DEQ Water Quality Division

State of Oregon
Department of
Environmental
Quality

2014 Final Oregon Nonpoint Source Management Program Plan

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Table of Contents

1. Executive Summary **6**

2. Introduction **7**

2.1. Update Oregon's NPS Plan 7

2.2. Oregon NPS Plan Goals, Priorities, Objectives and Strategies 8

2.3 Short Term Goal of Oregon NPS Plan 8

2.4 Long Term Goals of Oregon NPS Plan 8

2.5 DEQ's Responsibilities 9

2.6 Who is Responsible for Implementing the Oregon NPS Plan? 9

2.7 Need for Action 9

2.8. Clean Water Act Section 319 Funding 9

2.9 Public Review of Draft Oregon NPS Plan 10

2.10 Oregon NPS Plan Update Requirements 10

EPA's NPS Management Plan Eight (8) Key Components **11**

EPA KEY COMPONENT #1 11

EPA KEY COMPONENT #2 12

EPA KEY COMPONENT #3 13

EPA KEY COMPONENT #4 13

EPA KEY COMPONENT #5 13

EPA KEY COMPONENT #6 14

EPA KEY COMPONENT #7 14

EPA KEY COMPONENT #8 15

3. Oregon's NPS Management Program **15**

3.1 General Description of NPS Management Program 15

3.2 Partnerships 26

3.2.1 Local Partners 26

3.2.2 State Agencies 26

3.2.3 Federal Agencies 27

3.2.4 Federally Recognized Tribes of Oregon 27

3.3 Tribal Agency Coordination 27

3.2.4 DEQ Memorandum of Understandings and Memorandum of Agreements 28

3.3 Baseline Regulatory Statutes 29

3.3.1 Water Quality Standards 30

3.3.2 Integrated Report [303(d) and 305(b)] 31

3.3.3 Total Maximum Daily Loads (TMDLs) and Water Quality Management Plans 31
3.4 Other Management Programs that Address NPS 33
3.4.1 Watershed Approach Basin Reports 33
3.4.2 Cross Program Efforts to Address Toxic Chemicals 34
3.4.2.1 Pesticides Stewardship Partnerships (PSPs) 35
3.4.2.2 Water Quality Pesticide Management Team (WQPMT) 36
3.4.3 Drinking Water Protection 36
3.4.4 Groundwater Protection and Groundwater Management Areas (GWMAs) 37
3.4.5 Coastal Zone NPS Management Program 39
3.4.6. Incorporate EPA Watershed Plans Elements into TMDLs and Watershed Approach Basin Reports 40
4. Management of NPS by Land Use 45
4.1. Agricultural Lands 45
4.2. Agricultural Water Quality Management Program 45
4.1.4 Memorandum of Agreement 46
4.1.5. Nonpoint Source Program Priorities 47
4.1.6. TMDL Implementation, Biennial Reviews and Basin Plans 47
4.1.7 Strategic Implementation Areas 47
4.1.8 Focus Areas 47
4.1.9 National Water Quality Initiative and State Resource Assessment Process 48
4.1.10. Other Programs and Partners 48
4.1.10. The NPS Program Agricultural Measures, Timelines, and Milestones 49
4.1.11 ODA's Reporting 50
4.1.11.1. Water Quality Program Compliance Summary 50
4.1.11.2. Outreach and Education Summary 50
4.2 State and Private Forest Lands 51
4.2.1 RipStream (Riparian Function and Stream Temperature) Study 53
4.2.2 Forest Practices Act Sufficiency Analysis 54
4.3 Federal BLM and USFS Lands 55
4.3.1 Coordination with USFS and BLM to Meet State and Federal Water Quality Rules and Regulations 55
4.3.2 Revision of BLM Resource Management Plan and EIS for Western Oregon 58
4.3.3 USFS and BLM BMPs for Land Management Activities 58
4.3.3.1. USFS BMPs for All Land Management Activities 58
4.3.3.2. BLM Best Management Practices to Reduce Sediment Delivery from BLM Roads in Oregon 59

4.4 Urban and Rural Residential....60
4.4.1. TMDL Implementation for Urban and Rural Residential DMAs....60
4.4.2 NPDES MS4 Stormwater Permit....61
4.4.3 State Land Use Planning Goals....61
5.1 Federal CWA Section 319(h) NPS Grant Funding....62
5.2 Performance Partnership Agreement....63
5.3 Oregon NPS Program Funding....63
5.4 Project Funding....64
5.5 EPA Grants Reporting and Tracking System – GRTS....65
5.5.1 Grants Reporting to OWRI....66
5.5.2 Oregon Nonpoint Source Pollution Program Annual Report....66
6. Other State Operated NPS Funding Sources....67
6.1 Clean Water State Revolving Fund....67
6.2 Drinking Water Revolving Loan Fund (DWRLF)....69
6.3 OWEB....69
6.3.1 OWEB Grants Program....70
6.3.2 OWEB Prioritization Framework: Improvement Priorities at Basin and Watershed Scales....71
6.3.3 Oregon Watershed Restoration Inventory (OWRI)....73
6.3.4. Oregon Conservation Reserve Enhancement Program (CREP)....74
7. Water Quality Data and Assessments....74
8. Success Stories....75
8.1 USEPA Strategic Plan - 2015 National Water Program Guidance Measures....75
8.2 How are the NPS Success Stories Classified for EPA's Web Page?....75
APPENDIX I: GLOSSARY....77
APPENDIX 2: Abbreviations And Acronyms....92

Tables

Table 1: NPS MP Actions, Priorities, and Milestones 2014 to 2018....16
Table 2: EPA Watershed Plans Nine Key Elements....40
Table 3: Analysis Of TMDL Implementation Plans And Watershed Basin Approach Reports' Inclusion of EPA's Watershed Plans Nine Key Elements....42
Table 4: Example SWCDs Outreach and Education Summary....50
Table 5: Other SWCD Activities....50
Table 6: Oregon Total Section 319 Funding 2007 to 2013....61
Table 7: OWEB Grant Funding Example....73

Figures

Figure 1: Decisions and Actions Related to Planning and Activities.....18
Figure 2: 2013 Oregon 319 Type of Projects.....66
Figure 3: OWEB Prioritization Framework At The Regional Level – 15 Basins.....73

1. Executive Summary

The Oregon Department of Environmental Quality (DEQ) is updating Oregon's Nonpoint Source Management Program Plan (Oregon NPS Plan) because EPA now requires each state's NPS Plan to be updated every five years and submitted for EPA's review. DEQ's NPS Plan was last updated in 2000. The NPS Plan describes the federal and statutory basis of the Program.

The primary purpose of Oregon's NPS Management Program (Oregon NPS Program) and plan is to develop and implement strategies to protect, prevent, control, and eliminate water pollution from nonpoint sources in "Waters of the state" to meet water quality standards and TMDL load allocations. Other purposes of the plan are to describe the goals, priorities, objectives and strategies to be used for protecting, preventing, controlling and eliminating pollution of Oregon's waters from NPS. The NPS Plan represents an approach for Oregon to continue to plan, implement and prioritize actions to address NPS problems on a statewide basis.

The Oregon NPS Plan is being updated to describe how the state's NPS Management Program includes measures needed to meet federal, tribal nations, and state surface and groundwater quality standards and TMDL load allocations.

In addition, the plan describes outcomes and key actions expected over the five-year Oregon NPS Plan period. Some actions occur every year, others have fixed target dates, and some occur every five years, such as updates to the DEQ memorandums of understandings. Some examples of annual milestones and success stories include developing an annual Section 319-grant work plan, implementing projects in various high-priority impaired watersheds, and describing a number of success stories in Oregon's NPS Annual Report submitted to EPA.

State programs to protect or improve Oregon's water quality date back to 1938. Oregon's point source permit program was the second approved state program in the Country (September 26, 1973). More recently, the state also adopted another landmark program: in 1996, the state adopted the Oregon Plan for Salmon and Watersheds to focus work on watershed restoration and recovery of endangered salmonid populations.

The water quality program's mission is to protect and improve Oregon's water quality. Protecting Oregon's rivers, streams, lakes, estuaries and groundwater quality keeps these waters safe for multiple beneficial uses such as drinking water, fish and aquatic wildlife habitat, recreation and irrigation.

This is accomplished by developing and implementing water quality standards and clean water plans, regulating wastewater treatment systems and industrial dischargers, collecting and evaluating water quality data, providing grants and technical assistance to reduce nonpoint pollution sources, and providing loans to communities to prevent or mitigate water pollution.

The availability of clean and healthy water is critical to Oregon's environment and economy. The Water Quality Program coordinates multiple approaches to achieve these results. The state water quality program can be divided into the ten interdependent program elements listed below:

1. Water quality standards that establish beneficial uses for the waterbody as well as maximum levels of pollutants that can be in the waterbody without adversely affecting the designated use.
2. Permits for point sources, including stormwater, discharging pollutants to waters of the state.
3. Water Quality 401-Certifications for hydroelectric projects, dredge, and fill activities.
4. Biennial assessment of State waters to identify those waters that are not meeting water quality standards.
5. Pretreatment, Sewage Sludge Management, and On-Site System programs to ensure that water quality is not compromised by other land-based activities.
6. Development of TMDLs, which are limits on pollution, intended to bring rivers, lakes, and streams into compliance with water quality standards and would include allocations too and strategies for point and nonpoint sources of pollution.

7. Cost-share grants and low interest loan programs to address municipal sewage treatment and disposal needs, and activities to reduce or eliminate nonpoint sources of pollution.
8. Information and education outreach activities to create awareness by the public about the importance of NPS pollution and its impact on groundwater and surface water quality.
9. Facility or activity-specific compliance assessment, a pilot NPS effectiveness monitoring effort, technical assistance, and enforcement as warranted ensuring State water quality requirements are met.

The water quality program has an increased emphasis on the "watershed approach" as a way to better identify and address high priority water quality issues in a basin or region. The watershed approach combines the expertise of DEQ's 17 water quality sub-programs to produce basin-based assessments that are data-driven and contain quantitative elements that describe water quality conditions and include recommendations for actions that DEQ and others can take to improve water quality.

DEQ uses these assessments to work with local stakeholders, such as communities, watershed councils and conservation districts, as well as local, state and federal agencies, to find smart solutions to local water quality issues. This effort aligns with EPA's national strategy to Improve Water Quality on a Watershed Basis in the 2012 National Program Manager's guidance.

Annual milestones proposed in the draft Oregon NPS Plan are meant to be general enough to accommodate the long-term Oregon NPS Management Program planning goals while being specific enough for the state to track progress and for EPA to determine satisfactory progress in accordance with Section 319 of the federal Clean Water Act.

The Oregon NPS Management Program represents a unified approach reflecting the fact that Oregon collaborates, implements and prioritize actions to address nonpoint pollution problems on a watershed basis. One of Oregon's primary goals is to strengthen its working partnerships and linkages with appropriate state, interstate, tribal, regional and local entities (including conservation districts), private sector groups, citizens groups, and federal agencies.

2. Introduction

The federal Clean Water Act (CWA) requires states to develop a program to protect the quality of water resources from the adverse effects of NPS water pollution. NPS pollution is water pollution that does not originate from regulated point sources and occurs when rainfall and snow melt flows off the land, roads, buildings, and other features of the landscape. This diffuse runoff carries pollutants into drainage ditches, lakes, rivers, streams, wetlands, bays, and aquifers and other waters of the state.

Common NPS pollutants include, but are not limited to:

- Temperature
- Fertilizers, herbicides, and insecticides
- Oil, grease, and toxic chemicals
- Sediment;
- Nutrients, and;
- Bacteria

2.1. Update Oregon's NPS Plan

EPA issued guidance, *Section 319 Program Guidance: Key Components of an Effective State Nonpoint Source Management Program November 2012* http://water.epa.gov/polwaste/nps/upload/key_components_2012.pdf directing all states to update their NPS program plans. This 2012 guidance is an update of previous EPA guidance and contains a description of the eight key components that characterize an effective state NPS management program.

This plan updates Oregon's *October 2000 Water Quality Nonpoint Source Control Management Program Plan* http://www.deq.state.or.us/wq/nonpoint/docs/plan/plan.pdf. EPA is requiring an update of Oregon's 2000 Plan since many EPA and state rules, regulations, and programs have changed over the past fifteen years. An update of Oregon NPS Plan reflects current and planned goals, priorities, actions and milestones for the next five years. This five-year plan then provides the basis for tracking annual progress under the program.

EPA expects all states to review and, as appropriate, revise and update their NPS Management Program Plan every five years. An updated, comprehensive program is critical to the states and EPA. It allows EPA and Oregon to ensure that section 319 funding, technical support and other resources are directed in an effective and efficient manner.

2.2. Oregon NPS Plan Goals, Priorities, Objectives and Strategies

The Oregon Nonpoint Source Management Plan describes the goals, priorities, objectives, and strategies of the Oregon Nonpoint Source Program (NPS Management Program) used to achieve the mission to protect, prevent, control, and eliminate water pollution from nonpoint sources in "waters of the state" to meet water quality standards and Total Maximum Daily Load (TMDL) allocations.

The Oregon NPS Plan includes measures needed to meet federal and state surface and groundwater water quality standards, and established Total Maximum Daily Load allocations for water bodies designated as water quality limited on the state's 303(d) list of impaired waters.

To help protect the quality of our nation's water resources, and to strengthen EPA's implementation of its responsibilities under the Clean Water Act's section 319 nonpoint source pollution control program, the Administrator of EPA should, in revising section 319 guidelines to states, and in addition to existing statutorily required reporting measures, emphasize measures that (1) more accurately reflect the overall health of targeted water bodies (e.g., the number, kind, and condition of living organisms) and (2) demonstrate states' focus on protecting high-quality water bodies, where appropriate.

2.3 Short Term Goal of Oregon NPS Plan

The short-term goal of the NPS Management Program is to reduce NPS pollutants in water bodies not meeting water quality standards and assure continued attainment for water bodies meeting water quality standards. The DEQ NPS Management Program integrates with other relevant programs to restore and protect water quality, aligning priority setting processes and resources to increase efficiency and environmental results.

2.4 Long Term Goals of Oregon NPS Plan

The state's long-term goals in the Oregon NPS Plan are strategically focused and designed to achieve and maintain water quality standards and to maximize water quality benefits of the Oregon's NPS Management Program. The shorter-term objectives consist of activities, with annual milestones, designed to demonstrate reasonable progress toward accomplishing long-term goals as expeditiously as possible.

Since the Oregon NPS Plan is a long-term planning document, the milestones may be more general than are expected in an Oregon Nonpoint Source Pollution Program Annual Report. The NPS Annual report will report any progress on meeting milestones agreed upon with EPA in the annual PPA work plans. Since this plan covers five years with annual milestones, commitments/milestones made in this Plan are specific enough for the state to track progress and for EPA to determine satisfactory progress in accordance with section 319(h)(8). Annual milestones in state agencies' NPS work plans describe key actions expected each year, e.g., delivering a certain number of WQ-10 success stories or implementing projects in a certain number of high priority impaired watersheds.

The DEQ's NPS Management Program supports and promotes collaborative efforts of state, federal, and local agencies as well as other entities to achieve NPS goals. The State of Oregon is committed to implementing a program that focuses on the attainment of water quality goals by using a balanced approach of education, research, technical assistance, financial incentives, and regulation. These programs include the management or regulation of forestry, agriculture, grazing, transportation, recreation, hydromodification, marinas, urban development, land use planning, fish and wildlife habitat, riparian and wetlands protection/restoration, public education, water resources, and other activities that affect the quality of the state's waters.

2.5 DEQ's Responsibilities

DEQ has the responsibility of overseeing and implementing the State's NPS Management Program. The NPS Management Program is implemented by coordinating with many local, states and federal agencies and organizations throughout the State of Oregon. The NPS Management Program uses a combination of federal and state authority for implementing statewide, programmatic, and geographic priorities, objectives, and strategies to achieve the short- and long-term goals of the NPS Management Program. The NPS Management Program tracks and reports on administrative outputs and water quality outcomes from these activities in Oregon's NPS Annual Report submitted to EPA annually as a requirement of section 319.

2.6 Who is Responsible for Implementing the Oregon NPS Plan?

Responsibility for managing water resources in Oregon is shared among state, interstate, tribal, regional and local entities (including conservation districts), private sector groups, citizens groups, individual citizens and federal agencies. The program relies on a combination of state and federal laws and local ordinances. Plan implementation relies on the collective effort of the agencies and partners listed below.

Both the Oregon Departments of Agriculture and Forestry have a significant role in addressing nonpoint source pollution from agriculture and private and state forestry land uses. For federal forestry lands, the U.S. Forest Service and Bureau of Land Management implement many restoration and protection management practices of the Oregon NPS plan. Implementation within urban areas involves the many cities, counties and applicable districts as noted in the Oregon NPS Plan.

2.7 Need for Action

DEQ as well as other agencies and entities conduct water quality monitoring and analysis, develop and use technical water quality/Geographic Information System (GIS) data with watershed partners. It uses a balanced approach of education, research, technical assistance, financial incentives and regulation.

DEQ and partners such as the Oregon Departments of Land Conservation and Development, Agriculture and Forestry, as well as federal agencies, also develop and implement pollution control and reduction strategies for a wide range of activities that affect the state's water quality.

2.8. Clean Water Act Section 319 Funding

Another key component of Oregon's NPS Management Program is the coordination of monies that funds DEQ's NPS Management Program staff and the NPS Grant Program. The 319-grant program funds cooperating entities for activities that address NPS emphasizing watershed protection and enhancement, watershed restoration, voluntary stewardship, and partnerships among watershed stakeholders.

The program also integrates with other relevant programs to restore and protect water quality. It aligns priority-setting processes and resources to increase efficiency and environmental results. This includes alignment with significant match funding provided through the Oregon Watershed Enhancement Board (OWEB)'s parallel granting programs.

One of Oregon's primary goals is to strengthen its working partnerships and linkages to federal, state, interstate, tribal, regional and local entities (including conservation districts), private sector groups, and citizens groups. The NPS Plan identifies the needed collaboration, coordination, and communication for its implementation to address NPS pollution. The NPS Plan annual milestones are tracked and reported in required annual reports to EPA.

2.9 Public Review of Draft Oregon NPS Plan

DEQ staff worked with applicable state and federal agencies in development of the NPS Plan. DEQ consulted with ODF and ODA on forest and agriculture stakeholder outreach. EPA requested DEQ to conduct a 30-day informal public review and comment period on the Oregon NPS Plan. The public notice was issued on Monday, August 4, 2014. Public comments were due at 5 p.m. Tuesday, September 2, 2014. A 30-day public comment and notice for Oregon Tribes was also conducted by DEQ and EPA.EPA approval of Oregon's NPS Plan will help ensure DEQ continues to receive annual 319 funding from EPA that funds DEQ staff and projects.

2.10 Oregon NPS Plan Update Requirements

The following EPA Section 319 Program Guidance reporting guidelines and the Oregon NPS Management Program Plan contains the following required elements:

Description of NPS Management Program

- Partnerships: Federal Agencies, State Agencies, and Local Partners
- DEQ Memorandum of Understandings and Memorandum of Agreements
- Baseline Regulatory Statutes
    - Water Quality Standards
    - Total Maximum Daily Loads (TMDLs) and Water Quality Management Plans (WQMP)
    - General Permits for Pesticides
- Other Management Programs that Address NPS
    - Watershed Approach Basin Reports
    - Water Quality Basin Status/Action Plans
    - Cross Program Efforts to Address Toxic Chemicals
    - Drinking Water Protection
    - Groundwater Protection and Groundwater Management Areas (GWMAs)
    - Coastal Zone Act Reauthorization Amendments (CZARA), Coastal Zone NPS Management Program
    - Incorporate EPA Watershed Plans Elements into TMDLs and Watershed Approach Basin Reports
- Management of NPS by Land Use
    - Agricultural Lands
    - State and Private Forest Lands
    - Federal Forest Lands
    - Federal Grazing Lands
    - Urban and Rural Residential
- Oregon 319 Grant Program
- Other NPS Funding Sources
    - Clean Water State Revolving Fund
    - Drinking Water State Revolving Loan Fund (DWSRLF)

  - OWEB
  - Pacific Coastal Salmon Recovery Fund (PCSRF)
- Assessment of water quality and landscape condition
- Success Stories/Environmental Improvement (WQ-10) and (SP-12) Projects and Other

Oregon's NPS Management Program includes all "*Water or Waters of the State*" as defined by ORS 468B.005 (10) **Definitions for water pollution control laws.** *As used in the laws relating to water pollution, unless the context requires otherwise: (10) "Water" or "the waters of the state" include lakes, bays, ponds, impounding reservoirs, springs, wells, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Pacific Ocean within the territorial limits of the State of Oregon and all other bodies of surface or underground waters, natural or artificial, inland or coastal, fresh or salt, public or private (except those private waters which do not combine or effect a junction with natural surface or underground waters), which are wholly or partially within or bordering the state or within its jurisdiction. [Formerly 449.075 and then 468.700; 2003 c.469 §1]*

The Oregon NPS Management Program strategy involves baseline water quality management programs and regulatory, voluntary, financial, and technical assistance approaches to achieve a balanced program. NPS pollution is managed through assessment, planning, implementation, and education. The DEQ has established goals and objectives for guiding and tracking the progress of NPS management in Oregon. These goals and objectives are located in this plan, PPG work plans, and MOAs with other agencies.

Success in achieving the goals and objectives are reported annually in the Oregon NPS Pollution Program Annual Report, which is submitted to the EPA in accordance with the federal CWA.

Implementation of the Oregon NPS Management Program involves many partnerships. With the extent and variety of NPS issues across the state, cooperation across political boundaries is essential. Many local, regional, state, and federal agencies and entities play an integral part in managing NPS pollution, especially at the watershed level. They provide information about local concerns and infrastructure and build support for the kind of pollution controls that are necessary to prevent and reduce NPS pollution.

In addition, the many local, regional, state, and federal agencies and entities are vital partners in working with landowners to implement best management practices (BMPs) that prevent and abate urban and rural residential, agricultural, and forestry NPS water pollution. By establishing coordinated frameworks to share information and resources, the state can more effectively focus its water quality protection efforts.

The Oregon NPS Plan meets the requirements of the federal Clean Water Act (federal CWA) (33 USC 1329) and the U.S. Environmental Protection Agency's (EPA) *Section 319 Program Guidance: Key Components of an Effective State Nonpoint Source Management Program November 2012* http://water.epa.gov/polwaste/nps/upload/key_components_2012.pdf.

2.11 EPA's NPS Management Plan Eight (8) Key Components

Below is a cross-reference between EPA's NPS Management Plan eight (8) key components that the state's NPS Plan should address and how and where they are addressed in Oregon's NPS Plan:

2.11.1 EPA KEY COMPONENT #1

The first Key Component is: The state program contains explicit short- and long-term goals, objectives and strategies to restore and protect surface water and ground water, as appropriate.

a. CWA 303(d) New Program Vision

The Clean Water Act Section 303(d) Program provides for effective integration of implementation efforts to restore and protect the nation's aquatic resources, where the nation's waters are assessed, restoration and protection objectives are systematically prioritized, and TMDLs and alternative approaches are adaptively implemented to achieve water quality goals with the collaboration of states, federal agencies, tribes, stakeholders, and the public.

Engagement Goal: States actively engage the public and other stakeholders to improve and protect water quality, as demonstrated by documented, inclusive, transparent, and consistent communication; requesting and sharing feedback on proposed approaches; and enhanced understanding of program objectives.

Integration Goal: States identify and coordinate implementation of key point source and nonpoint source control actions that foster effective integration across CWA programs, other statutory programs (e.g., CERCLA, RCRA, SDWA, CAA), and the water quality efforts of other Federal departments and agencies (e.g., Agriculture, Interior, Commerce) to achieve the water quality goals of each state.

Alternatives Goal: States use alternative approaches, in addition to TMDLs, that incorporate adaptive management and are tailored to specific circumstances where such approaches are better suited to implement priority watershed or water actions that achieve the water quality goals of each state, including identifying and reducing nonpoint sources of pollution.

Protection Goal: In addition to the traditional TMDL development priorities and schedules for waters in need of restoration, States identify protection planning priorities and approaches along with schedules to help prevent impairments in healthy waters, in a manner consistent with each State's systematic prioritization.

Assessment Goal: States identify the extent of healthy and CWA Section 303(d) impaired waters in each State's priority watersheds or waters through site-specific assessment.

Prioritization Goal: States review, systematically prioritize, and report priority watersheds or waters for restoration and protection to facilitate State strategic planning for achieving water quality goals.

Oregon's program contains explicit short- and long-term goals, objectives, and activities (including financial and technical assistance) to restore and protect Oregon's surface water and ground water.

b. Sections 3.1, 3 Table 1, 3.3.4, and 4

NPS Management Plan addresses EPA Key component #1 in Sections 3 through 7, particularly Sections 3.1 General Description of NPS Management Program, Section 3, Table 1 Oregon NPS Plan Outcomes And Key Actions, Section 3.3.4 DEQ Memorandum of Understandings and Memorandum of Agreements, and Section 4 Oregon's Management of NPS by Land Use all contain descriptions of the plan's short and long-term goals, objectives, and activities to restore and protect Oregon's waters of the state, both surface and ground water.

EPA KEY COMPONENT #2

The second Key Component is: The state strengthens its working partnerships and linkages to appropriate state, interstate, tribal, regional, and local entities (including conservation districts), private sector groups, citizens groups, and federal agencies.

a. Sections 3.2, 3.4, and 5

The NPS Management Plan addresses EPA Key Component #2 in Sections 3 through 6, particularly Section 3.2 Partnerships which includes descriptions of the partners for the Oregon NPS Management Plan to be effective in meeting the Oregon NPS Plan priorities and objectives. Sections 3.4 Other Management Programs and Section 5 Oregon 319 Grant Program are important sections that describe the programs available from local, state, and federal, watershed councils and other funding partners, funding is a necessary part for implementing the NPS Plan.

EPA KEY COMPONENT #3

The third Key Component is: The state uses a combination of statewide programs and on-the-ground projects to achieve water quality benefits; efforts are well-integrated with other relevant state and federal programs.

Sections 3.1, 3.3, and 4

The NPS Management Plan addresses EPA Key Component #3 in Sections 3 through 6, particularly 3.1 General Description of NPS Management Program, 3.3 Baseline Regulatory Statutes, Table 2 Oregon NPS Plan Outcomes And Key Actions, 3.3 Baseline Regulatory Statutes, and Section 4 Oregon's Management of NPS by Land Use describe the legal authorities and requirements, both regulatory and non-regulatory programs, that are well integrated to protect, prevent, control, and eliminate NPS pollution. These section highlight how Oregon's NPS Management Program uses many state and federal regulatory and non-regulatory programs and existing baseline requirements that are well integrated to protect, prevent, control, and eliminate NPS pollution.

EPA KEY COMPONENT #4

The fourth EPA Key Component is: The state program describes how resources will be allocated between (a) abating known water quality impairments from NPS pollution and (b) protecting threatened and high quality waters from significant threats caused by present and future NPS impacts.

Sections 3.4, 4.1.1.2, and 5

The NPS Management Plan addresses EPA Key Component #4 in Sections 3 through 6, particularly Sections 3.4 Other Management Programs, Section 4.1.1.2 Water Quality Management Program Objectives and Strategies DEQ's describe ongoing efforts to provide protection of high quality waters that are prioritized locally through the Basin Planning process.

Oregon has in its water quality standards the Three Basin Rule (OAR340-41-0350) that was adopted to preserve or improve the existing high quality water. The DEQ Source Water Protection Program works to protect source water used for public water supplies (Section 3.4.3). In addition, protection is considered during the Oregon 319 Grant Program (Section 5) that describes how resources, both programmatic and project actions, are allocated between (a) abating known water quality impairments from NPS pollution and (b) protecting threatened and high quality waters from significant threats caused by present and future NPS impacts that are needed to complete and implement the State of Oregon NPS Plan.

EPA KEY COMPONENT #5

The fifth EPA Key Component is: The state program identifies waters and watersheds impaired by NPS pollution as well as priority unimpaired waters for protection. The state establishes a process to assign priority and to progressively address identified watersheds by conducting more detailed watershed assessments, developing watershed-based plans and implementing the plans.

Sections 3.3.1, 3.3.3, 3.4, 3.4.1, 5.1, and 6

The NPS Management Plan addresses EPA Key Component #5 in Sections 3 through 6, particularly Section 3.3.1, Integrated Report [303(d) and 305(b)] requires DEQ to assess water quality and report to EPA on the condition of Oregon's waters and identifying waters that do not meet and those that do meet water quality standards every two years. DEQ uses the list of impaired waters to set priorities for TMDL development which is used for setting priorities for restoration activities. In addition, the Basin Reports were used for identifying priorities for unimpaired watersheds (Section 3.4.1).

Sections 3.3.3 Total Maximum Daily Loads (TMDLs) and Water Quality Management Plans and 3.4 Other Management Programs that address NPS identify the pollution management programs, strategies, and resources that are currently in place or that are needed to minimize or prevent current or future NPS pollution effects.

New EPA guidance requires the following new information to be included in the TMDL documents:

- ("…as a condition of using § 319 funds to develop TMDLs, the state will include the following supplemental information to support the load allocations specified in the TMDL:
- An identification of total NPS existing loads and total NPS load reductions necessary to meet water quality standards, by source type;
- A detailed identification of the causes and sources of NPS pollution by source type to be addressed in order to achieve the load reductions specified in the TMDL (e.g., acres of various row crops, number and size of animal feedlots, acres and density of residential areas); and
- An analysis of the NPS management measures by source type expected to be implemented to achieve the necessary load reductions, with the recognition that adaptive management may be necessary during implementation.).

Section 3.4.1 Watershed Approach Basin Reports are developed by DEQ so that the action plans are used to determine basin priorities and to allocate resources (http://www.deq.state.or.us/wq/watershed/watershed.htm).

Sections 5.1 Federal CWA Section 319(h) NPS Grant Funding and Section 6 Other NPS Funding Sources. The NPS Grant Program is administered by DEQ to provide funding as grants to cooperating entities for activities. DEQ Basin Coordinators work with other DEQ NPS staff and local partners for identifying NPS priorities for restoration and protection that are used for the 319 Grant RFP (Section 5) These 319 Grant RFP priorities address the goals, objectives, and overall strategy to further develop its own and other agencies' or individual's capabilities, emphasizing watershed protection and enhancement, voluntary stewardship, and partnerships between all watershed stakeholders. DEQ works with federal, state, tribal, local and private partners to assist in program development and implementation beyond DEQ's regulatory jurisdiction and financial abilities.

EPA KEY COMPONENT #6

The sixth EPA Key Component is: the state implements all program components required by section 319(b) of the Clean Water Act, and establishes strategic approaches and adaptive management to achieve and maintain water quality standards as expeditiously as practicable. The state reviews and upgrades program components as appropriate. The state program includes a mix of regulatory, non-regulatory, financial and technical assistance, as needed.

Sections 3.1, 3.2, 3.3, 4, 3.4, and 5

The NPS Management Plan addresses EPA Key Component #6 in Sections 3 through 6, such as Section 3.1 General Description of NPS Management Program and Section 3.2 Partnerships which includes descriptions of the partners that are included in the process in order to carry out the Oregon NPS Plan objective of meeting state and federal water quality standards and TMDL load allocations. Sections 3.4 Other Management Programs, 3.3 Baseline Regulatory Statutes, Table 2 Oregon NPS Plan Outcomes and Key Actions, and Section 4 Oregon's Management of NPS by Land Use describe the legal authorities and requirements, both regulatory and non-regulatory programs, which are well integrated to protect, prevent, control, and eliminate NPS pollution. Section 4 and Section 5 Oregon 319 Grant Program are important sections that describe the other management programs available by local, state, and federal, watershed councils and other funding partners necessary to ensure the plan includes all the programmatic and project funding sources that are needed to complete and implement the NPS Plan.

EPA KEY COMPONENT #7

The seventh EPA Key Component is: the state manages and implements its NPS Management Program efficiently and effectively, including necessary financial management.

Sections 3.1, 5, 5.4

The NPS Plan addresses EPA Key Component #7 in Section 3.1 General Description of NPS Management Program describes the state process for managing and implementing its NPS Management Program efficiently and effectively, including necessary financial management. Section 5 Oregon 319 Grant Program manages the Section 319 funds so that they are primarily used for organizational capacity development and implementation activities, including monitoring used to support TMDL development, implementation and measuring progress towards achieving TMDL allocations. It is critical for the 319 Grant Program to be implemented strategically and efficiently. Oregon's priorities are to streamline grant administration and reporting, and to allocate funds strategically.

Section 5.4 EPA Grants Reporting and Tracking System – GRTS is the primary tool for management and oversight of the EPA's NPS pollution control program. DEQ reports annually to EPA on the progress in meeting milestones, including estimates of NPS pollutant load reductions and improvements to water quality achieved by implementing NPS pollution control practices.

EPA KEY COMPONENT #8

The eighth EPA Key Component is: the state reviews and evaluates its NPS Management Program using environmental and functional measures of success, and revises its NPS Management Program at least every five years.

Section 3.1 and 5.1

The NPS Plan addresses EPA Key Component #8 in Section 3.1 General Description of NPS Management Program describes how Oregon prepares annual reports that document the activities and accomplishments of the State of Oregon in general and the Oregon DEQ in particular regarding the administration of Oregon's NPS Management Program and reviews and evaluates its program using environmental and functional measures of success, This information will be used to updates the NPS Management Program Plan every five years. Section 5.1 Federal CWA Section 319(h) NPS Grant Funding describes the use of the Annual NPS Report to track yearly progress of implementation of the approved NPS Management Program and prepare annual nitrogen, phosphorus, and sedimentation-siltation NPS pollutant load reduction estimates for NPS projects and include in Oregon's Annual NPS Program Update Report. In addition, the Integrated Report is used for identifying waters not meeting water quality standards (Category 5), TMDLs in need of development (Category 4 once TMDL issued), and with restoration implementation waters that improve and meet the water quality standards identified for restoration (Category 2).

3. Oregon's NPS Management Program

The primary purpose of Oregon's NPS Management Program and plan is to develop and implement strategies to protect, prevent, control, and eliminate water pollution from nonpoint sources in "Waters of the state" to meet federal, tribal nations, and state surface and groundwater quality standards and TMDL load allocations. The NPS Plan represents an approach for Oregon to continue to plan, implement and prioritize actions to address NPS problems on a statewide basis.

3.1 General Description of NPS Management Program

The primary purpose of Oregon's NPS program and plan is to develop and implement strategies to protect, prevent, control, and eliminate water pollution from nonpoint sources in waters of the state to meet water quality standards

and TMDL load allocations. The plan represents an approach for Oregon to continue to plan, implement and prioritize actions to address NPS problems on a statewide basis.

The NPS Management Program uses a combination of federal and state authority and funding for implementing statewide, programmatic, and geographic priorities, objectives, and strategies to achieve the short- and long-term goals of the NPS Management Program. The state program includes objectives that address nonpoint sources of surface water and ground water pollution as appropriate (including sources of drinking water) in alignment with the goals of the federal CWA.

Oregon's NPS program conducts water quality monitoring and analysis, develops and uses technical water quality/GIS data, with watershed partners using a balanced approach of education, research, technical assistance, financial incentives, and regulation. DEQ also develops and implements pollution control and reduction strategies for the management or regulation of forestry, agriculture, grazing, transportation, recreation, hydromodification, marinas, urban development, land use planning, fish and wildlife habitat, riparian and wetlands protection and restoration, public education, water resources, and other activities that affect the quality of the state's waters.

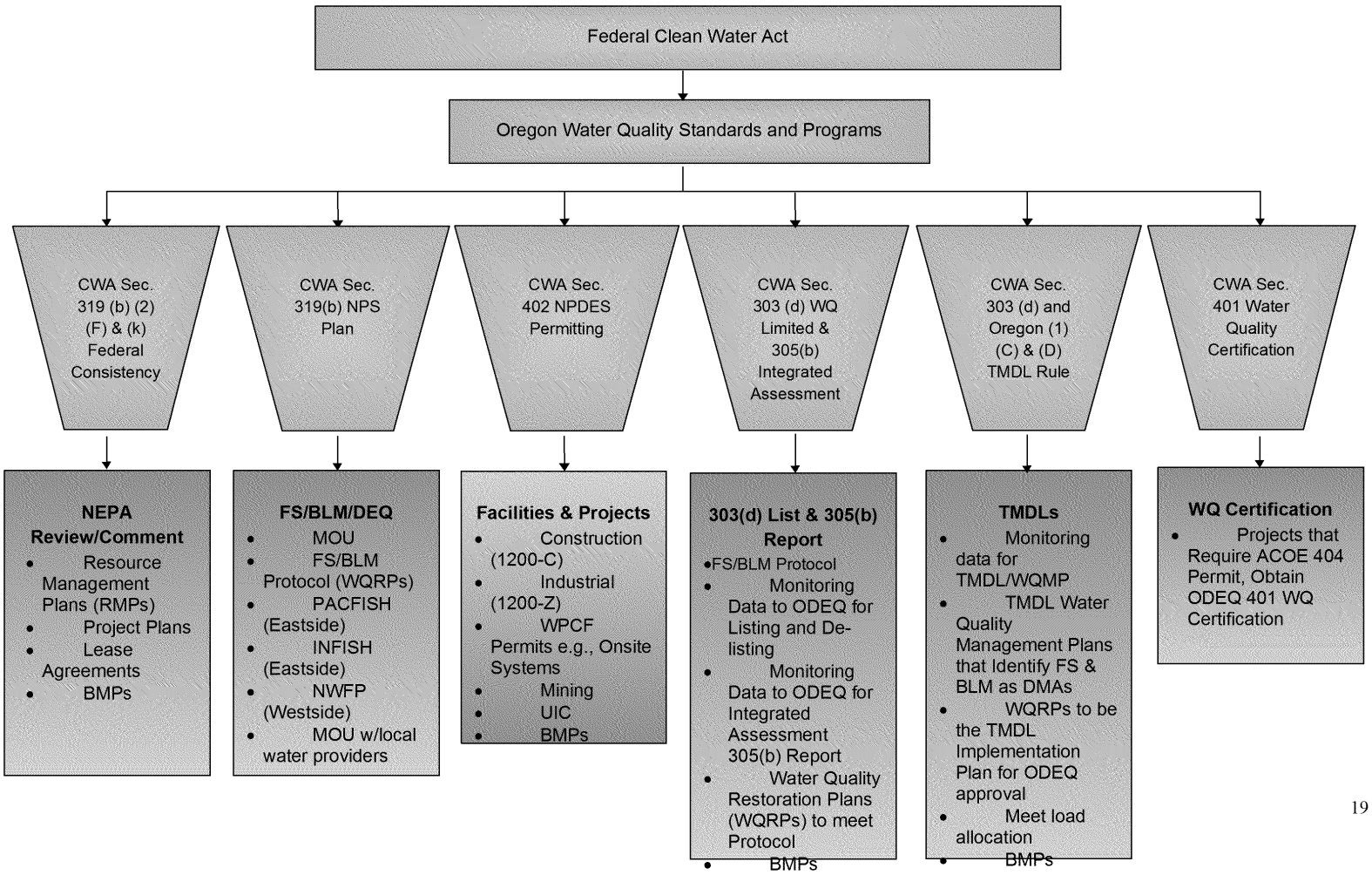
Another key component of Oregon's NPS Program is the coordination of EPA Section 319 funds that fund DEQ's program staff and the NPS Grant Program. The 319-grant program also provides funding to cooperating entities for activities emphasizing watershed protection, restoration, enhancement, voluntary stewardship, and partnerships between all watershed stakeholders. The DEQ NPS Program integrates with other relevant programs to restore and protect water quality, aligning priority setting processes and resources to increase efficiency and environmental results. This includes alignment with significant OWEB match funding provided through its parallel granting programs.

Oregon's NPS Management Program Plan describes outcomes and key actions expected over the 5-Year plan period. Some actions occur every year, others have fixed end target dates, and some occur every 5 years such as updates to Oregon's NPS Program Management Plan and a 5-Year Bureau of Land Management (BLM)/United States Forest Service (USFS)/DEQ MOU progress report http://www.deq.state.or.us/wq/nonpoint/docs/5YearProgRepFinal201003.pdf and recommendations for revisions/updates to the MOUs.

Some example annual milestones include developing annual section 319 grant work plans, implementing projects in a certain number of high priority impaired watersheds, and delivering a certain number of WQ-10 success stories. Progress on all of these milestones can be found in Oregon's NPS Annual Report (http://www.deq.state.or.us/wq/nonpoint/reports.htm) submitted to EPA annually as a requirement of Section 319(h) (8) & (11) of the federal Clean Water Act (33 USC 1329).
The NPS Management Program is based on a combination of the following state and federal laws, local ordinances and collaboration efforts as shown in the following figure:

OREGON DEQ WATER QUALITY

Figure 1: Decisions and Actions Related to Planning and Activities



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Section 319 of the federal Clean Water Act requires states to have NPS pollution management programs based on assessments of the amounts and origins of NPS pollution in the state. The State of Oregon's NPS Management Program relies on a combination of state and federal laws, tribal nations, local ordinances, and coordinates with several state agencies for its implementation. Key agencies for NPS sectors are Oregon's Departments of Forestry and Agriculture. ODA implements the Agriculture Water Quality Management Act and oversees agriculture and rural residential land uses.

ODF implements the State Forests Management Plan and Forest Practices Act and oversees forestry activity on nonfederal forest and rangelands. DEQ also works with counties and municipalities to promote integration of local NPS efforts. These agencies work in cooperation with DEQ to protect and restore waters of the state affected by NPS pollution.

Other agencies that also have rules and regulations that help in controlling, reducing, and treating NPS pollution are the Oregon Department of Land and Conservation Development (DLCD) and the Department of State Lands (DSL). The DLCD implements the State of Oregon land use planning laws that require each city and county to adopt comprehensive plans and land use regulations that are consistent with statewide goals.

Environmentally sensitive areas such as wetlands, riparian areas, and hazard areas such as steep slopes and floodplains are addressed by the statewide land use planning goals. Local communities are expected and in some cases required to adopt development ordinances such as riparian and wetland protection, and manage development in hazard prone areas to prevent loss of life and property (e.g., floodplains, steep slopes, earthquake prone areas ordinances, etc.). DLCD also administers the state's Coastal Zone Management Program and coordinates with DEQ and other state agencies to implement the state's Coastal Nonpoint Pollution Control Program.

The DSL implements the Oregon Removal-Fill Law (ORS 196.795-990). This law requires projects that would involve the removal or fill of material in waters of the state to obtain a permit from DSL. The purpose of the law is to protect public navigation, fishery, and recreational uses of the waters. "Waters of the State" are defined as "natural waterways including all tidal and non tidal bays, intermittent streams, constantly flowing streams, lakes, wetlands and other bodies of water in this state, navigable and non-navigable, including that portion of the Pacific Ocean that is in the boundaries of this state". The law applies to all landowners, whether private individuals or public agencies.

DEQ has also been working with staff from the Oregon Water Enhancement Board (OWEB), Natural Resources Conservation Service (NRCS), and other funding entities to prioritize and coordinate the state's efforts to address nonpoint sources of pollution. DEQ coordinates the 319 NPS grant proposals with OWEB and Watershed Oregon Councils.

OWEB has the Oregon Watershed Restoration Inventory (OWRI) http://www.oregon.gov/OWEB/monitor/Pages/owri.aspx includes completed watershed restoration projects funded by OWEB grants, USFS and BLM, private landowners, and 319 Grant dollars at a subbasins scale. Some NRCS program funds are sometimes used as match for OWEB grants and are included in this database. NRCS data, available at the subbasins scale through Cooperative Agreements includes NRCS funded projects that have been implemented within a given year at a subbasins scale. NRCS and OWEB categorize practices differently, so there is a need to complete a practice crosswalk between these agencies. DEQ is beginning to use data in OWRI for tracking and reporting on restoration activities that are expected to reduce NPS pollution. This information will be reported in the Oregon NPS Pollution Program Annual Reports.

BLM and the USFS coordinate restoration and monitoring efforts with state, federal, and local groups. This includes fish and wildlife agencies, Oregon Watershed Councils, environmental groups, timber companies, Tribes, Soil and Water Conservation Districts, DEQ, EPA, and OWEB. Specifically, the agencies provide staff for technical review of Oregon Watershed Enhancement Board (OWEB) grant proposals that include the Oregon Watershed Councils and the Soil and Water Conservation District submissions. In addition, BLM and USFS are represented on the OWEB Board. The agencies support the Watershed Council Consortium that brings Oregon Watershed Council coordinators together on an annual basis.

The agencies also contribute through water quality planning, projects, and implementation of the Governor's Oregon Plan for Salmon and Watersheds, 1997, Coastal Salmon Restoration Initiative (http://egov.oregon.gov/OPSW/archives/archived.shtml#Anchor-Plan).

3.2 Oregon's NPS Plan Goals, Action/Requirements, Milestones and Timeframes for implementing Oregon's NPS Plan Elements.

DEQ is committed to continual improvement in coordination between the various DEQ Water Quality Programs and projects including NPS, TMDLs, Integrated Report, Source Water Protection, Groundwater, Clean Water State Revolving Fund, and 319 Project Grants. Coordination among agencies is evidenced by the successful implementation of on-the-ground restoration projects with funding through many opportunities including agency base funds, partnerships through OWEB, watershed councils, and 319 Grant funded projects.

The following Table 1 is Oregon's NPS Plan Goals, Action/Requirements, Milestones and Timeframes for implementing Oregon's NPS Plan elements. These key elements are used to track and report on administrative outputs, overall program goals, and planned actions over the next five years. The table is organized by the program plan contents.

DEQ will report on progress made on each of these actions through the Oregon DEQ NPS Annual Report submitted to EPA Region 10. This is one of the key documents used by EPA to determine whether Oregon has made satisfactory progress in its NPS program. EPA's determination of satisfactory progress is required for Oregon to receive annual 319 grant funding from EPA. The actions and priorities to achieve the goals and objectives described in the NPS MP are summarized in Table 1.

Table 1: **Oregon NPS Management Plan Actions/Requirements, Priorities, and Output/Action.**

GOALS	ACTION/REQUIREMENT	OUTPUT/ACTION	TIME FRAME
	NPS PLANS		
Update NPS MP every 5 years	Update Oregon's NPS Plan that describes how the state's NPS management program achieves water quality standards and TMDL load allocations through restoration and protection.	DEQ issues and submits updated (2014) Oregon NPS Plan to EPA Region 10 for review	2014 to 2019
Implement NPS MP	Implement the NPS MP to achieve the NPS Program goals and priorities.	Various milestones as listed in this Table	2014 to 2018
Issue NPS Annual Report	The NPS Annual Report describes the progress in implementing the NPS MP and achieving the NPS Program goals and objectives.	DEQ issues and submits annually to EPA.	2014 to 2018
Complete the Coastal Nonpoint Pollution Control Program	*Submit to EPA and NOAA a plan for achieving:* • *Additional Management Measures for Forestry, as needed, in response to federal comments on the state's strategy*	DEQ/DLCD works with the other State of Oregon agencies for submittal to EPA and NOAA	2015-16

319 GRANT PROGRAM			
319 Grant Funding DEQ NPS Program	DEQ uses 319 Grant funds to implement DEQ activities that achieve the NPS Program goals and priorities.	DEQ NPS Program Funding	2014-2018
319 Grant Funding for pass through Grants	319 Grant funding of projects that address Oregon's NPS Program priorities.	Continue funding NPS Program high priority projects with 319 Grants	2014-2018
Priority projects to receive 319 Grant Funding for pass through Grants	Region and HQ staff identifies and rank projects to receive pass through 319 grant funds for addressing NPS Program priorities.	List of priority projects in the 319 Grant request for proposals	2014-2018
319 Grant RFPs	Continue process improvement of 319 Grant RFPs for timely and efficient issuance. Provide training to DEQ NPS and TMDL staff to increase efficiency and timeliness.	DEQ Provides Timely And Efficient Issuance of 319 Grant RFPs.	2014-2018
319 Grant Administration	Provide guidance to DEQ staff and grant recipients for grant administration. Guidance includes, planning, contracting, invoicing and reporting.	DEQ Develops, Receives EPA Review and Issues 319 Grant Administration Guidance	2015
GRTS	Continue to report 319 Grant Data into GRTS; Meet annual reporting deadlines.	Meet EPA timeline for GRTS Reporting	2014-2018
NPS Implementation	Collect information from NRCS, USFS, BLM and OWEB on annual NPS project implementation activities including 319 Grant projects.	Include information in the DEQ NPS Annual Report	2014-2018
DEQ's NPS Program Website	DEQ's NPS Program Website updated as needed	DEQ NPS Program website updates at least annually to reflect current RFP and NPS Annual Report and other documents as needed.	2014-2018
WATERSHED APPROACH BASIN REPORTS			
Watershed Basin Status and Action Plans	Develop a template for Watershed Basin Status and Action Plans. DEQ provides training to DEQ NPS and TMDL staff on its use.	Make Watershed Basin Status and Action Plans Template available to DEQ staff	2015
Watershed Basin Status and Action Plans	Develop Watershed Basin Status and Action Plans within identified priority watersheds that identify priority problems and waters.	DEQ issues Watershed Basin Status and Action Plans	2014-2018

WATERSHED APPROACH BASIN REPORTS (Cont.)			
EPA's Nine Key Elements	Report on how TMDL Implementation Plans and Watershed Basin Status and Action Plans meet EPA's Nine Key Elements.	Include information in the DEQ NPS Annual Report	2014-2018
Volunteer Monitoring	Volunteer Monitoring Watersheds Sample Plans Are Developed.	QAPPs and SAPs reviewed by DEQ	2014-2018
BASIN SPECIFIC PROJECTS			
Basin Specific Activities	Basin specific activities and projects will be prioritized through the various TMDL/NPS Program processes.	Basin specific activities reported in DEQ's NPS Annual Report	2014-2018
TMDLS AND OTHER WQ PROGRAMS			
TMDL Guidance or IMD	Develop TMDL Guidance or IMD on how to produce work plans that identify data needs and how to design a monitoring study.	TMDL Data Needs and Monitoring Study Produces Implementation Ready TMDLs and WQMPs	2015
Technical Assistance	DEQ headquarters and region staff will provide technical assistance to DMAs, DEQ staff, other local, state, and federal staff on TMDL development and TMDL implementation efforts.	DEQ Staff Provide TMDL Technical Assistance to Ensure TMDL Load Allocations and Water Quality Standards Are Met	2014-2018
TMDL IMPLEMENTATION			
TMDL Implementation Plans	Work with DMAs to develop and implement TMDL Implementation Plans (including annual reports) as described in the TMDL/WQMP.	DMAs Meet TMDL/WQMP responsibilities	2014-2018
TMDL Implementation Plans	DEQ reviews TMDL Implementation Plan annual reports.	DMAs Meet TMDL/WQMP responsibilities	2014-2018
TMDL Implementation Plan Guidance	Develop a process for DEQ staff to review TMDLs and TMDL Implementation Plans every 5 Years.	DMAs Meet TMDL/WQMP responsibilities as identified in the document describing the TMDL Implementation Plan Guidance.	2015
TMDL & NPS Implementation	Develop a spreadsheet and process for DEQ to track and report on landscape condition for achieving TMDL implementation timelines and milestones including water quality status and trends.	Information included in the DEQ NPS Annual Report	2014
TMDL IMPLEMENTATION (Cont.)			

Reasonable Assurance	Conduct analysis during TMDL/WQMP development to provide reasonable assurance and guide implementation for TMDLs.	Information included in the DEQ TMDL Implementation Plan Guidance and/or DEQ NPS Annual Report	2014-2018
TOXICS			
Water Quality Pesticide Management Team and Pesticide Stewardship Partnerships (PSPs)	Continue to work with the WQ-PMT and implement programs to address water quality pesticide issues including the PSP projects.	Reduce, where needed, instream pesticide concentrations	2014-2018
Public Water System (PWS)	Continue developing contaminant-specific reduction strategies for public water system use, such as for nitrates and pesticides from urban and rural residential lands.	Reduce or protect PWSs from NPSs of pollution	2014-2018
AGRICULTURE			
Landscape Condition for TMDLs and WQS	Document definition of system potential and site capable vegetation.	Coordination between, and effective implementation of the TMDL/NPS Programs and Agricultural Water Quality Management Program	2014
Landscape Condition for TMDLs and WQS	Conduct effective shade assessments for evaluating implementation to achieve TMDL/WQS goals under area rules and plan.	Coordination between, and effective implementation of, the TMDL/NPS Programs and Agricultural Water Quality Management Program	2014
Biennial Review of Area Rule and Plan	Participate in ODA's biennial review process by providing water quality status and trends and landscape condition in priority areas.	DEQ provides input during the Area Rule and Plan revision	2014-2018
Update DEQ Guidance for Biennial Reviews	Collaborate with ODA for updating DEQ guidance for providing comment during ODA's Biennial review Process.	Complete updating DEQ guidance by end of 2015.	2015
AGRICULTURE (Cont.)			
Grant Funding	Participate in local grant funding process to direct resources to high priority agricultural issues.	Coordination between, and effective implementation of, the TMDL/NPS Programs and Agricultural Management Water Quality Program	2014-2018

ODA Area Rule Compliance	Work with ODA to prioritize and help develop assessment methodologies for addressing temperature, sediment and sedimentation, bacteria, nutrients, and pesticides.	Coordination between, and effective implementation of, the TMDL/NPS Programs and Agricultural Management Water Quality Program	2014-2018
FORESTRY			
FPA Evaluation	Participate with ODF to jointly develop evaluation methods and study designs (with funding sources) to address unanswered monitoring questions from the Private Forests Monitoring Program Strategic Plan http://www.oregon.gov/odf/privateforests/docs/monitoringstrategicplan.pdf	Private and State Forestlands Meet TMDL Load Allocations and Water Quality Standards	2015
Forest Practices Act Rules	Participate in Forest Practices Act rule analysis and concept development for water quality issues and revisions to management plans for state forests.	Private and State Forestlands Meet TMDL Load Allocations and Water Quality Standards	2014
ODF/DEQ MOA	Participate with ODF on revising the current MOA between ODF and DEQ.	Revision to the 1998 DEQ/ODF MOA	2015
URBAN/ RURAL RESIDENTIAL LANDS			
TMDL and Stormwater	Development of DEQ guidance to improve and establish consistent coordination between TMDL and stormwater programs.	Finalize guidance and provide training to DEQ staff and urban DMAs	2014 - 2018
FEDERAL LANDS			
USFS Annual Status Report	The USFS will submit to DEQ a Statewide Annual Status Report to meet the MOU and any DEQ TMDL reporting requirements.	USFS submittal of the document to DEQ	2014 - 2018
USFS/DEQ 5-Year Progress Report	The 2013 USFS/DEQ MOU requires the preparation of a USFS/ DEQ 5-Year MOU Progress Report.	Document Progress In Implementing MOU Actions and Update MOUs	2018
FEDERAL LANDS (Cont.)			
BLM Annual Status Report	The BLM will submit to DEQ a Statewide Annual Status Report to meet the MOU and any DEQ TMDL reporting requirements.	BLM submittal of the document to DEQ	2014 - 2018
BLM 5-Year Progress Report	The 2011 BLM/DEQ MOU requires the preparation of a BLM/ DEQ 5-Year MOU Progress Report.	Document Progress In Implementing MOU Actions and Update MOUs	2016

Coordination of USFS and BLM with DEQ	The USFS and BLM will coordinate with DEQ for establishing priorities, strategies, and funding using a watershed approach to protect and restore water quality on BLM and USFS administered lands, this will include WQRPs.	Annual check in on BLM and USFS progress towards meeting TMDL Load Allocations and Water Quality Standards	2014 - 2018
USFS BMPs	As needed, USFS will develop Oregon specific land use activities BMPs and monitor implementation and effectiveness of BMPs following the USDA National Best Management Practices for Water Quality national protocols. http://www.fs.fed.us/biology/resources/pubs/watershed/index.html.	Annual check in on USFS progress towards meeting TMDL Load Allocations and Water Quality Standards	2014 - 2018
BLM BMPs	BLM develops Oregon specific land use activities BMPs, monitor implementation and effectiveness of BMPs, and submits to DEQ for review and comment.	Annual check in on BLM progress towards meeting TMDL Load Allocations and Water Quality Standards	2014 - 2018
Pre-TMDLs and Post-TMDL	The USFS and BLM will use the Forest Service and Bureau of Land Management Protocol for Addressing Clean Water Act Section 303(d) Listed Waters, May 1999, Version 2.0.	Annual check in on USFS and BLM progress towards meeting TMDL Load Allocations and Water Quality Standards	2014 - 2018
Agricultural Activities	The USFS and BLM will develop and implement a programmatic strategy to address agricultural activities on federal lands, such as grazing.	Annual check in on USFS and BLM progress towards meeting TMDL Load Allocations and Water Quality Standards	2014 - 2018

3.3 Partnerships

Responsibility for managing water resources in Oregon is shared among several partners that work together in an active and effective partnership to protect state waters. One of Oregon's primary goals is to strengthen its working partnerships and linkages to appropriate state, interstate, tribal, regional, and local entities (including conservation districts), private sector groups, and citizens groups,.

3.2.1 Local Partners

- Cities (League of Oregon Cities) http://www.orcities.org/
- Counties (Association of Oregon Counties) http://www.aocweb.org/aoc/default.aspx
- Watershed Councils (Network of Oregon Watershed Councils) http://oregonwatersheds.org/
- Soil and Water Conservation Districts (Oregon Association of Conservation Districts) http://oacd.org/
- Environmental Groups (such as Oregon Environmental Council, Audubon Society, Sierra Club, NW Environmental Advocates, Friends of Rivers, Streams, Watersheds, and Wetlands, etc.)
- Citizens Groups such neighborhood associations, and others, and
- Private Sector Groups, such as Association of Loggers, Agricultural Groups, Association of Pulp and Paper Industries, Association of Industries (AOI), etc.

3.2.2 State Agencies

- Oregon Department of Agriculture (ODA) www.oda.state.or.us
- Oregon Department of Forestry (ODF) www.odf.state.or.us
- Oregon Health Authority (OHA) http://www.oregon.gov/oha/Pages/index.aspx
- Oregon Parks and Recreation Department (OPRD) http://egov.oregon.gov/OPRD/index.shtml
- Oregon Department of State Lands (DSL) http://www.oregon.gov/DSL/index.shtml
- Oregon Department of Geology and Mineral Industries (DOGAMI) http://egov.oregon.gov/DOGAMI/index.shtml
- Oregon State Marine Board (OSMB) (Boat Ramps and Other Access Points) (Marine Board) http://www.boatoregon.com/
- Oregon Watershed Enhancement Board (OWEB) www.oweb.state.or.us
- Department of Fish and Wildlife (ODFW) www.dfw.state.or.us
- Department of Land, Conservation and Development (DLCD) www.lcd.state.or.us
- Department of Oregon Business Development (OBD) http://www.oregon4biz.com/
- Department of Transportation (ODOT) http://egov.oregon.gov/ODOT/index.shtml
- Oregon Water Resources Department (OWRD) http://www.oregon.gov/owrd/Pages/index.aspx
- Districts can do a better job fulfilling their mission when they partner with a variety of different groups, such as county governments, watershed councils, and state and federal agencies.
- Oregon Department of Agriculture – Natural Resource Division (ODA – NRD)
  Management of natural resource programs in the state and administrative oversight of Soil and Water Conservation Districts
- Soil and Water Conservation Commission (SWCC)
  Provides coordination between Oregon's Soil & Water Conservation Districts (SWCD) and the Department of Agriculture
- Oregon Conservation Education and Assistance Network (OCEAN)
  Delivers programming for all SWCD employees through training, education, and assistance
- National Association of Conservation Districts (NACD)
  National voice for nearly 3000 SWCD's and State Associations

- Natural Resources Conservation Service (NRCS)
  Primary federal agency providing technical assistance to SWCD's and private landowners
- Resource Conservation and Development (RC&D)
  Partners with SWCD's to identify and solve community, human, economic and environmental problems
- Farm Service Agency (FSA)
  Provides financial and other assistance to agricultural producers served by SWCD's
- Oregon Watershed Enhancement Board (OWEB)
  Restores, maintains and enhances Oregon watersheds in order to protect the economic and social well being of the state.

3.2.3 Federal Agencies

- U.S. Environmental Protection Agency (EPA) http://www2.epa.gov/aboutepa/epa-oregon or http://www.epa.gov/
- U.S. Forest Service (USFS) http://www.fs.fed.us/r6/water/
- U.S. Bureau of Land Management (BLM) http://www.blm.gov/or/st/en.html
- U.S. Fish and Wildlife Service (USFWS) http://www.fws.gov/oregonfwo/
- U.S. National Marine Fisheries Service (NMFS) http://www.westcoast.fisheries.noaa.gov/index.html
- US Army Corps of Engineers (USACE) http://www.nwp.usace.army.mil/
- U.S. Bureau of Reclamation (USBR) http://www.usbr.gov/pn/
- U.S. National Resource Conservation Services (NRCS) http://www.nrcs.usda.gov/wps/portal/nrcs/site/or/home/
- U.S. Farm Service Agency (FSA) http://www.fsa.usda.gov/FSA/stateoffapp?mystate=or&area=home&subject=landing&topic=landing

3.2.4 Federally Recognized Tribes of Oregon

- Burns Paiute Tribe http://www.burnspaiute-nsn.gov/
- Confederated Tribes of Coos, Lower Umpqua, and Siuslaw http://ctclusi.org/
- Confederated Tribes of the Grand Ronde Community of Oregon http://www.grandronde.org/ /
- Confederated Tribes of Siletz Indians of Oregon http://ctsi.nsn.us/
- Confederated Tribes of the Umatilla Indian Reservation http://ctuir.org/
- Confederated Tribes of Warm Springs Reservation of Oregon http://www.warmsprings.com/
- Coquille Indian Tribe http://www.coquilletribe.org/
- Cow Creek Band of the Umpqua Tribe http://www.cowcreek.com/
- Klamath Tribes http://www.klamathtribes.org/

3.3 Tribal Agency Coordination

Congress amended the Clean Water Act (CWA) in 1987 to establish the section 319 Nonpoint Source Management Program in recognition of the need for greater federal leadership to help focus state, tribal, and local nonpoint source efforts. Under section 319, states, territories, and Indian tribes receive grant money that supports a wide variety of activities including technical assistance, financial assistance, education, training, technology transfer, demonstration projects, and monitoring to assess the success of implementing management practices that address pollution from nonpoint sources.

Nine tribes have approved nonpoint source programs. DEQ has government-to-government relationships with the nine federally-recognized tribal governments Oregon DEQ is committed to the principles of environmental justice (EJ) and ensuring that the agency's actions address the interests of Oregon communities, including minority, low-income and other traditionally underrepresented communities, as much as state and federal laws allow. EJ Screen is

a screening and mapping tool that provides EPA with a nationally consistent dataset and methodology for calculating environmental justices which can be used for highlighting places that may be candidates for further review, analysis, or outreach as the agency develops programs, policies and other activities.

Once EPA's EJ Screen is available publically, DEQ will develop and implement a plan to ensure appropriate outreach is conducted associated with DEQ decisions in communities that are identified as having potential environmental justice issues. This plan will outline enhanced public participation actions, consider limited English proficiency, traditional or cultural needs, and ensure early engagement, and information exchanges. The EJ Screen will be incorporated into the NPS Management Plan once DEQ has completed this work and the NPS Management Plan is updated.

Ultimately, the plan will be implemented by and tailored to all of DEQ's environmental programs (including the Nonpoint Source Program) related to adopting rules, making permit decisions, awarding grants and loans, overseeing cleanup activities, and conducting enforcement actions. DEQ will also use EJ Screen to determine how best to incorporate decisions and priorities regarding nonpoint source water pollution impacts to underserved communities in Oregon.

3.4 DEQ Memorandum of Understandings and Memorandum of Agreements

DEQ has memorandum of understandings or memorandum of agreements with many partners that identify the specific roles and responsibilities to either develop and/or implement water quality programs to jointly meet water quality standards or TMDL load allocations. These include but are not limited to the following:

State Agencies

DEQ/ODA – *2012 Memorandum of Understanding Between Oregon Department of Agriculture and Oregon Department of Environmental Quality Relating to Agricultural Nonpoint Source Pollution.* http://www.deq.state.or.us/wq/nonpoint/docs/ODADEQMOA2012.pdf. The MOA is intended to assist DEQ and ODA in collaborative efforts to meet their legal responsibilities related to agricultural NPS pollution, and to help ensure, to the maximum extent practicable, that agricultural activities in compliance with Area Rules do not cause or contribute to exceedance of water quality standards and that with implementation of Area Plans TMDL allocations are achieved in agricultural areas.

DEQ/ODOT – *2011 Memorandum of Understanding between Oregon Department of Transportation (ODOT) and Oregon Department of Environmental Quality (DEQ)* http://www.deq.state.or.us/wq/pubs/igas/ODOTMOU2011.pdf**.** The MOU is entered into to protect water quality while efficently implementing ODOT and DEQ missions.

DEQ/EPA – *2010 Clean Water State Revolving Loan Fund Operating Agreement between the Oregon Department of Environmental Quality and U.S. Environmental Protection Agency Region 10.* http://www.deq.state.or.us/wq/pubs/igas/CWSRFopAgrmt20100909.pdf . The purpose of the Clean Water State Revolving Loan Fund (CWSRF) is to provide financial assistance for the construction, replacement or improvement of wastewater treatment works that are publically owned, for the implementation of a management program for nonpoint sources of water pollution, and for the development and implementation of a comprehensive conservation and management plan for estuaries designated under the national estuary program.

DEQ/ODF/ODA/DLCD/ODFW/OPRD – *2006 Memorandum Of Understanding Among Oregon Department of Forestry (ODF),Oregon Department of Agriculture (ODA), Oregon Division of State Lands (DSL), Oregon Department of Land Conservation and Development (DLCD), Oregon Department of Fish and Wildlife (ODFW), Oregon Parks and Recreation Department (OPRD), and Oregon Department of Environmental Quality (DEQ).* *E:\WINWORD\Forestry and Forestland Conversion\Conversions MOA Final 2006.doc* The agencies have common interests and responsibilities in protecting waters of the state and other natural resources during the conversion of forestland to non-forest uses.

DEQ/ODF — *1998 Memorandum of Understanding between Oregon Department of Environmental Quality and the Oregon State Department of Forestry* http://www.deq.state.or.us/wq/nonpoint/docs/MOUdeqODF.pdf
The MOA is intended to assist DEQ and ODF in collaborative efforts to meet their legal responsibilities related to NPS pollution from non-federal forestlands, and to help ensure to the maximum extent practicable, that forestry activities in compliance with the Forest Practices Act do not cause or contribute to exceedances of water quality standards and that with implementation of the Forest Practices Act TMDL allocations are achieved on non-federal forestlands.

Federal Agencies

DEQ/NRCS/OWEB/ODA – *2010 Memorandum Of Understanding Among U.S. Department Of Agriculture-Natural Resource Conservation Service And Oregon Watershed Enhancement Board And Oregon Department Of Environmental Quality* http://www.oregon.gov/OWEB/docs/board/2010-09/itemk_att_a.pdf USDA-NRCS, OWEB and DEQ will work together to share information and technical expertise to monitor, evaluate and report the effectiveness of cumulative conservation and restoration actions in achieving natural resource outcomes focused on water quality and water quantity.

DEQ/USFS – *20132 Memorandum of Understanding between U.S. Department of Agriculture-Forest Service's Pacific Northwest Region and State of Oregon Department of Environmental Quality to meet state and federal water quality rules and regulations was completed.*
http://www.deq.state.or.us/wq/nonpoint/docs/USFSDEQWQMU02.pdf. This MOU documents the USFS and DEQ strategy for managing and controlling point and NPS water pollution from USFS-managed lands in the State of Oregon. This MOU sets out the procedures for the USFS and DEQ to cooperatively implement State and Federal water quality rules and regulations. The physical, chemical, and biological conditions of "Waters of the State" that support beneficial uses (defined in Oregon Revised Statute (ORS), Chapter 468B — Water Quality and Oregon Administrative Rules (OAR), Division 41) will be protected, restored, and maintained by working in a proactive, collaborative, and adaptive manner through this MOU.

DEQ/BLM – *2011 Memorandum of Understanding between United States Department of The Interior Bureau of Land Management and State of Oregon Department of Environmental Quality To Meet State and Federal Water Quality Rules and Regulations was completed.*
http://www.deq.state.or.us/wq/nonpoint/docs/DEQBLMMOU20110401.pdf.
This MOU documents the BLM and DEQ strategy for managing and controlling point and NPS water pollution from USFS-managed lands in the State of Oregon. This MOU sets out the procedures for the BLM and DEQ to cooperatively implement State and Federal water quality rules and regulations. The physical, chemical, and biological conditions of "Waters of the State" that support beneficial uses (defined in Oregon Revised Statute (ORS), Chapter 468B — Water Quality and Oregon Administrative Rules (OAR), Division 41) will be protected, restored, and maintained by working in a proactive, collaborative, and adaptive manner through this MOU.

Idaho DEQ, Washington DOE, Oregon DEQ, EPA Region X, and the Columbia Basin Tribes – *2000 Memorandum of Agreement Columbia/Snake Rivers Total Maximum Daily Load for Total Dissolved Gas and Temperature.* http://www.deq.state.or.us/wq/tmdls/docs/columbiariver/tdg/tmdlmoa.pdf. The purpose of this MOA is to document a mutual understanding on the approach and roles among Idaho DEQ, Washington DOE, Oregon DEQ, EPA Region X, and the Columbia Basin Tribes to complete a total dissolved gas and temperature TMDL for the mainstem Columbia and Snake Rivers to River Mile 188. Expected roles of non-signatory agencies are also included. The environmental purpose of this effort is to understand the sources of total dissolved gas and temperature loadings and to allocate those loadings based on numeric water quality criteria in order to meet water quality standards. The Total Dissolved Gas TMDL was completed and issued by the states of Oregon and Washington and approved by EPA in 2002. EPA has not yet completed the Columbia River temperature TMDL.

3.5 Baseline Regulatory Statutes

The NPS Management Program relies on the following State of Oregon and federal rules and regulations:

- Federal Clean Water Act http://www.epw.senate.gov/water.pdf
- Federal Safe Drinking Water Act https://webinsight.arielresearch.com/ArielFT/NAdoc/law/L00072.htm
- EPA National Estuary Program http://water.epa.gov/type/oceb/nep/index.cfm#tabs-2
- CZARA Section 6217 Coastal NPS Control Program http://coastalmanagement.noaa.gov/about/czma.html#section6217
- Oregon Revised Statute 468B http://www.deq.state.or.us/wq/sb737/docs/LegRpAtt120100601.pdf
- Oregon Water Quality Standards http://www.deq.state.or.us/wq/standards/standards.htm
- Oregon TMDL Rule http://arcweb.sos.state.or.us/pages/rules/oars_300/oar_340/340_042.html
- Oregon Forest Practices Act http://arcweb.sos.state.or.us/pages/rules/oars_600/oar_629/629_670.html
- Oregon Agricultural Water Quality Management Act http://arcweb.sos.state.or.us/pages/rules/oars_600/oar_603/603_095.html
- Oregon State Land Use Planning Program, specifically Goal 5 (protection of riparian and wetlands) and Goal 6 (protection of air, water and land resources), Goal 16 (protection of estuaries classified as "natural" or "conservation", Goal 17 (protection and management of coastal shore lands), (Goal 19, Ocean Resources). http://arcweb.sos.state.or.us/pages/rules/oars_600/oar_660/660_023.html
- Oregon Groundwater Quality Protection rules http://arcweb.sos.state.or.us/pages/rules/oars_300/oar_340/340_040.html

3.5.1 Water Quality Standards

Establishing water quality standards for the state of Oregon is at the core of DEQ's water quality activities. Standards include beneficial uses of water, such as drinking water, aquatic life, recreation, etc., http://www.deq.state.or.us/wq/standards/uses.htm and the water quality criteria designed to protect those uses. The Water Quality Program is implemented to protect and restore water quality to meet those standards, including evaluating whether Oregon's water quality standards http://www.deq.state.or.us/wq/standards/standards.htm are being met through the development of the biennial Integrated Report http://www.deq.state.or.us/wq/assessment/2010Report.htm , which includes the section 303(d) list of impaired waters and the section 305(b) report describing the status of Oregon's surface water quality.

The activities include:

- Conduct triennial standards reviews to establish and update scientifically based water quality standards and related policies.
- Develop and maintain internal directives for and provide guidance to regional and headquarters staff on implementation of water quality standards in various water programs.
- Identify water bodies not meeting water quality standards and develop Integrated Reports that are linked to the Watershed Approach Basin Reports.
- Create a process to develop Integrated Report that complements and supports basin planning efforts: Develop guidance for Antidegradation for nonpoint sources.
- Revise turbidity standard to clarify implementation of the standard and better protection of beneficial uses
- Explore options for protecting water bodies from impairment due to nutrients. If needed, develop nutrient standard. Ensure that water quality assessment and basin planning efforts provide a comprehensive evaluation of water quality and other environmental information resulting in basin-based water quality status and action plans. This includes developing high priority waters to be protected. DEQ is committed to continue taking this basin planning approach.
- Work with our stakeholders to promote development of integrated plans based upon EPA's integrated planning framework. Guided by DEQ's basin assessments and local community needs and priorities, implementation will allow communities to address Clean Water and Safe Drinking Water Act program requirements that yield the highest environmental and public health benefits with a commitment to meet all regulatory obligations.

At least once every three years, Oregon is required to review its water quality standards and submit any new or revised standard to EPA for review and approval. The Oregon water quality standards, including the narrative and

numeric criteria, are contained in Chapter 340, Division 41 of the Oregon Administrative Rules, http://arcweb.sos.state.or.us/pages/rules/oars_300/oar_340/340_041.html. The associated tables and figures and additional information may be found on DEQ's water quality standards web page at: http://www.deq.state.or.us/wq/standards/standards.htm.

3.5.2 Integrated Report [303(d) and 305(b)]

Every two years, DEQ is required to assess water quality and report to EPA on the condition of Oregon's waters. DEQ prepares an Integrated Report http://www.deq.state.or.us/wq/assessment/assessment.htm that meets the requirements of the federal CWA for Section 305(b) and Section 303(d).

- Federal CWA Section 305(b) requires a report on the overall condition of Oregon's waters.
- Federal CWA Section 303(d) requires identifying waters that do not meet water quality standards and where a TMDL pollutant load limit needs to be developed.

The Integrated Report includes an assessment of each water body where data are available, a comparison of water quality information to Oregon's water quality standards, and identification of the Section 303(d) list of water quality limited waters needing a TMDL. DEQ uses the list of impaired waters to set priorities for TMDL development. DEQ's monitoring provides data that is collected to support decisions and for implementing the NPS Management Program.

The Integrated Report provides a comprehensive evaluation of water quality throughout the state. The NPS Management Program uses information from the Integrated Report and the 303(d) list of impaired waters to identify the waters and watersheds where pollutants are likely related to nonpoint sources in the watersheds. DEQ then can focus and prioritize 319 program activities to protect, prevent, control, and eliminate NPS pollution.

The Integrated Report information can also complement and support basin-planning efforts, development of basin-based water quality status and action plans, and assist in allocating resources between impaired and unimpaired waters.

3.5.3 Total Maximum Daily Loads (TMDLs) and Water Quality Management Plans

The federal Clean Water Act requires that water pollutant reduction plans, called TMDLs, be developed for water bodies that are listed in Category 5 of the Integrated Report (303(d) List). TMDLs describe the maximum amount of pollutants that can enter the river or stream and still meet water quality standards.

TMDLs take into account the pollution from all sources, including discharges from industry and sewage treatment facilities; runoff from farms, forests and urban areas; and natural sources. TMDLs include a margin of safety to account for uncertainty. TMDLs may include a reserve capacity that allows for future discharges to a river or stream. DEQ typically develops TMDLs on a watershed, subbasins, or basin level and occasionally at the reach level depending on the type and extent of impairments.

The Water Quality Management Plan (WQMP) is the framework for TMDL implementation that is issued by Oregon along with the TMDL (OAR 340-042-0040(l)). The WQMP lays out the strategies for TMDL implementation and serves as a multi-sector plan and provides the reasonable assurance that the TMDL will be implemented and allocations achieved.

Process for TMDL and WQMP Development:

Review existing data and monitor to determine the type and amount of pollutants that are causing water quality impairments. The review and monitoring program attempts to determine how much of the pollutants:

- Comes from point sources and nonpoint sources, and include natural sources such as wildlife.
- Use techniques such as water quality or watershed modeling to determine what effect the pollution is

having on the stream or river and how much of the pollutant can be discharged and still meet water quality standards.

- Use this information to establish waste load allocations for point sources (the amount of pollutant the permitted source is allowed to discharge which is incorporated into NPDES permits) and load allocations for nonpoint sources, which are, implemented through the WQMP and TMDL Implementation Plans, Agricultural Area Rules and Plans, Forest Practices Act, Water Quality Restoration Plans, and other planning documents.
- Typically, DEQ develops TMDLs on a basin, subbasins, or watershed scale (generally on a third field US Geological Survey Hydrologic Unit Code or smaller).
- Typically, program staff conducts all facets of work in collecting, analyzing, and presenting results. Staff will also perform public and stakeholder outreach to ensure input when decisions are being made. The combination of outreach and development provides for the transition from development of loading capacity and allocations to implementation in permits and planning documents, such as TMDL Implementation Plans.

TMDL Wasteload Allocations are implemented through effluent limits in permits for point source discharges, and NPS Load Allocations are implemented by DMAs and other designated sources.

DEQ staff actively implements TMDLs by:

- Revising industrial and municipal wastewater permits to incorporate WLAs into revised permit limits.
- Working with ODA staff to implement the Agricultural Water Quality Management Act to implement the TMDLs effectively on agricultural lands.
- Working with the ODF staff for implementation on state and private forestlands, through the Oregon Forest Practices Act and long-range management plans.
- Working with ODA and ODF to implement their programs to meet TMDL allocations.
- Assisting local governments identified as DMAs in developing TMDL Implementation Plans for urban and rural residential areas.
- Working with the USFS, BLM and other federal agencies on developing their implementation planning documents and implementing their programs for lands under their jurisdiction.

Under most circumstances, TMDL Implementation Plans for improved water quality rely on cooperation among landowners and land managers within a river basin. Local watershed councils, Soil and Water Conservation Districts, or other organizations will serve as community-based coordination points for these united efforts. Agencies and municipalities with jurisdiction over sources of NPS pollution and sources not covered by permit are required to submit TMDL Implementation Plans to DEQ. These plans describe actions that will be taken to reduce their contribution of the TMDL pollutant load.

In order for DEQ to better develop and implement TMDLs/WQMPs for nonpoint and point sources, DEQ will need to use these TMDL Program priorities:

- **Development**: Draft a guidance document for TMDL and WQMP development.
- **Development**: TMDLs will be developed to address the nonpoint source(s) in areas where land uses and land management are a source or potential source of the pollutant.
- **Development**: Provide better reasonable assurance during TMDL development process.
- **Implementation**: Work with DMAs to assure they are meeting TMDL priorities that address their responsibilities identified in the TMDL or WQMP.
- **Implementation**: Identify lead staff to work with sister agency DMAs to achieve consistency and efficiency.
- **Implementation**: Conduct additional analysis to provide better reasonable assurance and guide implementation for existing TMDLs that are identified as priorities.
- **Implementation**: Continue to build relationships with funding agencies and entities to direct funding toward high priority projects.
- **Implementation**: Align TMDL development source assessment, linkage analysis, and allocation methods

with WQMP development and TMDL implementation methods and priorities so that administrative outputs and landscape and water quality outcomes can be measured and tracked for reporting of program effectiveness.

- **Outreach and training**: Conduct outreach and training on the "Urban and Rural Residential DMAs

Guidance for Including Post - Construction Elements in TMDL Implementation Plans."

DEQ may include, as resources allow, the following information to support the load allocations specified in the TMDL: (1) an identification of total NPS existing loads and total NPS load reductions necessary to meet water quality standards, by source, sector, or category as data allows; (2) a detailed identification of the causes and sources of NPS pollution by source, sector, or category as data allows to be addressed in order to achieve the load reductions specified in the TMDL; and (3) an analysis of the NPS management measures by source, sector, or category as data allows expected to be implemented to achieve the necessary load reductions, with the recognition that adaptive management may be necessary during implementation.

3.6 Other Management Programs that Address NPS

Oregon's NPS Plan identifies the pollution management programs, strategies, and resources that are currently in place or that are needed to minimize or prevent NPS pollution effects. DEQ has the responsibility of overseeing and implementing the state's NPS Management Program by coordinating with many local, state, and federal agencies, tribes and other organizations throughout the State of Oregon. The NPS Management Plan describes the unified effort of many agencies and individuals and their various pollution control strategies that are currently taking place or are proposed for future implementation. There are several cross program and cross agency approaches used in Oregon for addressing NPSs, such as: Watershed Approach basin Reports; Pesticide Stewardship Partnerships; Water Quality Pesticide Management Team; Drinking Water Protection, Ground Water Management Areas; and Coastal Zone NPS Management Program.

3.6.1 Watershed Approach Basin Reports

DEQ coordinates its work to protect and improve Oregon's water by following the watershed approach. DEQ uses the term "watershed" to describe an area of land that contains related waterways. These watersheds may be traditional basins, areas that drain into a single waterway or an area that contains similar waterways, such as a group of coastal rivers.

Watershed Approach Basin Reports are in-depth assessments conducted by DEQ of the state's basins. These assessments take the form of local Water Quality Status and Action Plans, which describe water quality conditions and include recommendations for actions that DEQ and others who are interested in these basins can take to improve water quality. Where reports have been developed, DEQ has been able to use the action plans and basin priorities to determine how resources will be allocated.

The DEQ water quality program has increased its emphasis on the "watershed approach" as a way to better identify and address water quality issues in a basin or region. The watershed approach combines the expertise of DEQ's 17 water quality sub-programs to produce basin-based assessments that are data-driven and contain quantitative elements that describe all water quality conditions. This means that in some basins the pollutants identified as causing water quality issues includes additional (different) pollutants than that included on DEQ's 303(d) list or in a TMDL Water Quality Management Plan. This is one of the values of conducting a watershed approach.

DEQ develops the Watershed Approach Basin Reports that includes Water Quality Status and Action Plans with the help of local stakeholders, such as communities, watershed councils, Tribes, and conservation districts, as well as

local, state and federal agencies, to provide data and smart solutions to local water quality issues. The watershed approach allows opportunities for direct, interactive feedback between DEQ and its many stakeholders. LiDAR data is very useful for the NPS and TMDL programs because it provides high resolution surface and land cover elevations that can be used to improve our understanding and mapping of watershed characteristics and pollutant sources

The watershed approach framework is being used by DEQ to improve water quality throughout Oregon, protect drinking water, fish habitat, and water quality in general, which can also boost Oregon's economy. A clean and more dependable water supply is good for industry, promotes healthier commercial and recreational fisheries, and encourages tourism. Clean waterways also help ensure that Oregonians of all ages have safe places to swim and play.

Watershed Approach Basin Reports identify strategies for improving state waters on a geographic basis with the state's National Pollutant Discharge Elimination System (NPDES) permitting, assessment, Groundwater Management Area, and TMDL work aligned and prioritized according to the watersheds.

The watershed approach uses available information to identify water quality priorities and actions to protect or restore water quality. This Watershed Approach Basin Reports are used by DEQ to:

- Identify and address all water quality issues in a basin or region.
- Share its findings with affected stakeholders and residents, so all parties learn how to better manage our watersheds.
- Prioritize immediate and long-term actions that can be taken in a particular basin or watershed that have been identified through DEQ's Watershed Approach Basin Reports and Water Quality Status and Acton Plans.
- Encourage all involved to be flexible and open to new ways of solving problems (including voluntary collaboration where possible) to avoid duplication of efforts.
- Regularly assess the situation in each basin to determine in an outcome-based approach what is working and what is not.

DEQ plans to cover the state's major basins in the next few years and then re-visit each to mark progress and reassess how to deal with lingering water quality problems.

The DEQ Watershed Approach Basin Reports Water Quality Status and Acton Plans can be found at http://www.deq.state.or.us/wq/watershed/watershed.htm

3.6.2 Cross Program Efforts to Address Toxic Chemicals

DEQ developed a comprehensive, integrated approach to address toxic pollutants in the environment. An integrated approach is essential because these pollutants readily transfer from one environmental media to another (e.g., mercury can be released to the air, deposit on the land, and run off to the water). DEQ's cross-media toxics reduction strategy is meant to ensure that DEQ is addressing the problem of toxics in the environment in the most effective and efficient way.

A short summary of the Draft Toxics Reduction and Assessment Actions, and a document providing more detailed (1-2 page) descriptions of each of the draft actions can be found on DEQ's Toxics Reduction web page. The summary of Strategy actions, some of which directly involve NPS staff, can be found at: http://www.deq.state.or.us/toxics/docs/ToxicsStrategyNov28.pdf.

The objectives of the DEQ cross program efforts to address toxic chemicals:

- Optimize agency resources by focusing on the highest priority pollutants in a coordinated way.
- Implement actions that reduce toxic pollutants at the source.
- Establish partnerships with other agencies and organizations to increase the effective use of public and private resources.

- Use environmental outcome metrics to measure the effectiveness of strategy implementation where feasible.

DEQ is currently focused on implementing five short-term priority actions identified in the Toxics Reduction Strategy: (a) expanding and enhancing the Pesticide Stewardship Partnership Program (see below), (b) developing and implementing a pesticide waste collection strategy, (c) working with consumer product retailers to reduce toxics in products, (d) integrating business technical assistance across programs to advance green chemistry, and (e) developing and implementing low toxicity state purchasing guidelines.

The technical assistance and state purchasing initiatives are also directly linked to an executive order (#12-05) signed by Oregon's Governor in April 2012. Most recently, DEQ supported the Oregon Department of Administrative Services (DAS) in developing a new janitorial supplies contract with comprehensive and detailed guidelines and specifications that ensure the janitorial and cleaning products purchased by the state contain low toxicity ingredients. The State of Washington also is participating in this contract, which is estimated to represent approximately $20 million in total purchasing power.

3.6.3 Pesticides Stewardship Partnerships (PSPs)

The Pesticide Stewardship Partnership (PSP) approach uses local expertise in combination with water quality sampling to obtain monitoring data to encourage and support voluntary management measures that lead to measurable reduction of pesticides in Oregon waters. Since 1999, DEQ has been using a voluntary, collaborative approach called PSPs to identify problems and improve water quality associated with pesticide use. This program has been supported by grants and other small sources of funding for over a decade.

In 2013, DEQ and the Oregon Department of Agriculture obtained funding from the state legislature to implement and expand PSPs. This funding allows DEQ, ODA, and other WQPMT member agencies to add new PSP projects in more watersheds around the state, conduct several pesticide waste collection events, and enlist Oregon State University (OSU) and local expertise in providing pesticide risk reduction technical assistance.

The following PSP objectives are:

- Identify additional watersheds for PSP projects,
- Provide timely water quality information to local partners,
- Use stream monitoring to identify local, pesticide-related water quality concerns,
- Share results early and often with partners in the watershed,
- Explain data in terms of the effects of pesticides on the health of streams,
- Engage the agricultural community and other pesticide user groups in identifying and implementing solutions, and
- Use ongoing effectiveness monitoring to measure success and provide feedback to support water quality management.

The PSP approach of using water-monitoring data to inform voluntary actions continues to show success in selected watersheds. Since 2010, significant decreases (up to 90%) in average and median stream concentrations of pesticides of concern (Malathion and Diuron) have been observed in the Mill Creek (The Dalles) and Walla Walla (Milton-Freewater) watersheds. DEQ, ODA and other partners are currently working on refining PSP efforts in Western Oregon watersheds to produce similar demonstrable water quality improvements as have been observed in Eastern Oregon watersheds.

PSP work continues in Eastern Oregon with partners in Hood River and Walla Walla River Watersheds, as well as watersheds in Wasco County. Outreach efforts continued to be focused on communicating PSP monitoring results and providing technical assistance to orchards. The monitoring data shows continued significant reductions in concentrations of diuron (herbicide) in the Walla Walla watershed and Malathion (insecticide) in Wasco County watersheds. In addition, levels of almost all pesticides in the Hood River watershed remain well below relevant criteria or benchmarks.

DEQ continues PSP work with partners in four watersheds in the Willamette Valley: Clackamas, Pudding, and Yamhill River, and Amazon watersheds. The monitoring locations in these watersheds are located in a range of agricultural, urban and forested areas. DEQ and ODA worked with other partners to identify sub-watersheds and streams in these Willamette Valley watersheds where pesticide water quality concerns are the greatest, and focus outreach and technical assistance efforts more intensively in those areas.

More information on the PSP program can be found here:
http://www.deq.state.or.us/wq/pesticide/pesticide.htm

3.6.4 Water Quality Pesticide Management Team (WQPMT)

The Water Quality Pesticide Management Team (WQPMT) is an inter-agency team composed of representatives from DEQ, ODA, OHA, ODF, OWEB and OSU. The WQPMT was formed to coordinate, communicate, support, and facilitate water quality protection programs, within the four agencies, related to pesticides in the State of Oregon. The WQPMT operates under a Memorandum of Understanding (MOU) established in 2009. ODA is the lead coordinating agency under the Environmental Protection Agency (EPA) - ODA Consolidated Pesticide Cooperative Agreement.

The priorities for the WQPMT are:

- Expansion of and coordination of PSP-type monitoring programs. Expansion should include urban pesticide use along with groundwater and sediment monitoring efforts.
- Integration into each WQPMT member agency activities
- Determine ways of prioritizing allocation of limited pesticide monitoring and outreach resources at a smaller scale in watersheds.
- Possibly expand scope of WQPMT to include fertilizers.
- Conduct watershed vulnerability assessments and prioritization.
- Coordination of state agencies in prioritizing and implementing management tasks described in the PSP based on the assessment of monitoring data using the established Response Matrix.
- Standardize reporting of monitoring data and WQPMT assessments and recommendations.
- Develop consensus on how to assess the presence of mixtures in monitoring samples.
- Actively engage in policy discussions/decisions regarding the coordination and overlap of federal CWA-FIFRA issues.
- Minimize duplicate work by coordinating with TMDL, PSP and other management and monitoring efforts.
- Continue coordination with various DEQ toxics programs through the DEQ Toxics Reduction Strategy.
- Maintain and build communication between each agency's water quality programs and key stakeholders.
- Continue outreach, communication, and maintenance of interest/resources on pesticide impact on water quality.
- Pursue additional partnership opportunities with other state agencies, universities, and colleges.

3.6.5 Drinking Water Protection

The State of Oregon Drinking Water Protection Program works to implement strategies ensuring the highest quality water is provided to public intakes and wells. Mandated by the 1996 Federal Safe Drinking Water Act (SDWA), Source Water Assessments including identification of risk associated with the land management activities in drinking water source areas have been completed for all public water systems that have at least 15 hookups, or serve more than 25 people year-round.

Technical assistance is available to all public water systems and their communities to implement protection and restoration activities that address point and nonpoint sources of pollution that were identified in the Source Water Assessments (completed from 2000 through 2005) and more recent risk identification based on more advanced data and improved GIS capabilities.

DEQ's drinking water protection program and the NPS Management Program collaborate to help identify, prioritize and implement best management practices for water quality improvements addressing harmful algae blooms, nutrients, turbidity, microbes and toxics. The objectives of the collaboration include optimizing agency resources by focusing on the highest priority pollutants in a coordinated way, implementing actions that reduce toxic pollutants at the source, and establishing partnerships with other agencies and organizations to increase the effective use of public and private resources.

Examples in 2014-15 include addressing coastal community concerns about pesticide application on forested and agricultural lands, minimizing sources of turbidity to drinking water intakes, assisting with waste pesticide collection events, partnering with drinking water providers to provide outreach and funding to address failing septic

systems, providing input to encourage incorporation of drinking water concerns in agricultural management plans, and providing technical assistance to prioritize areas for riparian restoration. The Source water data is also is readily accessible and used by others. It is utilized to assist other DEQ programs to identify priority areas for permit modifications, inspections, technical assistance and cleanup. It has been provided to several other state and federal agencies including Oregon Emergency Response System, Oregon Department of Transportation, ODF, ODA, DLCD, Oregon State Marine Board (OSMB), Oregon Water Resources Department (OWRD), United States Forest Service (USFS), USDA, and the BLM to facilitate incorporation of protection strategies into their respective programs. Refer to DEQ's drinking water website for more information: http://www.deq.state.or.us/wq/dwp/dwp.htm.

3.4.6 Groundwater Protection and Groundwater Management Areas (GWMAs)

Groundwater makes up approximately 95 percent of available freshwater resources in Oregon. Approximately 70 percent of all Oregon residents rely solely or in part on groundwater for drinking water. Over 90 percent of rural Oregonians rely on groundwater for drinking water. The goals of the Oregon Groundwater Quality Protection Act of 1989 (ORS 468B.150 – 468B.190) are to prevent contamination of groundwater resources, conserve and restore groundwater, and maintain the high quality of Oregon's groundwater resource for present and future uses.

Groundwater is present beneath almost every land surface and is sometimes at very shallow depths. It is vulnerable to contamination from NPS and activities that take place on the land as well as from discharges of wastes and pollutants at or below the ground surface. DEQ uses a combination of water quality and land quality programs to help prevent groundwater contamination from point and nonpoint sources of pollution, clean up pollution sources, and monitor and assess groundwater and drinking water quality. Once groundwater becomes contaminated, it is very difficult to clean up. This contamination may impair groundwater for use as drinking water and may affect the quality of the surface waters where it comes to the surface.
Groundwater protection authority under Oregon state law is primarily vested in DEQ, although other agencies and counties have important roles, particularly with regard to controlling NPS that could pollute groundwater. This can include DEQ designating Groundwater Management Areas (GWMAs) when groundwater in an area has elevated contaminant concentrations resulting, at least in part, from nonpoint sources. A contaminant is considered elevated when its concentration in an area is greater than or equal to 70% if the Maximum Contaminant Level set by EPA under the Safe Drinking Water Act.

Once the GWMA is declared, a local Groundwater Management Committee comprised of affected and interested parties is formed. The Committee then works with and advises the state agencies that are required to develop a GWMA Action Plan that will reduce groundwater contamination in the area. This plan contains a description of the voluntary actions that, when implemented by the various agencies and organizations involved, could reduce the amount of NPS and/or point source pollution leaching into the groundwater. The action plan identifies sources such as irrigated agriculture, land application of food processing water, septic systems (rural residential areas), and confined animal feeding operations.

Priorities for groundwater protection are:

- Identify areas outside of GWMAs that may need additional groundwater protection actions.
- Coordinate DEQ programs with roles in groundwater protection to reach GWMA program objectives more efficiently.
- Continue DEQ and ODA funding of groundwater projects through various grants and loans including a groundwater research grant, federal Clean Water Act 319 grants, and Clean Water State Revolving Fund loans.

Objectives for groundwater protection are:

- Prevent pollution of groundwater by implementing water quality programs related to agriculture, underground storage tanks, underground injection control, on-site septic systems, development, and other activities that have the potential to pollute groundwater.
- Continue to implement GWMA Action Plans in Oregon's three GWMAs.

- Monitor groundwater quality and trends throughout the state.

Strategies in non-GWMAs include:

- Continue to work cooperatively with Deschutes County to implement groundwater protection programs in the La Pine area.
- Disseminate information about soil and aquifer characteristics that increase vulnerability of groundwater.
- Continue funding and support of research, education, and implementation of BMPs for groundwater protection, as funding allows.

Oregon has designated three GWMAs because of elevated nitrate concentrations in groundwater. These include the Lower Umatilla Basin GWMA, the Northern Malheur County GWMA, and the Southern Willamette Valley GWMA. Each one has developed a voluntary action plan to reduce nitrate concentrations in groundwater.

Northern Malheur County GWMA:
The Northern Malheur County (NMC) GWMA was declared in 1989. An Action Plan was adopted in 1991 that identifies the source of contamination and measures to be taken to reduce the contamination. The nitrate trend in the Northern Malheur County GWMA is slightly declining. Some of the activities in the NMC GWMA are:

- Continue to implement the North Malheur County GWMA Action Plan and evaluate the performance or success of the management plan in reducing groundwater contamination.
- Continued sampling of Northern Malheur County GWMA well network consisting of 36 wells sampled quarterly. The fourth trend analysis is currently being finalized. It shows a continuation of the gradual decline in groundwater nitrate concentrations in the GWMA. The next regional trend analysis should be completed in Spring 2014.

Lower Umatilla Basin GWMA:
The Lower Umatilla Basin (LUB) GWMA was declared in 1990. An Action Plan was adopted in 1997 that details the sources of nitrate and measures to be taken to reduce the nitrate contamination. The nitrate trend in the LUB GWMA continues to increase, although at a slower and slower rate. Some of the activities in the LUB GWMA are:

- Continue to implement the Lower Umatilla Basin Action Plan and evaluate the performance or success of the management plan in reducing groundwater contamination.
- Continue sampling of Lower Umatilla Basin GWMA well network consisting of 31 wells sampled quarterly.

Revise the LUB GWMA action plan by the LUB GWMA Committee after the *Third Four-Year Evaluation of Action Plan Success in the Lower Umatilla Basin GWMA is finalized.* Completed in January 2013, the document *Third Four-Year Evaluation of Action Plan Success in the Lower Umatilla Basin GWMA* is currently being prepared for publication.

- The Third Four-Year Evaluation of Action Plan Success in the Lower Umatilla Basin GWMA was finalized in January 2013. The LUBGWMA Committee is currently drafting the second LUBGWMA Action Plan.
- The Communications and Outreach Plan was completed by the Lower Umatilla Basin GWMA Committee in the first half of 2014. The LUBGWMA Committee decided to postpone drafting a Communications and Outreach Plan until after completion of the second action plan had been completed.
- Work with the City of Irrigon to develop their voluntary Source Water Protection Plan.

Southern Willamette Valley GWMA:
The Southern Willamette Valley (SWV) GWMA has been the focus of studies for 20 years because of concerns about elevated levels of nitrate in the shallow groundwater. The nitrate contamination originates from many everyday sources, such as fertilizer application, septic systems, and animal waste. In 2004, DEQ designated the Southern Willamette Valley as a GWMA to help ensure that Willamette Valley groundwater could continue to

provide a high quality resource for present and future use. Since then, local stakeholders have been engaged in planning to protect and improve the groundwater resource in the Southern Willamette Valley. To view the website for this project, go to http://gwma.oregonstate.edu/.

DEQ continues to monitor the 24 monitoring wells DEQ installed in the Southern Willamette Valley, as well as the 17 domestic wells that make up the long-term monitoring program. The 2009 "Synoptic Event' included one-time sampling of a little over 100 additional wells that brought new understanding to the depth of nitrate impacts in some areas of the SWV GWMA. DEQ has added several additional monitoring wells and six surface water locations to the long-term monitoring program in order to better assess this concern. In addition, EPA has volunteered to run stable isotopic analyses on surface and groundwater samples collected by the DEQ Lab.
Some of the other activities in the SWV GWMA are:

- Coordinate the Southern Willamette Valley GWMA Committee and implementation activities to reduce area-wide groundwater contamination.
- Continue monitoring 41 wells in the Southern Willamette Valley GWMA to determine groundwater trends. Provide EPA samples for stable isotopes analyses.
- Collaborate with EPA and Benton Soil and Water Conservation District on two grants that will focus on evaluating the effectiveness of conservation enhancement practices in reducing nitrate pollution to the groundwater in the Southern Willamette Valley GWMA.
- Conduct a focus group with randomly selected neighbors of two small schools in the GWMA, which have Public Water Systems with nitrate at or near 10 mg/L nitrate-N, to determine how to best incorporate groundwater protection into the daily life of those GWMA residents.
- Plan for a similar focus group targeting those growers managing large acreages.
- Use a social marketing approach to facilitate behavior change regarding groundwater protection.
- Update the Southern Willamette Valley Action Plan, to reflect activities that have been completed, and include additional voluntary strategies that were not part of the original Action Plan.
- Use the analyses to direct future work and GWMA Committee meeting topics.
- Evaluate funding sources for the Southern Willamette Valley GWMA, which may become a non-profit entity.
- Evaluate the potential nitrate impact to a 'deeper' aquifer in the Linn County area of the Southern Willamette Valley GWMA.

3.4.7 Coastal Zone NPS Management Program

Section 6217 of the Coastal NPS Control Program, CZARA
http://coastalmanagement.noaa.gov/about/czma.html#section6217
requires all applicable states and territories to develop Coastal Nonpoint Pollution Control Programs (CNPCP) to reduce impact from polluted runoff on coastal waters. CZARA is jointly administered by the National Oceanic and

Atmospheric Administration (NOAA) and the EPA. EPA and NOAA must approve a state's nonpoint pollution

control program. If the federal agencies do not approve a state's CNPCP program, federal funding for DLCD's coastal management program and DEQ's NPS pollution control programs are reduced. Oregon's CNPCP program has not yet received full approval by NOAA and EPA. If EPA 319 funding reductions occur, it will make it difficult to implement Oregon's NPS Management Plan measures.

CZARA requires states with approved coastal management programs to implement a set of 56 management measures that reduce NPS pollution. The measures are designed to control runoff from six main sources: forestry, agriculture, urban areas, marinas, hydromodification (such as dams or shoreline and stream channel modification), and wetlands and vegetated shorelines, or riparian areas. Where there is information to indicate that these 56 management measures are not sufficient to attain water quality standards, or protect critical coastal waters, additional management measures should be included in the state's CNPCP.

According to NOAA and EPA, a state's program is expected to build on existing coastal zone management and water quality programs by applying a consistent set of economically achievable management measures to prevent and mitigate polluted runoff. To obtain approval, a state must describe how it will implement 56 NPS pollution controls management measures that conform to those described in Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters ((g) Guidance) http://water.epa.gov/polwaste/nps/czara/index.cfm.

Oregon's CNPCP was developed by DEQ and the Department of Land and Conservation (DLCD) in partnership with several other state agencies. Oregon's CNPCP boundary includes roughly all lands west of the crest of the Coast Range and the entire Rogue and Umpqua River watersheds. At the north end, the area extends up the

Columbia River to Puget Island, near the Clatsop - Columbia County line.

CZARA requires Oregon's program to describe the programs and enforceable policies and mechanisms the state will use to implement management measures. Oregon DEQ, in conjunction with the ODF and ODA, has broad authority to prevent and control water pollution from nonpoint sources within the state. Together, these agencies have the statutory authority to prevent NPS pollution, to adopt additional rules to require implementation of measures as necessary to control discharges from nonpoint sources, to enforce prohibitions on NPS discharges, and to require restoration, as necessary.

Oregon submitted elements of its plan for approval to NOAA and EPA in 1995. On January 13, 1998, the federal agencies approved the Oregon Coastal Nonpoint Program subject to specific conditions that the state still needed to address (see "Oregon Conditional Approval Findings") at
http://coastalmanagement.noaa.gov/nonpoint/docs/findor.txt

EPA and NOAA identified the following unresolved issue in need of resolution prior to full program approval.

- Additional Management Measure, Forestry
  - Protect medium, small, and non-fish bearing streams;
  - Protect high-risk landslide areas;
  - Effectively address the impacts of road operation and maintenance, particularly legacy roads; and
  - Ensure the adequacy of stream buffers for the application of certain chemicals.

Oregon is working with EPA and NOAA to resolve this additional management measure.

3.4.8. Incorporate EPA Watershed Plans Elements into TMDLs and Watershed Approach Basin Reports

EPA recommends that the EPA Watershed Plans Nine Key Elements identified in EPA's *Handbook for Developing Watershed Plans to Restore and Protect our Waters* (water.epa.gov/polwaste/nps/handbook_index.cfm) and in Appendix C of these guidelines, provide an effective, integrated approach to address the diverse realities and needs of each watershed. These 9 elements can be used by the States for water quality planning purposes when addressing nonpoint sources in a watershed. In Oregon, TMDLs, WQMPs, and TMDL implementation plans in combination with watershed council plans could be used to address the EPA Watershed Nine Key Elements (Table 2).

State and local groups provide most, if not all, of the nine key elements in watershed plans through the development of TMDLs, WQMPs, TMDL implementation plans, Watershed Council watershed plans, and other local planning documents.

If the existing plans/strategies do not formally address the nine elements, they can still provide a valuable framework for producing updated plans. For example, some TMDL Water Quality Management Plans and TMDL Implementation Plans developed by DMAs contain information on hydrology, topography, soils, climate, land uses,

water quality problems, and management practices needed to address water quality problems but have no quantitative analysis of current pollutant loads or load reductions that could be achieved by implementing targeted management practices.

TMDL Implementation Plan Development
A TMDL IP describes the actions that are needed to improve water quality once a TMDL has been established. Generally, a TMDL IP includes a list of pollutants of concern and the sources (if known), proposed treatment strategies, a timeline for implementation activities, and proposed methods for monitoring the effectiveness of implementation activities. These TMDL IPs are necessary because a TMDL typically describes only what needs to happen and does not set out a schedule for implementing the specific improvements (see applicable TMDL/WQMP for specific requirements).

The required components of a TMDL IP are described in OAR 340-042-0080(4) excerpted below. See DEQ's May 2007 TMDL Implementation Plan Guidance for additional information. **OAR 340-042-0080(4):** *Persons, including DMAs other than the Oregon Department of Forestry or the Oregon Department of Agriculture, identified in a WQMP as responsible for developing and revising sector-specific or source-specific implementation plans must:*

The Nine Key Elements describe broad expectations for nonpoint source management:

1. Explicit short- and long-term goals, objectives and strategies to protect surface waters and groundwater.
2. Have strong working partnerships and collaboration with appropriate State, interstate, Tribal, regional, and local entities (including conservation districts), private sector groups, citizens groups, and Federal agencies.
3. A balanced approach that emphasizes both Statewide nonpoint source programs and on-the-ground management of individual watersheds where waters are impaired or threatened.
4. The State program (a) abates known water quality impairments resulting from nonpoint source pollution and (b) prevents significant threats to water quality from present and future activities.
5. An identification of waters and watersheds impaired or threatened by nonpoint source pollution and a process to progressively address these waters.
6. The State reviews, upgrades and implements all program components required by section 319 of the Clean Water Act, and establishes flexible, targeted, iterative approaches to achieve and maintain beneficial uses of water as expeditiously as practicable.
7. Ensure that all activities and uses on Federal lands are managed consistently with State program objectives.
8. Efficient and effective management and implementation of the State's nonpoint source program, including necessary financial management.
9. A feedback loop whereby the State reviews, evaluates, and revises its nonpoint source assessment and its management program at least every five years.

Table 2: EPA Watershed Plans Nine Key Elements

EPA WATERSHED PLANS NINE KEY ELEMENTS [1]
ELEMENT 1
Identification of causes of impairment and pollutant sources or groups of similar sources that need to be controlled to achieve needed load reductions, and any other goals identified in the watershed plan.
a. Include the geographic extent of the watershed covered by the plan.
b. Identify the measurable water quality goals, including the appropriate water quality standards and designated uses.
c. Identify the causes & sources or groups of similar sources that need to be controlled to achieve the water quality standards.
d. Break down the sources to the subcategory level.
e. Estimate the pollutant loads entering the waterbody.
ELEMENT 2
An estimate of the load reductions expected from management measures needed to meet the water quality goals. **(DEQ does not do this in the Watershed Approach Basin Reports. However, DEQ estimates the load reduction by pollutant for 319 funded projects and reports the load reductions in the NPS Annual Reports.)**
ELEMENT 3
A description of the nonpoint source management measures that need to be implemented to achieve load reductions, and a description of the critical areas in which those measures will be needed to implement this plan.
a. Identify the management measures that need to be implemented to achieve the load reductions.
b. Identify critical areas in which management measures are needed.
ELEMENT 4
Estimate of the amounts of technical and financial assistance needed associated costs, and/or the sources and authorities that will be relied upon to implement this plan.
a. Estimate the costs to implement the plan, including management measures, administration, information/education activities, and monitoring.
b. Identify the sources and amounts of financial and technical assistance and associated authorities available to implement the management measures.
ELEMENT 5
Prepare an information and education component used to enhance public understanding of the project and encourage their early and continued participation in selecting, designing, and implementing the nonpoint source management measures that will be implemented.

[1] From: EPA's Handbook for Developing Watershed Plans to Restore and Protect Our Waters, March 2008, EPA 841-B-08-002. http://water.epa.gov/polwaste/nps/upload/2008_04_18_NPS_watershed_handbook_app_c.pdf

EPA WATERSHED PLANS NINE KEY ELEMENTS [2]
ELEMENT 6
Develop a schedule for implementing the nonpoint source management measures identified in this plan that is reasonably expeditious.
ELEMENT 7
Prepare a description of interim measurable milestones for determining whether nonpoint source management measures or other control actions are being implemented.
ELEMENT 8
Develop a set of criteria that can be used to determine whether loading reductions are being achieved over time and substantial progress is being made toward attaining (or maintaining) water quality standards, and specify what measures will be taken if progress has not been demonstrated.
ELEMENT 9
Develop a monitoring component to evaluate the effectiveness of the implementation efforts over time, measured against the criteria established under Element 8 immediately above.
a. Develop a monitoring component to determine whether the plan is being implemented appropriately and whether progress toward attainment or maintenance of water quality goals is being achieved.
b. Develop an evaluation framework.

The developed guidance for these elements will include example TMDL Implementation Plans and Watershed Approach Basin Reports that meet the nine key elements.

The following **Table 3** will be included in the guidance for each example plan and report. This chart will indicate how the nine key elements are being met (noted as Yes or No) on a watershed basis. The filled –out chart will also indicate how the Oregon NPS Program Plan's goals, actions, milestones and planned actions with associated timelines (i.e. the nine key elements) are or are not included in the TMDL Implementation Plans and Watershed Approach Basin Reports.

[2] From: EPA's Handbook for Developing Watershed Plans to Restore and Protect Our Waters, March 2008, EPA 841-B-08-002. http://water.epa.gov/polwaste/nps/upload/2008_04_18_NPS_watershed_handbook_app_c.pdf

Table 3: Analysis of TMDL Implementation Plans and Watershed Basin Approach Reports' Inclusion Of EPA's Watershed Plans Nine Key Elements

ANALYSIS OF TMDL IMPLEMENTATION PLANS AND WATERSHED BASIN APPROACH REPORTS' INCLUSION OF EPA'S WATERSHED PLANS NINE KEY ELEMENTS		NAME AND DATE OF TMDL IMPLEMENTATION PLAN OR WATERSHED APPROACH BASIN REPORT (INCLUDE WATERSHED NAME)
Watershed Plans Nine Key Element	**Included Y/N**	**Where To Be Found/Comments**
1. Identification of causes of impairment and pollutant sources or groups of similar sources that need to be controlled to achieve needed load reductions, present in the watershed.		
2. An estimate of the load reductions expected from management measures.		
3. A description of the NPS management measures that will need to be implemented to achieve load reductions, and a description of the critical areas in which those measures will be needed to implement this plan.		
4. Estimation of the amounts of technical and financial assistance needed associated costs, and/or the sources and authorities that will be relied upon to implement this plan.		
5. An information and education component is used to enhance public understanding of the project and encourage their early and continued participation in selecting, designing, and implementing the NPS management measures that will be implemented.		
6. Schedule for implementing the NPS management measures identified in this plan that is reasonably expeditious.		
7. A description of interim measurable milestones for determining whether NPS management measures or other control actions are being implemented.		
8. A set of criteria that can be used to determine whether loading reductions are being achieved overtime and substantial progress is being made toward attaining water quality standards.		

9. A monitoring component to evaluate the effectiveness of the implementation efforts over time, measured against the criteria established.		

4. Management of NPS by Land Use

Land management activities on agricultural, forested, and urban lands can affect water quality. The types and extent of water quality impairments, as well as available resources and impediments, vary geographically. It therefore is critical to consider GWMA/basin specific conditions and develop local priorities and solutions for the prevention, control, and reduction of pollution sources to achieve water quality improvements. Oregon programs have been developed and adapted to address NPSs. These programs include the management or regulation of forestry, agriculture, grazing, transportation, recreation, hydromodification, marinas, urban development, land use planning, fish and wildlife habitat, riparian and wetlands protection/restoration, public education, water resources, and other activities that affect the quality of the state's waters.

In Oregon, the legislature has adopted statutes directing the roles and responsibilities of the state agencies for managing water quality affected by agriculture activities, forest activities, and urban landscapes. Oregon's NPS Management Program is intended to control or prevent nonpoint source pollution from causing impairments and allow water bodies to attain or maintain water quality standards and thereby protect the beneficial uses of all state waters. Oregon will promote and support programs and activities that are guided by best available science and implemented through an adaptive management approach. In addition, Oregon will realize these goals by striving for broad community acceptance and involvement.

4.1. Agricultural Lands

One of the goals of the NPS Management Program is to assure agricultural land management does not cause water quality impairments through implementation of the Agricultural Water Quality Management Act, the federal CWA, state water quality standards, and TMDL load allocations. This goal has been memorialized in the MOA between DEQ and ODA. Accomplishing this goal requires coordination with other state, federal, and local partners including tribes where appropriate.

DEQ's NPS Management Program works with ODA's Natural Resource Program to prevent pollution and improve water quality on agricultural lands as required under the Agricultural Water Quality Management Act. DEQ and ODA's program staff and management work collaboratively on various water quality related projects to address agricultural nonpoint sources. DEQ's NPS Management Program also coordinates with DEQ programs as well as agency partners such as USDA Natural Resources Conservation Service, Soil and Water Conservation Districts, USGS, Oregon State University, watershed council, and Tribes.

4.2. Agricultural Water Quality Management Program

The Agricultural Water Quality Management Act (ORS 568.900 to 568.933) authorizes ODA to develop Agricultural Water Quality Management (AGWQMP) Area Plans (area plans) and rules throughout the state The statute authorizes the development of Agricultural Water Quality Management Area Rules (area rules) to serve as a regulatory backstop to the voluntary efforts described in the area plans. ORS 561.191 states that ODA shall develop and implement any program or rules that directly regulate farming practices to protect water quality. The Agricultural Water Quality Management Program is the main regulatory tool to prevent and control nonpoint source pollution from agricultural lands. Water quality standards and TMDL load allocations for agricultural lands should be met through implementation of area plans and enforcement of area rules. The program staff members are also involved with the development of Ground Water Management Act action plans, and lead implementation of action plans to improve groundwater quality.

ODA began developing AGWQMP area plans in 1993 with passage of the Agricultural Water Quality Management Act in watersheds where water quality issues were identified. ODA has adopted area plans and rules for all 38 regions of Oregon. Each of these area plans were developed with a local advisory committee (LAC) consisting of stakeholders residing in the watershed. The LACs were responsible for working with ODA in the development of a draft area plan to address water quality issues from agricultural activities in its area. Each plan is reviewed and

revised about every two years and the LACs play an important role. All of the area plans have undergone at least several biennial reviews.

4.3 ODA is a Designated Management Agency (DMA) for TMDL Implementation.

ODA has been a partner for TMDL development and implementation and ODA is the DMA for agricultural lands. DEQ's basin coordinators and ODA staff have ongoing working relationships with the review and implementation of Agriculture Area Plans, as well as local water quality issues related to drinking water. Area rules and plans are the mechanisms for TMDL implementation on agricultural lands.

Soil and Water Conservation Districts (SWCDs) have contractual relationships with ODA to act as a Local Management Agencies (LMAs) to meet water quality goals on agricultural lands. Area plans must describe a program to achieve the water quality goals and standards necessary to protect designated beneficial uses related to water quality, as required by state law (OAR 603-090-0030(1) and the federal CWA.At a minimum, an area plan must:

- Describe the geographical area and physical setting of the Management Area
- List water quality issues of concern
- List impaired beneficial uses
- State that the goal of the area plan is to prevent and control water pollution from agricultural activities and soil erosion in order to achieve applicable water quality standards
- Include water quality objectives
- Describe pollution prevention and control measures deemed necessary by the Oregon Department of Agriculture (ODA) to achieve the goal
- Include an implementation schedule for measures needed to meet applicable dates established by law
- Include guidelines for public participation
- Describe a strategy for ensuring that the necessary measures are implemented

The area plans as well as the reports can be found at the following link:
http://egov.oregon.gov/ODA/NRD/water_agplans.shtml.

4.3.1 DEQ and ODA Memorandum of Agreement

DEQ and ODA negotiated and signed a Memorandum of Agreement in May 2012, http://www.deq.state.or.us/wq/nonpoint/docs/ODADEQMOA2012.pdf . The MOA is intended to guide the agencies to fulfill respective legal responsibilities and obligations in an efficient and effective manner.

<u>The following objectives are applicable to DEQ staff and management:</u>

- Leverage and strategically invest funds and resources by engaging in local and statewide watershed protection and restoration efforts.
- Support ODA to develop and implement AGWQMP area plans that would, when implemented, achieve TMDL load allocations and water quality standards including groundwater.
- Support ODA to develop and ensure compliance of AGWQMP area rules that would, when implemented, help achieve TMDL load allocations and water quality standards.
- Evaluate program effectiveness by designing, coordinating, and conducting water quality monitoring projects and compare with implementation activities.
- Capitalize on Water Quality Pesticide Management Team (WQPMT) partnerships to develop and implement a Pesticide Management Plan that would, when implemented, achieve water quality standards and other benchmarks including groundwater protection.

4.3.2. Agricultural Nonpoint Source Program Priorities

Due to limited resources and fluctuating state revenues, it is necessary for DEQ's nonpoint source program to be selective when allocating funds and resources. DEQ has been working with partners in the agriculture sector to coordinate and focus efforts.

4.3.3. TMDL Implementation, Biennial Reviews and Basin Plans

The priority work for DEQ for the next five years is to improve, where needed, water quality on agricultural lands. DEQ considers it important to build Oregon's capacity to be able to measure and report on nonpoint source activities and water quality trends on agricultural lands at various scales.

This is accomplished by the following actions:

- The DEQ NPS Annual Report summarizes implementation of activities to reduce nonpoint sources of pollution and water quality responses.
- TMDL implementation for TMDLs developed to address nonpoint sources could include DMA reporting that would be used by DEQ for reporting on NPS activities and water quality responses.
- DEQ will participate in the biennial review process to assist ODA to identify and document implementation actions. Implementation on agricultural lands should be strategic and future actions should be documented in order to demonstrate accountability and to leverage various funding sources.
- Decisions should be made while considering unique water quality issues. Basin priorities will be identified through the basin plan development process. Where basin plans have been developed, DEQ will use the action plans and basin priorities to determine how DEQ resources for agriculture will be allocated.
- Evaluation and reporting capacity is completed by DEQ, which prioritizes program activities in order to build capacity to report on the effectiveness of agricultural programs and water quality trends.

4.3.4 ODA Strategic Implementation Areas

ODA went through a strategic planning process in 2012. This was followed in May 2012 with an Oregon Board of Agriculture action item recommending that ODA develop additional alternatives to a complaint-based water quality program. The Board further recommended that the AGWQM Program devote more resources to building relationships, plan implementation, and compliance. To reinforce this goal, in March 2013 the Board passed Resolution 331. The resolution supports ODA to establish a strategic implementation process that identifies key geographic areas called strategic implementation areas (SIA) and targets resources to achieve compliance with local water quality regulations.

ODA established two SIAs in 2013, and is in the process of selecting six additional SIAs in 2015.
The Board of Agriculture resolution noted that the effort should be founded on the basic conservation principles of erosion control, nutrient management, stream bank stabilization, and moderation of solar heating of streams, promoted by aligning resources with local, state and federal natural resource partners.
Within SIAs, ODA will do a pre-assessment to identify locations likely not meeting water quality regulations. ODA will then work with local, state, and federal partners to outreach to agricultural landowners in the area, with a focus on those properties that are likely not in compliance. Following the outreach period, ODA will identify locations likely not meeting water quality regulations and schedule site visits to seek compliance. ODA will then do a post-assessment to measure change and communicate progress.
http://www.oregon.gov/ODA/shared/Documents/Publications/NaturalResources/SIA4.pdf

4.3.5 Focus Areas

ODA has asked SWCDs to select "Focus Areas" for implementation in each management area.
http://www.oregon.gov/ODA/shared/Documents/Publications/NaturalResources/WaterFocus4.pdf

Focus Areas concentrate limited outreach, technical assistance, and financial assistance resources in smaller

geographic areas where change may be measured faster. Focus Areas are identified and implemented by SWCDs for voluntary implementation of the Agriculture Area Plans. These efforts are focused on impaired areas since they are seen as the best, most effective way to prioritize staff and funding to improve water quality.

4.3.6 NRCS National Water Quality Initiative and State Resource Assessment Process

The Natural Resources Conservation Service (NRCS) identifies and works in priority watersheds throughout the Nation to improve water quality through the National Water Quality Initiative (NWQI). NRCS provides financial assistance to help producers and ranchers implement conservation practices and systems to reduce water quality pollution from agricultural lands. In Oregon, NRCS works with local as well as federal partners including DEQ, ODA, USFWS and others to identify NWQI watersheds based on needs as well as opportunities. In addition, EPA has directed the states to conduct effectiveness monitoring using 319 funds in NWQI watersheds.

As of January 2014, EPA has awarded technical assistance grants for Oregon to develop monitoring plans for Fifteen Mile Creek and Willow Creek NWQI effectiveness monitoring projects. DEQ and its partners will be developing and implementing the effectiveness monitoring projects in those watersheds during 2014-2019.

4.3.7 Other Programs and Partners

DEQ works with other partners and ODA programs to meet water quality goals for agricultural lands.

The following programs and partnerships are active in Oregon:

- Conservation Effectiveness Partnership (CEP) NRCS, OWEB, ODA, and DEQ).
- These agencies recognized a benefit to the public and agencies if the programs could more readily share information, and began exploring opportunities for collaboration on the shared grant program goals of improving water quality, watershed functions and processes. The agencies signed a memorandum of understanding in 2010 to formalize this collaboration and allow the sharing of certain types of data.

The goals of the partnership are to:

  - Build an understanding of the extent of the investment in watershed improvement actions through the agencies' collective grant programs;
  - Develop a better understanding of how local organizations are utilizing the agencies' respective grant programs;
  - Evaluate the impacts of grant investments on water quality and watershed health;
  - Describe gaps in the treatment of watersheds; and
  - Design tools and methods to report accomplishments to the public.

The partner agencies selected two "pilot watersheds":

- The Wilson River in Tillamook Bay, and
- Wychus Creek along the Upper Deschutes River.

  - The pilots were selected due to the length of time and investment of grant program dollars, the magnitude of projects undertaken, the availability of current data sets for these watersheds, and the potential to detect trends of change. (3.2.4 MOA between NRCS, OWEB, ODA, and DEQ).
  - Water Quality Pesticide Management Program (ODA, DEQ, ODF, OHA, OWEB, OSU).
  - Local and Statewide groups for strategic implementation.
    There are a number of committee meetings held at the state and regional level in order to develop and implement strategies for implementation:
  - Oregon Technical Advisory Committee (OTAC): The Natural Resources Conservation Service (NRCS)

State Conservationist and Farm Service Agency (FSA) State Director co-chair the OTAC under section 1446 of the 1990 Farm Bill. The Oregon USDA established the committee to provide advice for technical considerations and guidance for implementing programs in the Farm Bill such as Environmental Quality Incentive Program and Conservation Innovation Grants.

- Local and Basin Work Groups: NRCS holds meetings in each basin and county to allocate available funding in strategic manner.
- OWEB grants review group: OWEB convenes regional and statewide teams used to prioritize and recommend projects for OWEB funding.

4.1.8. The NPS Program Agricultural Measures, Timelines, and Milestones

The following strategies for agricultural water quality are applicable to DEQ staff and management between 2014 and 2019. Schedule may be revised based on annual prioritization process and implemented accordingly. DEQ currently works on many of the tasks identified here:

Statewide/Programmatic Projects:

- DEQ's projects often involve partners. DEQ will continue to seek opportunities to collaborate with others. (Ongoing)
- Protection of high quality waters are prioritized locally through Basin Planning process. In addition, protection is considered during triennial review. (Ongoing)
- Basin priorities for agriculture are identified through basin plan development process to ensure decisions are made while considering unique water quality issues. (Ongoing)
- DEQ works with local, state, and federal partners that provide technical assistance to producers to promote conservation practices and restoration. DEQ will continue those partnerships. (Ongoing)
- DEQ considers AGWQMP to be a key program for implementation. Review and update AWQM Program biennial review guidance document. (Annually)
- DEQ considers various programs that provide funding for implementing conservation practices and protection to be key programs for implementation. DEQ will continue to participate in existing statewide efforts to direct funds, and continue to seek other opportunities. (Ongoing)
- DEQ considers TMDL to be a key program for implementation. Revise and finalize TMDL Guidance document. (4/2014 to 4/2015, revise as necessary)
- Develop and incorporate source water protection guidance into AGWQM Program biennial review guidance document. (Annually)
- Develop and provide training related to agricultural land use, policy, and regulations to staff and partners. (As resources allow)
- Participate in Oregon Technical Advisory Committee meetings and subcommittees to direct funds to high priority projects. (Ongoing)
- Work with Clean Water State Revolving Fund program and Source Water programs to identify opportunities to streamline and leverage each other's resources. (Ongoing)
- Develop and implement a programmatic strategy to address agricultural activities on federal lands, such as grazing. (1/2016 to 12/2016)
- Support ODA to develop vegetation assessment methodology for SIA and FA. (evaluate and revise in 2015)
- Work with ODA to prioritize and help develop assessment methodologies for other area rule compliance. (6/2013 to 1/2019)
    - Erosion and sedimentation
    - Manure and nutrients
    - Pesticides
    - Waste management
- Develop capacity and provide GIS and water quality information to ODA during biennial reviews to facilitate prioritization and development of measurable milestones and timelines for implementation. (12/2013 to 1212/2014, then ongoing) - evaluate and revise as needed
- Participate in CEP:

  - Develop success stories by analyzing existing data or collecting additional data. (Ongoing)Collaborate with NRCS and OWEB to align reporting categories so that implementation information reported to both sources could be aggregated and reported by subbasins and basin scale. (66/15 to 3/16)
- Participate in biennial review process. Provide written comments on the contents including the plan objectives, focus area selection, measurable milestones, and timelines for implementation by using internal guidance document. (Ongoing)
- DEQ considers TMDL to be a key program for implementation. Engage and work with agricultural partners. Once TMDL Guidance document is drafted, use it to ensure consistency. (Ongoing)
- As resources allow, work with other WQ programs as well as local partners to leverage their resources. (Ongoing)
- Participate in Local Working Groups and OWEB Grant meetings. (Ongoing)
- Conduct additional vegetation assessment for SIAs and FAs where applicable. (1/2014 to 1/2019)
- Evaluate vegetation assessment data with ODA and estimate percent of SIA and FA meeting TMDL/WQS goals. (6/2015 to 1/2019)
- Implement monitoring plan and measure water quality trend on agricultural lands over time as indicated in monitoring plan (4/2014 to 1/2019)

4.1.9 ODA's Reporting

ODA keeps records of compliance related information, as well as summarizes and reports annually to interested entities including DEQ. ODA and the SWCDs also produce reports associated with AWQM Plan biennial reviews. The reports are updates on compliance and monitoring efforts as well as a summary of progress toward plan objectives and targets on outreach and on the ground projects.

DEQ's regional staff provides technical assistance and coordinates with ODA's water quality specialists to review the area plans and provide information for the reports as resources allow. ODA followed up on complaints by conducting site visits or driving by the sites. More compliance investigations were initiated due to issues related to manure management than other water quality issues. The area plans as well as the reports can be found at the following link: http://egov.oregon.gov/ODA/NRD/water_agplans.shtml.

4.1.9.1. Water Quality Program Compliance Summary

ODA provides the following information to DEQ annually. The following figures are included in NPS annual report to EPA.

- Total number of site visits by ODA's regions
- Compliance investigations by pollutant
- Source of compliance investigation
- ODA compliance action taken

4.1.9.2. Outreach and Education Summary

ODA provides funding to 45 SWCDs for implementation of water quality programs. One of the core components of the water quality program at ODA is its relationships with the SWCDs. ODA and the SWCDs negotiate scope of work agreements to clarify conservation projects to be completed. The SWCDs have used various venues to reach agricultural producers and rural land residents to promote conservation practices.

Additional information on conservation practices is in the funding partner section. **Table 4** provides example of the different types of SWCDs outreach and education activities. **Table 5** identifies the number of SWCD site visits and water quality monitoring sites.

Table 4: Example SWCDs Outreach and Education Summary

SWCDS OUTREACH AND EDUCATION	# EVENTS	ATTENDANCE OR DISTRIBUTION
Presentations	213	7002
Demonstrations	24	598
Tours	73	1507
Displays	127	38457
Student Events	201	16171
Fact Sheets	62	20265
Newsletter articles	579	54641

Table 5: Other SWCD Activities

OTHER SWCD ACTIVITIES	
Number of Site Visits	2689
Water Quality Monitoring Sites	470

4.2 State and Private Forest Lands

Oregon's NPS program for forestry uses cooperation between Oregon's DEQ and ODF, respectively to reduce and prevent NPS pollution from non-federal forestlands. Under the Oregon Forest Practices Act (FPA), ODF has exclusive jurisdiction over water quality regulation on non-federal forestlands unless additional protections are required by the federal Clean Water Act.

Under ORS 468B.110(2), ORS 527.765, and ORS 527.770, the Board of Forestry establishes best management practices or other control measures by rule that, to the maximum extent practicable, will ensure attainment and maintenance of water quality standards. If the Environmental Quality Commission (EQC) does not believe that the FPA rules will accomplish this result, the EQC is authorized to petition the Board for rules that are more protective. If the EQC petitions the Board for review of BMPs, the Board has two options: terminate review with the EQC concurrence, or begin rulemaking. If the Board determines that BMPs should be reviewed, rules specifying the revised BMPs must be adopted not later than two years from the filing date of the petition for review, unless the Board, with concurrence of the EQC, finds that special circumstances require additional time.

Upon the EQC's request, the Board is required to take interim action "to prevent significant damage to beneficial uses" while the BMPs are being reviewed. The "BMP shield" under ORS 527.770 is lost if the Board fails to complete BMP revisions, or makes a finding that revisions are not required, within the statutory deadline. In addition, under 468B.110(2), the EQC cannot adopt rules regulating nonpoint source discharges from forest operations and the DEQ cannot issue TMDL implementation plans or similar orders governing forest operations unless "required to do so by the CWA." This authority would also be triggered by the failure of the Board to adopt adequate BMPs to implement TMDL allocations for forestry or to avoid impairment of water quality such that standards are not met.

The FPA Rules and Best Management Practices (BMPs) protect natural resources including water quality. The FPA rules are periodically evaluated to insure that forest practices do not contribute to violations of water quality standards and those changes to rules be evaluated if the state Board of Forestry finds evidence of resource degradation and the public policy process under ORS 527.714 is completed. ODF has existing processes in place that help guide the work of staff by establishing work priorities.

A few examples of these processes follow:

- The Forestry Program for Oregon describes the mission, values, vision, goals, objectives, and indicators of sustainable forest management. The Oregon Board of Forestry has developed a Board work plan designed to describe major topics that the Board will discuss based on information from staff. The Private Forests Division has developed an Annual Operations Plan (AOP) that is the framework for staff priorities for the current year. These processes will be used by DEQ to identify common priorities and tasks, and priorities are developed with opportunities for DEQ's input.
- ODF has completed a monitoring strategy to establish priorities for monitoring. DEQ works cooperatively with ODF to evaluate rules and BMPs, design, implement, and analyze studies of forest practice effectiveness, and alter rules and BMPs when necessary This sequence of actions allows ODF to work in a "plan-do-check-act" cycle that affords continuous improvement of the FPA over time. An example of this process is the changes to the road rules over time to prevent sediment movement from forest roads into waters of the state.

Changes to road rules include:

- In 1984, rules with regard to road engineering were upgraded, requiring full bench construction on new and reconstructed roads, for example.
- In 1994, rule changes increased restrictions on deep fills near stream crossings, required the design of stream crossings to pass 50-yr peak flows and juvenile fish, and required stream crossings that are installed to provide fish passage be maintained to provide fish passage.
- In 2003, new rules were adopted restricting wet weather hauling when sediment is entering streams, requiring more frequent cross-drains from road ditches, addressing proposed roads in critical locations, and other measures to improve the hydrological performance of roads.

ODF and DEQ have the following State and Private Forest Lands Priorities:

- In cooperation with ODF Private Forest Division staff, ensure that water quality standards are being attained, TMDL load allocations are being met, and beneficial uses are being supported on private forestlands in Oregon.
- Evaluate voluntary implementation of Oregon Plan for Salmon and Watersheds in reducing water quality risks and impacts, identify information gaps, and collect additional information as needed in cooperation with ODF and landowners.
- Evaluate effectiveness of Oregon Plan for Salmon and Watersheds in reducing water quality risks and impacts.
- Review any changes to state forest management plans and work with ODF State Forest Division staff so changes to plans continue to protect water quality and beneficial uses on state-owned forestlands.

ODF and DEQ have the following State and Private Forest Lands Objectives:

- Continue evaluation of small and medium fish-bearing stream protection rules with respect to the Protecting Cold Water criterion of Oregon's temperature standard and temperature TMDL load allocations under the Human Use Allowance.
- Continue contributing to evaluation of RipStream data on riparian stand characteristics to determine if riparian stand function under the FPA and state forest management plans will provide adequate large woody debris recruitment for maintenance and creation of aquatic habitat, sediment regulation, and cold-water refugia.

- Discuss sufficiency of FPA for protection of water quality and beneficial uses with regard to small non-fish-bearing streams, landslide-prone areas, sediment-related processes, pesticide use (see PSPs), and drinking water sources by assisting ODF with their monitoring strategy and through data analysis and funding, as needed.
- Provide review on any proposed changes to state forest management plans that may impact water quality.
- Collect information on voluntary measures implemented under the Oregon Plan.

4.2.1 RipStream (Riparian Function and Stream Temperature) Study

The products of the RipStream Study relate to **Objectives 1 and 2** above.

ODF's RipStream project has been developed to provide a coordinated monitoring effort with which to evaluate effectiveness of Oregon Forest Practices Act (FPA) rules and strategies in protecting stream temperature, and promoting riparian structure that provides necessary functions for the protection of fish and wildlife habitat. DEQ is participating in the RipStream project by providing 319 funds and assisting in analyses of data and study results in cooperation with ODF staff. DEQ is also providing assistance through scientific, geographic, and policy analysis.

In order to meet this objective, the following questions were addressed:

- Are the FPA riparian rules and strategies effective in meeting DEQ water quality standards regarding protection of stream temperature and attaining the water quality standard?
- Are the FPA riparian rules and strategies effective in maintaining large wood recruitment to streams, downed wood in riparian areas, and shade?
- What are the trends in riparian area regeneration?
- What are the trends in overstory and understory riparian characteristics? How do they, along with channel and valley characteristics, correlate to stream temperature and shade?

ODF has completed their initial analysis to test whether current riparian protections on small and medium fish-bearing streams are adequate to meet water quality standards for temperature. Streams in State Forests are meeting both numeric and Protecting Cold Water (PCW) criteria of the temperature standard. Streams on private forests are typically meeting the numeric criterion, although 3 of 18 experimental stream reaches showed an exceedance after harvest. (Four additional streams exceeded numeric criteria pre-harvest or in the control reach, a mix of state and private sites.)

However, streams are not meeting the PCW criterion in 40% of post-harvest cases compared to a natural background rate of 5% on state and private forests. The higher than background PCW non-compliance rate also indicates an inability to consistently meet TMDL load allocations for forestry on fish-bearing streams. It should be noted that the starting temperatures in these streams are usually far below the numeric criteria.

Streams managed by FPA riparian rules showed a post-harvest average increase of 0.7 degrees C in the daily maximum temperature. State forest rules resulted in no change in the average daily maximum. Subsequent analysis has shown that reductions in shade are the primary factor driving these temperature changes, and shade decreases are primarily connected to lower basal areas.

The Oregon Board of Forestry issued a finding of degradation of resources (water quality) and initiated rulemaking. Rule alternatives are currently being designed and analyzed. Staff from ODF have done further analysis of RipStream data and conducted a Systematic Review of the scientific literature on harvest effects on shade and/or stream temperature. The results of the Systematic Review and analysis will be used to identify alternative rules that can meet the PCW criterion. The rule changes for temperature protection on small and medium fish-bearing streams should be completed over the next year and will have continued involvement and assistance from DEQ. Future analysis will evaluate if riparian management prescriptions are sufficient for riparian large woody debris recruitment needs.

The NPS program is working with ODF and will utilize existing ODF processes such as their monitoring strategy to evaluate FPA sufficiency for small non-fish-bearing streams, landslide-prone areas, sediment processes, pesticides,

and drinking water protection. This would incorporate past and ongoing agency work (e.g. Turbidity Report on Coast Range Public Water Systems, FPA compliance monitoring, Regional Solutions projects, PSPs, MidCoast TMDL work) and research (e.g. peer-reviewed studies; Trask, Alsea, Hinkle Creek watershed studies). It might also require new monitoring projects, so scoping and perhaps initiation of those studies would take place during the next 2 years.

4.2.2 Forest Practices Act Sufficiency Analysis

Analysis of Oregon FPA sufficiency relates to **Objective 3** above.

Oregon's DEQ and ODF completed "Sufficiency Analysis: A Statewide Evaluation of Forest Practices Act Effectiveness in Protecting Water Quality" in 2002. The Sufficiency Analysis described forest practice rules and their degree of certainty in terms of meeting water quality standards. It identified, among other things:

- Uncertainties in the ability of riparian rules for small and medium fish-bearing and non-fish-bearing streams to meet the temperature standard;
- Uncertainties in the ability of riparian rules for small and medium fish-bearing and non-fish-bearing streams to provide enough large woody debris over time for habitat creation and maintenance;
- Road rules being insufficient to meet turbidity and sedimentation standards due to inadequate cross-drain spacing and wet-weather hauling problems;
- Corrected in 2003 rule changes;
- Adequacy in current fish passage rules when implemented.

While the Sufficiency Analysis did contain discussion of forest practice (specifically clear cutting) effects on shallow landslide processes, it did not reach any conclusions or evaluate whether current rules for harvest on landslide-prone areas are protective of water quality. There are landslide rules in effect for public safety considerations but not for water quality impacts There are not restrictions to harvesting on steep slopes unless there is a public safety consideration. However, as required in-unit leave trees, (2 trees/acre) must be left along non-fish-bearing streams that could deliver debris flows to fish-bearing streams. In addition, ground-based yarding is restricted on slopes over 60% with additional required BMPs.

There is also a lack of information on upgrades to roads built before the current rules were in effect. Some locations (e.g. steep side slopes and riparian/floodplain areas), types of construction (e.g. cut-and-fill), and stream crossings represent a higher risk for catastrophic failures.

Voluntary upgrades and storm proofing have been extensive, but there is little information about remaining risk on the landscape. In addition, the science around sediment regimes has advanced over the last decade and recent monitoring shows low-levels of herbicides applied in forestry are reaching surface waters, and there are water quality problems (turbidity) for Public Water Systems in the Coastal Zone that may be related to forest practices.

The NPS program plans an evaluation of FPA sufficiency for small non-fish-bearing streams, landslide-prone areas, sediment processes, pesticides, and drinking water protection. This would incorporate past and ongoing agency work (e.g. Turbidity Report on Coast Range Public Water Systems, FPA compliance monitoring, Regional Solutions projects, PSPs, MidCoast TMDL work) and research (e.g. peer-reviewed studies; Trask, Alsea, Hinkle Creek watershed studies). It might also require new monitoring projects, so scoping and perhaps initiation of those studies would take place during the next 2 years.

The NPS Program State and Private Forest Measures, Timelines, and Milestones:

- Continue to participate in ODF/BOF rule work for evaluation of changes to stream protection rules for small and medium fish-bearing streams [Complete during 2014].
- Participate in analysis of riparian stand information to determine if large wood recruitment and other riparian functions are being maintained [Cooperate with ODF in creating a timeline during 2014; Continue assisting ongoing analysis]

- Continue working with ODF to ensure that water quality standards are being met with regard to small non-fish-bearing streams, landslide-prone areas, sediment processes, pesticide use, and drinking water sources on nonfederal forestlands. [In cooperation with ODF during 2014-15]
    - If necessary, create plan to remedy risks and impacts not covered by current rules [In cooperation with ODF by December 2016]
- Update the 1998 MOU between ODF and DEQ [In cooperation with ODF by December 2015]
- Review proposed changes to state forest management plans and comment as needed to ensure state forest plans will meet water quality standards and TMDL load allocations. [As necessary]
- Collect information on work done under the Oregon Plan and remaining water quality risks and impacts not covered by combination of forest practice rules and Oregon Plan implementation. [In cooperation with ODF by December 2015]
    - If necessary, create plan to remedy risks and impacts not covered by rules and Oregon Plan [In cooperation with ODF by December 2016]

4.3 Federal BLM and USFS Lands

4.3.1 Coordination with USFS and BLM to Meet State and Federal Water Quality Rules and Regulations

Oregon DEQ has Memoranda of Understanding (MOUs) with both the BLM http://www.deq.state.or.us/wq/nonpoint/docs/USFSDEQWQMU02.pdf and U.S. Forest Service (USFS) http://www.deq.state.or.us/wq/nonpoint/docs/USFSDEQMOU.pdf . The purpose of the MOUs are to document the cooperation between the parties to ensure that the agencies cooperatively meet State and Federal water quality rules and regulations related to point and NPS water pollution from USFS and BLM managed lands.

The federal CWA and associated Oregon Revised Statutes (ORS) and Administrative Rules (OARs) were created to assure that waters of the state (e.g., lakes, ponds, rivers, streams, and groundwater, etc.) in Oregon meet water quality standards. In addition, the implementing programs and regulations require that all feasible steps be taken toward achieving the highest quality water attainable. Federal agencies located within the state are held to the same standards as all other entities to manage waters under their jurisdiction to meet these standards.

The specific tasks identified in the MOU are:

- The USFS will conduct BMP implementation and effectiveness monitoring following the USDA National Best Management Practices for Water Quality on National Forest System Lands National Core BMP Technical Guide BMPs monitoring protocols that will also be required in Forest Plans and projects.
- The BLM and USFS will review and revise BMPs for all land uses and activities including harvest as necessary to improve their effectiveness.
- DEQ will review the BLM and USFS BMPs for the full range of land use activities addressed in Forest Plans, Forest Plan amendments, and Water Quality Restoration Plans (WQRPs).
- The DEQ will review and comment on Forest Plans and Forest Plan amendments, and provide comments and approval of WQRPs.
- The USFS will evaluate whether Regional programmatic and structural BMPs are needed to supplement the national BMPs and develop any deemed necessary. (All developed BMPs will be provided to DEQ for review and comment.)
- Work with the USFS and BLM to develop a water quality-monitoring program that identifies the number, type, and location of WQRP management measures (BMPs) including restoration projects being implemented and the instream water quality effects of implementing the BMPs over time in meeting TMDL Load Allocations and water quality standards. This would include evaluating shade zones and buffer widths, the effectiveness of the BLM roads BMP and other BMPs for all land uses and activities including harvest. The BLM and USFS will provide regulatory compliance data, listing and delisting data and TMDL support data that meets DEQ QA/QC requirements. The BLM and USFS will provide technical assistance in analyzing and interpreting data. Data will be submitted in a format that is compatible with the DEQ databases to the extent possible.

- Work with the USFS and BLM to ensure all TMDLs issued by DEQ have WQRPs completed and submitted to DEQ for approval.
- The BLM and USFS rely on the BMP process (as specified in the USFS NPS Plan) for protection, restoration, and maintenance of water quality through NEPA planning documents, aquatic conservation strategies, WQRPs, and most importantly project implementation. Implementation and effectiveness of BMPs are the legal and policy mechanism for control and management of NPS pollution. This important process was not effectively documented and communicated in the past, and should receive high priority for development, reporting, tracking, and approval by DEQ.
- The BLM and USFS will include as a term and condition of authorizations that the third party will obtain and abide by all required federal, state, or local permits and certifications. The BLM and USFS will not issue any third party authorization that is subject to state certification under CWA section 401 until the agency has received documentation that the state has issued the 401 certification or waived the requirement.
- Establish a process for joint review of ongoing watershed protection, restoration, and compliance activities; including a plan of short and long-term work.
- Participate in Forest Plan and Resource Management Plan revision processes to attain agreement on water quality goals to reduce the need for project level EA and EIS reviews.
- Work with the USFS and BLM to establish a process for joint review (both office and field) of ongoing watershed work/priorities.
- To develop a process of joint review of planning and upcoming activities that will assist with identifying and adjusting where feasible agency priorities, resources and funding, and facilitate implementation and monitoring of WQRP BMPs and restoration activities.

The Legal Authorities identified in the MOU are:

- Authority for controlling point and NPS pollution is provided in the Federal Water Pollution Control Act [As Amended through P.L. 107–303, November 27, 2002, (33 U.S.C. 1251 et seq. SEC. 101 (a) (7))]. The federal CWA establishes a national framework for protecting and improving water quality. The federal CWA was amended in 1987 to require States to develop plans for controlling nonpoint sources of water pollution. Oregon's NPS Control Program was established in 1978 before the passage of the Section 319 amendments in 1987.
- Section 313(a) (33 U.S.C. 1323) of the federal CWA directs the Federal Government to comply with all Federal, State, and local requirements with respect to the control and abatement of both point and NPS water pollution. Executive Order 12088 reinforced federal CWA requirements. Section 319(k) of the federal CWA (33 U.S.C. 1329) specifically addresses NPS pollution by directing Federal agencies to accommodate the concerns of the State regarding the consistency of agency projects with the State's NPS pollution management program.
- The National Forest Management Act (NFMA) of 1976 (P.L. 94-588; an amendment to the Forest and Rangeland Renewable Resources Planning Act of 1974) is the primary statute governing the administration of the USFS which called for the management of renewable resources on national forest lands.
- The U.S. Forest Service will follow the Forest Service/Bureau of Land Management Protocol for addressing Clean Water Act 303(d) listed waters[3] in subbasins with 303(d) listed stream(s), and in watersheds where there is no TMDL scheduled.

[3] The *FS/BLM Protocol for Addressing Clean Water Act Section 303(d) Listed Waters (The Protocol), May 1999*, and/or updates are the guidance for meeting these responsibilities. The protocol was signed by the Regional Administrator of the EPA for Region 10, by the Regional Foresters for the FS in Regions 1, 4, and 6, and by the State Directors for the FS in Oregon, Washington, Idaho, and Montana.

Additional guidance for WQRPs include DEQ's current May 2007 TMDL Implementation Plan Guidance – for State and Local Government Designated Management Agencies available at: http://www.deq.state.or.us/WQ/TMDLs/docs/impl/07wq004tmdlimplplan.pdf.

The MOU identified priorities:

- The DEQ and the U.S. Forest Service will continue to collaborate on identification and prioritization of water quality restoration projects. Priorities include the closing and restoration of roads so that soil and other road pollutants do not enter waters of the state and restoring riparian and wetland habitat so that shading is restored in order to meet DEQ temperature standard and to reduce soil, pesticides, and other pollutants from entering into waters of the state.
- Work with USFS and BLM to get water quality data and riparian restoration information for inclusion in the Oregon NPS Annual Report
- Prevent, reduce, eliminate, or remediate point and NPS water pollution and, where necessary, improve water quality to support beneficial uses on BLM and USFS administered lands.
- Cooperate on priorities, strategies, and funding using a watershed approach to protect and restore water quality on BLM and USFS administered lands.
- Foster and enhance communication, coordination, and working relationships between the USFS, BLM, and DEQ.
- Identify and implement USFS, BLM, and DEQ authorities, policies, programs, and practices that collectively ensure attainment of Federal and State water quality standards and TMDL load allocations on BLM and USFS administered lands.
- Identify, clarify, and support DEQ, BLM and USFS roles and responsibilities specific to water quality in a manner that reduces duplication of work.
- Establish a process and time line for joint review of ongoing watershed protection, restoration, and compliance, including development of a plan for short and long-term work.
- Evaluate progress and success in meeting or surpassing water quality goals and requirements.

The objectives identified in the MOU to be used by DEQ, the USFS, and BLM:

- Acquire and utilize information collected by USFS and BLM about BMP implementation, effectiveness, and water quality responses on BLM and USFS administered lands.
- Identify information gaps/uncertainties and means to fill those gaps.
- Define BLM, USFS, and DEQ's roles and responsibilities when contractor actions, vandalism, or other third party actions result in violations of state water quality rules and standards on BLM and USFS administered lands.
- A Statewide Annual Status Report will be written with involvement from each agency. This written report will satisfy MOU and DEQ TMDL reporting requirements.
- BLM and USFS will provide updates to WQRP status (e.g., "in progress", "completed", "approved", "being revised", other.) using a WQRP/TMDL tracking table. The BLM, USFS, and the DEQ will work together to develop a centralized streamlined process using existing databases and reporting mechanisms.
- The BLM and USFS will provide a summary of WQRP accomplishments including restoration and WQRP coverage with spatial context for BLM and USFS.
- The BLM and USFS agencies will provide the results of BMP implementation and effectiveness monitoring required in management plans and WQRPs.
- The agencies will provide updates on internal strategic planning that could affect MOU implementation.
- The agencies will provide updated contact lists to include the DEQ Basin Coordinators and NPS Coordinator along with BLM Oregon districts, USFS Regional Office, and USFS and BLM Oregon Water Program contacts.
- During the fifth year of implementation, the MOU will be reviewed to evaluate effectiveness and discuss MOU update and renewal. A five-year progress report will be prepared by the USFS Pacific Northwest Regional Office and the DEQ headquarters with input from the DEQ Regional and USFS National Forest offices and transmitted to the DEQ Water Quality Administrator and USFS Regional Forester.
    - The 5-Year Report will use information gathered in each Annual Status Report and recommend any changes to the future MOU. The MOU should serve as an outline for the 5-Year Report. The basic elements would include the following:

i. The spatial coverage of Federal land ownership, WQRP extent, and WQRP status ("in progress", "completed", "approved", "being revised", and "other").
ii. Individual WQRP development and implementation progress.
iii. A summary of BMP implementation and effectiveness monitoring.
iv. An evaluation of agency activities in meeting Federal and State Water Quality programs and standards.
v. The recommendations for MOU updates.

4.3.2 Revision of BLM Resource Management Plan and EIS for Western Oregon

In March 2012, the BLM began the process of revising the Resource Management Plans (RMPs) for 2.5 million acres of forested lands across six BLM Districts in western Oregon. BLM intends to revise the six RMPs with an associated EIS for the Western Oregon Planning Area. BLM has begun the scoping process, to determine the scope of issues to be addressed by the environmental analysis, including alternatives and the significant issues related to the planning process.

The Federal Land Policy and Management Act of 1976 (FLPMA) requires the development, maintenance, and revision of land use plans. Preparation of the RMPs and EIS will conform to federal and state management laws including the Endangered Species Act, the Clean Water Act, and the National Environmental Policy Act.

In 2012, the State of Oregon signed an MOU defining the process and scope of the state's involvement in developing an RMP that involves and receives better understating of how the state and federal clean water act and state rules and regulations are included in the RMP. DEQ, ODF, ODFW, and DSL directors signed the MOU.

The key federal and state natural resources agencies are members of the Cooperating Agencies Advisory Group and technical workgroups such as riparian/aquatic resources.

BLM is on a schedule to have a final RMP and EIS completed by 2015.

4.3.3 USFS and BLM BMPs for Land Management Activities

4.3.3.1. USFS BMPs for All Land Management Activities

The purpose and objectives of the USFS National BMP Program is to provide a standard set of core BMPs and a consistent means to track and document the use and effectiveness of BMP use on NFS lands across the country. The objectives of the National BMP Program are:

- To consolidate direction applicable to BMP use for NPS pollution control on all NFS lands to avoid, minimize or mitigate adverse effects to soil, water quality and riparian resources.
- To establish a uniform process of BMP implementation that will meet the intent of the federal and state water quality laws and regulations, Executive Orders, and the United States Department of Agriculture (USDA), and Forest Service directives.
- To establish a consistent process to monitor and evaluate Forest Service efforts to implement BMPs and the effectiveness of those BMPs at protecting water quality on regional and national scales.
- To establish a consistent and creditable process to document and report agency BMP implementation and effectiveness.

This technical guide contains the national core set of BMPs to be used in the National BMP Program. A separate technical guide is being prepared that will contain the national BMP monitoring protocols.

This technical guide provides information for implementing the National Core BMP portion of the Forest Service National BMP Program. The National Core BMPs were compiled from Forest Service manuals, handbooks, contract and permit provisions, policy statements and state or other organization's BMP documents. The National Core

BMPs are not intended to supersede or replace existing regional, state, Forest or Grassland BMPs. Rather the National Core BMPs provide a foundation for water quality protection on NFS lands and facilitate national BMP monitoring.

The National Core BMPs encompass the wide range of activities on NFS lands across the nation. The primary intent of the National Core BMPs is to carry out one of the federal CWA purposes to maintain the chemical, physical and biological integrity of the Nation's waters. To that end, the National Core BMPs are focused on water pollution control. The National Core BMPs also address soil, aquatic, and riparian resources, but only to the extent that they contribute to maintenance of chemical, physical and biological water quality.

The National Core BMPs in this technical guide are deliberately general and non-prescriptive. As this document is national in scope, it cannot address all possible practices or practices specific to local or regional soils, climate, vegetation types, or state-specific requirements. The National Core BMPs require the development of site-specific prescriptions based on local site conditions and requirements to achieve compliance with established state or national water quality goals. It is expected that State requirements and BMP programs, Forest Service regional guidance, and Forest or Grassland Plans will provide the criteria for site-specific BMP prescriptions. The National Core BMPs provide direction on "what to do" and the local direction will provide "how to do it".

contains two examples comparing the National Core BMP direction with Forest Service regional direction and state BMPs. Forest Service Regions may supplement the National Core BMPs with additional practices or practices that are more specific to meet Regional needs.

The federal CWA does not regulate NPS pollution. Instead, Sections 208 and 319 require states to develop a process to identify, as appropriate, agricultural, silvicultural and other categories of nonpoint sources of pollution and to set forth procedures and methods, including land use requirements, to control to the extent feasible such sources. Each state has a NPS Management Program and Plan that directs how the state will control NPS pollution. The NPS Management Plan describes the process, including intergovernmental coordination and public participation, for identifying BMPs to control identified nonpoint sources and to reduce the level of pollution from such sources.

Once BMPs have been approved by a state, the BMPs become the primary mechanism for meeting water quality standards in that state. Proper installation, operation and maintenance of state-approved BMPs are presumed to meet a landowner or manager's obligation for compliance with applicable water quality standards. If subsequent evaluation indicates that approved and properly installed BMPs are not achieving water quality standards, then the state should take steps to revise the BMPs, evaluate and, if appropriate, revise water quality standards (designated uses and water quality criteria), or both. Through the iterative process of monitoring and adjustment of BMPs and/or water quality standards, it is anticipated and expected that BMPs will lead to achievement of water quality standards (EPA-823-B-94-005a (SAM 32)).

The US Forest Service Manual Direction requires all land use activities on national forests to meet federal and state water quality standards; Clean Water Act Section 303(d) and federal and state TMDL requirements (including, as required in some states, the development and implementation of TMDL Implementation Plans (sometimes called WQRPs); point source NPDES permits; Drinking Water Protection; and Groundwater Protection requirements. BMPs applied should be based on site-specific conditions and political, social, economic and technical feasibility. Methods that reflect NPS conditions should be used to measure effectiveness of those BMPs.

4.3.3.2. BLM Best Management Practices to Reduce Sediment Delivery from BLM Roads in Oregon

BLM has developed a BMPs list for roads that is being used throughout Oregon (\\Deqhq1\wqnps\BLM and USFS\BLM Roads BMP List 2011\W_Or_BLM Road_BMP_Draft_2_ODEQ_Review_4_15_11 DY 5-4-11 epf 20110504_jds5-6-2011.xlsx). DEQ has approved this list.

The Road BMPs include the following:

- Written Plans for Road Construction

- Road Location
- Road Design
- Road Prism
- Stream Crossing Structures
- Drainage
- Waste Disposal Areas
- Road Construction
- Disposal of Waste Materials
- Drainage
- Stream Protection
- Stabilization
- Rock Pit and Quarry
- Road Maintenance
- Vacating Forest Roads
- Wet Weather Road Use
- Guidelines for maximum distance between contiguous cross drains based on U.S. Conservation Service soil erodibility groups
- Waterbar Spacing By Gradient And Erosion Class

4.4 Urban and Rural Residential

Although much of Oregon is in forestry and agricultural land uses, urban and rural residential areas can contribute much more pollution on a per acre basis. For the mostly urbanized watersheds, the impacts of urban development can include a longer list of different types of pollutants, including heavy metals, urban use pesticides, nutrients, sediment, hydrocarbons and combustion related by-products, bacteria, and emerging pollutants like fire retardant products. Increased levels of impervious surfaces (e.g., roads, rooftops and parking lots) associated with urbanization alter the hydrology of the landscape, often causing an increase in stormwater runoff volume/rates – resulting in unstable stream banks or increased flooding – and the discharge of additional pollutants to surface water bodies. In these urban or urbanizing watersheds, natural surface water systems are replaced by stormwater infrastructure, connecting this water pollution source directly to the nearest stream, lake or wetland.

In Oregon, it is important to note that polluted runoff from urban areas is addressed by NPS programs or stormwater point source permits, and in some instances both programs. For example, larger cities or more populated counties may have both NPS and permitted stormwater requirements or commitments. Whereas, most medium and small sized communities may only address stormwater runoff through NPS programs and Clean Water State Revolving Fund (CWSRF) for funding NPS projects

Oregon relies on the following programs for the prevention, control, and treatment of urban pollution:

- **TMDL Water Quality Management Plan** – DEQ identifies the urban pollutants located within a city, county and/or stormwater district's waters of the state that do not meet water quality standards and require TMDL load allocations to be met in order to protect beneficial uses.
- **TMDL Implementation Plan** – The TMDL identifies those city, county, and/or stormwater district DMAs that need to develop and implement a TMDL Implementation Plan. The Plan, developed by DMAs and approved by DEQ, must identify the programmatic and structural BMPs that are needed to control, reduce, and treat pollutants that have TMDL load allocations. The goal is for the DMA to meet TMDL load allocations and the waterbody to meet water quality standards.
- **NPDES Municipal Separate Storm Sewer System (MS4) Phase I or II Stormwater Permit -** Phase I or Phase II MS4 communities address their requirements for urban runoff-related pollutants (e.g., bacteria, sediment), by developing a Stormwater Management Plan (SWMP) and submit it to DEQ for approval and incorporation as permit conditions.

4.4.1. TMDL Implementation for Urban and Rural Residential DMAs

Each DMA identified in the Water Quality Management Plan is required to prepare an individualized TMDL implementation plan that provides a description of the management strategies necessary to prevent, control, and/or treat specific sources of the TMDL pollutant (OAR 340-042-0080(4)). The TMDL WQMP may provide information that the DMA *must* include in the TMDL Implementation Plan.

Each TMDL Implementation Plan must include the management strategies the DMA will use to reduce pollutant loading and achieve the load allocations. The TMDL Implementation Plan must describe the selected management strategies and measurable milestones in sufficient detail, such as providing siting criteria and operating methods, to inform DEQ's independent and objective review and effectiveness evaluation.

The TMDL Implementation Plan must also include implementation timelines and performance monitoring, including specific timelines for each practice to ensure that the TMDL load allocation is met within a reasonable timeframe.

The DMA should also include in the Implementation Plan reasonable assurances that the strategies described in the plan will work. There are two elements to these assurances. First, the management strategies selected should to be justified with estimates of their contribution to load reduction targets. Second, a description of funding sources and other mechanisms that will be used to assure implementation of strategies is essential for a complete plan. The cost of administration, operation and maintenance, and monitoring should be considered for the long-term implementation of the Implementation Plan.

4.4.2 NPDES MS4 Stormwater Permit

EPA's NPDES Phase I or Phase II Stormwater rules (http://cfpub.epa.gov/npdes/stormwater/munic.cfm) require the Municipal Separated Storm Sewer Systems (MS4) permitted community to implement a stormwater management program and to prepare a Stormwater Management Plan (SWMP) in order to reduce the discharge of pollutants into the storm sewer system to the maximum extent practicable. The SWMP can be used as the TMDL implementation plan but must be reviewed for adequacy to meet TMDL requirements.

The MS4 permittee submits its SWMP (or TMDL Implementation Plan) to DEQ for approval and incorporation as permit conditions. In addition, for those impaired water bodies that a MS4 Phase I permitted community discharges to 303d listed impaired waters that do not yet have an approved TMDL, the MS4 permit requires the permittee to evaluate all 303(d) listed pollutants to determine the adequacy of the SWMP to reduce the 303(d) listed pollutant to the maximum extent practicable, and make modifications to the SWMP BMPs as needed.

4.4.3 State Land Use Planning Goals

The Oregon Department of Land Conservation and Development (DLCD) implements the State of Oregon land use planning laws and regulations. Where implemented, Goals 5, 16, and 17 in protect wetlands, riparian areas, coastal shore lands, and estuaries by ensuring cities and counties identify environmentally sensitive areas in comprehensive plans and adopt zoning ordinances to protect them. Goal 6 can be used to support water quality related zoning and development ordinances such as riparian and wetland protection and stormwater control and treatment. It also allows jurisdictions to incorporate DEQ NPS directives into local plans and codes. Goal 7 directs local governments to apply land use management strategies that reduce risk to life and property. Goal 7 measures can integrate with NPS reduction measures in floodplains and landslide prone areas.

Statewide land use goals 11 and 14 also help to reduce the impacts of urbanization on water quality. Goal 11 requires jurisdictions to have public facility plans in place to serve as a framework for urban and rural development. Stormwater management plans are required under Goal 11 for all existing urban areas and when urban areas are expanded. Goal 14 provides standards for designating and expanding urban growth boundaries (UGBs). In Oregon

UGBs limit urban sprawl. Goals 3 and 4 work to preserve productive farm and forestland. Nonpoint pollution from residential land use in farm and forest zones is minimal because new development is severely restricted in these zones.

DEQ coordinates with DLCD to provide information to local governments on NPS reduction, and TMDL compliance strategies.
It is however important to note that a DMA will still need to meet both the TMDL load allocations and the state land use-planning goals individually. For example, even if a local jurisdiction has adopted a Goal 5 "safe harbor" for riparian and wetland areas protection, the DMA will need to analyze the adequacy of their Goal 5 program in meeting their TMDLs, particularly the shade requirements with a temperature TMDL. For most urban areas, the riparian areas are degraded and may contain very few trees. In addition, the "safe harbor" buffer widths may not provide sufficient shade to meet the temperature TMDL shade surrogates in some instances. A local jurisdiction may determine that they comply with Goal 5 and not Goal 6 or their TMDL.

Urban and rural nonpoint contributing sources need development-related controls administered through local land use ordinances. Goal 6 requires local jurisdictions to comply with state and federal water, land, and air quality laws. Land use planning is one of the most important first steps in meeting an urban and rural residential TMDL load allocation. It is essential that city and county land use related TMDL Implementation Plan measures are enforced through the local plan.

A city or county should review, and if needed, amend their comprehensive plan and applicable implementing ordinances. The city and county land use related TMDL Implementation Plan measures should be enforced through the local plan and development ordinances. 5. Oregon 319 Grant Program

5.1 Federal CWA Section 319(h) NPS Grant Funding

The NPS Grant Program is administered by the Oregon DEQ for providing funding to stakeholders for supporting activities that address the goals and objectives of the NPS Management Program. Section 319(h), federal funds are provided annually through the EPA to States for the development and implementation of each State's NPS Management Program. In Oregon the 319 grant dollars are used to fund DEQ NPS staff positions for implementing the NPS Program (Sect. 5.2) and to fund priority projects (Sect. 5.3) (Table 6).
Project priorities for 319 Pass Thru Grants are identified by DEQ NPS staff and included in the NPS RFPs.

Table 6 identifies the total Section 319(h) dollars, for the years 2007-2014. Funding of both staff and projects has decreased with cuts made by Congress to the EPA 319 Program. In the last three years (2011 to 2014), funding for projects has decreased by hundred thousands of dollars. The total EPA Region 10 funding has decreased in the last three years by >$1.4 million dollars (Table 6).

Table 6: Oregon Total Section 319 Funding 2007 to 2014

YEAR	STAFF	PROJECTS	TOTAL	LOSS
2014				
2013	$1,301,492	$756,508	$2,058,000	-$617,700
2012	$1,249,000	$905,000	$2,154,000	-$521,700
2011	$1,230,168	$1,111,832	$2,342,000	-$333,700

2010	$1,288,300	$1,387,400	$2,675,700	SIMILAR FUNDING LEVEL
2009	$1,288,300	$1,387,400	$2,675,700	SIMILAR FUNDING LEVEL
2008	$1,288,300	$1,387,400	$2,675,700	SIMILAR FUNDING LEVEL
2007	$1,279.900	$1,387,400	$2,667,300	SIMILAR FUNDING LEVEL
TOTALS	$7,646,840	$8,322,940	$17,248,400	

5.2 Performance Partnership Agreement

A portion of DEQ's NPS program activities are funded through the EPA and DEQ Performance Partnership Agreement (PPA). PPAs cover activities from July 1 to June 30. This funding is used in waters impaired by NPS pollution or to protect waters from NPS of pollution to support program implementation, management, administration, TMDL development and implementation, and agency coordination.

These funds will support staff within DEQ that will conduct the following activities:

- Implement TMDLs for NPS in watersheds where TMDLs/WQMPs have been completed, such as the Willamette River and Columbia River Basins.
- Implement the Willamette Mercury TMDL (Phase I) using DEQ's Mercury Reduction Strategy and mercury source characterization work to help identify priorities and strategies.
- Implement strategies for GWMA's with established Action Plans.
- Distribute 319 grants to fund project proposals in Oregon's priority basins based on TMDL implementation, 303(d) listings, GWMAs, and Drinking Water Source Areas.
- Administer 319 Grants.
- Prepare an annual report of NPS program accomplishments.
- Determine with EPA potential NPS success stories documenting either that the water body is meeting WQS or making water quality progress under EPA's national measures.
- Enter GRTS 319 project tracking mandated data elements by national deadlines, including pollutant load reductions, as available.
- Coordinate with the Oregon Department of Land Conservation and Development (DLCD) on the Oregon Coastal Nonpoint Pollution Control Program (CNPCP).
- Coordinate with state and federal natural resource managers on meeting water quality goals and objectives.
- Characterization of NPS problems/concerns.
- Monitoring to support and determine effectiveness of BMP programs.
- Best management practices development/implementation.
- Coordination between stakeholders.
- Liaison support staff to other state and federal agencies.
- Restoration activities.
- Development and modeling for NPS TMDLs.
- Development of UAA)/SSC as related to NPS activities.
- Public education.
- 319 Grant administrations for individual projects.

5.3 Oregon NPS Program Funding

The Oregon DEQ requests proposals for watershed assessment, planning, implementation, demonstration and education projects within the boundaries of impaired watersheds on a yearly basis. Since 2012, the RFP process has been a two-step application. The pre proposal application is the first step to gather concept project ideas from potential applicants. Requesting full proposal from selected pre proposal applicants is the second step.

Benefits to applicants of the pre-proposal process include:

- Simplified process for matching project ideas to DEQ's priorities,
- Increased focus on achieving desired results,
- Technical assistance and guidance from DEQ staff to develop final proposal, budget, and project that meet EPA 319 program requirements,
- Reduced risk to applicant of investing time and resources to develop a full proposal that may not be funded.

The projects funded are very specific in targeting the NPS priorities in the RFP. Additional information can be found in the 2014 Oregon 319 NPS Implementation Pre-Proposal Application
http://www.deq.state.or.us/wq/nonpoint/grants.htm

The proposals must focus on preventing, controlling, and eliminating water pollution from nonpoint sources in waters of the state to meet water quality standards and TMDL load allocations. In addition, proposals must be consistent with the goals, objectives, and priorities identified in the RFP. DEQ Region and HQ NPS and TMDL staff use existing information such as: TMDL/WQMP; Integrated Report; Watershed Approach Basin Reports; GWMA Action Plans; agricultural biennial reviews of area rules and plans; water quality data; and other relevant information to identify and prioritize projects for the RFP. Region and HQ RFP priorities are reviewed by NPS and TMDL staff and managers before inclusion in the RFP. The NPS and TMDL staff score and select pre-proposals for full proposals, which are then reviewed by NPS and TMDL staff, and management for funding. In addition, DEQ NPS and TMDL staffs are 319 Grant Administrators for the individual project grants. Typically, DEQ targets Pass Thru Grant funds for the following types of projects:

- TMDL implementation plans,
- Surface and ground water quality monitoring,
- Data analysis and modeling,
- Demonstration of innovative BMPs,
- Technical assistance to landowners for conservation planning,
- Public outreach/education,
- Implementation and development of EPA's nine-element, including the formation and facilitation of stakeholder groups,
- Monitoring activities to determine the effectiveness of specific pollution prevention methods.

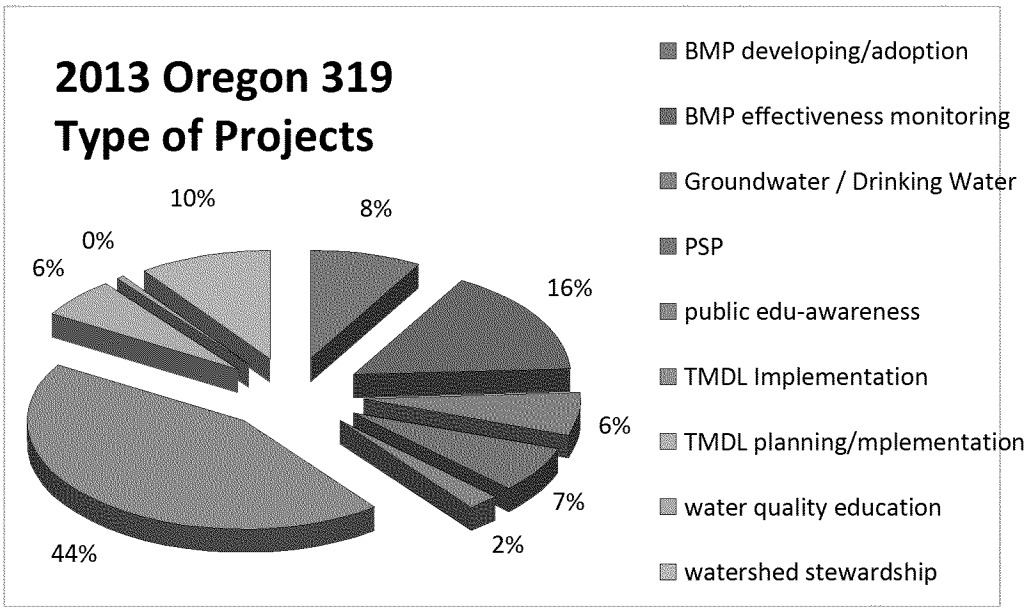
Project proposals should, where applicable, stress interagency coordination, demonstrate new or innovative technologies, use comprehensive strategies that have statewide applicability, and stress public participation.

5.4 Project Funding

DEQ seeks proposals from government agencies, tribal nations and nonprofit organizations to address non-point sources (NPS) of pollution affecting coastal, river, lake, drinking and ground water resources of the state. DEQ identifies specific regional priorities for implementation of the Oregon 319 NPS Grant. The priorities provide the objective and the type of strategy to implement. As an example, Figure 2 is the 2013 grant project objectives and is

characteristic of previous year's project types. DEQ prioritizes the projects on how well the proposal reflects the listed priorities in the RFP.

Figure 2: 2013 Oregon 319 Type of Projects



5.5 EPA Grants Reporting and Tracking System – GRTS

The Grants Reporting and Tracking System (GRTS) is the primary tool for management and oversight of the EPA's NPS pollution control program. GRTS pulls grant information from EPA's centralized grants and financial databases and allows grant recipients to enter detailed information on the individual projects or activities funded under each grant.

Oregon DEQ reports annually to EPA the progress in meeting milestones, including:

- Estimates of loading reductions of NPS pollutants;
- Improvements to water quality achieved by implementing NPS pollution control practices;
- Include WQ10 Success Stories into the DEQ NPS Annual Report when data shows water quality standards and/or TMDL allocations are being met.
- Oregon needs to develop a data collection and analysis protocol to determine when a WQ-10 story can be included into DEQ's NPS Annual Report); and
- Identification of the status of all subbasins in Oregon in improving water quality at all stages:
    - Impaired waters that do not meet water quality standards or TMDL Load Allocations.
    - Meets TMDL Load Allocations.
    - Meets Water Quality Standards.
    - Determine with EPA available NPS Success Stories documenting either water quality progress or full restoration under Program Activity Measure (PAM).
    - Outstanding Waters

GRTS is used by Oregon to supply information about the State's NPS Management Programs and annual Section 319 funded work programs, which include watershed-based BMP implementation projects. GRTS includes information about BMPs implemented under 319-funded watershed projects and the NPS load reductions achieved. EPA uses GRTS to compile and report information about state section 319 program projects including load reductions for nitrogen, phosphorus, and sediment.

As part of the reporting via GRTS, Oregon fulfills requirements of the federal CWA Sections 319(h) (11) and 319(m) (1). However, GRTS also provides EPA and other stakeholders greater and more efficient access to data,

information, and program accomplishments than would otherwise be available. Besides load reduction information, GRTS, in conjunction with WATERS (see below) provides detailed geo-referencing (i.e., National Hydrograph Dataset (NHD) or NHD reach addresses) for 319-funded projects, project cost information, and a host of other elements.

GRTS is also part of the Watershed Assessment, Tracking, and Environmental Results System (WATERS), which is used to provide water program information and display it spatially using a geographic information system integrated with several existing databases. These databases include the STOrage and RETrieval (STORET) database, the Assessment TMDL Tracking and Implementation System (ATTAINS) the Water Quality Standards Database (WQSDB), and GRTS.

Oregon continues to enter load reduction data for identified 319-funded projects into GRTS. Oregon is in the process of identifying additional watershed models to estimate the load reductions resulting from implementation of BMPs. In the meantime, Oregon continues to use the Spreadsheet Tool for Estimating Pollutant Loads (STEPL) directly supported by EPA and the "Region 5" model to estimate loading reductions of the following parameters:

- Sediment
- Sediment-borne phosphorus and nitrogen
- Feedlot run-off
- Commercial fertilizer, pesticides, and manure utilization

5.5.1 Grants Reporting to OWRI

In addition to GRTS reporting, DEQ requires that 319 project accomplishments for water quality and habitat restoration projects be entered into the OWEB's Oregon Watershed Restoration Inventory (OWRI) database located at http://apps.wrd.state.or.us/apps/oweb/owrio/selectproject.aspx.

Watershed restoration projects information included in this database is as follows:

- Activities designed to restore aquatic, riparian, estuarine, wetland, upland, or overall watershed conditions or functions.
- Completed projects or a completed phase of a project.

5.5.2 Oregon Nonpoint Source Pollution Program Annual Report

DEQ prepares an Oregon Nonpoint Source Pollution Program Annual Report that is submitted to EPA Region 10 for review. The NPS Annual Report contains the previous year's NPS Management Program performance including reports on progress on meeting goals, objectives, and priorities. This is the primary document EPA uses in making its determination on whether Oregon has made satisfactory progress on its NPS program goals. With an EPA determination of making satisfactory progress then EPA Region 10 provides 319 funding to Oregon.

This NPS program annual update report is to meet the requirements of section 319 (h) (8) and (11) of the Federal CWA (33 USC 1329). The report documents the activities and accomplishments of the State of Oregon in general and the DEQ in particular regarding the administration of the State's NPS Management Program during the period January – December.

For DEQ's NPS Program Annual Report, the EPA, Region 10 staff provided assistance in the development of the NPS Annual Report. This included providing assistance in the development of the review of 319-grant work plans and processing Oregon's grant and GRTS technical assistance and training to develop pollutant load reduction estimates of the funded projects.

Following EPA Section 319 Grant reporting guidelines, the report contains the following elements:

- Description of Oregon's NPS Program.
- Description of Oregon's Baseline Regulatory Statutes and Non-Regulatory NPS Programs.
- Annual Program Directions and Priorities.
- Nonpoint Source Management and Administration, Including a Description of Oregon's Performance Partnership Agreement (PPA) and Use of 319 Funds.
- Identification of the Annual Project Implementation Activities, which Included the Following Programs/Projects:
    - Total Maximum Daily Loads
    - New Water Quality Standards
    - Watershed Plan Development
    - NPS Projects Funding by Basin/Subbasin
    - Toxic Chemicals
    - Water Quality Issues on Agricultural Lands
    - Pesticide Management
    - Water Quality Issues on State and Private Forest Lands
    - Water Quality Issues on Federal Forest Lands
    - Clean Water State Revolving Fund
    - Drinking Water Protection in Oregon
    - Coastal Zone NPS Program
    - Monitoring and Data
    - Groundwater Management Areas (GWMAs)
- Progress of 319 Grant Funded Projects, including Grant Performance Report Summary, Description of Geographic and Programmatic Priorities for annual 319 Funding, and progress of 319-Grant Funded Projects and Categories.
- Calculated Nitrogen, Phosphorus, and Sedimentation-Siltation Annual Pollutant Load Reduction Estimates of Funded Projects.
- Description of DEQ's Watershed-Based Plans.
- Success Stories/Environmental Improvement (WQ-10) and (SP-12) Projects and Other.
- Oregon's 319-Grant allocation to Projects, Staff, and the NPS program.
- Annual 319 funded projects are usually divided in four areas of emphasis, as follows:
    - BMP Implementation (?%),
    - TMDL Implementation (?%),
    - Pesticide Stewardship Program (?%), and
    - Information and Education (?%).
- SP-12 or WQ-10 Project success stories Program Directions

6. Other State Operated NPS Funding Sources

Oregon's NPS Management Program is funded from other DEQ, state, and federal programs. For DEQ, there is the Clean Water State Revolving Loan (CWSRF) program. Other state funding programs include the Drinking Water Revolving Loan Fund (DWRLF), the following OWEB grants: Small Grants; Local Capacity Support Grants; Outreach; Monitoring; Restoration; Partnership Investments; which include Investments in Longer-Term, and Larger-Scale Activities.

6.1 Clean Water State Revolving Fund

With the amendments to the Clean Water Act in 1987, Congress ushered in a new era in financing water quality improvements. Under Title VI, the CWA established the innovative Clean Water State Revolving Fund program. The CWSRF program is available to fund a wide variety of water quality projects including all types of nonpoint source, watershed protection or restoration, and estuary management projects, as well as more traditional municipal wastewater treatment projects.

The CWSRF loan operates much like an environmental infrastructure bank that is capitalized with federal and state contributions. The fund loans to public agencies and loan repayments are recycled back into the program to fund additional water quality improvement projects. The revolving nature of the loan provides for an ongoing funding source intended to be available in perpetuity.

Many think of the CWSRF program as a source of funding for municipal projects. It is. Yet, it is also a significant resource for funding nonpoint source and estuary management projects. To date, the CWSRF has provided over $3 billion in funding for nonpoint source projects nationally.

In Oregon, the loan program provides low-cost loans to public agencies for the planning, design or construction of various projects that prevent or mitigate water pollution. The Oregon Department of Environmental Quality administers the program. Eligible public agencies include federally recognized Indian tribal governments, cities, counties, sanitary districts, soil and water conservation districts, irrigation districts, various special districts and certain intergovernmental entities.

When used to address nonpoint source pollution, the CWSRF loan can be a very effective source of financing. Not a grant perhaps, but these are low-cost loans that are apt to qualify as match for a 319 grant, an OWEB grant or USDA conservation programs.

In addition to direct, nonpoint source loans, Oregon's CWSRF program includes a specific form of loan, the Sponsorship Option that encourages a partnership between an operator of a publicly owned wastewater system and an organization seeking funding for a qualifying nonpoint source project. By agreeing to fund a nonpoint source project in conjunction with wastewater project, the operator could be eligible for a discounted CWSRF loan resulting in the funding of both the wastewater project and the nonpoint source project at a cost equivalent to just the wastewater project. The goal of this approach is to match an existing source of funding to those needed water quality improvements that would likely be overlooked for funding.

DEQ accepts new applications year-round. Applicants must provide information on the project's water quality benefits, environmental impact and estimated cost. DEQ reviews and scores all applications against specific ranking criteria using the information submitted. DEQ then lists applicant's projects for possible funding, in rank order, within the program's project priority list.

Applicants whose projects are placed on the project priority list must still complete all required program documents. These documents may include land-use compatibility statements evidence of authority to undertake the project, and financial reports. Once DEQ approves the required documentation, DEQ considers the project ready-to-proceed. DEQ only considers those projects identified as ready-to-proceed for a loan. DEQ offers loans to applicants in rank as funds become available. The program typically provides about $50 million annually for funding planning, point source and nonpoint source projects.

In order to receive CWSRF funds, all proposed nonpoint source projects must align with, and support the goals of Oregon's Nonpoint Source Control Program Plan. Nonpoint source staff at DEQ headquarters reviews the proposed project's information and goals. With input from the appropriate basin coordinator, headquarters staff determines whether the proposed project aligns with the Nonpoint Source Control Program Plan. If the proposed project does not align with the Nonpoint Source Control Program Plan, it is not eligible for CWSRF funding.

In 2013, DEQ revised its administrative rules to improve the program's ability to provide financial assistance to public agencies that have diverse water quality improvement needs. The new rules:

- Encourage public agencies to address water quality improvements through integrated approaches and encourage planning efforts.
- Broaden and clarify current project eligibility to include more types of water quality improvements. Previous project eligibility may have been a barrier to funding nonpoint source projects.
- Clarify that stormwater improvement projects (both point source and nonpoint source) are eligible for CWSRF funding, and project criteria are now more inclusive of these types of projects.

- Shift ranking criteria emphasis to encourage projects to integrate sustainable and "green" components with conventional "gray" infrastructure.
- Encourage those projects that address water quality benefits and the relationship of those benefits to a watershed.

For almost two decades, DEQ's CWSRF staff has administered Oregon's implementation of EPA's Clean Watershed Needs Survey. This national survey and other recent studies consistently indicate nonpoint sources of pollution continue to be an important source of water impairment. DEQ's CWSRF loan program continues to scrutinize effective avenues to financial support projects addressing nonpoint source pollution.

6.2 Drinking Water Revolving Loan Fund (DWRLF)

In Oregon, the Drinking Water Revolving Loan Fund (DWRLF) is administered by the Oregon Health Authority (OHA), the state agency that regulates drinking water under state law and the Safe Drinking Water Act. OHA works cooperatively with DEQ on source water protection efforts.

Money from the DWRLF is used to fund:

- Source Water Protection Grants (up to $30,000) to fund source water protection activities, monitoring, and planning in Drinking Water Source Areas (DWSAs);
- Loans for improving drinking water treatment, source water protection activities, or land acquisition in DWSAs; and
- DWRLF set-asides for administration fund five Drinking Water Protection positions at Oregon DEQ, which delineate DWSAs, integrate Clean Water Act programs (including the NPS Program) with source water protection needs, provide technical assistance to public water systems, and research NPS impacts on surface and ground drinking water sources.

6.3 OWEB

The Oregon Watershed Enhancement Board (OWEB) is a state agency that provides grants to help Oregonians take care of local streams, rivers, wetlands and natural areas. OWEB grants http://www.oregon.gov/OWEB/GRANTS/pages/grant_faq.aspx are funded from the Oregon Lottery, federal dollars, and salmon license plate revenue. OWEB offers a variety of grant types and programs. The OWEB mission of *restoring, maintaining, and enhancing watersheds* implicitly recognizes that specific goals for improvement will vary between watersheds.

OWEB has the following grants for the various watershed improvement activities identified in watershed assessments, action plans, restoration plans, and other plans such as DEQ's TMDLs and Water Quality Basin Status and Action Plans, local Watershed Plans prepared by Watershed Councils. These plans focus on water quality improvements to meet water quality standards and TMDL load allocations. These grants are also used to implement habitat, stream, fish and wildlife restoration projects.

6.3.1 OWEB Grants Program

Small Grants:
The Small Grant Program is a competitive grant program that awards funds of up to $10,000 for on-the-ground restoration projects that address local priorities. Watershed councils, soil and water conservation districts and tribes submit applications on behalf of landowners.

- **Technical Assistance Grants**
  CREP Technical Assistance grants to SWCD and/or Watershed Councils.
  http://www.oregon.gov/OWEB/GRANTS/pages/crep_tech_assist_grants.aspx
- **Restoration Grants**
  The Restoration Grant Program is a competitive grant program that awards funds to local partners for projects to improve watershed health. Grant projects address non-point source pollution issues, groundwater issues, water conservation/water efficiency, water quality, instream needs, climate change adaptation, fish and wildlife habitat, irrigation efficiency infrastructure and stormwater.
- **Outreach Grants**
  The Outreach Grant Program is a competitive grant program that awards funds to perform outreach activities that provide information to increase awareness and understanding of watershed restoration and protection, and are related directly to efforts to protect or restore native fish or wildlife habitat or water quality or stream flows.
- **Monitoring Grants**
  The Monitoring Grant Program is a competitive grant program that awards funds to perform monitoring projects that identifies conditions in the watershed. It may be for the purpose of gathering baseline data on current conditions, for evaluation of the specific effects of management actions, or for comparing similar watershed components before and after a project.

Local Capacity Support Grants:
These grants are used for investing in the watershed restoration infrastructure. OWEB supports the capacity of watershed councils and soil and water conservation districts so that the state has an enduring, high capacity local infrastructure for conducting watershed restoration and conservation. See http://www.oregon.gov/OWEB/GRANTS/pages/grant_faq.aspx.

- **Watershed Council Support**
  Watershed councils are locally organized, voluntary, non-regulatory groups established to improve the condition of watersheds in their local area. Watershed councils bring varied interests together to form a common vision for the watershed, prioritize activities, and identify landowner participants for important projects. OWEB council support grants provide funds for watershed council coordinator salary, operating costs, risk management and accountability insurance, and other costs. See
  http://www.oregon.gov/OWEB/GRANTS/Pages/council_capacity_apps.aspx#Purpose_of_Council_Capacity_Grants
- **Soil and Water Conservation Districts**
  Soil and water conservation districts historically focused primarily on helping farmers and ranchers protect soil and water resources. Today, there are 45 districts providing technical information and guidance to landowners, managers, and citizens across the state. OWEB provides funding to support the capacity of soil and water conservation districts to work with landowners in support of the Oregon Plan for Salmon and Watersheds and the local Agricultural Water Quality Management Plans.

Partnership Investments; Investments in Longer-Term, Larger-Scale Activities:
The Partnership Investment Program is a means by which OWEB works closely with partners and utilizes a different process to invest in longer-term activities intended to result in larger-scale ecological outcomes. Ideally, a Partnership Investment contributes to a historic change or surge of progress in the recovery of a species, the restoration of an ecosystem, or the launching of an initiative that addresses widespread issues.

- The Special Investment Partnership (SIP) Program
  Partnerships have been established in the Upper Deschutes, Willamette and Upper Klamath basins. Additional SIPs are being considered for future funding.
- Deschutes Special Investment Partnership
  The goal of the Deschutes SIP is to re-establish the stream flow, restore habitat, and re-establish extirpated salmon and steelhead runs in the Deschutes River and tributaries above the Round Butte Dam.
- Willamette Special Investment Partnership
  The main goal of the Willamette SIP is to restore the main stem river's meanders, natural floodplains, and fish and wildlife habitats in order to slow floodwaters and allow the river to interact with the land and plants around it. The Willamette SIP is built on a companion effort of the Meyer Memorial Trust who is an active funding partner and committed to increasing the pace of restoration in the Willamette basin.
- Upper Klamath Special Investment Partnership
  The Upper Klamath SIP desired outcomes are to contribute to chemical, thermal, and physical aquatic conditions that will benefit fish populations and water quality in the Upper Klamath Basin by reestablishing, improving, and sustaining the ecologic and hydrologic connectivity of aquatic ecosystems. The Upper Klamath SIP is built on a companion effort with The National Fish and Wildlife Foundation. The Partnership will enable conservation and restoration of local ecosystems, while supporting local communities.
- Whole Watersheds Restoration Initiative (EcoTrust and WWRI)
  WWRI is a partnership with U.S. Forest Service, NOAA Fisheries, and EcoTrust that focuses funding on restoring land across public and private ownerships within priority watersheds.

The goal of this prioritization framework is to create a science-guided process that incorporates local priorities into regional (basin) improvement project priorities. Input from other stakeholders, like DEQ, are used to identify watershed improvement project priorities.

OWEB's process for establishing watershed improvement activity priorities:

- Information from watershed assessments, action plans, other studies such as DEQ's TMDLs and Water Quality Basin Status and Action Plans, and input from local Watershed Councils and other stakeholders, like DEQ, have been used to identify watershed improvement project priorities.
- Five general types of activities have been identified to address watershed function improvement:
  1. Actions that restore habitat connectivity;
  2. Actions that address impaired watershed processes that affect the aquatic system or water quality;
  3. Actions that address key habitats and water quality for ESA-listed species;
  4. Actions that reduce human impacts and inputs to the watershed; and
  5. Actions that address symptoms of impaired watershed processes (e.g., placing large wood in streams) that impact fish habitat or water quality, or affect specific wildlife concerns (e.g. wildlife guzzlers).

OWEB staff work with DEQ basin coordinators, watershed councils and other conservation entities to develop basin priorities. The priorities are intended to be used as guidance by OWEB in the review of grant applications and to help ensure a clear and strategic approach to prioritizing the funding of projects. http://www.oregon.gov/OWEB/pages/restoration_priorities.aspx shows which basin priorities are complete.

6.3.2 OWEB Prioritization Framework: Improvement Priorities at Basin and Watershed Scales

In OWEB's "*Draft OWEB Prioritization Process V 4.2 3, Prioritization Framework, Improvement Priorities at Basin and Watershed Scales* http://www.oregon.gov/OWEB/GRANTS/docs/grants_restoration_prioritization_frmwork.pdf" OWEB developed a framework that establishes improvement priorities at regional geographic scales and evaluates the relative merits of proposed improvement projects at local watershed scales (similar to 3rd field HUCs).. The term regional (as used here) refers to the 15 basins described in the Oregon Plan Biennial Report (**Figure 3).**

Figure 3: OWEB Prioritization Framework At The Regional Level – 15 Basins

OWEB is required by statute to establish regional priorities that will guide funding decisions by the Board (ORS 5431.371 (1) (c)). In addition, OWEB's Board clarified its funding goal in a "grant funding preference criterion" in September 2001. The Board agreed that, "Capital expenditure project funding priorities will primarily focus on addressing those factors in the watershed that directly limit the improvement of water quantity and water quality and the recovery of fish species listed under the state or federal Endangered Species Act." OWEB developed a Prioritization Framework that reflects this preference. The framework is founded on principles of conservation biology and applicable to all basins.

Basin and watershed scale priorities are identified through a review of watershed assessments and conversations with local stakeholders where the most often reported local improvement needs identified are captured. Those improvement needs that address conditions as a result of historical (legacy) land management and those needs that address conditions under current land management practices can also be identified.

The following **Table 7** provides an example of identified restoration priorities at the basin scale for the Hood River Basin:

Table 7: OWEB Grant Funding Example

OWEB GRANT FUNDING EXAMPLE HOOD RIVER BASIN: Watershed Improvement Priorities.		
KEY PRINCIPLES	**ISSUES (WATERSHED LOCATION)**	**WATERSHED IMPROVEMENT PRIORITIES**
Actions that address impaired watershed processes that affect the aquatic system or water quality. Actions that address key habitats and water quality for these ESA-listed fish: • Winter Steelhead • Summer Steelhead • Spring Chinook • Fall Chinook • Bull Trout Actions that restore habitat connectivity.	Fish Passage Barriers due to roads and dams, including the Clear Branch Dam. In stream sedimentation, particularly Fifteen mile Creek. Water quality concerns: temperature. Irrigation diversions create low summer flows and dewater some reaches (Hood, Fifteen mile, Mosier). Retain water and soil in upland areas, particularly Fifteen mile Creek.	Restore / improve fish passage at road crossings, irrigation diversions and dams. Restore instream flows, increase irrigation efficiency or water leasing. Promote ecologically sound range management to improve vegetative cover in grasslands and reduce grazing pressure on riparian areas. Encourage conversion to no-till or perennial crops. Restore riparian conditions for habitat and aquatic shade.

6.3.3 Oregon Watershed Restoration Inventory (OWRI)

The Oregon Watershed Restoration Inventory (OWRI) originated at the onset of the Oregon Plan for Salmon and Watersheds to track Oregonians' voluntary efforts to restore habitats for salmon and wildlife. For more information on the OWRI program, please refer to http://www.oregon.gov/OWEB/monitor/Pages/owri.aspx.

While the database is managed by OWEB and contains information about grants funded by OWEB, the majority of the OWRI entries represent voluntary actions of private citizens and landowners who have worked in partnership with federal, state, and local groups to improve aquatic habitat and water quality conditions. With over 14,000 records of projects completed since 1995, OWRI is the single largest restoration information database in the Western United States.

The DEQ Section 319 NPS Grant Program and the OWEB grant program http://www.oweb.state.or.us/ complement each other as many projects are co-funded by these programs. It is a requirement of all projects funded by the DEQ Section 319 NPS Grant Program to report also into the OWRI database if the project involves restoration. Watershed restoration activities included in the inventory are:

- Activities designed to restore aquatic, riparian, estuarine, wetland, upland, or overall watershed conditions or functions;
- Completed projects or a completed phase of a project; and
- Activities beyond normal maintenance and management procedures in cases such as road and culvert improvements, erosion control, etc.

How OWRI information is used:

- To report Oregon Plan for Salmon and Watershed accomplishments;
- To support effectiveness monitoring of restoration activities; and
- To inform watershed assessments and future restoration project planning and prioritization.

DEQ is beginning to use data in OWRI for tracking and reporting on restoration activities that are expected to reduce NPS pollution. This information will be useful in finding and writing WQ10 stories. And this information will be reported in the Oregon NPS Program Annual Reports.

6.3.4. Oregon Conservation Reserve Enhancement Program (CREP)

The Conservation Reserve Enhancement Program (CREP) is a state and federal partnership that allows landowners to receive incentive payments and conservation rental payments from the USDA Farm Services Agency for establishing long-term riparian buffers on eligible land. The Oregon CREP was approved in 1998. As an offspring of the Conservation Reserve Program, CREP is a voluntary program for agricultural landowners. http://www.oregon.gov/OWEB/GRANTSODA/NRD/pages/water_crep_tech_assist_grants.aspx

The following projects are likely to be funded during the 5-year timeframe of this Plan:

- Projects addressing stream water quality issues; primarily stream temperature;
- Establishing long-term riparian buffers on eligible land;
- In addition to providing partial funding to direct landowner payments for conservation activities, OWEB has participated in providing funding for outreach, technical assistance and program coordination;
- DEQ, ODA, ODF, OWRD, and NRCS also assist in CREP implementation and coordination; and
- OWEB fund annual grants from January 1 to December 31 that will provide funding for staff positions to assist landowners with conservation plan development and implementation, including the completion of Endangered Species Act and cultural resources reviews.

7. Water Quality Data and Assessments

The NPS Program using data and information from water quality monitoring performed by a variety of entities including: DEQ, watershed councils, ODF, USFS, BLM, and others. This data and information is used for helping with identifying implementation priorities and effectiveness of the program.

Some of the DEQ monitoring activities include:

- TMDL Development – Collect data to develop TMDLs for 303(d) listed streams.
- Groundwater – Identify areas of groundwater contamination and determine trends in Groundwater Management Areas.
- Large River Ambient – Collect data for long term trending at fixed sites across the state.
- Volunteer Monitoring – Improve data quality collected by third parties and increases the data accessibility for local and state assessments.
- Coastal Environmental / Bacteria Monitoring – Collects data to determine the need for beach advisories.
- Toxics Monitoring - Toxics Monitoring Project for surface waters in watersheds across Oregon and Drinking Water Toxics Monitoring. These projects will give information about current and emerging contaminants that threaten aquatic life and human health.
- Pesticide Stewardship Partnership - Collaborative approach to reduce instream pesticide concentrations in agricultural, urban and forest areas. Instream pesticide information is shared with growers to help them target management practices that reduce pesticides in water.
- Effectiveness monitoring in some 319 grant-funded projects.

Priorities for future monitoring and data collection by DEQ or in cooperation with related agencies are:

- Implementation and effectiveness monitoring for private and state forest practices rules.
- Implementation and effectiveness monitoring and reporting on work-to-be-done for voluntary improvements to forest roads and other voluntary conservation practices on private forestlands.
- Implementation and effectiveness monitoring for BLM and USFS to ensure that approved BMPs are being correctly implemented by agency personnel, stewardship contractors, and timber operators.
- Implementation and effectiveness monitoring for agricultural area rules.
- Implementation and effectiveness monitoring for agricultural area plans and other voluntary conservation practices on agricultural lands.
- Updating of Real Estate Transaction data for private domestic wells to include recent years of time-of-transfer data for required nitrate, coliform bacteria, and arsenic testing.
- Collection of raw water data from Public Water Systems for analysis of amount and sources of turbidity/sediment, pesticides, and organic matter contributing to disinfection by-products. These data would be used to evaluate whether nonpoint sources are causing impairments of drinking water provision in the state.

8. Success Stories

Annual milestones in state agencies' NPS work plans describe key actions expected each year, e.g., delivering a certain number of WQ-10 success stories or implementing projects in a certain number of high priority impaired watersheds.

8.1 USEPA Strategic Plan - 2015 National Water Program Guidance Measures

- WQ-10 Measure: Primarily NPS-impaired waters that are partially or fully restored thanks to restoration.
- SP-12 Measure: Impaired waters that are improved by using the watershed approach.
  For detailed descriptions of each measure, see http://water.epa.gov/resource_performance/planning/FY-2015-NWPG-Measure-Definitions-Water-Quality.cfm

8.2 How are the NPS Success Stories Classified for EPA's Web Page?

1. Fully or Partially Restored Waters
2. Waters Showing Measurable Progress
3. Waters Showing Ecological Restoration

View completed WQ-10 Success Stories at http://water.epa.gov/polwaste/nps/success319 WQ-10: What Qualifies as "Fully Restored?"

- Waters that were previously primarily NPS-impaired now meet all designated uses/water quality criteria
- Scale: Waterbodies/segments on the state's impaired waters list

WQ-10: What Qualifies as "Partially Restored?"

- After restoration efforts, either of the following two conditions are met:
  - A waterbody meets the criteria for one or more pollutants that had been identified as causes of impairment on the state's impaired waters list/section 303(d) list, **or**
  - A waterbody fully supports one or more uses that had been impaired (but remains impaired for other uses/pollutants). WQ-10: Other Key Requirements Needed to Qualify
- Waters must be:
  - Moved from integrated report category 4 or 5 to category 1 or 2 as a result of primarily NPS restoration efforts.
  - Included on the state's impaired waters list in 1998 or after.

- Either already removed from the impaired waters list, or data show the water meets standards and therefore the state intends to remove it during the next listing cycle.

- If a Waterbody Doesn't Qualify as Fully/Partially Restored under WQ-10

  1. Waters showing measurable progress
     You have data showing improvement
  2. Waters showing ecological restoration
  3. Waterbody had water quality problems but was not listed as impaired (e.g., invasives)

SP-12: What Qualifies?

1. SP-12 documents water quality improvement on a 12-digit hydrologic unit code* level.
2. One or more waters in that HUC-12 must have been listed as impaired (in category 4 or 5).
3. Improvement is due to a watershed approach.

* May receive partial credit for smaller watersheds

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* May receive partial credit for smaller watersheds

What is a "Watershed Approach?"

- Is focused on hydrologically defined areas
- May be smaller or larger than the HUC-12 level
- Involves key stakeholders
- Uses an iterative planning or adaptive management process to address priority water resource goals
- Uses an integrated set of tools and programs

SP-12: Reporting Options Three options to report improvement:

1. Option 1: fully restoring one or more impaired uses on at least 40% of impaired waters in the HUC 12 watershed*, OR
2. Option 2a: statistical improvement, OR
3. Option 2b: weight of evidence of improvement

* As shown through the removal of the waterbody/ pollutant combination from categories 4 or 5.

- Restoration Activities - Use data in OWRI for tracking and reporting on restoration activities that are expected to reduce NPS pollution in the 72 subbasins in Oregon. Annually DEQ includes the status of restoration projects into the DEQ NPS Annual Report. (The 2014 DEQ NPS Annual Report was the first year of reporting).
- DEQ NPS Annual Report -- Next year's (Year 2015) NPS Annual Report is planned to include NRCS restoration projects status.
- Progress of restoration projects - EPA has requested that the progress of restoration projects towards meeting WQS for impaired watersheds where restoration work has been completed will be included in

future DEQ NPS Annual Reports

APPENDIX 1: Acronyms

Acronym	Translation/Capitalization
319	Section 319 of the federal Clean Water Act; Nonpoint Source Pollution Program
401	Certification of Fill and Removal and Hydroelectric Projects
ACP	Aquatic Conservation Strategy
ACWA	Association of Clean Water Agencies
AFO, CAFO	Animal Feeding Operation, Concentrated Animal Feeding Operation
AG	Attorney General
AWQMAP	Agricultural Water Quality Management Area Plan
BLM	U.S. Bureau of Land Management
BMP	Best Management Practice
BOD	Biochemical Oxygen Demand
CAFO	Confined Animal Feeding Operation
CBOD	Carbonaceous Biochemical Oxygen Demand
CERCLA	Comprehensive Environmental Response, Compensation & Liability Act
CFR	Code of Federal Regulations
CNPCP	Coastal NonpointPollution Control Program
CPM	EPA core performance measure
CREP	Conservation Reserve Enhancement Program (State)
CRP	Conservation Reserve Program (Federal)
CSO	Combined Sewer Overflow
CWA	Clean Water Act
CWAP	Clean Water Action Plan
CZARA	Coastal Zone Act Reauthorization Amendments
DEQ	Oregon Department of Environmental Quality
DLCD	Oregon Department of Land Conservation and Development
DMA	Designated Management Agencies (Federal, USA EPA)
DOGAMI	Department of Geology & Mineral Industries
DOJ	Department of Justice
DSL	Division of State Lands

Acronym	Translation/Capitalization
EMAP	Environmental Monitoring and Assessment Program
EPA	Environmental Protection Agency
EPOC	Environmental Partnership for Oregon Communities
EQC	Oregon's Environmental Quality Commission
ER	Eastern Region
ESA	Endangered Species Act (federal)
ESU	Evolutionarily Significant Unit
FLIR	Forward-looking infrared radiometer
FPA	Forest Practices Act
FPAC	Forest Practices Advisory Committee
GIS	Geographic Information System
GWMA	Groundwater Management Area
H20	Headwaters to Ocean project (Oregon)
HSP	Healthy Streams Partnership
HSPIG	Healthy Streams Partnership Implementation Group
HSRAF	Hazardous Substance Remedial Action Fund
HW	Hazardous Waste program
ICBEMP	Interior Columbia Basin Ecosystem Management Project
IMST	Independent Multidisciplinary Science Team
IPM	Integrated Pest Management
IUP	Intended Use Plan
IWR	Instream Water Rights
LASAR	DEQ's Laboratory Analytical Storage & Retrieval System
LCREP	Lower Columbia River Estuary Program
LEAD	DEQ's Laboratory and Environmental Assessment Division
LLID	Latitude Longitude Identification
LUCS	Land Use Compatibility Statement
LQ	DEQ Land Quality Division
MAO	Mutual Agreement And Order

MOA	Memorandum Of Agreement
MOU	Memorandum Of Understanding
NEP	National Estuary Program
Acronym	**Translation/Capitalization**
NFP	Northwest Forest Plan
NHD	USGS National Hydrography Dataset
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NON	Notice of Noncompliance
NPDES	National Pollutant Discharge Elimination System
NPS	Nonpoint Source Pollution
NPV	Notice Of Permit Violation
NRCS	Natural Resources Conservation Service
NRI	Natural Resources Inventory
NWR	DEQ Northwest Region
OAR	Oregon Administrative Rules
OCSRI	Oregon Coastal Salmon Restoration Initiative
OD	DEQ Office of Director
ODA	Oregon Department of Agriculture
ODF	Oregon Department of Forestry
ODFW	Oregon Department of Fish and Wildlife
ODOT	Oregon Dept of Transportation
OECA	US EPA Office of Enforcement and Compliance Assurance
OPSW	Oregon Plan for Salmon and Watersheds
ORS	Oregon revised statutes
OSU	Oregon State University
OWEB	Oregon Watershed Enhancement Board
OWQI	Oregon Water Quality Index
P2	Pollution Prevention
PBT	Persistent Bioaccumulative Toxics
PCS	Permit Compliance System
PNCERS	Pacific Northwest Coastal Ecosystems Regional Study
PPIS	Pollution Prevention Incentives For States
PSU	Portland State University

RBP	Rapid Bioassessment Protocol
RCRA	Resource Conservation & Recovery Act
REMAP	Regional Environmental Monitoring and Assessment Program

Acronym	Translation/Capitalization
RMA	Riparian Management Area
SB 1010	Oregon Senate Bill 1010, Agricultural Water Quality Management Act (1996)
SB 737	Oregon Senate Bill 737, pollution prevention and toxics reduction (2007)
SDWA	Safe Drinking Water Act
SOLV	Stop Oregon Litter & Vandalism
SRF	State Revolving Fund
STAC	USDA State Technical Advisory Committee
STORET	US EPA Storage and Retrieval System
SWCD	Soil And Water Conservation District
TBNEP	Tillamook Bay National Estuary Project
TCPP	Tillamook County Performance Partnership
TDG	Total Dissolved Gas
TMDL	Total Maximum Daily Load
UAA	Use Attainability Analysis
UIC	Underground Injection Control
USACE (US COE)	US Army Corps of Engineers
USFS	US Forest Service
USFS	US Fish and Wildlife Service
USGS	US Geological Survey
UST	Underground Storage Tanks
UWA	Unified Watershed Assessment
WMC	DEQ Waste Management & Cleanup Division
WPCF	Water Pollution Control Facility
WQ	Water Quality Division
WQMP	Water Quality Management Plan
WR	DEQ Western Region
WRD	Oregon Water Resources Department

APPENDIX II: GLOSSARY

Abiotic — non-living

Aerobic — (of an organism or tissue) requiring air for life; pertaining to or caused by the presence of oxygen

Algae — non-vascular plants that are very small; algae are the main producers of food and oxygen in aquatic environments

Alluvial plain — the floodplain of a river, where the soils are deposited by the overflowing river

Alluvium — any sediment deposited by flowing water, as in a riverbed, floodplain, or delta

Alternate hypothesis — a statistical hypothesis that disagrees with the tested hypothesis, e.g., these two wetlands do not have the same vegetation community

Anaerobic — living in the absence of oxygen; pertaining to or caused by the absence of oxygen

Anoxic — without oxygen

Anthropogenic — caused by humans; often used when referring to human induced environmental degradation

Aquatic — living or growing in or on water

Attenuation — to lessen the amount, force, magnitude, or value of

Backwater — a body of water in which the flow is slowed or turned back by an obstruction such as a bridge or dam, an opposing current, or the movement of the tide

Baseline measurements — a set of measurements taken to assess the current or pre-restoration condition of a community or ecosystem

Beach seine — a short (typically 20 m or less) fine mesh catch net that can be pulled through shallow water on to beach areas by hand

Benthic — on the bottom or near the bottom of streams, lakes, or oceans

Biogenic — produced by living organisms

Biomass — the amount of living matter, in the form of organisms, both plants and animals, present in a particular habitat, usually expressed as weight-per-unit area

Blackwater streams — streams that do not carry sediment, but are dark in color due to the tannins dissolved in them from flowing through peat-based areas

Brackish — water with a salinity intermediate between seawater and freshwater, often referred to as oligohaline (salinity 0.5 to 5.0 ppt). Interlacing or tangled network of several small branching and reuniting shallow channels are also often present.

Brackish marsh — marsh areas containing a mixture of salt and fresh water; however, the salinity level is less than seawater

Breeder trap — a small box shaped trap containing a funneled entrance and constructed of clear

Plexiglas, that is set on the sediment surface to catch fry and small sized fish species

Calcareous — sediment/soil formed of calcium carbonate or magnesium carbonate due to biological deposition or inorganic precipitation

Catchment — the land area drained by a river or stream; also known as "watershed" or "drainage basin"; the area is determined by topography that divides drainage between watersheds

Coastal habitat restoration — the process of reestablishing a self-sustaining habitat in coastal areas that in time can come to closely resemble a natural condition in terms of structure and function

Coastal habitat restoration monitoring — the systematic collection and analysis of data that provides information useful for measuring coastal habitat restoration project performance

Community — all the groups of organisms living together in the same area, usually interacting or depending on each other for existence; all the living organisms present in an ecosystem

Coral reefs — highly diverse ecosystems, found in warm, clear, shallow waters of tropical oceans worldwide. They are composed of marine polyps that secrete a hard calcium carbonate skeleton, which serves as a base or substrate for the colony.

Coralline algae — algae that contains a coral-like, calcareous outer covering

Cost estimate — estimates on costs of planning and carrying out a project. Examples of items that may be included in a cost estimate for a monitoring plan may be personnel, authority to provide easements and rights-of-way, maintenance, labor, and equipment.

Deepwater swamps — forested wetlands that develop along edges of lakes, alluvial river swamps, in slow-flowing strands, and in large, coastal-wetland complexes. They can be found along the Atlantic and Gulf Coasts and throughout the Mississippi River valley. They are distinguished from other forested habitats by the tolerance of the dominant vegetation to prolonged flooding.

Demersal — bottom-feeding or bottom-dwelling fish, crustaceans, and other free moving organisms

Desiccation – process of extracting moisture

Detritivorous — the practice of eating primarily detritus

Detritus — fine particles of decaying organic and inorganic matter formed by excrement and by plant and animal remains; may be suspended in water or accumulated on the bottom of a water body

Diatoms — any of a class (Bacillariophyceae) of minute planktonic unicellular or colonial algae with silica-based skeletons

Dissolved oxygen — oxygen dissolved in water and available to aquatic organisms; one of the most important indicators of the condition of a water body; concentrations below 5 mg/l are stressful and may be lethal to many fish and other species

Dominant species — a plant species that exerts a controlling influence on or defines the character of a community

Down welling — the process of build-up and sinking of warm surface waters along coastlines

Drop sampler — a shallow water sampling device, typically 1 – 2 m in diameter used to collect fish and decapods via a drop in the water from a boom or support platform, and subsequent

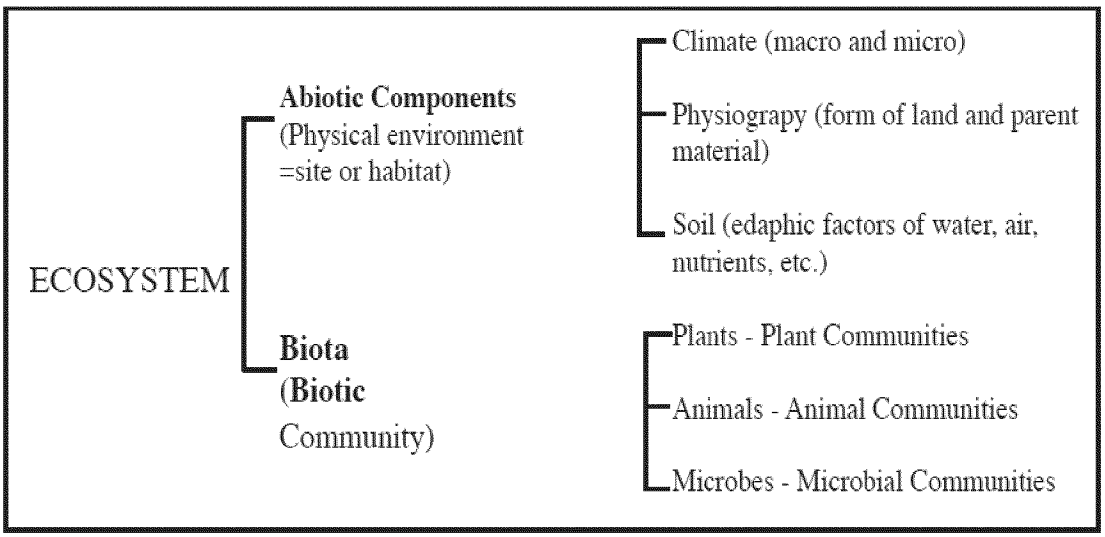
collection using small seines or suction pumping the water within the trap

Duration — a span or interval of time

Ebb — a period of fading away; low tide

Echinoderms — any of a phylum (Echinodermata) of radially symmetrical primitive marine animals including the starfishes, sea urchins, and related forms

Ecosystem — a volume of land and air including all the biotic and abiotic components (*Graphic courtesy of B. Barnes, University of Michigan*)



Emergent plants — aquatic plants with roots and part of the stem below water level, but the rest of the plant is above water; e.g., cattails and bulrushes

Ephemeral — lasting a very short time

Epifaunal — animals living on the surface of the sediment or other substrate such as debris

Epiphytes — plants that grow on another plant or object upon which it depends for mechanical support but not as a source of nutrients; i.e. not parasitic

Estuary — a part of a river, stream, or other body of water that has at least a seasonal connection with the open sea or Great Lakes and where the seawater or Great Lakes water mixes with the surface or subsurface water flow, regardless of the presence of man-made structures or obstructions

Eulittoral — refers to that part of the shoreline that is situated between the highest and lowest seasonal water levels

Eutrophic — designating a body of water in which the increase of mineral and organic nutrients has reduced the dissolved oxygen, producing an environment that favors plant over animal life

Eutrophication — a natural process, that can be accelerated by human activities, whereby the concentration of nutrients in rivers, estuaries, and other bodies of water increases; over time this can result in anaerobic (lack of oxygen) conditions in the water column; the increase of nutrients stimulates algae "blooms" as the algae decays and dies, the availability of dissolved oxygen is reduced; as a result, creatures living in the water

accustomed to aerobic conditions perish

Evapotranspiration — the combination of water that is evaporated and transpired by plants as a part of their metabolic processes

Exotic species — plants or animals not native to the area

Fauna — animals collectively, especially the animals of a particular region or time

Fecal coliform — any of several bacilli, especially of the genera *Escherichia*, found in the intestines of animals. Their presence in water suggests contamination with sewage of feces, which in turn could mean that disease-causing bacteria or viruses are present. Fecal coliform bacteria are used to indicate possible sewage contamination. Fecal coliform bacteria are not harmful themselves, but indicate the possible presence of disease-causing bacteria, viruses, and protozoans that live in human and animal digestive systems. In addition to the possible health risks associated with them, the bacteria can also cause cloudy water, unpleasant odors, and decrease dissolved oxygen in the water.

Fetch — the distance along open water or land over which the wind blows

Flooding regime — pattern of flooding over time

Floodplain — a strip of relatively flat land bordering a stream channel that may be overflowed at times of high water; the amount of land inundated during a flood is relative to the severity of a flood event

Flora — plants collectively, especially the plants of a particular region or time

Fluvial — of, relating to, or living in a stream or river

Food chain — interrelations of organisms that feed upon each other, transferring energy and nutrients; typically solar energy is processed by plants who are eaten by herbivores which in turn are eaten by carnivores: sun –> grass –> mouse –> owl

Food webs — the combined food chains of a community or ecosystem

Frequency — how often something happens

Fronds — leaf-like structures of kelp plants

Function — refers to how wetlands and riparian areas work – the physical, chemical, and biological processes that occur in these settings, which are a result of their physical and biological structure regardless of any human benefit

Functional habitat characteristics — parameters that describe what ecological service a habitat provides and may be used as a measure to determine how well a particular place performs a specific function

Fyke net — a collection net which is staked to the sediment surface and constructed of small mesh that uses tidal fluctuation or current to entrain fish and decapods via wings that act to funnel the catch into a box like mouth containing a series of chambers and partitions used to retain the catch

Gastropods — any of a large class (Gastropoda) of mollusks (as snails and slugs) usually with a single shell or no shell and a distinct head bearing sensory organs

Geomorphic — pertaining to the form of the Earth or its surface features

Geomorphology — the science that treats the general configuration of the Earth's surface; the description of landforms

Habitat — the sum total of all the living and non-living factors that surround and potentially influence an organism; a particular organism's environment

Hectare – the area of a square 100 m on each side: approximately 107,600 square feet; 12,000 square yards; or 2.5 acres

Herbivory — the act of feeding on plants

Holdfasts — a part by which a plant clings to a surface

Hydric soil — a soil that is saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions that favor the growth and regeneration of hydrophytic vegetation. Field indicators of hydric soils can include a thick layer of decomposing plant material on the surface; the odor of rotten eggs (sulfur); and colors of bluish–gray, gray, black, with occasional contrasting brighter spots of color

Hydrodynamics — the motion of water that generally corresponds to its capacity to do work such as transport sediments, erode soils, flush pore waters in sediments, fluctuate vertically, etc. Motions can vary within each of three flow types: primarily vertical, primarily bidirectional and horizontal, and primarily unidirectional and horizontal. Vertical fluxes are driven by evapotranspiration and precipitation. Bidirectional flows are driven by astronomic tides and wind-driven seiches. Unidirectional flows are down slope movement that occurs from seepage slopes and on floodplains.

Hydrology — the study of the cycle of water movement on, over and through the earth's surface; the science dealing with the properties, distribution, and circulation of water

Hydro period — depth, duration, seasonality, and frequency of flooding

Hydrostatic pressure — the pressure water exerts at any given point when a body of water is in a still motion

Hyper saline — extremely saline, generally over 30 ppt salinity (average ocean water salinity)

Hypoxic — waters with dissolved oxygen less than 2 mg/L, the point at which most aquatic life dies

Infauna — plants that live in the sediment

Interspersion — scattered or distributed at regular intervals

Interstices — a space that intervenes between things; especially one between closely spaced things

Intertidal — an area that is alternately flooded and exposed by tides

Intralittoral — a sub-area of the sublittoral zone where upward-facing rocks are dominated by algae, mainly kelp

Invasive species — a species that does not naturally occur in a specific area and whose introduction is likely to cause economic or environmental harm

Invertebrate — an animal with no backbone or spinal column; invertebrates include 95% of the animal kingdom

Irregularly exposed — refers to coastal wetlands with substrate exposed by tides less frequently than daily

Lacunars — a small cavity, pit, or discontinuity

Lacustrine — pertaining to, produced by, or formed in a lake

Lagoons — a shallow stretch of seawater (or lake water) near or open to the sea (or lake) and partly or completely separated from it by a low, narrow, elongate strip of land

Line transect — a straight line is laid out across a project area. Samples or measurements are taken at specific, predetermined locations along this straight line

Littoral — refers to the shallow water zone (less than 2 m deep) at the end of a water body, commonly seen in lakes or ponds

Macro algae — relatively shallow (less than 50 m deep) sub tidal algal communities dominated by very large brown algae. Kelp and other macro algae grow on hard or consolidated substrates forming extensive three-dimensional structures that support a diversity of other plants and animals.

Macro fauna — animals large enough to be seen with the naked eye, typically exceeding 1 mm in length or that will not pass through a 1 mm sieve

Macroinvertebrate — animals without backbones that can be seen with the naked eye (caught with a 1 to 2 mm mesh net); includes insects, crayfish, snails, mussels, clams, fairy shrimp, etc.

Macrophytes — plant species that are observed with the naked eye, e.g., vascular plants

Mangroves — swamps dominated by shrubs that live between the sea and the land in areas that are inundated by tides. Mangroves thrive along protected shores with fine-grained sediments where the mean temperature during the coldest month is greater than 20° C, limiting their northern distribution.

Marine polyps — the small living units of a coral, responsible for secreting calcium carbonate maintaining coral reef shape

Marshes (marine and freshwater) — transitional habitats between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is covered by shallow water tidally or seasonally. Freshwater species are adapted to the short- and long-term water level fluctuations typical of freshwater ecosystems.

Mast — the nuts of forest trees accumulated on the ground

Meiofauna — diverse microorganisms that are approximately between .042 mm and 1 mm in size

Metadata — data that describes or provides background information on other data

Microfauna — animals that are very small and best identified with the use of a microscope, e.g., protozoans and nematodes

Micro invertebrates — invertebrates so small they can only be observed with a microscope

Micro-topography — very slight changes in the configuration of a surface including its relief and the position of its natural and man-made features

Migratory — a creature that moves from one region to another when the seasons change

Morphology — the study of structure and form, either of biological organisms or features of the earth surface

Mottling — contrasting spots of bright colors in a soil; an indication of some oxidation or ground

water level fluctuation

Mudflat — bare, flat bottoms of lakes, rivers and ponds, or coastal waters, largely filled with organic deposits, freshly exposed by a lowering of the water level; a broad expanse of muddy substrate commonly occurring in estuaries and bays

Nanoplankton — plankton of minute size, generally size range is from 2 - 20 micrometers

Native — an animal or plant that lives or grows naturally in a certain region

Near shore — near shore waters beginning at the shoreline or the lake ward edge of the coastal wetlands and extending offshore to the deepest lakebed contour where the thermocline typically intersects with the lakebed in late summer or early fall

Non-point source — the origin of any water-carried material from a broad area rather than from a discrete point, e.g., runoff from agricultural fields

Nuisance species — undesirable plants and animals, commonly exotic species

Null hypothesis — a statistical hypothesis the truth of which is to be investigated by sampling, e.g., these two wetlands have the same vegetation community

Nutria — a large South American semi-aquatic rodent (*Myocastor coypus*) with webbed hind feet that has been introduced into parts of Europe, Asia, and North America

Nutrient — any inorganic or organic compound that provides the nourishment needed for the survival of an organism

Nutrient cycling — the transformation of nutrients from one chemical form to another by physical, chemical, and biological processes as they are transferred from one trophic level to another and returned to the abiotic environment

Oligotrophic — a water body that is poor in nutrients, refers mainly to lakes, ponds, and some wetlands

One-hundred year flood — refers to the floodwater levels that would occur once in 100 years, or as a 1.0 percent probability per year

Organic — containing carbon, but possibly also containing hydrogen, oxygen, chlorine, nitrogen, and other elements

Organic material — anything that is living or was living; in soil it is usually made up of nuts, leaves, twigs, bark, etc.

Osmotic stress — water stress due to differences in salinity between an organism and its aquatic environment

Overstory — trees that tower above the surrounding canopy

Oyster beds — dense, highly structured communities of individual oysters growing on the shells of dead oysters

Palustrine — non tidal wetlands dominated by trees, shrubs, persistent emergents, emergent mosses or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean-derived salts is below 0.5%

Pelagic — pertaining to, or living in open water column

pH — a measure of the acidity (less than 7) or alkalinity (greater than 7) of a solution; a pH of 7 is

considered neutral

Physiographic setting — the location in a landscape, such as stream headwater locations, valley bottom depression, and coastal position, similar to geomorphic setting

Physiography — a description of the surface features of the Earth, with an emphasis on the mode or origin

Phytoplankton — microscopic floating plants, mainly algae that are suspended in the water column and are transported by wave currents

Piscivorous — feeding on fish

Pit trap — a collection method that uses shallow depressions dug into the sediment surface that are lined with a non porous water retaining container, to collect select fish and decapods species that use depression on the sediment surface as refuge habitats during low tide

Planktivorous — eating primarily plankton

Plankton — plants and animals, generally microscopic and float or drift in fresh or saltwater

Pneumatocysts — known as gas bladders or floaters that help a plant stay afloat, e.g., bladders seen in the brown alga *Macrocystis*

Pneumatophores — specialized roots formed by several species of plants occurring in frequently inundated habitats. The root is erect and protrudes above the soil surface.

Pop net — a shallow water sampling gear typically 1 – 2 m in diameter composed of fine mesh that is used to collect fish and decapods. The pop net is attached to the sediment surface, and after some time a connected float collar is released from the sediment surface to encompass the whole of the water column in the area of the net. Catch within the pop net is then collected via seines or suction pumping the water within the trap.

Population — a collection of individuals of one species or mixed species making up the residents of a particular area

ppt — parts per thousand, the salinity of ocean water is approximately 35 ppt

Prop roots — long root structures that extend midway from the trunk and arch downward creating tangled branching roots above and below the water's surface, such as in the mangrove *Rhizophora*

Propagules — a structure (such as a cutting, a seed, or a spore) from which a new plant can grow

Pseudofeces — material expelled by the oyster without having gone through the animal's digestive system

Quality assurance/quality control plan — a detailed plan that describes the means of data collection, handling, formatting, storage, and public accessibility for a project

Rebar — also called reinforcing bar; a steel rod with ridges for use in reinforced concrete

Receiving water bodies — lakes, estuaries, or other surface waters that have flowing water delivered to them

Redox potential — oxygen-reduction potential, often used to quantify the degree of electrochemical reduction of wetland soils under anoxic conditions

Reference condition — set of selected measurements or conditions to which a restoration project will

be compared, may be relatively pristine or very degraded

Reference site — a site that is representative of the expected ecological conditions and integrity of other sites of the same type and region

Regime — a regular pattern of occurrence or action

Restoration — the process of reestablishing a self-sustaining habitat that in time may come to closely resemble a natural condition in terms of structure and function

Restoration monitoring — the systematic collection and analysis of data that provides information useful for measuring restoration project performance at a variety of scales (locally, regionally, and nationally)

Rhizome — somewhat elongate usually horizontal subterranean plant stem that is often thickened by deposits of reserve food material, produces shoots above and roots below, and is distinguished from a true root in possessing buds, nodes, and usually scale-like leaves

Riparian — a form of wetland transition comprised of multiple habitats and located between permanently saturated wetland and upland habitats. These areas exhibit vegetation or physical characteristics reflective of permanent surface of subsurface water influence. Lands along, adjacent to, or contiguous with perennially and intermittently flowing rivers and streams, glacial potholes, and the shores of lakes and reservoirs with stable water levels are typically riparian areas. Excluded are such sites as ephemeral streams or washes that do not exhibit the presence of vegetation dependent upon free water in the soil.

Riverine — associated with rivers

Riverine forests — forests found along sluggish streams, drainage depressions, and in large alluvial floodplains. Although associated with deepwater swamps in the southeastern United States,

riverine forests are found throughout the United States and are not subject to prolonged flooding.

Rock bottom — all wetlands and deepwater habitats with substrates having an areal cover of stones, boulders, or bedrock 75% or greater, and vegetative cover of less than 30%

Rocky shoreline — extensive littoral habitats on wave-exposed coasts, the substrate is composed of boulders, rocks, or cobble

Salinity — the concentration of dissolved salts in a body of water, commonly expressed as parts per thousand

Salt pans — an undrained natural depression in which water gathers and leaves a deposit of salt upon evaporation

Sampling designs — the procedure for selecting samples from a population and the subsequent statistical analysis

SAV (marine, brackish, and freshwater) — flowering plants that grow on soft sediments in sheltered shallow waters of estuaries, bays, lagoons, and lakes. Freshwater species are adapted to the short- and long-term water level fluctuations typical of freshwater ecosystems.

Seasonality — the change in natural cycles over time, such as lunar cycles and flooding cycles; changes from one season to the next

Seiches — a sudden oscillation of the water surface in a moderate-size body of water, caused by wind

Senescence — the life stage in a plant or plant part (such as a leaf) from full maturity to death, also applies to winter dormancy

Sessile — permanently attached or established, not free to move about

Socioeconomic monitoring — tracking of key indicators that characterize the economic and social state of a human community

Soft bottom — loose, unconsolidated substrate characterized by fine to coarse-grained sediment

Soft shoreline — sand beaches and muddy shores; stretches of land covered by loose material, exposed to and shaped by waves and/or wind.

Statistical hypothesis — a statement about the population or populations being sampled, or occasionally a statement about the sampling procedure

Statistical protocol — a method of analyzing a collection of observed values in order to make an inference about one or more characteristic of a population or unit

Strands — a diffuse freshwater stream flowing through a shallow vegetated depression on a gentle slope

Stratified random sampling — a population is divided into subgroups that are homogeneous. Random samples are then taken within each subgroup, assuring that key subgroups within a population are sampled, particularly those in the minority. This type of sampling can be done for populations or for areas.

Structural habitat characteristics — characteristics that define the physical composition of a habitat, the functions an ecosystem can perform are often dependent upon its structure

Subtidal — continuously submerged areas affected by ocean tides

Supralittoral region — an area above the high tide mark receiving splashing from waves

Taxa — a grouping of organisms given a formal taxonomic name such as species, genus, family, etc. (singular form is taxon)

Tested hypothesis — a statistical hypothesis the truth of which is to be investigated by sampling, sometimes called the null hypothesis

Thermocline — a horizontal region in a thermally stratified body of water than separates warmer oxygen-rich surface water from cold oxygen-poor deep water

Tide — the rhythmic, alternate rise and fall of the surface (or water level) of the ocean, and connected bodies of water, occurring twice a day over most of the earth, resulting from the gravitational attraction of the moon, and to a lesser degree, the sun

Time series — an ordered sequence of values of a certain variable that are equally spaced over time

Time series analysis — looking for patterns such as seasonal variations or impacts of events in data sets whose measurements are collected at equally spaced intervals over time

Topography — the general configuration of a land surface or any part of the earth's surface, including its relief and the position of its natural and man-made features

Transient — passing through or by a place with only a brief stay or sojourn

Trophic — refers to food, nutrition, or growth state

Trophic level — a group of organisms united by obtaining their energy from the same part of the food web of a biological community

Unconsolidated — loosely arranged

Understory — trees and tall bushes that are completely submerged under the canopy

Viviparous — producing living young instead of eggs from within the body in the manner of nearly all mammals, many reptiles, and a few fishes; germinating while still attached to the parent plant

Water column — a conceptual volume of water extending from the water surface down to, but not including the substrate, found in marine, estuarine, river, and lacustrine systems

Watershed — surface drainage area that contributes water to a lake, river, or other body of water; the land area drained by a river or stream

Zonation — a state or condition that is marked with bands of color, texture, or different species

Zooplankton — free-floating animals that drift in the water, ranging in size from microscopic organisms to larger animals such as jellyfish

APPENDIX 2: Abbreviations And Acronyms

Abbreviation Agency, Organization or Program

AFO, CAFO Animal Feeding Operation, Concentrated Animal Feeding Operation

AGC Associated General Contractors

BMPs Best Management Practices

CC Washington State Conservation Commission

COE US Army Corps of Engineers

CCWF Centennial Clean Water Fund

CERCLA Comprehensive Environmental Response, Compensation, and Liability Act (Superfund)

CIDMP Comprehensive Irrigation District Management Plan

CRAB Washington State County Roads Administration Board

CREP Conservation Reserve Enhancement Program (State)

CRP Conservation Reserve Program (Federal)

CSP Conservation Security Program

CTA Conservation Technical Assistance

CWA Clean Water Act

CZARA Coastal Zone Management Act Reauthorization Amendments of 1990

DCTED, CTED Washington State Department of Community, Trade and Economic Development

DFW, WDFW Washington State Department of Fish and Wildlife

DNR Washington State Department of Natural Resources

DOH, Health Washington State Department of Health

ECY, Ecology Washington State Department of Ecology

EPA, US EPA US Environmental Protection Agency

EQIP Environmental Quality Incentives Program

FFR Forests and Fish (Report)

ESA Endangered Species Act

FSA Farm Services Agency

Abbreviation Agency, Organization or Program

GMA Growth Management Act

HCP Habitat Conservation Plan

HPA Hydraulic Project Approval

HUC Hydraulic Unit Code

IAC Washington State Interagency Committee for Outdoor Recreation

LLP Landowner Landscape Plan

MOA, MOU Memorandum of Agreement, Memorandum of Understanding

NALMS North American Lake Management Society

NMFS National Marine Fisheries Service

NPDES National Pollution Discharge Elimination System

Abbreviation Agency, Organization or Program

NPS Nonpoint Source (pollution)

NRCS Natural Resources Conservation Service (USDA)

NWMTA Northwest Marine Trade Organization

OSPI Washington Office of the Superintendent of Public Instruction

Parks Washington State Parks & Recreation Commission

PSAT Puget Sound Action Team

RCRA Resource Conservation Recovery Act

SEPA State Environmental Policy Act

SMA Shoreline Management Act

SRA Salmon Recovery Act

SRO Salmon Recovery Office

TFW Timber Fish and Wildlife (replaced by FFR – Forests and Fish)

TMDL Total Maximum Daily Load

Tribes Indian Tribes of Washington

USDA US Department of Agriculture

USFS US Forest Service

USFWS US Fish and Wildlife Service

USGS US Geological Survey

UW University of Washington

WACD Washington Association of Conservation Districts

WALPA Washington Lake Protection Association

WHIP Wildlife Habitat Incentives Program