1300 Quince St SE
Olympia, WA 98504-0910

Dear Ms. Fanning:

Thank you for the opportunity to respond to the Joint Legislative Audit and Review Committee's (JLARC) Study on the *Stormwater Permit Requirements at the Department of Transportation*. We reviewed the report and have provided our formal response in the attached document.

We value the review of our agency's work in this area, work which is important, challenging and required by law. Also, we would like to thank you and your staff for the work put into this report.

As noted in the report, the changes from the 1995 Stormwater Permit to the permit issued in 2009 are having major impacts on the Department, due to the significantly larger geographic area now covered and the new management responsibilities, which include annual inspection and maintenance of stormwater facilities. We appreciate the report noting that WSDOT's cost estimates are well documented and that the agency has been proactive in working on permit implementation. WSDOT takes pride in our workforce and strives for excellence and integrity in everything we do.

WSDOT will work with the Legislature, as directed to develop and conduct a pilot program to contract maintenance of some stormwater control devices or conduct further analysis; however, it will be important that any such pilot program allow the Department to meet the current permit implementation deadlines and does not increase costs.

Ms. Ruta Fanning
December 7, 2010
Page 2 of 4

We are developing an action plan that addresses the study's recommendations. Progress on our action plan will be reported through JLARC annual recommendation tracking process.

Sincerely,

Paula J. Hammond, P.E.
Secretary of Transportation

Enclosure

cc: David Dye, WSDOT Deputy Secretary
Steve Reinmuth, WSDOT Chief of Staff
Jerry Lenzi, WSDOT Assistant Secretary, Chief Engineer
Amy Arnis, WSDOT Assistant Secretary, Chief Financial Officer
Bill Ford, WSDOT Assistant Secretary, Administration
David Mosley, WSDOT Assistance Secretary, Washington State Ferries
Megan White, WSDOT Director of Environmental Services
Bob Covington, WSDOT Director Accountability and Financial Services
Chris Christopher, WSDOT Director Maintenance Operations
Rico Baroga, WSDOT Maintenance Manager - Policy
Dillon Auyoung, WSDOT Director Governmental Relations
Steve Pierce, WSDOT Director Communications
Steve McKerney, WSDOT Director Audit Office
Jesse Daniels, WSDOT Audit Office, External Audit Liaison
Stephanie Hoffmann, JLARC Research Analyst
John Woolley, JLARC Research Analyst

Recommendation 1: To the Legislature

To obtain comparative cost information and determine whether private contractors can meet the permit deadlines, the Legislature should direct WSDOT to conduct a pilot program contracting for the maintenance of some stormwater control devices. WSDOT should report to the Legislature on the results of the pilot program.

WSDOT Position: Directed to the Legislature

Comments: Although this recommendation was directed to the Legislature, WSDOT concurs that there may be value in conducting a pilot project that will serve to develop cost information regarding different alternatives of maintaining stormwater control devices.

If so directed by the Legislature, WSDOT will work with OFM and Legislative staff to develop a pilot project or conduct further analysis that could be used for the 2013-15 budget development process.

WSDOT Action Steps:

- NPDES permit deadlines are pending in the 2011-13 biennium. WSDOT will commence annual inspection and maintenance of stormwater control devices, as required by the NPDES permit, during the 2011-13 biennium.
- During the 2011 Legislative session, as directed by the Legislature, WSDOT will work with OFM and Legislative staff to determine the most effective way to implement the JLARC recommendation. It will be important that any such pilot program allow the Department to meet the current permit implementation deadlines and does not increase costs.

Recommendation 2 - To WSDOT

To ensure that WSDOT is using the most cost-effective option for performing monitoring and inventory, WSDOT should prepare comparative cost information on viable options for meeting permit requirements for future budget cycles.

WSDOT Position: Concur

Comments: WSDOT agrees that a cost comparison of options for meeting permit requirements could yield helpful information for budgeting permit activities, however, comparative cost analysis may be limited in scope due to availability of comparative information, as noted in the report.

WSDOT Action Steps:

- WSDOT will prepare comparative cost information for options to meet monitoring and inventory requirements of the permit, to the extent comparable cost data is available with reasonable effort, based on limitations noted in the JLARC report.

- This recommendation requires that costs be "normalized", including specifying what level staff contractors would use to perform the work, so that cost comparisons are most useful. This is a deviation from the normal contracting process, wherein the contractor estimates cost based upon the scope of work and the level of staff they think is needed to perform the work. While the contracting agency does not have to accept the cost estimate, specifying staff levels is not part of the normal process. WSDOT will attempt to ensure that cost comparisons are based on utilization of staff with the appropriate level of expertise.

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
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JLARC

December 10, 2010

Ruta Fanning,
Legislative Auditor
Joint Legislative Audit and Review Committee
PO Box 40910
Olympia, WA 98504

RE: Department of Ecology's formal response to the Joint Legislative Audit Review Committee's (JLARC) preliminary report on "Stormwater Permit Requirements at the Department of Transportation"

Dear Ms. Fanning:

Thank you for the opportunity to respond to JLARC's preliminary report on "Stormwater Permit Requirements at the Department of Transportation." We understand that our responses will be included in the proposed final report that is tentatively scheduled to be presented at JLARC's January 5, 2011, meeting. While the two recommendations in the preliminary report do not directly affect the Washington State Department of Ecology (Ecology), we concur with them and will do what we can to assist the Washington State Department of Transportation (WSDOT) in implementing them. In addition, we would like to make the following comments:

- As pointed out in the JLARC preliminary report, stormwater runoff is the single largest contributor to water quality problems in Washington. The stormwater permits issued by Ecology, including the permit issued to the WSDOT, are important elements for the protection and restoration of water quality and are necessary to meet the Governor's goals for Puget Sound.

- It is important that implementing the study recommendations not compromise WSDOT's ability to comply with their stormwater permit. Failure to meet federal NPDES permit requirements could put WSDOT at risk for third-party lawsuits under the Federal Clean Water Act.

We would like to express appreciation for the professionalism of the JLARC staff who contacted Ecology as part of their work on this report. JLARC staff did an excellent job distilling a very complex issue into a well-written and well-organized report.

Sincerely,

Ted Sturdevant,
Director

cc: Paula Hammond, Secretary of Transportation
Stephanie Hoffman, JLARC Research Analyst
Eric Thomas, JLARC Research Analyst
Megan White, WSDOT Director of Environmental Services
John Woolley, JLARC Research Analyst

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Insurance Building, PO Box 43113 • Olympia, Washington 98504-3113 • (360) 902-0555

December 20, 2010

TO: Ruta Fanning, Legislative Auditor
Joint Legislative Audit and Review Committee

FROM: Marty Brown
Director

SUBJECT: **JLARC PRELIMINARY REPORT ON STORMWATER PERMIT REQUIREMENTS AT THE DEPARTMENT OF TRANSPORTATION**

Thank you for the opportunity to review and comment on the Joint Legislative Audit and Review Committee's preliminary report on *Stormwater Permit Requirements at the Department of Transportation*. The Office of Financial Management (OFM) concurs with the two recommendations set forth in this report.

Recommendation	Agency Position	Comments
1. To the Legislature: To obtain comparative cost information and determine whether private contractors can meet the permit deadlines, the Legislature should direct WSDOT to conduct a pilot program contracting for the maintenance of some stormwater control devices. WSDOT should report to the Legislature on the results of the pilot program.	Concur	
2. To the Washington State Department of Transportation: To ensure that WSDOT is using the most cost-effective option for performing monitoring and inventory, WSDOT should prepare comparative cost information on viable options for meeting permit requirements for future budget cycles.	Concur	OFM will work with WSDOT to establish a methodology for collecting and distributing comparative cost information, as well as make recommendations on where the use of private sector contracting should be used once the pilot project has concluded.

Thank you again for this opportunity to review the JLARC report.

cc: Jay Manning, Chief of Staff, Office of the Governor

APPENDIX 3 – DETAIL ON ANALYSIS OF OPTIONS

This appendix presents additional detail on JLARC's analysis of options. A summary description of the results of the analysis is followed by an explanation of the criteria used and tables reviewing the advantages and disadvantages of the different options. Detail is presented for each of the major permit areas. While in the body of the report all maintenance activities are combined, in the appendix tables maintenance is divided between catch basins and BMPs.

Summary Analysis

For maintenance, both WSDOT and the private sector are viable options. Both have experience performing some of the maintenance functions required under the new permit. However, $6.9 million of the maintenance request is for BMP inspection and maintenance, an activity that WSDOT has not performed before on a system-wide basis. WSDOT has performed maintenance on a reactive basis and to keep BMPs operational, but has not performed routine maintenance.

As noted in Exhibit 7 in the body of the report, private firms have experience maintaining BMPs for private residential developments, as well as constructing BMPs for WSDOT during the initial capital project delivery. The private sector has not performed routine maintenance of BMPs or catch-basins on highways. Using the private sector requires soliciting and analyzing competitive bids and may involve collective bargaining, which may add an unknown element of risk for meeting permit timelines.

There is limited data and limited experience both nationally and locally to conclude whether one option is more favorable than the other.

For monitoring, WSDOT, Ecology and the private sector are all viable options. To fulfill previous monitoring requirements, WSDOT has used private sector consultants. As mentioned, WSDOT contracted with the U.S. Geological Survey (USGS) in 2009 to assess its stormwater monitoring program and to identify standard operating procedures and quality assurance protocols for its program to meet NPDES permit requirements. The USGS report recommended that, regardless of who performs the work, WSDOT should develop internal expertise to oversee and ensure the success of the program.

Both Ecology and the private sector are also viable options for performing the monitoring functions. WSDOT is already contracting with Ecology to develop its monitoring program, and WSDOT could continue contracting with Ecology to do additional work. However, like WSDOT, Ecology would need additional staff to perform this work. This option also may create the appearance of a conflict of interest, with a regulatory agency performing compliance duties on behalf of an agency it is regulating.

Private sector firms have successfully performed monitoring work on behalf of WSDOT in the past. As with maintenance, using the private sector requires soliciting and analyzing competitive bids, which may add an unknown element of risk for meeting permit timelines.

For inventory, WSDOT and the private sector are viable options. WSDOT has contracted for some inventory services in the past, and the private sector likely has the skills and experience to

perform the required tasks. WSDOT has also used its own staff to perform similar tasks, and the agency views this activity as part of a larger agency effort to understand and manage its assets.

While Ecology has experience in GIS-related systems, and inventorying water resources is consistent with the agency's mission, Ecology would require additional staff and resources to perform the work. If state employees are to perform this task, WSDOT is likely better suited than Ecology given its more extensive familiarity with the highway features it is required to inventory and map.

Explanation of Criteria

In evaluating viability, JLARC reviewed advantages and disadvantages using the following criteria:

1. **Timing Needs:** Does the organization have the potential to meet the deadlines established in the permit? How fast can an organization get an activity up and running? Is the need short- or long-term?
2. **Organizational Fit:** Does an organization have the technical expertise or knowledge to meet the permit requirements? Does it have the capacity in terms of staff and/or equipment? Is the function aligned with the organization's mission and other existing programs or functions?
3. **Experience of Others:** What does the experience of other local or state governments tell us about how to best meet the requirements of the permit? What does national literature have to say about permit implementation or the options in general?

While cost is a key consideration when reviewing options, a lack of comparable, reliable cost information precluded JLARC from including cost as a criterion in determining viability.

Comment on Criteria and Evaluation of Options

JLARC assessed each of the options for meeting WSDOT's permit requirements against the above criteria. JLARC ranked the criteria in order of importance, with timing being the most important factor given the mandatory deadlines contained within WSDOT's 2009 permit. Regardless of which entity performs the permit activities, WSDOT is responsible for meeting the existing permit deadlines. If WSDOT fails to meet those deadlines, compliance actions can be taken against it.

The ranking of the criteria is important to note because some of the advantages listed in the following tables were given more "weight" than others when it came to determining viable options for meeting the permit requirements. For instance, if an entity was unlikely to meet the current permit deadlines, it was deemed not viable for this permit cycle, even though it may have had merits based on other criteria. Similarly, one option may have more advantages listed than another option, but that does not indicate it is the "better" option. The tables include the most salient advantages and disadvantages for each option based on JLARC's evaluation of the criteria described. As the report concludes, several key gaps in information make it difficult to determine whether one of the viable options is preferable to another.

Detailed Analysis of Options

BMP Maintenance

✓ Represents likely advantage to this entity performing the permit function × Represents likely disadvantage

	WSDOT	Consortium	Ecology	Private
Timing Needs	✓ WSDOT has developed a plan to meet permit deadlines ✓ Long-term need × Recruitment and hiring process may take time	× Have been discussions about sharing maintenance (ROAD MAP), but currently no infrastructure exists beyond sharing information × Unlikely to be put in place in time to meet permit deadlines	× No existing staff, equipment, or experience in maintaining highway BMPs makes it unlikely to meet permit deadlines × Likely requires lengthy lead time to establish infrastructure	✓ Private firms built the BMPs so likely will have transferrable skills to maintain them ✓ Private contractors currently maintain privately owned BMPs ✓ Due to long-term need, potential for developing competition among firms × Unknown time requirements for bidding process and collective bargaining
Organizational Fit	✓ Preservation of the highways and protecting the environment are two of five priorities called out in WSDOT's statute ✓ Has performed limited maintenance of BMPs and has general knowledge of location and condition × Will need additional staff and infrastructure to meet permit requirements (30 FTEs)	✓ Potential sharing of expertise and resources may be good idea × No structure in place to perform maintenance tasks on behalf of multiple entities	× No experience or expertise in performing highway BMP maintenance × Road maintenance not consistent with Ecology's mission × Potential conflict of interest to have regulatory agency performing compliance duties	✓ Firms with BMP construction experience or experience maintaining privately-owned BMPs can likely expand capacity to maintain WSDOT's BMPs × All other maintenance functions are generally performed in-house

	WSDOT	Consortium	Ecology	Private
Experience of Others	✓ Although experience with BMP maintenance is limited, generally performed in-house both nationally and locally	× Of the states and local governments reviewed, no evidence of a consortium approach to BMP maintenance	× Of the states and local governments reviewed, no evidence of an environmental regulatory agency performing BMP maintenance functions on roadways	✓ National research indicates that some states are experimenting with contracting for BMP maintenance × However, generally performed in-house both nationally and locally × National research indicates it is important to understand specific requirements for maintaining BMPs before contracting for their maintenance

Summary Analysis:

- Due to timing issues, Ecology and consortium approaches are not viable options for WSDOT's 2009 permit.
- Private sector appears to be a viable option. Private firms built the BMPs for WSDOT as part of road construction projects, so likely to have transferrable skills to maintain them. Private firms also maintain privately-owned BMPs in residential developments. Maryland found a competitive private sector market bidding for BMP maintenance contracts.
- However, national research indicates some experience with what is required for BMP maintenance is needed before effectively contracting for the services. For example, Maryland has experimented with an approach to BMPs where the contractor is responsible for operating and maintaining BMPs, and the state found it requires detailed, accurate information on BMP maintenance needs upfront prior to issuing contracts in order to ensure successful contract relationships. Additionally, using private sector option has some unquantified risks, such as unknown time requirements for bidding and collective bargaining and current capacity issues specific to the needs of high-speed roads.
- WSDOT has historically performed its maintenance functions in house, and has performed limited BMP maintenance.

Catch Basin Maintenance

✓ Represents likely advantage to this entity performing the permit function × Represents likely disadvantage

	WSDOT	Consortium	Ecology	Private
Timing Needs	✓ Expansion of existing activity ✓ Long-term need × Recruitment and hiring process may take time	× Have been discussions about sharing maintenance (ROAD MAP), but currently no infrastructure exists beyond sharing information × Unlikely to be put in place in time to meet permit deadlines	× No existing staff or equipment to meet permit deadlines × Likely requires lengthy lead time to establish infrastructure	✓ Firms exist that provide vactoring services × These firms are not currently performing vactoring on high-speed highways so may need additional equipment × Unknown time requirements for bidding process and collective bargaining
Organizational Fit	✓ Currently routinely performing this activity as part of highway safety work × Will need additional staff and equipment (8 FTEs, 3 new vactor trucks) to meet frequency requirements	✓ Potential sharing of expertise and resources may be good idea ✓ Already is some current and planned sharing of decant facilities between WSDOT and counties × WSDOT reports a lack of current unused local vactor truck capacity among local governments	× No experience or expertise in performing catch-basin maintenance on highways × Road maintenance not consistent with Ecology's mission × Potential conflict of interest to have regulatory agency performing compliance duties	✓ Firms with vactoring experience can likely expand capacity quickly as similar to what they are currently doing for other public/private entities × Local firms lack experience on high speed highways which require added safety measures and potentially additional equipment × All other maintenance functions are generally performed in-house
Experience of Others	✓ Generally performed in-house both nationally and locally	× Generally performed in-house both nationally and locally	× Generally performed in-house both nationally and locally	× Generally performed in-house both nationally and locally

Summary Analysis:

- Due to timing issues, Ecology and consortium approaches are not viable options for WSDOT's 2009 permit.
- Private sector firms have experience performing vactoring services. However, this would be a change in current approach since WSDOT performs its maintenance functions in-house. Performing maintenance of catch-basins in-house is consistent with national and local practices.
- Using private sector option has some unquantified risks, such as unknown time requirements for bidding and collective bargaining, and current capacity issues specific to the needs of high-speed roads.

Monitoring

✓ Represents likely advantage to this entity performing the permit function × Represents likely disadvantage

	WSDOT	Consortium	Ecology	Private
Timing Needs	✓ WSDOT has developed a plan to meet permit deadlines ✓ For efficiency, plan to use some portion of existing field staff time for monitoring purposes × Unclear whether expertise is readily available for public sector in the local employment market × Recruitment and hiring process may take time	× While a consortium for monitoring is the focus of extensive discussions for future permit cycles, no structure in place to meet current permit deadlines	✓ Ecology is currently under contract with WSDOT to draft detailed monitoring plans and assist with monitoring site selection ✓ Already has technical expertise in-house which could be leveraged to meet needs of WSDOT permit × Would need additional staff to meet permit requirements	✓ Private firms performed monitoring for WSDOT in the past and likely will have available expertise ✓ Monitoring requirements may change in future; private firms may provide more flexibility for shifting requirements × Unknown time requirements for bidding process
Organizational Fit	✓ 2009 USGS report recommends WSDOT develop in-house expertise in monitoring to manage and ensure success of program ✓ Have already made some investments in developing in-house expertise and are planning to leverage current WSDOT research efforts with monitoring responsibilities × Lack experience designing and implementing monitoring programs because have contracted for this function in past × Will need additional staff and equipment to meet permit requirements (7.6 FTEs)	× While a consortium for monitoring is the focus of extensive discussions for future permit cycles, no structure in place to meet current permit deadlines	✓ Has experience with designing and implementing monitoring programs ✓ Water quality is a key focus for Ecology × Potential conflict of interest to have regulatory agency performing compliance duties	✓ Private firms specializing in this work have experience and expertise with designing and implementing monitoring programs ✓ Likely existing capacity in private sector to meet permit needs × 2009 USGS report recommends WSDOT develop in-house expertise to manage and ensure success of program

Experience of Others	✓ Four local governments primarily performing monitoring in-house for current permit × Other states have largely contracted for this function	✓ Local governments are involved in extensive discussions to establish a consortium for monitoring for future permits × Limited evidence of other states using a consortium to meet permit requirements	× Of the states and local governments reviewed, no evidence of an environmental regulatory agency performing stormwater permit monitoring functions	✓ Majority of states contacted contract for monitoring ✓ North Carolina contracts with universities to perform function × Four local governments primarily performing monitoring in-house for current permit

Summary Analysis:

- Due to timing issues, consortium approach is not a viable option for this permit cycle. However, it is likely to be a viable option for WSDOT's 2014 permit.
- Ecology and private sector appear to be viable options. Both have experience and expertise in water quality monitoring.
- Ecology may have a potential conflict of interest due to the fact that a regulatory agency would be performing monitoring on behalf of an agency it is overseeing.
- 2009 USGS report recognizes that even if WSDOT does not perform all of the monitoring functions in-house, WSDOT needs to develop in-house expertise for quality assurance, contract management and oversight of monitoring program.

Inventory

✓ Represents likely advantage to this entity performing the permit function × Represents likely disadvantage

	WSDOT	Consortium	Ecology	Private
Timing Needs	✓ Continuation and augmentation of existing efforts as well as utilizing existing regional staff ✓ WSDOT has developed a plan to meet permit deadlines with additional staff and resources × Recruitment and hiring process may take time	× No structure in place to meet current permit deadlines	× Would require new expertise and additional staff to meet permit requirements	✓ Private firms performed inventory for WSDOT in the past and likely will have available expertise × May require long-term contract commitment for some of the permit requirements
Organizational Fit	✓ Have some existing expertise and staff in-house because this is a continuation of efforts that began in early 1990s ✓ Asset management called out in WSDOT statute, and this permit function is part of a broader effort to understand the condition of WSDOT's assets × Need to hire and train 9 additional FTEs	✓ Potential sharing of expertise and resources may be a good idea in theory × No structure in place to meet current permit deadlines	✓ Have expertise in GIS-related systems ✓ Mapping and inventorying water resources is consistent with agency's mission × Unlikely to have direct experience with road features and interpreting highway design plans × Potential conflict of interest to have regulatory agency performing compliance duties	✓ Work to date has relied on private sector for geo-referencing and interpreting highway designs ✓ WSDOT has used some private firms in past that have knowledge of WSDOT systems × Some level of in-house expertise needed to oversee effort and ensure data credibility and usability to meet overall needs of WSDOT

Experience of Others	✓ × Other states and local governments have used a combination of in-house staff and private consultants to perform this function	× Of the states and local governments reviewed, no evidence of consortium being used elsewhere	× Of the states and local governments reviewed, no evidence of an environmental regulatory agency performing stormwater permit inventory and mapping functions	✓ × Other states and local governments have used a combination of in-house staff and private consultants to perform this function

Summary Analysis:

- Due to timing issues, consortium and Ecology approaches are not viable options for WSDOT's 2009 permit. Ecology would require additional staff and resources to perform the work. If state employees are to perform this task, WSDOT is likely better suited than Ecology given its more extensive familiarity with the highway features it is required to inventory and map.
- Private sector appears to be a viable option, with experience and expertise in both WSDOT's inventory and mapping efforts and with the development of information systems in general.
- However, WSDOT has already invested in some staff for this effort and is likely to need some level of in-house staffing into the future for oversight of the effort and to ensure data credibility and usability to meet the overall needs of WSDOT. WSDOT also plans to leverage regional staff to perform some of the permit requirements.

APPENDIX 4 – OTHER STATES' AND LOCAL GOVERNMENTS' APPROACHES TO MANAGING STORMWATER

To assess whether there were successful practices in other states that might serve as viable alternatives to WSDOT performing its stormwater permit activities, JLARC contacted the Federal Highway Administration and the American Association of State Highway and Transportation Officials for their recommendations of states with innovative or advanced stormwater management programs. JLARC also reviewed two recent reports on stormwater management practices in state DOTs.[7] Based on this feedback, JLARC contacted:

- California
- Maryland
- Minnesota
- New York
- North Carolina
- Oregon

JLARC and its consulting scientist developed a survey to assess how these states performed the three major activities in WSDOT's budget request. For the purposes of this survey, we separated catch basin maintenance from BMP maintenance in order to gather comparable information to WSDOT's budget request which identifies estimated costs for these two activities separately. Each of the state DOTs contacted have different permits, issued at different times, ranging from 1999 to 2010, with varying requirements.

To better understand Washington's permit requirements and approaches to meeting them, JLARC also reviewed the four Phase I counties, all of which have had over two years of experience with their current stormwater permit. Our review included the following counties:

- Clark
- King
- Pierce
- Snohomish

Although specific permit requirements were different from WSDOT's, there were basic functions common to each of the permit holders. Our review of other states, local governments, and national literature did not identify additional implementation options beyond those identified in JLARC's study mandate.

[7] See National Cooperative Highway Research Program (August 2010) *Final Report: Cost and Benefit of Transportation Specific MS4 and Construction Permitting*; *25-25 Task 56;* National Cooperative Highway Research Program (December 2009) *Scan 08-03: Best Practices In Addressing NPDES And Other Water Quality Issues In Highway System Management*.

Permit Types

An **individual NPDES permit** is unique to a specific facility or permit holder. The limitations and requirements contained in an individual permit are based on the permit holder's operations, the type and amount of discharge, the receiving water bodies, and other factors. When multiple individual permits contain very similar or identical requirements, their contents may be compiled into a general permit that can be applied to certain categories of discharges within a stated geographic area (often a state or a specific watershed).

A **general permit** is usually written in broad terms, with a general focus on municipalities and site-based construction activities.

The tables below illustrate each state's permit type and provide detail on the approaches these states are taking to meet their respective permit requirements. Information presented in the tables is based on interviews JLARC and its consultant had with state and county officials.

Other States' NPDES Permit Types and Issuance Dates

	Issued	Permit Type	Notes
California	1999	Individual DOT-specific combined NPDES/ Construction Permit	Statewide coverage.
Maryland	2005	Individual Phase II Permit	Covers stormwater discharges from Maryland State Highway Administration within nine counties in the state.
Minnesota	2006	Phase II General Permit	Minnesota Department of Transportation (MNDOT) districts are autonomous. Headquarters advises regional districts, but does not provide prescriptive guidance.
New York	2010	General Permit	Includes "non-traditional municipal separate storm water sewer systems," such as the DOT.
North Carolina	2005	Individual DOT-specific combined NPDES/ Industrial Permit/ Construction Permit	Statewide coverage.
Oregon	2000	Individual Phase I/II Permit	For its next permit, Oregon Department of Transportation (ODOT) is planning to adopt a comprehensive approach to complying with requirements for NPDES, Clean Water Act 401, Endangered Species Act, and Underground Injection Control.
Washington	2009	Individual Phase I/II Permit	Covers WSDOT in Phase I/II areas in Washington.

Source: JLARC analysis.

Other States' Approaches To Meeting Stormwater Permit Requirements

	Who does it?	What is required?
BMP Maintenance		
California (Current permit issued in 1999)	Primarily performed in-house.	No inspection frequency specified in permit for stormwater treatment and flow control facilities. Caltrans has prepared a Maintenance Indicator Document for its BMP Retrofit Pilot Program that is used to specify inspection and maintenance frequencies for various BMPs.
Maryland (Current permit issued in 2005)	The majority of routine and major maintenance is performed by on-call contractors by the design lead office. Maryland State Highway Administration (MSHA) has advertised a number of open-end (time and material) contracts to perform routine and preventive maintenance as well as major repairs. Typically the contract duration is 24 or 36 months. MSHA also uses its own maintenance forces in selected districts to incorporate BMP maintenance into the routine roadside maintenance.	Inspections are required every three years with required remediation efforts completed one year after that. Maryland also has an internal business plan goal to have 90% of its BMPs functionally adequate by 2010. Maryland inspects structural BMPs based on established criteria and rates them in terms of functionality. Based on the rating, the facility may be slated for routine maintenance, major maintenance or complete retrofit.
Minnesota (Current permit issued in 2006)	Primarily performed in-house.	No prescriptive guidance in permit.
New York (Current permit issued in 2010)	In- house, with the exception of the Hudson Valley region that includes the New York City East of Hudson Watershed, which is included in a district-wide maintenance contract. Other regions are evaluating this approach, but have not let contracts.	No prescriptive guidance in permit.

	Who does it?	What is required?
North Carolina (Current permit issued in 2005)	In-house.	No inspection frequency specified in permit for stormwater treatment and flow control facilities. However, the North Carolina Department of Transportation (NCDOT) was required to develop a Stormwater Control Inspection and Maintenance Manual that specified inspection frequencies and detailed information for maintenance, evaluation, reporting, and tracking. NCDOT also developed a mechanism to track BMP inspection and maintenance activities in conjunction with hard copy inspection checklists.
Oregon (Current permit issued in 2000)	Primarily performed in-house. Oregon Department of Transportation (ODOT) has agreements with other local DOTs on sharing equipment and plans to partner with locals on specific tasks. There are plans to experiment with contracting for some maintenance work, but the extent and duration of work is not clear.	BMP and catch basin maintenance is not specified in the NPDES permit, but is guided by the department's maintenance guide, which does not have a set maintenance schedule.
Catch Basin Maintenance		
California (Current permit issued in 1999)	Primarily performed in-house, and supplemented by limited service contracts.	No inspection requirement specifically linked to catch basins, however, Caltrans developed and implemented an inspection and cleaning program throughout the state. During FY09, approximately 76,000 of the 413,189 catch basins (19 percent) were inspected and 75 percent of those inspected were cleaned.
Maryland (Current permit issued in 2005)	The majority of routine and major maintenance is performed by on-call contractors by the design lead office.	Permit requires MSHA to maintain catch basins to standards prescribed in "Environmental Guidelines for Maintenance Activities," a state document.
Minnesota (Current permit issued in 2006)	Primarily done in-house, with some use of contractors.	Inspection of all facilities is required annually; based on inspections, determine if repair, replacement, or maintenance are necessary.

	Who does it?	What is required?
New York (Current permit issued in 2010)	In-house, with the exception of the Hudson Valley region that includes the NYC East of Hudson Watershed. Catch basin maintenance is included in a larger maintenance contract.	In watersheds identified by the state environmental conservation department as impaired, NYSDOT must inspect and maintain catch basins twice a year.
North Carolina (Current permit issued in 2005)	In-house, as part of routine maintenance (primarily reactive maintenance/cleanup).	Permit does not specify an inspection frequency for catch basins.
Oregon (Current permit issued in 2000)	Primarily performed in house. Oregon Department of Transportation (ODOT) has agreements with other local DOTs on sharing equipment and plans to partner with locals on specific tasks. There are plans to experiment with contracting for some maintenance work, but the extent and duration of work is not clear.	BMP and catch basin maintenance is not specified in the NPDES permit, but is guided by the department's maintenance guide, which does not have a set maintenance schedule.
Monitoring		
California (Current permit issued in 1999)	Primarily performed by consultants, although Caltrans partners with other jurisdictions and consortiums in selected instances.	Caltrans' NPDES permit requires: • BMP effectiveness monitoring; • Receiving water monitoring; • Characterization monitoring of runoff by facility type; • Construction site monitoring and evaluation; • Location specific monitoring in Lake Tahoe Basin for de-icing materials; and • Location specific TMDL required monitoring.
Maryland (Current permit issued in 2005)	Primarily performed by consultants.	MSHA required to select a watershed restoration project for monitoring, which includes 12 storm events per year and an annual report.

	Who does it?	What is required?
Minnesota (Current permit issued in 2006)	N/A	No formal requirements under current permit.
New York (Current permit issued in 2010)	N/A	No formal requirements under current permit.
North Carolina (Current permit issued in 2005)	NCDOT's Research and Analysis Unit solicits, selects, and monitors all state planning and research-funded research projects. The monitoring is primarily conducted by state colleges and universities (University of North Carolina and North Carolina State), while a managing consultant oversees the work for NCDOT.	Monitoring is required for several components of NCDOT's stormwater permit including: • BMPs, for a "Toolbox for Post-Construction Runoff" which intends to identify and standardize the most effective structural measures for addressing stormwater runoff; • Research to explore new and innovative technologies that may be suitable for treating specific pollutants; and • TMDL
Oregon (Current permit issued in 2000)	Consultant set up monitoring sites, conducts monitoring and analysis. BMP effectiveness monitoring will be done through contract with United States Geological Survey and Oregon State University. Compliance monitoring is done internally.	Monitor four sites for five years, with four storms per year at each site. Must choose: 1 high Annual average daily traffic (AADT) site, 1 medium AADT site, 1 low AADT site, 1 rural site, 1 dry (east side) site. Perform one BMP before and after assessment.
Inventory		
California (Current permit issued in 1999)	The inter-relational database was completed by consultants, and Caltrans staff manage the ongoing database maintenance.	Caltrans is required to create and maintain an inventory of their entire roadway stormwater system infrastructure.

	Who does it?	What is required?
Maryland (Current permit issued in 2005)	Research consultant on staff developed and maintains a history of the State roadway development within each NPDES county, includes reviewing advertisement history, searching the archived scans, visiting district offices, reviewing permit files and searching for plats. Information is provided to GIS development consultants to perform county updates.	Update inventory every three years along with BMPs and outfall illicit discharge detection and elimination and stability inspections.
Minnesota (Current permit issued in 2006)	Primarily done in-house, with some use of contractors.	Requires map of drainage system.
New York (Current permit issued in 2010)	In-house.	Map of drainage system in TMDL watersheds, statewide inventory of BMPs.
North Carolina (Current permit issued in 2005)	Contractors, in-house.	NCDOT is required to continue to build their geospatial information systems (GIS)-based stormwater outfall inventory to include outfalls from primary and secondary roadways that cross or run parallel to sensitive waters, with a minimum of 20 percent of secondary roadways mapped each year. This should be updated annually to incorporate new projects and changes to previously inventoried outfalls.
Oregon (Current permit issued in 2000)	Interns and limited duration FTEs have performed this work.	ODOT has inventoried 36" outfall pipes. Per the terms of a legal settlement, ODOT is now inventorying 12" outfall pipes in the NPDES permit area.

Washington Counties' Approaches To Meeting Stormwater Permit Requirements

	Who does it?	What is required?
BMP Maintenance		
Clark	Performed in-house.	Permit requires annual inspections for all county-owned stormwater facilities; inspections of privately-owned facilities at least once during the permit term; and the development of a program to achieve the long-term maintenance of private and county-owned stormwater facilities.
King	Primarily performed in-house, with a small portion (less than 5%) contracted to private businesses. King County occasionally rents its maintenance equipment to other jurisdictions in the County.	
Pierce	Performed in-house.	
Snohomish	Performed in-house.	
Catch Basin Maintenance		
Clark	Performed in-house.	Requires annual inspections for all county-owned stormwater facilities. It also requires inspections of privately-owned facilities at least once during the permit term and development of a program to achieve adequate long-term maintenance of both private and county-owned stormwater facilities.
King	Primarily performed in-house, with a small portion (less than 5%) contracted to private businesses. King County occasionally rents its maintenance equipment to other jurisdictions in the County.	
Pierce	Performed in-house.	
Snohomish	Performed in-house.	
Monitoring		
Clark	Primarily performs monitoring in-house. Used consultants to develop experimental design and for site installations.	Requirements similar to WSDOT's monitoring requirements (e.g., baseline and targeted stormwater monitoring, program and BMP effectiveness monitoring) but at fewer sites—a minimum of seven sites for counties.
King	Primarily performed in-house, but has an on-call consultant to cover possible staff shortages.	
Pierce	Pierce County plans to hire new staff or use existing staff to complete monitoring. Used consultants to develop experimental design.	
Snohomish	Snohomish County conducts its monitoring with internal staff (3-4) and consultants.	

	Who does it?	What is required?
Inventory		
Clark	County has upgraded GIS information on its stormwater system and has an employee dedicated to maintaining this information. Clark County contracted for its original stormwater mapping and has shared its template with other local permit holders.	Counties' permits require that over the first two to four years of the permit, the following are mapped: all stormwater outfalls; county-owned BMPs; subbasin attributes for all urban and higher density rural subbasins. Additional requirements and timelines related to mapping connections to other storm and sewer systems.
King	Primarily performed in-house and is also coordinated with other jurisdictions. Recently hired an employee to address inventory requirements and coordinate with staff in other King County agencies.	
Pierce	The County has completed most of this task during the previous permit and funds an FTE for maintaining the database.	
Snohomish	The mapping and documentation work is performed in-house by Snohomish County staff.	