DEPARTMENT OF
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State of Washington

Year 2008 Report on Activities to Implement Washington State's Water Quality Plan to Control Nonpoint Source Pollution

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Year 2008 Report
On Activities to Implement Washington State's Water Quality Plan to Control Nonpoint Source Pollution

by
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Table of Contents

Chapter 1: A Year of Building the Foundation for Successful Implementation

In 2007, the department of Ecology evolved the nonpoint program as a result of learning from the previous years of program administration. Notably, Ecology began to more closely align the TMDL and nonpoint programs to better leverage an array of staff skills and to orient programmatic efforts toward achieving measurable results in the water column, not merely on paper. Subsequently, a new programmatic mantra was born—getting to clean water! While such a simple and overt goal seems intuitive, previous objectives were centered on the *production* of TMDLs and not necessarily focused on achieving the end *result*, i.e., cleaner water.

Re-orienting programmatic efforts toward on-the-ground results meant emphasizing implementation. However, this is easier said than done, and as with any change, it merited a deliberate and measured response. As noted in last year's report, 2007 was largely a year of investigation and identification of what needed to be changed in order to best support successful implementation and the programmatic reorientation from production to results. A key lesson learned from our analysis was that there are many pieces to the puzzle, and developing a successful nonpoint program oriented toward achieving on-the-ground results would require modifying many of those pieces. Another key lesson was that successful implementation would require the development of many other tools in addition to the dissemination of grants.

2008 was a year of such accomplishments. In 2008 we have set to the work of removing the identified roadblocks and developing the tools that were previously lacking. Essentially, in 2008 we began to construct the necessary foundation upon which subsequent successful implementation actions could be built to achieve actual changes in the water. Our broad ranging accomplishments include:

- Updating regulations and policies.
- Changing decision making processes.
- Changing report template language.
- Conducting internal training.
- Providing targeted outreach and technical assistance.
- Developing guidance manuals.
- Creating new implementation strategies.
- Continually honing the Direct Implementation Fund.
- Improving TMDL development and implementation plans.

In addition to providing information about projects awarded funding, this report will further detail the above mentioned efforts, provide updates about other ongoing initiatives, and highlight some new approaches to addressing nonpoint pollution problems.

Chapter 2: How EPA's 2007 319 Grant to Washington State was Distributed

In SFY09, the federal 319 dollars were again distributed among three major work plan elements as in SFY08.

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 26 such projects awarded during 2008.
2. **Direct Implementation Fund**—Through its enhanced benefit status, Ecology has developed the direct implementation fund (DIF). In 2007, the DIF was re-designed to assist Ecology regional offices to directly implement TMDLs and other regional office priority nonpoint water quality projects. 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 problems. The regions then collaborate with state agencies, local jurisdictions, nonprofits, or the Washington Conservation Corps to develop and implement projects addressing those problems. There were 19 DIF grants awarded in 2008.
3. **Water Quality's Nonpoint Program Support Projects**—Ecology funded 13.70 staff FTEs for projects in 2008 that directly support the nonpoint program.

Overall, federal allocations were:

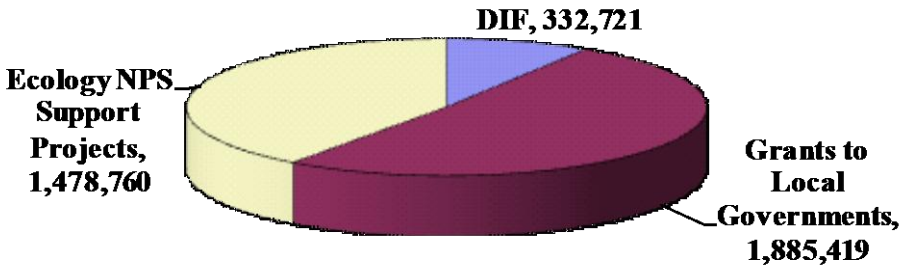


Figure 2.1 - 319 Federal Allocations 2008

The above figures show initial allocations. Ecology applied 40 percent matching funds using State Centennial Clean Water Fund dollars contained within 17 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, application form, and 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 SFY2009 funding cycle, 17 projects were funded to control nonpoint sources of pollution, or to restore habitats affected by land uses that exacerbate nonpoint pollution problems.

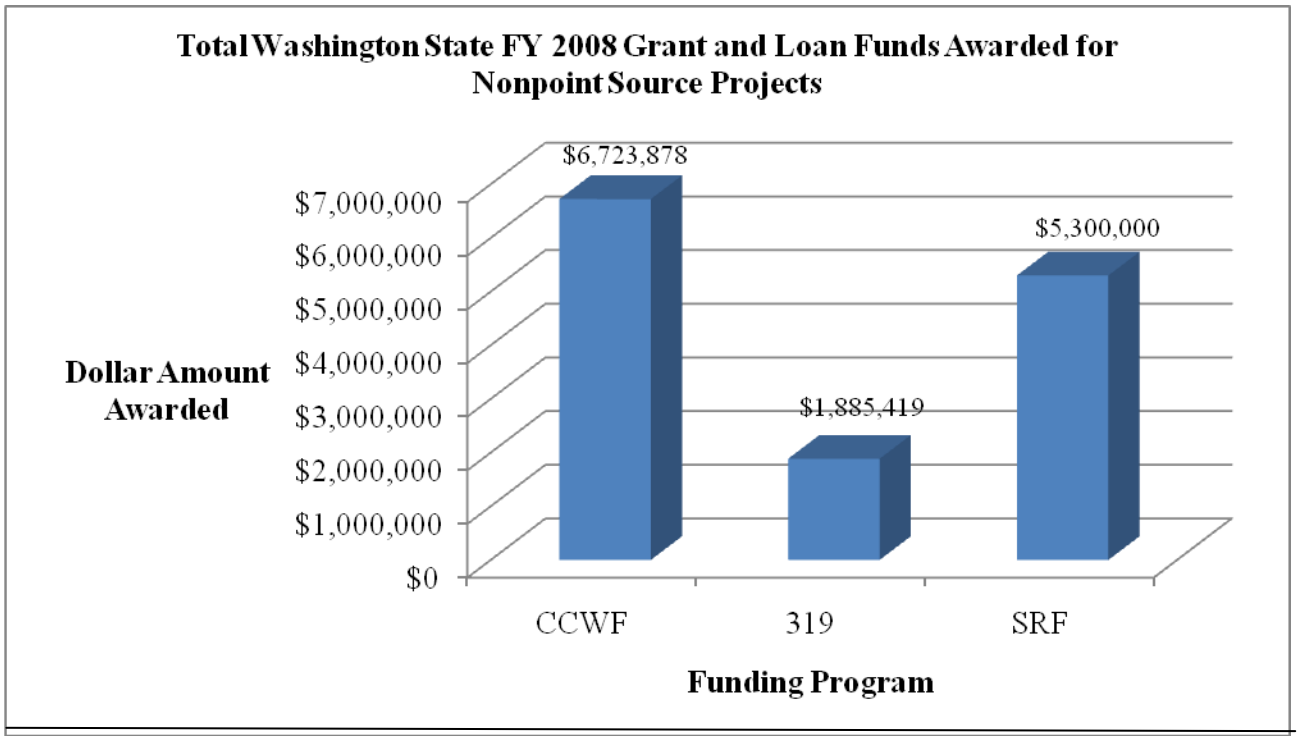
The State Revolving Fund (SRF)

SRF provides low-interest loans for treatment facilities and for activities to reduce nonpoint sources of water pollution. In the SFY2009 funding cycle, two projects received loan funds to implement nonpoint programs.

Section 319

319 grants provide funds to reduce nonpoint sources of water pollution. In the SFY2009 funding cycle, 9 projects were funded with 319 funds. Also, the direct implementation fund program, awarded 19 projects.

The SFY 2009 funding cycle provided the following totals for Washington's nonpoint grants and loans:


Total Washington State FY 2008 Grant and Loan Funds Awarded for Nonpoint Source Projects
Dollar Amount Awarded
$7,000,000
$6,000,000
$5,000,000
$4,000,000
$3,000,000
$2,000,000
$1,000,000
$0
$6,723,878
$1,885,419
$5,300,000
CCWF
319
SRF
Funding Program

2.1 Nonpoint water quality grants and loans SFY2009

Application Number	Applicant Name	Project Title	Project Description	Centennial Funds Offered	319 Funds Offered	SRF Funds Offered
FP09001	Coupeville, Town of	Coupeville Stormwater Activities Project	The Town of Coupeville and partners will assess stormwater quality and create a resulting mitigation implementation plan and pre-design report for the purpose of protecting Penn Cove, a 303(d) listed water body, related endangered salmon habitat, and prohibited shellfish harvesting areas.	$52,490.00	$0.00	$0.00
FP09004	Whatcom County Public Works	Special District Riparian Re-establishment Initiative	The project will improve water quality by re-establishing vegetated riparian corridors along targeted streams within special district boundaries. Improvements will include control of invasive species; bank stabilization; shade to reduce water temperatures and create fish habitat; interception of nutrients and bacteria; and reduced long-term need for any watercourse maintenance activities.	$228,915.00	$271,085.00	$0.00
FP09007	Spokane County CD	Conservation Tillage Sediment Reduction Program	The conservation tillage sediment reduction program will assist farmers in eleven counties with purchasing conservation tillage equipment, making the transition to direct seeding economically feasible. The direct benefits of conservation tillage operations	$0.00	$0.00	$5,000,000.00

Application Number	Applicant Name	Project Title	Project Description	Centennial Funds Offered	319 Funds Offered	SRF Funds Offered
			include decreased erosion, providing improved water quality, and salmonid habitat protection through reductions in sediment and associated nutrients. This project implements Washington State's Nonpoint Plan. These programs will help prevent soil erosion from agricultural land and sediment delivery to receiving waters.			
FP09008	Airway Heights, City of	City of Airway Heights Water Reclamation and Recharge Project	The city will construct a new water reclamation plant to treat and reclaim wastewater from the city of Airway Heights, eliminating effluent discharge to the Spokane River that is related to Airway Heights wastewater. Construct collection system improvements to transport wastewater to the new treatment facilities and it will construct infrastructure improvements to provide reuse water to local customers. Construct an aquifer recharge system to percolate reclaimed water to a stressed West Plains aquifer.	$2,923,104.00	$0.00	$0.00
FP09012	Whidbey Island Conservation District	Lone Lake Restoration and Implementation Project	The Lone Lake water quality project targets reduction and control of phosphorus pollution sources in the lake and its inlets through water quality monitoring, livestock best management practices, and low impact development techniques.	$0.00	$64,865.00	$0.00

Application Number	Applicant Name	Project Title	Project Description	Centennial Funds Offered	319 Funds Offered	SRF Funds Offered
			The education component will target farm and forest owners as well as residential homeowners and the general public.			
FP09013	Skagit Fisheries Enhancement Group	Day Creek Habitat Restoration	Day Creek suffers from abnormally high water temperatures during the summer months which can kill threatened juvenile salmonid species. This project will decrease high summer temperatures in Day Creek by strategically placing large log jams in the stream to narrow the channel width and increase channel depth.	$0.00	$228,915.00	$0.00
FP09014	Oak Harbor, City of	On-Site Septic Management Program and Loan Program	This project will implement an on-site septic system management and loan programs. Included in this are an inventory and assessment of existing septic system conditions within the city, education regarding septic systems operations/maintenance, education regarding technical and financial options for failing systems, establishing liaisons between property owners, the city, and county regarding necessary improvements, and providing low-interest loans.	$0.00	$0.00	$300,000.00

Application Number	Applicant Name	Project Title	Project Description	Centennial Funds Offered	319 Funds Offered	SRF Funds Offered
FP09016	Spokane County Conservation District	Hangman Creek Phosphorus Reduction Program	The phosphorus reduction program initiates a long-term approach to reduce non-point source phosphorus and sediment contributions in the Hangman Creek Watershed. The program will identify and prioritize phosphorus sources in the watershed and implement a 1,500 foot livestock/streambank project. 100% of this grant request will be utilized for implementation and monitoring.	$128,000.00	$0.00	$0.00
FP09018	Upper Skagit Indian Tribe	Hansen Creek Alluvial Fan Project	This project will restore approximately 50 acres of historic alluvial fan and 80 acres of associated riparian and forested wetland acreage in a priority salmon recovery watershed. Particular emphasis will be on restoring habitats to support natural sediment storage and transport processes, and reducing temperature and fecal loads.	$454,000.00	$0.00	$0.00
FP09019	Snohomish Conservation District	Collaborative Watershed Education in Little Bear Creek & Bear Creek Basins	To improve water quality in Little Bear Creek and Bear Creek, Snohomish Conservation District and its partners, King Conservation District, will develop a targeted collaborative watershed education program that effectively provides land owners with technical assistance and farm planning needs related to agricultural activities, pet	$283,125.00	$0.00	$0.00

Application Number	Applicant Name	Project Title	Project Description	Centennial Funds Offered	319 Funds Offered	SRF Funds Offered
			waste, septic systems, wells, stormwater, and lawn care.			
FP09020	Snohomish Conservation District	Stillaguamish LID Remediation Project	Through an aggressive LID public education and outreach program, Snohomish Conservation District will help restore and protect water quality in the Stillaguamish watershed and Camano Island. The target audience will be developers, city planners, builders, landscape architects, nurseries, homeowners, and other interested parties in both counties.	$194,775.00	$0.00	$0.00
FP09021	Snohomish Conservation District	Miller and Pilchuck Creeks TMDL Improvement	The Snohomish Conservation District will educate and work with landowners to decrease fecal coliform pollution in two Stillaguamish sub-basins: Pilchuck and Miller. Tasks include developing educational materials using social marketing, educating landowners about all sources of fecal coliform pollution, implementing farm BMPs, and locating severely polluted stream reaches through monitoring.	$227,250.00	$0.00	$0.00

Application Number	Applicant Name	Project Title	Project Description	Centennial Funds Offered	319 Funds Offered	SRF Funds Offered
FP09023	Skagit County	Skagit County Natural Resource Stewardship Program	This grant would create the Skagit County Natural Resource Stewardship Program which would provide funding to grassroots riparian, fencing, and fish habitat restoration projects. Funding would be directed only at Skagit County watercourses that are impaired for temperature, dissolved oxygen, and/or fecal coliform.	$405,000.00	$0.00	$0.00
FP09025	Asotin County Conservation District	Asotin County Riparian Restoration/Enhancement Project	The riparian restoration project will improve riparian health and water quality in Asotin County by assisting landowners to implement BMPs, including fencing, off-stream watering, and riparian planting on 10-15 miles of stream. Important project components include effective monitoring and strong public outreach.	$250,000.00	$0.00	$0.00
FP09027	Bellingham, City of	Marine Nearshore Water Quality and Habitat Improvement Project	The proposed city of Bellingham Marine Nearshore water quality and habitat improvement project will directly improve nearshore habitat and water quality conditions in Bellingham Bay and Chuckanut Bay by implementing high priority Nearshore habitat improvement projects and supporting implementation of regulatory protection (i.e. CAO and Shorelines Management Plans).	$271,603.00	$0.00	$0.00

Application Number	Applicant Name	Project Title	Project Description	Centennial Funds Offered	319 Funds Offered	SRF Funds Offered
FP09031	Ferry Conservation District	Curlew Lake Assessment Project	In 2004, Curlew Lake was placed on the state's 303(d) List for excessively high phosphorus levels. With an intensive water quality monitoring program, the district will attempt to identify probable sources of pollution and concurrently conduct best management practice implementation and outreach programs to improve the lake's water quality.	$0.00	$250,000.00	$0.00
FP09032	Central Klickitat Conservation District	Little Klickitat River TMDL Implementation Project	This project is designed to reduce temperatures in the Little Klickitat River by implementing BMPs which support the goals and objectives of the TMDL detailed implementation plan and the WRIA 30 management plan. riparian restoration, habitat improvement, monitoring, and public education and outreach activities are all components of this project.	$0.00	$250,000.00	$0.00
FP09034	Jefferson County Public Health	Mats Mats Bay Water Quality Improvement Project	The Mats Mats Bay Water Quality Improvement Project has two goals. The first is to prevent further downgrade of a threatened commercial shellfish growing area caused by nonpoint pollution. The second is to improve water quality by implementing BMPs for on-site sewage systems and agricultural practices.	$168,941.00	$0.00	$0.00

Application Number	Applicant Name	Project Title	Project Description	Centennial Funds Offered	319 Funds Offered	SRF Funds Offered
FP09035	Kittitas County Conservation District	Upper Kittitas County Water Quality Planning & Improvement Project	The Kittitas County Conservation District is working in Upper Kittitas County to assist private landowners and a small municipality with water quality improvement projects, including streamside re-vegetation and stormwater planning (inventories and assessments) by providing technical expertise, financial incentives, and educational opportunities.	$112,958.00	$0.00	$0.00
FP09036	Kittitas Reclamation District	Kittitas Multi-TMDL Compliance Project	To decrease turbidity, bacteria, and temperature to compliance points for meeting TMDL goals by: 1) using technology to target specific egregious problems and assisting Ecology with other monitoring activities; 2) providing lab work and data analysis 3) educating targeted population segments; and 4) providing BMP assistance as an incentive and aid.	$0.00	$247,425.00	$0.00
FP09040	Okanogan Conservation District	Okanogan Conservation Technical Assistance II	The Okanogan Conservation District will work with NRCS to implement agricultural BMPs under federal farm bill programs that protect, enhance, and restore water quality, such as riparian plantings, livestock fencing, and irrigation system improvements. The district will also implement technical assistance regarding irrigation water management, nutrient management,	$250,000.00	$0.00	$0.00

Application Number	Applicant Name	Project Title	Project Description	Centennial Funds Offered	319 Funds Offered	SRF Funds Offered
			and pest management.			
FP09041	Okanogan Conservation District	Okanogan Backyard Conservation and Small Farm Implementation	This project involves implementing best management practices and providing technical assistance to landowners district-wide. Priority target areas will be based on TMDLs and on an initial inventory of areas of high impact, high animal density, and critical surface water sources. Education and outreach to landowners are also a major focus.	$0.00	$249,985.00	$0.00
FP09042	Clallam County	On-Site Septic System Plan Implementation - Educating the Homeowner	Use of public outreach newsletters and workshops to assign homeowners the responsibility to maintain their own septic system as required by law, and to conduct a pilot project that will evaluate the effectiveness of a Do-It-Yourself homeowner septic system inspection program and electronic record submission process.	$142,127.00	$99,898.00	$0.00
FP09050	Kitsap County Health	Sinclair Inlet Fecal Pollution Reduction Project	This project implements actions for Sinclair/Dyes Inlet total maximum daily load for fecal coliform. It will improve/maintain Sinclair Inlet water quality to protect public health. The project identifies and corrects fecal coliform nonpoint sources from	$468,840.00	$0.00	$0.00

Application Number	Applicant Name	Project Title	Project Description	Centennial Funds Offered	319 Funds Offered	SRF Funds Offered
			failing septic systems, poor stormwater system maintenance, and inadequate agricultural waste management.			
FP09061	Palouse Rock-Lake Conservation District	Direct Seed Outreach and Education	This project is designed to improve the water quality in the Palouse River, Rock Creek, Rebel Flat Creek, and the tributaries by implementing five miles of riparian buffers along streams and waterways and increasing the usage of direct seed systems by 7,500 acres to decrease soil erosion and improve water quality.	$162,750.00	$0.00	$0.00
FP09064	SCW Resrce Conservation & Dev. Council	Reecer Creek Floodplain Restoration Project	The Reecer Creek Floodplain Restoration Project will reintroduce the creek into its historic floodplain, increase stream length and complexity, plant native riparian vegetation, and install a setback levee. Benefits: improved water quality, increased rearing and spawning habitat for anadromous fish, reduced offsite flooding, and creation of educational and recreational opportunities.	$0.00	$223,246.00	$0.00
			Totals	$6,723,878.00	$1,885,419.00	$5,300,000.00

2.2 Washington State estimated load reductions for calendar year 2008

Nitrogen		
Project Title	**Drainage Area Name**	**Current Estimate**
Finney Creek Temperature Reduction - Skagit Fisheries Enhancement Group	171100020102: Lower Finney Creek	406
Wind River Small Acreages for Clean Water - Underwood Conservation District	170701051004	26.9
South Fork Nooksack Tributaries Restoration - Nooksack Salmon Enhancement Assoc.	17110004	0.5
Thurston/Mason Equine Outreach & Education - Thurston Conservation District	171100160101	7790.64
Thurston/Mason Equine Outreach & Education - Thurston Conservation District	171100160102	7790.64
Thurston/Mason Equine Outreach & Education - Thurston Conservation District	171100160201	7790.64
Thurston/Mason Equine Outreach & Education - Thurston Conservation District	171100190504	5077.24
Thurston/Mason Equine Outreach & Education - Thurston Conservation District	171100190505	5077.24
Quilceda Pollution Identification and Correction - The Adopt-A-Stream Foundation	171100110204 Quilceda Creek	0.8
Cow Creek Implementation Phase II - Adams Conservation District	170601090401: Palm Lake	5202.1
Little Bear Pollution Identification/Correction - Adopt-A-Stream Foundation	171100120304: Bear Creek-Sammamish R	0.7
Livestock Implementation Project - Lincoln County Conservation District	170200130101	0.094
Livestock Implementation Project - Lincoln County Conservation District	170200130207	4.73
Livestock Implementation Project - Lincoln County Conservation District	170200130301	9.83
Livestock Implementation Project - Lincoln County Conservation District	170200130405	0.92

Nitrogen		
Project Title	**Drainage Area Name**	**Current Estimate**
Palouse River Implementation Project "B" - Adams Conservation District	170601070704: Holiday Coulee-Palouse River	6283.4
Matching Proj: Deschutes Early Action TMDL Project - Thurston Conservation District	171100160101	12.63
Matching Proj: Deschutes Early Action TMDL Project - Thurston Conservation District	171100160102	12.63
Matching Proj: Deschutes Early Action TMDL Project - Thurston Conservation District	171100160201	12.6
Match Proj: Healthy Backyard Streams - Snohomish Conservation District	171100120302	3.1
Oakland Bay Riparian Restoration Area Assessment - Mason Conservation District	17110019	155.3
Swamp Creek Water Pollution Prevention Project - Adopt-A-Stream Foundation	171100120303: Swamp Creek	1.4
Snoqualmie Stewardship Program - Stewardship Partners	171100100101	1534.3
Snoqualmie Stewardship Program - Stewardship Partners	171100100404	1534.3
Snoqualmie Stewardship Program - Stewardship Partners	17110010060	1534.3
Rural Living for Clean Water - Clark Conservation District	170800020504	76
Fishtrap Creek Riparian Restoration - Nooksak Salmon Enhancement Association	171100040503	0.3
Matching Project: Henderson/Nisqually Water Quality Improvement	171100150308	3.12
Matching Project: Henderson/Nisqually Water Quality Improvement	171100190502	18.9
South Fork Stillaguamish Tributaries Restoration - Stilly-Snohomish Fisheries Enhancement Task Force	171100080109: Rock Creek-N F Stillaguamish R	201.6
South Fork Stillaguamish Tributaries Restoration - Stilly-Snohomish Fisheries Enhancement Task Force	171100080206: Jim Creek	4.1
	Total	**50566.954 lbs/yr**

Phosphorus		
Project Title	**Drainage Area Name**	**Current Estimate**
Finney Creek Temperature Reduction - Skagit Fisheries Enhancement Group	171100020102: Lower Finney Creek	156.6
Wind River Small Acreages for Clean Water - Underwood Conservation District	170701051004	10.3
South Fork Nooksack Tributaries Restoration - Nooksack Salmon Enhancement Assoc.	17110004	0.1
Thurston/Mason Equine Outreach & Education - Thurston Conservation District	171100160101	1751.41
Thurston/Mason Equine Outreach & Education - Thurston Conservation District	171100160102	1751.41
Thurston/Mason Equine Outreach & Education - Thurston Conservation District	171100160201	1751.41
Thurston/Mason Equine Outreach & Education - Thurston Conservation District	171100190504	1141.41
Thurston/Mason Equine Outreach & Education - Thurston Conservation District	171100190505	1141.41
Quilceda Pollution Identification and Correction - The Adopt-A-Stream Foundation	171100110204 Quilceda Creek	0.9
Cow Creek Implementation Phase II - Adams Conservation District	170601090401: Palm Lake	1887.2
Little Bear Pollution Identification/Correction - Adopt-A-Stream Foundation	171100120304: Bear Creek-Sammamish R	0.1
Livestock Implementation Project - Lincoln County Conservation District	170200130101	0.0096
Livestock Implementation Project - Lincoln County Conservation District	170200130207	0.49
Livestock Implementation Project - Lincoln County Conservation District	170200130301	1.01
Livestock Implementation Project - Lincoln County Conservation District	170200130405	0.094
Palouse River Implementation Project "B" - Adams Conservation District	170601070704: Holiday Coulee-Palouse River	2098.7
Matching Proj: Deschutes Early Action TMDL Project - Thurston Conservation District	171100160101	2.4
Matching Proj: Deschutes Early Action TMDL Project - Thurston Conservation District	171100160102	2.4
Matching Proj: Deschutes Early Action TMDL Project - Thurston Conservation District	171100160201	2.4
Match Proj: Healthy Backyard Streams - Snohomish Conservation District	171100120302	0.3
Oakland Bay Riparian Restoration Area Assessment - Mason Conservation District	17110019	24.6
Swamp Creek Water Pollution Prevention Project - Adopt-A-Stream Foundation	171100120303: Swamp Creek	0.03
Snoqualmie Stewardship Program - Stewardship Partners	171100100101	248.8
Snoqualmie Stewardship Program - Stewardship Partners	171100100404	248.8

Phosphorus		
Project Title	**Drainage Area Name**	**Current Estimate**
Snoqualmie Stewardship Program - Stewardship Partners	17110010060	248.8
Rural Living for Clean Water - Clark Conservation District	170800020504	17.8
Fishtrap Creek Riparian Restoration - Nooksak Salmon Enhancement Association	171100040503	0.1
Matching Project: Henderson/Nisqually Water Quality Improvement	171100150308	0.3
Matching Project: Henderson/Nisqually Water Quality Improvement	171100190502	1.5
South Fork Stillaguamish Tributaries Restoration - Stilly-Snohomish Fisheries Enhancement Task Force	171100080109: Rock Creek-N F Stillaguamish R	77.6
South Fork Stillaguamish Tributaries Restoration - Stilly-Snohomish Fisheries Enhancement Task Force	171100080206: Jim Creek	1.6
	Total	**12569.9836 lbs./yr**

Sedimentation-Siltation		
Project Title	**Drainage Area Name**	**Current Estimate**
Finney Creek Temperature Reduction - Skagit Fisheries Enhancement Group	171100020102: Lower Finney Creek	299.2
Wind River Small Acreages for Clean Water - Underwood Conservation District	17070105	271.2
Wind River Small Acreages for Clean Water - Underwood Conservation District	170701051004	19.8
South Fork Nooksack Tributaries Restoration - Nooksack Salmon Enhancement Assoc.	17110004	0.0024
Little Klickitat TMDL Implementation Project - Central Klickitat Conservation District	070701060301 Upper Little Klickitat	19
Little Klickitat TMDL Implementation Project - Central Klickitat Conservation District	170701060305 Lower Little Klickitat	68
Thurston/Mason Equine Outreach & Education - Thurston Conservation District	171100160101	0.06
Thurston/Mason Equine Outreach & Education - Thurston Conservation District	171100160102	0.06
Thurston/Mason Equine Outreach & Education - Thurston Conservation District	171100160201	0.06
Thurston/Mason Equine Outreach & Education - Thurston Conservation District	171100190504	0.04
Thurston/Mason Equine Outreach & Education - Thurston Conservation District	171100190505	0.04
Bonaparte Creek Implementation - Okanogan Conservation District	170200060205	1514
Cow Creek Implementation Phase II - Adams Conservation District	170601090401: Palm Lake	1466.5

Sedimentation-Siltation		
Project Title	**Drainage Area Name**	**Current Estimate**
Livestock Implementation Project - Lincoln County Conservation District	170200130101	0.0024
Livestock Implementation Project - Lincoln County Conservation District	170200130207	0.12
Livestock Implementation Project - Lincoln County Conservation District	170200130301	0.25
Livestock Implementation Project - Lincoln County Conservation District	170200130405	0.024
Palouse River Implementation Project "B" - Adams Conservation District	170601070704: Holiday Coulee-Palouse River	1522.7
Matching Proj: Deschutes Early Action TMDL Project - Thurston Conservation District	171100160101	0.03
Matching Proj: Deschutes Early Action TMDL Project - Thurston Conservation District	171100160102	0.03
Matching Proj: Deschutes Early Action TMDL Project - Thurston Conservation District	171100160201	0.03
Match Proj: Healthy Backyard Streams - Snohomish Conservation District	171100120302	0.1
Little Klickitat Enhancement - Central Klickitat Conservation District	170701060301 Upper Little Klickitat	19
Oakland Bay Riparian Restoration Area Assessment - Mason Conservation District	17110019	0.2
Swamp Creek Water Pollution Prevention Project - Adopt-A-Stream Foundation	171100120303: Swamp Creek	0.1
Snoqualmie Stewardship Program - Stewardship Partners	171100100101	1.9
Snoqualmie Stewardship Program - Stewardship Partners	171100100404	1.9
Snoqualmie Stewardship Program - Stewardship Partners	17110010060	1.9
Rural Living for Clean Water - Clark Conservation District	170800020504	0.7
Fishtrap Creek Riparian Restoration - Nooksak Salmon Enhancement Association	171100040503	0.0005
Matching Project: Wenatchee TMDL Project - Cascadia Conservation District	170200110604: Brender Creek-Mission Creek	101.1
Matching Project: Wenatchee TMDL Project - Cascadia Conservation District	170200110701: Beaver Creek-Wenatchee River	9.4
Matching Project: Wenatchee TMDL Project - Cascadia Conservation District	170200110705: Chumstick Creek	7.1
Matching Project: Wenatchee TMDL Project - Cascadia Conservation District	170200110708:Nahahum Canyon-Wenatchee River	3.5
Matching Project: Henderson/Nisqually Water Quality Improvement	171100150308	0.02

Sedimentation-Siltation		
Project Title	**Drainage Area Name**	**Current Estimate**
Matching Project: Henderson/Nisqually Water Quality Improvement	171100190502	0.09
South Fork Stillaguamish Tributaries Restoration - Stilly-Snohomish Fisheries Enhancement Task Force	171100080109: Rock Creek-N F Stillaguamish R	126
South Fork Stillaguamish Tributaries Restoration - Stilly-Snohomish Fisheries Enhancement Task Force	171100080206: Jim Creek	3
	Total	**5457.1593**

2.3 Total riparian areas restored since life of project (for projects reporting in 2008)

Project Title	BMP Description	Number Installed	Unit Of Measure
Progressive Drainage District Riparian Restoration - Whatcom County Public Works	Channel Bank Vegetation	3	AC
Bonaparte Creek Implementation - Okanogan Conservation District	Channel Bank Vegetation	2	AC
Kittitas TMDL Support and Monitoring - Kittitas Reclamation District	Channel Bank Vegetation	3340	FT
Swamp Creek Water Pollution Prevention Project - Adopt-A-Stream Foundation	Channel Bank Vegetation	600	FT
Clark Public Utilities - Mason/Lockwood Restoration Project	Cut Bank Stabilization	1200	FT
(LR) Middle Salmon Creek Restoration - Clark Public Utilities	Cut Bank Stabilization	410	FT
Bonaparte Creek Implementation - Okanogan Conservation District	Cut Bank Stabilization	3500	FT
White Salmon Landowners for Clean Water - Underwood Conservation District	Cut Bank Stabilization	582	FT
Matching Proj: Pine Creek Enhancement Phase 2 - Eastern Klickitat Conservation District	Cut Bank Stabilization	1000	FT
Little Klickitat Enhancement - Central Klickitat Conservation District	Cut Bank Stabilization	800	FT
Animal Waste Management Campaign - Snohomish County Public Works	Fence	3000	FT
Clark Public Utilities - Mason/Lockwood Restoration Project	Fence	550	FT
(LR) Middle Salmon Creek Restoration - Clark Public Utilities	Fence	1851	FT
Kittitas TMDL Support and Monitoring - Kittitas Reclamation District	Fence	3500	FT
Garfield County Riparian Restoration Project - Pomeroy Conservation District	Fence	19811	FT

Project Title	BMP Description	Number Installed	Unit Of Measure
Palouse Watershed Riparian Restoration Project - Adams Conservation District	Fence	40000	FT
King County Conservation District - Snoqualmie Watershed Agricultural Assistance Team (SWAAT)	Fence	3880	FT
Little Klickitat TMDL Implementation Project - Central Klickitat Conservation District	Fence	4600	FT
Thurston/Mason Equine Outreach & Education - Thurston Conservation District	Fence	800	FT
Quilceda Pollution Identification and Correction - The Adopt-A-Stream Foundation	Fence	500	FT
Cow Creek Implementation Phase II - Adams Conservation District	Fence	5300	FT
Livestock Implementation Project - Lincoln County Conservation District	Fence	22215	FT
Palouse River Implementation Project "B" - Adams Conservation District	Fence	5280	FT
Matching Proj: Deschutes Early Action TMDL Project - Thurston Conservation District	Fence	1412	FT
White Salmon Landowners for Clean Water - Underwood Conservation District	Fence	2	MI
Riparian Fencing and Planting Crew - WA Dept of Ecology	Fence	8	MI
Kittitas TMDL Support and Monitoring - Kittitas Reclamation District	Filter Strip	3500	FT
Bonaparte Creek Implementation - Okanogan Conservation District	Filter Strip	2000	FT
Little Klickitat TMDL Implementation Project - Central Klickitat Conservation District	Livestock Use Area Protection	2	MI
(LR) - Nookachamps Basin Riparian Restoration - Skagit Fisheries Enhancement Group	Native Plant Community Restoration and Management	29.27	AC
Palouse Watershed Riparian Restoration Project - Adams Conservation District	Native Plant Community Restoration and Management	100	AC
Okanogan Conservation Technical Assistance - Okanogan Conservation District	Native Plant Community Restoration and Management	2253.3	AC
Wind River Small Acreages for Clean Water - Underwood Conservation District	Native Plant Community Restoration and Management	4	AC
Cow Creek Implementation Phase II - Adams Conservation District	Native Plant Community Restoration and Management	160	AC
Snoqualmie Stewardship Program - Stewardship Partners	Native Plant Community Restoration and Management	5340	FT

Project Title	BMP Description	Number Installed	Unit Of Measure
Palouse Watershed Riparian Restoration Project - Adams Conservation District	Natural Channel Restoration	100	AC
Cow Creek Implementation Phase II - Adams Conservation District	Natural Channel Restoration	160	AC
Matching Proj: Deschutes Early Action TMDL Project - Thurston Conservation District	Natural Channel Restoration	0.72	AC
Bonaparte Creek Implementation - Okanogan Conservation District	Restoration And Management of Declining Habitats	1000	FT
Little Bear Pollution Identification/Correction - Adopt-A-Stream Foundation	Restoration And Management of Declining Habitats	500	FT
Swamp Creek Water Pollution Prevention Project - Adopt-A-Stream Foundation	Restoration And Management of Declining Habitats	1165	UNITS
Riparian Buffers to Reduce Non-Point Pollution Project – WA State University	Riparian Buffers - Vegetative	0.67	AC
Progressive Drainage District Riparian Restoration - Whatcom County Public Works	Riparian Buffers - Vegetative	10	AC
Adopt-A-Stream Foundation - McAleer/Lyon Creek Pollution Reduction	Riparian Buffers - Vegetative	1.33	AC
Adopt-A-Stream - North Creek Pollution Identification and Correction Project	Riparian Buffers - Vegetative	1.31	AC
Palouse Watershed Riparian Restoration Project - Adams Conservation District	Riparian Buffers - Vegetative	100	AC
Thurston/Mason Equine Outreach & Education - Thurston Conservation District	Riparian Buffers - Vegetative	12	AC
Quilceda Pollution Identification and Correction - The Adopt-A-Stream Foundation	Riparian Buffers - Vegetative	1	AC
Cow Creek Implementation Phase II - Adams Conservation District	Riparian Buffers - Vegetative	160	AC
Little Bear Pollution Identification/Correction - Adopt-A-Stream Foundation	Riparian Buffers - Vegetative	0.24	AC
Matching Proj: Deschutes Early Action TMDL Project - Thurston Conservation District	Riparian Buffers - Vegetative	3.12	AC
Matching Project: Wenatchee TMDL Project - Cascadia Conservation District	Riparian Buffers - Vegetative	1.5	AC
South Fork Stillaguamish Tributaries Restoration - Stilly-Snohomish Fisheries Enhancement Task Force	Riparian Buffers - Vegetative	5.2	AC
Animal Waste Management Campaign - Snohomish County Public Works	Riparian Buffers - Vegetative	3000	FT
Kittitas TMDL Support and Monitoring - Kittitas Reclamation District	Riparian Buffers - Vegetative	3340	FT

Project Title	BMP Description	Number Installed	Unit Of Measure
Little Klickitat TMDL Implementation Project - Central Klickitat Conservation District	Riparian Buffers - Vegetative	1425	FT
Bonaparte Creek Implementation - Okanogan Conservation District	Riparian Buffers - Vegetative	2000	FT
Little Bear Pollution Identification/Correction - Adopt-A-Stream Foundation	Riparian Buffers - Vegetative	250	FT
Matching Proj: Pine Creek Enhancement Phase 2 - Eastern Klickitat Conservation District	Riparian Buffers - Vegetative	200	FT
Snoqualmie Stewardship Program - Stewardship Partners	Riparian Buffers - Vegetative	2920	FT
Matching Project: Henderson/Nisqually Water Quality Improvement	Riparian Buffers - Vegetative	300	FT
Little Klickitat TMDL Implementation Project - Central Klickitat Conservation District	Riparian Buffers - Vegetative	1	MI
Riparian Fencing and Planting Crew - WA Dept of Ecology	Riparian Buffers - Vegetative	4	MI
(LR) - Nookachamps Basin Riparian Restoration - Skagit Fisheries Enhancement Group	Riparian Buffers - Vegetative	5	N/A
Little Klickitat Enhancement - Central Klickitat Conservation District	Riparian Buffers - Vegetative	2400	Sq. Ft
Oakland Bay Riparian Restoration Area Assessment - Mason Conservation District	Riparian Buffers - Vegetative	28687	sq. Ft
Swamp Creek Water Pollution Prevention Project - Adopt-A-Stream Foundation	Riparian Buffers - Vegetative	23625	Sq. Ft
Clark Public Utilities - Mason/Lockwood Restoration Project	Riparian Buffers - Vegetative	37661	UNITS
(LR) Middle Salmon Creek Restoration - Clark Public Utilities	Riparian Buffers - Vegetative	36120	UNITS
White Salmon Landowners for Clean Water - Underwood Conservation District	Riparian Buffers - Vegetative	5528	UNITS
Progressive Drainage District Riparian Restoration - Whatcom County Public Works	Riparian Forest Buffer	2	AC
Garfield County Riparian Restoration Project - Pomeroy Conservation District	Riparian Forest Buffer	4	AC
Palouse Watershed Riparian Restoration Project - Adams Conservation District	Riparian Forest Buffer	100	AC
Cow Creek Implementation Phase II - Adams Conservation District	Riparian Forest Buffer	160	AC
Wind River Small Acreages for Clean Water - Underwood Conservation District	Riparian Forest Buffer	1.2	MI
Match Proj: Healthy Backyard Streams - Snohomish Conservation District	Riparian Forest Buffer	1.1	UNITS
Kittitas TMDL Support and Monitoring - Kittitas Reclamation District	Riparian Herbaceous Cover	3340	FT
Adopt-A-Stream Foundation - McAleer/Lyon Creek Pollution Reduction	Stream Channel Stabilization	2205	FT

Project Title	BMP Description	Number Installed	Unit Of Measure
Adopt-A-Stream - North Creek Pollution Identification and Correction Project	Stream Channel Stabilization	2765	FT
Kittitas TMDL Support and Monitoring - Kittitas Reclamation District	Stream Channel Stabilization	2380	FT
Little Klickitat TMDL Implementation Project - Central Klickitat Conservation District	Stream Channel Stabilization	620	FT
Quilceda Pollution Identification and Correction - The Adopt-A-Stream Foundation	Stream Channel Stabilization	480	FT
Little Bear Pollution Identification/Correction - Adopt-A-Stream Foundation	Stream Channel Stabilization	600	FT
Little Klickitat Enhancement - Central Klickitat Conservation District	Stream Channel Stabilization	120	FT
Finney Creek Temperature Reduction - Skagit Fisheries Enhancement Group	Stream Channel Stabilization	1.6	MI
White Salmon Landowners for Clean Water - Underwood Conservation District	Stream Channel Stabilization	0.1	MI
Palouse Watershed Riparian Restoration Project - Adams Conservation District	Stream Corridor Improvement	2000	FT
Cow Creek Implementation Phase II - Adams Conservation District	Stream Corridor Improvement	2600	FT
(LR) - Nookachamps Basin Riparian Restoration - Skagit Fisheries Enhancement Group	Stream Corridor Improvement	3.5	MI
White Salmon Landowners for Clean Water - Underwood Conservation District	Stream Corridor Improvement	2	UNITS
Kittitas TMDL Support and Monitoring - Kittitas Reclamation District	Stream Crossing	4	UNITS
Riparian Fencing and Planting Crew - WA Dept of Ecology	Stream Crossing	5	UNITS
Little Klickitat TMDL Implementation Project - Central Klickitat Conservation District	Stream Habitat Improvement and Management	940	FT
Little Klickitat Enhancement - Central Klickitat Conservation District	Stream Habitat Improvement	120	FT
Finney Creek Temperature Reduction - Skagit Fisheries Enhancement Group	Stream Habitat Improvement and Management	27	UNITS
Swamp Creek Water Pollution Prevention Project - Adopt-A-Stream Foundation	Stream Habitat Improvement and Management	34	UNITS
(LR) - Nookachamps Basin Riparian Restoration - Skagit Fisheries Enhancement Group	Streambank & Shoreline Protection	7410	FT
Palouse Watershed Riparian Restoration Project - Adams Conservation District	Streambank & Shoreline Protection	2000	FT
Little Klickitat TMDL Implementation Project - Central Klickitat	Streambank & Shoreline	2000	FT

Project Title	BMP Description	Number Installed	Unit Of Measure
Conservation District	Protection		
Quilceda Pollution Identification and Correction - The Adopt-A-Stream Foundation	Streambank & Shoreline Protection	2500	FT
Cow Creek Implementation Phase II - Adams Conservation District	Streambank & Shoreline Protection	2600	FT
Little Bear Pollution Identification/Correction - Adopt-A-Stream Foundation	Streambank & Shoreline Protection	100	FT
Swamp Creek Water Pollution Prevention Project - Adopt-A-Stream Foundation	Streambank & Shoreline Protection	200	FT
Riparian Fencing and Planting Crew - WA Dept of Ecology	Streambank & Shoreline Protection	8	MI
Progressive Drainage District Riparian Restoration - Whatcom County Public Works	Streambank & Shoreline Protection	31	N/A
Wind River Small Acreages for Clean Water - Underwood Conservation District	Tree/Shrub Establishment	4	AC
(LR) Spokane Stormwater Bio-infiltration Swale and Water Wise Landscape Demonstration Project	Urban Grassed Swale	4000	Sq. Ft
Low-Impact Development and Backyard Conservation Pilot Project: Whidbey Island Conservation District	Urban Infiltration Basin	1100	Sq. Ft
Kittitas TMDL Support and Monitoring - Kittitas Reclamation District	Vegetative Buffer Strips	3500	FT
Kittitas TMDL Support and Monitoring - Kittitas Reclamation District	Wetland Creation	2.5	AC
Kittitas TMDL Support and Monitoring - Kittitas Reclamation District	Wetland Enhancement	2.5	AC
Kittitas TMDL Support and Monitoring - Kittitas Reclamation District	Wetland Restoration	2.5	AC

2.4 Direct Implementation Fund 2008

OFFICE	Project Title	Location	Summary	Partners	Cost
North West Regional Office	Eagle Creek off-stream water	colony creek road	Install solar powered off-stream water pump to achieve livestock exclusion. Project includes education and outreach component by creating a lending program and accompanying education.	Snohomish CD	7,674
	Cherry Creek NPS identification	Cherry Creek, King/Snohomish Counties	Phase I of project to address NPS problems. First, project will conduct source identification monitoring to identify pollution sources causing low DO and high FC counts. Phase II will address identify sources .	Wild Fish Conservancy/ Tulalip Tribe	12,810
	Snohomish Estuary Edge Enhancement Project	Snohomish River at upper extent of estuary	Estuary restoration including tree and shrub planting and large woody debris installation to restore salmon habitat, and help address instream temperature issues.	Snohomish County	13,000
	Pet Waste Hazard Signage	Fauntleroy Park	Affix signs to pet waste disposal locations communicating hazards of pet waste, the need for proper disposal.	City of Seattle/Fauntleroy Watershed Council	300
	Phase I: Collaborative Investigation and Correction of Fecal Coliform Sources in Juanita Creek Basin	Juanita Creek/Beach Basin	Conduct Fecal Coliform source identification in a highly urbanized basin that discharges to a popular swimming beach at lake Washington. Will work with partners to rectify immediate problems such as sewer line breaks. Phase II will implement BMPs to address the sources identified in phase I.	City of Kirkland, King County DNR, Public Health Seattle -King Count, and Northshore Utility District	22,850

OFFICE	Project Title	Location	Summary	Partners	Cost
	Skagit County Off-Stream Livestock Watering	Thomas Creek	Two phased project. First, install off-stream water development after landowner put livestock exclusion fence in as match. Then after landowner puts in own pump, Skagit County will remove the solar power pump and use it for quick response exclusion purposes. Project also incorporates education and outreach about livestock exclusion from riparian area.	Skagit County CD	2812
South West Regional Office	Gordon dairy fencing and planting	Chehalis River	Replace 1,980 ft of livestock exclusion fence along the Chehalis River. Plant 600 trees. Fence previously destroyed by flood.	WSCC/Grays Harbor CD	15,063
	Chehalis River Mainstem Riparian Fencing and Trees	Chehalis River	Install 4,680 ft of exclusion livestock exclusion fence. Restore 11 acres of riparian area.	Confederated Tribes of the Chehalis Reservation	30,706
	Riparian restoration on Salmon Creek (Kunkel Project)	Salmon Creek, Clark County	Restore 150 linear feet of streambank and restore 1 acres or riparian area. Install large woody debris.	Clark Public Utilities	25,484
Eastern Regional Office	Washington Conservation Corp Labor	Crab Creek watershed, Palouse river watershed, Rock Creek watershed, cow creek, deadman creek and others	Address impacts to streams from livestock, by installing livestock exclusion fence. Will install 30 miles of fence and result in restoration of 15 miles of stream. Will plant 5,000 native trees and shrubs and 10 off-stream water developments.	Pomeroy CD, Adams CD, Palouse-Rock CD, Lincoln CD	85,772

OFFICE	Project Title	Location	Summary	Partners	Cost
	South Colville River Enhancement Project SK 45.5	Colville River mile 45.5 approximately 4 miles south of Chewelah, Stevens County	Plant 3,700 feet of Colville River with native trees and shrubs.	Steven County CD, USFW, WSCC	4,500
	Meadow Creek Native Tree Planting	Meadow Creek, Garfield County	Plant 10,000 native trees and shrubs, after 2 miles of riparian corridor is fenced to protect against livestock. Livestock exclusion will be installed with other funds.	Pomeroy CD	14,550
	GPS auto steer	WRIA 32, 33, 35	Encourage the use of GPS autosteer in tractors to reduce "overlapping" when operators are applying pesticides, herbicides and fertilizers. Achieve reductions in nutrient and pesticide application by approximately 10%. This could result in reducing 5,000lbs of nitrogen if autosteer were used on just 500 acres. CDs will purchase and lend an autosteer unit, and also education on use and importance of reducing nutrients.	Pomeroy, Columbia Co., and Walla Co. CDs	8200
	Cow Creek Native Plant Propagation	Cow Creek, Adams County	Watershed is currently 75% fenced with plans to complete fencing in next 2-3 years. This project addresses the next phase of stream restoration - the re-vegetation strategy. Project will research, collect and propagate genetically appropriate native vegetation. Initially 1,000 trees will be planted. However, mass production techniques of collected material will then lead to the planting of 100,000 more true native plants best suited for the local climate and soils, and will better ensure successful restoration.	Eastern Washington University/ Adams CD	12,000

OFFICE	Project Title	Location	Summary	Partners	Cost
Central Regional Office	Beaver Reintroduction for Water Quality Improvement in the Methow Sub basin of the Upper Columbia River	Methow Watershed	Reintroducing beavers to upper reaches of the Methow sub basin where beavers have been historically known to reside. Beaver reintroduction will facilitate hydrologic and vegetative restoration. The ultimate goal is to develop cold water refugia in the headwaters to address temperature listings. Project also includes mapping, communicating with land owners that have irresolvable conflicts with beavers, and an education and outreach component. Beavers will be relocated from areas where they were likely to be exterminated by landowners in the lower watershed. Relocating beavers will also remove road blocks to tree planting efforts in lower watershed.	Partners include the Methow Conservancy, Pacific Biodiversity Institute, US Forest Service, the National Fish and Wildlife Foundation, Ecotrust, Washington Audubon, the Salmon Recovery Funding Board, Washington Conservation Corps, the Washington Department of Fish and Wildlife, the US Bureau of Reclamation, and the US Fish and Wildlife Service Winthrop National Fish Hatchery	77,000

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 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

2. **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

3. **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

4. 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 will apply 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

5. 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 ground water monitoring capture the success or failure of various voluntary and regulatory efforts. In addition, we will measure the effectiveness of specific implementation activities. Post TMDL monitoring is also 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: Improving Implementation

Alongside the development of TMDLs, and the dissemination of grants, we are developing a foundation upon which we may best support and direct implementation efforts. Creating and organizing this foundation has taken many shapes and forms, and has resulted in changes in many sectors. Ultimately, we feel that these structural changes will not only facilitate future implementation efforts, but also ensure their effectiveness and efficiency. The following chapter details these efforts, as they apply to agriculture, forestry, urban land use, and internally at the department of Ecology (specifically looking at grant and TMDL programs).
What we've done this year:

3.1 Improvements within in Ecology

3.1.1 Grant program

Ecology views our pass-through funds as important tools to implement our clean water objectives. The grants themselves are not simply an opportunity to implement something, somewhere, but instead represent an opportunity to bring financial assistance to support achievement of a specific and targeted clean water objective. By coordinating our grants with our other nonpoint efforts we can leverage more dollars, achieve better awareness, and ultimately attain critical mass in a single watershed. Essentially, our 319 grants should be but one piece of the puzzle, and therefore need to integrate, and work in conjunction with, our overall programmatic efforts.

Currently, our grants work toward implementing TMDLs and the state nonpoint plan. In order to best accomplish these objectives, we have reviewed our eligible BMPs to ensure that we are providing the necessary tools, and are continually targeting the direct implementation fund to further support our nonpoint efforts. The following are several accomplishments that have moved us toward better coordinating our implementation efforts.

BMP Eligibility Review
In 2008, Ecology requested input from external stakeholders and internal staff regarding desired BMP eligibility for both 319 and Centennial Clean Water Funds. As part of the application, submissions were required to provide supporting evidence of the water quality benefit and the effectiveness of BMPs. Ecology staff then reviewed the submissions, conducted independent technical and policy reviews, and solicited further internal and external input before making final recommendations. The final recommendations were then presented to the Water Quality Program Management Team for final decisions on eligibility.

As a result of the process, two new suites of BMPs and an increase in eligible funding for one BMP were approved. The primary basis for the approval was the ability to support existing and active implementation efforts, and the ability of the BMPs to provide long term source control as opposed to short term treatment. Accompanying the approval process, Ecology developed guidance for each new BMP to ensure proper and efficient implementation and to eliminate risk of abuse. The following BMPs were approved:

- **No till/Direct Seed to support conversion of conventionally tilled dry land farms**

Erosion rates in the Palouse region, in Eastern Washington, can exceed a ton/per acre/per day. Numerous Eastern Washington TMDLs have pinpointed excessive sediment as a key cause of numerous impairments. While there are several agricultural practices that can help alleviate the sediment concern, no-till or direct seed technology provides the greatest sediment reductions and long term water quality benefit by addressing the root cause of erosion – excessive soil disturbance and loss of vegetative residue.

The water quality program now supports landowners seeking to convert conventionally tilled agricultural lands to a single pass, low disturbance, no-till system. The current guidelines operate to incentivize the rental of equipment or use of custom applicators for the first three-year crop rotation. Partners may also purchase equipment to start an equipment loan program where access to no-till implements is a barrier to the adoption of the practice. However, landowners currently using the technology are not eligible for a subsidy under this program.

- **Manure Management Suite of BMPs**

Many fecal coliform TMDLs all across Washington State have pointed to manure management as a key practice to reduce fecal and nutrient loading in streams. Also, the location of livestock winterfeeding operations adjacent to streams has been shown to increase fecal, nutrient and sediment loading as well. Ecology's nonpoint and livestock programs are very active in addressing these issues, but were in need of financial support in addition to USDA cost-share grants.

Ecology now supports landowners seeking to optimally locate feeding sites and properly manage manure through the 319 grants. However, landowners are only eligible to receive a benefit from this program when they implement an entire suite of BMPs that will ensure adequate water quality protection. For instance, livestock owners must protect the riparian areas, and properly store manure in covered facilities if they are to be eligible to receive heavy use area protection in areas of concentrated animal activity.

- **Increased funding for off-stream water facilities**

Previous guidelines capped eligible funding for off-stream water facilities at $6,000 per landowner. However, in the case of large ranches in eastern Washington, many landowners wanted to protect several *miles* of stream corridor, but were unable to access the financial support for the accompanying off-stream water. To resolve the inequity between small and large landowners, and to ensure successful livestock exclusion projects on these large ranches, Ecology raised the funding limit. Funding limits for off-stream water facilities are now based on miles of riparian protection provided.

Targeting the Direct Implementation Fund

Ecology continues to develop, focus, and continually improve the direct implementation fund to ensure that Ecology can leverage the greatest on-the-ground water quality benefit for the dollar. As mentioned above, the best way to achieve critical mass is to coordinate Ecology work and grant efforts as closely as possible. Ecology is looking to use the direct implementation fund to sew together TMDL, nonpoint enforcement and compliance, and funding efforts into one package that can deliver highly effective implementation. In doing so, Ecology feels that they

can achieve BMP implementation of practices where they are needed most, reduce roadblocks to specific adoption, and therefore execute high priority implementation.

3.1.2 Watershed evaluation

The watershed management section is in a constant state of continual improvement to better address the ubiquitous and yet elusive problems of nonpoint pollution. Currently, the section is undertaking efforts that will lead to better watershed planning, and improved TMDLs and detailed implementation plan development.

Clean Water Strategy Soirees
When Ecology set up its TMDL program, one of the key process pieces was an annual meeting held in each region to decide where we would initiate TMDLs during the next year. In 2007, we changed the focus of these meetings to be a discussion of the Category 5 listings in the region, a consideration of possible ways to solve the water quality problems, and a decision about what kind of approach would be most likely to achieve clean water. In 2008, we actually changed the title of these meetings to reinforce the idea that our objective is to choose the strategy most likely to get to clean water.

The soirees resulted in ideas for a wide variety of projects, many of them designed to pinpoint problems in watersheds so we could target the most important places to implement management practices, either to implement a TMDL or to use a straight-to-implementation approach. Some staff still struggle with being allowed to think of alternative solutions, but for the most part, setting people free to think about what is most likely to work is resulting in promising approaches to solve water quality problems, and is leading to faster, more cost effective solutions.

TMDL and Detailed Implementation Plans (DIP) Templates
In an attempt to better integrate various efforts, and to apply a consistent and streamlined approach to TMDLs and implementation plans, Ecology re-evaluated existing report templates. As a result of that review and the desire to better leverage TMDLs and DIPs for implementation purposes, Ecology is making several important changes to the report and plan layout, design, and content.

First, Ecology is looking to make TMDLs more readable and user friendly. This means that key information, requirements, and recommendations will be better highlighted and summarized where needed. Moreover, a new emphasis on the content and quality of the executive summary will be brought to the forefront of the report design. Ultimately, by making the reports and plans more user-friendly, Ecology hopes that TMDLs and DIPs will be more accessible to the public and key constituents, who in turn can better use the TMDLs to advocate for the goals set in the plans.

Another important element of expanding the accessibility of the TMDLs and DIPs is to ensure that the reports adequately address the intended audiences. In our review, we noted that local, city, and county planners were essential to the implementation of nonpoint source solutions. However, planners were rarely a part of the advisory committees, nor did they receive or utilize

the TMDLs to guide planning decisions. While Ecology has launched several efforts to rectify this (see land use section), they also needed to ensure that TMDLs and DIPs contained the needed information to address the specific problem and target audiences. As a result, a DIP may contain information about likely emerging land use based sources of nonpoint pollution for the specific pollutant parameter of concern. Therefore, TMDLs will be able to help better inform landuse decision making through SEPA and various facets of the Growth Management Act.

Templates will also start to better address implementation needs in the following manner. First DIPs will start to include *all* necessary implementation activities needed to bring the watershed into compliance with the water quality standards. By listing all necessary actions, and not just those that participants are willing to accomplish, Ecology will be able to better assess the total cost of watershed implementation, an important element of watershed planning. Once all necessary actions are included, DIPs will also begin to prioritize projects based on various criteria. We hope that through this process, DIPs can begin to better inform the grant process, and therefore better target dollars to the most efficient projects and highest priority concerns.

TMDL Mapping Project

Another way we are building the foundation for improved implementation of TMDLs is to represent key data in a graphical manner to facilitate the needs of a TMDL user. There are a number of Ecology business needs (including but not limited to water quality assessment, TMDL implementation, NPDES permitting and compliance, and 319 grant funding) that require application of TMDL data in an unambiguous and efficient way. Currently, that information is available online in TMDL Water Quality Improvement Reports (WQIRs) and other planning documents that are necessarily complex and which can be neither easily nor efficiently interpreted or queried. The purpose of the TMDL Maps project is to provide key TMDL information with a more efficient and state-of-the-art GIS mapping system that will allow users to visualize and create spatial analyses of data pertaining to the clean-up of point and non-point source pollution. The database will be integrated with Ecology's other environmental information databases, such as EIM, to leverage the value and power of these tools as well.

TMDL Maps will be available to Ecology staff using ArcGIS products and to users outside of Ecology with a web-mapping service similar to Ecology's 303(d) web mapping tool. TMDL Maps will help Ecology staff better manage the TMDL program using GIS spatial analysis to guide TMDL development and implementation to where it is needed most and to improve management of water clean-up plans. TMDL Maps will better inform local land-use decision makers by identifying: the area where a TMDL has identified nonpoint pollution problems, the location and values of load and wasteload pollutant allocations, the pollutant parameters, and link to further information on Ecology's TMDL web-pages. TMDL Maps will also provide openness and transparency to the general public and increase their awareness of water quality in the watersheds they live in.

Mapping Nonpoint Sources of Pollution in Detailed Implementation Plans

Ecology recently completed a TMDL for fecal coliform bacteria in Samish Bay watershed. The TMDL determined that fecal coliform loading is extensive and dispersed throughout the watershed and significant reductions in loading from nonpoint sources are needed. However, in

order to develop a clean-up strategy for the Samish Bay watershed, more information about the actual sources was needed.

The primary land use in Samish watershed is agriculture and includes agricultural based, rural, and suburban residents. A watershed characterization determined the primary nonpoint sources to be onsite sewage systems, livestock operations including dairies, heifer operations, beef cattle and non-commercial operations, and manure spreading. However, the number and distribution of these sources was unknown, which limited Ecology's ability to relate loading to sources. Lack of this knowledge hampered our efforts to prioritize and target efforts to improve water quality.

To solve this, Ecology worked with the local health department, conservation district, and state Department of Agriculture to determine the number and distribution of sources and developed ArcGIS spatial coverages for the primary sources in the watershed. These spatial coverages provided critical information needed to relate the sources to the loading. This essential information then allowed Ecology to identify best management practices needed by sub-watershed, target implementation efforts, and locate high priority areas. This information is also used in public meetings and outreach materials to communicate the need for watershed wide land use changes and best management practice implementation.

TMDL Quarterly Video Conferences

In addition to greatly improving and facilitating the way we convey key information in the TMDL to target audiences, we have also undertaken efforts to improve internal communication and subsequently promote consistency in implementation efforts amongst TMDL staff. Through state-of-the-art videoconferencing equipment, the TMDL program is using technology to hold quarterly meetings with all regional water quality program TMDL staff. These meetings provide peer-to-peer discussion of current and upcoming TMDL-related issues and to reinforce consistent application of the TMDL program statewide. Ecology's TMDL program has a biennial two-day conference bringing together regional staff. However, two years is really too long an interval for a continually evolving program, and increasing budget constraints makes videoconferencing both cost-effective and efficient. Two meetings have been held as of January 2009 and three more are scheduled for the calendar year. Feedback from staff has been positive and a two-hour format with one hour reserved for open discussions worked very well. The videoconferencing technology improves communication by letting you see and better interact with staff participating at satellite locations as well as share and view electronic presentations, data, GIS, and web-pages easily. There is also a carbon emission reduction benefit linked to the elimination of many staff driving from all over the state to attend a meeting at one physical location. Ultimately, having a quarterly forum is important to building the implementation foundation because it provides a sounding board for creative implementation solutions, and therefore allows all state staff to benefit from those progressions. Such efforts enhance our implementation efficiencies by first disseminating new ideas, then discussing them, and finally advancing those ideas at regular intervals and at a faster pace.

TMDL Effectiveness Monitoring

The Lake Ballinger Total Phosphorus Total Maximum Daily Load (TMDL) Water Quality Attainment Report was published in April, 2008. This study looked at whether Lake Ballinger

was meeting the total phosphorus criterion set in the TMDL study. Conclusions reached indicated Lake Ballinger was meeting the total phosphorus criterion. However, recommendations were made to help ensure continued success in keeping total phosphorus levels at an appropriate level.

Liberty Lake dataset evaluation was also conducted to help asses if the lake was meeting the allocations set in the Liberty Lake TMDL. This was not a formal TMDL effectiveness monitoring report but a technical memo, because the data was collected by someone outside Ecology and there were concerns about the data quality. Instead, we looked at the 30 years worth of data and prepared a scope of work

- Compile and document the lab and field quality assurance/quality control protocols associated with the data collection effort.
- Determine the trophic state index for total phosphorus, Secchi clarity and chlorophyll-a.
- Graph the entire total phosphorus dataset and compare to the suggested TMDL target limit.
- Determine the total phosphorus (TP)/orthophosphorus (OP) ratio and compare Liberty Lake's ratio to other lakes sampled by Ecology.
- Graph Secchi disk clarity and total phosphorus data as a scatter plot and compare to a subset of the lakes sampled as part of Ecology's statewide lake monitoring program.

From the data analysis, it appears Liberty Lake is meeting the Water Quality Standard suggested summer epilimnetic total phosphorus criterion of 35µg/L. However, it was difficult to come to any strong conclusions with regard to confidence in the total phosphorus results due to questions concerning the quality control for the dataset.

3.2 Improvements in implementing agricultural BMPs

3.2.1 Nonpoint Source Pollution identification and compliance efforts

Forty-seven listings moved from Category 5 to 4b using straight to implementation
The Department of Ecology's Eastern Regional Office has established a Livestock and Water Quality Program that uses a unique collaborative approach to address livestock-related problems. Instead of using the standard process that starts with a Category 5 listing, establishing a TMDL for the stream, writing an implementation plan, and finally getting to actual implementation, this strategy goes straight to implementation. The strategy is applied in watersheds in which the cause of a water quality impairment is clear and there are no point source problems.

Ecology encourages implementation of a wide variety of best management practices, however, a primary focus of the program has been to restore degraded riparian corridors and eliminate unlimited animal access to streams. Healthy riparian areas can improve water quality and stream health in multiple ways, which make them a particularly valuable and cost-effective management practice. Healthy riparian areas

- Slow bank erosion by holding soil in place during periods of high water.
- Reduce flood damage and sedimentation by slowing runoff and capturing the sediment that would otherwise be carried downstream**.**

- Help keep water cool and reduce light exposure in summer by shading the stream.
- Improve water quality by capturing sediment, nutrients, pesticides, pathogens, and other pollutants before they reach the stream.
- Enhance summer stream flow by improving water infiltration and storage.
- Create fish and wildlife habitat.
- Limit livestock manure inputs to the creek and riparian areas.

Ecology has a three-step riparian restoration strategy, which allows the department to efficiently apply resources to priority problem areas. The first step is to address the source of degradation – unlimited livestock access to streams and winterfeeding operations in close proximity to the riparian corridor. Ecology relies primarily on livestock exclusion, and off-stream water supply to restrict livestock access to the riparian area. In implementing this BMP, Ecology uses NRCS riparian buffer standards, which require a minimum 35-foot buffer between the livestock fence and the mean ordinary high water mark of the nearest stream bank. In many cases, the buffer width may be larger depending on the stream and site conditions.

By first addressing livestock access, Ecology seeks to abate the primary pollution sources—livestock in the stream, eroded streambanks, increased runoff, increased sedimentation, and subsequent transport of fecal matter. As vegetation naturally returns in the riparian area, site conditions become stabilized and the pollution sources are dramatically reduced. Also, this approach works to arrest morphological changes to the entire stream that are induced by erosion and sedimentation.

Ecology has spent much of its efforts and resources implementing this first step, in large part because we have taken a holistic, watershed approach to protecting streams. By first addressing the primary sources of pollution and geomorphic change, Ecology can establish the necessary site conditions for successful restoration. Moreover, Ecology ensures that, first and foremost, the root problems are addressed for *the entire stream*, before resources are focused on site or segment specific restoration.

The second step occurs after a majority of site conditions have been stabilized, and the stream's entire geomorphic integrity is no longer jeopardized by the adjacent management practices. Ecology conducts a reach-by-reach assessment to determine the appropriate trees and shrubs to be used for restoration. Ecology is currently partnering with universities to study the genetic make-up of local riparian seed banks. Ecology then establishes nurseries to propagate the site appropriate native plant material. In some cases, federal programs require re-vegetation as part of the cost-share program, and so restoration work occurs simultaneously with livestock exclusion.

The third step is to work with local land owners to promote continuous and proper management of upland grazing lands.

Ecology teams with conservation districts, local governments, and landowners to provide technical assistance and funding for implementation of best management practices. Ecology uses a traditional regulatory process only when collaborative efforts fail. Chapter 90.48 RCW gives Ecology the authority to take enforcement actions against nonpoint polluters. We have, in

fact, issued enforcement orders to two landowners in watersheds in which we are implementing the Livestock and Water Quality Program.

The result of these partnerships has been the implementation of best management practices at hundreds of sites where water quality and fish habitat issues exist. By using a collaborative strategy, backed up by enforcement when necessary, Ecology has been able to create relationships and build trust with rural residents while improving water quality.

Ecology is implementing the Livestock and Water Quality Program in several watersheds simultaneously. In five of these watersheds, enough implementation has occurred that the agency believes these watersheds will achieve compliance with standards within the next five years and, as a result, placed the pollutant listings in Category 4b of the Water Quality Assessment. For the five watersheds, this is a total of 47 listings for fecal coliform, temperature, pH, and dissolved oxygen. The five watersheds are Couse Creek, Cow Creek, Deadman Creek, Tenmile Creek, and Upper Alpowa Creek.

Technical Assistance and Inspection

In addition to the robust livestock program in Eastern Regional Office, each Ecology regional office supports staff that deal with nonpoint compliance issues. These staff conduct field visits, provide technical assistance, highlight financial assistance opportunities, and refer landowners (if need be) to local conservation districts for additional support. The fruits of our labor have resulted in increased awareness, community presence, implemented BMPs, favorable hearings board decisions, and statewide recognition of nonpoint staff by conservation districts.

In 2008, Derek Rockett of Southwest Regional Office received the state stewardship award granted by Pierce County Conservation District. Derek was bestowed this honor based on his ability to build strong partnerships between Ecology, the conservation district, and the landowners. Derek and the conservation district have collaborated on many different types of pasture-based activities.

For example, Derek investigated a complaint alleging that a large boarding stable was discharging turbid water, potentially contaminated with animal waste, into a roadside ditch that discharged to a stream.

During this investigation, Derek found evidence of a discharge from the horse paddocks. By formally referring the land owner to the conservation district, the landowners received education about their animal management practices and assistance creating a farm plan designed to manage the animals as well as to protect water quality.

The landowners will have time to resolve the discharge concern without enforcement as long as they make the changes recommended. Cooperation between Ecology and the conservation districts can result in this kind of on-the-ground improvement to water quality in a politically favorable manner, when the conservation districts are amenable to such collaborative opportunities. Forging these relationships also supports successive implementation efforts by securing both technical assistance and political support for compliance based actions.

3.2.2 Washington Conservation Corps

The Water Quality Program has teamed up with the Washington Conservation Corps (WCC) to provide much needed labor for installing essential BMPs and completing riparian restoration work. In many places in Washington, Ecology has identified a shortfall in the labor needed to plant riparian buffers and build exclusion fence in a timely manner. In many cases, a variety of watershed groups are forced to cobble together various volunteer organizations to complete restoration work. While this approach increases watershed awareness and builds community, it often stretches out project timelines and reduces implementation efficiencies. This in turn can impact landowner willingness to adopt BMPs, because they are looking for minimal intrusion and prefer to have projects completed quickly. One way Ecology has worked to resolve this labor shortfall, instill landowner confidence, and accomplish timely implementation, is to utilize the WCC.

Now in both Western and Eastern Washington the WCC crews are working in conjunction with nonpoint staff to complete riparian restoration and livestock exclusion projects in a rapid fashion. The WCC crews, funded in part by the direct implementation fund, are able to assure landowners that projects can start and end quickly. Being able to complete projects increases a project's desirability to landowners, as they feel that the process is less intrusive, more professional, and they don't have to wait around to see results. Therefore, through WCC, Ecology is able to overcome the shortfall of cost effective restoration labor, and also continue to entice landowners through efficient service. Rounding out this win-win situation is the fact that WCC crews also encourage young adults to explore green jobs, and improve communities and the environment. Truly a positive solution for all!

3.2.3 Coordinating statewide resources to address agriculture

Ecology and Washington State Department of Agriculture (WSDA) are developing a coordinated strategy to respond to livestock related water quality complaints. Both Ecology and WSDA have staff to respond to, and when needed, correct livestock related water quality issues. Working to resolve our limited individual agency resources, we indentified that combining our efforts can more effectively respond to livestock related complaints. Therefore, Ecology and WSDA have committed to coordinate staff in order to improve response times for complaints, and better ensure corrective action whenever needed. Our ultimate goal is to address water quality issues immediately and prevent future impairments. Coordination between Ecology and WSDA accomplishes this by enhancing the state's ability to promptly identify livestock-related water quality issues, provide necessary technical assistance, and utilize partnering agencies to achieve long-term protection of water quality.

3.2.4 Nonpoint Source Pollution Management Manual for Agricultural Practices

Ecology is currently working on a series of guidance manuals that will recommend suites of BMPs for specific agricultural practices. BMPs are being researched and evaluated on the basis that their implementation will result in compliance with state and federal water quality regulations.

Generally, the manuals will discuss the nature and extent of potential water quality impacts caused by the specific agricultural practices. The research and field experience used to identify the impacts is then used to tailor a suite of BMPs to provide source control and treatment of nonpoint pollution sources.

The guidance manuals will be a valuable tool for resolving compliance field visits and informing detailed implementation plans (specifically providing a more accurate and meaningful assessment of the cost of implementation per the nine key elements). Moreover, the guidance manuals may also better inform local ordinances and farm planning efforts by providing a specific list of BMPs that can be verified to achieve, at a minimum, compliance with the water quality standards.

The manual and accompanying outreach efforts also represent an opportunity to collaborate with the agricultural community, and educate Ecology staff and the public on how BMPs need to be applied to achieve effective pollution control. Also, the guidance manual provides an opportunity to answer an oft cited complaint – that owners and operators need clear expectations on how to resolve water quality problems. By providing upfront, easy to follow guidance, owners and operators can easily achieve effective water quality controls and also satisfy the relevant water quality regulations. The intended result, to the benefit of the both the producer and Ecology, is a landowner's presumed compliance with the regulations when the BMPs are installed in accordance with the guidance. The manual will also provide guidance and criteria by which owners and operators may design and implement their own BMPs to best suit their management needs and local conditions.

3.3 Improvements in addressing land use based pollution problems

It goes without saying that land use development patterns and nonpoint source pollution go hand in hand. Nevertheless, state agencies often lack the tools to address pollution problems that are derived from local land use decision making. While local advisory groups and other voluntary efforts do much to educate local jurisdictions about urban land use based pollution problems, they do not effectively merge science-based water quality concerns with the regulatory back-stops of the local planning process. In 2007, Ecology began to address this issue by integrating TMDLs with the State Environmental Policy Act (SEPA). Since then, Ecology has made headway into the planning world by beginning to better connect water quality work with Growth Management Act planning processes. Moreover, TMDLs and their implementation plans are continuing to address urban based pollution parameters and their impacts. The following are

several examples of how Ecology is continuing to build the foundation for implementing land use based pollution controls through, and with the support of, the local planning process.

3.3.1 Lake Whatcom TMDL

Lake Whatcom is a priority because it is the main source of drinking water for 96,000 Bellingham-area residents. In 1998, the lake failed to meet state standards for dissolved oxygen, placing the lake on the state's list of polluted waters. The listing triggered a total maximum daily load study, determining how much pollution a water body can handle and also meet state water quality standards.

Phosphorus is the main cause of Lake Whatcom's low-oxygen problem. Phosphorus occurs naturally, but development increases phosphorus entering the lake in stormwater. Computer predictions show the lake would meet state standards for oxygen if there was 86 percent less development than existed in 2003. Since then, zoning laws have allowed more development in the watershed.

The final TMDL study findings will need to be the basis for decisions local governments make about the lake's future. In doing so, the city of Bellingham and Whatcom County will have to work with the state to develop a plan for meeting the limits established in the study. While the city has made an initial effort to address further degradation by declaring a moratorium on Lake Whatcom development, it has yet to be seen how both county and city will rectify the findings of the TMDL with both existing and future development patterns.

3.3.2 TMDLs and SEPA outreach

One approach to integrating a TMDL's load allocation with land use decision making is to get a TMDL considered in the SEPA review process. In that manner, the scientific and legal information of the TMDL can inform the decision, even though the decision itself is ultimately made by the locality.

In 2007, Ecology developed guidance on how TMDLs could integrate into the SEPA review process. Following the development of guidance, Ecology is also providing outreach to the planning community. In 2008, Ecology staff presented to the Eastern Washington Planners' Forum. The session explained both the legal underpinnings of integrating TMDLs with SEPA review, as well the basics of the TMDL process. Ecology will continue outreach to planners in 2009 when staff presents to the Planning Association of Washington. That presentation will also include a case study of the aforementioned Lake Whatcom TMDL, and its ramifications on land use decision making.

3.3.3 Integrating TMDLs with Growth Management Act (GMA) guidance

Another way in which we are beginning to build a framework to better integrate our scientific efforts into the planning process is through updates to GMA rules found in the Washington Administrative Code (WAC). The GMA is a planning statute which directs certain size communities to develop comprehensive plans that achieve basic planning goals, including "cleansing discharges to waters of the state". The comprehensive plan is in turn the guiding document which zoning, development regulations, and critical area ordinances flow from, and therefore must be consistent with. What we have been learning is that the traditional implementation approach of just encouraging ordinance adoption is actually like starting at the end, when in fact we need to start at the beginning – the comprehensive plan. By first informing the comprehensive plan updates with important water quality information, we can better ensure that subsequent regulations will be consistent with the overarching guiding document. Also those subsequent regulations and land use decisions that are not consistent with the comprehensive plan are subject to third party lawsuits under the GMA.

The GMA WAC provides guidance for the development of the comprehensive plan. Recently, Ecology has been working with Washington's Community, Trade and Economic Development Agency (CTED), to update the GMA regulations to better address water quality concerns in the comprehensive plans. Proposed updates to the regulations include recommendations for planners to review and integrate TMDLs and municipal stormwater permits prior to comprehensive plan development. Updating comprehensive plans with this information should facilitate succeeding implementation efforts such as code and ordinance changes, by ensuring consistency with the overarching community planning principles. In this manner, Ecology continues to build the foundation for better informing land use decision making about necessary water quality protections.

3.4 Improvements in forestry implementation efforts

2009 review of state forest practices rules
In 2000, Washington adopted new forest practices rules. The rules were intended to achieve compliance with state water quality standards and the Clean Water Act, and are essentially a set of best management practices to be used during timber harvest, road construction and maintenance, and other activities defined as forest practices. The rules apply to all state and private forest lands in Washington.

As part of the agreement that led to rulemaking, Ecology agreed to defer producing TMDLs for the watersheds covered by the forest practices rules, since the rules themselves were essentially a "straight to implementation" strategy. However, Ecology's willingness to defer TMDLs was predicated on:

- Effective and consistent implementation of the forest practices rules.
- Implementation of a robust adaptive management program that would evaluate the effectiveness of the rules and result in rule changes when necessary to ensure water quality standards are met**.**

By July 1, 2009, Ecology is scheduled to decide whether the TMDL deferral will be continued. Ecology has completed a first draft of its 2009 decision, and has presented that draft to the standing committees that oversee the forest practices adaptive management program in the state of Washington. Ecology will work with those committees to create a formal work plan to ensure that all noted program deficiencies will be corrected in the shortest practical time, and that scientific studies designed to test the effectiveness of the rules are treated as the highest priority for research.

In the meantime, there are several other issues in the world of forest practices that we are working on.

Forest practices rules must be implemented properly for them to be effective in protecting water quality. The Washington Department of Natural Resources (DNR) with the assistance of staff from the Department of Ecology, the Department of Fish and Wildlife, and tribal governments assesses compliance with the state's forest practices rules. As part of the compliance monitoring program, the DNR prepares biennial compliance monitoring reports. These reports assess how well foresters are doing in complying with both the forest practices rules and the specific conditions of their approved forest practice applications (harvest plans). Data on compliance with specific provisions of the state rules (such as buffer widths, snags, leave tree requirements) are independently examined to provide a better understanding of what parts of the rules may be creating the greatest problems with non-compliance. The compliance monitoring program is also being designed to allow the data to be examined by DNR region. However, as of the 2008 report there were still not sufficient monitoring visits in all of the regions to allow a region-to-region comparison. Such a comparison is needed to identify if there are inconsistencies in compliance between regions that need to be addressed. It is expected that a statistically sufficient sample will exist by the 2010 biennial report. Also expected by 2010 will be an assessment of compliance with the rules for 20 acre-exempt parcels (distinct harvest requirements exist for these parcels), and an initial assessment of whether or not alternate plans (site-specific harvest plans that may establish unique requirements) have adequate documentation on the basis for their approval.

Under the state's forest practice rules, landowners may propose alternate plans for harvesting timber. These alternate plans may establish unique requirements that recognize the specific situation at the site. Such plans must be approved by a multi-agency review team (called an ID team). Approved plans are to provide equal or greater protection for public resources as the standard forest practices rules would provide. The guidance supporting the ID team process directs teams to examine five specific riparian functions when making an assessment of whether or not the alternate plan provides equal or greater protection. These include shading, bank stability, woody debris availability and recruitment, sediment filtering, nutrients, leaf litter fall, and any other riparian features important at the site.

In many cases, alternate plans are trading off some short-term function for long-term function. An example would be thinning a stand to grow larger woody debris to assist in protecting the stream channel and to provide fish cover and habitat. The thinning may reduce shading in the short-term to help the trees grow to a larger size more quickly. About 80 alternate plans are approved each year. This is a very small percentage (perhaps less than 1%) of the total forest

practice applications approved each year. They are a concern, however, because they occur in riparian areas and there is reason to suspect that the use of this program will increase over time. No study exists or is on the drawing board for determining the effectiveness of the alternate plan program.

Ecology has raised this as an issue in meetings in early 2008 directed at establishing the schedule of priorities for forest research and has made it a condition for continuing with the Clean Water Act assurances. This research would likely be completed by the Cooperative Monitoring, Evaluation, and Research (CMER) committee of the state's forests and fish program, or by outside contractors. The nature of trading different riparian functions over different time scales will make conducting this research particularly challenging. CMER also does not appear to have the capacity in the next three to five years to begin this work and it will be important for Ecology and other stakeholders to weigh where this research is as a priority along with other research questions.

It takes from three to seven years to plan, conduct, and prepare a final report for field research. By its very nature, sound scientific research takes a significant amount of time and resources. However, almost ten years have passed without the forest and fish adaptive management program completing any of the studies Ecology needs to evaluate the effectiveness of the forest practice rules in protecting water quality. Studies which have been in the works for six to seven years remain threatened and stalled due to problems getting landowners to harvest them on schedule and to the specifications needed for the study. Ecology has been part of the forests and fish process and was part of the decision making process for prioritizing scientific research. Ecology did not, however, anticipate all of the problems that would occur with following through with the needed research.

In addition to difficulty conducting field research in a timely manner, a lack of good communication between policy and technical staff on the resolution needed to answer critical questions has resulted in some studies being conducted that have not resulted in science-based solutions to disputed provisions of the forest practices rules. This has been unsatisfactory to all stakeholders, who are investing time and resources into the adaptive management process. Ecology is very concerned with the current state of the adaptive management program, and will be formally seeking some greater assurance that studies needed to determine the effectiveness of the rules in protecting water quality will proceed more expediently. Ecology will also be seeking some greater assurance that results from completed studies will be translated into improved forest practices regulations in the shortest practical time. While Ecology is concerned, we are also optimistic that with the help of the other members of the forest and fish process these problems can be resolved. Ecology will currently taking part in a formal effort to review and revise as necessary the research priorities and will use this opportunity to seek across the board improvements to the adaptive management program and the interrelationship between the science and policy arms of the forests and fish process.

Road maintenance and abandonment plans. Roads are considered to be the greatest source of sedimentation to streams in forested watersheds. Poorly developed and maintained roads erode and transport sediment to streams and often times are a contributing factor to landslides entering streams. Under the forest practices rules Road Maintenance and Abandonment Plans (RMAPs)

have been developed by almost all of the large forest landowners in the state. These plans are aimed at ensuring that roads are either brought up to current standards or properly put to rest by restoring them to a more natural forest condition. The plans also include provisions for removing blockages to fish migration. Landowners have formal schedules for bringing all of their roads into compliance by 2016, and a formal program of oversight exists to monitor that progress. Small forest landowners are not required to develop RMAPs, but are still to bring their roads up to the same high standards as the large forest landowners by 2016. The Washington State DNR is expected to provide an update on the progress of these small forest landowners to the legislature in 2011 to allow the legislature to consider if the program is working. In addition to bringing the roads up to current standards for road construction to minimize their contribution of sediment to streams, the forests and fish adaptive management program is conducting studies that are testing the effectiveness of those new road standards to ensure they are adequate to protect water quality.

Chapter 4: A Case Study
Building the Foundation for Implementing Erosion Control in the Palouse

The following is a case study of how Ecology is looking to align multiple programmatic efforts to address a severe nonpoint pollution problem in Southeastern Washington. In achieving this goal, Ecology has sought to address a multitude of barriers in a step-wise fashion. In an attempt to avoid the age-old regulatory arguments of whether the carrot or the stick is the solution, Ecology is looking to blend a variety of approaches to accomplish wide-spread adoption of BMPs. However, in order to accomplish a well balanced and strategic approach, we must first put in place a foundation of policy adoption, partnerships and guidance.

Where we are today

Southeast Washington is dominated by agriculture. Throughout the region winter wheat is king, as the often repeated phrase goes. Winter wheat is planted in the fall leaving the nearly bare ground exposed to the elements through the fall, winter, and early spring. Furthermore, the soils in the region are very fine and highly erodible. Farmers use traditional (or conventional) tillage practices to farm the steep, undulating topography. Erosion can be severe with standard erosion rates at 8 to 15 tons per acre. During certain rainfall events, erosion can be in excess of 50 to 80 tons per acre. Consider that a standard dump truck holds eight tons of soil and that more than two million acres are in production. As you might imagine, thousands of tons of soil end up in our streams and rivers annually, making this one of the most severe non-point pollution problems in the state. The Palouse River watershed for example, in the heart of wheat country, has 320 individual category 5 listings.

The most efficient way to farm these fragile soils and prevent the sediment from reaching our waterways is through utilization of direct seed systems. Direct seed is the practice of seeding a crop into the standing stubble of the previous crop. Very little soil disturbance is necessary and, as a result, soil erosion is significantly reduced. The research suggests erosion is reduced by more than 90 percent. But unfortunately, less than 10 percent of farmers have adopted the practice.

Coordinating multifaceted implementation effort

Farmers provide many reasons for not changing tillage practices. They include everything from the expense of new equipment to knowledge that conventional tillage is a reliable way to produce a crop. To increase the adoption of direct seed technology, we are working to develop a set of tools, and are merging multiple agency and partnership efforts to address these concerns, convince more farmers that direct seed will work on their farm, and ultimately implement BMPs to protect water quality while still keeping this long standing industry viable.

In order to approach the full array of problems, we needed to first address some internal policies, merge programmatic efforts, forge new partnerships, and coordinate both internal and external agency work. We took some major steps forward in 2008. First, we made direct seed eligible for Centennial/319 funds for the first time. This will allow farmers to apply for a $25 per acre

credit to offset the cost of custom application or rental equipment, to try direct seed on up to 200 acres.

Next, we partnered with the Palouse-Rock Lake conservation district to create a Coordinated Resource Management (CRM) group for the northern Palouse. The CRM is made up of state, federal and local government staff, and landowners. The group's goal is to reduce soil erosion resulting from tillage practices and provide a coordinated and consistent approach to ensuring adoption of BMPs. Funds from an Ecology grant are also enabling the CRM to launch an extensive social marketing campaign. That process identifies barriers to adoption of direct seed and develops tools to address them. In many cases these tools feed off of, or support other previous efforts. Here are just a few of the tools the CRM will use to promote adoption:

- A mentoring program will place an experienced direct seeder with a farmer who is just starting. This will help reduce typical mistakes and provide technical assistance for new direct seed adopters.

- Radio and billboard advertising to promote direct seed and cost-share programs. Ads will air in local communities and are currently planned to run during local broadcasts of the State B basketball tournament.

- The give it a try campaign will provide interested landowners an opportunity to have acreage planted by a custom direct seed operation at little or no cost. This way he can see how it works on his property. An economic analysis will be done for those acres looking at both yield and inputs to demonstrate that it is economical on their property.

- Promote Spokane CD low-interest loans for direct seed equipment. Specialized equipment is necessary for direct seed. The Spokane CD received a state revolving loan from Ecology to lend the money needed to purchase equipment.

- Free direct seed DVD mailed to nearly 500 individuals that explains the economic and ecological benefits if direct seed and ;

- Absentee landowner outreach to inform those that no longer farm their property the benefits of direct seed for long-term sustainability. Many of the landowners that rent their ground no longer have a strong connection to the family farm. They are often opposed to changes in management, and present a significant barrier to direct seed adoption.

In addition to aforementioned efforts, Ecology has also produced several TMDLs and detailed implementation plans that also support the use and adoption of direct seed technologies. These studies also provide an important scientific foundation describing the extent of the sediment problem, and its subsequent impacts on numerous streams and water quality parameters.

Ecology has also investigated extreme erosion events, and maintains that such events are in violation of the state water pollution control act. Essentially, Washington State law provides a

regulatory backstop to our multifaceted implementation approach and helps to encourage landowners to voluntarily adopt these best management practices and achieve compliance.

Future agency endeavors may also support continued implementation efforts. Additional projects may include the production of BMP guidance manuals for dry land wheat farming, and agency focus sheets explaining how certain production methods may contribute to water quality violations of state law.

Ecology feels that the long standing nonpoint pollution problems in Southeastern Washington cannot be overcome by one single implementation effort. By applying strategy, and laying the foundation for implementing succeeding actions, we hope to develop the potential to garner large scale adoption of BMPs. By bringing the best of all our programmatic and partnership efforts we feel that we can overcome numerous barriers and ultimately achieve wide-spread solutions to a difficult nonpoint pollution problem.

A Future of Sustainable Agriculture

In social marketing lingo, we are hopeful that our efforts will work toward 'normalizing the behavior' of direct seed. If we gain acceptance from some of the leading farmers in the region, many more will follow. Our hope is to continue to build local partners that help promote less soil disturbance during tillage and the protection of stream corridors. These activities will help to achieve water quality standards and promote long-term sustainable agriculture. Moreover, Ecology feels that we may only address this pervasive nonpoint pollution problem by merging our programmatic efforts including grants, nonpoint staff, and TMDLs to bring forth a multifaceted solution and thereby leverage all our efforts to build critical mass in the adoption of BMPs.

Chapter 5: Conclusions

Ecology is operating on the principle that successful implementation of nonpoint pollution abatement requires first laying the foundation, or building the infrastructure, upon which succeeding actions will be supported and successful. We recognize that solely relying upon volunteerism incentivized by financial assistance (while an important element is nonetheless a proportionally small contribution compared to the size of the nonpoint problem) will not get us from "A to B." And while creating the necessary infrastructure is a measured and deliberate process, it is nevertheless necessary to address policies and regulations, coordinate agency actions, engage target audiences, and ensure that the right staff is in place, in order to carry out a comprehensive effort to address nonpoint pollution.

The lynchpin of this comprehensive effort will be the update of the nonpoint plan in 2010. Through the update of the plan, we hope to continue to hone our nonpoint efforts to:

- Focus our funds and efforts at high priority problems and solutions.
- Leverage our grant dollars to support programmatic efforts and achieve critical mass.
- Emphasize the most effective BMPs.
- Call upon our partners to implement the necessary water quality protections

In addition to this planned and strategic nonpoint approach, we maintain that our end goals are efficient on the ground change, and 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.

Appendix: Table 5.1 Activities to Implement

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

Objectives to be fulfilled(See Chapter 3)	**Through these Forestry Activities**	**Lead Entity--** Cooperators	**Measurable Outcome**
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
Focus funding	For 8: Continue to implement the forest land 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

Objectives to be fulfilled (See Chapter 3)	**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
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**	

Objectives to be fulfilled (See Chapter 3)	**Through these Urban and Suburban Activities:**	**Lead Entity--** Cooperators	**Measurable Outcomes**
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 on-site systems.	**DOH,** ECY	

Objectives to be fulfilled (See Chapter 3)	**Through these Urban and Suburban Activities:**	**Lead Entity--** Cooperators	**Measurable Outcomes**
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
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	
Teach about connections	Rec 4: Fund education to prevent small oil spills and for citizen responses to oil spills.	**ECY**	

Objectives to be fulfilled (See Chapter 3)	**Through these Recreational Activities**	**Lead Entity--Cooperators**	**Measurable Outcomes**
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.

	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
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

	Through Habitat Alteration Activities	Lead Entity-Cooperators	Measurable Outcome
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
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, 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
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

Objectives to be fulfilled (See Chapter 3)	**Through these Educational Activities:**	**Lead Entity—** Cooperators	**Measurable Outcomes**
			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
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

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**
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	
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

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 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
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