

Final Report

Workload Analysis of NPDES Stormwater Discharge Permit Issues

Pierce County

October 16, 2008



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Stormwater Discharge Permit Issues

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October 14, 2008



Matt Temmel
Performance Audit Coordinator
Office of the Pierce County Council
955 Tacoma Avenue South
Suite 302A
Tacoma, WA 98402

Subject: Final Report - Workload Analysis of NPDES Stormwater Discharge Permit Issues

Dear Matt:

The Pierce County Council passed Ordinance No. 2008-22s that authorizes 2008 funding to Public Works and Utilities and to PALS to hire some staff as the first step in complying with the NPDES Phase I Municipal Stormwater Permit. It also directs the Performance Audit Committee to contract for services to perform a workload analysis of Pierce County's programmatic response to the stormwater permit; and it directs the Performance Audit Committee, after the contractor's report has been presented, to issue findings on the appropriate staffing levels, staff organization, and other matters as needed.

R. W. Beck is pleased to submit this final report that contains the workload analysis of the NPDES Phase I Municipal Stormwater Permit referred to in this ordinance. As part of this workload analysis, R. W. Beck reviewed prior NPDES Phase I permit compliance assessments and compiled data prepared by County staff in response to this project as an update to their prior work. R. W. Beck also prepared an alternative compliance strategy that was based upon our understanding of the Permit, conversations we have had with County staff, and our knowledge of compliance strategies used by other NPDES Phase I permittees in Washington State.

We look forward to presenting the results of this final report to the Audit Committee.

Sincerely,

R. W. BECK, INC.

A handwritten signature in dark ink, appearing to read 'Steven Swenson', written over a horizontal line.

Steven Swenson, P.E.
Project Manager

SJS/alb/jcl





Pierce County

Performance Audits

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October 16, 2008

To: Performance Audit Committee

From: Matt Temmel, Performance Audit Coordinator

A handwritten signature in blue ink, appearing to be 'MT'.

Re: Workload Analysis of NPDES Stormwater Discharge Permit Issues

This project addresses a major issue currently being considered by the County Council. It is an example of how performance audit work can be done “in real time” and make a significant contribution to legislative oversight of county government.

In 2007, based on an estimate by the Surface Water Management division, it appeared that Pierce County needed to hire approximately 48 new staff to comply with the Phase I Municipal Stormwater Permit issued by the Washington State Department of Ecology. In May 2008, the County Council authorized hiring of a limited number of new staff for compliance work, while also directing the Performance Audit Committee to contract with an engineering firm for a workload analysis of how many new staff members are needed.

After a competitive solicitation process, R.W. Beck was selected to conduct the analysis and was awarded a contract for \$120,000. Work was done between July and October 2008. The main task was to update and improve the estimated cost of compliance by placing the estimates on a solid foundation that can withstand professional scrutiny. As readers will see, the estimated cost of compliance now includes approximately 25 to 29 new staff, as opposed to the 48 new staff in the 2007 estimate by county staff. Implementation of the recommendations will thus result in a large cost avoidance that will benefit Pierce County ratepayers.

The project was conducted in accord with “Yellow Book” standards for planning, supervision, quality assurance, and other matters. Performance audit staff worked closely with the contractor on analytical issues. The quality control process included, among other work, technical review of a draft report by Surface Water Management and Planning and Land Services. Comments by those Pierce County agencies appear in Appendix A, along with R.W. Beck’s response. The report is available to the public at www.piercecountywa.org/performance-audit.



Workload Analysis of NPDES Stormwater Discharge Permit Issues

Pierce County

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This report has been prepared for the use of the client for the specific purposes identified in the report. The conclusions, observations and recommendations contained herein attributed to R. W. Beck, Inc. (R. W. Beck) constitute the opinions of R. W. Beck. To the extent that statements, information and opinions provided by the client or others have been used in the preparation of this report, R. W. Beck has relied upon the same to be accurate, and for which no assurances are intended and no representations or warranties are made. R. W. Beck makes no certification and gives no assurances except as explicitly set forth in this report.

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EXECUTIVE SUMMARY

In early 2007, the Washington State Department of Ecology made effective a new Phase I Municipal Stormwater Permit (Permit) in accordance with federal requirements under the National Pollutant Discharge Elimination System (NPDES) that regulates the discharges from municipal separate storm sewers owned or operated by Clark, King, Pierce and Snohomish counties, and the cities of Seattle and Tacoma.

A short time later, Pierce County staff in the Surface Water Management (SWM) division estimated the cost to comply with the Permit. This estimate, known as the 2007 Cost of Compliance, was an initial assessment that was completed relatively quickly over about a 30-day period in early 2007. A more detailed estimate was not prepared, and the 2007 Cost of Compliance became the basis for a budget request to the County Council for approximately 48 new staff. However, SWM took an “adaptive management” approach by requesting approximately 20 FTEs in 2007 and 2008 while reserving the additional estimated increases in staff for later years when program experience would be used to validate cost assumptions.

Because of the high costs, the County Council delayed action until early 2008, when it approved a supplemental budget that authorized several new positions to be supported by the SWM fund balance. The Council declined to provide new funding until it could obtain a second opinion on Permit compliance costs. Thus, the Performance Audit Committee was directed to contract for services to conduct a workload analysis of Pierce County’s Permit compliance needs. R. W. Beck was selected to perform the analysis.

Because the 2007 estimate was an initial assessment, R. W. Beck determined that it would be more useful to provide an opinion on an updated estimate of Permit compliance costs. To accomplish this, R. W. Beck compiled a new Pierce County Updated Cost of Compliance estimate based on new data from Surface Water Management, Planning and Land Services (PALS), and Road Operations Division (Roads). SWM, PALS, and Roads have reviewed the Updated Cost of Compliance, and they concur that it reflects their most current estimate of these costs.

Upon completion of the Pierce County Updated Cost of Compliance, R. W. Beck prepared an opinion on these updated costs in the form of an Alternative Compliance Strategy.

The following table compares key results of the original 2007 estimate, the Pierce County Updated Cost of Compliance Estimate, and the R. W. Beck Alternative Compliance Strategy. The table shows average new annual costs and staffing estimated for Permit compliance.

Executive Summary

Average New Annual Costs and Staffing for Permit Compliance

	2007 Estimate	Pierce County Updated Cost of Compliance	R. W. Beck Alternative Compliance Strategy
Average Additional Annual Cost	\$7.4 million	\$3.7 million ¹	\$3.4 million ²
New FTEs	48 ³	28 ⁴	25 ⁵

1. \$5.8 million in 2009, and \$3.7 million in subsequent years.

2. \$4.5 million in 2009, and approximately \$3.4 million in subsequent years.

3. Only 20 FTEs were proposed for the first two years with FTEs added as needed.

4. 26.7 new FTEs in 2009, an additional 1.9 FTEs in 2010, and decrease of 0.8 FTEs in 2011.

5. 24.5 new FTEs in 2009, an additional 1.4 FTEs in 2010, and a decrease of 0.8 FTEs in 2011.

Explanations of these costs and staffing estimates can be found in Sections 2 and 3 of the report.

Recommendation 1

The County should use the reporting required by the Permit as an adaptive management tool to continuously update and refine Permit compliance costs. This information could be used to inform the budget process each year by comparing previous assumptions and estimates to actual experience.

Recommendation 2

Some of the resources allocated in the County staff's Updated Cost of Compliance for Permit management should be used instead for doing field work, such as inspections, that is required by the Permit.

Recommendation 3

The following list of miscellaneous observations should be reviewed and modifications made to the Updated Cost of Compliance if appropriate.

- a. The County should evaluate whether existing construction site inspectors, as opposed to new PALS staff, can perform basic compliance inspections for installation and maintenance of temporary erosion and sediment controls.
- b. The County's reported expenditures for structural stormwater controls should only include capital improvement projects that prevent or reduce the impacts of stormwater discharges to waters of the state.
- c. The County should review its facility maintenance program for consistency with the published Ecology maintenance standards required by the Permit and then update the maintenance costs accordingly.

- d. The County should update the estimate for the public involvement requirements in the Permit based on additional consultation with an expert in social marketing and behavior change.

Recommendation 4

Pierce County Council should provide new funding in the 2009 budget for NPDES compliance work. Tables 2-1 and 3-1 in the report summarize the two current estimates of the funding needed to comply with the Permit. R. W. Beck recommends that the Council fund the Alternative Cost of Compliance (Table 3-1).

Section 1

Introduction and Background

1.1 Problem Statement and Background

On February 16, 2007, the Washington State Department of Ecology (Ecology) made effective a new Phase I Municipal Stormwater Permit (Permit) that regulates the discharges from municipal separate storm sewers owned or operated by Clark, King, Pierce and Snohomish counties, and the cities of Seattle and Tacoma. This Permit was issued to cover discharges from municipal separate storm sewers in accordance with federal requirements under the National Pollutant Discharge Elimination System (NPDES) program and the State Waste Discharge General Permit.

To comply with the Permit, Pierce County must demonstrate that it is implementing certain programs intended to improve the quality of stormwater discharges into and from its storm sewer system. Through its current programs, Pierce County already complies with many of the Permit requirements. However, to be fully compliant, Pierce County will also need to implement new or expanded programs.

In early 2007, County staff in the Surface Water Management division of the Public Works and Utilities Department (hereafter Surface Water Management, or SWM) estimated the cost to comply with the Permit (Appendix D). As part of this work, SWM staff estimated how much of the Permit compliance cost is associated with existing budgeted activities and how much is associated with new activities that need to be funded.

The 2007 analysis was presented to the Pierce County Council as the basis for funding requests. Because of the high costs, the County Council delayed action until early 2008, when a supplemental budget was brought forward to authorize expenditures to support new activities for NPDES Permit compliance. The County Council authorized funding for several new positions, to be supported by the SWM fund balance. But the Council declined to provide new funding until it could obtain a second opinion on Permit compliance costs. To accomplish this, the County Council directed the Performance Audit Committee to contract for services to perform this Workload Analysis of Pierce County's Permit compliance needs.

1.2 Summary of Permit Requirements

The Permit requires the development and implementation of a stormwater management program for municipal separate storm sewers owned or operated by Pierce County.

Ecology's permitting strategy for this Permit was to employ "adaptive management," which involves successively reviewing the effectiveness of the permittees' stormwater programs and revising the permit requirements to eventually gain full compliance with

Section 1

water quality standards. This adaptive management portion of the Permit was challenged by several of the permittees, including Pierce County, and the Pollution Control Hearings Board (PCHB) issued its ruling on August 7, 2008. Because of the PCHB ruling, Ecology must revise the requirements related to this adaptive management process. However, the specific PCHB orders to Ecology will not appreciably affect the permit compliance costs estimated in this report.

The core requirement of the Permit is that Pierce County must implement a Stormwater Management Program. Parts of this requirement were also challenged by several of the permittees, including Pierce County, but the Pollution Control Hearings Board ruling did not provide any relief that would significantly affect the cost of compliance.

The Stormwater Management Program must:

- Control runoff from new development, redevelopment, and construction sites.
- Construct structural stormwater controls.
- Identify existing development sites that are potentially pollutant-generating and implement an inspection and enforcement program.
- Detect and eliminate illicit connections and illicit discharges.
- Implement a program to achieve adequate long-term operation and maintenance of public and private stormwater facilities.
- Implement a public involvement, participation, and education program to reduce or eliminate behaviors and practices that cause or contribute to adverse impacts of stormwater discharges on water bodies.
- Manage the Permit to establish legal authority; map and document the storm sewer system; coordinate activities (both internally and externally); provide training; and report to Ecology each year.

As part of the Permit, Pierce County is also required to implement actions to achieve pollutant reductions in stormwater discharges called for in Total Maximum Daily Load (TMDL) limits. The state has set TMDL limits on the amount of certain pollutants that South Prairie Creek receives from all sources. These pollutants include bacteria and temperature.

Pierce County must implement a long-term monitoring program that:

- Characterizes stormwater runoff quantity and quality at a limited number of locations.
- Monitors the effectiveness of at least two stormwater management practices.
- Monitors the effectiveness and maintenance and operation requirements of at least two treatment best management practices.

Pierce County must submit an annual report to Ecology that documents the status of implementation of the County's Stormwater Management Program. The expiration date of this Permit is February 2012.

1.3 Initial Review of Pierce County Proposed Compliance Strategy

R. W. Beck's first task under this Workload Analysis was to review the County's 2007 analysis, which was contained in a February 27, 2007 spreadsheet titled *Cost of Compliance with Municipal Stormwater Phase I NPDES Permit* (2007 Cost of Compliance). A copy of this spreadsheet is included in Appendix D. For new Permit compliance work, the 2007 Cost of Compliance estimated an annual cost of \$7.4 million, including 48 new FTE staff.

Key points about the 2007 Cost of Compliance are as follows:

- The 2007 Cost of Compliance was an initial assessment conducted by staff in the Surface Water Management division. The work was completed relatively quickly over about a 30-day period in early 2007.
- A more detailed estimate was not prepared, and the 2007 Cost of Compliance was used as the basis for a budget proposal to County Council because SWM staff chose to take an “adaptive management” approach to providing a more substantial basis for these costs. The “adaptive management” approach taken was to ask for 20 FTEs (less than half of the 48 FTEs estimated in the 2007 Cost of Compliance) for the years 2007 and 2008 and reserving final increases in staff for later years when program experience would be used to validate cost assumptions.
- During 2007, SWM was pursuing negotiations with the Washington State Department of Ecology to issue a separate and different permit that would be applicable to Pierce County. These negotiations ultimately proved to be unsuccessful.
- While SWM was awaiting the outcome of the negotiations with Ecology and direction from the County Council and Executive on funding related to the new permit requirements, no effort was devoted to re-analyzing or validating the assumptions made in the 2007 Cost of Compliance. We have not spent time to determine how communications amongst these groups affected SWM's decision not to continue to refine and update their 2007 estimate.
- The 2007 Cost of Compliance, although not updated, was still being utilized over a year later in budget discussions with the Council that culminated in May 2008 with the passage of a supplemental budget (Ordinance No. 2008-22s). The ordinance authorized hiring of some new staff, supported by the SWM fund balance, to work on NPDES compliance activities.
- A more defensible budget would need to be based on a more thorough and more rigorous estimate of the cost of compliance.

In July 2008, after R. W. Beck reviewed the 2007 Cost of Compliance, we discussed this situation with the Performance Audit Coordinator and other County staff. It was agreed that the best way to proceed would be for R. W. Beck to compile an Updated Cost of Compliance, in three steps:

Section 1

1. R. W. Beck would compile more detailed work plans for permit compliance activities from Surface Water Management (SWM), Planning and Land Services (PALS), and other affected County agencies to update the 2007 Cost of Compliance.
2. An Updated Cost of Compliance would be prepared: (1) to reflect changes that have occurred since early 2007, and (2) to include the results of the more detailed work plans.
3. R. W. Beck would then prepare an alternative compliance strategy that could be compared to the County staff's Updated Cost of Compliance.

1.4 Methodology

Work plans or estimates were prepared for following NPDES-related program areas:

- Development review (completed by PALS)
- Development inspection and enforcement services (PALS)
- Pollutant source control and inspection of private stormwater management facilities (SWM)
- Outreach and public education (SWM)
- Illicit discharge and detection elimination program (SWM)
- Inspection and maintenance of County stormwater facilities (SWM and Road Operations Division)
- Monitoring (SWM)
- Other required activities such as reporting, coordination, and training (SWM and PALS)

Based on the revised work plans, R. W. Beck compiled an Updated Cost of Compliance (see Section 2 of this report). Hourly labor costs (including wages and benefits) were developed for each job classification (determined by County staff) needed to complete the work. In addition, an overhead rate was computed based on data from SWM for 2008. This overhead rate of \$52/hour/employee was based on the total SWM overhead divided by SWM's total productive hours for the year. Overhead covers the following seven kinds of expenses:

1. Office space rent, maintenance, cleaning, and utilities
2. Vehicle usage
3. Supplies and equipment rental
4. Computers and information technology support
5. Geographic Information Systems
6. County indirect costs such as Budget and Finance charges
7. Public Works department-wide allocations

Cost estimates were prepared for Permit compliance activities from 2009 through 2011. The estimates reflect the estimated number of hours and the hourly labor costs. Overhead was added at the end. Cost estimates also incorporate estimates of one-time startup costs, generally needed in 2009. Costs are based on 2008 dollars and have not been inflated for subsequent years.

To estimate the required number of new FTEs, the estimated annual work hours were summed by program area and job class. To determine the number of full-time employees, each total was divided by 1,768 hours, which reflects the average number of productive hours per year per employee after subtracting for holiday, vacation, and sick leave. This number of hours was based on several discussions with SWM, PALS, Budget and Finance, and Performance Audit. The FTE count is based on 1,768 productive hours per year. The hourly labor rates, besides covering the productive time, also include the cost of employee benefits, such as health care and retirement, and paid time off.

Section 2

Pierce County Updated Cost of Compliance Estimate

2.1 Introduction

In August and September 2008, R. W. Beck compiled data from Surface Water Management (SWM), Planning and Land Services (PALS), and Road Operations Division (Roads) in order to produce an Updated Cost of Compliance estimate. SWM, PALS, and Roads have reviewed the Updated Cost of Compliance and they concur that it reflects their most current estimate of these costs. The complete County staff's Updated Cost of Compliance is included in Appendix B.

Table 2-1 summarizes the County staff's Updated Cost of Compliance estimate. The total annual cost of new Permit compliance activities without overhead is \$5.8 million in 2009 and \$3.7 million in subsequent years. This can be compared with the total annual cost of \$7.4 million estimated for new Permit compliance work contained in the County's 2007 Cost of Compliance. Table 2-1 also shows almost 27 new FTEs in 2009 and 2 more FTEs in 2010, compared to 48 new FTEs in the 2007 Cost of Compliance.

With one exception, the estimated costs for PALS to perform plan reviews and inspections contained in the County's Updated Cost of Compliance is based on the average number of development projects processed over the past four years. For 2009, however, the estimated number of development projects that PALS will process is reduced from the four-year average to reflect the downturn in the housing market that occurred in 2008 and is expected to continue into 2009.

The Updated Cost of Compliance does not include all the supervisory and office support staff that may be needed to support the new FTEs.

Costs in the updated estimate are different in 2009 (relative to 2010 and 2011) because of high startup costs and lower plan review and inspection costs for PALS in 2009.

The updated costs of Permit compliance and full-time equivalent (FTE) staff shown in Table 2-1 are believed to be more accurate than the County's 2007 estimate. This is because the Updated Cost of Compliance reflects changes since 2007 and also is based on more detailed work plans and cost estimates. Table 2-2 shows the new types of FTEs.

Section 2

**Table 2-1
New Costs and Employees – Pierce County Staff's Updated Cost of Compliance
for NPDES Phase 1 Municipal Stormwater Permit**

Department	2009		2010		2011	
	Costs	New FTEs	Costs	New FTEs	Costs	New FTEs
Surface Water Management						
1. Source Control Program	\$205,235	1.5	\$168,935		\$168,935	
2. IDDE Program	\$335,850	4.3	\$410,894		\$345,635	-1.3
3. Operations & Maintenance	\$157,800	1.0	\$130,300		\$130,300	
4. Public Education & Outreach	\$604,390	2.1	\$454,390		\$454,390	
5. Monitoring	\$778,720	0.2	\$643,720		\$643,720	
6. NPDES Permit Management	\$1,629,269	5.0	\$293,725		\$293,725	
7. Other Tasks	\$99,717	0.3	\$99,717		\$99,717	
8. New Employee Setup	\$344,550		\$0		\$0	
Subtotal	\$4,155,531		\$2,201,681		\$2,136,422	
Overhead	\$1,379,040		\$1,379,040		\$1,259,523	
Totals	\$5,534,571	14.4	\$3,580,721	0.0	\$3,395,945	-1.3
Planning and Land Services						
1. Reviews	\$178,311	1.8	\$383,683	1.1	\$383,683	
2. Inspections	\$309,085	2.5	\$280,449	0.8	\$320,030	0.5
3. Enforcement	\$437,735	6.1	\$525,196		\$525,196	
4. Other Tasks	\$10,944		\$10,944		\$10,944	
5. New Employee Setup	\$352,150		\$41,668		\$21,363	
Subtotal	\$1,288,225		\$1,241,939		\$1,261,215	
Overhead	\$864,198		\$1,038,877		\$1,084,845	
Total	\$2,152,424	10.4	\$2,280,816	1.9	\$2,346,060	0.5
Roads						
1. Inspections	\$165,000	1.6	\$165,000		\$165,000	
2. Operations & Maintenance	\$42,000	0.3	\$42,000		\$42,000	
3. Training	\$76,340		\$76,340		\$76,340	
4. New Employee Setup	\$85,450		\$0		\$0	
Subtotal	\$368,790		\$283,340		\$283,340	
Overhead	\$183,872		\$183,872		\$183,872	
Total	\$552,662	1.9	\$467,212	0.0	\$467,212	0.0
Other Departments						
1. Training	\$27,500		\$27,500		\$27,500	
Totals	\$27,500	0.0	\$27,500	0.0	\$27,500	0.0
All Departments New Employees (net)³		26.7		1.9		-0.8
All Departments Subtotal (no overhead)⁴	\$5,840,047		\$3,754,461		\$3,708,477	
All Departments Overhead	\$2,427,110		\$2,601,789		\$2,528,240	
All Departments with Overhead	\$8,267,157		\$6,356,250		\$6,236,717	

All Departments 2009 to 2011 Total Costs

\$20,860,124

Notes:

- All costs are in 2008 dollars
- County labor overhead costs are \$52/hour per productive hour (1768 productive hours per year)
- This estimate of new employees, totaling approximately 29 new FTEs, compares to the 48 new FTEs estimated in the County's 2007 Cost of Compliance analysis.
- This subtotal of new annual costs compares to the \$7,389,586 annual cost estimated in the County's 2007 Cost of Compliance analysis.

Pierce County Updated Cost of Compliance Estimate

Table 2-2
New FTEs – Pierce County Staff's Updated Cost of Compliance
for NPDES Phase 1 Municipal Stormwater Permit

Hire Year	Job Class	Count	Department	Description of Work
2009				
	ET2	0.3	SWM	GIS Mapping
	ET3	1.3	SWM	Source Control Program--Inspection Field Personnel
	OA2	0.2	SWM	Source Control Program--Record-keeping
	ET3	0.6	SWM	IDDE Program--Enforcement Field Personnel
	ET2	2.7	SWM	IDDE Program (2009 & 2010)--Inspection Field Personnel
	P3	1.0	SWM	IDDE Program Manager
	ET3	0.5	SWM	Operations & Maintenance--Private Facility Enforcement
	ET2	0.4	SWM	Operations & Maintenance--Public Facility Inspections
	OA2	0.1	SWM	Operations & Maintenance--Record-keeping
	P2	1.1	SWM	Public Education & Outreach--Program Mgmt.
	ET2	1.0	SWM	Public Education & Outreach--Implementation
	P1	0.2	SWM	NPDES Monitoring Program
	P3	1.0	SWM	NPDES Permit Mgmt.--Internal Training Program Manager
	P2	0.5	SWM	NPDES Permit Mgmt.--Code/Policy Development & Reporting
	P1	2.4	SWM	NPDES Permit Mgmt.--Code/Policy Development, Reporting, & Coordination
	RS	1.1	SWM	NPDES Permit Mgmt.--Record-Keeping
SWM Subtotal		14.4		
	ET2	1.6	ROADS	Operations & Maintenance--In Right-of-Way Inspections
	MT	0.3	ROADS	Operations & Maintenance--In Right-of-Way Maintenance
Roads Subtotal		1.9		
	CE2	0.9	PALS	Area Review Work Unit
	CE1	0.9	PALS	Single Family Residential Review Work Unit
	ET3	0.8	PALS	Development Engr.--Inspections (SFR Sites during Construction)
	ET3	0.9	PALS	Development Engr.--Inspections (General Site Dev. during Construction)
	ET3	0.4	PALS	Development Engr.--Inspections (Residential Sub-Division Monitoring)
	OA2	0.4	PALS	Development Engr.--Inspections
	CE2	2.5	PALS	Development Engr.--Enforcement
	ET3	2.6	PALS	Development Engr.--Enforcement
	OA2	1.0	PALS	Development Engr.--Enforcement
PALS Subtotal		10.4		
County 2009 Total		26.7		
2010				
	CE2	0.4	PALS	Area Review Work Unit
	CE1	0.7	PALS	Single Family Residential Review Work Unit
	ET3	0.5	PALS	Development Engr.--Inspections (SFR Sites during Construction)
	ET3	0.1	PALS	Development Engr.--Inspections (General Site Dev. during Construction)
	ET3	0.1	PALS	Development Engr.--Inspections (Residential Sub-Division Monitoring)
	OA2	0.1	PALS	Development Engr.--Inspections
PALS Subtotal		1.9		
County 2010 Total		1.9		
2011				
	ET2	-1.3	SWM	Reduction in IDDE Program (2011 & on)--Inspection Field Personnel
SWM Subtotal		-1.3		
	ET3	0.4	PALS	Development Engr.--Inspections (Commercial & Off-Site Monitoring)
	OA2	0.1	PALS	Development Engr.--Inspections (Commercial & Off-Site Monitoring)
PALS Subtotal		0.5		
County 2011 Total		-0.8		

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The following subsections summarize the results of the more detailed work plans developed by County staff for the major programs required by the Permit. The tables list labor costs and other significant expenses if applicable.

2.2 New Development Reviews and Inspections

The Permit requires Pierce County to control stormwater runoff from new development, redevelopment, and construction sites. The Permit specifies that this shall be accomplished by reviewing site plans and by performing inspections during and after construction. The following subsections describe the resources that PALS estimates will be needed to perform this work.

2.2.1 Review Site Plans

PALS currently reviews (a) site plans for larger developments, (b) plats, and (c) site plans for single-family residences that have over 5,000 square feet of new impervious area. To comply with the Permit, PALS will need to perform new work to review site plans for single-family residences that have between 2,000 and 5,000 square feet of new impervious area. The estimate for performing the new site plan reviews for these small single-family residential sites assume that an engineer's stamp will not be required and a simple submittal is all that will need to be provided. This is consistent with the County's new Surface Water Design Manual, which will allow an "abbreviated" site plan for small single-family homes.

The County is also required under the Permit to adopt design standards equivalent to the Minimum Standards documented in Appendix A of the Permit. The new Surface Water Design Manual will include minimum requirements intended to be equivalent to those contained in the Permit. Because the new manual is much more complicated than the County's previous manual, site plan reviews will take more time. Thus, there will also be new costs to review projects with over 5,000 square feet of new impervious area, even though that is a current activity. Some of this time is only for the stormwater parts of these reviews and does not include all the time spent doing this work.

The following table shows estimated costs and staffing for performing these reviews for both the current program and the new future program.

Types of Reviews	Cost		New FTEs
	New Costs	Existing Costs	
Larger Developments	\$126,000	\$415,000	1.3
Review Plats	\$700	\$14,000	0
Single-Family Residences	\$135,000	\$49,000	1.6

2.2.2 Inspect Prior to Clearing and Construction All Development Sites with High Potential for Sedimentation

PALS does not currently perform preconstruction site inspections. When developing this estimate, PALS assumed that one-third of all residential sites have a high potential for sedimentation and will require preconstruction inspections. Assuming that one-third of all the residential sites will need a preconstruction inspection is not based on actual experience and this assumption may need to be revised later based on experience. The County does not currently perform preconstruction inspections of residential sites, so all the costs associated with this requirement will be new costs. The following table shows estimated costs and staffing for performing these inspections.

	New Cost	New FTEs
Preconstruction Inspections	\$31,000	0.4

2.2.3 Inspect all Permitted Sites Involving Land-Disturbing Activity during Construction

PALS currently inspects permitted sites during construction. The Permit requires regular inspections during construction to make sure that temporary erosion and sediment controls are installed and maintained. The Permit does not specify an inspection frequency during construction, so County staff have determined that compliance will require monthly inspections. Monthly inspections of permitted construction sites will increase the number of construction inspections that PALS currently performs. The following table shows estimated costs and staffing for performing both the current inspection program and the new inspections.

	Cost		New FTEs
	New Costs	Existing Costs	
General Site Construction Inspections	\$100,800	\$50,000	1.3
Single-Family Construction Inspections	\$93,000	\$325,000	1.2

2.2.4 Inspect All Sites upon Completion of Construction

The Permit requires inspections after construction is complete to make sure that permanent stormwater facilities are installed per the approved plans. The Permit also states that private stormwater facilities need to be inspected for proper maintenance every six months during the period of heaviest construction to enforce compliance

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with maintenance standards as needed. PALS currently performs final inspections for permitted sites upon completion of construction, but County staff do not inspect these systems for proper maintenance during the 42-month maintenance bonding period. To comply with the permit, additional inspections for maintenance during the 42-month bonding period have been added. The following table shows estimated costs and staffing for performing both the current inspection program and the new maintenance inspections.

	Cost		
	New Costs	Existing Costs	New FTEs
Post-Construction Inspections (residential)	\$0	\$2,100	0
Post-Construction Maintenance Inspections (residential)	\$45,000	\$0	0.4
Post-Construction Inspections (commercial & off-site)	\$0	\$3,600	0
Post-Construction Maintenance Inspections (commercial & off-site)	\$37,600	\$0	0.5

2.2.5 Enforcement of New Development Requirements

The Permit requires Pierce County to take enforcement actions for nonconforming sites. County staff perform enforcement actions under their current program, but additional staff are needed to be able to respond to violations in a more timely manner. Currently the County has a three-month backlog on enforcement actions. Estimated costs and staffing for performing both the current enforcement program and the new enforcement program are shown in the following table.

	Cost		
	New Costs	Existing Costs	New FTEs
Development Engineering Enforcement	\$301,000	\$199,000	3.6

2.2.6 Incidental Tasks Associated with New Development

The Permit requires Pierce County staff to be trained to perform site plan reviews. The County is also required under the Permit to adopt design standards equivalent to the Minimum Standards documented in Appendix A of the Permit. The County is preparing to adopt a new Surface Water Design Manual that includes minimum requirements intended to be equivalent to those contained in the Permit. Training of

both PALS staff and SWM staff will be needed to support the adoption of the new manual.

SWM and PALS used different assumptions to develop their training estimates. The County's old surface water design standards were simple enough so that PALS was able to use on-the-job training with plan reviewers. With the new manual, PALS is budgeting additional time for supervisors to train plan reviewers because of its added complexity. SWM is budgeting for a portion of a full-time training coordinator's time under this compliance activity. The full-time training coordinator would administer all the SWM training programs. Expenses for the training coordination are shown in Appendix B. The following table shows estimated costs and staffing for training.

	New Cost	New FTEs
PALS Training	\$122,000	
SWM Training	\$66,000	0.3

In addition, the new costs for PALS for development review and inspection include \$118,000 in startup costs associated with training and program development on top of the labor costs shown in the preceding table.

2.3 Water Quality Improvement Capital Projects

The Permit requires that Pierce County implement structural stormwater control projects. These are capital projects to control the rate of stormwater runoff from urbanized areas as well as projects that provide stormwater treatment. The County currently has a capital program that implements approximately \$8 million in projects each year. The County believes that its current capital program satisfies the Permit requirement for structural stormwater controls. However, violations of water quality standards attributed to stormwater discharges may result in the need to implement more water quality treatment facilities relative to other types of facilities.

2.4 Reduce Pollutants from Existing Development (Source Control)

The Permit requires Pierce County to identify existing development sites which are potentially pollutant-generating and to implement an inspection program to make sure these sites are using best management practices (BMPs) that would prevent them from causing illicit discharges and violations of water quality standards. The Permit also requires the County to have an enforcement program for those instances where the inspections and education are not an effective way to ensure that the required BMPs are being implemented on a particular site. Pierce County's compliance strategy for this requirement is described in the following subsections.

2.4.1 Create List of Potential Pollutant-Generating Businesses

Pierce County must generate an inventory of potential pollutant-generating businesses based on the list of possible polluters contained in Appendix 8 of the Permit. County staff have begun work on this matter and generated a list of 1,750 businesses.

2.4.2 Send Notices to Potential Pollutant-Generating Businesses

The Permit requires Pierce County to inform each business in its inventory of potential pollutant-generating businesses about the types of BMPs that need to be implemented on the site to prevent the business from causing illicit discharges and violations of water quality standards. The County does not currently provide this information to those businesses. Therefore, all the costs associated with this requirement will be new costs, and the County is assuming that this is a one time startup cost. The following table shows estimated costs and staffing to send notices.

	New Cost	New FTEs
Sending Notices	\$8,800	Negligible

2.4.3 Inspect 20 Percent of the Potential Pollutant-Generating Businesses

The Permit requires Pierce County to inspect 20 percent of the potential pollutant-generating businesses each year to ensure that they have implemented the BMPs about which the County has informed them. The County does not currently perform these types of source control inspections. As discussed in Section 2.6.1, many of the sites that are on the list of potential pollutant-generating businesses also have flow control facilities or treatment systems that need to be inspected for proper maintenance as part of another Permit requirement. To be efficient, County staff plan to conduct both the source control inspections and the maintenance inspections at the same time. County staff currently do not perform these business inspections, so all costs associated with the source control inspection requirement will be new. The following table shows estimated costs and staffing to perform these source control inspections.

	New Cost	New FTEs
Source Control Inspections	\$98,000	1.0

2.4.4 Enforcement of Existing Development Requirements

The Permit requires Pierce County to implement a progressive enforcement program for existing sites that do not implement the required BMPs. The County does not

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currently perform these types of enforcement actions. The following table shows estimated costs and staffing for performing these new enforcement actions.

	New Cost	New FTEs
Existing Development BMP Enforcement	\$29,000	0.3

2.4.5 Incidental Tasks Associated with Existing Development

Training of Pierce County staff to perform inspections of the potentially pollutant-generating businesses each year is required by the Permit. As mentioned previously, SWM is budgeting for a portion of a full-time training coordinator's time under this compliance activity. This inspection program is new, so the training for it is also new. The following table shows estimated costs and staffing for training SWM staff.

	New Cost	New FTEs
SWM Training	\$41,500	0.3

2.5 Locate and Eliminate Illicit Discharges

The Permit requires Pierce County to detect and eliminate illicit connections and illicit discharges. Pierce County's strategy to comply with this requirement is described in the following subsections.

2.5.1 Ongoing Screening to Detect Illicit Discharges

The County currently performs some screening of outfalls for illicit discharges. The Permit requires Pierce County to perform field screening for at least one-half of the conveyance systems in urban and higher density basins to proactively detect illicit discharges. To estimate this effort, County staff determined that inspecting half of these outfalls for signs of illicit discharges in 2009 and 2010 would satisfy this Permit requirement. County staff also estimated that there would be an ongoing screening program that would continue in 2011, at a level about double their existing program. The following table shows estimated costs and staffing to perform these inspections.

	Cost		New FTEs
	New Costs	Existing Costs	
Illicit Discharge Detection Inspections – (average from 2009 to 2011)	\$206,100	\$141,600	2.7
Illicit Discharge Detection and Elimination Program Coordinator	\$102,500		1.0

2.5.2 Investigation and Elimination of Illicit Discharges and Enforcement

The Permit requires Pierce County to investigate potential illicit discharges. Once illicit discharges have been found, the County must ensure that the illicit discharges are eliminated. County staff estimated that 5 percent of the illicit discharge detection inspections will show signs of an illicit discharge. This assumption is not based on actual experience and may need to be revised later. County staff must look for the source of possible illicit discharges. Once the source is found, County staff must eliminate the illicit discharge if it is from a County-owned system, or require the private property owner to eliminate the illicit discharge if it is from a private system. SWM staff will enforce elimination of illicit discharges in most cases, but when SWM staff discover an illicit discharge originating from improper erosion and sediment controls on a construction site, they will refer the enforcement of eliminating that illicit discharge to PALS. The County does not currently perform this type of illicit discharge investigation, elimination, and enforcement, so these will be new costs. The following table shows estimated costs and staffing to perform this work.

	New Cost	New FTEs
Investigation, Elimination, and Enforcement of Illicit Discharges by SWM Staff	\$54,500	0.6
Elimination and Enforcement of Illicit Discharges by PALS Staff	\$224,200	2.5

2.5.3 Other Incidental Tasks

The Permit requires that Pierce County staff be trained to perform the illicit discharge inspections required by the permit. Besides training SWM staff how to perform these screening inspections, the Permit also requires training of all County field staff who, as part of their normal job responsibilities, might come in contact with or observe an illicit discharge or illicit connection. These County staff, such as Roads staff and building inspectors, must be trained to provide high-level inspections of erosion and sediment control that enables them to recognize, report, and respond to illicit discharges when they are in the field doing other work. As mentioned previously, the SWM training budget is for a portion of a full-time training coordinator’s time under this compliance activity. The following table shows estimated costs and staffing for training SWM, Roads, and other County staff.

	New Cost	New FTEs
SWM Training	\$47,700	0.3
Road Operations Training	\$7,600	NA
Other County Staff Training	\$13,800	NA

2.6 Ensure Proper Maintenance of Private and Public Facilities

The Permit requires the County to implement a program to achieve adequate long-term operation and maintenance of both private and County-owned stormwater facilities. The County must establish maintenance standards for these facilities that are as protective or more protective of how they function than the maintenance standards specified in the Department of Ecology Stormwater Management Manual for Western Washington. Pierce County’s compliance strategy for this requirement is described in the following subsections.

2.6.1 Inspect Private Facilities

The Permit requires the County to inspect all of the private flow control and stormwater treatment facilities at least once during the permit term to make sure they are being maintained according to adopted standards. The County currently inspects all of the private facilities each year, so there are no new costs associated with this Permit requirement. As discussed in Section 2.4.3, many of the sites that are on the list of potentially pollutant-generating businesses also have flow control facilities or treatment systems that need to be inspected for proper maintenance as described in this subsection. To be efficient, County staff plan to do both the business source control inspections and the maintenance inspections at the same time. The following table shows estimated costs and staffing for existing private facility maintenance inspections.

	Cost		New FTEs
	New Cost	Existing Cost	
Private Facility Maintenance Inspections		\$336,600	
Enforcement of Private Facility Maintenance	\$50,200		0.5

2.6.2 Inspect and Maintain County-Owned facilities

The Permit requires the County to inspect all of the County-owned facilities each year and implement appropriate maintenance actions that may be necessary to comply with adopted maintenance standards.

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Outside the Right-of-Way

County-owned facilities outside the right-of-way are inspected and maintained by SWM. SWM staff inspect about two-thirds of the County-owned facilities each year and perform maintenance on them under the current program. However, the degree to which the existing maintenance program is consistent with the Ecology maintenance standards is unknown. Inspecting the one-third of the facilities each year that do not currently get inspected will be a new cost, but County staff assume that no new expenditures would be necessary for performing additional maintenance as a result of the additional inspections. County staff will also be required to conduct spot checks of potentially damaged facilities after major storm events. The following table shows estimated costs and staffing to perform these inspections and maintenance.

	Cost		
	New Costs	Existing Costs	New FTEs
SWM Inspections of County-Owned Facilities	\$10,800	\$21,600	0.2
SWM Inspections of County-Owned Facilities after Storms	\$11,300		0.2
SWM Maintenance of County-Owned Facilities	\$0	\$1.28 Million	

Within the Right-of-Way

County-owned facilities within the right-of-way are inspected and maintained by the Road Operations Division. The County system within the right-of-way consists almost entirely of catch basins. The County is required to annually inspect catch basins and clean them if the inspection shows cleaning is required to comply with maintenance standards. The County currently inspects half of the existing catch basins and maintains about 15 percent of them. However, the degree to which the existing maintenance program is consistent with Ecology's maintenance standards is unknown. To achieve annual inspection and needed maintenance of catch basins, the County will need to inspect the other half of the catch basins that it does not currently inspect; according to County staff they will need to maintain another 20 percent more catch basins than they currently maintain. The following table shows estimated costs and staffing to perform these inspections and maintenance.

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	Cost		
	New Costs	Existing Costs	New FTEs
Roads Inspections of County-Owned Catch Basins	\$165,000	\$165,000	1.6
Roads Maintenance of County-Owned Catch Basins	\$42,000	\$210,000	0.3

2.6.3 Other Incidental Tasks

The Permit requires Pierce County staff be trained to perform maintenance of stormwater facilities in accordance with Ecology standards. Both SWM staff and Roads staff will need to be trained to perform this maintenance work. As mentioned previously, the SWM training budget is for a portion of a full-time training coordinator's time under this compliance activity. This is a new training program. The following table shows the estimated costs and staffing for training SWM and Roads staff.

	New Cost	New FTEs
SWM Training	\$58,000	0.3
Roads Training	\$27,500	NA
Other County Staff Training	\$13,800	NA

2.7 Public Involvement, Education, and Outreach

The Permit requires Pierce County to create opportunities for public involvement and participation and to implement a public education program to reduce or eliminate behaviors and practices that cause or contribute to adverse impacts of stormwater discharges on water bodies. The County will be required to achieve measured improvements in certain target audiences' understanding of how they contribute to adverse impacts of stormwater discharges on water bodies. These target audiences include the general public, businesses, homeowners/landscapers, and the development community. The County provides some education and outreach to the general public as part of its current program, but County staff believe that additional work will be required with this target audience to meet the measurable improvement requirement of the Permit. PALS also provides public education to the development community as part of its plan review and inspection programs. The following table shows estimated costs and staffing to perform public involvement, education, and outreach for the different target audiences.

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	Cost		New FTEs
	New Costs	Existing Costs	
Implement Outreach Program to Public & Institutions	\$132,200	\$278,000	0.9
Implement Outreach programs to Businesses	\$111,100		0.6
Implement Outreach Programs to Landowners and Landscapers	\$206,700		0.6
Program Effectiveness	\$4,400		0.1

In addition, the new costs for public education include \$150,000 for a professional services contract for outreach effectiveness and social marketing analysis that is on top of the labor costs shown in the preceding table.

2.8 Compliance with Total Maximum Daily Load Requirements

The state has set limits (Total Maximum Daily Load or TMDL) on the amount of certain pollutants that South Prairie Creek receives from all sources. These pollutants include bacteria and temperature. As part of the Permit, Pierce County is required to implement actions necessary to achieve pollutant reductions in stormwater discharges called for in the TMDL limits. The County has already taken actions to achieve pollutant reductions in stormwater discharges to South Prairie Creek. However, County staff have determined that they also need to increase review requirements and inspection frequency for permitted land conversions and land use actions in South Prairie Creek and do some bacterial source tracing to achieve pollutant reductions. The following table shows estimated costs and staffing for PALS to implement these additional review requirements and inspections.

	New Cost	New FTEs
Increase Review Requirements and Inspection Frequency	\$10,900	negligible
Investigate Bacterial Sources	\$16,700	NA

2.9 Monitoring

The Permit requires that Pierce County implement a long-term monitoring program that:

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1. Characterizes stormwater runoff quantity and quality at a limited number of locations.
2. Monitors effectiveness of at least two stormwater management practices.
3. Monitors the effectiveness and maintenance and operations of at least two treatment best management practices.

The following table shows the cost and staffing for SWM to perform these monitoring tasks. Most of this work is contracted, so there will not be a significant increase in FTEs as a result of this work

	New Cost	New FTEs
Program Development	\$140,000	New FTEs for all monitoring add up to 0.2 FTE
Stormwater Characterization Monitoring	\$139,400	
Surface Water Management Program Effectiveness Monitoring	\$70,400	
BMP Effectiveness Monitoring	\$260,400	
Monitoring Reporting	\$33,600	

In addition, new costs for monitoring include \$135,000 in startup costs on top of the labor costs shown in the preceding table.

2.10 Permit Management

This section discusses SWM work required by the Permit that is related to documentation, reporting, internal and inter-jurisdictional coordination, training of staff, and development of standards and ordinances. Pierce County's compliance strategy for these requirements is summarized in the following subsections. A more detailed breakdown of these costs and staffing is contained in the County staff's Updated Cost of Compliance in Appendix B.

2.10.1 Documentation, Tracking, and Reporting

Under the Permit, Pierce County must comply with a number of reporting requirements, such as an annual report submitted to Ecology that documents the implementation status of the County's Stormwater Management Plan. The following table shows the cost and staffing for SWM to perform the documentation, tracking, and reporting tasks. For additional detail, see Appendix B.

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	Cost		New FTEs
	New Costs	Existing Costs	
Submit annual report	\$11,520	\$11,520	0.1
Documentation, Tracking and Reporting	\$126,000	\$0	1.8

2.10.2 Training Program Development

The cost and staffing for SWM to develop a training program includes a full-time equivalent. That cost is embedded in the estimates for the programs listed above.

2.10.3 Coordination

The following table shows the cost and staffing for SWM for coordination. This is for a position to coordinate Permit activities in addition to the full-time training coordinator and illicit discharge coordinator. For additional detail, see Appendix B.

	New Cost	New FTEs
Coordination	\$77,100	1.0

2.10.4 Development and Implementation of Ordinances, Policies, and Manuals

The following table shows the cost and staffing for SWM to develop and implement ordinances, policies, and manuals. The first item includes a full-time employee to develop and implement new ordinances and policies. The items in the last three rows are lump sum startup costs, so no FTE estimates are needed.

	New Cost	New FTEs
Development and Implementation of Ordinances and Policies.	\$79,500	1.1
Establish and Implement Policies and Procedures to Reduce Pollutants from Lands Owned or Maintained by Permittee (e.g., parks, open space, ROWs, maintenance yards, facilities, trash)	\$400,000	
Develop and Implement a SWPPP for All Heavy Equipment Maintenance or Storage Yards, Material Storage Facilities Owned/Operated by Permittee	\$400,000	
Maintenance Manual & Asset Management System Implementation	\$433,000	

Section 3

Alternative Compliance Strategy

3.1 Introduction

The alternative compliance strategy is based on R. W. Beck's understanding of the Permit, conversations we have had with County staff, and our knowledge of compliance strategies used by other NPDES Phase I permittees in Washington State. The Alternative Cost of Compliance estimate is based on a review of the County staff's Updated Cost of Compliance (described in Section 2) and makes suggestions on different ways that Pierce County may want to look at various programs required by the Permit.

County staff were able to develop a more accurate estimate of the Permit compliance costs when they prepared their updated estimate in August-September 2008. The accuracy of that work may depend on the level of effort put into the various work plans that formed the basis for the County staff's Updated Cost of Compliance. The work plans and related cost estimates are still evolving and will benefit from implementation experience.

The County staff's Updated Cost of Compliance and the R. W. Beck Alternative Cost of Compliance differ in terms of total costs and allocation of costs amongst the various Permit activities.

As shown in Table 3-1 below, the total estimated cost of new annual Permit compliance activities without overhead in the Alternative Cost of Compliance estimate is \$4.5 million in 2009, \$3.4 million in 2010, and \$3.3 million in 2011. These figures can be compared to the new annual cost estimate without overhead in the County staff's Updated Cost of Compliance (Table 2-1) of \$5.8 million in 2009, \$3.8 million in 2010, and \$3.7 million in 2011.

As shown in Table 3-1, the total estimate for new staffing for new annual Permit compliance activities in the Alternative Cost of Compliance estimate is 24.5 FTEs in 2009 and 1.4 more in 2010. The new annual staffing in the County staff's Updated Cost of Compliance (Table 2-2) is 26.7 FTEs in 2009 and 1.9 more in 2010.

With the exception of 2009, the estimated costs for PALS to perform plan reviews and inspections contained in the Alternative Cost of Compliance are based on the average number of development projects processed over the past four years. For 2009, the estimated number of development projects that PALS will process is reduced from the four-year average to reflect the downturn in the housing market that occurred in 2008 and is expected to continue into 2009.

Because of inadequate data, the Alternative Cost of Compliance includes no supervisory and office support staff. The existing supervisory and office support

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capacity is unknown, and thus it is not possible to accurately determine how much additional staff will be needed for those functions.

This Alternative Cost of Compliance is shown in more detail in the spreadsheet included in Appendix C. This Alternative Cost of Compliance did not evaluate outsourcing any of this work beyond what was assumed in the County staff's Updated Cost of Compliance. It assumes that County staff would perform nearly all of this work to comply with the Permit.

In 2010 and 2011, the difference in total costs between the Alternative Cost of Compliance and the County staff's Updated Cost of Compliance is not as great as the difference between the two estimates for 2009. This is because of differences in startup costs that will be explained later in this section.

The tables on the following pages show new FTEs and costs (Table 3-1), and new FTEs by type (Table 3-2) in the Alternative Cost of Compliance.

**Table 3-1
New Costs and Employees - Alternative Cost of Compliance**

Department	2009		2010		2011	
	Costs	New FTEs	Costs	New FTEs	Costs	New FTEs
Surface Water Management						
1. Source Control Program	\$352,670	3.3	\$272,370		\$272,370	
2. IDDE Program	\$469,020	5.6	\$441,520		\$283,124	-1.3
3. Operations & Maintenance	\$133,800	1.0	\$106,300		\$106,300	
4. Public Education & Outreach	\$604,390	2.1	\$454,390		\$454,390	
5. Monitoring	\$778,720	0.2	\$643,720		\$643,720	
6. NPDES Permit Management	\$162,656	2.0	\$162,656		\$162,656	
7. Other Tasks	\$75,717	0.3	\$75,717		\$75,717	
8. New Employee Setup	\$476,250		\$0		\$0	
Subtotal	\$3,053,223		\$2,156,673		\$1,998,277	
Overhead	\$1,562,912		\$1,562,912		\$1,443,395	
Totals	\$4,616,135	14.4	\$3,719,585	0.0	\$3,441,672	-1.3
Planning and Land Services						
1. Reviews	\$178,311	1.8	\$383,683	1.1	\$383,683	
2. Inspections	\$249,810	2.1	\$204,348	0.3	\$243,929	0.5
3. Enforcement	\$382,085	4.3	\$357,460		\$357,460	
4. Other Tasks	\$10,944		\$10,944		\$10,944	
5. New Employee Setup	\$254,588		\$19,600		\$21,363	
Subtotal	\$1,075,738		\$976,035		\$1,017,379	
Overhead	\$726,294		\$855,005		\$900,973	
Total	\$1,802,033	8.2	\$1,831,040	1.4	\$1,918,352	0.5
Roads						
1. Inspections	\$165,000	1.6	\$165,000		\$165,000	
2. Operations & Maintenance	\$42,000	0.3	\$42,000		\$42,000	
3. Training	\$76,340		\$76,340		\$76,340	
4. New Employee Setup	\$85,450		\$0		\$0	
Subtotal	\$368,790		\$283,340		\$283,340	
Overhead	\$183,872		\$183,872		\$183,872	
Total	\$552,662	1.9	\$467,212	0.0	\$467,212	0.0
Other Departments						
1. Training	\$27,500		\$27,500		\$27,500	
Totals	\$27,500	0.0	\$27,500	0.0	\$27,500	0.0
All Departments New Employees (net)		24.5		1.4		-0.8
All Departments Subtotal (no overhead)	\$4,525,251		\$3,443,548		\$3,326,496	
All Departments Overhead	\$2,473,078		\$2,601,789		\$2,528,240	
All Departments with Overhead	\$6,998,329		\$6,045,337		\$5,854,736	

All Departments 2009 to 2011 Total Costs **\$18,898,402**

Notes:

1. All costs are in 2008 dollars
2. County labor overhead costs are \$52/hour per productive hour (1768 productive hours per year)

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**Table 3-2
New FTEs - Alternative Cost of Compliance**

Hire Year	Job Class	Count	Department	Description of Work
2009				
	ET2	0.3	SWM	GIS Mapping
	ET3	2.8	SWM	Source Control Program--Inspection Field Personnel
	OA2	0.5	SWM	Source Control Program--Record-keeping
	ET3	1.4	SWM	IDDE Program--Enforcement Field Personnel
	ET2	4.2	SWM	IDDE Program (2009 & 2010 only)--Inspection Field Personnel
	ET3	0.5	SWM	Operations & Maintenance--Private Facility Enforcement
	ET2	0.4	SWM	Operations & Maintenance--Public Facility Inspections
	OA2	0.1	SWM	Operations & Maintenance--Record-keeping
	P2	1.1	SWM	Public Education & Outreach--Program Mgmt.
	ET2	1.0	SWM	Public Education & Outreach--Implementation
	P1	0.2	SWM	NPDES Monitoring Program
	P2	1.0	SWM	NPDES Permit Mgmt.--Code/Policy Development, Training Coord., & Reporting
	RS	1.0	SWM	NPDES Permit Mgmt.--Record-Keeping & Reporting
SWM Subtotal		14.4		
	ET2	1.6	ROADS	Operations & Maintenance--In Right-of-Way Inspections
	MT	0.3	ROADS	Operations & Maintenance--In Right-of-Way Maintenance
Roads Subtotal		1.9		
	CE2	0.9	PALS	Area Review Work Unit
	CE1	0.9	PALS	Single Family Residential Review Work Unit
	ET3	0.5	PALS	Development Engr.--Inspections (SFR Sites during Construction)
	ET3	0.7	PALS	Development Engr.--Inspections (General Site Dev. during Construction)
	ET3	0.4	PALS	Development Engr.--Inspections (Residential Sub-Division Monitoring)
	OA2	0.5	PALS	Development Engr.--Inspections
	CE2	1.7	PALS	Development Engr.--Enforcement
	ET3	1.8	PALS	Development Engr.--Enforcement
	OA2	0.8	PALS	Development Engr.--Enforcement
PALS Subtotal		8.2		
County 2009 Total		24.5		
2010				
	CE2	0.4	PALS	Area Review Work Unit
	CE1	0.7	PALS	Single Family Residential Review Work Unit
	ET3	0.1	PALS	Development Engr.--Inspections (SFR Sites during Construction)
	ET3	0.1	PALS	Development Engr.--Inspections (Residential Sub-Division Monitoring)
	OA2	0.1	PALS	Development Engr.--Inspections
PALS Subtotal		1.4		
County 2010 Total		1.4		
2011				
	ET2	-1.3	SWM	Reduction in IDDE Program (2011 & on)--Inspection Field Personnel
SWM Subtotal		-1.3		
	ET3	0.4	PALS	Development Engr.--Inspections (Commercial & Off-Site Monitoring)
	OA2	0.1	PALS	Development Engr.--Inspections (Commercial & Off-Site Monitoring)
PALS Subtotal		0.5		
County 2011 Total		-0.8		

The following subsections describe R. W. Beck's Alternative Cost of Compliance in terms of how it differs from the County staff's Updated Cost of Compliance.

3.2 New Development Reviews and Inspections

The resources that Planning and Land Services (PALS) estimates will be needed to perform reviews and inspections are evaluated in the following subsections.

3.2.1 Review Site Plans

As mentioned in Section 2, PALS currently reviews site plans for larger developments, reviews plats, and reviews site plans for single-family residences that have over 5,000 square feet of new impervious area. To comply with the Permit, PALS will need to perform new work to review site plans for single-family residences with between 2,000 and 5,000 square feet of new impervious area.

The estimates developed by PALS for review of site plans, described in Section 2, seem reasonable.

3.2.2 Inspect Prior to Clearing and Construction All Development Sites with High Potential for Sedimentation

The Permit requires that Pierce County inspect construction sites prior to clearing that have a high potential for sedimentation. The County does not currently perform these types of inspections, so the estimate developed by PALS for preconstruction inspection of construction sites was based on the assumption that one-third of all residential sites have a high potential for sedimentation. We think this is a reasonable assumption at this point, but it is not based on actual experience. This assumption should be revisited as PALS gains more experience with doing these preconstruction inspections.

3.2.3 Inspect All Permitted Sites Involving Land-Disturbing Activity during Construction

As mentioned in Section 2, PALS currently inspects permitted sites during construction. The Permit requires regular inspections during construction to make sure that temporary erosion and sediment controls are installed and maintained. Although the Permit does not specify an inspection frequency during construction, County staff believe that compliance will require monthly inspections.

In our opinion, monthly inspection of permitted construction sites for installation and maintenance of temporary erosion and sediment controls seems to be a reasonable interpretation of the Permit requirements. But Pierce County staff have also assumed that all of these monthly inspection will be performed by PALS staff and this will increase the number of construction inspections that PALS will need to perform.

When there is a building involved, other Phase I permittees in Washington State make use of other construction site inspectors (such as building inspectors, plumbing inspectors, etc.) to perform the additional inspections required by the Permit. PALS has expressed concern that other types of building inspectors would not be qualified, nor would it be a priority for them to inspect sites for proper installation and maintenance of temporary erosion and sediment controls.

In our opinion, when a building is being constructed, it is reasonable for the County to train other inspectors to recognize when erosion and sediment controls are not installed or maintained properly. If these other inspectors can notify PALS when they

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observe problems, then the PALS inspectors can come to the site and work with the contractor to make sure the erosion and sediment controls are installed and maintained properly. Leveraging these other inspectors prevents PALS staff from having to inspect every construction site once per month. For development sites where only the streets, stormwater infrastructure and other utilities are being constructed, PALS inspectors will need to perform the monthly inspections since these other types of inspectors will not be present.

Cost savings from having other inspectors perform basic inspections during construction but still allowing for some amount of new inspections for PALS staff when they are called have been reflected in our Alternative Compliance Costs. Our proposed costs and staffing compared to the PALS estimate are shown in the following table.

	Cost		FTEs	
	Alternative Costs	County Updated Costs	Alternative FTEs	County Updated FTEs
General Site Construction Inspections	71,100	\$100,800	1.0	1.3
Single Family Construction Inspections	\$46,400	\$93,000	0.6	1.2

3.2.4 Inspect All Sites upon Completion of Construction

As mentioned in Section 2, the Permit requires post-construction inspections to make sure that permanent stormwater facilities are installed per the approved plans. The Permit also states that private stormwater facilities need to be inspected for proper maintenance every six months during the period of heaviest construction to enforce compliance with maintenance standards as needed.

PALS currently performs final inspections for permitted sites upon completion of construction, but County staff do not inspect these systems for proper maintenance during the 42-month maintenance bonding period. To comply with the Permit, additional facility inspections for maintenance during the 42-month bonding period were added to the Updated Cost of Compliance described in Section 2.

Considerable sediment may be contributed by new home construction to the permanent stormwater facilities following final inspection, so performing subsequent maintenance inspections is not only required by the Permit, but it also protects the County or other parties responsible for maintenance from inheriting those cleanup costs. Thus, in our opinion, the estimates developed by PALS for post-construction inspections seem reasonable.

3.2.5 Enforcement of New Development Requirements

As mentioned in Section 2, the Permit requires Pierce County to take enforcement actions for nonconforming sites. County staff perform enforcement actions under their current program, but with current staffing that can take as long as three months. The Permit does not provide a time frame for how quickly enforcement actions need to be taken, so this is more a matter of County policy. In our Alternative Cost of Compliance estimate, we have assumed that County policy is to perform these enforcement actions more quickly and have included the County estimated costs for more timely action by PALS.

3.2.6 Incidental Tasks Associated with New Development

As mentioned in Section 2, the Permit requires training of Pierce County staff to perform site plan reviews. We agree with the County staff's updated estimate that training of both PALS staff and SWM staff will be needed to support the adoption of the new Pierce County Surface Water Design Manual.

3.3 Water Quality Improvement Capital Projects

As mentioned in Section 2, the Permit has a requirement for Pierce County to implement structural stormwater control projects that reduce the impacts of stormwater discharges to waters of the state. The Permit does not specify the number or value of projects that the County needs to implement. The Permit requires that the expected benefit of a proposed capital improvement project is documented in order for the project to be considered a part of the structural stormwater control program. The County can take credit for those projects that provide a documented water quality or flow control benefit. These projects would satisfy this Permit requirement.

3.4 Reduce Pollutants from Existing Development

As mentioned in Section 2, the Permit requires Pierce County to identify existing development sites which are potentially pollutant-generating and to implement an inspection program. The intent of this inspection program is to make sure these sites are using best management practices (BMPs) to reduce the potential for illicit discharges and violations of water quality standards. The Permit also requires the County to have an enforcement program for those instances where the inspections and education are not an effective way to ensure that the required BMPs are being implemented on a particular site.

We reviewed Pierce County's compliance strategy for this requirement and have some concerns about whether this program is adequately resourced. Although we have not been able to review the numbers in detail, other NPDES Phase I permittees in Washington State of comparable population have developed lists of potential pollutant-generating businesses that are almost double the size of the County's list.

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We also reviewed the estimates and proposed strategy developed by County staff for sending notices to potentially pollutant-generating businesses. Again, in our experience with other NPDES Phase I permittees in Washington State, those permittees expend more effort to inform and educate these businesses about implementing BMPs to reduce the amount of pollutants leaving their sites.

Based on our experience with other NPDES Phase I permittees in Washington State of comparable size, we believe that achieving Permit compliance for this requirement will take more resources than those proposed in the County staff's Updated Cost of Compliance. Ultimately, the costs developed for the source control program for existing development must be reviewed and confirmed by County staff. The reason the training costs decreased is because the County staff's updated estimate budgeted a 1 FTE training coordinator whose time was distributed amongst all the compliance activities. In our opinion, given the County's size, we do not think a full-time trainer is needed, and we believe that coordination of training activities could be performed by the overall program coordinator.

The following table shows our proposed costs and staffing to reduce pollutants from existing businesses compared to SWM's costs for this work. Our proposed costs are a rough estimate based on what we believe the size of this compliance activity should be relative to the size of the County's overall program.

	Cost		FTEs	
	Alternative Costs	County Updated Costs	Alternative FTEs	County Updated FTEs
Sending Notices	\$52,800	\$8,800	Needs to be ongoing work	Shows as startup cost
Source Control Inspections	\$196,000	\$98,000	2.0	1.0
Existing Development BMP Enforcement	\$58,500	\$29,000	0.6	0.3
SWM Training	\$17,500	\$41,500	NA	0.3
Roads Training	\$8,300	\$8,300		

3.5 Locate and Eliminate Illicit Discharges

As mentioned in Section 2, the Permit requires Pierce County to detect and eliminate illicit connections and illicit discharges. The County currently performs some screening of outfalls for illicit discharges. However, the Permit requires Pierce County to perform field screening for at least one-half of the conveyance systems in urban and higher density basins and in one rural, lower density basin to proactively detect and eliminate illicit discharges.

To estimate this effort, County staff determined that inspecting half of their total number of outfalls and conveyances for signs of illicit discharges would satisfy this Permit requirement. Other NPDES Phase I permittees in Washington State prioritize their outfalls for screening based on criteria such as the area and types of land use tributary to the outfall. These other jurisdictions then use this information to plan their screening program for outfalls that represent 50 percent of the conveyance system area, as opposed to 50 percent of the number of outfalls.

Identifying illicit discharges and performing proactive investigations on this scale is relatively new for Pierce County. SWM staff estimated that 5 percent of the illicit discharge detection inspections will show signs of an illicit discharge that must then be investigated. But this assumption is not based on a large amount of actual experience. This assumption has resulted in a relatively low estimate for performing these proactive investigations relative to other NPDES Phase I permittees in Washington State. We believe that achieving permit compliance for locating and eliminating illicit discharges will require more SWM resources than those proposed in the County staff's Updated Cost of Compliance.

The hours for PALS to eliminate illicit discharges reflect the estimated time for PALS staff to respond to the erosion and sediment control problems on construction sites that are reported to them. In the Alternative Cost of Compliance, we reduced the time for PALS to respond to notifications from SWM inspectors or others that new development projects are causing illicit discharges. The time for PALS to respond to these notifications should be less than the time it takes SWM or others to find these nonconforming sites. Also, as described in the previous section, the training costs in the Alternative Cost of Compliance decreased because we eliminated the 1 FTE training coordinator whose time was distributed amongst all the compliance activities in the County staff's updated estimate.

The following table shows our proposed costs and staffing to reduce pollutants from illicit discharges compared to SWM's costs for this work. Our proposed costs are a rough estimate based on what we believe the size of this compliance activity should be relative to the size of the County's overall program.

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	Cost		FTEs	
	Alternative Costs	County Updated Costs	Alternative FTEs	County Updated FTEs
Illicit Discharge Detection Inspections – (average from 2009 to 2011)	\$299,300	\$206,100	4.2	2.7
Investigation, Elimination, and Enforcement of Illicit Discharges by SWM Staff	\$118,600	\$54,500	1.4	0.6
Elimination and Enforcement by PALS Staff	\$56,400	\$224,200	0.7	2.5
SWM Training	\$23,600	\$47,700	NA	0.3
Road Operations Training	\$7,600	\$7,600	NA	NA
Other County Staff Training	13,800	13,800	NA	NA

3.6 Ensure Proper Maintenance of Private and Public Facilities

As mentioned in Section 2, the Permit requires the County to implement a program to achieve adequate long-term operation and maintenance of both private and County-owned stormwater facilities. To accomplish this, the Permit specifies inspection frequencies for facilities with a requirement that the facilities be maintained if they exceed certain maintenance standards. The County must establish maintenance standards for these facilities that are as protective or more protective of their function than those specified in Ecology's Stormwater Management Manual for Western Washington. The County staff's updated estimates to perform the inspection of private and public facilities seem reasonable. We have not proposed anything different in our alternative.

The main issue with the County staff's updated estimate for this compliance activity is that the County has not yet established new maintenance standards equivalent to those required by the Permit. SWM staff perform maintenance on County-owned facilities outside the right-of-way when they believe it is necessary. But the degree to which this maintenance program is consistent with the Ecology maintenance standards is unknown. The County Road Operations Division performs maintenance on County-owned facilities within the right-of-way when they believe it is necessary, but again, the degree to which this maintenance program is consistent with the Ecology maintenance standards is unknown. For these reasons we believe that the estimates for any new work that may be necessary to maintain these facilities are unreliable.

We have not proposed different costs in our Alternative Cost of Compliance for maintenance of County-owned facilities, even though we believe the current estimate is unreliable. First, the County needs to prepare a thorough and rigorous estimate on what it will cost to perform this maintenance based on the standards required by the Permit.

3.7 Public Involvement, Education, and Outreach

As mentioned in Section 2, the Permit requires Pierce County to create opportunities for public involvement and participation and to implement a public education program to reduce or eliminate behaviors and practices that cause or contribute to adverse impacts of stormwater discharges on water bodies.

The Permit requires Pierce County to achieve measured improvements in certain target audiences' understanding of how they contribute to adverse impacts of stormwater discharges on water bodies. Achieving this will require that the County implement a public education program that is based on social marketing and behavior change. Our main concern with the County staff's updated costs is that County staff have limited experience with the kinds of public education programs that are based on social marketing and behavior change.

Other NPDES Phase I jurisdictions in Washington State have brought expertise on social marketing and behavior change into their surface water programs in order to build public education programs that can achieve measured improvement in the public's understanding of these issues. Because Pierce County has limited expertise related to these types of programs, it is difficult for the existing staff to estimate costs for a program whose components have not been developed yet.

We have not proposed anything different in our Alternative Cost of Compliance for public education, even though the current estimates are somewhat unreliable. A more reliable estimate would need to be prepared by County staff after consulting carefully with someone who has expertise in implementing a public education program based on social marketing and behavior change.

3.8 Compliance with Total Maximum Daily Load Requirements

As mentioned in Section 2, the state has set Total Maximum Daily Load (TMDL) limits on the amount of certain pollutants that South Prairie Creek receives from all sources. These pollutants include bacteria and temperature. As part of the Permit, Pierce County is required to implement actions necessary to achieve pollutant reductions in stormwater discharges called for in the TMDL limits.

Based on our understanding of the County's actions to achieve pollutant reductions and their costs, we have not proposed anything different in our Alternative Cost of Compliance.

3.9 Monitoring

As mentioned in Section 2, the Permit requires that Pierce County implement a long-term monitoring program that:

- Characterizes stormwater runoff quantity and quality at a limited number of locations.
- Monitors the effectiveness of at least two stormwater management practices.
- Monitors the effectiveness and maintenance and operations of at least two treatment best management practices.

Pierce County SWM staff, together with a consultant, have expended considerable effort to develop a monitoring plan and program that will be in compliance with the Permit. The work already performed by the County to determine the costs for this monitoring plan is more thorough than what we would be able to provide as part of this Workload Analysis. Based on our limited review of the monitoring plan, we believe the costs developed as part of that effort are reasonable. We have not proposed anything different in our Alternative Cost of Compliance.

3.10 Permit Management

As mentioned in Section 2, Pierce County must comply with Permit requirements related to documentation, reporting, internal and inter-jurisdictional coordination, training of staff, and development of standards and ordinances. To simplify budgeting for these types of Permit management activities, these have all been gathered into one place in this document so that they can be viewed together and an overall assessment of the level of effort for managing this permit can be made.

County staff have estimated that it will take 5 FTEs to accomplish these Permit-related activities. This includes a full-time person to develop and implement training programs and a full-time permit coordinator. It also includes over \$1.5 million in startup costs to do things listed in the permit such as:

1. Establish and implement policies and procedures to reduce pollutants from lands owned or maintained by permittee (e.g., parks, opens space, rights-of-way, maintenance yards, facilities, trash).
2. Develop and implement a Stormwater Pollution Prevention Plan for all heavy equipment maintenance or storage yards, material storage facilities owned/operated by permittee.
3. Maintenance Manual and Asset Management System Implementation.

Our comments on these three items are as follows. First, SWM staff propose to produce a best management practices manual for other County departments. The Permit requires the County to implement policies and procedures to reduce pollutants from land it owns, but the Permit does not specifically require production of a manual. The various County departments may already be implementing programs to

accomplish what is needed. A survey of these other department practices should be made before budgeting for a manual.

Second, SWM staff propose to produce Stormwater Pollution Prevention Plans for certain County-owned facilities. These facilities may already have SWPPPs prepared that would reduce or eliminate the need to prepare new plans. The need for new plans should be ascertained before budgeting for new plans.

Third, SWM proposes to produce a Maintenance Manual and Asset Management System. While SWM might like to have such a system, it is not specifically required by the NPDES permit.

In our Alternative Cost of Compliance, we have estimated what we think is a reasonable level of effort to manage the Permit based on what other NPDES Phase I jurisdictions are doing in Washington State and the overall size of Pierce County's program. The following table shows our proposed costs for Permit management, coordination, and reporting compared to SWM's updated costs for this work.

	Cost		FTEs	
	Alternative Costs	County Updated Costs	Alternative FTEs	County Updated FTEs
Documentation, Tracking and Reporting	\$65,400	\$126,000	1.0	1.8
Coordination	\$48,600	\$77,100	0.5	1.0
Development and Implementation of Ordinances and Policies.	\$48,600	\$79,500	0.5	1.0
Establish and implement policies and procedures to reduce pollutants from lands owned or maintained by permittee (e.g., parks, opens space, ROWs, maintenance yards, facilities, trash)	\$0	\$400,000	NA	NA
Develop and implement a SWPPP for all heavy equipment maintenance or storage yards, material storage facilities owned/operated by permittee	\$0	\$400,000	NA	NA
Maintenance Manual & Asset Management System Implementation	\$0	\$433,000	NA	NA

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Conclusions and Recommendations

4.1 Conclusions

The major conclusions derived from R. W. Beck's workload assessment of Pierce County's NPDES Stormwater Permit compliance are as follows.

1. The 2007 Cost of Compliance was an initial assessment that was completed quickly by Surface Water Management. While SWM was awaiting the outcome of the negotiations with Ecology and direction from the County Council and Executive on funding related to the new permit requirements, no effort was devoted to re-analyzing or validating the assumptions made in the 2007 Cost of Compliance. We have not spent time to determine how communications amongst these groups affected SWM's decision not to continue to refine and update their 2007 estimate.
2. The funding requests made in 2007 and early 2008 were based on an "adaptive management" approach. This amounted to a request for partial staffing in 2007 and 2008 for 20 of the 48 estimated total FTEs thought to be needed, and then using program experience to determine the actual need in later years. In our opinion, the "adaptive management" approach did not provide a strong basis for a budget request. What was needed was a more rigorous and thorough estimate of the cost of compliance.
3. In mid-2008, after R. W. Beck was engaged to conduct the workload analysis, it was agreed that the best way to proceed would be for R. W. Beck to compile an Updated Cost of Compliance based on more detailed work plans prepared by County staff. R. W. Beck would then prepare an alternative compliance strategy that could be compared to the County staff's Updated Cost of Compliance.
4. The County staff's Updated Cost of Compliance estimate for the cost of new Permit compliance activities is \$5.8 million in 2009, \$3.8 million in 2010, and \$3.7 million in 2011, which can be compared with \$7.4 million per year in the County's 2007 Cost of Compliance. Neither of these estimates includes overhead. The County's Updated Cost of Compliance includes 26.7 new FTEs in 2009 and 1.9 more FTEs in 2010, compared with 48 new FTEs in the County's 2007 Cost of Compliance. The Updated Cost of Compliance does not include supervisory and office support staff that may be needed.
5. The Alternative Cost of Compliance estimate for the total annual cost of new Permit compliance activities without overhead is \$4.5 million in 2009, \$3.4 million in 2010, and \$3.3 million in subsequent years. This is comparable to the County staff's Updated Cost of Compliance for new annual permit compliance without overhead of \$5.8 million in 2009, \$3.8 million in 2010, and \$3.7 million in

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subsequent years. The Alternative Cost of Compliance staffing estimate for new annual Permit compliance activities is 24.5 new FTEs in 2009 and 1.4 more in 2010, compared to 26.7 new FTEs in 2009 and 1.9 more FTEs in 2010 in the County staff's Updated Cost of Compliance.

6. In 2010 and 2011, the difference in total costs between the Alternative Cost of Compliance and the County staff's Updated Cost of Compliance is not as great as the difference between the two estimates for 2009.
7. R. W. Beck's Alternative Cost of Compliance and the County staff's Updated Cost of Compliance differ significantly in terms of how costs are allocated amongst Permit compliance activities. The alternative indicates more money is needed for compliance activities, such as inspections of potential pollutant-generating businesses and detection of illicit discharges, and less money is needed for Permit management activities.
8. Many of the Permit compliance activities are relatively new for Pierce County, which makes it difficult to project what the actual costs will be. This is especially true for the new work to be performed by the Surface Water Management Division (SWM). New work for Planning and Land Services (PALS) and the Road Operations Division (Roads) consists primarily of added levels of effort for current activities that can be used as a basis for cost estimating. For this reason, there is a greater risk that the actual cost of the new work that needs to be performed by SWM will be different from their estimates. The County's NPDES compliance program is still evolving, and it will take several years of implementation experience to know more precisely what it will cost.
9. Based on the County staff's Updated Cost of Compliance, the estimated new FTEs are approximately 14 for SWM, 13 for PALS (by 2011), and 2 for Roads. R. W. Beck's Alternative Cost of Compliance has similar estimates for SWM and Roads staffing but only 10 new FTEs are estimated for PALS (by 2011). In both estimates, the FTE count for SWM drops by 1 FTE in 2011 due to the decreased workload expected for the IDDE program.

4.2 Recommendations

R. W. Beck has four major recommendations derived from our workload assessment of Pierce County's NPDES Stormwater Permit compliance.

Recommendation 1

The County should use the reporting required by the Permit as an adaptive management tool to continuously update and refine Permit compliance costs. This information could be used to inform the budget process each year by comparing previous assumptions and estimates to actual experience.

Recommendation 2

Some of the resources allocated in the County staff's Updated Cost of Compliance for Permit management should be used instead for doing field work, such as inspections, that is required by the Permit.

Recommendation 3

The following list of miscellaneous observations should be reviewed and modifications made to the Updated Cost of Compliance if appropriate.

- a. The County should evaluate whether existing construction site inspectors, as opposed to new PALS staff, can perform basic compliance inspections for installation and maintenance of temporary erosion and sediment controls.
- b. The County's reported expenditures for structural stormwater controls should only include capital improvement projects that prevent or reduce the impacts of stormwater discharges to waters of the state. Information demonstrating each project's benefits in terms of water quality or flow control is a required part of the County's Stormwater Management Program documentation.
- c. The County should review its facility maintenance program for consistency with the published Ecology maintenance standards required by the Permit and then update the maintenance costs accordingly. The estimates for performing new facility maintenance work required by the Permit may be unreliable because it appears that they were not based on these standards.
- d. The County should update the estimate for the public involvement requirements in the Permit based on additional consultation with an expert in public education based on social marketing and behavior change. Achieving measured improvement in the public's understanding of stormwater quality issues is required by the Permit. Pierce County staff appears to have limited experience with public education programs based on social marketing and behavior change, which experts deem necessary to achieve measured improvement in the public's understanding of these types of environmental issues.

Recommendation 4

Pierce County Council should examine this report in detail and take action to provide new funding in the 2009 budget for NPDES compliance work. Tables 2-1 and 3-1 summarize the two current estimates of the funding needed to comply with the Permit. R. W. Beck recommends that the Council fund the Alternative Cost of Compliance (Table 3-1).

Appendix A

Agency Comments

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- A.2. Comments by Surface Water Management
- A.3. R. W. Beck's Response to Agency Comments

A-1. Comments by Planning and Land Services

**PIERCE COUNTY
PLANNING AND LAND SERVICES**

MEMORANDUM

Date: October 6, 2008

To: Matt Temmel, Performance Audit Coordinator
From: Mitchell Brells, Development Engineering Manager

MAB

Subj: PALS Comments / Draft Workload Analysis of NPDES Stormwater Discharge Permit Requirements / Report Prepared by R. W. Beck on September 19, 2008

Thank you for the opportunity to review and comment on the draft report. While we do have some comments and corrections/suggestions, overall we are in agreement with the recommendations provided by the consultant with regard to alternative compliance methods, FTE levels, set-up, and training costs.

Beck Recommendations:

Recommendation 1:

The County should use the reporting required by the Permit as an adaptive management tool to continuously update and refine the Permit compliance costs. The information could be used to inform the budget process each year by comparing previous assumptions and estimates to actual experience.

PALS response: Agree

As we gear up and begin implementing the newer elements of the Permit it will be essential to track and collect data to further refine our operations and assure that we are in compliance. For example it is anticipated that there will be a larger enforcement caseload for PALS due to the fact that the permit requires all County field staff (road crews, building inspectors, Fire Prevention Bureau inspectors, etc.) to be trained in illicit discharge identification and reporting. This means that in addition to our existing violation workload that is generated by citizen complaints, we will now also have a violation workload that is generated by County staff. In essence we are moving into "proactive" enforcement where historically we have always been reactive. We have estimated the volume of this workload and based any additional costs on these estimates. As we track and report on this data we will develop a better understanding of the work volume and will be able to make appropriate adjustments to staffing.

Recommendation 2:

The money and resources allocated in the County staff's Updated Cost of Compliance for the Permit compliance work (such as inspections of potentially pollutant-generating businesses and detection of illicit discharges) should be greater relative to the resources proposed by the County for Permit management. Some of the staff's updated costs for managing the Permit should be used instead for doing the work required by the permit.

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PALS response: No comment

Permit management is a responsibility of Surface Water Management and was not analyzed in the the PALS work plan.

Recommendation 3:

The following list of miscellaneous observations should be reviewed and modifications made to the Updated Cost of Compliance if appropriate:

- a. The County should evaluate whether existing construction site inspectors, as opposed to new PALS staff, can perform basic compliance inspections for installation and maintenance of temporary erosion and sediment controls.*

PALS response: Agreed

We agree that the building inspectors should be trained in identifying and reporting erosion control and construction pollution problems as a supplement to the Development Engineering inspection program. It should be noted that this recommendation may require bargaining with the engineer's union Local 17.

- b. The County should only take credit in its Permit compliance reporting for the projects that reduce the impacts of stormwater discharges to waters of the state.*

PALS response: No comment

Permit compliance reporting is a responsibility of Surface Water Management, and while there may need to be PALS data contributed to the report we do not have an opinion on this issue.

- c. The County should review its facility maintenance program for consistency with the published Ecology maintenance standards required by the Permit and then update the maintenance costs accordingly. The estimates for performing new facility maintenance work required by the Permit may be unreliable because it appears that they were not based on these standards.*

PALS response: No comment

Maintenance is a responsibility of Surface Water Management and Road Operations and is not an NPDES responsibility of PALS.

The County should update the estimate for the public involvement requirements in the Permit based on additional consultation with an expert in public education based on social marketing and behavior change. Achieving measured improvement in the public's understanding of stormwater

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quality issues is required by the Permit. Pierce County staff appears to have limited experience with public education programs based on social marketing and behavior change, which experts deem necessary to achieve measured improvement in the public's understanding of these types of environmental issues.

PALS response: No comment

Public education was included in the Surface Water Management work plan.

PALS Comments

1. While we were not able to review a draft of the executive summary we hope that it will include simplified recommendations on FTE's, training costs, setup costs etc. for 2009 and 2010.
2. Paragraph 3 of section 2.1 discusses that plan review and inspection costs for PALS would continue to be lower in 2009 due to the slump in the housing market. Has this thinking been folded into Beck's alternative compliance strategy? In some of the next comments below we have found some discrepancies between the report and our updated work plan. Is this the reason for the discrepancies?
3. In the PALS portion of table 2-2 some of the job class and count items do not line up properly with the work descriptions. We believe the same is true in table 3-2.
4. In PALS's revised work plan (August 25, 2008 version) we determined that 4.5 additional FTE's were necessary for inspections under the new permit. Chapter 2 is supposed to be a summary of PALS' revised work plan. The text in chapter 2 reflects only 3.4 FTEs and the table in chapter 2 only reflects 3.2 FTE's. It would seem that chapter 2 should be consistent with our work plan.
5. In PALS' revised work plan we determined that 7 additional FTE's were necessary for enforcement under the new permit. In chapter 2 the text calls for 3.5 FTE and table 2-2 calls for 6.1 FTE. We believe these should be consistent.
6. Section 3.2.3 discusses the inspection of land-disturbing activities during construction. This section suggests possible savings could be realized by training the building inspectors to recognize erosion control problems. While we can see this idea when applied to the construction of a single family home or a commercial building, we do not see that it is applicable to general site development inspections. These general site development inspections consist of the construction of plat road and storm drainage,

Matt Temmel
October 6, 2008
Page 4

construction of offsite road improvements, grading projects, clearing projects, and commercial/industrial type developments. With the exception of the commercial/industrial type developments, building inspectors do not visit these sites. The amount of benefit obtained by the Beck recommendation for general site construction inspections will therefore be less than the anticipated 0.6 FTE.

7. This is a minor oversight we believe, but in Table 2-2, the partial OA2's listed for inspection support in 2009 & 2011 both include the annotation 'Field Setup Costs assumed'. Our OA's do not go to the field and therefore do not need field setup.

Cc: Chuck Kleeberg, Director, Planning and Land Services
Brian Zeigler, Director, Public Works & Utilities
Harold Smelt, Manager, Surface Water Management
Dan Wrye, Senior Planner
Scott Murdock, Development Engineering
Ken Cook, Development Engineering
Ron Bridgman, Development Engineering
Steve Swenson, P.E., R.W. Beck
Jay Cammermeyer, R.W. Beck

A-2. Comments by Surface Water Management



Pierce County

**Public Works and Utilities
Surface Water Management**

2702 South 42nd Street, Suite 201
Tacoma, WA 98409


(253) 798-2725
(253) 798-7709 - fax

October 6, 2008

Memorandum

WP55534

To: Matt Temmel, Performance Audit Coordinator

From: Harold Smelt, PE, SWM Manager 

Subject: Technical Review of RW Beck Draft Report

As requested, Public Works and Utilities (PW&U) is responding comments on the recommendations contained in the September 19, 2008, Confidential Draft Report, Workload Analysis of NPDES Stormwater Discharge Permit Issues (RW Beck). A summary of factual errors and requests for edits are contained in the attached Appendix A. Appendix B includes marked up pages of the report noting additional edits.

The staff of PW&U and PALS worked closely with RW Beck during the development of this plan through numerous meetings, the development, refinement and revisions of work plans, emails and phone conversations. RW Beck did a good job sorting through this information and bringing their experience with NPDES Stormwater programs elsewhere around Washington to bear. In fact, without RW Beck's experience with the NPDES permit, this huge effort would not have been possible, especially in the short time period allowed.

One result of the County's efforts has been an update of the preliminary workload assessment created in 2007. This estimate represents a substantial refinement of the earlier work based on a more complete understanding of DOE's requirements and the development of some efficiency strategies. It should be noted that one major difference is that the new estimate does not include any capital costs; the original estimate included \$1.5 million annually for water quality related projects and retrofits of existing systems. County staff still believes it would be prudent to include these costs.

Perhaps the greatest short coming of the report is that it fails to note the importance of proper funding for all the required permit related activities. Although RW Beck was not asked to evaluate Pierce County's ability to fund these activities, we think it appropriate that one of their recommendations include the need for a funding assessment and a review of funding alternatives.

A review of RW Beck's alternative compliance strategies reveals that in some areas they believe County staff overestimated compliance costs, and in some areas, costs were underestimated. Perhaps this indicates that we've gotten as close as we can at this point, and only by monitoring the actual costs of implementation in 2009 will we be able to determine the future program costs with any greater accuracy.

It's important to note that the original cost of compliance estimate prepared in 2007 had two major purposes: one, to understand the specific new requirements within the permit (there are almost two hundred) and, two, to gain an understanding of the cost ramifications of the new permit. The estimate formed the basis for which the County decided to appeal the new permit and lead it a settlement offer to the state which would have cost the County only 1/4th the cost of compliance estimated. The state ultimately rejected the settlement offer, the appeal proceeded, and the courts affirmed the bulk of the new permit requirements.

With the completion of this study, there are now three work load assessments to be compared; the original 2007 done by County staff, the updated County assessment, and the RW Beck Alternative Compliance Strategy.

COMMONALITIES AMONG THE THREE ASSESSMENTS

Substantial Increase in Size of Program Needed

The RW Beck Report substantiates the need for a significant increase in the size of Pierce County' municipal stormwater permit program to be in compliance with the new requirements of the permit. While the dollar and FTE numbers vary, all three estimates of cost of compliance establish that a substantial additional investment is necessary.

Omission of Supervisory Staff

None of three alternatives account for the need to hire supervisory staff to oversee the 25 to 30 additional staff recommended by the alternatives. Using even a moderate span of control of 8 staff per supervisor could result in 4 to 5 additional supervisory staff above the cost of compliance estimated by all three alternatives.

Efficiencies and Assumptions Tracking

Both the County's updated assessment and the RW Beck realized economies by consolidating functions. Adaptive management will better refine costs.

MAJOR DIFFERENCES AMONG THREE ASSESSMENTS

Omission of additional CIP in the updated estimate and the alternatives

As mentioned above, County staff still believe that the permit requires an increase in specific CIP activities. The annual \$1.5 million included in the Department's 2007 implementation estimate accounts for much of the difference between that estimate and the other alternatives.

"Permit Management" consolidation in RW Beck's Alternative Compliance Strategy

Since the term "Permit Management" may be something of a misnomer, it would be helpful to clarify that this task includes annual reporting needs, inter-jurisdiction coordination, and required training of staff. Consolidating these tasks is consistent with other Phase 1 jurisdictions and is supported by the Department.

Program Growth to be Phased In

When staff first prepared the 2007 cost estimate, it was accompanied by a conservative proposal to phase in the hiring and implementation costs over the duration of the permit. This would allow the County to modify the level of staff commitment through an adaptive management process throughout the duration of the permit. Between the time of preparing the original estimate (March 2007) and the 2008 budget request (November 2007), staff were able to reduce the anticipated FTE's in 2008 from 20 to 14.

2009 represents the third year of the permit and our opportunity to "phase in" new staff has probably been lost; the implementation phase of the permit is passed and there is a State expectation of active programs at this point. Unfortunately, it is difficult to quickly hire and incorporate over 25 new staff into an organization. Should additional staff be approved as a result of this report, the County will need to prioritize hiring based on a risk evaluation of the different required program elements.

Response to Recommendations

RW Beck Recommendation 4.2.1: Use Permit Required Report to Update and Refine Permit Compliance Costs.

County Response: Agree. We believe that utilizing the reporting requirements of the permit for adaptive management, we will be complying with the permit at the same time as we gain information to better manage permit compliance and its associated costs as well as being in a position

to better manage the risks to the County of noncompliance. In order to implement this recommendation for adaptive management, however, the permit management functions contained in the Alternative Cost of Compliance needs to be funded. It is not possible to implement those requirements with existing resources.

RW Beck Recommendation 4.2.2: *Resources allocated in County staff's Updated Cost of Compliance for permit management should be used instead for doing the work required by the permit.*

County Response: As noted above, the term “Permit Management” may be a source of confusion, even for the writers of the report. This task refers to required programmatic elements of the permit, not oversight or supervision of NPDES staff. We request a clarification from the consultant on this recommendation.

RW Beck Recommendation 4.2.3a: *Evaluate using existing, rather than new, construction site inspectors for erosion and sedimentation control inspections.*

County Response: Agree. The new permit is necessitating changes to roles and functions throughout County administration as well as establishing a more centralized approach for tracking, reporting and evaluating County compliance. To implement this recommendation, we will follow the intra-jurisdiction coordination requirements of the permit to establish and specify these duty changes.

RW Beck Recommendation 4.2.3b: *Take credit in Permit reporting only for projects that reduce impacts of stormwater discharges to waters of the state.*

County Response: Disagree. The vast majority of SWM capital projects, including river levee projects, contain water quality improvement elements. This is because virtually all of our work is in or immediately adjacent to waters of the state and we incorporate a management of multiple benefit approach for flood damage reduction, water quality enhancement, and riparian habitat enhancement. This approach enables us to improve the biological, physical as well as chemical components of waters of the state for beneficial use attainment, as is the goal of the NPDES permit program and the overall federal Clean Water Act and State Water Pollution Control Act. Additionally, the NPDES stormwater program emphasizes infiltration rather than direct discharge. Finally, SWM seeks to reestablish and preserve natural hydrology, which inherently includes water quality ecological services. Even our major levee projects, particularly setback levees, provide water quality enhancement by reestablishing natural sediment movement through the system. We believe the County should

“take credit” for these traditional and nontraditional approaches to capital projects and since 1995, the County has included the entire surface water management capital facilities plan in its permit-required, County Executive certified, annual report to the state. Flood damage reduction and riparian habitat improvements are integral with water quality enhancement, not separate and distinct from them.

RW Beck Recommendation 4.2.3c: *Review facility maintenance program for consistency with Ecology maintenance standards and update maintenance costs accordingly.*

County Response: Agree. We believe a significant amount of work is needed, using professional services, to establish and document maintenance standards equivalent to the Ecology maintenance manual. We have begun that effort under a \$90,000 consultant contract for its initial phase. In 2005, we received a budget estimate with a proposed scope of work to complete this that totaled over \$400,000. Due to budget limitations, we effectuated only the first, \$90,000 phase. That phase will be complete in 2009. Thus, we believe a minimum of an additional \$300,000 will be required to complete the maintenance manual and that is needed before we can more thoroughly and accurately estimate the costs of meeting the new maintenance standards that are contained in the permit.

RW Beck Recommendation 4.2.3d: *Update the estimate for public involvement based on additional consultations with an expert in public education based on social marketing and behavior change.*

County Response: Disagree. While its true the County has limited “expertise on social marketing and behavior change,” we disagree with the consultant characterizing our public education cost estimates as “somewhat unreliable.” SWM has an effective and recognized outreach program that uses a mix of media, materials, events, conferences, giveaways, and targeted outreach initiatives. Some of these have won national awards, such as our Pet Waste Water Quality Campaign. The cost estimates included in the Cost of Compliance all take the same costing and staffing estimation process that has resulted in the success of the current program. Additionally, the cost estimates include use of consultant services to further enhance the outreach program in the realm of “social marketing”.

Thank you for this opportunity to comment on this process. It is my belief that Pierce County will benefit from this effort.

Cc: John Ladenburg, Pierce County Executive

Appendix A-2. SWM Comments

Brian Ziegler, Director, Public Works & Utilities
Chuck Kleeburg, Director, Planning and Land Services
Mitchell Brells, Development Engineering Supervisor

Appendix A
SWM REQUESTED FACTUAL CORRECTIONS TO RW BECK REPORT

(Sections 1 & 2)

INSERT 1 to page 2

Pierce County was one of the five Phase 1 NPDES Permittees that appealed Ecology's 2007 permit. The County's appeal was based on several aspects: that the permit as written did not reflect other County programs that were functioning to better protect water quality than the prescriptions within the permit; that the County had a more useful, and specific water quality monitoring program than the permit required; and that the costs of implementing the new requirements of the permit were excessive.

In December 2007, the County met with Ecology and its Assistant Attorney General's Office staff and offered to settle its appeal on the Municipal Stormwater NPDES Permit. At the meeting, the County offered to drop its appeal if Ecology would issue an individual permit to the County with specific requirements customized for Pierce County rather than the general prescriptions within the Permit. Specifically, the County offered to continue to implement its existing programs for water quality and floodwater damage mitigation and to strategically enhance a few key core functions, namely, increased inspections, maintenance, and enforcement. The County offered to increase these core areas by adding a total of 12 additional FTEs, or roughly one fourth the cost of compliance as it had been estimated at the time, or one half its current estimate. Ecology did not accept the County's settlement offer and the appeal advanced to the PCHB in April 2008.

INSERT 2 to page 2

A key requirement of the Permit and one that was litigated during the PCHB appeal is known as "compliance with standards." The permit requires the County to notify Ecology when it becomes aware that a discharge from its stormwater system is causing or contributing to a violation of water quality standards. Requirements in the permit includes implementation of additional management practices, including structural approaches, until those violations are eliminated. The PCHB modified the requirements of this section. However, several non-County appellants have appealed the PCHB decision to Superior Court and those appeals have not been heard.

INSERT 3 to page 3

- The 2007 Cost of Compliance recommended an increase in staffing of 20 FTEs for the years 2007 and 2008 and reserving final increases in staff for later years in order to await the PCHB ruling and to validate cost assumptions.

Appendix A
SWM REQUESTED FACTUAL CORRECTIONS TO RW BECK REPORT

INSERT 4 to page 5

The \$7.4 million total from the County's 2007 Cost of Compliance estimate includes \$1 million additional capital improvement projects would be needed plus \$1.3 million in additional professional services, leave a total of \$5 million of need to fund new staff annually. The County's Updated Cost of Compliance does not include the \$1 million in additional capital improvement projects estimate from the 2007 Cost of Compliance estimate.

INSERT 5 to page 5

Neither the County's 2007 Cost of Compliance or the current Updated Cost of Compliance estimates include costs of supervisory and administrative support staff. The consequence of adding between 40 and 50 staff (2007 estimate) or 29 staff (current updated estimate) will include the need of hiring supervisory and administrative support staff in support. Assuming a line employee to supervisory employee ratio of 1 to 4 to 1 to 6 and a line employee to support employee ration of 1 to 6 to 1 to 8, the County would need to add between 14 and 20 additional FTEs (2007 estimate) or between 9 and 12 additional FTEs (current Updated Estimate). These additional costs are not included in Table 2-1.

INSERT 6 to page 11

However, there are two potential caveats imbedded in this assumption. Firstly, under permit requirement Compliance With Standards (Permit Required S4f), as written in the original permit, as ordered by the Pollution Control Hearings Board, or as potentially modified under appeal by non-County appellants, violations of water quality standards caused by polluted stormwater from County MS4 system may result in the need for additional structural controls. Secondly, even if no additional controls are needed under S4f, it is likely that additional water quality treatment capital facility projects will be constructed due to the permit. This does not necessarily increase the amount of the capital budget, but is likely to result in a shift away from funding other non-water quality projects, e.g., fewer flood damage mitigation projects.

**SWM RESPONSES TO RW BECK ALTERNATIVE COMPLIANCE STRATEGY
(SECTION 3)**

Page 24: 3.2.1 Acknowledged

Page 24: 3.2.2 Agree. The assumption of 1/3 of all residential sites having a high potential for sedimentation will be evaluated as part of the record keeping, tracking and reporting requirements of the permit.

Page 25: 3.2.3 Agree. The new permit is necessitating changes to roles and functions throughout County administration as well as establishing a more

Appendix A

SWM REQUESTED FACTUAL CORRECTIONS TO RW BECK REPORT

centralized approach for tracking, reporting and evaluating County compliance. To implement this recommendation, we will follow the intra-jurisdiction coordination requirements of the permit to establish and specify these duty changes.

Page 25: 3.2.4 Acknowledged

Page 26: 3.2.5 Agree. While the permit does not specify timelines, it does provide additional constraints on the County to make enforcement referrals to the state by prohibiting those referrals without County affirmative action. Additionally, a theme throughout the permit is significant increase in field and site presence by the County intended to identify, evaluate and rectify water quality excursions. These necessitate a progressive and effective enforcement response. We concur that quick resolution is intended in the permit.

Page 26: 3.2.6 Acknowledged

Page 26: 3.3 Disagree. Vast majority of SWM capital projects, including river levee projects, contain water quality improvement elements. This is because virtually all of our work is in or immediately adjacent to waters of the state and we incorporate a management of multiple benefit approach for flood damage reduction, water quality enhancement, and riparian habitat enhancement. This approach enables us to improve the biological, physical as well as chemical components of waters of the state for beneficial use attainment, as is the goal of the NPDES permit program and the overall federal Clean Water Act and State Water Pollution Control Act. Additionally, the NPDES stormwater program emphasizes infiltration rather than direct discharge. Finally, SWM seeks to reestablish and preserve natural hydrology, which inherently includes water quality ecological services. Even our major levee projects, particularly setback levees, provide water quality enhancement by reestablishing natural sediment movement through the system. We believe the County should “take credit” for these traditional and nontraditional approaches to capital projects and since 1995, the County has included the entire surface water management capital facilities plan in its permit-required, County Executive certified, annual report to the state. Flood damage reduction and riparian habitat improvements are integral with water quality enhancement, not separate and distinct from them.

Page 26 3.4 Agree. PALS numbers one half of original number of potential pollutant generators. PALS needs to respond. Agree on the better use of a body to do inspections than training IF training still occurs. Agree that the approach to have the overall program coordinator do and manage the training is reasonable and a better use of the FTE is to be had doing the inspections and compliance. However, the training still must occur.

Page 27 3.5 Agree. Due to our limited experience in meeting these permit requirements, we assumed a very low level of noncompliance (only 5% of

Appendix A

SWM REQUESTED FACTUAL CORRECTIONS TO RW BECK REPORT

noncompliance). We agree this is probably low and thus the cost estimate is probably low as well. These numbers will be evaluated through the tracking and reporting requirements in the permit.

Page 29 3.6 Agree. We believe a significant amount of work is needed, using professional services, to establish and document maintenance standards equivalent to the Ecology maintenance manual. We have begun that effort under a \$90,000 consultant contract for its initial phase. In 2005, we received a budget estimate with a proposed scope of work to complete this that totaled over \$400,000. Due to budget limitations, we effectuated only the first, \$90,000 phase. That phase will be complete in 2009. Thus, we believe a minimum of an additional \$300,000 will be required to complete the maintenance manual and that is needed before we can more thoroughly and accurately estimate the costs of meeting the new maintenance standards that are contained in the permit.

Page 30 3.7 Disagree. While its true the County has limited “expertise on social marketing and behavior change,” we disagree with the consultant that our cost estimates are somewhat unreliable as they pertain to public education. SWM has an effective and recognized outreach program that uses a mix of media, materials, events, conferences, giveaways, and targeted outreach initiatives. Some of these have won national awards, such as our Pet Waste Water Quality Campaign. The cost estimates included in the Cost of Compliance all take the same costing and staffing estimation process that has resulted in the success of the current program. Additionally, the cost estimates include use of consultant services to further enhance the outreach program in the realm of “social marketing”.

Page 30 3.8 Acknowledged.

Page 31 3.9 Acknowledged. We also note that the PCHB in its consideration of the County’s monitoring report as a proposed (cheaper) alternative to the Ecology permit-required monitoring, rendered a rare split decision prompting one of the three members of the PCHB to write in support of the County. Nonetheless, the remaining two board members voted to order implementation of the (more expensive) state permit required monitoring program.

Page 31 3.10 Agree. We strongly agree with the consolidation of a myriad duties and functions required by the permit under a centralized permit management category. We think this more clearly shows what the permit is intended to achieve: specific, credible, direct implementation of explicit prescriptions. As written and in the early cost of compliance estimates, we think this explicit implementation was spread throughout various components of the permit leaving a piecemeal, scattering of duties and responsibilities without a specific alignment and correlation to other functions. We strongly support the consolidation of and efficiency gained from this centralizing of related responsibilities. This way, it will

Appendix A

SWM REQUESTED FACTUAL CORRECTIONS TO RW BECK REPORT

be much easier to track, evaluate progress, and make course corrections to more strategically reduce risks of noncompliance to the County.

To clarify the uncertainty of the \$800,000 of the Updated Cost of Compliance, consider the permit requirement to “reduce pollutants from lands owned or maintained by permittee.” Our cost estimate was based on a proposed program that developed and implemented a pollution prevention program for County lands. Thus, its estimates assumed professional services and site visits. The proposed expenditure of \$433,000 for a maintenance manual and asset management system was intended to satisfy various permit requirements related to maintenance standards and reduction of polluted runoff and maintenance response and was based on the maintenance manual estimate referenced under Section 3.6, above. Nonetheless, we concur that these costs are not well developed and that the Alternative Cost of Compliance approach is a significant improvement over our Updated Cost of Compliance.

SWM FACTUAL CORRECTIONS AND RESPONSES TO CONCLUSIONS (SECTION 4)

Page 33 1st Bullet: It is not accurate to say the original estimate was “not vetted internally.” In fact, all managers in SWM were given copies of early drafts and it was the subject of several management team meetings and reviews. Similarly, many of the assumptions were in fact “vetted” throughout SWM and PALS. Finally, its important to include what the original purpose of the Cost Estimate was and how it was used to negotiate with the state. Please make factual correction as follows:

“...we conclude that this was an initial assessment that was completed quickly within days of the permit issuance for the purpose of determining what the new permit requirements would be, whether the County should appeal the permit, and what fiscal implications it would have for the County, ~~was not vetted internally, and.~~ The original cost estimate confirmed it was in the County’s best interest to appeal the permit and the County did that. During the course of the permit appeal, the County offered to settle its appeal with the state if the state would accept a program that added 12 additional FTEs, or one-fourth the number estimated in the County’s Cost of Compliance estimate. The state declined the settlement offer and the appeal proceeded. The Cost of Compliance estimate was not updated prior to this performance audit project. We also conclude that a more defensible budget proposal should be based on a more thorough and rigorous estimate.”

Page 33 2nd Bullet: Correct.

Page 33 3RD Bullet: Please make factual correction as follows:

Appendix A

SWM REQUESTED FACTUAL CORRECTIONS TO RW BECK REPORT

“...This is comparable to the estimate in the County’s 2007 Cost of Compliance of \$7.4 million annually with the exception that the 2007 estimate included \$1 million additional CIP annually whereas the revised estimate assumes no addition CIP annually. Neither of these estimates include overhead. Additionally, neither of these estimates or the Alternative Cost of Compliance estimates include costs of supervisory and administrative support staff. The consequence of adding between 40 and 50 staff (2007 estimate); 29 staff (Updated Estimate); or 25 (Alternative Cost of Compliance) will include the need of hiring supervisory and administrative support staff in support. Assuming a line employee to supervisory employee ratio of 1 to 4 to 1 to 6 and a line employee to support employee ration of 1 to 6 to 1 to 8, the County would need to add between 14 and 20 additional FTEs (2007 estimate); between 9 and 12 additional FTEs (Updated Estimate); or 7 to 10 additional FTEs (Alternative Cost of Compliance Estimated). The County’s Updated Cost of Compliance staffing estimate for new annual Permit compliance activities is 27 new FTEs in 2009 with 2 or more FTEs in 2010 compared to the staffing estimate in the County’s 2007 Cost of Compliance of ~~48~~ 40 to 50 new FTEs.”

Page 33 4th Bullet: Correct.

Page 33 5th Bullet: Correct and Agree this is a better use of the staff and financial resources than in County Cost of Compliance Estimates. We acknowledge, though, that the components of the permit management categories continue to be requirements of the permit and must still be done.

Page 34 1st Bullet: Agree. In fact, the original 2007 County Cost of Compliance expressly recommended a ramping up over the term of the permit to specifically account for the fact that many of the new requirements will require time to fully understand their workload requirements and the various risks of noncompliance for the County to manage. We believe these will be better understood through the permit management functions associated with the tracking, evaluation, and reporting of permit implementation.

SWM FACTUAL CORRECTIONS AND RESPONSES TO APPENDIX D COUNTY STAFF’S ORIGINAL (2007) COST OF COMPLIANCE

Add cover page to table, entitled “*Cost of Compliance with Municipal Phase 1 NPDES Permit Proposed Implementation Strategy, Goal: Fully funded going into 5th (final) year of permit.*”

Appendix B
Mark-up pages

October 16, 2008

To: Interested Readers

From: Matt Temmel, Performance Audit Coordinator



Re: Appendix B of the SWM Response

Appendix B in the comments by Harold Smelt, SWM Manager, is not reproduced here, but it will be retained in the project work papers. Appendix B is a partial copy of the September 19 draft report by R.W. Beck with extensive handwritten comments by SWM staff. The material amounts to a repetition of the substance of Appendix A (on the preceding pages), along with a large amount of suggested editing to revise details in the report. R.W. Beck has reviewed the handwritten material from SWM and incorporated the changes that it believes are appropriate.

A-3. R. W. Beck's Response to Agency Comments

**Appendix A3:
R. W. Beck's Response to Agency Comments**

Planning and Land Services Comments

Comment 2: The same assumptions for 2009 were used in both the County staff's Updated and R. W. Beck's Alternative Cost of Compliance. The reason for the apparent discrepancies is explained below in response to Comments 4 and 5.

Comment 3: Tables 2-2 and 3-2 have been revised so that the rows are now properly aligned.

Comments 4 and 5: The difference between the FTEs in the PALS workplan and those presented in the report are due to different assumptions about the number of productive hours per employee. All FTEs shown in this report are based on 1,768 productive hours per employee per year (paid time of 2,080 hours, less average vacation and sick leave), while PALS used 1,474 hours per employee in its calculations. The report has PALS enforcement staff in both sections 2.2.5 and 2.5.2. The FTE counts match those in Table 2-2.

Comment 6: We agree with the comment and have revised the text accordingly.

Comment 7: We agree, and this item will be eliminated from the table.

Surface Water Management Comments

Funding of capital improvement program (CIP) above current level (page 1, third paragraph and page 3, first paragraph): County staff believes that the Permit requires an increase in specific CIP activities and spending. We disagree with this interpretation of the Permit. First, the County needs to demonstrate that a program is in place to provide structural stormwater controls. SWM believes that their entire CIP project meets this definition. Second, any site-specific structural retrofits that are required to address a known water quality violation could be funded by reallocating existing capital improvement funds.

Failure to note importance of proper funding (page 2, first paragraph): We agree. In the final report, we have added a fourth recommendation to explicitly state that the County needs to provide funding to fulfill the County's obligations under the Permit.

Omission of supervisory staff (page 2, sixth paragraph): We acknowledge the number of additional staff estimated by the different workload analyses. However, insufficient information is available to provide a reliable estimate of additional supervisory needs for SWM. A few points should be mentioned:

Appendix A3. R. W. Beck's Response to Agency Comments

- We were not provided with information on the “span of control” of current supervisors within SWM that would allow an assessment of the existing supervisory capacity.
- PALS did not request additional staff beyond what is indicated in the County staff's Updated Cost of Compliance

“Permit management” consolidation (page 3, second paragraph and page 4, second paragraph): We have revised section 2.10 in the report to clarify what activities are analyzed in that section.

Take credit in Permit reporting only for projects that reduce impacts of stormwater discharges to waters of the State (page 4, bottom items): We do not know the distribution of project types within the County's CIP program. This recommendation simply means that documentation will be necessary to demonstrate the water quality benefit of each project that is reported to the Department of Ecology as being part of the County's Structural Stormwater Control Program.

Review facility maintenance program (page 5, third paragraph): The Permit requires the County to adopt and implement maintenance standards equivalent to those published in Ecology's 2005 Stormwater Management Manual for Western Washington. The Permit does not require the County to develop its own maintenance manual at a \$400,000 cost as proposed by SWM. To comply with the permit, the County could adopt the Ecology maintenance standards at a minimal cost.

Estimate of public involvement costs (page 5, last item): We do not believe that the costs associated with the public involvement program can be estimated without the input of a social marketing expert. Individuals with this training would best know the means for reaching the required goals of the program that are essential for establishing a reliable cost estimate.

Appendix B
Pierce County Staff's Updated Cost of Compliance

**Appendix B. County Staff's Updated Cost of Compliance with the Washington State 2007 NPDES Phase I Municipal Stormwater Permit
Pierce County Performance Audit Committee
NPDES Workload Assessment**

Description of Work	Permit Section	Data										Total Costs (2008 dollars) (\$000) (1)			Cost by County Department (\$000)												Comments
		Year Work Starts	Number of Actions			Type of Action or Units	Hours per Action	Cost per Hour	Job Classification	Annual Contracted Services and Equipment Purchases (\$000)	Startup Costs	Annualized Costs from 2009 to 2011	Total Costs from 2009 to 2011	Surface Water Management			Planning & Land Services			County Roads			Other Departments				
			Total	New	Existing									Startup Costs (2009)	New	Existing	Total 2009 to 2011 Costs	Startup Costs (2009)	New	Existing	Total 2009 to 2011 Costs	Startup Costs (2009)	New	Existing	Total 2009 to 2011 Costs	Annual Costs (No Existing Annual Costs)	
1 S3. Responsibilities of Permittees																										Costs included under "Municipal NPDES Permit Management" below.	
2 S4. Compliance with Standards																										Current capital construction (SC6) program sufficient to meet any structural BMP requirements triggered by this Section; Costs associated with Stormwater Management Plan, Annual Report, and written notification of water quality violations included under "Municipal NPDES Permit Management" below.	
3 S5. Stormwater Management Program																										Costs other than mapping included under "Municipal NPDES Permit Management" below.	
4 C2 System Mapping & Documentation																											
5 Mapping	S5C2b	2009	1	1		Mapping	1,400	\$36	ET2			\$17	\$50	\$17	\$50												SWM costs only
6 C3 Coordination																											Included under "Municipal NPDES Permit Management" below.
7 C4 Public Involvement & Participation																											Combined with SSC10 "Public Education and Outreach Program" below.
8 C5 Controlling Runoff from New Development & Construction Sites																											
9 Review Site Plans (Area Review Work Unit)--existing	S5C5bvi	ends in 2008	2,244	0	2,244	Reviews	3.3	\$56	CE2			\$415	\$1,244				\$415	\$1,244									
10 Review Site Plans (Area Review Work Unit)--proposed	S5C5bvi	2009	2,244	2,244	0	Reviews	1.0	\$56	CE2	\$11	\$126	\$388				\$11	\$126	\$388									Startup cost based on information from PALS for training; annual cost based on year 2012 information from PALS.
11 Review Site Plans (Plat Work Unit)--existing	S5C5bvi	ends in 2008	1,416	0	1,416	Reviews	0.2	\$49	CE1			\$14	\$42				\$14	\$42									
12 Review Site Plans (Plat Work Unit)--proposed	S5C5bvi	2009	1,416	1,416	0	Reviews	0.0	\$49	CE1			\$1	\$2				\$1	\$2									Annual cost based on year 2012 information from PALS.
13 Review Site Plans (Single Family Residential Work Unit)--existing	S5C5bvi	ends in 2008	2,508	0	2,508	Reviews	0.4	\$49	CE1			\$49	\$147				\$49	\$147									
14 Review Site Plans (Single Family Residential Work Unit)--proposed	S5C5bvi	2009	2,508	2,508	0	Reviews	1.1	\$49	CE1			\$135	\$406				\$135	\$406									
15 Pre-Construction Inspection	S5C5bvi	2009	1,208	1,208	0	Inspections	0.5	\$49	ET3	\$9	\$27	\$89				\$9	\$27	\$89									Includes initial (\$138K) and annual (\$28K) setup/equipment costs for all NPDES inspection work by PALS.
16 Pre-Construction Inspection--OA support	S5C5bvi		1,208	1,208	0	OA time	0.1	\$32	OA2			\$4	\$13				\$4	\$13									
17 Inspection During Construction (General Site Development)	S5C5bvi	2009	4,464	2,976	1,488	Inspections	0.6	\$49	ET3	\$37	\$131	\$430				\$37	\$87	\$44	\$430								4464 inspections = 2976 new + 1488 existing
18 Inspection During Construction (General Site Development)--OA support	S5C5bvi		4,464	2,976	1,488	OA time	0.1	\$32	OA2			\$20	\$60				\$13	\$7	\$40								
19 Inspection During Construction (Single Family Residential Developments)	S5C5bvi	2009	16,313	3,625	12,688	Inspections	0.5	\$49	ET3			\$361	\$1,082				\$80	\$280	\$1,082								Assume 4.5 visits at 3625 distinct SFR sites (4.5 x 3625 = 16313 visits).
20 Inspection During Construction (Single Family Residential Developments)--OA support			16,313	3,625	12,688	OA time	0.1	\$32	OA2			\$57	\$172				\$13	\$45	\$38								
21 Inspection upon completion of construction (Residential developments)	S5C5bvi; SSC9bii(4)	2009	749	684	65	Inspections	0.6	\$49	ET3	\$37	\$22	\$103				\$37	\$20	\$2	\$103								Assumes a semi-annual inspection by PALS of stormwater facilities in maintenance bonding phase (based on Mitch Brells assessment of permit reqs).
22 Inspection upon completion of construction (Residential developments)--OA support	S5C5bvi; SSC9bii(4)		749	684	65	OA time	0.1	\$32	OA2			\$3	\$8				\$2	\$0	\$7								
23 Additional costs associated with non-conforming sites (residential)	S5C5bvi; SSC9bii(4)	2009	228	228	0	Enforcements	2.0	\$49	ET3			\$22	\$67				\$22	\$67									
24 Inspection upon completion of construction (commercial & off-site)	S5C5bvi; SSC9bii(3)	2011	682	573	109	Inspections	0.6	\$49	ET3	\$2	\$20	\$62				\$2	\$17	\$3	\$62								According to Mitch Brells (PALS), this work would begin in 2011; 682 inspections = 573 new + 109 existing
25 Inspection upon completion of construction (commercial & off-site)--OA support	S5C5bvi; SSC9bii(3)	2011	682	573	109	OA time	0.1	\$32	OA2			\$2	\$7				\$2	\$0	\$6								
26 Additional costs associated with non-conforming sites (commercial & off-site)	S5C5bvi; SSC9bii(3)	2011	191	191	0	Enforcements	2.0	\$49	ET3			\$19	\$56				\$19	\$56									According to Mitch Brells (PALS), this work would begin in 2011.
27 Development Engineering Enforcement (Current Reactive Program)	S5C5bvi	2009	332	332	332	Inspections	13	\$49	ET3	\$11	\$208	\$636				\$11	\$130	\$78	\$636								Number of actions remains the same (reactive program assumption) but time per action increase by 8 hours
28 Development Engineering Enforcement (Current Reactive Program)	S5C5bvi7	2009	300	300	300	Enforcements	15	\$56	CE2			\$255	\$766				\$134	\$121	\$766								Number of actions remains the same (reactive program assumption) but time per action increase by 8 hours; new costs reflect a CE2 instead of current CE1.
29 Development Engineering Enforcement (Current Reactive Program)--OA support	S5C5bvi7		300	300	0	OA time	3.8	\$32	OA2			\$36	\$109				\$36	\$109									
30 PALS training of reviewers	S5C5bviii	2009				Training						\$122	\$366				\$122	\$366									Based on total 3-year program provided by Mitch Brells with revised labor costs by RW Beck (cost estimated at \$366K).
31 Training of non-PALS personnel	S5C5bviii	2009	30	30		Training	40	\$55	varies + 0.25 P3	\$33	\$99	\$298			\$66	\$199											Based on information from Dan Wrye: includes cost of 0.25 P3 (\$24K new, ongoing), + \$9250 contract services (new, ongoing) + \$27,500 contract services (new, startup) in SWM.
32 C6 Structural Stormwater Control																											
33 Structural stormwater control program	S5C6a	2009										\$8,000	\$24,000				\$8,000	\$24,000									Based on current capital improvement program.
34 C7 Source Control Program for Existing Development																											Does not include any capital improvement costs to County.
35 Inventory of businesses & notifications	S5C7bii; S5C7bii	2009	1	1	0	Inspections	160	\$55	ET3 + 0.18 hrs of OA2 per inspection hour	\$9	\$9	\$9				\$9											
36 Inspection program	S5C7bii	2009	350	350		Inspections	5.1	\$55	ET3 + 0.18 hrs of OA2 per inspection hour	\$98	\$295	\$98				\$98			\$295								20% of an estimated 1700 unique sites that meet land use/business type in Appendix 8 of NPDES permit

**Appendix B. County Staff's Updated Cost of Compliance with the Washington State 2007 NPDES Phase I Municipal Stormwater Permit
Pierce County Performance Audit Committee
NPDES Workload Assessment**

Description of Work		Permit Section	Data										Total Costs (2008 dollars) (\$000) (1)			Cost by County Department (\$000)												Comments
			Year Work Starts	Number of Actions			Type of Action or Units	Hours per Action	Cost per Hour	Job Classification	Annual Contracted Services and Equipment Purchases (\$000)	Startup Costs	Annualized Costs from 2009 to 2011	Total Costs from 2009 to 2011	Surface Water Management			Planning & Land Services			County Roads			Other Departments				
				Total	New	Existing									Startup Costs (2009)	New	Existing	Total 2009 to 2011 Costs	Startup Costs (2009)	New	Existing	Total 2009 to 2011 Costs	Startup Costs (2009)	New	Existing	Total 2009 to 2011 Costs	Annual Costs (No Existing Annual Costs)	
37	Implement progressive enforcement	S5C7biv	2009	35	35		Enforcements	15	\$55	ET3 + 0.18 hrs of OA2 per inspection hour		\$29	\$88		\$29	\$88												Hours per enforcement action based on PALS estimate; assumed to be less complicated than IDDE actions
38	Training	S5C7bv	2009	30			Training	10	\$55	varies + 0.25 P3	\$33	\$28	\$50	\$177	\$28	\$42	\$152					\$8	\$25					Based on information from Dan Wrye: includes cost of 0.25 P3 (\$24K new, ongoing), + \$9250 contract services (new, ongoing) + \$27,500 contract services (new, startup) in SWM.
39	C8 Illicit Connections & Illicit Discharges Detection & Elimination																											
40	Ongoing Screening to detect illicit connections (2009 & 2010)	S5C8bvi	2009	1,834	1,834	0	Inspections	5.1	\$42	ET2	\$184		\$348	\$761	\$206	\$142	\$761											Number of actions is over a 2-year period 2009 to 2010
41	Ongoing Screening to detect illicit connections (2011)	S5C8bvi	2011	460	460	0	Inspections	5.1	\$42	ET2	\$184		covered above	\$283	covered above	same as above	\$283											Number of inspections assumed per year from 2011 on
42	Illicit Discharge Investigation and Elimination (Includes Enforcement by SWM staff)	S5C8bvii	2009	92	92	0	Enforcements	36	\$49	ET3		\$55	\$164	\$55		\$164												Number of actions is over permit cycle.
43	Enforcement by Development Engineering staff	S5C8bvii	2009	150	150	0	Enforcements	26	\$53	Avg of ET3 & CE2		\$14	\$207	\$634			\$14	\$207	\$634									Enforcement of illicit discharges from new construction; initial costs account for training within PALS for IDDE enforcement
44	Enforcement by Development Engineering staff--OA time			150	150	0	OA time	3.6	\$32	OA2			\$17	\$52			\$17	\$52										
45	Training (SWM & Roads)	S5C8biii	2009	40			Training	10	\$55		\$33	\$28	\$55	\$193	\$28	\$48	\$170					\$8	\$23					Based on information from Dan Wrye: includes cost of 0.25 P3 (\$24K new, ongoing), + \$9250 contract services (new, ongoing) + \$27,500 contract services (new, startup) in SWM.
46	Training (other staff)	S5C8biv	2009	500			Training	0.5	\$55			\$14	\$41											\$14	\$41			
47	C9 Operation & Maintenance Program																											
48		S5C8bv				12		1.0	\$50																			
49																												
50	Inspect private facilities annually	S5C9bi3	2009	1,200	0	1,200	Inspections	5.1	\$55	ET3 + 0.18 hrs of OA2 per inspection hour		\$337	\$1,010		\$337	\$1,010												Assumes one-time initial inspection in 2011; likely to have annual inspections in subsequent years (covered by existing program)
51	Enforcement of maintenance on failing private facilities	S5C9bi(2)	2009	60	60	0	Enforcements	15	\$55	ET3 + 0.18 hrs of OA2 per inspection hour		\$50	\$150	\$50	\$150													Assumes 5% of inspections lead to enforcement. Hours per enforcement is based on PALS estimate and assumes less significant time commitment than IDDE since facility has been authorized by County.
52													\$0															
53	Evaluate and update ordinances requiring maintenance	S5C9bii											\$0															
54	Routine annual inspections of County owned stormwater facilities (out of r/w)	S5C9biii(1)	2009	450	150	300	Inspections	2.0	\$36	ET2		\$32	\$97	\$11	\$22	\$97												Based on personal communication from Harold Brende
55	Additional inspections	S5C9biii(2)	2009	900	900	0	Inspections	0.4	\$36	ET2		\$11	\$34	\$11	\$34													Based on personal communication from Harold Brende
56	Provide maintenance for county facilities (out of r/w)	S5C9bii(6)	2009	450	0	450	Facilities					\$1,279	\$3,837		\$1,279	\$3,837												Assumes current level of maintenance by SWM is sufficient; cost from SWM's 2008 "Pond Maintenance" program
57	Inspect county owned catch basins (in r/w)	S5C9biv(1)	2009	23,000	11,500	11,500	Inspections			Maintenance Tech		\$330	\$990								\$165	\$165	\$990					Based on information from Bruce Wagner: double inspection hours to cover county system annually which is equivalent to 1.6 new ET2s; covers updating GIS database; includes drywells
58	Maintain county owned catch basins (in r/w)	S5C9biv(2)	2009	4,200	700	3,500	Cleanings		\$60	Unit cost per catch basin cleaning		\$252	\$756								\$42	\$210	\$756					Based on information from Bruce Wagner; assumes doubling amount of structures cleaned in response to increased inspections and any new requirements (3500 additional catch basin cleanings at 0.82 hours per structure)
59	Training of maintenance staff	S5C9bviii	2009	120			Employees	10	\$55	varies + 0.25 P3	\$33	\$28	\$99	\$325	\$28	\$58	\$202				\$28	\$83	\$14	\$41				Based on information from Dan Wrye: includes cost of 0.25 P3 (\$24K new, ongoing), + \$9250 contract services (new, ongoing) + \$27,500 contract services (new, startup) in SWM.
60	C10 Public Education & Outreach Program																											
61	Implement Outreach Program to Public & Institutions	S5C10bi(1)	2009	3	2	2	Permit cycle	3,100	\$42	Avg of P2 & ET2 rates	\$280		\$410	\$1,231	\$132	\$278	\$1,231											Existing annual costs are \$150K for professional services and 1 P2 at \$128K (1500 productive hrs/yr x \$85/hr)
62	Implement Outreach programs to Businesses	S5C10bi(2)(4)	2009	3	3	0	Permit cycle	1,050	\$42	Avg of P2 & ET2 rates	\$67		\$111	\$333	\$111	\$333												
63	Implement Outreach Programs to Landowners and Landscapers	S5C10bi(3)	2009	3	3	0	Permit cycle	1,040	\$42	Avg of P2 & ET2 rates	\$163		\$207	\$620	\$207	\$620												
64	Program Effectiveness	S5C10bii	2009	3	3	0	Permit cycle	105	\$42	Avg of P2 & ET2 rates		\$150	\$4	\$163	\$150	\$4	\$163											One-time \$150K professional services contract
65	S7. Compliance With TMDL Requirements																											
66	Comply with specific TMDL requirements in Appendix 2, record keeping of all actions relevant, report status in annual report	STA											\$0															
67													\$0															
68	Increase review requirements and inspection frequency for permitted land conversions and land use actions in South Prairie Creek	Appendix 2	2009	24	24	0	Reviews	8.0	\$57	ET3 + 0.24 hrs of OA2 per inspection hour		\$11	\$33				\$11	\$33									Estimate from SWM	
69	Investigate bacterial sources: two areas	Appendix 2	2010	1	1	0	Inspections					\$17	\$50		\$17	\$50												Estimate from SWM

**Appendix B. County Staff's Updated Cost of Compliance with the Washington State 2007 NPDES Phase I Municipal Stormwater Permit
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Description of Work		Data										Total Costs (2008 dollars) (\$000) (1)			Cost by County Department (\$000)										Comments			
		Year Work Starts	Number of Actions			Type of Action or Units	Hours per Action	Cost per Hour	Job Classification	Annual Contracted Services and Equipment Purchases (\$000)	Startup Costs	Annualized Costs from 2009 to 2011	Total Costs from 2009 to 2011	Surface Water Management			Planning & Land Services			County Roads			Other Departments					
			Total	New	Existing									Startup Costs (2009)	New	Existing	Total 2009 to 2011 Costs	Startup Costs (2009)	New	Existing	Total 2009 to 2011 Costs	Startup Costs (2009)	New	Existing		Total 2009 to 2011 Costs	Annual Costs (No Existing Annual Costs)	Total 2009 to 2011 Costs
Task	Permit Section																											
103	Establish and implement policies and procedures to reduce pollutants from lands owned or maintained by permittee (e.g., parks, opens space, ROWs, maintenance yards, facilities, trash)	SSC9vii	2009	1			Documentation					\$400		\$400	\$400													Based on cost proposal submitted by TetraTech/KCM for complete County SWM Maintenance Manual (in 2005).
104	Develop and implement a SWPPP for all heavy equipment maintenance or storage yards, material storage facilities owned/operated by permittee	SSC9ix	2009	1			Documentation					\$400		\$400	\$400													Based on cost proposal submitted by TetraTech/KCM for complete County SWM Maintenance Manual (in 2005).
105	Maintenance Manual & Asset Management System Implementation (New costs)		2009	1			Documentation					\$433		\$433	\$433													Per 8/13/08 email from Harold Smelt; existing costs are \$92,000 not accounted for in totals since this is a one-time startup cost
106	New Employee Setup Costs											\$811		\$811	\$345													
107	Subtotal											\$2,540	\$15,241	\$48,263	\$1,954	\$2,202	\$10,068	\$38,457	\$501	\$1,227	\$1,058	\$7,200	\$85	\$283	\$375	\$2,060	\$28	\$83
108	New Employee Overhead Costs											\$2,666	\$7,998		\$1,379		\$4,137		\$1,103		\$3,310		\$184		\$552			
109	Totals											\$2,540	\$17,907	\$56,261	\$1,954	\$3,581	\$10,068	\$42,594	\$501	\$2,330	\$1,058	\$10,510	\$85	\$467	\$375	\$2,612	\$28	\$83

(1) Labor costs reflect raises expected for 2009.

Appendix C
R. W. Beck's Alternative Cost of Compliance

**Appendix C. R. W. Beck's Alternative Cost of Compliance with the Washington State 2007 NPDES Phase I Municipal Stormwater Permit
Pierce County Performance Audit Committee
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Description of Work		Data										Total Costs (2008 dollars) (\$000) (1)			Cost by County Department (\$000)												Comments				
															Surface Water Management			Planning & Land Services			County Roads			Other Departments							
												Task	Permit Section	Year Work Starts	Number of Actions			Type of Action or Units	Hours per Action	Cost per Hour	Job Classification	Annual Contracted Services and Equipment Purchases (\$000)	Startup Costs	Annualized Costs from 2009 to 2011	Total Costs from 2009 to 2011	Startup Costs (2009)		Annual Costs		Total 2009 to 2011 Costs	Startup Costs (2009)
Total	New	Existing	New	Existing	Total 2009 to 2011 Costs	New	Existing	New	Existing	Total 2009 to 2011 Costs	New				Existing																
1 S3. Responsibilities of Permittees																														Costs included under "Municipal NPDES Permit Management" below.	
2 S4. Compliance with Standards																														Current capital construction (SSC6) program sufficient to meet any structural BMP requirements triggered by this Section; Costs associated with Stormwater Management Plan, Annual Report, and written notification of water quality violations included under "Municipal NPDES Permit Management" below.	
3 S5. Stormwater Management Program																														Costs other than mapping included under "Municipal NPDES Permit Management" below.	
4 C2 System Mapping & Documentation																															
5 Mapping	S5C2b	2009	1	1		Mapping	1,400	\$36	ET2			\$17	\$50		\$17		\$50													SWM costs only	
6 C3 Coordination																														Included under "Municipal NPDES Permit Management" below.	
7 C4 Public Involvement & Participation																															Combined with SSC10 "Public Education and Outreach Program" below.
8 C5 Controlling Runoff from New Development & Construction Sites																															
9 Review Site Plans (Area Review Work Unit)--existing	S5C5bvi	ends in 2008	2,244	0	2,244	Reviews	3.3	\$56	CE2			\$415	\$1,244				\$415	\$1,244													
10 Review Site Plans (Area Review Work Unit)--proposed	S5C5bvi	2009	2,244	2,244	0	Reviews	1.0	\$56	CE2		\$11	\$126	\$388				\$11	\$126		\$388										Startup cost based on information from PALS for training; annual cost based on year 2012 information from PALS.	
11 Review Site Plans (Plat Work Unit)--existing	S5C5bvi	ends in 2008	1,416	0	1,416	Reviews	0.2	\$49	CE1			\$14	\$42							\$14	\$42										
12 Review Site Plans (Plat Work Unit)--proposed	S5C5bvi	2009	1,416	1,416	0	Reviews	0.0	\$49	CE1			\$1	\$2				\$1				\$2									Annual cost based on year 2012 information from PALS.	
13 Review Site Plans (Single Family Residential Work Unit)--existing	S5C5bvi	ends in 2008	2,508	0	2,508	Reviews	0.4	\$49	CE1			\$49	\$147							\$49	\$147										
14 Review Site Plans (Single Family Residential Work Unit)--proposed	S5C5bvi	2009	2,508	2,508	0	Reviews	1.1	\$49	CE1			\$135	\$406				\$135				\$406										
15 Pre-Construction Inspection	S5C5bvi	2009	1,208	1,208	0	Inspections	0.5	\$49	ET3		\$9	\$27	\$89				\$9	\$27		\$89										Includes initial (\$138K) and annual (\$28K) setup/equipment costs for all NPDES inspection work by PALS.	
16 Pre-Construction Inspection--OA support	S5C5bvi		1,208	1,208	0	OA time	0.1	\$32	OA2			\$4	\$13							\$4	\$13										
17 Inspection During Construction (General Site Development)	S5C5bvi	2009	3,588	2,100	1,488	Inspections	0.6	\$49	ET3		\$37	\$105	\$353				\$37	\$62	\$44	\$353										4464 inspections = 2976 new + 1488 existing; Alternative assumes only 1488 new	
18 Inspection During Construction (General Site Development)--OA support	S5C5bvi		3,588	2,100	1,488	OA time	0.1	\$32	OA2			\$16	\$48							\$9	\$7	\$28									
19 Inspection During Construction (Single Family Residential Developments)	S5C5bvi	2009	14,501	1,813	12,688	Inspections	0.5	\$49	ET3			\$320	\$961				\$40	\$280	\$961											Assume 4.5 visits at 3625 distinct SFR sites (4.5 x 3625 = 16313 visits); Alternative assumes only 1813 new	
20 Inspection During Construction (Single Family Residential Developments)--OA support			14,501	1,813	12,688	OA time	0.1	\$32	OA2			\$51	\$153				\$6	\$45	\$19												
21 Inspection upon completion of construction (Residential developments)	S5C5bvi; S5C9bii(4)	2009	749	684	65	Inspections	0.6	\$49	ET3		\$37	\$22	\$103				\$37	\$20	\$2	\$103										Assumes a semi-annual inspection by PALS of stormwater facilities in maintenance bonding phase (based on Mitch Brells assessment of permit reqs).	
22 Inspection upon completion of construction (Residential developments)--OA support	S5C5bvi; S5C9bii(4)		749	684	65	OA time	0.1	\$32	OA2			\$3	\$8				\$2	\$0	\$7												
23 Additional costs associated with non-conforming sites (residential)	S5C5bvi; S5C9bii(4)	2009	228	228	0	Enforcements	2.0	\$49	ET3			\$22	\$67				\$22		\$67												
24 Inspection upon completion of construction (commercial & off-site)	S5C5bvi; S5C9bii(3)	2011	682	573	109	Inspections	0.6	\$49	ET3		\$2	\$20	\$62				\$2	\$17	\$3	\$62										According to Mitch Brells (PALS), this work would begin in 2011; 682 inspections = 573 new + 109 existing	
25 Inspection upon completion of construction (commercial & off-site)--OA support	S5C5bvi; S5C9bii(3)	2011	682	573	109	OA time	0.1	\$32	OA2			\$2	\$7				\$2	\$0	\$6												
26 Additional costs associated with non-conforming sites (commercial & off-site)	S5C5bvi; S5C9bii(3)	2011	191	191	0	Enforcements	2.0	\$49	ET3			\$19	\$56				\$19		\$56											According to Mitch Brells (PALS), this work would begin in 2011.	
27 Development Engineering Enforcement (Current Reactive Program)	S5C5bvi	2009	332	332	332	Inspections	13	\$49	ET3		\$11	\$208	\$636				\$11	\$130	\$78	\$636										Number of actions remains the same (reactive program assumption) but time per action increase by 8 hours	
28 Development Engineering Enforcement (Current Reactive Program)	S5C5bvi7	2009	300	300	300	Enforcements	15	\$56	CE2			\$255	\$766				\$134	\$121	\$766											Number of actions remains the same (reactive program assumption) but time per action increase by 8 hours; new costs reflect a CE2 instead of current CE1.	
29 Development Engineering Enforcement (Current Reactive Program)--OA support	S5C5bvi7		300	300	0	OA time	3.8	\$32	OA2			\$36	\$109				\$36		\$109												
30 PALS training of reviewers	S5C5bviii	2009				Training						\$122	\$366				\$122		\$366											Based on total 3-year program provided by Mitch Brells with revised labor costs by RW Beck (cost estimated at \$366K)	
31 Training of non-PALS personnel	S5C5bviii	2009	30	30		Training	40	\$55	varies	\$9		\$75	\$226	\$42		\$127						\$33		\$99						Based on information from Dan Wrye: includes cost of 0.25 P3 (\$24K new, ongoing), + \$9250 contract services (new, ongoing) + \$27,500 contract services (new, startup) in SWM.	
32 C6 Structural Stormwater Control																															
33 Structural stormwater control program	S5C6a	2009										\$8,000	\$24,000				\$8,000	\$24,000												Based on current capital improvement program.	
34 C7 Source Control Program for Existing Development																															Does not include any capital improvement costs to County.
35 Inventory of businesses & notifications	S5C7bii; S5C7biii	2009	1	1	0	Inspections	960	\$55	ET3 + 0.18 hrs of OA2 per inspection hour		\$53		\$53	\$53		\$53														Alternative assumes t	
36 Inspection program	S5C7biii	2009	700	700		Inspections	5.1	\$55	ET3 + 0.18 hrs of OA2 per inspection hour			\$196	\$589	\$196		\$589														20% of an estimated 1700 unique sites that meet land use/business type in Appendix 8 of NPDES permit	
37 Implement progressive enforcement	S5C7biv	2009	70	70		Enforcements	15	\$55	ET3 + 0.18 hrs of OA2 per inspection hour			\$59	\$176	\$59		\$176														Hours per enforcement action based on PALS estimate; assumed to be less complicated than IDDE actions	

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			Number of Actions			Type of Action or Units	Hours per Action	Cost per Hour	Job Classification	Annual Contracted Services and Equipment Purchases (\$000)	Startup Costs	Annualized Costs from 2009 to 2011	Total Costs from 2009 to 2011	Surface Water Management			Planning & Land Services			County Roads			Other Departments										
			Total	New	Existing									Annual Costs	Annual Costs	Annual Costs	Annual Costs	Annual Costs	Annual Costs	Annual Costs	Annual Costs	Annual Costs	Annual Costs		Annual Costs	Annual Costs	Annual Costs	Annual Costs	Annual Costs				
38 Training	S5C7bv	2009	30			Training	10	\$55	varies	\$9	\$28	\$26	\$105	\$28	\$18	\$80																	Based on information from Dan Wrye: includes cost of 0.25 P3 (\$24K new, ongoing), + \$9250 contract services (new, ongoing) + \$27,500 contract services (new, startup) in SWM.
C8 Illicit Connections & Illicit Discharges																																	
39 Detection & Elimination																																	
40 Ongoing Screening to detect illicit connections (2009 & 2010)	S5C8bvi	2009	1,834	1,834	0	Inspections	8.0	\$42	ET2	\$184		\$441	\$984		\$299	\$142	\$984																Number of actions is over a 2-year period 2009 to 2010
41 Ongoing Screening to detect illicit connections (2011)	S5C8bvi	2011	460	460	0	Inspections	8.0	\$42	ET2	\$184		covered above	\$339		covered above	same as above	\$339															Number of inspections assumed per year from 2011 on	
42 Illicit Discharge Investigation and Elimination (Includes Enforcement by SWM staff)	S5C8bvii	2009	200	200	0	Enforcements	36	\$49	ET3			\$119	\$356		\$119		\$356															Number of actions is over permit cycle.	
43 Enforcement by Development Engineering staff	S5C8bvii	2009	75	75	0	Enforcements	12	\$53	Avg of ET3 & CE2		\$14	\$48	\$157		\$14	\$48	\$157															Enforcement of illicit discharges from new construction; initial costs account for training within PALS for IDDE enforcement	
44 Enforcement by Development Engineering staff--OA time			75	75	0	OA time	3.6	\$32	OA2			\$9	\$26			\$9	\$26																
45 Training (SWM & Roads)	S5C8iii	2009	40			Training	10	\$55	varies	\$9	\$28	\$31	\$121	\$28	\$24	\$98																Based on information from Dan Wrye: includes cost of 0.25 P3 (\$24K new, ongoing), + \$9250 contract services (new, ongoing) + \$27,500 contract services (new, startup) in SWM.	
46 Training (other staff)	S5C8iv	2009	500			Training	0.5	\$55				\$14	\$41																				
47 C9 Operation & Maintenance Program																																	
50 Inspect private facilities annually	S5C9bi3	2009	1,200	0	1,200	Inspections	5.1	\$55	ET3 + 0.18 hrs of OA2 per inspection hour			\$337	\$1,010			\$337	\$1,010															Assumes one-time initial inspection in 2011; likely to have annual inspections in subsequent years (covered by existing program)	
51 Enforcement of maintenance on failing private facilities	S5C9bj(2)	2009	60	60	0	Enforcements	15	\$55	ET3 + 0.18 hrs of OA2 per inspection hour			\$50	\$150		\$50		\$150															Assumes 5% of inspections lead to enforcement. Hours per enforcement is based on PALS estimate and assumes less significant time commitment than IDDE since facility has been authorized by County.	
54 Routine annual inspections of County owned stormwater facilities (out of r/w)	S5C9biii(1)	2009	450	150	300	Inspections	2.0	\$36	ET2			\$32	\$97		\$11	\$22	\$97															Based on personal communication from Harold Brende	
55 Additional inspections	S5C9biii(2)	2009	900	900	0	Inspections	0.4	\$36	ET2			\$11	\$34		\$11		\$34															Based on personal communication from Harold Brende	
56 Provide maintenance for county facilities (out of r/w)	S5C9bij(6)	2009	450	0	450	Facilities						\$1,279	\$3,837			\$1,279	\$3,837															Assumes current level of maintenance by SWM is sufficient; cost from SWM's 2008 "Pond Maintenance" program	
57 Inspect county owned catch basins (in r/w)	S5C9biv(1)	2009	23,000	11,500	11,500	Inspections			Maintenance Tech			\$330	\$990												\$165	\$165	\$990					Based on information from Bruce Wagner: double inspection hours to cover county system annually which is equivalent to 1.6 new ET2s; covers updating GIS database; includes drywells	
58 Maintain county owned catch basins (in r/w)	S5C9biv(2)	2009	4,200	700	3,500	Cleanings		\$60	Unit cost per catch basin cleaning			\$252	\$756												\$42	\$210	\$756					Based on information from Bruce Wagner; assumes doubling amount of structures cleaned in response to increased inspections and any new requirements (3500 additional catch basin cleanings at 0.82 hours per structure)	
59 Training of maintenance staff	S5C9bvii	2009	120			Employees	10	\$55	varies	\$9	\$28	\$75	\$253	\$28	\$34	\$130									\$28		\$83	\$14	\$41			Based on information from Dan Wrye: includes cost of 0.25 P3 (\$24K new, ongoing), + \$9250 contract services (new, ongoing) + \$27,500 contract services (new, startup) in SWM.	
60 C10 Public Education & Outreach Program																																	
61 Implement Outreach Program to Public & Institutions	S5C10bi(1)	2009	3	2	2	Permit cycle	3,100	\$42	Avg of P2 & ET2 rates	\$280		\$410	\$1,231		\$132	\$278	\$1,231																Existing annual costs are \$150K for professional services and 1 P2 at \$128K (1500 productive hrs/yr x \$85/hr)
62 Implement Outreach programs to Businesses	S5C10bi(2)(4)	2009	3	3	0	Permit cycle	1,050	\$42	Avg of P2 & ET2 rates	\$67		\$111	\$333		\$111		\$333																
63 Implement Outreach Programs to Landowners and Landscapers	S5C10bi(3)	2009	3	3	0	Permit cycle	1,040	\$42	Avg of P2 & ET2 rates	\$163		\$207	\$620		\$207		\$620																
64 Program Effectiveness	S5C10bi	2009	3	3	0	Permit cycle	105	\$42	Avg of P2 & ET2 rates		\$150	\$4	\$163	\$150	\$4	\$163																	One-time \$150K professional services contract
65 S7. Compliance With TMDL Requirements																																	
68 Increase review requirements and inspection frequency for permitted land conversions and land use actions in South Prairie Creek	Appendix 2	2009	24	24	0	Reviews	8.0	\$57	ET3 + 0.24 hrs of OA2 per inspection hour			\$11	\$33		\$11		\$33															Estimate from SWM	
69 Investigate bacterial sources: two areas	Appendix 2	2010	1	1	0	Inspections						\$17	\$50		\$17		\$50															Estimate from SWM	
70 S8. Monitoring																																	
71 Program Development	S8C1	2009	1	1	0	Monitoring	120	\$42	P1	\$135		\$140	\$420		\$140		\$420																From SWM's original estimate (kept assumption of 5-yr program to cover likely continuation beyond current permit cycle); minor revisions following input from John Collins
72 Stormwater Characterization Monitoring	S8D	2009	1	1	0	Monitoring	80	\$42	P1	\$136	\$45	\$139	\$463	\$45	\$139		\$463																From SWM's original estimate (kept assumption of 5-yr program to cover likely continuation beyond current permit cycle); minor revisions following input from John Collins; startup costs is for a QAPP prepared by consultant
73 SWMP Effectiveness Monitoring	S8E	2009	1	1	0	Monitoring	80	\$42	P1	\$67	\$45	\$70	\$256	\$45	\$70		\$256																From SWM's original estimate (kept assumption of 5-yr program to cover likely continuation beyond current permit cycle); minor revisions following input from John Collins; startup costs is for a QAPP prepared by consultant
74 BMP Effectiveness Monitoring	S8F	2009	1	1	0	Monitoring	80	\$42	P1	\$257	\$45	\$260	\$826	\$45	\$260		\$826																From SWM's original estimate (kept assumption of 5-yr program to cover likely continuation beyond current permit cycle); minor revisions following input from John Collins; startup costs is for a QAPP prepared by consultant
75 Monitoring Reporting	S8B, S8H	2009	1	1	0	Reporting	800	\$42	P1			\$34	\$101		\$34		\$101																From SWM's original estimate (kept assumption of 5-yr program to cover likely continuation beyond current permit cycle); minor revisions following input from John Collins
76 Municipal NPDES Permit Management (SWM costs)																																	
77 Documentation, Tracking, and Reporting																																	
78 Record-keeping and reporting	S9A	2009		3		Reporting	1,768	\$37	RS			\$77	\$231		\$65	\$12	\$231																Assumes 1 new full-time record keeper

Appendix C. R. W. Beck's Alternative Cost of Compliance with the Washington State 2007 NPDES Phase I Municipal Stormwater Permit
Pierce County Performance Audit Committee
NPDES Workload Assessment

Description of Work		Data									Total Costs (2008 dollars) (\$000) (1)			Cost by County Department (\$000)												Comments	
														Surface Water Management			Planning & Land Services			County Roads			Other Departments				
Task	Permit Section	Year Work Starts	Number of Actions			Type of Action or Units	Hours per Action	Cost per Hour	Job Classification	Annual Contracted Services and Equipment Purchases (\$000)	Startup Costs	Annualized Costs from 2009 to 2011	Total Costs from 2009 to 2011	Annual Costs			Annual Costs			Annual Costs			Annual Costs New (No Existing Annual Costs)	Total 2009 to 2011 Costs			
			Total	New	Existing									Startup Costs (2009)	New	Existing	Total 2009 to 2011 Costs	Startup Costs (2009)	New	Existing	Total 2009 to 2011 Costs	Startup Costs (2009)			New	Existing	Total 2009 to 2011 Costs
79 Inter- and Intra-Jurisdictional Coordination																											
80	Establish intra- and inter-governmental coordination procedures for compliance	SSC3bi	2009	3	3		Coordination	884	\$55	P3		\$49	\$146		\$49		\$146										0.5 P3 for NPDES program's required coordination activities
81 Policies and Procedure Development and Implementation																											
82	Ordinances, internal policies and internal training	SSC5bi	2009	3	3		Coordination & Training	884	\$55	P3		\$49	\$146		\$49		\$146										0.5 P3 for NPDES program's required training and implementation
83	New Employee Setup Costs										\$811	\$811	\$496	\$916	\$2,157	\$10,068	\$37,591	\$350	\$983	\$1,058	\$6,317	\$85	\$283	\$375	\$2,060	\$28	\$83
84	Subtotal										\$1,351	\$14,952	\$46,207	\$916	\$1,563	\$10,068	\$37,591	\$350	\$983	\$1,058	\$6,317	\$85	\$283	\$375	\$2,060	\$28	\$83
85	New Employee Overhead Costs										\$2,666	\$7,998			\$1,563		\$4,689		\$919		\$2,758		\$184		\$552		
86	Totals										\$1,351	\$17,618	\$54,206	\$916	\$3,720	\$10,068	\$42,280	\$350	\$1,902	\$1,058	\$9,075	\$85	\$467	\$375	\$2,612	\$28	\$83
(1) Labor costs reflect raises expected for 2009.																											

Appendix D
County Staff's Original (2007) Cost of Compliance

**Cost of Compliance with Municipal Stormwater Phase 1 NPDES Permit
 Proposed Implementation Strategy**

Goal: Fully funded going into 5th (final) year of permit

Org Unit	Org Unit	Functions	Additional FTEs				Total
			2007-2008	2009	2010	2011	
Water Programs	Water Programs			TBD	TBD	TBD	
	Water Quality	Insp, Recording Keeping, Prog Dev, Reporting	4				
	Maintenance	Maintenance follow up	2				
	CIP	Additional WQ retrofits	1				
	Prog Services	Interlocal coord, lands p2, outreach	3				
PALS	PALS			TBD	TBD	TBD	
	Dev Eng	Insp.(2), plan reviews (1)	3				
	Natural Resouces	Enforcement	5				
Roads	Maintenance	Maintenance follow up	2	TBD	TBD	TBD	
Others	TBD	TBD		TBD	TBD	TBD	
Total			20	10	5 to 10	5 to 10	40 to 50

Benefits

- Surge in first 2 years: demonstrates compliance
- Reserve final ramp up to later years after PCHB and after validation of assumptions
- Functions determined by our perceived needs in relation to costs estimates -- ability to drive areas needing improvement
- Involves some consideration of programmatic, lakes, shellfish
- Reserves decision on 2007 supplemental

Downsides

- UIC unknowns
- Lakes and shellfish not fully supported
- Other BP Programmatic not included
- Costs and timing relative to rate structure review and no other known local fund sources
- Assumes we can choose which functions and when to ramp up

Cost of Compliance with Municipal Stormwater Phase 1 NPDES Permit

Permit Requirement	Function	Permit Section	Number	Hours/Action	\$/unit (hour, action)	Frequency/ permit life	Five Year Cost	Average Annual Cost	Comments
S2. AUTHORIZED DISCHARGES									
Does not apply to Indian lands		S2E							Unknown but additional costs
S3. RESPONSIBILITIES OF PERMITTEES									
Submit/amend statement where Co-permittees	Permit Coordination	S3B	5	40	\$ 50	1	\$ 10,000	\$ 2,000	Assumes 5 entities seek co-permittee status
S4. COMPLIANCE WITH STANDARDS									
Written notification when causing or contributing to WQS violation	Tracking, Reporting, Record Keeping	S4F1	1	40	\$ 50	1	\$ 2,000	\$ 400	Assumes one reoccurring violation
Review SWMP and submit report	Tracking, Reporting, Record Keeping	S4F2a(i, ii, iii)	1	320	\$ 50	1	\$ 16,000	\$ 3,200	
Submit revised report	Tracking, Reporting, Record Keeping	S4F2b	1	160	\$ 50	1	\$ 8,000	\$ 1,600	
Implement additional BMPs	CIP	S4F2c	1		\$ 500,000	1	\$ 500,000	\$ 100,000	Assumes one wq structural BMP
Annual report summary of status, assessment, evaluation	Tracking, Reporting, Record Keeping	S4F2d	1	320	\$ 50	5	\$ 80,000	\$ 16,000	
S5. STORMWATER MANAGEMENT PROGRAM									
Written and electronic documentation of SWMP	Tracking, Reporting, Record Keeping	S5A1	1	160	\$ 50	1	\$ 8,000	\$ 1,600	
Track costs of SWMP development/implementation	Tracking, Reporting, Record Keeping	S5A2	1	8	\$ 50	260	\$ 104,000	\$ 20,800	1 day per week to track

Cost of Compliance with Municipal Stormwater Phase 1 NPDES Permit

Permit Requirement	Function	Permit Section	Number	Hours/Action	\$/unit (hour, action)	Frequency/ permit life	Five Year Cost	Average Annual Cost	Comments
Track costs of inspections, enforcements, and outreach actions	Tracking, Reporting, Record Keeping	S5A3							Costs included under S5A2
Continue to implement pre-07 permit requirements	Ongoing	S5B						\$ -	Current program is approx \$16m
Demonstrate legal authority to control discharges	Tracking, Reporting, Record Keeping	S5C1a	1	8	\$ 50	1	\$ 400	\$ 80	
Map all known municipal outfalls, receiving waters, structures, flow controls	GIS	S5C2bi	1	80	\$ 50	1	\$ 4,000	\$ 800	Assumes most currently available. Gaps only.
Map conveyances, drainage areas, landuse in urban/higher density rural subbasins	GIS	S5C2bii	1	160	\$ 50	1	\$ 8,000	\$ 1,600	
Initiate a program to develop and maintain a map of all connections	GIS	S5C2biii	1	960	\$ 50	1	\$ 48,000	\$ 9,600	Assumes on-site verification.
Map existing connections over 8" for 1/2 of urban/higher density rural subbasins	GIS	S5C2biv	1	160	\$ 50	1	\$ 8,000	\$ 1,600	
Map geographic areas that do not discharge stormwater to surface water	GIS	S5C2bv	1	40	\$ 50	1	\$ 2,000	\$ 400	
Provide mapping information to DOE upon request	GIS	S5C2bvi	4	4	\$ 50	5	\$ 4,000	\$ 800	Assumes quarterly.
Provide mapping information to co-permittees upon request	GIS	S5C2bvii	5	4	\$ 50	5	\$ 5,000	\$ 1,000	

Cost of Compliance with Municipal Stormwater Phase 1 NPDES Permit

Permit Requirement	Function	Permit Section	Number	Hours/Action	\$/unit (hour, action)	Frequency/ permit life	Five Year Cost	Average Annual Cost	Comments
Establish coordination mechanisms among entities covered under permit	Permit Coordination	S5C3a	1	2080	\$ 50	5	\$ 520,000	\$ 104,000	Assumes FTE for Permit Coordinator for coordinated programs, policies
Establish intra-governmental coordination procedures for compliance	Permit Coordination	S5C3bi	1		\$ 50	1	\$ -	\$ -	Cost under Permit Coordinator
Establish inter-governmental coordination procedures (roles, regulations, monitoring, shared waters). Documentation.	Permit Coordination	S5C3bii	1		\$ 50	1	\$ -	\$ -	Cost under Permit Coordinator
Create opportunities for public participation and comments in SWMP	Outreach and Ed	S5C4bi							Costs included under outreach S5C10bi
Make all submittals available to the public	Outreach and Ed	S5C4bii							Costs included under outreach S5C10bi
Establish minimum requirements for new development, redevelopment, construction sites	Program Development	S5C5bi	1	4160	\$ 50	1	\$ 208,000	\$ 41,600	Cost of updating of manual for equivalency with DOE
Establish site planning process, BMP selection and design criteria, document	Program Development	S5C5bii, iii							Included under cost of minimum requirements
Adoption of local minimum requirements, process	Program Development	S5C5biv	1	480	\$ 50	1	\$ 24,000	\$ 4,800	Cost of adopting manual for equivalency with DOE

Cost of Compliance with Municipal Stormwater Phase 1 NPDES Permit

Permit Requirement	Function	Permit Section	Number	Hours/Action	\$/unit (hour, action)	Frequency/ permit life	Five Year Cost	Average Annual Cost	Comments
Legal authority for enforcement for inspections of private facilities and enforcement of maintenance standards for new and redevelopment	Program Development	S5C5bv							Included under cost of adoption of minimum requirements
Permits, plan review, inspections, enforcement, review of all stormwater site plans	Development Review	S5C5vi	5000	4	\$ 50	5	\$ 5,000,000	\$ 1,000,000	Assumes 5000 sites per year per Ken Cook at PALS (site dev permit worksheet)
Inspect prior to clearing and construction all development sites with high potential for sediment	Inspections - Dev Eng	S5C5vi	1650	4	\$ 50	5	\$ 1,650,000	\$ 330,000	Assumes 1/3 of 5000 sites have "high potential" per year per Ken Cook at PALS (site dev permit worksheet)
Inspect all permitted sites involving land disturbing during construction. Enforce as necessary.	Inspections - Dev Eng	S5C5vi	5000	4	\$ 50	5	\$ 5,000,000	\$ 1,000,000	Assumes 5000 sites per year per Ken Cook at PALS (site dev permit worksheet)
Inspect all sites upon completion of construction. Enforce as necessary. Complete a maintenance plan.	Inspections - Dev Eng	S5C5vi	6650	4	\$ 50	5	\$ 6,650,000	\$ 1,330,000	Assumes 5000 sites per year per Ken Cook at PALS (site dev permit worksheet) plus maintenance plan for 1/3
Implement record keeping of inspections and enforcement actions.	Tracking, Reporting, Record Keeping	S5C5vi	1	4	\$ 50	260	\$ 52,000	\$ 10,400	Assumes 1 day per week

Cost of Compliance with Municipal Stormwater Phase 1 NPDES Permit

Permit Requirement	Function	Permit Section	Number	Hours/Action	\$/unit (hour, action)	Frequency/ permit life	Five Year Cost	Average Annual Cost	Comments
Establish and implement enforcement strategy	Enforcement	S5C5vi	5	2080	\$ 50	5	\$ 2,600,000	\$ 520,000	Assumes 5 FTEs @ 10% of total inspections requiring enforcement (inspections = 35,000/yr * 10% = 700/FTE)(catch basin isp not included)
Training, followup training, and record keeping for all staff in permitting, plan review, inspections, enforcement	Training	S5C5vii	120	160	\$ 50	2	\$ 1,920,000	\$ 384,000	Assumes 120 PWU, PALS staff for 4 trainings @ 40 each, twice
Structural stormwater control program	CIP	S5C6a	1	1	\$ 7,000,000	5	\$ 35,000,000	\$ 7,000,000	Based on current annual CIP
Implement structural control program	CIP	S5C6ai							Cost included under S6a, above
Description of structural control program in report	Tracking, Reporting, Record Keeping	S5C6aii	1	160	\$ 50	1	\$ 8,000	\$ 1,600	
Estimate pollutant load reduction, expected outcomes, environmental benefits, monitoring results	Monitoring, Modelling, Source Tracking	S5C6aiii	1	600	\$ 50	1	\$ 30,000	\$ 6,000	
Annual report updates on structural controls	Tracking, Reporting, Record Keeping	S5C6aiv	1	40	\$ 50	5	\$ 10,000	\$ 2,000	
Reduce pollutants from existing land uses through operation, structural, and treatment BMPs	CIP	S5C7ai	1	3	\$ 300,000	5	\$ 4,500,000	\$ 900,000	Assumes 3 retrofits/year

Cost of Compliance with Municipal Stormwater Phase 1 NPDES Permit

Permit Requirement	Function	Permit Section	Number	Hours/Action	\$/unit (hour, action)	Frequency/ permit life	Five Year Cost	Average Annual Cost	Comments
Inspections/enforcement of pollutant-generating sources and multifamily	Inspections - WP	S5C7a ⁱⁱ	9063	4	\$ 50	1	\$ 1,812,600	\$ 362,520	Est from CountyView GIS (3633 commercial and 3617 multi family). Enf of 1/4 inspections. 20%/yr
Enforcement of PC and DOE-permitted sites	Enforcement	S5C7a ⁱⁱⁱ							Assumed under S7a ⁱⁱ , above
Reduction of pollutants from pesticides, herbicides, fertilizers	Lands Management	S5C7a ^{iv}	453.15	40	\$ 50	1	\$ 906,300	\$ 181,260	Assumes 5% of commercial sites @ 40hrs/site @ 20% sites per year
Adopt, implement, enforce controls at existing pollutant generating sites; submit to DOE	Program Development	S5C7b ⁱ	1	960	\$ 50	1	\$ 48,000	\$ 9,600	Cost of adopting only, assumed to be controversial
Program to identify potential pollutant generators (land use inventory with updates, complaint-based response)	Program Development	S5C7b ⁱⁱ	1	2080	\$ 50	5	\$ 520,000	\$ 104,000	Cost of Pollutant Generator Program Coordinator FTE to develop and administer
Implement an audit/inspection program for b ⁱⁱ (contact all sites with business address and inspect 20% annually plus 100% complaints)	Inspections - WP	S5C7b ⁱⁱⁱ	3633	2	\$ 50	1	\$ 363,300	\$ 72,660	Cost of contacts to commercial only. Inspections under S7a ⁱⁱ
Implement progressive enforcement program	Enforcement	S5C7b ^{iv}							Cost included under S7a ⁱⁱ
Training and record keeping for all staff in enforcement	Training	S5C7b ^v							Cost included under S55v ⁱⁱ

Cost of Compliance with Municipal Stormwater Phase 1 NPDES Permit

Permit Requirement	Function	Permit Section	Number	Hours/Action	\$/unit (hour, action)	Frequency/ permit life	Five Year Cost	Average Annual Cost	Comments
Remove and prevent illicit connections and illicit discharges, including spills through field screening, inspections, complaints, monitoring	Inspections - WP	S5C8bi	1	2080	\$ 50	5	\$ 520,000	\$ 104,000	Cost of Illicit Discharge Decommissioning FTE to develop and administer illicit dischargers
Evaluate and update ordinances to prohibit line flushing, lawn watering, swim pool discharges, street washing, other non-stormwater discharges	Program Development	S5C8bii	1	960	\$ 50	1	\$ 48,000	\$ 9,600	Cost of adopting only, assumed to be controversial
Address in SWMP each category under S8bii		S5C8bii (3)-(5)	1	160	\$ 50	1	\$ 8,000	\$ 1,600	
Training, follow up training and record keeping for all staff in illicit discharge identification, investigation, termination, cleanup, spills	Training	S5C8biii	80	40	\$ 50	2	\$ 320,000	\$ 64,000	Assumes 80 PWD, PALS employees @ 40 hr, twice
Training, follow up training and record keeping for all municipal staff who may come in contact or observe illicit discharges	Training	S5C8biv	1750	8	\$ 50	5	\$ 3,500,000	\$ 700,000	Assumes 50% of PC employees, one day annual
Provide publicly-listed wq complaint phone number	Outreach and Ed	S5C8bv	12	1	\$ 50	5	\$ 3,000	\$ 600	
Conduct on-going screening of illicit discharges/connections and source tracking (prioritized)	Inspections - WP	S5C8bvi							Cost included under S8bi

Cost of Compliance with Municipal Stormwater Phase 1 NPDES Permit

Permit Requirement	Function	Permit Section	Number	Hours/Action	\$/unit (hour, action)	Frequency/ permit life	Five Year Cost	Average Annual Cost	Comments
Conduct investigations with 21 days of report of illicit discharges; eliminate through enforcement; report to DOE; enforcement referrals limitations	Inspections - WP	S5C8bvii	1	2080	\$ 50	5	\$ 520,000	\$ 104,000	Cost of enforcement on illicit dischargers
Participate in emergency response program or implement investigation and spills response program. Prioritize and investigate reports	Inspections - WP	S5C8bviii	1	2080	\$ 50	5	\$ 520,000	\$ 104,000	Cost of FTE to develop and administer spills response
Track and maintain records of illicit discharge detection and elimination program	Tracking, Reporting, Record Keeping	S5C8bix	12	8	\$ 50	5	\$ 24,000	\$ 4,800	
Develop a program to regulate and conduct maintenance activities to include standards for public and private facilities	Program Development	S5C9ai	1	2880	\$ 50	1	\$ 144,000	\$ 28,800	18 month program development (staff only)
Conduct O&M for public facilities	Maintenance	S5C9aai	4	2880	\$ 50	5	\$ 2,880,000	\$ 576,000	Cost of 4 Facilities M&O staff
Reduce pollutants of pesticides, herbicides, fertilizers by permittee	Lands Management	S5C9aiii							Cost included under S5C9aai
Reduce stormwater impacts from heavy equipment, maintenance or storage yards and from material storage facilities operated by permittee	Lands Management	S5C9aiv							Cost included under S5C9aai
Establish maintenance standards (public and private)	Program Development	S5C9bi	1		\$ 800,000	1	\$ 800,000	\$ 160,000	Based on current cost of maintenance manual

Cost of Compliance with Municipal Stormwater Phase 1 NPDES Permit

Permit Requirement	Function	Permit Section	Number	Hours/Action	\$/unit (hour, action)	Frequency/ permit life	Five Year Cost	Average Annual Cost	Comments
Require prescribed maintenance frequency and/or report to DOE	Enforcement	S5C9bi(2)	1359.45	8	\$ 50	1	\$ 543,780	\$ 108,756	Assumes 75% of S7biii facilities req. maintenance @ 20% per year @ 8 hrs per action
Evaluate and update ordinances requiring maintenance	Program Development	S5C9bii(1)	1	960	\$ 50	1	\$ 48,000	\$ 9,600	Cost of adopting only, assumed to be controversial
Develop and implement initial inspection schedule for all known, permanent stormwater facilities; ongoing	Inspections - WP	S5C9ii(2)(3)	6797	8	\$ 50	1	\$ 2,718,800	\$ 543,760	Assumes total number of S5C7aai (no 1/4 enf)
Inspect all new stormwater facilities, including catch basins, in new residential developments	Inspections - WP	S5C9ii(4)	1800	8	\$ 50	6	\$ 4,320,000	\$ 864,000	Assumes 1800/year, inspected six months each years 3, 4, 5
Require catch basin cleaning	Enforcement	S5C9ii(6)							Cost included under ii(4)
Implement annual inspections of all permanent stormwater facilities owned by permittee and implement maintenance actions	Inspections - WP	S5C9iii(1)	1000	4	\$ 50	5	\$ 1,000,000	\$ 200,000	Assumes 1000 PC facilities
"Spot checks" of facilities after storms	Inspections - WP	S5C9iii(2)	250	4	\$ 50	5	\$ 250,000	\$ 50,000	
Inspect all sites		S5C9iii(3)							Cost included under iii(1)
Annual inspections of all catch basins and inlets owned or operated by permittee and/or written statements	Inspections - WP	S5C9iv	42000	2	\$ 50	5	\$ 21,000,000	\$ 4,200,000	Number from Helmut

Cost of Compliance with Municipal Stormwater Phase 1 NPDES Permit

Permit Requirement	Function	Permit Section	Number	Hours/Action	\$/unit (hour, action)	Frequency/ permit life	Five Year Cost	Average	Comments
								Annual Cost	
Maintain records of inspections, maintenance or repairs and include repairs > \$25k in annual report	Tracking, Reporting, Record Keeping	S5C9v	42000	1	\$ 50	5	\$ 10,500,000	\$ 2,100,000	Assumes 1 hour per for record keeping and reporting
Establish and implement practices to reduce stormwater impacts from impervious surfaces owned by permittee and roads maintenance	Program Development	S5C9vi	400000	1	\$ 400,000	1	\$ 400,000	\$ 80,000	Est. cost of regional road maintenance manual
Establish and implement policies and procedures to reduce pollutants from lands owned or maintained by permittee (e.g., parks, opens space, ROWs, maintenance yards, facilities, trash)	Lands Management	S5C9vii	400000	1	\$ 400,000	1	\$ 400,000	\$ 80,000	Based on est. cost of property management manual
Ongoing training program and followup training on construction, operations, maintenance jobs and record keeping	Training	S5C9viii	500	8	\$ 50	5	\$ 1,000,000	\$ 200,000	Assumes 15% of PC employees meet definition, one day annual
Develop and implement a SWPPP for all heavy equipment maintenance or storage yards, material storage facilities owned/operated by permittee	Lands Management	S5C9ix	400000	1	\$ 400,000	1	\$ 400,000	\$ 80,000	Based on est. cost of property management manual
Implement or participate in an education and outreach program to achieve target audience's understanding (general public, businesses, homeowners, engineers, staff, etc)	Outreach and Ed	S5C10bi	220666	3	\$ 662,000	5	\$ 3,310,000	\$ 662,000	Assumes 3 FTEs plus \$350k professional services/equipment; based on existing program

Cost of Compliance with Municipal Stormwater Phase 1 NPDES Permit

Permit Requirement	Function	Permit Section	Number	Hours/Action	\$/unit (hour, action)	Frequency/ permit life	Five Year Cost	Average Annual Cost	Comments
Implement or participate in an effort to measure understanding and adoption of the targeted behaviors by the targeted audiences	Outreach and Ed	S5C10bii							Cost included under 10bi
Track and maintain records of public education activities	Tracking, Reporting, Record Keeping	S5C10biii							Cost included under 10bi

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Permit Requirement	Function	Permit Section	Number	Hours/Action	\$/unit (hour, action)	Frequency/ permit life	Five Year Cost	Average Annual Cost	Comments
S7. COMPLIANCE WITH TMDL REQUIREMENTS									
Comply with specific TMDL requirements in Appendix 2, record keeping of all actions relevant, report status in annual report		S7A							
Increase review requirements and inspection frequency for permitted land conversions and land use actions in South Prairie Creek	Inspections - Dev Eng	Appendix 2	24	8	\$ 50	5	\$ 48,000	\$ 9,600	Assumes 2 additional site inspections per month
Investigate Trib 1 bacterial sources upstream of SR162 and determine contributions	Monitoring, Modeling, Source Tracking	Appendix 2	1	1	\$ 50,000	1	\$ 50,000	\$ 10,000	Assumes 1 time professional services contract
Investigate bacterial sources upstream of SR165 along Spiketon Road, Mundy Loss Road, and Spiketon Ditch Road and determine contributions	Monitoring, Modeling, Source Tracking	Appendix 2							Costs included under 1 time professional services contract, above
Assess current roadway maintenance practices, determine type, frequency, and schedule of maintenance	Program Development	Appendix 2							Costs included under S9, maintenance
Distribute educational materials to landowners	Outreach and Ed	Appendix 2							Costs included under S10, education and outreach
Refer landowners to PCD for technical assistance where ag impacts	Enforcement	Appendix 2							Costs included under S5, enforcement strategy

Cost of Compliance with Municipal Stormwater Phase 1 NPDES Permit

Permit Requirement	Function	Permit Section	Number	Hours/Action	\$/unit	Frequency/	Five Year Cost	Average	Comments
					(hour, action)	permit life		Annual Cost	
Participate in development of other TMDLs	Monitoring, Modeling, Source Tracking	S7C	480	1	\$ 50	5	\$ 120,000	\$ 24,000	Assumes low level participation
S8. MONITORING									
Provide description of monitoring program or studies, an assessment of BMP appropriateness, and other monitoring information in annual report	Monitoring, Modeling, Source Tracking	S8B	480	1	\$ 50	5	\$ 120,000	\$ 24,000	Report prepare costs only
Develop and implement long-term monitoring program that includes (a) stormwater characterization; (b) effectiveness monitoring; © BMP evaluation monitoring.	Program Development	S8C1					\$ 400,000	\$ 80,000	Based on cost of monitoring program from B and C
Prepare QAPPs for each monitoring program component	Monitoring, Modeling, Source Tracking	S8C2	3	1	\$ 45,000	1	\$ 135,000	\$ 27,000	Cost of QAPP is \$40-\$50k (Based on B and C)
Choose and document site selection process, basin size, land use	Monitoring, Modeling, Source Tracking	S8D1a							Cost included under S8C1
Monitor one outfall or conveyance each for commercial, low density residential, high density residential	Monitoring, Modeling, Source Tracking	S8D1b							Cost included under [parameters]
Sample 75% of storms up to 15/year, throughout the year	Monitoring, Modeling, Source Tracking	S8D2a							Cost included under [parameters]

Cost of Compliance with Municipal Stormwater Phase 1 NPDES Permit

Permit Requirement	Function	Permit Section	Number	Hours/Action	\$/unit (hour, action)	Frequency/ permit life	Five Year Cost	Average Annual Cost	Comments
Sample using flow-weighted composite sampling with at least 10 aliquots; continuous flow recording; precipitation and flow data (conventional pollutants, fecal coliform, nutrients, metals, organics, pesticides)	Monitoring, Modeling, Source Tracking	S8D2b							Cost included under [parameters]
Toxicity testing of first flush (submit reports, test untreated stormwater, specific lab and QA protocols)	Monitoring, Modeling, Source Tracking	S8D2di		3	\$ 15,000	5	\$ 75,000	\$ 15,000	Cost based on SeaTac costs
Implement TI/RE plan, submit report to DOE	Monitoring, Modeling, Source Tracking	S8D2dii		1	\$ 150,000	1	\$ 150,000	\$ 30,000	Assumes one failure per year @ \$30k each plus \$20k to report back and \$100k to implement plan
Conduct grab samples at each storm event for TPH, FC	Monitoring, Modeling, Source Tracking	S8D2e		45	\$ 570	5	\$ 128,250	\$ 25,650	\$170/pr + 8hrs* 3 outfalls*15 storms
Conduct annual sediment samples at each stormwater monitoring site, and analyze for total solids, grain size, total organic carbon, copper, zinc, cadmium, lead, mercury, PAHs, phthalates, phenolics, PCBs and pesticides	Monitoring, Modeling, Source Tracking	S8D2f		45	\$ 2,900	5	\$ 652,500	\$ 130,500	2500/yr/outfall+ 8 hrs per
Calculate event mean concentrations, total annual pollutant load, and seasonal load for wet and dry seasons (expressed in mass)	Monitoring, Modeling, Source Tracking	S8D2g		3	\$ 4,000	1	\$ 12,000	\$ 2,400	Requires enhanced flow monitoring (\$4k hardware per site)

Cost of Compliance with Municipal Stormwater Phase 1 NPDES Permit

Permit Requirement	Function	Permit Section	Number	Hours/Action			Five Year Cost	Average		Comments
					\$/unit (hour, action)	Frequency/ permit life		Annual Cost		
Conduct SWMP effectiveness monitoring of targeted actions and environmental outcomes (stormwater, sediment or receiving water of physical, chemical and/or biological characteristics)	Monitoring, Modeling, Source Tracking	S8E1, 2		1	\$ 200,000	1	\$ 200,000	\$ 40,000		Assumed to be a qualitative evaluation that could direct program changes
Develop monitoring program for effectiveness of targeted actions and outcomes including (a) significance, (b) hypothesis, © parameters, and (d) modification of actions	Program Development	S8E3								Cost included in \$400k program development plus \$200k qualitative evaluation
Conduct full scale field monitoring to evaluate the effectiveness and operation and maintenance requirements of stormwater treatment and hydrologic management BMPs; prepare QAPP for each BMP	Monitoring, Modeling, Source Tracking	S8F1					\$ 700,000	\$ 140,000		From B and C estimate
Monitor at least 2 treatment BMPs at at least 2 sites (basic treatment, metals/phosphorus, oil)	Monitoring, Modeling, Source Tracking	S8F2								Cost included under S8F1
Monitor effectiveness on one flow reduction strategy	Monitoring, Modeling, Source Tracking	S8F7					\$ 70,000	\$ 14,000		From B and C estimate
Submit monitoring report with annual report beginning in 2009, including data, QA/QC reports for each component, and pollutant loadings	Tracking, Reporting, Record Keeping	S8H1	1	480	\$ 50.00	5	\$ 120,000	\$ 24,000		Assumes 3 mos to pull report together
Submit report of all other stormwater monitoring in annual report	Tracking, Reporting, Record Keeping	S8H2	1	80	\$ 50.00	5	\$ 20,000	\$ 4,000		Assumes 2 weeks to pull other data together

Cost of Compliance with Municipal Stormwater Phase 1 NPDES Permit

Permit Requirement	Function	Permit Section	Number	Hours/Action	\$/unit (hour, action)	Frequency/ permit life	Five Year Cost	Average Annual Cost	Comments
S9. REPORTING REQUIREMENTS									
Submit annual report, perscriptions under S9E2	Tracking, Reporting, Record Keeping	S9A	1	480	\$ 50.00	5	\$ 120,000	\$ 24,000	Assumes 3 mos to pull report together
Keep all records related to permit and SWMP	Tracking, Reporting, Record Keeping	S9C	1	2080	\$ 50.00	5	\$ 520,000	\$ 104,000	Assumes 1 FTE record keeper
Make all records available	Outreach and Ed	S9D							Cost included under S9C
TOTAL Five-Year COST							\$ 126,447,930		
Annual COST								\$ 25,289,586	

Professional Services Cost

Current (8 yr avg) Program	\$ (17,900,000)	Note: if 2005 used (\$19.2m), New FTEs = 35
Dfference	\$ 7,389,586	
New Prof Services	\$ (1,350,000)	\$ 25,289,586
New Additional CIP	\$ (1,000,000)	
	\$ 5,039,586	
# New FTEs	48	