DEPARTMENT OF
ECOLOGY
State of Washington

Year 2009 Report

Activities to Implement Washington State's Water Quality Plan to Control Nonpoint Source Pollution

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Year 2009 Report

Activities to Implement Washington State's Water Quality Plan to Control Nonpoint Source Pollution

by

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Olympia, Washington

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Chapter 1: The Path Toward Clean Water

At the Department of Ecology (Ecology), we place great emphasis on implementing TMDLs and other watershed-based strategies to achieve clean water. This report highlights both the policy level and the on-the-ground approaches to achieving this paramount goal. Notably, this report showcases many different implementation paths to clean water, but the general direction is always the same: striving for greater regulatory clarity and collaboration to achieve dependable on-the-ground results.

While Ecology has achieved many successes, walking the path toward clean water has also proven to be fraught with difficulties. In some situations, inconsistencies and confusion have proven prolific in a complex regulatory world. And at each turn in the path we are learning that new tools are needed to cut through these often ensnarled courses. Nonetheless, 2009 has been a year of surmounting many barriers on the march toward clean water.

This report highlights some of the policy-level engagements and advances in our continual effort to map out the nonpoint source regulatory landscape and navigate toward a more productive statewide nonpoint source program.

This report also highlights several comprehensive TMDL implementation efforts that utilized 319 funds to target specific nonpoint source pollution problems in discrete geographic locations. What is unique about these efforts is that multiple Ecology staff continued past the watershed plan development stage and worked with local partners to implement clean water. Their efforts have helped forge stronger partnerships, further developed Ecology's watershed presence, and ultimately helped craft more effective implementation.

Finally, this report details the noteworthy federal and state investments made in the pass-through grant programs. Significantly, state fiscal year (SFY) 2010 grants have leveraged the implementation of numerous best management practices (BMPs) and the restoration of many riparian areas. In sum, of the reporting active projects in SFY 2010, Ecology's pass-through recipients have reduced 359,792 pounds/year of nitrogen, 78,655 pounds/year of phosphorus, and 26,189 tons/year of sediment! Moreover, active projects this year were responsible for the implementation of over 29 miles of riparian buffers and over 32 miles of livestock exclusion fence!

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Chapter 2:
How EPA's 2009 319 Grant to Washington State was Distributed

In SFY 2010, the federal 319 dollars were again distributed among three major work plan elements within Ecology as in SFY 2009.

1. **Local grant and loan funding**

   Money was allocated and disbursed under the current water quality grant program as competitive grants to local governments, tribes, special purpose districts, and nonprofit groups during this last year. The application process for the Centennial Clean Water Fund, SRF, and 319 funding cycle is administered by the Financial Management Section of the Water Quality Program. Applicants requesting grants and loans for nonpoint projects are implementing activities in accordance with the Washington State Nonpoint Plan. There were eight such projects awarded during SFY 2010.

2. **Directed Implementation Fund**

   Through its Enhanced Benefit Status, Ecology developed the Direct Implementation Fund (DIF). In SFY 2009, the DIF was re-designed to assist Ecology's regional offices to directly implement TMDLs and other regional nonpoint water quality initiatives. Funds must be used to implement on-the-ground practices that will provide a direct and demonstrable water quality benefit. The regional offices use DIF to address priority nonpoint projects. The regions then collaborate with local jurisdictions, nonprofits, and the Washington Conservation Corps to develop and implement projects addressing those problems. There were six DIF grants awarded in SFY2010.

3. **Water Quality's Nonpoint Program Support Projects**—Ecology funded 13.34 staff FTEs for projects in SFY 2010 that directly support the nonpoint program.

Overall, federal allocations were:

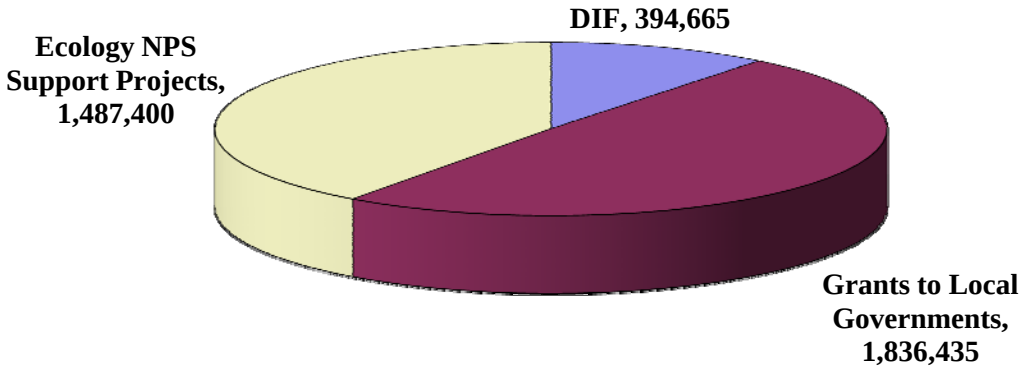


Figure 2.1 – 319 Federal Allocation SFY 2010

The previous figures show initial allocations. Ecology applied 40 percent matching funds using State Centennial Clean Water Fund dollars contained within 14 nonpoint projects (see below).

Ecology's grant and loan program

Ecology's Water Quality Program administers three major funding programs that provide grants and low-interest loans for projects to protect and improve water quality in Washington State. Ecology acts in partnership with state agencies, local governments, and Indian tribes by providing financial and administrative support for their water quality efforts. As much as possible, Ecology manages the three programs as one with common guidelines, one funding cycle, one application form, and one offer list.

The Centennial Clean Water Fund (CCWF)

CCWF provides grants and low-interest loans to fund activities to reduce nonpoint source pollution. In the SFY2010 funding cycle, a total of 14 projects were funded to control nonpoint sources of pollution, or to restore habitats affected by land uses that exacerbate nonpoint pollution problems.

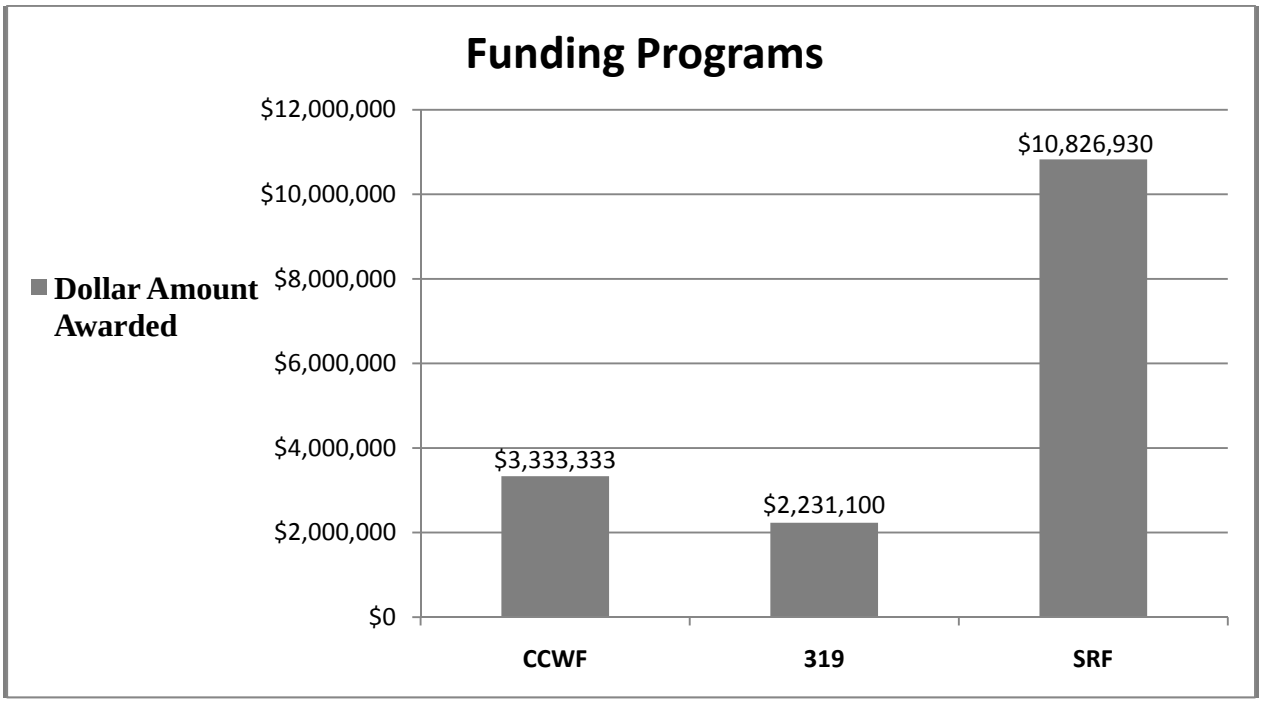
The State Revolving Fund (SRF)

SRF provides low-interest loans for treatment facilities and for activities to reduce nonpoint sources of water pollution. The Green Project Reserves of the American Recovery and Reinvestment Act (ARRA), along with the possibility of forgivable principal, helped to boost the number of SRF applications for nonpoint source activities and projects. In the SFY 2010 funding cycle, a total of 8 projects received loan funds to implement nonpoint programs.

Section 319

319 grants provide funds to reduce nonpoint sources of water pollution. In the SFY2010 funding cycle, eight projects were funded with 319 funds. In addition, the Direct Implementation Fund (DIF) program awarded six projects.

Total Washington State SFY2010 grant and loan funds awarded for Nonpoint source projects



Project descriptions for all three fund sources follow:

2.1 Nonpoint water quality grants and loans SFY2010

Application Number	Applicant Name	Project Title	Project Summary	Centennial Funds Offered	319 Funds Offered	CWSRF Funds Offered
FP10069	Kitsap County Health District	Liberty Bay Watershed Restoration Project	This project implements early actions for a total maximum daily load study for fecal coliform, and Marine Recovery Area designation for Liberty Bay. It will significantly reduce fecal coliform contamination of Liberty Bay and its tributaries by correcting fecal coliform sources including failing septic systems, animal waste, boat waste, etc.	500,000.00	0.00	0.00
FP10008	Twisp, Town of	Methow Basin Water Quality Restoration and Monitoring Program	Address temperature 303(d) listings in the Methow River basin through riparian restoration, basinwide effectiveness monitoring, adaptive management of projects, and outreach. Implement the clean water strategy of the Methow Restoration Council and achieve compliance with water quality standards for temperature sooner than a conventional TMDL approach.	417,750.00	0.00	0.00

Application Number	Applicant Name	Project Title	Project Summary	Centennial Funds Offered	319 Funds Offered	CWSRF Funds Offered
FP10048	Snohomish County	Stillaguamish Temperature TMDL Adaptive Assessment and Implementation	This project proposes a geographically-based landscape approach to improve temperature in the Stillaguamish watershed. The approach uses several methodologies including a watershed process characterization, baseflow analysis, temperature monitoring, and groundwater/surface water interactions analysis to prioritize geographic areas for protection and restoration, then implements one recommended action and designs two others.	264,046.00	0.00	0.00
FP10023	Pierce County	Septic Repair Grant and Loan Project	Continue and expand Pierce County's financial assistance program for homeowners to repair or replace failing and antiquated on-site sewage systems. The program priorities are to resolve sources of sewage that pose a health or water quality risk to shellfish growing areas; 303(d) listed water bodies, Puget Sound, or other surface water threats. This project authorities include the Puget Sound Partnership Action Area Profile Tables in the North Central Action Area; Pierce and Kitsap counties onsite management plans; and Kitsap County's onsite Identification and Correction program.	250,000.00	0.00	500,000.00

Application Number	Applicant Name	Project Title	Project Summary	Centennial Funds Offered	319 Funds Offered	CWSRF Funds Offered
FP10010	Columbia Conservation District	Columbia County Riparian & Water Quality Enhancement Project	The Columbia CD Riparian & Water Quality Enhancement Project will improve riparian health and water quality in Columbia County by assisting landowners to implement BMP's including fencing, off-stream watering, riparian planting and riparian weed control. Important project components include effectiveness monitoring, strong public education/outreach and cost-share funding support.	250,000.00	0.00	0.00
FP10019	Kittitas County Conservation District	Cle Elum River Restoration	Engineered log jams will be constructed to direct perennial flows into a two-mile historic side-channel downstream of Cle Elum Dam. Dense riparian vegetation, increased groundwater and hyporheic exposures, and cold-water tributary augmentation will restore a 303(d)-listed water body. Reduced water temperatures plus a restored self-sustaining riparian corridor benefit salmon populations.	250,000.00	0.00	0.00

Application Number	Applicant Name	Project Title	Project Summary	Centennial Funds Offered	319 Funds Offered	CWSRF Funds Offered
FP10035	Stevens County Conservation District	Chamokane Creek Watershed Implementation Project	The project will address sediment loading from streambank and streambed erosion, and fecal coliform bacteria from human and livestock sources. Curtailing channel incision will help with water quantity concerns. A watershed council will be established to bring all interested parties together to address the needs of the watershed.	250,000.00	0.00	0.00
FP10079	Clark Public Utilities	Salmon Creek Riparian Restoration II	The Salmon Creek Riparian Restoration Project will address multiple water quality impairments through re-establishing vegetation in riparian corridors. Project activities will include four primary actions: Riparian tree plantings to reduce instream temperatures, decrease turbidity and fecal coliform and improve stream base flow through increased floodplain carrying capacity. Streamside fencing to prevent livestock impacting riparian vegetation and decreasing fecal coliform from animals. Removal of non-native invasive species to increase riparian plant diversity and thereby floodplain function. Stabilize streambanks to decrease turbidity.	250,000.00	0.00	0.00

Application Number	Applicant Name	Project Title	Project Summary	Centennial Funds Offered	319 Funds Offered	CWSRF Funds Offered
FP10039	Yakima County	Yakima Low Impact Development Manual & Demonstration Project	Create a low impact development technical guidance manual for Yakima County emphasizing local semi-arid climate and soils. Construct and monitor a LID demonstration project comparing three pervious pavements and three soil amendments in bioswales.	226,400.00	0.00	0.00
FP10074	Thurston County Pub. Hlth & Social Svcs Dept	Nisqually Septic System Operation and Maintenance Project	Develop and implement an onsite sewage system operation and maintenance program for the Nisqually Reach Shellfish Protection District. The project goal is to reduce the contribution of fecal coliform bacteria and nutrients to Nisqually Reach from septic systems.	189,694.00	0.00	0.00
FP10050	Pomeroy Conservation District	Pomeroy Conservation District Water Quality Improvement Project	Purchase equipment to demonstrate as a pilot project the weed seeker technology to reduce amount of herbicide applied on chemical fallow fields in no-till seeding program. Maintain and increase no-till acres. Cost share riparian improvement projects where farming practices and livestock operations have adverse impacts on water quality.	172,294.00	0.00	0.00

Application Number	Applicant Name	Project Title	Project Summary	Centennial Funds Offered	319 Funds Offered	CWSRF Funds Offered
FP10075	Thurston Conservation District	TMDL Response to Fecal Coliform	Education on manure management as a local alternative to commercial fertilizers delivered through a combination of outreach techniques for landowners within the Henderson/Nisqually watersheds. Technical and cost share assistance to be delivered to agricultural landowners to aid in implementation of Best Management Practices that address water quality issues.	124,047.00	0.00	0.00
FP10038	Palouse Conservation District	South Fork Palouse River: TMDL Implementation	This project will bring together local people to address current water quality issues and implement a plan that will lead to these water bodies being removed from the 303(d) list and meeting water quality standards. The implementation actions will help restore the streams so that they continue to meet water quality standards in the future.	108,262.00	0.00	0.00
FP10070	Clark Conservation District	Project Water Education for Livestock Owners (WELL)	Project well supports livestock landowners in improving water quality through education and technical and financial assistance for BMP implementation. Water quality improvements include reducing livestock pollutants, and establishing vegetated riparian corridors to address the need for decreased temperatures, bacteria, and turbidity in Salmon Creek and East Fork Lewis River.	80,840.00	169,160.00	0.00

Application Number	Applicant Name	Project Title	Project Summary	Centennial Funds Offered	319 Funds Offered	CWSRF Funds Offered
FP10024	Mason County Public Health	Onsite Septic System Discovery & Pollution Abatement	The project will improve water quality by correcting failing OSS; located adjacent to 303(d) listed streams. All septic records within the MRA will be researched and updated, sites with records and within 100' will be identified and updated in Caromdy and the records will be available via the internet.	0.00	303,702.00	0.00
FP10012	Washington State University - Puyallup	Clarks Creek WQ Science, Restoration & Education Implementation Program	Washington State University, in partnership with local agencies and the Puyallup tribe, will conduct science, restoration and education projects along Clarks Creek. The project will implement elements to restore aquatic habitats and riparian areas through the reduction of fecal coliform and sediment loadings.	0.00	250,000.00	0.00
FP10020	Yakama Nation	Swauk Creek Riparian and Floodplain Restoration	This project will enhance riparian canopy, increase bank retention of spring run-off, and reactivate historic meanders along one mile of Swauk Creek - a temperature-impaired water body. It will also investigate the feasibility of enhancing floodplain connectivity higher in the watershed in order to decrease downstream temperatures.	0.00	249,573.00	0.00

Application Number	Applicant Name	Project Title	Project Summary	Centennial Funds Offered	319 Funds Offered	CWSRF Funds Offered
FP10003	Methow Conservancy	Beaver Restoration in the Methow River Watershed	Project partners address impairments by restoring beavers to places where they historically occurred. An education campaign with riparian landowners creates better understanding of riparian function and improved riparian stewardship. Results include improved riparian shade, less sediment, more in-stream wood, and additional late season flow, all contributing to cooler streams.	0.00	247,500.00	0.00
FP10072	Palouse Rock Lake Conservation District	Direct Seed Cost-Share	This project is designed to improve the water quality in the Palouse River; Rock Creek, Rebel Flat Creek, and the tributaries by implementing three miles of riparian buffers along streams and water ways and increasing the usage of direct seed systems through the cost share program, outreach education and tours to decrease erosion and improve water quality.	0.00	245,250.00	0.00
FP10025	Mason County Public Health Department	North Shore Hood Canal Pollution Identification and Correction	The North Shore Hood Canal Pollution Identification and Correction project will seek fecal coliform (FC) pollution in freshwater inputs to Hood Canal, then investigate and correct the sources, if possible. Nutrient samples will provide data to see if there is a relationship between FC and nutrients.	0.00	187,500.00	0.00

Application Number	Applicant Name	Project Title	Project Summary	Centennial Funds Offered	319 Funds Offered	CWSRF Funds Offered
FP10043	The Adopt-A-Stream Foundation	Bear-Evans Urban/Suburban Riparian Enhancement Project	The Adopt-A-Stream Foundation will work with urban-suburban landowners to identify riparian restoration needs and implement creative restoration plans in the Bear and Evans Creek watersheds. This effort will: compile baseline information on riparian conditions, educate watershed residents about how to assure healthy creeks, create implementation plans, and work with willing landowners to implement projects.	0.00	183,750.00	0.00
SA10072	Skagit Co. Planning and Development Services	Skagit County Local Loan Fund	The primary goal of this State Revolving Fund loan is to improve surface and ground water quality and keep shellfish bays open in Skagit County. The SRF loan fund will continue to provide funds to land/home owners for improvements for septic systems impacting water quality. This project implements Urban 17, test innovative approaches for providing funds to homeowners to repair failing onsite systems - from Washington State's nonpoint plan.	0.00	0.00	2,061,828.00
SA10067	Yakima, City of	Lincoln Avenue Grade Separation Storm Drainage	Construct a drainage system that will retain and treat stormwater drainage at the Lincoln Ave. underpass using best management practices. This project implements action item Urban 4 from Washington State's nonpoint plan.	0.00	0.00	1,214,000.00

Application Number	Applicant Name	Project Title	Project Summary	Centennial Funds Offered	319 Funds Offered	CWSRF Funds Offered
SA10075	Vancouver, City of	Burnt Bridge Creek Greenway Expansion & Riparian Restor.	This Burnt Bridge Creek Restoration Project will transform 26 city owned acres into functional wetlands and riparian forest. The city will use this area to intercept and treat stormwater runoff. Stormwater controls will include LID techniques, bioretention, groundwater infiltration, and greenspace protection. This project implements action item Urban 4, identify and participate in a low impact project and research the applicability of LID to regional hydrogeolgy, soils, and climatic conditions - from Washington State's nonpoint plan.	0.00	0.00	1,100,000.00

Application Number	Applicant Name	Project Title	Project Summary	Centennial Funds Offered	319 Funds Offered	CWSRF Funds Offered
SA10087	Olympia, City of	Enhanced Treatment of Stormwater Runoff at Yauger Park	This project will develop the southern ten acres of city owned park land as green infrastructure. Low impact development features include a water quality treatment wetland, bio-retention ponds, a 5000 square foot rain garden and biofiltration swales, a new parking lot with porous pavement, with smaller rain gardens, and water harvesting and re-use for irrigation. The project area will be lowered 3 feet to add 12-14 acre feet of storage for stormwater runoff and provide enhanced treatment for 840 acre feet of runoff per year. This project implements action item Urban 2, which promotes low impact development - from Washington State's nonpoint plan.	0.00	0.00	3,670,000.00
SA10053	Seattle Public Utilities	Ballard Green Streets	CSO basin retrofit using bioretention cells, a Green Stormwater Infrastructure technique. Bioretention will be places along ten street blocks to provide CSO reduction, reduce energy demand on King County's pumping station, and provide a regional dataset on costs to more effectively incorporate this technique into other water quality projects. Implements action item Urban 4 from Washington State's nonpoint plan.	0.00	0.00	1,546,524.00

Application Number	Applicant Name	Project Title	Project Summary	Centennial Funds Offered	319 Funds Offered	CWSRF Funds Offered
SA10086	Clark County	Upper Whipple Creek Habitat Protection and Enhancement	The Upper Whipple Creek Habitat Protection and Runoff Control Project will protect and enhance 40 acres of critical habitat and wetlands in Clark County. The area will was chosen as a critical site to protect the rest of Whipple Creek from stormwater runoff from anticipated development upstream. The project includes grade control to protect wetland complexes, valley-spanning log jams to attenuate future runoff, riparian area rehabilitation, and other techniques to control and treat stormwater runoff. This project implements action items, Urban 4 and Habitat 1 from Washington State's nonpoint plan.	0.00	0.00	852,578.00
SA10111	Spokane, City of	West Broadway SURGE	West Broadway SURGE is a green infrastructure project that will use Low Impact Development (LID) techniques to decrease stormwater flow to the combined sewer, reduce CSO discharge to Spokane River, evaluate LID strategies in Spokane's climate and educate the public. This project implements action item Urban 4 from the state's nonpoint plan. Urb 4: Identify and participate in a low impact project and research the applicability of low-impact techniques to regional hydrogeology, soils, and climactic conditions.	0.00	0.00	382,000.00
Total				**3,333,333.00**	**1,836,435.00**	**10,826,930.00**

2.2 Washington State estimated load reductions for SFY 2010 projects

Nitrogen				
State Project Number	**Project Title**	**Drainage Area Name**	**Load Reduction Estimate**	**Unit of Measure**
C0800205	US 101 Schneider Creek and Griffinwood Compost and Bark Mulch/Native Plants Filter Strip Demonstration Project - Washington Dept. of Transportation	171100190601	0.2	LBS/YR
C0900068	Chehalis River Mainstem Riparian Restoration Project - Confederated Tribes of the Chehalis Reservation	Chehalis and Black Rivers	11,628.00	LBS/YR
C0900107	Gordon Dairy Fencing and Planting Project - Grays Harbor Conservation District	171001030404	243	LBS/YR
C0900113	Salmon Creek Riparian Restoration Project: Kunkle Site - Clark Public Utilities	170900120303	59.7	LBS/YR
C0900147	South Colville River Enhancement Project - Stevens County Conservation District	South Colville River	1,080.80	LBS/YR
ERO-DIF-ES-2010	Palouse River Project	170200130103	2.1	LBS/YR
		170601080308	10.5	LBS/YR
		170601080406	0.21	LBS/YR
		170601080704	2.1	LBS/YR
		170601090205	2.1	LBS/YR
G0600123	South Fork Nooksack Tributaries Restoration - Nooksack Salmon Enhancement Assoc.	171100040406	36.8	LBS/YR
G0600339	Thurston/Mason Equine Outreach & Education - Thurston Conservation District	171100190601	289.5	LBS/YR
G0700006	Quilceda Pollution Identification and Correction - The Adopt-A-Stream Foundation	171100110204 Quilceda Creek	1	LBS/YR
G0700042	White Salmon Landowners for Clean Water - Underwood Conservation District	170701050805	124.2	LBS/YR
G0700094	Cow Creek Implementation Phase II - Adams Conservation District	170601080704	45,646.10	LBS/YR
G0700126	Little Bear Pollution Identification/Correction - Adopt-A-Stream Foundation	171100120304: Bear Creek-Sammamish R	9.3	LBS/YR

Nitrogen				
State Project Number	**Project Title**	**Drainage Area Name**	**Load Reduction Estimate**	**Unit of Measure**
G0700167	Palouse River Implementation Project 'B' - Adams Conservation District	170601080506	227,230.50	LBS/YR
		170601080804: Holiday Coulee-Palouse River	57,568.80	LBS/YR
G0700184	Matching Project: Deschutes Early Action TMDL Project - Thurston Conservation District	171100160102	168.5	LBS/YR
		171100160201	174.6	LBS/YR
		171100160202	73.9	LBS/YR
G0700191	Kettle River the Watershed Improvement Project - Ferry Conservation District	170200020405	11.1	LBS/YR
		170200020502	747.8	LBS/YR
		170200020508	2,427.00	LBS/YR
G0700234	Match Proj: South Fork Big Trees - Snohomish County Public Works	171100080207	71.7	LBS/YR
G0700294	Oakland Bay Riparian Restoration Area Assessment - Mason Conservation District	171100190606	14	LBS/YR
G0700316	Swamp Creek Water Pollution Prevention Project - Adopt-A-Stream Foundation	171100120303: Swamp Creek	9	LBS/YR
G0800109	Snoqualmie Stewardship Program - Stewardship Partners	171100100404	69.8	LBS/YR
		171100100601	53.8	LBS/YR
		171100100603	52.7	LBS/YR
G0800238	Fishtrap Creek Riparian Restoration - Nooksak Salmon Enhancement Association	171100040502	4.7	LBS/YR
G0800331	Matching Project: The Wedge Project - Stevens County Conservation District	170200010206	1,328.00	LBS/YR
G0800355	LPOR Watershed Project - Stevens County Conservation District	170200030206	9,797.80	LBS/YR
G0800374	Matching Project: Henderson/Nisqually Water Quality Improvement - Thurston Conservation District	171100150205	184.4	LBS/YR
		171100190501	184.7	LBS/YR
		171100190502	148.6	LBS/YR
G0800469	South Fork Stillaguamish Tributaries Restoration - Stilly-Snohomish Fisheries Enhancement Task Force	171100080206: Jim Creek	7.3	LBS/YR
		171100080207	1.4	LBS/YR
G0900040	Special District Riparian Re-establishment Initiative - Whatcom County Flood Control Zone District	171100010301	9.4	LBS/YR
		171100020202	13.5	LBS/YR
		171100040406	133.68	LBS/YR
		171100040503	33.42	LBS/YR

Nitrogen				
State Project Number	**Project Title**	**Drainage Area Name**	**Load Reduction Estimate**	**Unit of Measure**
G0900061	Matching Proj.: Direct Seed Outreach and Education - Palouse-Rock Lake Conservation District	170601090110	5.1	LBS/YR
		170601090205	27.8	LBS/YR
		170601090306	16.3	LBS/YR
		170601090404	4.1	LBS/YR
G0900077	Matching Project: Asotin County Riparian Enhancement Project - Asotin County Conservation District	170601030205	28.6	LBS/YR
		170601030208	0.4	LBS/YR
		170601030304	28.6	LBS/YR
		170601060709	7.9	LBS/YR
G0900078	Curlew Lake Assessment Project - Ferry Conservation District	170200020401	17.5	LBS/YR

Phosphorus				
State Project Number	**Project Title**	**Drainage Area Name**	**Load Reduction Estimate**	**Unit of Measure**
C0900068	Chehalis River Mainstem Riparian Restoration Project - Confederated Tribes of the Chehalis Reservation	Chehalis and Black Rivers	4,476.80	LBS/YR
C0900107	Gordon Dairy Fencing and Planting Project - Grays Harbor Conservation District	171001030404	88.3	LBS/YR
C0900113	Salmon Creek Riparian Restoration Project: Kunkle Site - Clark Public Utilities	170900120303	23	LBS/YR
C0900147	South Colville River Enhancement Project - Stevens County Conservation District	South Colville River	416.1	LBS/YR
ERO-DIF-ES-2010	Palouse River Project	170200130103	4.2	LBS/YR
		170601080308	21	LBS/YR
		170601080406	8.4	LBS/YR
		170601080704	4.2	LBS/YR
		170601090205	4.2	LBS/YR
G0600123	South Fork Nooksack Tributaries Restoration - Nooksack Salmon Enhancement Assoc.	171100040406	9.3	LBS/YR
G0600339	Thurston/Mason Equine Outreach & Education - Thurston Conservation District	171100190601	26.8	LBS/YR
G0700006	Quilceda Pollution Identification and Correction - The Adopt-A-Stream Foundation	171100110204 Quilceda Creek	0.3	LBS/YR
G0700042	White Salmon Landowners for Clean Water - Underwood Conservation District	170701050805	47.7	LBS/YR
G0700094	Cow Creek Implementation Phase II - Adams Conservation District	170601080704	10,821.40	LBS/YR
G0700126	Little Bear Pollution Identification/Correction - Adopt-A-Stream Foundation	171100120304: Bear Creek-Sammamish R	3.3	LBS/YR
G0700167	Palouse River Implementation Project 'B' - Adams Conservation District	170601080506	46,011.00	LBS/YR
		170601080804: Holiday Coulee-Palouse River	12,794.90	LBS/YR
G0700184	Matching Project: Deschutes Early Action TMDL Project - Thurston Conservation District	171100160102	14.9	LBS/YR
		171100160201	13.5	LBS/YR
		171100160202	6.1	LBS/YR

Phosphorus				
State Project Number	**Project Title**	**Drainage Area Name**	**Load Reduction Estimate**	**Unit of Measure**
G0700191	Kettle River the Watershed Improvement Project - Ferry Conservation District	170200020405	4.3	LBS/YR
		170200020502	271.8	LBS/YR
		170200020508	846.8	LBS/YR
G0700234	Match Proj: South Fork Big Trees - Snohomish County Public Works	171100080207	7.3	LBS/YR
G0700294	Oakland Bay Riparian Restoration Area Assessment - Mason Conservation District	171100190606	2.9	LBS/YR
G0700316	Swamp Creek Water Pollution Prevention Project - Adopt-A-Stream Foundation	171100120303: Swamp Creek	2.8	LBS/YR
G0800109	Snoqualmie Stewardship Program - Stewardship Partners	171100100404	229.5	LBS/YR
		171100100601	8.5	LBS/YR
		171100100603	226.8	LBS/YR
G0800238	Fishtrap Creek Riparian Restoration - Nooksak Salmon Enhancement Association	171100040502	1.2	LBS/YR
G0800331	Matching Project: The Wedge Project - Stevens County Conservation District	170200010206	124.8	LBS/YR
G0800355	LPOR Watershed Project - Stevens County Conservation District	170200030206	1,928.20	LBS/YR
G0800374	Matching Project: Henderson/Nisqually Water Quality Improvement - Thurston Conservation District	171100150205	16.7	LBS/YR
		171100190501	16.7	LBS/YR
		171100190502	13.5	LBS/YR
G0800469	South Fork Stillaguamish Tributaries Restoration - Stilly-Snohomish Fisheries Enhancement Task Force	171100080206: Jim Creek	2.8	LBS/YR
		171100080207	0.6	LBS/YR
G0900040	Special District Riparian Re-establishment Initiative - Whatcom County Flood Control Zone District	171100010301	0.8	LBS/YR
		171100020202	1.1	LBS/YR
		171100040406	29.12	LBS/YR
		171100040503	7.28	LBS/YR
G0900061	Matching Proj.: Direct Seed Outreach and Education - Palouse-Rock Lake Conservation District	170601090110	10.2	LBS/YR
		170601090205	45.5	LBS/YR
		170601090306	32.6	LBS/YR
		170601090404	8.2	LBS/YR

Phosphorus				
State Project Number	**Project Title**	**Drainage Area Name**	**Load Reduction Estimate**	**Unit of Measure**
G0900077	Matching Project: Asotin County Riparian Enhancement Project - Asotin County Conservation District	170601030205	6.4	LBS/YR
		170601030208	0.1	LBS/YR
		170601030304	6.4	LBS/YR
		170601060709	1.6	LBS/YR
G0900078	Curlew Lake Assessment Project - Ferry Conservation District	170200020401	4.8	LBS/YR

Sediment-Siltation				
State Project Number	**Project Title**	**Drainage Area Name**	**Load Reduction Estimate**	**Unit of Measure**
C0900068	Chehalis River Mainstem Riparian Restoration Project - Confederated Tribes of the Chehalis Reservation	Chehalis and Black Rivers	8,550.00	TONS/YR
C0900107	Gordon Dairy Fencing and Planting Project - Grays Harbor Conservation District	171001030404	94.2	TONS/YR
C0900113	Salmon Creek Riparian Restoration Project: Kunkle Site - Clark Public Utilities	170900120303	24.9	TONS/YR
C0900147	South Colville River Enhancement Project - Stevens County Conservation District	South Colville River	450.3	TONS/YR
ERO-DIF-ES-2010	Palouse River Project	170200130103	2	TONS/YR
		170601080308	10	TONS/YR
		170601080406	2	TONS/YR
		170601080704	2	TONS/YR
		170601090205	2	TONS/YR
G0600123	South Fork Nooksack Tributaries Restoration - Nooksack Salmon Enhancement Assoc.	171100040406	0.06	TONS/YR
G0600339	Thurston/Mason Equine Outreach & Education - Thurston Conservation District	171100190601	5	TONS/YR

Sediment-Siltation				
Project Number	**Project Title**	**Drainage Area Name**	**Load Reduction Estimate**	**Unit of Measure**
G0700006	Quilceda Pollution Identification and Correction - The Adopt-A-Stream Foundation	171100110204 Quilceda Creek	0.3	TONS/YR
G0700042	White Salmon Landowners for Clean Water - Underwood Conservation District	170701050805	54.72	TONS/YR
G0700094	Cow Creek Implementation Phase II - Adams Conservation District	170601080704	3,830.80	TONS/YR
G0700126	Little Bear Pollution Identification/Correction - Adopt-A-Stream Foundation	171100120304: Bear Creek-Sammamish R	5.9	TONS/YR
G0700167	Palouse River Implementation Project 'B' - Adams Conservation District	170601080506	6,926.60	TONS/YR
		170601080804: Holiday Coulee-Palouse River	5,098.20	TONS/YR
G0700184	Matching Project: Deschutes Early Action TMDL Project - Thurston Conservation District	171100160102	1.6	TONS/YR
		171100160202	1.6	TONS/YR
G0700191	Kettle River the Watershed Improvement Project - Ferry CD	170200020405	3.5	TONS/YR
		170200020502	211.5	TONS/YR
		170200020508	653.4	TONS/YR
G0700294	Oakland Bay Riparian Restoration Area Assessment - Mason CD	171100190606	0.6	TONS/YR
G0700316	Swamp Creek Water Pollution Prevention Project - Adopt-A-Stream Foundation	171100120303: Swamp Creek	4	TONS/YR
G0800109	Snoqualmie Stewardship Program - Stewardship Partners	171100100404	0.04	TONS/YR
		171100100601	0.03	TONS/YR
		171100100603	0.03	TONS/YR
G0800238	Fishtrap Creek Riparian Restoration - Nooksak Salmon Enhancement Association	171100040502	0.01	TONS/YR
G0800239	Matching Project: Wenatchee TMDL Project - Cascadia Conservation District	170200110604: Brender Creek-Mission Creek	0.08	TONS/YR
		170200110701: Beaver Creek-Wenatchee River	0.03	TONS/YR
		170200110708:Nahahum Canyon-Wenatchee River	0.25	TONS/YR
G0800331	Matching Project: The Wedge Project - Stevens County CD	170200010206	18.6	TONS/YR

Sediment-Siltation				
State Project Number	**Project Title**	**Drainage Area Name**	**Load Reduction Estimate**	**Unit of Measure**
G0800355	LPOR Watershed Project - Stevens County Conservation District	170200030206	118.7	TONS/YR
G0800374	Matching Project: Henderson/Nisqually Water Quality Improvement - Thurston Conservation District	171100150205	3	TONS/YR
		171100190501	3	TONS/YR
		171100190502	2.4	TONS/YR
G0800396	Match: Little Klickitat Temperature TMDL Implementation Project - Central Klickitat Conservation District	170701060304	7	TONS/YR
		170701060405	7	TONS/YR
		170701060406	2	TONS/YR
G0800469	South Fork Stillaguamish Tributaries Restoration - Stilly-Snohomish Fisheries Enhancement Task Force	171100080206: Jim Creek	4	TONS/YR
		171100080207	1.1	TONS/YR
G0900040	Special District Riparian Re-establishment Initiative - Whatcom County Flood Control Zone District	171100010301	0.1	TONS/YR
		171100040406	0.8	TONS/YR
		171100040503	0.2	TONS/YR
G0900052	Little Klickitat River TMDL Implementation Project - Central Klickitat Conservation District	170701060307	2	TONS/YR
G0900061	Matching Proj.: Direct Seed Outreach and Education - Palouse-Rock Lake Conservation District	170601090110	1.5	TONS/YR
		170601090205	40	TONS/YR
		170601090306	30	TONS/YR
		170601090404	1.2	TONS/YR
G0900077	Matching Project: Asotin County Riparian Enhancement Project - Asotin County Conservation District	170601030205	4.3	TONS/YR
		170601030208	0.1	TONS/YR
		170601030304	4.3	TONS/YR
		170601060709	1	TONS/YR
G0900078	Curlew Lake Assessment Project - Ferry Conservation District	170200020401	1.8	TONS/YR

2.3 Management practices implemented in SFY 2010

Livestock Practices					
Practice	**Project Number**	**Project Title**	**Amount**	**Unit of Measure**	Totals
Controlled Stream Access for Livestock Watering	G0800396	Match: Little Klickitat Temperature TMDL Implementation Project - Central Klickitat Conservation District	1600	FT	
	G0700294	Oakland Bay Riparian Restoration Area Assessment - Mason Conservation District	58	AC	62.18 ac
	G0900078	Curlew Lake Assessment Project - Ferry Conservation District	4.18	AC	
Fence	C0900068	Chehalis River Mainstem Riparian Restoration Project - Confederated Tribes of the Chehalis Reservation	4948	FT	171,486 ft
	C0900107	Gordon Dairy Fencing and Planting Project - Grays Harbor Conservation District	1980	FT	
	ERO-DIF-CA-2009	2009 WCC Corp Labor	47520	FT	
	ERO-DIF-ES-2010	Palouse River Project	28000	FT	
	G0600071	Matching Project: Cottage Lake Phosphorus Reduction - King County Water and Land Resources	616	FT	
	G0700042	White Salmon Landowners for Clean Water - Underwood Conservation District	924	FT	
	G0700094	Cow Creek Implementation Phase II - Adams Conservation District	18480	FT	
	G0700167	Palouse River Implementation Project 'B' - Adams Conservation District	22440	FT	
	G0700184	Matching Project: Deschutes Early Action TMDL Project - Thurston Conservation District	2214	FT	
	G0700191	Kettle River the Watershed Improvement Project - Ferry Conservation District	320	FT	
	G0700234	Match Proj: South Fork Big Trees - Snohomish County Public Works	3445	FT	
	G0700294	Oakland Bay Riparian Restoration Area Assessment - Mason Conservation District	1143	FT	
	G0800331	Matching Project: The Wedge Project - Stevens County Conservation District	1740	FT	
	G0900052	Little Klickitat River TMDL Implementation Project - Central Klickitat Conservation District	932	FT	

Livestock Practices					
Practice	**Project Number**	**Project Title**	**Amount**	**Unit of Measure**	Totals
Fence cont'd.	G0900061	Matching Proj.: Direct Seed Outreach and Education - Palouse-Rock Lake Conservation District	25000	FT	
	G0900077	Matching Project: Asotin County Riparian Enhancement Project - Asotin County Conservation District	9184	FT	
	G0900078	Curlew Lake Assessment Project - Ferry Conservation District	2600	FT	
Heavy Use Area Protection	G0600339	Thurston/Mason Equine Outreach & Education - Thurston Conservation District	2500	SQUARE FEET	
Livestock Stream Crossing	G0700191	Kettle River the Watershed Improvement Project - Ferry Conservation District	3	UNITS	
Livestock Use Area Protection	G0700184	Matching Project: Deschutes Early Action TMDL Project - Thurston Conservation District	3000	SQUARE FEET	
Stream Crossing	ERO-DIF-ES-2010	Palouse River Project	2	UNITS	4 crossings
	G0900061	Matching Proj.: Direct Seed Outreach and Education - Palouse-Rock Lake Conservation District	2	UNITS	
Use Exclusion	G0600339	Thurston/Mason Equine Outreach & Education - Thurston Conservation District	36	AC	
	G0600339	Thurston/Mason Equine Outreach & Education - Thurston Conservation District	15927	FT	
Waste Storage Facility	G0600339	Thurston/Mason Equine Outreach & Education - Thurston Conservation District	1	UNITS	
Watering Facility	ERO-DIF-ES-2010	Palouse River Project	2	UNITS	17 units
	G0700094	Cow Creek Implementation Phase II - Adams Conservation District	1	UNITS	
	G0700167	Palouse River Implementation Project 'B' - Adams Conservation District	7	UNITS	
	G0700191	Kettle River the Watershed Improvement Project - Ferry Conservation District	5	UNITS	
	G0900052	Little Klickitat River TMDL Implementation Project - Central Klickitat Conservation District	2	UNITS	

Riparian Practices					
Practice	**Project Number**	**Project Title**	**Amount**	**Unit of Measure**	**Totals**
Channel Bank Vegetation	G0700042	White Salmon Landowners for Clean Water - Underwood Conservation District	0.32	AC	
	G0700042	White Salmon Landowners for Clean Water - Underwood Conservation District	260	FT	506 ft
	G0800396	Match: Little Klickitat Temperature TMDL Implementation Project - Central Klickitat Conservation District	300	FT	
Critical Area Planting	G0800396	Match: Little Klickitat Temperature TMDL Implementation Project - Central Klickitat Conservation District	150	FT	
Cut Bank Stabilization	G0700042	White Salmon Landowners for Clean Water - Underwood Conservation District	0.32	AC	
	G0700042	White Salmon Landowners for Clean Water - Underwood Conservation District	260	FT	1210 ft
	G0700191	Kettle River the Watershed Improvement Project - Ferry Conservation District	800	FT	
	G0800396	Match: Little Klickitat Temperature TMDL Implementation Project - Central Klickitat Conservation District	150	FT	
Filter Strip	G0600339	Thurston/Mason Equine Outreach & Education - Thurston Conservation District	1.7	AC	
	G0800355	LPOR Watershed Project - Stevens County Conservation District	400	FT	
Native Plant Community Restoration and Management	G0700191	Kettle River the Watershed Improvement Project - Ferry Conservation District	44	AC	67.6 ac
	G0700234	Match Proj: South Fork Big Trees - Snohomish County Public Works	9.6	AC	
	G0900074	Matching Proj: Hansen Creek Alluvial Fan Project - Upper Skagit Indian Tribe	14	AC	
Natural Channel Restoration	G0800355	LPOR Watershed Project - Stevens County Conservation District	150	FT	
Riparian Buffers - Vegetative	ERO-DIF-ES-2010	Palouse River Project	60	AC	160 ac
	G0700006	Quilceda Pollution Identification and Correction - The Adopt-A-Stream Foundation	0.21	AC	
	G0700094	Cow Creek Implementation Phase II - Adams Conservation District	12.75	AC	
	G0700126	Little Bear Pollution Identification/Correction - Adopt-A-Stream Foundation	0.61	AC	
	G0700184	Matching Project: Deschutes Early Action TMDL Project - Thurston CD	11	AC	
	G0700316	Swamp Creek Water Pollution Prevention Project - Adopt-A-Stream Foundation	1.32	AC	

Riparian Practices Continued					
Practice	**Project Number**	**Project Title**	**Amount**	**Unit of Measure**	**Totals**
Riparian Buffers - Vegetative	G0800109	Snoqualmie Stewardship Program - Stewardship Partners	7.6	AC	
	G0800355	LPOR Watershed Project - Stevens County Conservation District	0.12	AC	
	G0900040	Special District Riparian Re-establishment Initiative - Whatcom County Flood Control Zone District	13.39	AC	
	G0900061	Matching Proj.: Direct Seed Outreach and Education - Palouse-Rock Lake Conservation District	53	AC	
	C0900147	South Colville River Enhancement Project - Stevens County Conservation District	7700	FT	91,400.2 ft
	ERO-DIF-CA-2009	2009 WCC Corp Labor	5280	FT	
	G0700006	Quilceda Pollution Identification and Correction - The Adopt-A-Stream Foundation	335	FT	
	G0700094	Cow Creek Implementation Phase II - Adams Conservation District	7920	FT	
	G0700126	Little Bear Pollution Identification/Correction - Adopt-A-Stream Foundation	465	FT	
	G0700234	Match Proj: South Fork Big Trees - Snohomish County Public Works	9715.2	FT	
	G0700316	Swamp Creek Water Pollution Prevention Project - Adopt-A-Stream Foundation	2172	FT	
	G0800109	Snoqualmie Stewardship Program - Stewardship Partners	12093	FT	
	G0900040	Special District Riparian Re-establishment Initiative - Whatcom County Flood Control Zone District	20720	FT	
	G0900061	Matching Proj.: Direct Seed Outreach and Education - Palouse-Rock Lake Conservation District	25000	FT	
	G0800374	Matching Project: Henderson/Nisqually Water Quality Improvement - Thurston Conservation District	1645	SQUARE FEET	
	C0900107	Gordon Dairy Fencing and Planting Project - Grays Harbor Conservation District	1100	INDIVIDUAL UNITS	2112 plants
	G0700184	Matching Project: Deschutes Early Action TMDL Project - Thurston Conservation District	1012	UNITS	
Riparian Forest Buffer	G0600339	Thurston/Mason Equine Outreach & Education - Thurston Conservation District	36	AC	45.59 ac
	G0700294	Oakland Bay Riparian Restoration Area Assessment - Mason Conservation District	4.46	AC	

Riparian Practices Continued					
Practice	**Project Number**	**Project Title**	**Amount**	**Unit of Measure**	**Totals**
	G0800239	Matching Project: Wenatchee TMDL Project - Cascadia Conservation District	0.93	AC	
	G0800469	South Fork Stillaguamish Tributaries Restoration - Stilly-Snohomish Fisheries Enhancement Task Force	4.2	AC	
	ERO-DIF-ES-2010	Palouse River Project	20000	FT	44126 ft
	G0600339	Thurston/Mason Equine Outreach & Education - Thurston Conservation District	15927	FT	
	G0700294	Oakland Bay Riparian Restoration Area Assessment - Mason Conservation District	3999	FT	
	G0800239	Matching Project: Wenatchee TMDL Project - Cascadia Conservation District	1750	FT	
	G0800469	South Fork Stillaguamish Tributaries Restoration - Stilly-Snohomish Fisheries Enhancement Task Force	2450	FT	
Riparian Herbaceous Cover	G0700184	Matching Project: Deschutes Early Action TMDL Project - Thurston Conservation District	1.9	AC	
Stream Channel Stabilization	C0900113	Salmon Creek Riparian Restoration Project: Kunkle Site - Clark Public Utilities	170	FT	870 ft
	G0800355	LPOR Watershed Project - Stevens County Conservation District	400	FT	
	G0800396	Match: Little Klickitat Temperature TMDL Implementation Project - Central Klickitat Conservation District	300	FT	
	G0800355	LPOR Watershed Project - Stevens County Conservation District	600	SQUARE FEET	
Stream Habitat Improvement and Management	G0700006	Quilceda Pollution Identification and Correction - The Adopt-A-Stream Foundation	150	FT	10550 ft
	G0700316	Swamp Creek Water Pollution Prevention Project - Adopt-A-Stream Foundation	750	FT	
	G0900074	Matching Proj: Hansen Creek Alluvial Fan Project - Upper Skagit Indian Tribe	9650	FT	
	G0700006	Quilceda Pollution Identification and Correction - The Adopt-A-Stream Foundation	1500	SQUARE FEET	9000 sq ft
	G0700316	Swamp Creek Water Pollution Prevention Project - Adopt-A-Stream Foundation	7500	SQUARE FEET	

Riparian Practices Continued					
Practice	**Project Number**	**Project Title**	**Amount**	**Units**	
Streambank & Shoreline Protection	C0900068	Chehalis River Mainstem Riparian Restoration Project - Confederated Tribes of the Chehalis Reservation	11	AC	
	G0700126	Little Bear Pollution Identification/Correction - Adopt-A-Stream Foundation	50	FT	150 ft
	G0800355	LPOR Watershed Project - Stevens County Conservation District	100	FT	
	G0700126	Little Bear Pollution Identification/Correction - Adopt-A-Stream Foundation	150	SQUARE FEET	2550 sq ft
	G0800355	LPOR Watershed Project - Stevens County Conservation District	2400	SQUARE FEET	
Tree/Shrub Establishment	G0700294	Oakland Bay Riparian Restoration Area Assessment - Mason Conservation District	4.46	AC	23.26 ac
	G0900077	Matching Project: Asotin County Riparian Enhancement Project - Asotin County Conservation District	18.8	AC	
	G0700191	Kettle River the Watershed Improvement Project - Ferry Conservation District	600	FT	9081 ft
	G0700294	Oakland Bay Riparian Restoration Area Assessment - Mason Conservation District	3999	FT	
	G0800355	LPOR Watershed Project - Stevens County Conservation District	600	FT	
	G0800396	Match: Little Klickitat Temperature TMDL Implementation Project - Central Klickitat CD	150	FT	
	G0900052	Little Klickitat River TMDL Implementation Project - Central Klickitat CD	932	FT	
	G0900077	Matching Project: Asotin County Riparian Enhancement Project - Asotin County Conservation District	2800	FT	
	G0900052	Little Klickitat River TMDL Implementation Project - Central Klickitat CD	18620	SQUARE FEET	
	C0900173	Meadow Creek Native Planting - Pomeroy Conservation District	10000	UNITS	18500 plants
	G0900077	Matching Project: Asotin County Riparian Enhancement Project - Asotin County Conservation District	8500	UNITS	
Wetland Enhancement	G0700191	Kettle River the Watershed Improvement Project - Ferry Conservation District	44	AC	54.1 ac
	G0800331	Matching Project: The Wedge Project - Stevens County Conservation District	10.1	AC	
Wetland Restoration	G0800239	Matching Project: Wenatchee TMDL Project - Cascadia Conservation District	2.39	AC	

Riparian Practices Continued					
Practice	**Project Number**	**Project Title**	**Amount**	**Unit of Measure**	
Wetland restoration	G0800239	Matching Project: Wenatchee TMDL Project - Cascadia Conservation District	700	FT	
Invasive Species/Noxious Weed Control	G0800469	South Fork Stillaguamish Tributaries Restoration - Stilly-Snohomish Fisheries Enhancement Task Force	0.45	AC	
	C0900147	South Colville River Enhancement Project - Stevens County Conservation District	7700	FT	55,220 ft
	G0800469	South Fork Stillaguamish Tributaries Restoration - Stilly-Snohomish Fisheries Enhancement Task Force	47520	FT	

Agricultural Practices					
Practice	**Project Number**	**Project Title**	**Amount**	**Unit of Measure**	**Totals**
Conservation Tillage	G0700184	Matching Project: Deschutes Early Action TMDL Project - Thurston Conservation District	20	AC	1020 ac
	G0900061	Matching Proj.: Direct Seed Outreach and Education - Palouse-Rock Lake Conservation District	1000	AC	
Diversion	C0800205	US 101 Schneider Creek and Griffinwood Compost and Bark Mulch/Native Plants Filter Strip Demonstration Project - Washington Dept. of Transportation	100	FT	
Irrigation Water Management	G0800239	Matching Project: Wenatchee TMDL Project - Cascadia Conservation District	13	AC	
Roof Runoff Management	G0600339	Thurston/Mason Equine Outreach & Education - Thurston Conservation District	300	FT	540 ft
	G0800396	Match: Little Klickitat Temperature TMDL Implementation Project - Central Klickitat Conservation District	240	FT	
Comprehensive Nutrient Management Plan (CNMP)	G0700191	Kettle River the Watershed Improvement Project - Ferry Conservation District	2	UNITS	
Nutrient Management	G0600339	Thurston/Mason Equine Outreach & Education - Thurston Conservation District	45	AC	185 ac
	G0700184	Matching Project: Deschutes Early Action TMDL Project - Thurston Conservation District	12	AC	
	G0800374	Matching Project: Henderson/Nisqually Water Quality Improvement - Thurston Conservation District	64	AC	

Education				
Practice	**Project Number**	**Project Title**	**Amount**	**Unit of Measure**
Outreach And Education	G0700006	Quilceda Pollution Identification and Correction - The Adopt-A-Stream Foundation	135	UNITS
	G0700126	Little Bear Pollution Identification/Correction - Adopt-A-Stream Foundation	295	UNITS
	G0700316	Swamp Creek Water Pollution Prevention Project - Adopt-A-Stream Foundation	42	UNITS
	G0800396	Match: Little Klickitat Temperature TMDL Implementation Project - Central Klickitat Conservation District	1	UNITS
	G0900052	Little Klickitat River TMDL Implementation Project - Central Klickitat Conservation District	1	UNITS

2.4 The Directed Implementation Fund (DIF)

The Directed Implementation Fund is grant program that allows Ecology regional staff to focus and direct grant dollars toward regional NPS implementation priorities. Many of the projects include extensive Ecology staff participation as in the development and deployment of the implementation strategies.

OFFICE	Project Title	Location	Summary	Recipient	Cost
North West Regional Office	Compliance Activities for Unknown Onsite Sewage Systems in Samish	Samish Watershed, Skagit County WRIA 3	Identify onsite sewage systems adjacent to water bodies with impairments that are likely contributing to the nonpoint pollution. HD will follow up will notices, outreach, and potential enforcement.	Skagit County Health Department	23,047
	Samish Livestock Compliance Assistance	Samish Watershed, Skagit County WRIA 3	Provides financial assistance to the County Planning Department to respond to complaints, provide information about the need for protecting water quality to landowners, code enforcement and make referrals to the Skagit Conservation District for technical and financial assistance for implementing Best Management Practices.	Skagit County Planning Dept	$34,049
	Materials for Samish Livestock Best Management Practices	Samish Watershed, Skagit County WRIA 3	Funds will be used by Skagit Conservation District for labor and materials for fencing and alternative water systems on properties where livestock access to Samish-area streams and ditches may be contributing to FC pollution	Skagit Conservation District	17,700
South West Regional Office	Winter Creek TMDL Forensics--To Find and Fix Failing On-Site Septic system	unincorporated areas south of the city of Westport. WRIA 22	Project to help determine source locations of fecal inputs. Also, develop a tiered response plan in order to address findings deemed problematic, and to educate OSS owners of the value of routine operation and maintenance of OSS and other OSS related issues. Also, determine scope of problem to determine of sewer extension and hook up is best solution.	Grays Harbor County Environmental Health Division	22,862
	Community Watershed Project	WRIA 25	Skamokawa Creek restoration includes, including fencing and LWD for bank stabilization	Wahkiakum CD	52,138
Eastern Regional Office	Palouse Watershed Targeted Implementation	Palouse Watershed	Project uses a combination of targeted resources in a single watershed to maximize landowner participation in NPS pollution source control and riparian restoration. Methods include inspection, social marketing, BMP incentives, and WCC implementation support. Partners include Ecology, WCC and conservations districts.	PLR CD, Palouse CD, WCC	150,000
Central Regional Office	Wenas Creek Riparian Mgmt Phase I	Wenas Creek, Upper Yakima, WRIA 39	Livestock exclusion and riparian restoration. Approximately 3,412 feet of fencing, 5 acres of restoration, and 3,400 plants planted	North Yakima Conservation District	75,000

2. 5 Water Quality Program's support projects - (13.70 FTE @ $1,478,760)

1. Nonpoint policy and plan coordination (2.5 FTE)

Ecology is responsible for overseeing and coordinating overall plan implementation activities. Part of that role entails management; compiling progress reports and reporting back to EPA; taking the lead in coordinating with other Ecology programs; facilitating inter-state agency work; implementing activities that have statewide applicability; and performing technical outreach about the plan with local governments; tribes; and special purpose districts. In addition, Ecology is responsible for statewide nonpoint policy and planning.

Estimated cost of this work plan component – $ 242,125

2. Financial administration (1.65 FTE)

Staff of the Water Quality Program's Financial Management Section administers and manages all Section 319 grant funds and match funds passed through to local government entities, Indian tribes, and public not-for-profit groups. Staff ensures that funds are allocated to the highest priority projects and are spent in a fiscally responsible manner. Staff also closely tracks projects tasks and data from initiation to completion.

Estimated cost of this work plan component – $ 130,800

3. TMDL nonpoint education and outreach (.5 FTE)

Ecology initiates an education and outreach effort as part of every TMDL. Our purpose is to ensure that people understand why we are doing a TMDL, what their responsibilities are likely to be, and how they can participate. A successful public process makes TMDL implementation more likely and more effective.

Estimated cost of this work plan component – $ 53,801

4. TMDL development and implementation (3.0 FTEs)

The primary job of a TMDL lead is managing the development of the TMDL and supporting documents for successful submission to and approval by EPA. This element includes knowledge of TMDL concepts and procedures and the ability to work effectively with diverse groups within and outside Ecology. Other products required from this work element include development of an implementation strategy (IS) to go along with the TMDL, a summary of public involvement, and a water quality (detailed) implementation plan (WQIP). Once these procedures are documented, the TMDL lead coordinates and initiates implementation activities to meet the allocations set in the TMDL. In some cases, the TMDL lead also manages local implementation grants.

Estimated cost of this work plan component – $ 294,860

5. Nonpoint technical assistance and compliance (2.85 FTEs)

The purpose of this work plan element is to provide technical assistance to landowners, as well as federal, state and local agencies, tribes, forests, and special-purpose districts to ensure their activities, projects, and programs meet state water quality laws, regulations, and standards. Areas of technical assistance include forest practices, agricultural activities, riparian restoration, and nonpoint source enforcement. This work plan element applies in watersheds that implement nonpoint TMDLs, or in watersheds with plans that focus on protection of threatened waters or implementation activities to clean up waters.

Estimated cost of this work plan component – $ 320,940

6. Monitoring (3.2 FTEs)

This work plan element designs and conducts monitoring studies to determine the effectiveness of nonpoint source management programs. Effectiveness monitoring, and groundwater monitoring capture the success or failure of various voluntary and regulatory efforts. In addition, we measure the effectiveness of specific implementation activities. Post-TMDL monitoring is conducted to verify that the pollutant controls result in the water body improving or meeting water quality standards. It also tests the effectiveness of the management programs carried out as a part of the implementation plan.

Estimated cost of this work plan component – $ 436,234

Chapter 3: Implementation in Action

Alongside TMDL development, monitoring, and the dissemination of grants, we continually strive to improve upon the frameworks that support nonpoint source reductions. In 2009, we spent much effort, both internally and externally, to further develop the path to clean water. Operating at the policy and watershed scale, Ecology has sought to build important partnerships and leverage better water quality protections. Ultimately, this has led Ecology through many significant coordination exercises.

At the policy level, Ecology engaged in multiple efforts to clarify how processes external to Ecology ensure water quality protections. Ecology coordinated with the Washington State Department of Agriculture to develop a new Memorandum of Agreement; finalized the Clean Water Act assurances review for the Forest Practices Act and established milestones for future improvement; engaged in a multiagency process to better understand BMP standards in Washington; and improved TMDL mapping systems to better coordinate with local entities.

At the watershed scale, regional staff developed sophisticated implementation systems using innovative approaches to better target resources and build critical mass in watersheds. The result has been highly visible implementation actions, which strengthened local partnerships while achieving important on-the-ground changes. In 2009, Ecology and numerous partners launched the Clean Samish Initiative to provide intensive, high-priority implementation of the Samish Fecal Coliform TMDL in western Washington. In the east, Ecology staff worked closely with local conservation districts to provide focused and innovative outreach and attractive BMP incentives to increase participation in stream restoration.

The following details these efforts.

3.1 Coordinating statewide resources to improve NPS reductions

3.1.1 Ecology and WSDA sign Memorandum of Agreement

Ecology and Washington State Department of Agriculture (WSDA) developed and signed a Memorandum of Understanding (MOU) for coordinating statewide resources to efficiently and effectively address livestock related water pollution. Livestock-related activities are a significant source of water pollution throughout Washington State. The MOU was established to leverage existing agency resources to best address these livestock related water quality issues.

The MOU outlines the roles and responsibilities of each agency and created an interagency response and referral system to manage livestock related complaints. In doing so, each agency committed to ensuring that livestock complaints are handled in a timely manner, corrective actions are taken when necessary, and the outcomes of investigations are shared with the respective agencies. The referral and response system establishes a first-responder process so that each agency will know who is responding to a complaint, and it provides a mechanism by which the partnering agency may refer complaints to one another. The system also outlines when and how corrective actions are taken to address identified water quality impairments.

Ultimately, the goal of this system is to guarantee prompt responses to livestock complaints and ensure consistent corrective actions are taken when necessary.

3.1.2 Understanding BMP standards in Washington

In previous reports, Ecology described the proposed work and reasons behind developing BMP manuals for Washington State. In an effort to foster agency consistency and provide implementation assurances in the application of BMPs for similar sources, Ecology developed a very preliminary draft guidance manual on how to use BMPs to prevent pollution at livestock grazing operations. Much of the work was based on collective agency experience in implementing a clean water and livestock program, as well as a comprehensive review of relevant scientific literature pertaining to livestock-related pollution and prevention. The preliminary draft also utilized NRCS conservation practices from the Field Office Technical Guide (FOTG). Ecology then sought to hone the technical merits of the manual by requesting input on a preliminary draft from key partners such as NRCS, Conservation Commission and some select Conservation Districts, and Tribal interests.

Unfortunately, some of the conservation planning community reacted adversely to the concept of Ecology involvement in agricultural BMP development, and asserted that only NRCS practices were necessary to protect clean water. Although Ecology often encourages select adoption of the conservation practices in the FOTG, the agency is unclear whether the complete discretionary planning process consistently results in practices installed on-the-ground that protect water quality to the standards established by Washington State water quality regulations – particularly the state's Water Pollution Control Act and Washington State's Water Quality Standards.

In an effort to establish clarity and improve understanding, Ecology, the Conservation Commission, Washington Association of Conservation Districts, Washington State Department of Agriculture, and Natural Resource Conservation Service agreed to meet over the course of six months to investigate questions such as:

- What are "NRCS standards," and how are the employed by the various stakeholders in Washington?
- How do Washington's water quality regulations relate to BMPs?
- Are NRCS standards consistent with the water quality standards and other state laws?

The hope of these talks is to arrive at solutions to provide consistent application of BMPs that will protect water quality to the standards established by the state's water quality standards and state water pollution control act. From Ecology's view, a more consistent application of BMPs will help answer landowners' oft-cited request for clear and consistent expectations on what it takes to comply with the law. Moreover, it is Ecology's hope that we can develop a more solid, clear and unified message in Washington on what we all need to do to improve water quality. Without this, we are afraid that the clean water message will be drowned in a clamor of competing voices, ironically all trying to speak for the same goal.

Concurrent with the BMPs talks, a similar group is reviewing the twenty-some year old memorandum of agreement with Conservation Districts. It has come to light that over the last

twenty years the water quality regulatory landscape has become increasingly more complex. This changing landscape has changed the nature of many roles and responsibilities, both within and outside the agency. For instance, CAFO permit and TMDL implementation place Ecology in an increasingly regulatory role with a need for more concrete assurances. As result, Ecology and the Conservation Commission have jointly agreed to redevelop, if necessary, a memorandum of agreement that more accurately reflects appropriate roles within the modern regulatory context.

3.1.3 Clean Water Act Assurances Review for the Forest Practices Act

Under Washington State law (Chapter 90.48 RCW) forest practices rules are to be developed so as to achieve compliance with the state water quality standards and the federal Clean Water Act (CWA). The Department of Ecology (Ecology) was designated as the state water pollution control agency for all purposes of the CWA, and has been directed to take all action necessary to meet the requirements of that Act. Ecology established Clean Water Act assurances (CWA assurances) for the state's forest practices program in 1999 as part of the Forests and Fish Report (FFR). The CWA assurances established that the state's forest practices rules and programs, as updated through a formal adaptive management program, would be used as the primary mechanism for bringing and maintaining forested watersheds into compliance with the state water quality standards.

The CWA Assurances were established for an initial ten year period and were scheduled to expire June 30, 2009. In 2009, Ecology completed an extensive review to determine whether or not to extend the CWA assurances into the future. As part of its 2009 review, Ecology examined all of the written conditions for maintaining the assurances established in Schedule M-2 of the 1999 Forests and Fish Report. Ecology also examined all of the issues highlighted in a supplemental 2006 Ecology White Paper. The 2006 paper was written to let stakeholders to the FFR process know some of the specific information Ecology would need for this 2009 review.

As a result of our complete review, Ecology found that the Forests and Fish program had not achieved the level of information needed to verify that water quality in the forested environment will meet water quality standards. Ecology was also unable verify that all of the conditions for offering the assurances in 1999 had been satisfied. In spite of these shortcomings, Ecology believes the Forests and Fish program still offers a viable and compelling management strategy for achieving water quality goals in the forested environment. Ecology concluded, therefore, that continuation of CWA assurances is warranted if specific actions are taken to improve the program's performance.

Taken in total, the forest practices program provides a substantial framework for bringing the forest practices rules and activities into full compliance with the water quality standards. Ecology concluded it is in the best interests of water quality, and is consistent with legislative intent, to work with the other participants to make needed improvements to the existing program. Therefore, Ecology conditionally extended the CWA assurances with the intent to stimulate the needed improvements to the forest practices and adaptive management programs. Ecology, in consultation with key stakeholders, established specific corrective milestones. The extension of the assurances is conditioned on meeting these research and administrative milestones by the

specific target dates described. These milestones serve as a corrective action plan necessary to retain the assurances into the foreseeable future.

Improvements in the system are necessary to create a program that participants can rely on to provide a more efficient and confident program for testing the effectiveness of the rules in protecting water quality and modifying the rules as appropriate. Even as the milestones were being prepared, however, steps were taken to address many of the corrective milestones associated with operational issues, compliance monitoring, and assessing progress under Road Maintenance, Abandonment, and Planning (RMAP) rules. Based on stakeholder commitments and ongoing progress, Ecology fully expects the corrective actions to be successful in the short-term. Going forward, Ecology's highest concern is with the adaptive management program. These concerns are greatest regarding the ability to fund the needed studies and assessments at a rate that creates a viable science-based program. Scientific studies and assessments need to be designed to provide Policy and the Forest Practices Board (Board) with information sufficient to enable these policy makers to make informed science-based policy decisions. Just as importantly, policy makers must be committed to using science to fairly and efficiently revise the forest practices rules and programs as needed.

The value of offering formal assurances is that they provide landowners and agencies with a predictable and consistent regulatory system. In doing, so we provide additional motivation for stakeholders to participate in the adaptive management program. However, to be successful in meeting these milestones and consequently the CWA assurances, the caucus principals will need to work together to find funding and to support the actions needed to meet the specific milestones. Therefore, Ecology is working to support the strategic goal to bring together the principals as soon as practical, to renew and maintain a spirit of cooperation and collaboration among the six caucuses.

3.1.4 TMDL Mapping Project: Improving TMDL Awareness

Some land use development patterns and nonpoint source pollution go hand in hand. In the past few years, Ecology began to address this issue by integrating water quality data into the various facets of the local planning process. For instance, Ecology developed guidance on integrating TMDLs with the State Environmental Policy Act (SEPA) and helped update the Growth Management Act comprehensive planning rules to include TMDLs into the planning processes.

This year we continued to encourage and facilitate the integration of water quality data into the planning process through the on-going TMDL mapping effort. This effort also aims to support the generation and development of TMDL implementation plans.

The TMDL Maps project is a GIS-based data set that consists of spatial features representing the boundaries of TMDLs; nonpoint compliance areas where load allocations (LAs) apply; stormwater permit areas with wasteload allocations (WLAs); and target points where water quality compliance is measured for compliance with TMDLs. The spatial features are attributed with information identifying the TMDL, the pollutants that apply, the values of the LAs and WLAs, and provides links to TMDL documentation. The products of this project are:

1. To develop a GIS-based mapping tool providing both internal and external users with maps and data that describes TMDLs that have been approved in Washington state.
2. To provide the GIS-based maps in a TMDL Map Atlas publication that is a document-style representation of the GIS-based maps in a .pdf format.

The primary goal for the project is to provide key TMDL information in an efficient and easy-to-use format that clearly identifies where a TMDL applies and specific requirements. The benefit of this project is that it encourages the use of TMDL information for environmental decision-making and standardizes interpretation. The products can also be used by watershed stakeholders and local planning departments in the determination and development of TMDL LA and WLA requirements; sampling critical area ordinances; growth management planning; shoreline master plans; and other planning decisions that should account for TMDLs.

The map products can be used by Ecology staff for:

- The development and management of TMDL implementation plans.
- Determining NPDES permit requirements or special conditions applied to construction stormwater permits.
- Communicating TMDLs to the public.

During this reporting period the following interim goals were met:

- TMDL Maps spatial database was refined from a previous version to better meet business needs.
- Approximately 1/3 of historical TMDLs were mapped.
- Mapping guidance was developed.
- Several new TMDLs (with expected approval dates in 2010) were mapped.
- A template format for the TMDL Map Atlas document was developed.
- Began working with Ecology technical support staff to provide TMDL Maps on the agency GIS server for internal use and integration with our water quality web mapping applications.

3.2 Strengthening local partnerships through implementation

3.2.1 Palouse River Partnership

The Palouse River watershed has been significantly degraded over the last century by agricultural activities. Throughout the watershed, livestock have direct access to surface water and are a major source of pollution. Winter feeding and summer pasture activities remove vegetation, trample banks, and deposit excrement in the stream and riparian corridor. In addition, many operators farm crops to the edge of the stream, leaving no riparian buffer.

Riparian Fencing & Planting Project Completed Spring 2010

The Palouse River watershed is approximately 3,280 square miles of eastern Washington, making it one of the largest watersheds in the state. Unfortunately, it is also one of the most polluted watersheds in the state.

Total maximum daily load (TMDL) plans addressing bacteria and historical toxins have been completed for 18 stream segments. These TMDLs recommend fencing livestock away from the stream and establishing riparian buffers to filter pollutants. Another six TMDLs are under development throughout the watershed to address bacteria, temperature, dissolved oxygen impairments. Washington State's Water Quality Assessment further highlights the severity of the water quality issue.

According to the 2008 assessment the watershed has:

- Sixty-one (61) impairments.
- Sixty-four (64) waters of concern.
- Eighteen (18) stream segments with total maximum daily load implementation needs.
- Twenty-four (24) stream segments being addressed through other pollution control efforts.

The streams in the watershed are plagued by the same recurring problem - poor riparian conditions.

Therefore, the most effective method of addressing nonpoint source pollution causing these impairments is to create stream buffers and establish functioning riparian areas.

Unfortunately, the Palouse watershed has few existing financial resources to address water quality impacts. The Palouse River Falls provide a barrier to migrating Endangered Species Act (ESA) listed Steelhead and Salmon. As a result, while large sums of money are dedicated to Puget Sound streams and other ESA-listed water bodies, the Palouse watershed remains largely forgotten. Even when some funds are available for fencing and planting activities there remains a shortage of labor to implement the needed BMPs. Moreover, landowners are often unaware of technical and financial assistance or in some cases, unwilling to use it.

The goal of this project is to bring together area partners and provide a targeted implementation project that will deliver highly attractive incentive packages in conjunction with focused outreach. Integral to these efforts are the partnerships that implement this project. Ecology is working closely with local Palouse-Rock Lake and Palouse conservation districts to ensure that outreach, messaging, and ultimately BMPs meet the water quality needs of the watershed.

As a result of the collaboration, outreach and incentive packages for BMPs are consistent with TMDLs, are well grounded in scientific research, and clearly agreed upon by all partners. Best of all, implementing projects on a unified manner with local partners ensures that individual projects will be effective in reaching water quality goals. Moreover, involved staff is working in a mutually beneficial way that supports and strengthens the role of respective organizations.

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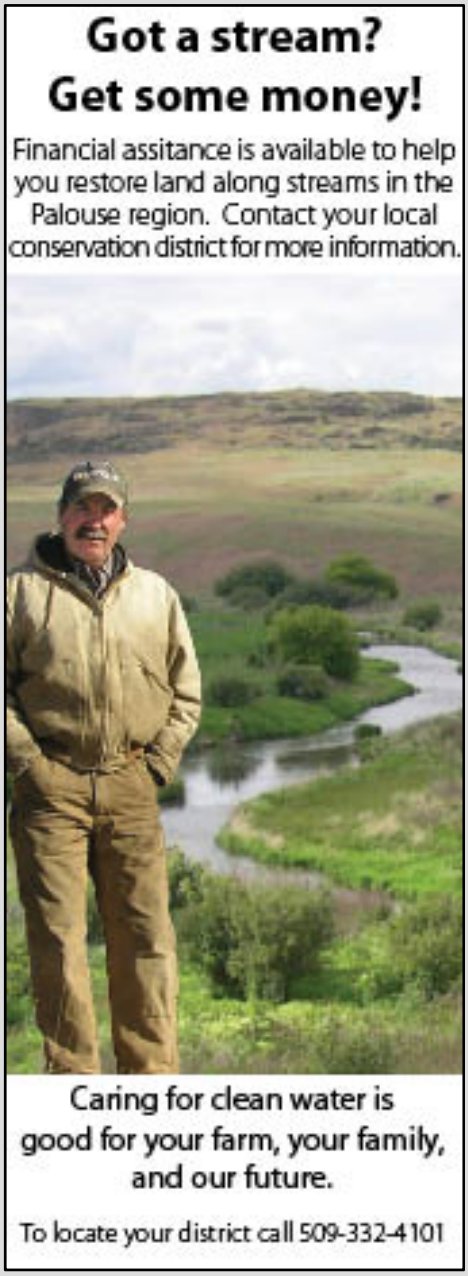

Ultimately, the on-the-ground goals of this collaboration include:

- Installing 30 miles of riparian buffer using livestock exclusion fencing.
- Planting 100,000 native trees and shrubs in the riparian corridor.

The project also includes a social marketing campaign to increase the understanding of water quality and riparian issues among local landowners. The marketing campaign will look to use several tools that will promote continued implementation of riparian BMPs in the area. The social marketing campaign is focused in the upper Palouse area because Ecology has had difficulty in moving implementation efforts forward. A great deal of anxiety remains in this area regarding riparian BMPs to protect water quality.

Ecology is employing outreach strategies to explain state water quality law and regulations, existing TMDLs; the components of proper functioning stream corridor; how BMPs can improve the overall health of a livestock operation; and how they can receive financial assistance.

To date, Ecology has advertised the availability of financial assistance for riparian protection on agricultural lands on the radio and in print. We have produced menus for restaurants that promote water quality protection and describe the availability of cost-share funding. We plan to hold water quality workshops in the fall, after harvest is complete and landowners will be able to attend.

The timeline for the Palouse Implementation Pilot Project is October 2009 – December 2010. As of April 1, 2010, approximately 24 miles of fence have been installed and 71,000 native trees and shrubs have been planted. WCC crews continue work on major projects designed to protect water quality on the mainstem of the Palouse River and its tributaries.

3.2.2 Samish fecal coliform bacteria TMDL implementation: *the Clean Samish Initiative*

Samish Bay, an inlet of Puget Sound in northwest Washington state, is home to important commercial and recreational shellfish beds, primarily Pacific oysters, Manila clams, and geoduck clams. Water quality is compromised by high loading of fecal coliform bacteria from freshwater sources, particularly from the Samish River during rain events. In the past two years, state Department of Health, which monitors the bay and regulates commercial shellfish harvest, has had to establish a number of temporary shellfish closures in order to protect public health.

Reducing fecal coliform bacteria from a variety of nonpoint sources is challenging. A variety of strategies for education, public involvement, and compliance with regulations is needed to reach the appropriate audiences. The Samish watershed is largely rural and agricultural. Onsite sewage systems; pet waste; commercial livestock and small farms; dairies; manure spreading; and human recreators such as fishers, hunters and hikers, are all considered potential important human-related sources.

The Samish Bay Watershed Fecal Coliform TMDL, approved by EPA in October 2009, outlined a number of actions that would lead to reduced inputs of bacteria throughout the watershed. Many of these actions were taken up in the Clean Samish Initiative, a partnership of more than 20 local, state, federal, tribal, and non-governmental organizations led by Ecology. In September 2009 the partners agreed to work together to speed up implementation of the TMDL. Besides educating and involving the public, the partnership recognized that continued monitoring,

funding, incentives, and enforcement of regulations would be needed to fully implement the TMDL.

Progress through compliance with regulations

Two compliance initiatives are beginning to make a difference in the Samish: Ecology nonpoint inspections and Skagit County Health Department's onsite system inspection program which includes tasks supported by Directed Implementation Funds.

In October 2009, Ecology began a series of nonpoint inspections of livestock properties on Parsons Creek, a small tributary to the Samish River, and along a ten-mile reach of the middle Samish River. A livestock owner on Parsons Creek immediately made corrections on his property, and follow-up monitoring has shown consistently reduced bacteria counts in the creek. Ecology continues to work with 30 other livestock owners, making referrals to the Skagit Conservation District for technical assistance and beginning an enforcement process for those who are not working to abate nonpoint source pollution problems.

In July 2009, Ecology awarded $46,000 in Direct Implementation Funds to Skagit Health for work to notify owners of onsite septic systems in the Samish watershed of "unknown" status. A property with an unknown system is one that appears in the county assessor's database as having a residence but has no inspection record. (The county requires conventional gravity septic systems to have an inspection every three years and alternative systems every year.)

The inspection requirement is implemented through a series of mailed notifications advising property owners of deadlines for inspections and penalties for not following through. Between July 2009 and March 2010, the number of "unknown" onsite systems was reduced from 457 to 132, with the highest compliance with the inspection requirement occurring in neighborhood targeted by the mailings. Since July 2009, the inspections have resulted in finding 14 systems requiring correction and 10 failures.

Education, public involvement and monitoring

Efforts by Clean Samish Initiative partners resulted in good local media coverage of Samish water quality problems, including several articles in the Skagit Herald in fall 2009. In addition, workshops by the Skagit Conservation District and the Clean Samish partnership provided a number of opportunities for Samish residents to learn best ways to manage land and livestock manure to protect water quality.

The "Storm Team," a remarkable group of volunteers that monitors Samish water quality during storm events, has monitored no fewer than 15 storms and one non-storm event since August 2009, sampling as many as 22 sites per storm. They put together a powerful and easily-understood Powerpoint presentation showing where, and when in the watershed, high fecal is occurring. The Powerpoint presentation is posted on Ecology's Samish TMDL web site.

Incentives for landowners and funding for the future

To date, no or few landowners have received financial assistance for implementing farm plans. It is still early as far as implementation goes, and it is expected that the continuing work by

Ecology's nonpoint inspector will result in more landowners contacting Skagit CD for technical and financial assistance.

In March 2010 Skagit County and a group of cooperating organizations were awarded a $960,000 grant from EPA to implement many of the Clean Samish Initiative actions through a Samish watershed Pollution Identification and Correction program. This program will follow the Kitsap County model, which combines community education, detailed monitoring and enforcement to clean up stream basins. **Results "in the water"**

The Clean Samish partners agree that avoidance of temporary shellfish closures is a long-term goal of the project. Ecology is also tracking water quality at several Samish sites that are part of ongoing monitoring programs.

Results include:

Lower bacteria counts in Parsons Creek. Prior to October 2009 Ecology work with landowner, this site was usually 500 to 9000 cfu/100 mL; except for one storm in April, this site's bacteria count has been steady at lower than 100 cfu/100 mL.

Four temporary shellfish closures have been necessary – one in November 2009; one in March and two in April 2010.

Chapter 4: A Case Study - Hydrologic Restoration Through Innovation

High stream temperatures are one of the most frequently listed symptoms of degraded stream habitat in the eastern Cascades. Several stream temperature total maximum daily load (TMDL) evaluations have been completed in east slope Cascade Mountain tributaries to the Columbia River. These TMDLs primarily use stream shade as a surrogate for heat load to the aquatic systems. TMDL compliance is often described as attainment of prescribed shade levels, but implementation also involves restoration of stream flow timing, sediment balances and stabilization of riparian areas.

Several factors affect stream flow timing. One factor that has not been addressed until recently is the critical-season storage capacity of key hydrologic features such as floodplains, upland forests, and beaver dam complexes.

In the early 1800s, near extinction of beavers in the east slope Cascades and throughout the western United States had a significant impact on hydrology. Streams flooded with higher energy, down-cut their channels, lowered the water tables, and left riparian vegetation dry during the hottest seasons. In addition, storage of water in the hyporheic zone was lost due to lower elevations of stream channels and lower late season stream flow. Less water throughout the system produced less trees and increased heat loading to streams.

Beaver dams slow and store the water from late winter to early summer snow melt and rain events. They take energy and volume out of flood pulses, thereby protecting sensitive stream banks from erosion. Beaver dams also maintain stream channel elevations that keep riparian zone water tables higher, thus promoting more vegetation to shade the stream channel.

In 2008-09, Ecology supported the development and implementation of a successful protocol to reintroduce beavers to the Methow watershed. The project educated landowners on the benefits of beavers to streams and moved nuisance beavers to former beaver dam sites in order to restore natural storage functions. Reintroducing beavers in tributaries to the Methow River has resulted in the establishment of approximately six new beaver pond complexes, with up to seven dams constructed in each complex. Also, over a thousand citizens have been contacted by the educational component of the program, which discusses beaver benefits to streams and other strategies for restoring riparian areas and protecting water quality.

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Chapter 5: Conclusions

The implementation path to clean water has provided the opportunity for continual learning. As we begin to take more and more steps past plan development and toward the goals of those plans, we are afforded the opportunity to engage in processes that will strengthen our efforts and better elucidate our roles.

Reflecting on this year's successes and difficulties, we learned that clarifying roles and responsibilities among the complex regulatory landscape is essential to ensure efficient and effective implementation. As a result, we worked toward avoiding duplicity, unifying clean water messages, developing assurances for clean water actions, and better communicating essential information to key decision makers. Moreover, we continue to strengthen local partnerships while implementing nonpoint source pollutant reductions through both traditional and innovative means. And although these efforts are undoubtedly time consuming, they are integral to developing a total nonpoint framework which sets the stage to tackle one of the most difficult water quality problems in the nation.

While much has been accomplished thus far, Ecology remains cognizant of the enormity of the problem and the additional work needed. Key to our continued comprehensive nonpoint source effort will be the update of the nonpoint plan in the coming year. Through the update of the plan, we hope to continue to hone our nonpoint efforts to:

- Focus our funds and efforts on high priority problems and solutions.
- Leverage our grant dollars to support programmatic efforts and build critical mass in watersheds.
- Emphasize the most effective BMPs.
- Call upon our partners to implement the strongest water quality protections, consistently.

In addition to this planned and strategic nonpoint approach, we maintain that our end goals are effective on-the-ground change, consistent and unified messages, and ultimately getting to clean water. To that end, Ecology maintains that continued support and financial security to support both the staff and the actions to implement are elemental to our clean water initiatives.

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Appendix A: Table 5.1 Actions to Manage Nonpoint Pollution in Washington State *(2005—2010)*

Objectives to be fulfilled (See Chapter 3)	**Through these Agriculture Activities**	**Lead Entity--** Cooperators	**Measurable Outcome**
Focus funding on most effective strategies	Ag 2: Expand well water protection funding and prioritize technical support and compliance inspections to agricultural producers.	**WSDA** Ecology	
Restore and maintain habitats	Ag 3: Continue to refine and update regulatory program for pesticide applications.	**WSDA,** ECY	
Restore and maintain ecosystems	Ag 4: Provide technical assistance on proper use of pesticides to ensure compliance with pertinent regulations.	**WSDA**	
Restore and maintain ecosystems	Ag 5: Continue to research, develop, test, and evaluate agricultural best management practices.	WSU Ecology	Reductions in sediment
Support sustainable human communities	Ag 6: Actively engage producer groups in implementing new best management practices.	**CC,** WSU ECY	Reductions in sediment
Focus funding on most effective strategies	Ag 7: Continue to implement the Conservation Reserve Enhancement Program and look for O&M solutions.	**CC**	Reductions in sediment
Focus funding on most effective strategies	Ag 8: Use SRF low interest loans to help agricultural commodity groups with development and installation of BMPs that address water pollution, air pollution, and water use.	**ECY**	
Teach about connections	Ag 9: Provide outreach and education to the agricultural community on riparian area function and management related to agricultural land uses.	**WSU** ECY	
Support sustainable human communities	Ag 10: Implement the Irrigation Efficiencies program statewide.	**CC**	Reduction in sediment

Objectives to be fulfilled (See Chapter 3)	**Through these Agriculture Activities**	**Lead Entity--** Cooperators	**Measurable Outcome**
Teach about connections	Ag 11: Implement the IPM certification program statewide.	**WSU,** WSDA	# of new operators certified
Teach about connections	Ag 12: Implement an education and outreach program related to whole farm Phosphorus balance, the Phosphorus Index, and feeding management..	**WSU,** CC, WSDA	Number of agricultural landowners served. Number of workshops offered
Teach about connections	Ag 13: Develop environmental marketing pilot project to get agricultural producers to implement BMPs.	**WSU,** ECU, CC	

Objectives to be fulfilled(See Chapter 3)	**Through these Forestry Activities**	**Lead Entity--** Cooperators	**Measurable Outcome**
Restore and maintain habitats	For 1: Implement the forest practices rules that pertain to water quality protection.	**DNR,** ECY, WDFW, WSDA	Improve water quality in forested habitats; effective compliance; monitoring and enforcement
Preserve natural ecosystems	For 3: Continue to implement a state Forest Riparian Easement Program (FREP) to allow timber leases for conservation purposes.	**DNR**	Number of acres
Sustain biodiversity	For 4: Continue to implement the family forest fish passage program.	**DNR**	Number of culverts replaced
Support sustainable human communities	For 6: Carry out functions of the Small Forest Landowners Office that relate to water quality protection.	**DNR**	Number of small forest landowners served.
Teach about connections	For 7: Educate small forest landowners on water quality and ESA issues, and new RMAP rules.	**DNR,** WSU, UW, Parks, NRCS, WDFW ECY	Number of small forest landowners served; Number of workshops offered

Objectives to be fulfilled (See Chapter 3)	**Through these Agriculture Activities**	**Lead Entity--** Cooperators	**Measurable Outcome**
Focus funding	For 8: Continue to implement the forestland enhancement program to family forest owners. Provide cost-share funding and education on erosion control, water quality, wetlands, and fish habitat protection.	**DNR**	Reduction in sediment; improved fish habitat and wetland protection
Focus funding	For 9: Use SRF low-interest loans to help small forest landowners with implementing BMPs required by the forest practices act.	**ECY,** DNR	
Teach about connections	For 10: Field foresters continue providing technical assistance to landowners and tribes, and provide enforcement ability.	**ECY**	
Restore and maintain habitats	For 11: Continue participation in forest practices adaptive management program.	**ECY**	
Focus funding	For 12: Expand the urban community forestry program to meet current requests for assistance from local governments.	**DNR, cities**	Number of communities with urban forestry programs served

	Through these Urban and Suburban Activities:	**Lead Entity--** Cooperators	**Measurable Outcomes**
Support sustainable human communities	Urb 1: Continue to provide road maintenance guidelines and technical assistance to local communities.	**WSDOT**, ECY	
Support sustainable human communities	Urb 2: Continue to promote low impact development to Washington State communities through assistance, research, and demonstration projects, and by providing assistance to revise existing ordinances and development standards to allow for low impact development.	ECY, WSU	Number of local governments with ordinances that allow for or encourage LID
Restore and maintain habitats	Urb 3: Continue to manage runoff from state highways using the updated highway runoff manual.	**WSDOT**	
Support sustainable human communities	Urb 4: Identify and participate in a low impact project and research the applicability of low-impact techniques to regional hydrogeology, soils, and climactic conditions.	CTED, ECY	Credits for LID techniques updated in Ecology stormwater manual

Objectives to be fulfilled (See Chapter 3)	**Through these Agriculture Activities**	**Lead Entity--** Cooperators	**Measurable Outcome**
Restore and maintain habitats	Urb 5: Develop methods and procedures for watershed-based runoff, streamflow, and water quality mitigation measures, with a goal of resource recovery in place of patchwork, incremental mitigation as practiced in the past.	WSDOT	
Preserve natural ecosystems	Urb 7: Update guidelines and models for consideration by counties and cities on inclusion of Best Available Science and giving special consideration to salmon conservation in their local GMA Critical Areas Ordinances.	**CTED**	
Support sustainable human communities	Urb 8: Continue to research stormwater technology design, cost benefit and know-how to effectively address stormwater problems. Educate to key audiences about new findings, etc.	**ECY**	
Support sustainable human communities	Urb 9: Educate key audiences in the best available science in Pacific Northwest stormwater management and low impact development techniques.	**WSDOT,**WSU ECY, WDFW	Number of local governments assisted. Number of developers and consultants served.
Support sustainable human communities	Urb 10: Promote adoption of Ecology's stormwater manual and other elements of a comprehensive stormwater program.	**ECY**	Number of local governments adopting manual
Preserve natural ecosystems	Urb 11: Assess the impacts of urban and highway stormwater runoff on the quality of tideland, shoreland, and bedland sediments as well as biological resources and habitat, with particular emphasis on urban embayments in Puget Sound.	**DNR**, ECY, DOH, Sea Grant, WDFW	Number of acres impacted.
Teach about connections	Urb 12: Support local health jurisdictions in developing an effective education program on the importance of properly maintaining their on-site systems and how to do that.	**DOH**	
Support sustainable human communities	Urb 13: Continue to work on the rule development process leading to adoption of new and revised rules by the Washington State Board of Health for on-site sewage systems up to 3500 gallons per day.	**DOH**, ECY	Final rule
Support sustainable human communities	Urb 14: Continue to work on the rule development process leading to adoption of new and revised rule large on-site sewage systems over 3500 gallons per day by the Washington State Board of Health.	**DOH**, ECY	Final rule
Focus funding	Urb 15: Continue to review and oversee the planning, design, construction, and operation of large onsite systems.	**DOH,** ECY	

Objectives to be fulfilled (See Chapter 3)	**Through these Agriculture Activities**	**Lead Entity--** Cooperators	**Measurable Outcome**
Focus funding	Urb 16: Assist further development of local health districts capacity to manage their on-site sewage system inventory with electronic databases.	**DOH**	Number of local health districts with GIS capacity for managing OSSS
Focus funding	Urb 17: Test innovative approaches for providing funds to homeowners to repair failing on-site systems.	**DOH**	% reduction of nutrients by tested units
Focus funding	Urb 18: Inventory, prioritize, and repair failing on-site septic systems owned by Washington State Parks.	**Parks**	Number of systems repaired
Teach about connections	Urb 20: Develop educational activities necessary for implementing new and revised rules for on-site sewage systems up to 3500 gallons per day.	**DOH**	Number of people trained
Focus funding	Urb 21: Develop and share technical and administrative guidance to assist local health jurisdictions in the development and implementation of risk-based management plans.	**DOH**	
Preserve natural ecosystems	Urb 22: Develop pilot program to address water quality violations associated with on-site sewage systems in sensitive areas.	**ECY,** DOH	

Objectives to be fulfilled (See Chapter 3)	**Through these Recreational Activities**	**Lead Entity-- Cooperators**	**Measurable Outcomes**
Preserve natural ecosystems	Rec 1: Continue to implement the comprehensive boat sewage management plan for Washington State.	**Parks**	Reduction in F. coliform
Focus funding	Rec 2: Help fund local health districts to address pollution problems identified by the BEACH Program.	**DOH**	Reduction in F. coliform
Restore and maintain degraded ecosystems	Rec 3: Continue to implement the beach monitoring and notification program for recreational marine waters contaminated with nonpoint source pollution.	ECY, DNR, DOH	

Objectives to be fulfilled (See Chapter 3)	**Through these Agriculture Activities**	**Lead Entity--** Cooperators	**Measurable Outcome**
Teach about connections	Rec 4: Fund education to prevent small oil spills and for citizen responses to oil spills.	**ECY**	
Preserve natural ecosystems	Rec 5: Assess the impact of nonpoint source pollution on nearshore marine vegetation with specific emphasis on the impacts of urban stormwater.	**DNR,** ECY, Sea Grant, WDFW	Identify key factors related to nonpoint pollution and loss of nearshore aquatic vegetation.
Restore and maintain degraded ecosystems	Rec 6: Sample a cross-section of marinas in different physical settings around the state to determine if water quality standards are being met during peak use periods of the summer.	**DNR**, ECY, DOH, Sea Grant	Number or percentage of marinas meeting water quality standards.
Restore and maintain degraded ecosystems	Rec 7: Assess the impacts of urban and highway stormwater runoff on the quality of tideland, shoreland and bedland sediments with particular emphasis on urban embayments in Puget Sound.	**DNR,** ECY, DOH, Sea Grant, WDFW	Number of acres of tidelands, shorelands and bedlands impacted by urban stormwater and highway runoff.

Objectives to be fulfilled (See Chapter 3)	**Through Habitat Alteration Activities**	**Lead Entity-Cooperators**	**Measurable Outcome**
Restore and maintain degraded ecosystems	Hab 1: Prioritize and coordinate restoration projects on a watershed basis.	ECY, WDFW	Miles of riparian areas restored
Sustain biodiversity	Hab 2: Provide critical information, technical guidance, and maps to support local government's revisions to their Critical Areas Ordinances.	CTED, WDFW	
Sustain biodiversity	Hab 3: Provide outreach and educational materials on the aquatic habitat guidelines.	**WDFW,** ECY, WSDOT	Number of workshops

Objectives to be fulfilled (See Chapter 3)	**Through these Agriculture Activities**	**Lead Entity--** Cooperators	**Measurable Outcome**
Sustain biodiversity	Hab 4: Train local, state, and tribal staff on aquatic habitat guidelines.	**WDFW**, ECY, WSDOT	Number of staff trained
Teach about connections	Hab 5: Continue to develop and disseminate educational materials in multi-media formats on the benefits and methods of riparian restoration.	**WDFW**, ECY	
Restore and maintain degraded ecosystems	Hab 6: Develop additional needed aquatic habitat guidelines (e.g. stream crossings, marine shorelines protection, marine habitat restoration, treated wood, etc.)	**WDFW**, ECY, WSDOT	
Restore and maintain degraded ecosystems	Hab 7: Continue to implement the Puget Sound wetland restoration program.	**ECY**	Acres of wetlands restored
Sustain biodiversity	Hab 8: Develop wetland guidance documents based on the best available scientific information for use by local governments in developing wetland protection regulations under the GMA and the SMA.	**ECY**, CTED	
Sustain biodiversity	Hab 9: Conduct wetland-training workshops for local governments to assist them in implementing local wetland regulatory programs.	**ECY**	Number of workshops
Preserve natural ecosystems	Hab 10: Develop new guidance on wetland mitigation plans.	ECY	
Focus funding	Hab 11: Develop a compliance tracking and enforcement program for agency permitted wetland mitigation projects.	**ECY**	
Preserve natural ecosystems	Hab 12: Prevent, control, and monitor the spread of aquatic nuisance species and increase the capacity of watershed groups to do the same.	**WSDA,** ECY, WSU, Parks, WDFW, DNR	Reduction in areas where nuisance species exist
Support sustainable human communities	Hab 13: Provide technical assistance and education to support Shoreline Master Program updates.	**ECY**	
Teach about connections	Hab 14: Provide technical assistance to local governments on functions and processes of nearshore habitat.	**ECY**	
Restore and maintain degraded ecosystems	Hab 15: Develop a strategy to remove creosote logs from public and state beaches, wetlands, and parks.	**Parks**	Number of logs removed

Objectives to be fulfilled (See Chapter 3)	**Through these Agriculture Activities**	**Lead Entity--** Cooperators	**Measurable Outcome**
Restore and maintain degraded ecosystems	Hab 16: Assess the impacts of nonpoint source pollution on nearshore marine vegetation with specific emphasis on the impacts of urban stormwater.	**DNR**, ECY, Sea Grant, WDFW	Acres of nearshore habitat loss
Preserve natural ecosystems	Hab 17: Find a volunteer watershed planning community to begin the task of identifying conservation targets for maintaining biological diversity within an aquatic ecological system.	**ECY,** CTED, WDFW, IAC	
Restore and maintain degraded ecosystems	Hab 18: Provide WCC crews in each Ecology region.	**ECY**	

Objectives to be fulfilled (See Chapter 3)	**Through these Educational Activities:**	**Lead Entity—** Cooperators	**Measurable Outcomes**
Teach about connections	Ed 1: Organize a biennial conference on nonpoint pollution.	**WSU,** ECY	
Teach about connections	Ed 2: Continue to develop, upgrade, and enhance environmental learning centers across the state.	**Parks**	
Teach about connections	Ed 4: Continue implementing the Columbia Watershed Curriculum.	**ECY,** WSU	Number of students participating
Teach about connections	Ed 5: Continue to implement the Chehalis Basin Education and Consortium Water Quality Monitoring Program.	**ECY,** WSU	Number of students participating
Teach about connections	Ed 6: Introduce and support Master Watershed Steward Programs across the state.	**WSU**, ECY	Number of individual served; Number of workshops offered
Teach about connections	Ed 7: Develop and implement statewide training programs for the public and specific interest groups, such as real estate professionals, conservation district staff, planners, watershed group members, developers, and agriculture professionals.	**WSU,** ECY**,** WDFW, WSDOT, Parks	Training developed and presented

Objectives to be fulfilled (See Chapter 3)	**Through these Agriculture Activities**	**Lead Entity--** Cooperators	**Measurable Outcome**
Support sustainable human communities	Ed 8: Support existing community outreach programs to help reach TMDL goals.	**WSU,** ECY	Number of volunteers trained. Number of hours volunteered.
Teach about connections	Ed 10: Develop water quality outreach programs to minority populations.	**ECY**	
Teach about connections	Ed 11: Develop and present water quality education in classrooms and events as requested.	**ECY,** WSU	Number of students
Teach about connections	Ed 12: Educate and engage the public in activities to correct and prevent nutrient pollution in Hood Canal.	WSU	Number of people attending activities
Focus funding	Ed 13: Support building local capacity for public education on water quality.	ECY, WSU	
Support sustainable human communities	Ed 14: Develop a water quality component for the continuing education program for local officials.	**CTED,** ECY, DNR, WSU, Parks	Number of workshops
Teach about connections	Ed 15: Implement Healthy Water/Healthy People curriculum.	**ECY,** WSU,	Number of students

Objectives to be fulfilled (See Chapter 3)	**Through these General Program Activities** *Programs that have multiple impacts or are administrative in nature*	**Lead Entity—** Cooperators	**Measurable Outcome**
Support sustainable human communities	Gen 2: Continue to promote local watershed planning and implementation.	**ECY**	Number of watershed-based plans supported under this plan
Restore and maintain degraded ecosystems	Gen 3: Continue to develop TMDLs and detailed implementation plans to address waters impacted by nonpoint source pollution.	ECY	Number of TMDLs developed

Objectives to be fulfilled (See Chapter 3)	**Through these Agriculture Activities**	**Lead Entity--** Cooperators	**Measurable Outcome**
Restore and maintain degraded ecosystems	Gen 5: Continue to emphasize lake and watershed management planning to address nutrient and sediment enrichment, and de-emphasize the use of chemicals for pest control.	**ECY**	lbs of nutrients removed
Restore and maintain degraded ecosystems	Gen 6: Implement the Yakima River Sediment Reduction Plan.	**ECY**	Tons of sediment reduced
Support sustainable human communities	Gen 7: Create a toolbox of solutions for nonpoint source problems that includes grant project reports and products as well as agency products, and make the toolbox available on the internet.	**ECY**	
Support sustainable human communities	Gen 8: Develop clean water indicators for sustainable communities. Work with communities to forward their adoption.	**WSU, ECY, CTED**	
Restore and maintain degraded habitats	Gen 9: Support local corrective actions and programs to reduce human-related pollution and nutrient input into Hood Canal to address the low dissolved oxygen problem.	**ECY**	Number of corrective actions
Restore and maintain degraded habitats	Gen 10: Develop a social marketing program for clean water projects for statewide application. Use the campaign to increase citizens' awareness of how their actions affect water quality and what they can do to improve water quality.	**ECY,** CTED	
Restore and maintain degraded ecosystems	Gen 11: Continue to implement the shellfish closure response strategy.	**DOH,** ECY	Acres of commercial shellfish beds with improved classifications
Focus funding	Gen 12: Automate nonpoint source data collection and reporting in shellfish growing areas.	**DOH**	
Restore and maintain degraded ecosystems	Gen 13: Conduct source identification monitoring in shellfish growing areas threatened or impaired by nonpoint source pollution.	**DOH**	
Preserve natural ecosystems	Gen 14: Provide guidance on land use measures to protect shellfish from impacts of urbanization.	**CTED,** DOH	

Objectives to be fulfilled (See Chapter 3)	**Through these Agriculture Activities**	**Lead Entity--** Cooperators	**Measurable Outcome**
Preserve natural ecosystems	Gen 15: Develop a model shellfish guidance that addresses nonpoint source pollution.	**CTED**, DOH	

Objectives to be fulfilled (See Chapter 3)	**Through Monitoring and Enforcement activities -** *Programs that monitor water quality or enforce water quality standards*	**Lead Entity--** Cooperators	**Measurable Outcome**
Teach about connections	ME 1: Develop protocols for performing nonpoint source monitoring throughout Washington.	**ECY**	
Focus funding on most effective strategies	ME 2: Monitor the effectiveness of corrective actions for nonpoint TMDLs, BMPs, and other watershed based plans.	**ECY**	Effectiveness of TMDLs, BMPs, and watershed based plans
Restore and maintain degraded systems	ME 3: Monitor nitrates and pesticide runoff from agricultural lands.	**WSDA**, ECY	
Teach about connections	ME 5: Continue to implement ground water pesticide monitoring to support PMPs and ESA water quality and toxicological assessments.	**WSDA**	
Restore and maintain degraded systems	ME 6: Continue to monitor the implementation of forest practice rules statewide.	**DNR**, ECY, WDFW	Compliance monitoring report
Teach about connections	ME 7: Using existing monitoring data, identify water bodies high in phosphorus, nitrates, and sediments.	**ECY**	List of water bodies
Teach about connections	ME 8: Report to the public on monitoring trends in Puget Sound through the Puget Sound Ambient Monitoring Program.	**PSAT**	List of reports issued and copies distributed
Restore and maintain degraded ecosystems	ME 9: Increase compliance and enforcement activities for nonpoint pollution sources.	**ECY**	Number of enforcement actions

Objectives to be fulfilled (See Chapter 3)	**Through Monitoring and Enforcement activities -** *Programs that monitor water quality or enforce water quality standards*	**Lead Entity--** Cooperators	**Measurable Outcome**
Restore and maintain degraded ecosystems	ME 10: Investigate agriculture related complaints and assist in development and implementation of farm plans.	**ECY, CC**	Number of complaints attended