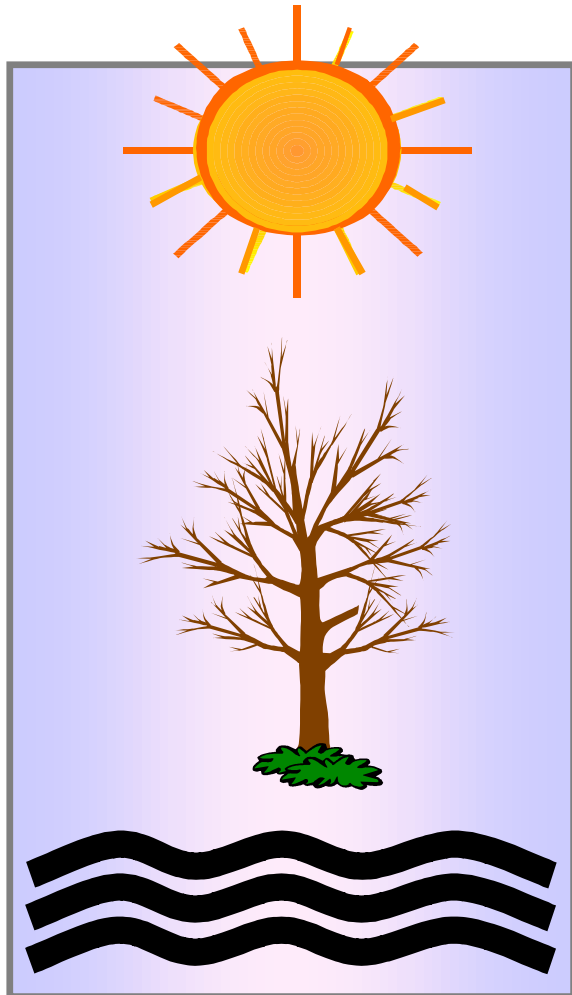


FINAL



OREGON NONPOINT SOURCE CONTROL PROGRAM PLAN



2000 Update

October 2000



Oregon Department of Environmental Quality
Water Quality Division — Watershed Management Section
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EXECUTIVE SUMMARY

The Oregon ecosystems are renowned for their beauty, vitality and diversity. However, approximately 14,000 stream and river miles are not achieving full compliance with the State's water quality standards. Moreover, several species of salmon and steelhead have been placed on the threatened and *endangered* list. In 2000, the State and Federal governments committed more than \$35 million dollars to begin to reverse this degradation of water quality.

This document summarizes the State of Oregon's nonpoint source water pollution control program quality implemented under the State Environmental Quality, the CZARA Section 6217 Coastal NPS Control Program, the National Estuary Program, the Forest Practices Act, The Healthy Stream Partnership, Agricultural Water Quality Act, drinking water and groundwater protection programs.

The Oregon nonpoint source program was originally established in 1978 and has been revised and in 1991 and updated every year in the Intended Use Document 319-proposal submittal to EPA. The program was established to address non-discreet pollutant discharges to surface waters not otherwise regulated by Federal or State point source control programs. The goal of the program has been broadened to safeguard groundwater resources as well as surface water.

Historically, the Oregon nonpoint source program has been a "stand alone" effort. Several individual, dedicated ODEQ staff sponsored education and awareness programs, provided technical assistance, developed "how to" guidance, and distributed Federal money available for nonpoint source projects throughout the State. However, recognizing the significance and magnitude of nonpoint source pollution contributions, the State has determined that the program's goals will more effectively and efficiently be achieved by integrating nonpoint source concerns into the fabric of the State's basic water pollution programs. Rather than being considered in isolation, each component of Oregon's water quality program now includes nonpoint source concerns. Similarly, ODEQ has reached out to other Federal, State, Tribal, Local and Private partners to assist in program development and implementation beyond ODEQ's regulatory jurisdiction and financial abilities.

The centerpiece of the State nonpoint source program is the Oregon Plan for Salmon and Watersheds (Oregon Plan). Adopted in April 1997, the Oregon Plan is designed to restore the healthy function of the State's natural aquatic systems. The Plan calls for salmonid fish populations to be restored to productive and sustainable levels. In order for this effort to succeed, the Plan requires all government agencies that could potentially impact aquatic systems to coordinate their activities and ensure that they are consistent with watershed restoration efforts. The Oregon Plan meshes science with public support and local decision-making, and anticipates the use of regulatory controls as well as voluntary and cooperative actions. The

future direction and priorities of the nonpoint source program must be considered in the context of this larger backdrop.

Nine Key Elements

The Oregon nonpoint source program can be described through an examination of the nine key elements set out below.

Key Element #1: Explicit short and long-term goals, objectives and strategies to protect surface and groundwater.

Oregon has embarked upon both a short term and long term approach to addressing water quality concerns. In the short term, the emphasis is placed on restoration, that is reducing the level of existing pollution preventing the aquatic environment from realizing its proper functionality and biological diversity. The long-term strategy relies more on prevention to ensure that future waterways do not become impaired in the first place. In each case, a wide variety of partnering efforts, and regulatory and non-regulatory tools and methodologies will be brought to bear to respond to pollution threats, both real and potential.

Oregon has already completed a comprehensive inventory of the health of its surface waters and has identified those waterways that are not yet meeting water quality standards. Likewise, existing and potential threats to drinking water sources, including ground water wells are being assessed. Over the next seven years (by 2007), each of the impaired surface waters will be individually analyzed to determine the cause of the impairment and to identify all viable options to returning the waterway to complete health. Throughout much of Oregon, nonpoint sources will be identified as substantial contributors to both the existing water quality impairment, and the solutions making it possible for stream restoration. Please refer to Chapter 2 for a thorough discussion on this theme.

Key Element #2: Strong working partnerships and collaboration with appropriate State, interstate, Tribal, regional, and local entities (including conservation districts), private sector groups, citizen groups, and Federal agencies.

“Vigorous partnerships” are a dominant theme of the Oregon water quality program. Various State and Federal laws, including the State Northwest Forest Practices Act, the Agricultural Water Quality Management Act, the Healthy Streams Partnership Act, the Environmental Quality Act, the federal Coastal Zone Management Act, the federal Endangered Species Act and the federal Clean Water Act require government agencies, including Tribes and some private organizations, to undertake their respective missions in a manner that facilitates watershed restoration. Activities of mutual interest are to be discussed and coordinated. To the extent practical, priorities and resources should be aligned and consistent. Similarly, watershed decisions will be locally driven. In order to ensure this consistency, ODEQ has entered into formal “memoranda of understanding” with several of these federal and state entities. Local watershed councils, conservation districts and other watershed residents will actively participate in the development of watershed solutions. Finally, funders, such as the Oregon Watershed

Enhancement Board and OEDQ will exchange information on needs, criteria and priorities for available resources. Additional information on the theme of partnerships and what they mean to Oregon NPS program could be found in Chapter 3.

Key Element #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.*

Oregon has put a number of monitoring and assessment systems in place to enable the State to maintain a vigilant watch on all of its waters. As noted above, while watershed restoration continues to be a primary focus over the next seven years, the State has not lost sight of the importance of prevention and the need to protect healthy aquatic systems from becoming impaired in the future.

Over the next 7 years, ODEQ will focus much of its efforts on completing total maximum daily load (TMDLs) evaluations of impaired State waters. Nonpoint source pollutant contributions and pollutant reduction opportunities will be a major consideration in this analysis. Similarly, although a portion of nonpoint source funds will continue to be used for outreach and awareness activities across the State, we anticipate the majority of those funds will support on-the-ground changes in the watershed to aid in restoration.

Beyond the TMDL initiative, the State continues to sponsor and participate in statewide water quality assessments and watershed restoration efforts, including debris removal. Support to local watershed councils and advisory groups, as well as technical assistance to private and public entities, continues to be available throughout the State.

Key Element #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 nonpoint source activities.*

As noted above, all of the State's nonpoint source energy and resources will be used in pursuit of the two goals set out in this element.

Key Element #5: *An identification of waters and watersheds impaired or threatened by nonpoint source pollution and a process to progressively address these waters.*

Oregon and its federal, tribal, local and private sector partners are committed to collecting sufficient data to determine compliance with water quality standards, trends in pollutant loading, effects on biota, and determine the effectiveness of watershed restoration actions. The State has identified a precise timetable for TMDL development and implementation for both point and nonpoint sources of water quality degradation. In addition to surface waters, Oregon has an active program to assess and protect sources groundwater, particularly groundwater used as a current source of drinking water.

Key Element #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.*

Oregon makes full use of an array of tools in its nonpoint source program including economic incentives, regulatory and non-regulatory actions, enforcement, technical assistance, financial support education, training, technology transfer and demonstration projects. Moreover, Oregon's federal, tribal, local and private sector partners are actively pursuing similar strategies to accomplish common water quality goals. Please refer to Chapter 5 for further discussion on BMPs and water quality.

Key Element #7: *An identification of Federal lands and activities, which are not managed consistently with State nonpoint, source program objectives.*

Federal land managers, including the U.S. Forest Service and the Bureau of Land Management, and natural resource agencies such as the National Marine Fisheries Service, the U.S. Fish and Wildlife Service, and the Natural Resources Conservation Service, are all working in an active and close partnership with Oregon departments and agencies to improve State water quality and to further the goals of the Oregon Plan.

Key Element #8: *Efficient and effective management and implementation of the State's nonpoint source program including necessary financial management.*

ODEQ is committed to targeting federal 319 dollars at projects and activities that provide significant water quality benefits, both short and long term. The Department has adopted specific criteria to use in evaluating proposals generated around the State. The money is awarded on an annual basis, and project expenditures and accomplishments are tracked to ensure these financial resources are used efficiently and appropriately. The specific process for grant distribution is described in Chapter 7 of this document.

Key Element #9: *A feedback loop whereby the State reviews, evaluates, and revises its nonpoint source assessment and its management program at least every five years.*

While ODEQ is constantly on the watch for continuous program improvement opportunities, the State plans a more formal evaluation of the nonpoint source program by the year 2004. At that time, the program will be reviewed to determine its effectiveness in three distinct areas: (a) its effect on impair waters, (b) its effect at preventing additional waters from becoming impaired, and (c) its efficiency in delivering funding to the geographic areas and highest priority projects. The resulting revisions to the State's nonpoint source plan will guide the program through the year 2009.

Document Organization

The document is organized as follows:

Chapter One sets out a brief introduction that provides additional context and background information regarding the Oregon Nonpoint Source Program.

Chapter Two provides an overview of the State Nonpoint Source strategy, and a detailed implementation schedule covering the anticipated activities in years 2000-2004. Many of these activities are organized and described by subbasin and indicates their relative priority. Short and long term objectives are documented. Unified Watershed Assessment is noted as a tool to prioritize statewide efforts dealing with watershed based strategies.

Chapter Three describes the means by which the State, as a part of its 5-year strategy, will implement its Nonpoint Source goals. Heavily tilted toward cooperative efforts and partnerships, Oregon employs a variety of formal and informal methods to coordinate the water quality, watershed health and aquatic habitat related activities. Additional discussion of this strategy can be found in Chapters 5 and 6.

Chapter Four describes specific challenges facing the State's waters. The major causes of impairment are discussed as well as a brief description of stressors and pollution sources. The Chapter also includes information on groundwater.

Chapter Five sets out the 10 objectives the State is pursuing to reverse watershed degradation. The Chapter also presents a summary of progress to date.

As noted above, Chapter Six discusses the unified watershed assessment and restoration strategies to be used to evaluate stream health and recovery efforts.

Also as noted above, Chapter Seven provides background on the State's distribution of 319 nonpoint source grants.

Finally, a series of Appendices have been attached. These documents provide additional detailed information on various aspects of the State's program. Some of these documents are:

- Unified watershed assessment and restoration priorities,
- Memoranda of Understanding with partner agencies,
- A list of Oregon Watershed Councils, and
- A description of the nonpoint source program as it affects coastal areas.

Conclusion

The State of Oregon has submitted this document to the U.S. Environmental Protection Agency in satisfaction of the requirements of Title 33, section 1329 of the United States Code [also known as section 319 of the Clean Water Act]. The document captures the breadth and scope of the State's unified, integrated approach to water quality planning, program development and

implementation Statewide, and reflects the prominence of nonpoint source controls within that more comprehensive framework.

While nonpoint source issues continue to be addressed both locally and State-wide, integration of these efforts with other water quality elements will minimize or avoid undue duplication of effort, and facilitate State efforts to focus available resources on high priority issues.

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1. INTRODUCTION

1.1 REASON FOR THE UPDATE

Section 319(b) added to the Federal *Clean Water Act* in 1987, required States to produce a Nonpoint Source Management Program Plan covering at least a four-year timeframe. After 18 months of assessment and problem identification and another 18 months of program development, Oregon's first 319(b) NPS Management Program Plan was approved by the Environmental Protection Agency (EPA) in mid-1991. That document was intended to guide the State's NPS program for at least five years, but was designed to be broadly applicable for an indefinite period of time. Each year after adoption of the NPS Plan, Oregon submitted requests to EPA for grant funding under Section 319(h). Each year's submission included an "intended use" document explaining how the funds requested would serve whichever of the goals and objectives of the NPS Plan were deemed to be the highest priorities that year. In this way, the annual funding requests served as yearly updates of the 1991 NPS Plan.

In May 1996, EPA published a guidance for updating State NPS program plans for Federal fiscal years 1997 and beyond. This guidance described nine "key elements" that must be addressed by the updated plans. Subsequent actions by Congress and EPA expanded the funds available through Section 319(h) and established that only those States with approved NPS program updates would be eligible for 319(h) funds starting in fiscal year 2000 funds.

This document satisfies the requirements for an updated NPS Management Program for Oregon. It renews Oregon's commitment to a strong and full-featured NPS control program, and assures

continued eligibility for Section 319(h) grant funding.

1.2 OREGON'S NONPOINT SOURCES

Nonpoint source pollution is briefly defined in Oregon Administrative Rule 340-41-006(17):

"Nonpoint Sources" refers to diffuse or unconfined sources of pollution where wastes can either enter into or be conveyed by the movement of water to public waters.

This definition deliberately avoids mention of how the pollution might be regulated or controlled, and instead emphasizes the source. Similarly, this NPS Program Plan addresses the causes of NPS pollution regardless of how they might be regulated or controlled, and makes eligible for 319 grant funding and State Revolving Loans any and all activities that evaluate, prevent, reduce, eliminate, or remediate the effects of NPS pollution.

For example: Most urban stormwater issues in Oregon are now (or will eventually be) addressed through our NPDES permit-based stormwater program, and the treatment of collected stormwater runoff sometimes involves technology similar to that for treating sewage and other point sources. Nevertheless, stormwater runoff remains essentially a nonpoint source because it fits the definition above. Details of Oregon's NPDES stormwater permit program are not described in this Plan, but activities addressing stormwater runoff are part of the State's overall NPS Program.

Another example is confined animal feeding operations (CAFOs) and other animal feeding operations (AFOs). The former is regulated through a permit program managed by the Oregon Department of Agriculture, the latter is not. Both have elements of point sources and nonpoint sources. But rather than make fine distinctions that may result in gaps in coverage, Oregon's NPS Program embraces both CAFOs and AFOs as generally eligible for 319 and SRF funding. These funding programs will then decide, either periodically or on a case-by-case basis, which specific CAFO and AFO activities may be eligible for one or another kind of funding support.

1.3 ORGANIZATION OF THIS DOCUMENT

Oregon's Nonpoint Source Program Plan is based on the features of a number of different programs. Taken together, these programs provide Oregon with a robust NPS control program which satisfactorily addresses all nine of the key NPS program elements identified by EPA.

These nine key elements are listed and described later in this chapter. Subsequent chapters describe how the various programs in Oregon

address the key elements and accomplish the control of NPS pollution. Table 1-1 shows where each EPA element is addressed in this Plan.

This NPS Program Plan is designed as a "stand-alone" document containing sufficient detail to fully describe Oregon's NPS program. However, important and extensive additional detail is contained within other documents focusing on the specific aspects of the program—for example: federal watershed analyses and land management plans, National Estuary Comprehensive Conservation and Management Plans, local watershed council action plans, and so on. Where appropriate, excerpts from these other documents have been incorporated here or attached in the Appendices. Questions about this document or about Oregon's Nonpoint Source Program may be directed to:

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Table 1-1: Nine Key Elements

Element	Where Addressed in this Plan
#1 -- Goals and Objectives, Short- and Long-Term	Chapter 2
#2 -- Partnerships	Chapter 3
#3 -- Balanced Program (Local and statewide)	Chapter 5
#4 -- Abating and Preventing NPS Pollution	Chapter 4
#5 -- Condition Assessment	Chapter 4
#6 -- BMPs and Implementation	Chapter 5
#7 -- Federal Consistency	Chapter 3
#8 -- 319 Grants Management	Chapter 5, 7
#9 -- NPS Program Review and Evaluation	Chapter 2

1.4 THE NINE KEY ELEMENTS

The EPA has identified nine "Key Elements" necessary in updated State Nonpoint Source Management Programs. The full text of EPA's description of these elements is in Appendix A.

The following briefly describes how Oregon's updated NPS Program addresses each of these key elements:

Key Element #1: Explicit short- and long-term goals, objectives and strategies to protect surface and groundwater.

Key Element #2: Strong working partnerships and collaboration with appropriate State, interstate, Tribal, regional, and local entities (including conservation districts), private sector groups, citizen groups, and Federal agencies.

Key Element #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.

Key Element #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 nonpoint source activities.

Key Element #5: An identification of waters and watersheds impaired or threatened by nonpoint source pollution and a process to progressively address these waters.

Key Element #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.

Key Element #7: An identification of Federal lands and activities which are not managed consistently with State nonpoint source program objectives.

Key Element #8: Efficient and effective management and implementation of the State's nonpoint source program, including necessary financial management.

Key Element #9: A feedback loop whereby the State reviews, evaluates, and revises its nonpoint source assessment and its management program at least every five years.

1.5 THE IMPORTANCE OF THE OREGON PLAN

The Oregon Plan for Salmon and Watersheds is Oregon's primary initiative to address issues of habitat and water quality that adversely affect salmonid populations and other sensitive beneficial uses of the State's waters. Constantly evolving, the program began in 1996 as the Coastal Salmon Restoration Initiative, but has since been expanded to include salmonid, water quality, and watershed issues throughout the State.

"The key tenets of The Oregon Plan are: (1) an ecosystem approach that requires a systematic consideration of the full range of attributes of aquatic health, (2) a focus on reversing factors for decline and meeting the objectives that address those factors, (3) use of adaptive management and a comprehensive monitoring strategy, and (4) involving citizens and constituent groups as partners in the restoration process."

(From The Oregon Plan for Salmon and Watersheds, Steelhead Supplement, Ch. 2)

The Oregon Plan deliberately integrates a number of other related initiatives, including the NW Forest Plan, the Forest Practices Act, the Agricultural Water Quality Act, the CZARA Section 6217 Coastal NPS Control Program, the National Estuary Program, the Healthy Streams Partnership, the Oregon Watershed Enhancement Board grant program, drinking water and groundwater protection programs, and many other programs large and small throughout

government and the private sector. Each of these programs contributes goals, objectives, resource condition assessments, management measures, funding sources, and other vital components to the overall Oregon Plan.

The Oregon Plan places great emphasis on partnerships, on watershed-scale organization, and on action-oriented objectives—in other words, on many of the same things that should characterize a State NPS control strategy. The extensive list of Oregon Plan objectives and tasks includes many that address NPS concerns. These objectives represent definite commitments to action made by the public sector partners, including the Federal land management agencies and the State natural resource agencies, and most of the resulting activities are high priorities

with either full or significant funding. Because these attributes make *The Oregon Plan* a perfect basis for Oregon's updated NPS Management Program, much of the content of this document is borrowed from that Plan.

Chapter 5 of this document describes numerous Oregon Plan objectives and tasks, all relating to NPS control and watershed assessment, restoration, and protection. Progress toward achieving these objectives is reported several times a year to the Governor's office, which assembles the information into an annual "Oregon Plan Implementation Report." The report for 1999 is 160 pages long and is too big to fit into this document. You may review and/or print the report at this Internet site: <http://www.oregon-plan.org/reports.html>.

2. GOALS, OBJECTIVES, AND PRIORITIES

2.1 PROGRAM VISION AND GOALS

The overall goal of Oregon's water quality nonpoint source program is the prevention or control of NPS pollution such that none of the beneficial uses of water is impaired by that pollution.

The NPS program shares the mission of *The Oregon Plan*: to restore Oregon's native fish populations—and the aquatic systems that support them—to productive and sustainable levels that will provide substantial environmental, cultural, and economic benefits.

The NPS program also shares the mission of Oregon's Healthy Streams Partnership to " ... integrate private sector energy, resources, and knowledge with the public sector to improve the health and function of aquatic systems and enhance beneficial uses of water for future generations." The HSP mission Statement goes on to say "Managing for the proper function of aquatic systems and watersheds will help make those systems more productive for all beneficial uses, improve water quality, and develop a legacy and model of how to work together for shared goals and objectives." In this context, "all beneficial uses" includes human health generally and drinking water protection in particular.

Oregon's approach to nonpoint source control is shaped by basic concepts put forth in *The Oregon Plan* which link water quality, water

quantity, and physical habitat. Protection and recovery of natural processes in watersheds is the aim. Consider these excerpts from *The Oregon Plan for Salmon and Watersheds, Steelhead Supplement (Chapter 14A, Water Quality Measures, page 12)*:

"These interrelationships between water quality, water quantity and physical habitat make it imperative that the approach to addressing steelhead conservation be comprehensive and encompasses watersheds and ecosystems rather than individual streams and water quality parameters. Aquatic habitats critical to salmonids are the product of processes acting throughout watersheds and particularly within riparian areas along streams and rivers. Salmonid conservation can be achieved only by maintaining and restoring these processes and their natural rates. If ecosystems are allowed to function in a natural manner, habitat characteristics favorable to salmonids will result, and fish will be able to re-invade and populate historical habitats, recover from earlier stressors, and persist under natural disturbance regimes."

"It is important to understand the interrelationships between various water quality parameters when undertaking steelhead conservation planning. The effects of individual water quality parameters are often related to the conditions of other parameters, so it is often beneficial to address water quality issues in a holistic integrated fashion to ensure the cure will really address the underlying problem."

2.1.1 A Strategy For Watershed Scale Restoration

However well conceived each individual watershed protection or restoration project may be, achieving the goals stated in this chapter requires coordinated strategies within each watershed and across the State as a whole. For several years, both the Oregon Watershed Enhancement Board (OWEB) and Section 319 grant programs have encouraged and favored those project proposals that stem from or at least are consistent with established watershed action plans.

OWEB has grants specifically earmarked for watershed assessment and watershed action plan development. Three watershed scale guidance documents already have been developed and published by OWEB and *The Oregon Plan* partnership: the Oregon Aquatic Habitat Restoration and Enhancement Guide (May 1999), the Oregon Watershed Assessment Manual (July 1999), and the Water Quality Monitoring Technical Guidebook (July 1999). At least one additional guidance document, needed to tie these other materials together, is now in development and is due for completion in the first half of 2001: a Strategy for Watershed Scale Restoration—essentially a guidance on how to prepare a watershed restoration action plan that is based on a full-featured watershed assessment and that utilizes the wide range of restoration and protection objectives and measures addressed in Chapters 2 and 5 of this NPS Program Plan.

2.2 LONG AND SHORT- TERM OBJECTIVES

The objectives of this NPS Program are assembled primarily from *The Oregon Plan* Biological Objectives, which are described in this section.

In general, the NPS program's approach to setting objectives is to focus on the prevention and reduction of known impairments of water

quality-dependant beneficial uses. This aligns with the objectives of *The Oregon Plan*, but differs somewhat from Oregon's previous NPS approach, which was to identify all the categories of human activity that *may* contribute NPS pollution and to identify a set of strategies and measures to address each of those categories. Either approach should result in successful NPS control, but building the program around objectives that fix or prevent specific, well known water quality impairments makes the program less abstract and more meaningful to land managers. Also, *The Oregon Plan* objectives, which form the core of the NPS Program's objectives, are designed to directly address the "factors for decline" of sensitive, threatened, and endangered species. This approach serves *The Oregon Plan's* explicit mission (as described above). But it also serves the implicit purpose of *The Oregon Plan*, which is to restore and protect critical habitat such that sensitive species do not become listed as "threatened" or "endangered" (pursuant to the Federal Endangered Species Act) and so that already listed species can be removed from the list as soon as possible.

2.2.1 Oregon Plan Biological Objectives

The Oregon Plan Biological Objectives are not site-specific as written, but are intended to guide the development of site-specific objectives for each watershed. Each objective has a component relating to protection and antidegradation as well as components addressing water quality or habitat restoration. Each objective identifies one or more key responsible entities, and most objectives also identify measurable indicators of mid-term and final achievement.

This section lists the biological objectives identified for each of the "factors for decline" discussed in Chapter 4. Please note that the numbering of the objectives reflects the fact that some objectives initially proposed for inclusion in *The Oregon Plan* were subsequently discarded and thus do not appear here. In

Upper Willamette River, and Snake River Basin ESUs that meet State water quality standards for temperature, dissolved oxygen, and pH. This figure is referred to in several of the following Biological Objectives. The assessment was made by DEQ in preparation of the 1994–96 303(d) List and represents all water quality data that was readily available to DEQ.

These numbers are useful in estimating the current status of water quality in biological Objective 2 for temperature, dissolved oxygen, and pH.



Figure 2-1: Oregon Plan Ecologically Significant Units (ESUs)

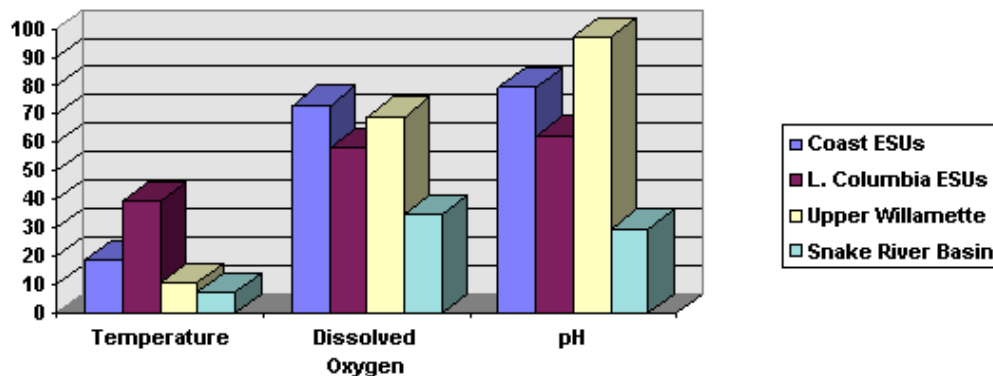


Figure 2-2: Percent of Stream Miles Assessed that Meet Water Quality Standards for Temperature, Dissolved Oxygen, and pH

2.2.2 Temperature

Temperature Biological Objective 1:

In ESU watersheds that support or have historically supported steelhead, where water quality currently is equal to or better than DEQ's water quality standard for temperature, manage activities such that water quality is not degraded.

Temperature Biological Objective 2:

To meet DEQ's water quality standard for temperature in ESU watersheds that support steelhead, or have historically supported steelhead, according to the following milestones (% of watersheds meeting numeric criteria for temperature—see Figure 2-2 and Table 2-1).

Temperature Biological Objective 3:

To identify watersheds in the Steelhead ESUs not meeting the water quality standard for temperature through biennial updates to the 303(d) List according to the following milestones (% of watersheds measured):

2002 — 50%

2007 — 95%

Temperature Biological Objective 4:

To identify temperature conditions within unimpaired or least impaired reference sites in the Steelhead ESUs according to the following milestones (% of reference sites monitored per ESU). See Table 2-2.

Temperature Biological Objective 5:

To determine the status and trend of temperature conditions within the Steelhead ESUs through randomly selected monitoring sites according to the following milestones (% of random sites monitored per ESU). See Table 2-3.

Temperature Biological Objective 6:

To evaluate the effectiveness of restoration projects and Agricultural Water Quality Management Plans (AWQMP) by developing and implementing monitoring strategies for assessing temperature conditions following the implementation of such activities within Steelhead ESUs. DEQ will rely heavily on Watershed Councils or other agencies for these data. DEQ will provide technical assistance as needed.

Temperature Biological Objective 7:

Review the numeric criteria in the temperature standard during each Triennial Review Period to determine if the standard needs to be scheduled

for revision to ensure it remains protective of beneficial uses based upon the most current scientific information.

Table 2-1: Percent of Watersheds Meeting Numeric Criteria for Temperature

Years	Coast ESUs	L. Columbia ESUs	U. Willamette ESU	Snake Basin ESU	All Steelhead ESUs
1997	18%	39%	11%	7%	18%
2007	35%	45%	20%	20%	35%
2012	45%	60%	40%	40%	45%
2017	65%	80%	60%	60%	65%
2027	90%	90%	90%	90%	90%

Table 2-2: Proposed Number of Reference Temperature Sites per ESU

Year	Sites Sampled	Total Sites Sampled
1998	First 20%	20%
1999	Second 20%	40%
2000	Third 20%	60%
2001	Fourth 20%	80%
2002	Last 20%	100%
2003+	Repeat cycle by re-sampling beginning with first 20%	

Table 2-3: Proposed Number of Random Temperature Sites per ESU

Klamath Mountains and Oregon Coast		SW Washington and Lower Columbia	Upper Willamette River	Snake River Basin
150		100	100	100
Year	Sites Sampled		Total Sites Sampled	
1998	First 20%		20%	
1999	Second 20%		40%	
2000	Third 20%		60%	
2001	Fourth 20%		80%	
2002	Last 20%		100%	
2003+	Repeat cycle by re-sampling beginning with first 20%			

2.2.3 Sediment

Sediment Biological Objective 1:

In ESU watersheds that support or have historically supported steelhead, where water quality currently is equal to or better than DEQ's water quality standards for inter-gravel dissolved oxygen and sedimentation, manage activities such that water quality is not degraded.

Sediment Biological Objective 2:

To meet DEQ's water quality standards for inter-gravel dissolved oxygen and sedimentation in spawning gravel beds for ESU watersheds according to the following milestones (% of watersheds that meet numeric criteria for inter-gravel dissolved oxygen and sedimentation):

1997 — Unknown
 2007 — 15%
 2012 — 40%
 2017 — 70%
 2027 — 90%

Sediment Biological Objective 3:

To identify sediment conditions within unimpaired or least impaired reference sites in the Steelhead ESUs according to the following milestones (% of reference sites monitored per ESU). See Table 2-4.

Sediment Biological Objective 4:

To determine the status and trend of sediment conditions within the Steelhead ESUs through

randomly selected monitoring sites according to the following milestones (% of random sites monitored per ESU). See Table 2-5.

Sediment Biological Objective 5:

To evaluate the effectiveness of restoration projects and Agricultural Water Quality Management Plans (AWQMP) by developing and implementing monitoring strategies for assessing sediment conditions following the implementation of such activities within Steelhead ESUs. DEQ will rely heavily on Watershed Councils or other agencies for these data. DEQ will provide technical assistance as needed.

Sediment Biological Objective 6:

Review the numeric criteria in the inter-gravel dissolved oxygen and turbidity standards during each Triennial Review Period to determine if the standards need to be scheduled for revision to ensure they remain protective of beneficial uses based upon the most current scientific information.

Sediment Biological Objective 7:

During the next Triennial Review Period (1997–99 biennium) review and revise, as appropriate, the State narrative water quality standard for sedimentation to determine if numeric criteria can be developed to improve protection of aquatic species and to make the standard easier to implement.

Table 2-4: Proposed Number of Reference Sediment Sites per ESU

Klamath Mountains and Oregon Coast		SW Washington and Lower Columbia		Upper Willamette River		Snake River Basin	
150		100		100		100	
Year	Sites Sampled				Total Sites Sampled		
1998	First 20%				20%		
1999	Second 20%				40%		
2000	Third 20%				60%		
2001	Fourth 20%				80%		
2002	Last 20%				100%		
2003+	Repeat cycle by re-sampling beginning with first 20%						

Table 2-5: Proposed Number of Random Sediment Sites per ESU

Klamath Mountains and Oregon Coast		SW Washington and Lower Columbia		Upper Willamette River		Snake RiverBasin	
150		100		100		100	
Year	Sites Sampled				Total Sites Sampled		
1998	First 20%				20%		
1999	Second 20%				40%		
2000	Third 20%				60%		
2001	Fourth 20%				80%		
2002	Last 20%				100%		
2003+	Repeat cycle by re-sampling beginning with first 20%						

2.2.4 Dissolved Oxygen (D.O.)

D.O. Biological Objective 1:

In ESU watersheds that support or have historically supported steelhead, where water quality currently is equal to or better than DEQ's water quality standard for dissolved oxygen, manage activities such that water quality is not degraded.

D.O. Biological Objective 2:

To meet DEQ's water quality standard for water column dissolved oxygen in ESU watersheds that support, or have historically supported steelhead, according to the following milestones (% of watersheds meeting the numeric criteria for dissolved oxygen—see Figure 2-2 and Table 2-1).

D.O. Biological Objective 3:

To identify watersheds in the Steelhead ESUs not meeting the water quality standard for dissolved oxygen through biennial updates to the 303(d) List according to the following milestones (% of watersheds measured):

2002 — 50%
2007 — 95%

D.O. Biological Objective 4:

To identify dissolved oxygen conditions within unimpaired or least impaired reference sites in

the Steelhead ESUs according to the following milestones (% of reference sites monitored per ESU). See Table 2-7.

D.O. Biological Objective 5:

To determine the status and trend of dissolved oxygen levels within the Steelhead ESUs through randomly selected monitoring sites according to the following milestones (% of random sites monitored per ESU). See Table 2-8.

D.O. Biological Objective 6:

To evaluate the effectiveness of restoration projects and Agricultural Water Quality Management Plans (AWQMP) by developing and implementing monitoring strategies for assessing dissolved oxygen conditions following the implementation of such activities within Steelhead ESUs. DEQ will rely heavily on Watershed Councils or other agencies for these data. DEQ will provide technical assistance as needed.

D.O. Biological Objective 7:

Review the numeric criteria in the dissolved oxygen standard during each Triennial Review Period to determine if the standard needs to be scheduled for revision to ensure it remains protective of beneficial uses based upon the most current scientific information.

Table 2-6: Percent of Watersheds Meeting Numeric Criteria for Dissolved Oxygen

Years	Coast ESUs	L. Columbia ESUs	U. Willamette ESU	Snake Basin ESU	All Steelhead ESUs
1997	73%	58%	69%	35%	67%
2007	80%	65%	75%	40%	70%
2012	85%	75%	80%	50%	80%
2017	90%	85%	90%	80%	90%
2027	95%	95%	95%	95%	95%

Table 2-7: Proposed Number of Reference Dissolved Oxygen Sites per ESU

Klamath Mountains & Oregon Coast		SW Washington & Lower Columbia		Upper Willamette River		Snake River Basin	
50		25		25		25	
Year	Sites Sampled				Total Sites Sampled		
1998	First 20%				20%		
1999	Second 20%				40%		
2000	Third 20%				60%		
2001	Fourth 20%				80%		
2002	Last 20%				100%		
2003+	Repeat cycle by re-sampling beginning with first 20%						

Table 2-8: Proposed Number of Random Dissolved Oxygen Sites per ESU

Klamath Mountains & Oregon Coast		SW Washington & Lower Columbia		Upper Willamette River		Snake River Basin	
50		50		50		50	
Year	Sites Sampled				Total Sites Sampled		
1998	First 20%				20%		
1999	Second 20%				40%		
2000	Third 20%				60%		
2001	Fourth 20%				80%		
2002	Last 20%				100%		
2003+	Repeat cycle by re-sampling beginning with first 20%						

2.2.5 Biological Conditions

Bio-Criteria Biological Objective 1:

In ESU waterbodies that support or have historically supported steelhead, where resident biological communities currently have a species composition, diversity, and functional organization comparable to that of the natural habitat of the Sub-basin, manage activities such that water quality is not degraded.

Bio-Criteria Biological Objective 2:

Support and maintain a balanced, integrated, adaptive community of organisms, in ESU watersheds that support steelhead, which have a species composition, diversity, and functional organization comparable to that of the natural habitat of the Sub-basin as determined by accepted biomonitoring techniques provided under DEQ's biological criteria water quality standard. Based on the evaluation of randomly selected sites the percent of ESU watersheds not meeting the biological criteria will be calculated. The goal will be to reduce the percent of biologically impaired streams according to the following milestones:

- 1997 — Unknown
- 2007 — 5% reduction
- 2014 — 20% reduction

Bio-Criteria Biological Objective 3:

Use accepted biomonitoring techniques to develop metrics descriptive of the natural

habitats found in ESU watersheds used by steelhead to ensure a complete set of reference sites is available for implementation of the biological criteria water quality standard according to the following milestones (% of reference sites monitored per ESU). See Table 2-9.

Bio-Criteria Biological Objective 4:

To determine the status and trend of biological conditions within the Steelhead ESUs through randomly selected monitoring sites according to the following milestones (% of random sites monitored per ESU). See Table 2-10.

Bio-Criteria Biological Objective 5:

To evaluate the effectiveness of restoration projects and Agricultural Water Quality Management Plans (AWQMP) by developing and implementing monitoring strategies for assessing biological conditions following the implementation of such activities within Steelhead ESUs. DEQ will rely heavily on Watershed Councils or other agencies for these data. DEQ will provide technical assistance as needed.

Bio-Criteria Biological Objective 6:

Review the biological criteria standard during each Triennial Review Period to determine if the standard needs to be scheduled for revision to ensure it remains protective of beneficial uses based upon the most current scientific information.

Table 2-9: Proposed Number of Reference Bio-Criteria Sites per ESU

Klamath Mountains and Oregon Coast		SW Washington and Lower Columbia	Upper Willamette River	SNAKE RIVER BASIN
75		50	50	50
Year	Sites Sampled			Total Sites Sampled
1998	First 20%			20%
1999	Second 20%			40%
2000	Third 20%			60%
2001	Fourth 20%			80%
2002	Last 20%			100%
2003+	Repeat cycle by re-sampling beginning with first 20%			

Table 2-10: Proposed Number of Random Bio-Criteria Sites per ESU

Klamath Mountains and Oregon Coast		SW Washington and Lower Columbia		Upper Willamette River		Snake River Basin	
150		100		100		100	
Year	Sites Sampled				Total Sites Sampled		
1998	First 20%				20%		
1999	Second 20%				40%		
2000	Third 20%				60%		
2001	Fourth 20%				80%		
2002	Last 20%				100%		
2003+	Repeat cycle by re-sampling beginning with first 20%						

2.2.6 pH

pH Biological Objective 1:

In ESU watersheds that support or have historically supported steelhead, where water quality currently is equal to or better than DEQ's water quality standard for pH, manage activities such that water quality is not degraded.

pH Biological Objective 2:

To meet DEQ's water quality standard for pH in ESU watersheds that support, or have historically supported steelhead, according to the following milestones (% of watersheds meeting the numeric criteria for pH—see Figure 2-2 and Table 2-11).

pH Biological Objective 3:

To identify watersheds in the Steelhead ESUs not meeting the water quality standard for pH through biennial updates to the 303(d) List according to the following milestones (% of watersheds measured):

2002 — 50%

2007 — 95%

pH Biological Objective 4:

To identify pH conditions within unimpaired or least impaired reference sites in the Steelhead

ESUs according to the following milestones (% of reference sites monitored per ESU). See Table 2-12.

pH Biological Objective 5:

To determine the status and trend of pH levels within the Steelhead ESUs through randomly selected monitoring sites according to the following milestones (% of random sites monitored per ESU). See Table 2-13.

pH Biological Objective 6:

To evaluate the effectiveness of restoration projects and Agricultural Water Quality Management Plans (AWQMP) by developing and implementing monitoring strategies for assessing pH conditions following the implementation of such activities within Steelhead ESUs. DEQ will rely heavily on Watershed Councils or other agencies for these data. DEQ will provide technical assistance as needed.

pH Biological Objective 7:

Review the numeric criteria in the pH standard during each Triennial Review Period to determine if the standard needs to be scheduled for revision to ensure it remains protective of beneficial uses based upon the most current scientific information.

Table 2-11: Percent of Watersheds Meeting Numeric Criteria for pH

Years	Coast ESUs	L. Columbia ESUs	U. Willamette ESU	Snake Basin ESU	All Steelhead ESUs
1997	79	62	97	30	79
2007	85	70	97	40	85
2012	90	80	97	60	90
2017	95	90	97	80	95
2027	95	95	97	95	95

Table 2-12: Proposed Number of Reference pH Sites per ESU

Klamath Mountains and Oregon Coast		SW Washington and Lower Columbia		Upper Willamette River		Snake River Basin	
50		25		25		25	
Year	Sites Sampled				Total Sites Sampled		
1998	First 20%				20%		
1999	Second 20%				40%		
2000	Third 20%				60%		
2001	Fourth 20%				80%		
2002	Last 20%				100%		
2003+	Repeat cycle by re-sampling beginning with first 20%						

Table 2-13: Proposed Number of Random pH Sites per ESU

Klamath Mountains and Oregon Coast		SW Washington and Lower Columbia		Upper Willamette River		Snake River Basin	
50		50		50		50	
Year	Sites Sampled				Total Sites Sampled		
1998	First 20%				20%		
1999	Second 20%				40%		
2000	Third 20%				60%		
2001	Fourth 20%				80%		
2002	Last 20%				100%		
2003+	Repeat cycle by re-sampling beginning with first 20%						

2.2.7 Stream Fertility

Stream Fertility Biological Objective 1:

In ESU watersheds that support or have historically supported steelhead, where water quality currently is equal to or better than DEQ's water quality standards for dissolved oxygen, pH, biological criteria, phosphorus, and deleterious aquatic growth (OAR 340-41-(basin)-2(h)), and where the *chlorophyll a* target level in OAR 340-41-150 is met, manage activities such that water quality is not degraded.

Stream Fertility Biological Objective 2:

To meet DEQ's water quality standards for dissolved oxygen, pH, biological criteria, phosphorus, and deleterious aquatic growth (OAR 340-41-(basin)-2(h)), and to resolve problems where the *chlorophyll a* target level in OAR 340-41-150 is not met, in ESU watersheds that support, or have historically supported steelhead, according to the following milestones (% of watersheds meeting water quality standards):

1997 — Unknown
 2007 — 35%
 2012 — 70%
 2017 — 90%
 2027 — 95%

Stream Fertility Biological Objective 3:

To identify ESU watersheds where nutrient loads are adversely affecting beneficial uses through biennial updates to the 303(d) List according to the following milestones (% of watersheds measured):

2002 — 50%
 2007 — 95%

Stream Fertility Biological Objective 4:

To identify stream nutrient conditions within unimpaired or least impaired reference sites in the Steelhead ESUs according to the following milestones (% of reference sites monitored per ESU). See Table 2-14.

Stream Fertility Biological Objective 5:

To determine the status and trend of stream nutrient conditions within the Steelhead ESUs through randomly selected monitoring sites according to the following milestones (% of random sites monitored per ESU). See Table 2-15.

Stream Fertility Biological Objective 6:

To evaluate the effectiveness of restoration projects and Agricultural Water Quality Management Plans (AWQMP) by developing and implementing monitoring strategies for assessing nutrient conditions following the implementation of such activities within Steelhead ESUs. DEQ will rely heavily on Watershed Councils or other agencies for these data. DEQ will provide technical assistance as needed.

Stream Fertility Biological Objective 7:

During the next Triennial Review Period (1997–99 biennium) review the State water quality standards that address nutrient loading to determine if numeric criteria for phosphorus should be developed, or other parameters revised, to adequately protect aquatic species.

Stream Fertility Biological Objective 8:

Increase the growth and survival of juvenile salmonids in a set of streams where spawner abundance is depressed by increasing the abundance of adult salmon carcasses in spawning areas during and shortly after the spawning season.

Table 2-14: Proposed Number of Reference Stream Fertility Sites per ESU

Klamath Mountains and Oregon Coast		SW Washington and Lower Columbia	Upper Willamette River	SNAKE RIVER BASIN
75		50	50	50
Year	Sites Sampled		Total Sites Sampled	
1998	First 20%		20%	
1999	Second 20%		40%	
2000	Third 20%		60%	
2001	Fourth 20%		80%	
2002	Last 20%		100%	
2003+	Repeat cycle by re-sampling beginning with first 20%			

Table 2-15: Proposed Number of Random Stream Fertility Sites per ESU

Klamath Mountains and Oregon Coast		SW Washington and Lower Columbia	Upper Willamette River	SNAKE RIVER BASIN
150		100	100	100
Year	Sites Sampled		Total Sites Sampled	
1998	First 20%		20%	
1999	Second 20%		40%	
2000	Third 20%		60%	
2001	Fourth 20%		80%	
2002	Last 20%		100%	
2003+	Repeat cycle by re-sampling beginning with first 20%			

2.2.8 Toxics

Toxics Biological Objective 1:

In ESU watersheds that support or have historically supported steelhead, where water quality currently is equal to or better than DEQ's water quality standards for toxic substances, manage activities such that water quality is not degraded.

Toxics Biological Objective 2:

To meet DEQ's water quality standards for toxic substances contained in Table 20 of OAR Chapter 340, Division 41 for all ESU watersheds that support or have historically supported steelhead, according to the following milestones (% of streams meeting the numeric criteria for toxics):

1997 — Unknown
 2007 — 35%
 2012 — 70%
 2017 — 90%
 2027 — 95%

Toxics Biological Objective 3:

To identify background levels of potential toxins, biological communities and physiologic markers will be assessed within unimpaired or least impaired reference sites in the Steelhead ESUs according to the following milestones (% of reference sites monitored per ESU). See Table 2-16.

Toxics Biological Objective 4:

To determine the status and trend of toxic contamination within the Steelhead ESUs randomly selected monitoring sites will be assessed for the biological community structure sensitive to toxins and by assessing physiologic markers within certain species according to the following milestones (% of random sites monitored per ESU). See Table 2-17.

Toxics Biological Objective 5:

Review the numeric criteria in the toxics standard during each Triennial Review Period to determine if the standard needs to be scheduled for revision to ensure it remains protective of beneficial uses based upon the most current scientific information.

2.2.9 Objectives Outside The ESUs

The objectives cited so far reflect *The Oregon Plan's* initial and major focus on anadromous salmonids, and thus an emphasis on the Columbia Basin and coastal watersheds. However, *The Oregon Plan*, and this NPS Program Plan, address all the watersheds in Oregon. Objectives for watersheds not in one of the ESUs are determined through the processes that lead to the Watershed Restoration Action Strategies (see Chapter 6).

Table 2-16: Proposed Number of Reference Toxic Sites per ESU

Klamath Mountains and Oregon Coast		SW Washington and Lower Columbia		Upper Willamette River		Snake River Basin	
75		50		50		50	
Year	Sites Sampled				Total Sites Sampled		
1998	First 20%				20%		
1999	Second 20%				40%		
2000	Third 20%				60%		
2001	Fourth 20%				80%		
2002	Last 20%				100%		
2003+	Repeat cycle by re-sampling beginning with first 20%						

Table 2-17: Proposed Number of Random Toxic Sites per ESU

Klamath Mountains and Oregon Coast		SW Washington and Lower Columbia		Upper Willamette River		Snake River Basin	
150		100		100		100	
Year	Sites Sampled				Total Sites Sampled		
1998	First 20%				20%		
1999	Second 20%				40%		
2000	Third 20%				60%		
2001	Fourth 20%				80%		
2002	Last 20%				100%		
2003+	Repeat cycle by re-sampling beginning with first 20%						

2.3 PRIORITIES

The priorities of this NPS Program Plan are assembled from a number of sources. These priorities are coordinated and integrated by these two mechanisms:

1. The Section 303(d) TMDL program, and
2. The 1998 Unified Watershed Assessment (UWA).

2.3.1 Section 303(d) TMDL Priorities

The Section 303(d) TMDL priorities identify the years by which TMDLs will be completed for specific parameters in each Sub-basin (see Figure 2-3). These TMDL sub-basins constituted the first level screen in determining Category 1 Sub-basins in the Unified Watershed Assessment (see below). The 303(d) geographical and chronological priorities also are central to setting priorities for *The Oregon Plan* (including the Healthy Streams Partnership), and will continue to guide annual Section 319(h) grant priorities at least through

fiscal year 2007 (the last year of the current 303(d) priority listing). In a few of the sub-basins on the 303(d) List, restoration of water quality may be possible by addressing point sources only. However, Oregon's NPS Program assumes that all TMDLs will require a NPS component, and so the TMDL development priorities also become NPS Program priorities. It is important to note that the 303(d) priorities refer to the year in which **development** of the TMDL and its associated implementation plan will be finished. Implementation of each TMDL will begin immediately upon its approval, and the NPS components of that implementation will be a high priority from the start. While some implementation tasks will begin immediately, others will be scheduled for later, and many will continue for years. Each TMDL implementation plan will have timelines and milestones built in, as well as mechanisms for effectiveness evaluation on a periodic basis. Some of the objectives may require many years—even decades—to achieve, particularly those relating to riparian vegetation growing to full "site potential" size and those that depend upon natural forces to change stream channel shapes.

Details on the 303(d) prioritization method are contained in Appendix B.

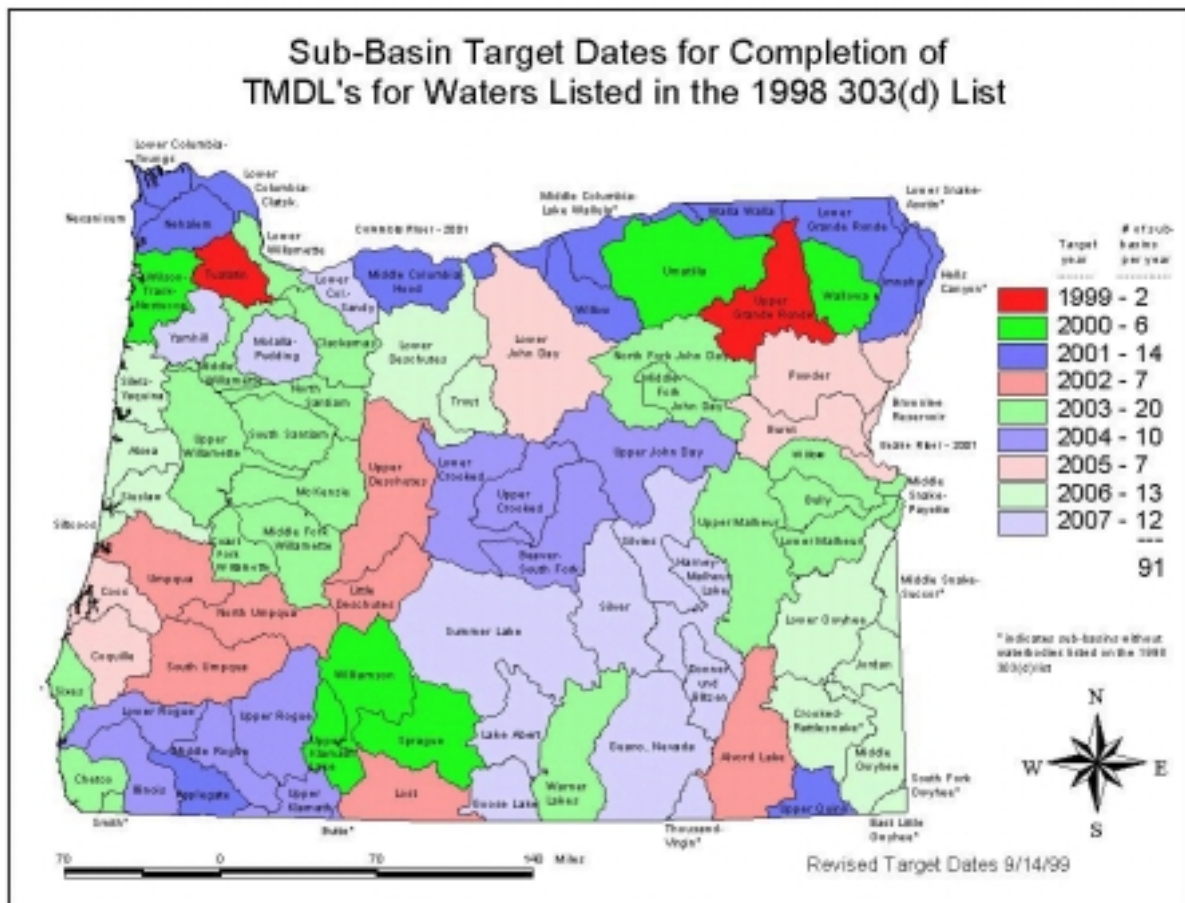


Figure 2-3: Map of 303(D) Sub-Basin Priorities Objectives Outside the ESUs

2.3.2 Unified Watershed Assessment Priorities

In February 1998, The Environmental Protection Agency (EPA) and the U.S. Department of Agriculture (USDA) issued a "Clean Water Action Plan" (CWAP) that provides a strategy for restoring and protecting the Nation's waters. One of the initial key elements of the CWAP asked States and Tribal governments to work with the public and Federal agencies to assess the condition of their water resources and to prioritize watersheds for restoration. Based on this request, a multi-agency team in Oregon developed Unified Watershed Assessment (UWA) priority criteria for restoration at the Sub-basin level. Existing Federal, State and Tribal assessments and prioritizations were used in this effort. These restoration priorities will be reviewed periodically and updated as needed to reflect changing conditions as more detailed watershed information becomes available. Figure 2-4 and Table 2-18 show how Oregon Sub-basins were prioritized by the UWA. This prioritization is used to target the increased Section 319(h) funding associated with the CWAP. The UWA for Oregon does not revise or replace Federal, State, Tribal, and local watershed efforts. It does, however, identify those areas of high-priority for all three Governments. Additional detail on the UWA is in Appendix C.

The UWA prioritization process utilized the following four sources:

OR 1998 Section 303(d) List Priorities and Targets: This DEQ prioritization and targeting effort proposed stratification of sub-basins on the Oregon 303(d) List into **four** priority levels based on fishery and water quality factors. These factors included concerns about fish with Endangered Species Act listing status, health advisories, water supply status, closures to shellfish harvesting, concerns regarding water contact recreation, Wild and Scenic River/State Scenic Waterway status, resident fish and aquatic life spawning and rearing, and other water resource related factors. The DEQ

application of the above factors resulted in 51 Priority 1 Sub-basins and 2 Priority 1 interstate rivers, 16 Priority 2 sub-basins, 12 Priority 3 Sub-basins, and 12 Sub-basins without an assigned priority.

Wy-Kan-Ush-Mi-Wa-Kish-Wit—Spirit of the Salmon, The Columbia River Anadromous Fish Restoration Plan of the Nez Perce, Umatilla, Warm Springs and Yakama Tribes, July 1996: This long-term plan provides a foundation for meeting Tribal treaty and trust obligations, addresses the causes of anadromous fish declines, provides information on fish stock status and habitat and makes recommendations to halt declines in fish populations. This plan looks at 21 Sub-basins and the Columbia and Snake River mainstems. Based on the status of fish stocks and habitat, treaty rights, usual and accustomed fisheries and uses, and other Tribal values there are 14 "Sub-basins" and 2 mainstem rivers that are a Columbia River Basin Tribal priority for restoration and protection.

Northwest Forest Plan/ICBEMP Data: These two large-scale Forest Service/BLM efforts include aquatic restoration and assessment components. The Northwest Forest Plan designates Key Watersheds based on the presence of at-risk fish stocks and high quality waters and targets watershed restoration efforts in those Key Watersheds. There are 25 Sub-basins west of the Cascades that contain Key Watersheds which are a priority for Forest Service/BLM restoration efforts. Data from the ICBEMP identifies known strong populations of seven salmonid species and also populations of these salmonids that have high genetic integrity. Sub-basins containing these core and fringe salmonid populations present key opportunities for restoring fisheries and water quality. There are 29 sub-basins that have strong or unique genetic populations of seven salmonid species in Eastern Oregon.

Stage 1 Watershed Assessment, Final Report, Oregon Division of State Lands (DSL): This DSL Assessment created a priority list of Sub-basins based on a combination of the following criteria: The greatest natural resource

value (e.g., largest number of Federally listed species, largest percent area of wetlands, largest number of vegetation complexes); the least impact to condition (e.g., fewer of polluted sites, lowest population and road density); and the greatest risk to condition (e.g., projected population increase, smallest percent of area managed for protection of biodiversity). These three categories of criteria were used to establish priority rankings for Sub-basins that could most benefit from a watershed management or restoration approach. There are 21 priority ranked Sub-basins in Oregon.

DEQ took the lead in assembling the first UWA. We will reconvene the UWA advisory group on an annual basis to review and, if necessary, update the UWA priorities. In addition to the four main sources of condition assessment and priorities used in 1998, future UWAs will also utilize the results of watershed condition assessments and watershed action plans developed by Watershed Councils in conjunction with the OWEB and Healthy Streams processes.

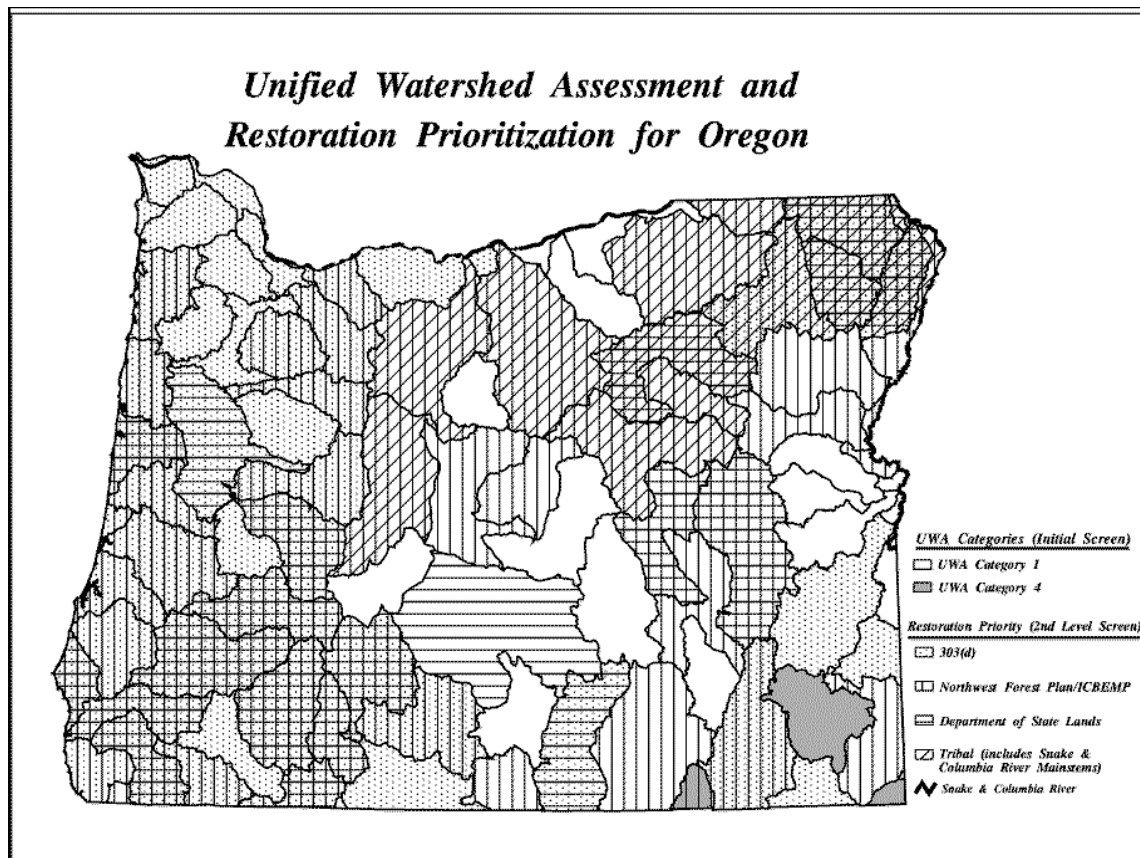


Figure 2-4: Map of UWA Sub-Basin Priorities

Table 2-18: Prioritization of Oregon Sub-Basins by the 1998 UWA

Basin	Sub-Basin Name	HUC	Level	Restoration Priority (#s) Ranking (Greater No., Greater Need)	TMDL Status
Grande Ronde	Imnaha	17060102	1	4	
Grande Ronde	Wallowa	17060105	1	4	
Grande Ronde	Lower Grande Ronde	17060106	1	4	
Grande Ronde	Upper Grande Ronde	17060104	1	3	January 15
John Day	North Fork John Day	17070202	1	3	
Klamath	Williamson	18010201	1	3	
Klamath	Upper Klamath Lake	18010203	1	3	
Klamath	Upper Klamath	18010206	1	3	
Mid Coast	Alsea	17100205	1	3	
Rogue	Upper Rogue	17100307	1	3	
Rogue	Lower Rogue	17100310	1	3	
Rogue	Illinois	17100311	1	3	Done
South Coast	Sixes	17100306	1	3	
Umpqua	North Umpqua	17100301	1	3	
Umpqua	South Umpqua	17100302	1	3	
Willamette	Middle Fork Willamette	17090001	1	3	
Deschutes	Upper Deschutes	17070301	1	2	
Deschutes	Lower Deschutes	17070306	1	2	
Goose and Summer Lakes	Warner Lakes	17120007	1	2	
Grande Ronde	Lower Snake / Asotin	17060103	1	2	
John Day	Upper John Day	17070201	1	2	
John Day	Middle Fork John Day	17070203	1	2	
John Day	Lower John Day	17070204	1	2	
Klamath	Sprague	18010202	1	2	
Malheur	Upper Malheur	17050116	1	2	
Malheur Lake	Silvies	17120002	1	2	
Malheur Lake	Alvord Lake	17120009	1	2	
Mid Coast	Siletz / Yaquina	17100204	1	2	
Mid Coast	Siuslaw	17100206	1	2	
Mid Coast	Siltcoos	17100207	1	2	
North Coast / Lower Columbia	Wilson / Trask / Nestucca	17100203	1	2	Done
Rogue	Applegate	17100309	1	2	
Sandy	Lower Columbia / Sandy	17080001	1	2	
South Coast	Coos	17100304	1	2	
South Coast	Coquille	17100305	1	2	
South Coast	Chetco	17100312	1	2	
Umatilla	Walla Walla	17070102	1	2	
Umatilla	Umatilla	17070103	1	2	March 1
Umpqua	Umpqua	17100303	1	2	
Willamette	Upper Willamette	17090003	1	2	
Willamette	McKenzie	17090004	1	2	
Willamette	North Santiam	17090005	1	2	
Willamette	Molalla / Pudding	17090009	1	2	
Deschutes	Upper Crooked	17070304	1	1	
Deschutes	Lower Crooked	17070305	1	1	
Goose and Summer Lakes	Summer Lake	17120005	1	1	
Goose and Summer Lakes	Goose Lake	18020001	1	1	
Hood	Middle Columbia / Hood	17070105	1	1	May 1
Klamath	Smith	18010101	1	1	

Table 2-18: Prioritization of Oregon Sub-Basins by the 1998 UWA (continued)

Basin	Sub-Basin Name	HUC	Level	Restoration Priority (#s) Ranking (Greater No., Greater Need)	TMDL Status
Klamath	Lost	18010204	1	1	
Malheur Lake	Harney / Malheur Lakes	17120001	1	1	
Malheur Lake	Guano	17120008	1	1	
North Coast / Lower Columbia	Lower Columbia / Clatskanie	17080003	1	1	
North Coast / Lower Columbia	Lower Columbia / Youngs	17080006	1	1	
North Coast / Lower Columbia	Necanicum	17100201	1	1	
North Coast / Lower Columbia	Nehalem	17100202	1	1	
Owyhee	Upper Quinn	16040201	1	1	
Owyhee	South Fork Owyhee	17050105	1	1	
Owyhee	Middle Owyhee	17050107	1	1	
Owyhee	Jordon	17050108	1	1	
Powder	Brownlee Reservoir	17050201	1	1	
Powder	Burnt	17050202	1	1	
Powder	Powder	17050203	1	1	
Rogue	Middle Rogue	17100308	1	1	
South Coast	Smith	18010209	1	1	
Willamette	Coast Fork Willamette	17090002	1	1	
Willamette	South Santiam	17090006	1	1	
Willamette	Middle Willamette	17090007	1	1	
Willamette	Yamhill	17090008	1	1	
Willamette	Tualatin	17090010	1	1	
Willamette	Clackamas	17090011	1	1	
Willamette	Lower Willamette	17090012	1	1	
Deschutes	Little Deschutes	17070302	1	0	
Deschutes	Beaver / South Fork Crooked	17070303	1	0	
Deschutes	Trout	17070307	1	0	
Goose and Summer Lakes	Lake Abert	17120006	1	0	
Grande Ronde	Hells Canyon	17060101	1	0	
Klamath	Butte	18010205	1	0	
Malheur	Middle Snake / Payette	17050115	1	0	
Malheur	Lower Malheur	17050117	1	0	
Malheur	Bully	17050118	1	0	
Malheur	Willow	17050119	1	0	April 1
Malheur Lake	Donner and Blitzen	17120003	1	0	
Malheur Lake	Silver	17120004	1	0	
Owyhee	Middle Snake / Succor	17050103	1	0	
Owyhee	Lower Owyhee	17050110	1	0	
Umatilla	Middle Columbia / Lake Wallula	17070101	1	0	
Umatilla	Willow	17070104	1	0	
Malheur Lake	Thousand / Virgin	16040205	4		
Owyhee	East Little Owyhee	17050106	4		
Owyhee	Crooked / Rattlesnake	17050109	4		

2.3.3 Resulting Project Priorities For Section 319(H) Nonpoint Source Grants

For at least the next ten years, a significant portion of Section 319(h) funding will be targeted to addressing TMDL priorities in Oregon. Table 2-19, Table 2-20, Table 2-21, and Table 2-22 present basin project priorities determined with the TMDL schedule in mind.

Selection criteria used in making recommendations to EPA for 319 funding will also include the nature and severity of the water quality problems to be addressed, adequacy of the project application and the potential for success.

- Projects addressing the Total Maximum Daily Loads priorities listed in any of the Sub-basins listed in Table 2-19, Table 2-20, Table 2-21, and Table 2-22;
- Significant publicly owned lakes currently listed in the Priority streams document [303(d) List];
- Drinking water supplies from surface reservoirs and river intakes;
- Groundwater protection projects addressing contamination;
- On-going agricultural and urban NPS projects making significant progress in addressing Nonpoint problems and can demonstrate a need to extend or expand the scope of the project;
- Other water bodies (surface or groundwater) that are publicly owned and locally important;
- Public water supplies that can demonstrate a need for protection or improvement. Funds could be requested to be used for NPS water quality improvements related to drinking water for public water systems. The proposed NPS improvements must be (at least partially) within the sensitive zones of

drinking water protection areas as delineated under the Federal *Safe Drinking Water Act*—Source Water Assessment Program. The improvements should focus on water quality problems related to the well(s) or surface water intake as demonstrated by raw water quality data prior to treatment by the public water system.

2.3.4 Special Consideration By DEQ Will Be Given To Projects Which Address The Following Issues

- Control of non-agricultural NPS pollution (such as urban stormwater, construction site erosion, etc.);
- Demonstration of innovative or alternative NPS control strategies or practices being part of an overall watershed project and used to promote greater implementation of best management practices.
- Loss of floodplain or wetland function;
- Low and high flow affecting habitat and water quality;
- Information/education of public or targeted groups on NPS pollution issues and promoting increased use of BMPs in a watershed;
- Higher priority will be given to projects demonstrating strong local/regional involvement and support, including financial support or other resource contributions from governmental/private sources.

As part of its Section 319(h) grant cycle each year, DEQ and its partners will identify those categories and detailed tasks within categories that are the highest priorities for funding at that point in time. The selection of these annual priorities is based on the circumstances, needs, and opportunities of the moment. The annual priorities are described in one or more

documents issued by DEQ at the beginning of the grant cycle.

2.4 REVIEW AND REVISION MECHANISMS AND MEASURES

Oregon's NPS Management Program will be regularly reviewed. The focus will be on the achievement of objectives, the effectiveness of the strategies and measures utilized, needs for updating goals and objectives, and opportunities for revising the Plan to improve it. The mechanisms of this review are briefly described below. Each of the mechanisms listed includes its own particular set of output products, and each tends to focus on its own set of indicators when evaluating progress and effectiveness. Taken together, they provide a diverse and complete picture of NPS program achievement.

Regular 5-year NPS Program Plan Revision: Six months before the five-year anniversary of Plan approval, DEQ will undertake a review of the Plan, inviting other key NPS program partners to join in. The product of the review will be a report describing progress in program implementation and any recommendations for change.

Water Quality: The most direct measure of program progress and effectiveness is to evaluate conditions and trends in water quality and the resultant levels of beneficial use support. DEQ collects a significant amount of this data itself, and also participates in coordination of the collection and analysis of such data by a number of our partners, including the Forest Service, BLM, ODFW, ODOF, Watershed Councils, local governments, and certain special districts. The conclusions drawn from these data are published in the biennial Oregon Water Quality Status Assessment, also known as the "305(b) Report".

Section 319 Grant Reports: The Section 319(h) grant funds are focused directly on implementation of this NPS Program Plan.

Interim and final reports on projects receiving these funds are a direct indication of program achievement and effectiveness.

Annual 319 Grant RFP: Published each year at the start of the new grant cycle, this document identifies that year's highest geographic and programmatic NPS targets and priorities. Development of the document entails reviewing progress to date in achieving the highest priorities, and also involves identifying any new options or opportunities for addressing NPS control. In this sense, the RFP represents both a review of progress and a form of annual updating of the NPS Program Plan.

MOU Progress and Effectiveness Evaluations: Typically, these MOUs are based around *The Oregon Plan* and objectives related to TMDL development and implementation, and address both site-specific and statewide programmatic tasks and priorities. Each agreement signed by DEQ and its NPS partners includes stipulations for reporting on activities and for review and revision of the MOU. At the least, these reviews are annual, with revisions of the agreements occurring as need and opportunity dictates.

Monthly and Annual Reports by All Partners on Oregon Plan Achievement: The Governor requires all public agency partners in *The Oregon Plan* to compile monthly and annual reports on program implementation. These reports cover the whole range of Oregon Plan objectives, including those contained in this NPS Program Plan.

Oregon Plan Update: *The Oregon Plan* and its precursors have undergone several revisions and expansions over the last half-decade and more are expected. In approximate order of occurrence, these developments were:

- The Watershed Health Program.
- The Coastal Salmon Restoration Initiative.
- The Healthy Streams Partnership.

- The amalgamation of *The Oregon Plan* from the above elements.
- The expansion of the Oregon Watershed Enhancement Board and its integration into *The Oregon Plan*.
- The update of *The Oregon Plan* in the form of the Steelhead Supplement.

And most recently, the integration of the Willamette Restoration Initiative into *The Oregon Plan*.

At this point there is no date set for a complete overhaul and rewriting of *The Oregon Plan*, but it will continue to be updated and expanded by means of new initiatives which represent the latest watershed protection priorities and approaches.

2.4.1 Goals, Objectives And Priorities

Progress of 303d TMDL Development and WQMP Implementation: As the implementing agency in Oregon for Section 303d of the Federal *Clean Water Act*, DEQ is required to pursue completion of TMDLs, including the NPS components and the accompanying action plans, on a particular schedule (described elsewhere in this document). DEQ must report annually on the progress of this TMDL development, and also re-issues every two years the "303d list" of water quality limited waterbodies in the State. The size of the 303d list itself, and the length of time a particular waterbody is on the list, may be useful long-term measures of progress, but are relatively insensitive indicators of progress in developing and implementing on-the-ground water quality

management plans (WQMPs). However, the 303d list does indicate which waters have approved TMDLs and accompanying WQMPs, and these are the crucial tools for addressing the NPS issues on the listed waters.

ESA Listings and Recovery Plans: The number of ESA listings related to water quality (e.g., salmonids) is one way to measure the overall effect of all water quality programs. As with the 303d list, the number of species on the threatened and endangered list is a better indication of long-range progress. However, the Recovery Plans now being developed under NMFS coordination will closely resemble other types of watershed restoration plans, including WQMPs. Tracking the development and implementation of these Recovery Plans provides another indication of how NPS control objectives are being pursued in the highest priority watersheds in the State.

OWEB Project Reports: Progress and final reports on OWEB funded projects, most of which address Oregon Plan and NPS objectives directly or indirectly, are another way to gauge progress in implementing NPS controls.

2.4.2 Progress Reports

DEQ will use the sources listed above to produce a biennial summary of NPS program status and achievement. These reports will particularly focus on:

- Section 319(h) funded projects.
- Oregon Plan objectives.
- TMDL implementation.

Table 2-19: Western Oregon Priority Sub-Basins for 319 Funded Projects in FY 2001

Western Region: South Coast TMDL Status 03/00								
TMDL Submission Date	Sub-Basin	Watershed	Listed Parameters	Programmatic Activity Needs for 319 Funds				Project Needs
				Assessment	TMDL Development	Planning	Implementation	
1999	Lower Rogue	Lobster Creek,	Temperature	Complete	Complete	High	High	Planning, RipZn Enhncmt, Sed. abatement
1999	Coquille	Upper So Fork	Temperature	Complete	Complete	Complete	High	RipZn Enhancement, Sed abatement
2000	Coquille	East Fork Coquille River	Temperature	Complete	Complete	Complete	High	Monitoring, RipZn Enhncmt, Sed. abatement
2000	Coos Bay	Larson Slough,	Temperature, bacteria	High	Medium	Medium	Medium	Condition Assessment
2000	Coquille	Middle Fork (Big Creek)	Temperature	Complete	Complete	High	Medium	Monitoring
2001	Chetco	Chetco River(upper)	Temperature	USFS	High	High	Medium	Monitoring, enhancement planning
2001	Coquille	Lower So Fork	Temperature, bacteria	In Progress	High	High	Medium	Monitoring, enhancement planning
2001	N Tenmile	Tenmile Lake	Aquatic weeds, algae	In Progress	High	High	Medium	Monitoring, enhancement planning
2001	Sixes	Elk River	Temperature	Medium	High	High	Medium	Monitoring, develop planning components
2001	Coquille	North Fork	Temperature, bacteria	High	High	Medium	Medium	Condition Assessment
2002	Sixes	New River, Fourmile, Morton, Floras	Temperature	Complete	Complete	High	High	Planning, RipZn Enhncmt, Sed abatement
2002	Chetco	Chetco River (lower)	Temperature	In Progress	High	High	Medium	Monitoring, enhancement planning
2002	Sixes	Sixes River	Temperature	In Progress	High	High	Medium	Monitoring, enhancement planning
2002	Chetco	Hunter Creek	Temperature	High	High	Medium	Medium	Condition Assessment, Monitoring
2002	Coquille	Cunningham Creek	Bacteria, DO	High	Medium	Medium	Medium	Condition Assessment
2002	Coquille	Catching Creek,	Temperature	High	Medium	Medium	Medium	Condition Assessment
2003	Sixes	Floras, Croft Lakes	Aquatic weeds, algae	High	High	Medium	Medium	Condition Assessment, Monitoring
2004	Coos	Coos Bay	Bacteria	High	High	High	High	Assessment, Monitoring, Planning, Implementation

Table 2-19: Western Oregon Priority Sub-Basins for 319 Funded Projects in FY 2001 (continued)

Western Region: Rogue Basin TMDL Status 7/99								
TMDL Submission Date	Sub-Basin	Watershed	Listed Parameters	Programmatic Activity Needs for 319 Funds				Project Needs
				Assessment	TMDL Development	Planning	Implementation	
1999	Middle Rogue	Bear Creek	Temp, bact, hab/flow mod	Low	High	High	Medium	TMDL Development
	Lower Rogue	Grave Creek	Temperature	High	High	Medium	Medium	Assessment
	Illinois River	Sucker Creek (Private Lands)	Temp, hab/flow mod	Low	High	High	Medium	TMDL Development
		Sucker Creek (Fed Lands)	Temp, hab/flow mod	Low	Low	Medium	Medium	Planning
		Illinois River Lawson	Temperature	Low	High	Medium	Medium	TMDL Development
	Applegate	Williams Creek	Temperature	High	High	Medium	Low	Assessment
		Star/Beaver/Palmer	Sediment, hab/flow mod	High	High	Medium	Low	Assessment
		Little Applegate	Temperature	Low	High	Medium	Low	TMDL Development
	Upper Rogue	Foster/Woodruff/Abbott	Temperature, hab mod	Low	High	Medium	Low	TMDL Development
2000	Illinois	E. Fork Illinois	Temp, flow modification	High	High	Medium	Low	Assessment
		Althouse Creek	Temperature	High	High	Medium	Low	Assessment
		West Fork Illinois	Temp, flow modification	High	High	Medium	Low	Assessment
		Deer Creek	Temperature	High	High	Medium	Low	Assessment
		Illinois River-Josephine	Temperature	High	High	Medium	Low	Assessment
		Briggs Creek	Temperature	High	High	Medium	Low	Assessment
		Illinois River-Klondike	Temperature	High	High	Medium	Low	Assessment
		Silver Creek	Temperature	High	High	Medium	Low	Assessment
		Indigo Creek	Temperature	High	High	Medium	Low	Assessment

Table 2-19: Western Oregon Priority Sub-Basins for 319 Funded Projects in FY 2001 (continued)

Western Region: Umpqua Basin TMDL Status 7/99								
TMDL Submission Date	Sub-Basin	Watershed	Listed Parameters	Programmatic Activity Needs for 319 Funds				Project Needs
				Assessment	TMDL Development	Planning	Implementation	
1999	No. Umpqua	Little River	Temp, sed, pH, hab. mod	Low	Low	Low	Med	Implementation
	So. Umpqua	West Fork Cow Creek	Temperature	High	High	Low	Med	Assessment
	Umpqua	Lower Smith River	Temperature	Low	Low	Low	High	Implementation
2000	So. Umpqua	So Umpqua Headwaters	Temp, pH, sed, flow mod.	Low	Low	Low	Low	None
		Middle Cow Creek	Temperature	High	Low	Low	Med	Assessment
		Lower Cow Creek	Temp, pH, tox. hab mod	High	Low	Low	Med	Assessment
	No. Umpqua	Steamboat/Canton Ck.	DO, pH, tem, sed, hab. mod.	Low	Low	Low	Low	None
		Rock Creek	Temperature	Low	High	High	Low	TMDL
	Umpqua	Upper Smith River	Temperature	Low	High	High	Low	TMDL
		Loon Lake		Low	High	High	Med	TMDL
2001	So. Umpqua	Elk Creek	Temp, flow mod	Med	Med	Low	Med	Assessment
		Galesville		Med	Med	Low	Med	Assessment
		Middle South Umpqua	Bact,DO,pH,temp.	Low	Med	Low	Med	TMDL
	No. Umpqua	No Umpqua Headwaters	DO, pH, temp, hab. mod	Low	Low	Low	Low	None
	Umpqua	Tyee Frontal		Low	Low	Low	Med	Implementation
		Calapooya Creek	Bac, DO, pH, tem, flow /habitat	Med	Low	Low	Med	Assessment
2002	So. Umpqua	Myrtle Creek	T, hab./flow mod	Med	Low	Low	Med	Assessment
		Olalla/Lookinglass	Biol. crit, flow mod	Med	Low	Low	Med	Assessment
		Lower South Umpqua	T, pH, DO, bact, hab. mod.	Low	Low	Low	Med	Implementation
	No. Umpqua	Middle North Umpqua	Temp, DO, pH	Low	Low	Low	Med	Implementation
		Lower North Umpqua	Temp, flow mod	Med	Low	Low	Med	Assessment
	Umpqua	Elk Creek	Bact, DO, temp, flow mod.	Med	Low	Low	Med	Assessment
		Reedsport/Elkton Fr.		Low	Low	Low	Med	Implementation
		Smith/Umpqua Estuary		Med	Low	Low	High	Implementation

Table 2-20: Northwest Oregon Priority Sub-Basins for 319 Funded Projects in FY 2001

Northwest Region: Willamette Basin								
TMDL Submission Date	Sub-Basin	Watershed	Listed Parameters	Programmatic Activity Needs for 319 Funds				Project Needs
				Assessment	TMDL Development	Planning	Implementation	
Approved 11/25/1998	Columbia Slough	Lower Willamette	Algal Growth/Phosphorus	Done	Needed	Needed	In Development	Implement Phosphorus Control Strategies identified in MOAs and Permits
Approved 11/25/1998	Columbia Slough	Lower Willamette	DO/BOD	Done	Needed	Needed	In Development	Implement BOD Control Strategies identified in MOAs and Permits
Approved 11/25/1998	Columbia Slough	Lower Willamette	Bacteria	Done	Needed	Needed	In Development	Implement Bacteria Control Strategies identified in MOAs and Permits
Approved 11/25/1998	Columbia Slough	Lower Willamette	Toxics (Pb, DDT/DDE, Dieldrin, Dioxin, PCBs)	Done	Needed	Needed	In Development	Implement Toxics Control Strategies identified in MOAs and Permits
Approved 11/25/1998	Columbia Slough	Lower Willamette	Temperature	Needed	Needed	Needed	In Development	Need additional temperature data (FLIR, continuous monitoring) of Slough
<p style="text-align: center;">Willamette Basin:</p> <p>The DEQ has begun the development of Total Maximum Daily Loads (TMDLs) for the Willamette River and some of its tributary rivers and streams. The DEQ is scheduled to complete TMDLs for nine of the 12 Willamette River sub-basins by the end of 2003. The nine sub-basins targeted for completion by 2003 are the Lower Willamette, Clackamas, Middle Willamette, North Santiam, South Santiam, Upper Willamette, McKenzie, Middle Fork and Coast Fork. TMDLs for the Yamhill and Molalla-Pudding sub-basins are not due until 2007. With Tualatin TMDLs nearly complete, the DEQ is approaching the work on TMDLs for the remaining 9 sub-basins as one large project.</p> <p><u>319 Grant funds</u> could help address non-point source issues in the Willamette Basin. Given the schedule for TMDL completion, proposals should relate to the characterization of non-point source problems (source identification) and monitoring that will ultimately help support TMDL development. In addition, Forward Looking Infrared Radiometry (FLIR) for 303(d) listed stream segments and the correlation of flow with other parameters of concern have been identified as basin-wide priorities. In developing your proposal for funding for the Willamette Basin we encourage you to contact the corresponding DEQ individual. Please refer to Table I for the names and phone numbers. These individuals could be great resource as you identify NPS issues to be addressed in the basin.</p>								

Table 2-20: Northwest Oregon Priority Sub-Basins for 319 Funded Projects in FY 2001 (continued)

Northwest Region North Coast								
TMDL Submission Date	Sub-Basin	Watershed	Listed Parameters	Programmatic Activity Needs for 319 Funds				Project Needs
				Assessment	TMDL Development	Planning	Implementation	
In Development, Due In 2000	Tillamook	Wilson-Trask-Nestucca	Temperature	Done	Needed	Needed	NEP CCMP	Implement Temperature Management Strategies identified in CCMP
In Development, Due In 2000	Tillamook	Wilson-Trask-Nestucca	Bacteria	Done	Needed	Needed	NEP CCMP	Implement Bacteria Management Strategies identified in CCMP
Done (1/27/1994), In Revision, Due In 2000	Tualatin	Tualatin	ALGAL Growth/Phosphorus	Done	Needed	Needed	Done	Implement Phosphorus Control Strategies identified in Management Plans
In Development, Due In 2000	Tualatin	Tualatin	Temperature	In Development	Needed	Needed	In Development	Implement Temperature Management Strategies
In Development, Due In 2000	Tualatin	Tualatin	Bacteria	In Development	Needed	Needed	In Development, Related to P Control	Implement Bacteria Management Strategies identified in Management Plans
Northwest Region North Coast: Nehalem-Nestucca Basins								
TMDL Submission Date	Sub-Basin	Watershed	Listed Parameters	Programmatic Activity Needs for 319 Funds				Project Needs
				Assessment	TMDL Development	Planning	Implementation	
Due In 2000	Nehalem	Nehalem	Temperature	Watershed Plan Being Developed	Needed	Needed	In Development	Additional Temperature Assessment
Due In 2001	Nehalem	Nehalem	Bacteria	Watershed Plan Being Developed	Needed	Needed	In Development	Additional Bacteria Assessment
Due In 2000	Nestucca	Wilson-Trask-Nestucca	Temperature	Watershed Plan Action Available	Needed	Needed	In Development	Implement Practices in Watershed Action Plan
	Nestucca	Wilson-Trask-Nestucca	Bacteria	Watershed Plan Action Available	Needed	Needed	In Development	Implement Practices in Watershed Action Plan
	Nestucca	Wilson-Trask-Nestucca	Sediment	Watershed Plan Action Available	Needed	Needed	Needed	Additional Sediment Assessment, Implement Practices in Watershed Action Plan

Table 2-20: Northwest Oregon Priority Sub-Basins for 319 Funded Projects in FY 2001 (continued)

North Coast: Columbia River								
TMDL Submission Date	Sub-Basin	Watershed	Listed Parameters	Programmatic Activity Needs for 319 Funds				Project Needs
				Assessment	TMDL Development	Planning	Implementation	
Dec 2001	Lower Columbia	Columbia	Bacteria, DO, Toxics (as DDE, DDT, PCB, pH)	Bi-state study, LCREP CCMP	Needed	Needed	LCREP CCMP	Implementation of LCREP CCMP
Dec 2001	Lower Columbia	Columbia	Total dissolved gas	USACOE gas abatement, EPA model	Commencing development in conjunction with Y2K waiver	Needed	USACOE gas abatement	TMDL development implementation planning
Dec 2001	Lower Columbia	Columbia	Temperature	EPA Model	Needed	Needed	Needed	Finalization of EPA model, conceptual approach for TMDL
Due In 2001	Lower Columbia	Columbia	N/A	Needed	N/A	Needed	Needed	Survey and management plan for non-indigenous aquatic invasive species.

Table 2-21: Eastern Oregon Priority Sub-Basins for 319 Funded Projects in FY 2001

Eastern Region: Columbia River Basin								
TMDL Submission Date	Sub-Basin	Watershed	Listed Parameters	Programmatic Activity Needs for 319 Funds				Project Needs
				Assessment	TMDL Development	Planning	Implementatio n	
Dec 2001	Lower Columbia	Columbia	Total dissolved gas	USACOE gas abatement, EPA model	Commencing development in conjunction with Y2K waiver	Needed	USACOE gas abatement	TMDL development implementation planning
Dec 2001	Lower Columbia	Columbia	Temperature	EPA Model	Needed	Needed	Needed	Finalization of EPA model, conceptual approach for TMDL
Eastern Region: Klamath Basin								
TMDL Submission Date	Sub-Basin	Watershed	Listed Parameters	Programmatic Activity Needs for 319 Funds				Project Needs
				Assessment	TMDL Development	Planning	Implementatio n	
2000	Sprague	All watersheds	Temperature Dissolved oxygen PH	In progress	In progress	Needed	Needed	Reduction of sediment, stream temperature, nutrients and bacteria simultaneously; low cost restoration of degraded wet meadows; reduction of one/more of the following parameters - stream temperature, sediment, nutrients, bacteria; public awareness of nps pollution in urban situations. Use of innovative bmps, and/or education components.
2000	Upper Klamath Lake	All watersheds	T, DO, pH, Algae/weeds	In progress	In progress	Needed	Needed	Same as above.

Table 2-21: Eastern Oregon Priority Sub-Basins for 319 Funded Projects in FY 2001 (continued)

Eastern Region: Umatilla Basin								
TMDL Submission Date	Sub-Basin	Watershed	Listed Parameters	Programmatic Activity Needs for 319 Funds				Project Needs
				Assessment	TMDL Development	Planning	Implementation	
In Development, 2000	Umatilla	All watersheds	Temperature, sediment, bacteria (basin-wide); nitrate (Wildhorse) ammonia (L. Umatilla)	In progress	In progress	Needed	Needed	Reduction of stream temp., sediment, nutrient, and bacteria impacts simultaneously
								innovative technologies that include monitoring and education components
								Raise public awareness of NPS pollution in urban situations
								Low cost restoration of degraded wet meadows
								Education component as a demonstration project. Projects that control introduction of pesticide residual into groundwater and surface waters; include monitoring and/or education/demonstration components; address reduction of one or more of the following: parameters: stream temperature, sediment, nutrient, and bacteria impacts.
								Reduction of stream temp., sediment, nutrient, and bacteria impacts simultaneously
In Development, 2001	Walla Walla	All	Temperature	In progress	In progress	Needed	Needed	Raise public awareness of NPS pollution in urban situations
								Low cost restoration of degraded wet meadows
								Education component should focus on its use as a demonstration project. Projects that prevent and control introduction of pesticide residual into groundwater and surface waters. Projects that include monitoring and/or education/demonstration components. Projects that address reduction of one or more of the following: parameters: stream temperature, sediment, nutrient, and bacteria impacts

Table 2-21: Eastern Oregon Priority Sub-Basins for 319 Funded Projects in FY 2001 (continued)

Eastern Region: Umatilla Basin								
TMDL Submission Date	Sub-Basin	Watershed	Listed Parameters	Programmatic Activity Needs for 319 Funds				Project Needs
				Assessment	TMDL Development	Planning	Implementation	
In Development, 2001	Willow	All	Temperature, pH (basin-wide), bacteria (Balm Fork)	In progress	In progress	Needed	Needed	Reduction of stream temp., sediment, nutrient, and bacteria impacts.
								Innovative technologies that include monitoring and education components
								Raise public awareness of NPS pollution in urban situations
								Low cost restoration of degraded wet meadows
								Education component should focus on its use as a demonstration project; prevent and control introduction of pesticide residual into ground / surface waters; include monitoring/ education / demonstration; address reduction of: stream temperature, sediment, nutrient, bacteria.
Eastern Region: Grande Ronde								
1999	Upper Grande Ronde	All watersheds	Temperature, sediment, habitat, D.O., pH, algae, nutrients, bacteria, flow				Needed	Reduction of stream temp., sediment, nutrient, and bacteria. Increase late season flow. Riparian Restoration. Flood plain reconnection. Education and outreach related to listed parameters.
2000	Lower Grande Ronde	All watersheds	Temperature, Flow, habitat, sediment,		Needed	Needed	Needed	Same as above
2000	Wallowa	All watersheds	Temperature, Flow, habitat, sediment, bacteria, pH		Needed	Needed	Needed	Same as above
2000	Imnaha	All watersheds	Temperature, habitat, sediment,		Needed	Needed	Needed	Same as above

Table 2-21: Eastern Oregon Priority Sub-Basins for 319 Funded Projects in FY 2001 (continued)

Eastern Region: Hood Basin								
TMDL Submission Date	Sub-Basin	Watershed	Listed Parameters	Programmatic Activity Needs for 319 Funds				Project Needs
				Assessment	TMDL Development	Planning	Implementation	
2000	Hood River	All watersheds	Temperature	Done	In progress	In progress	Needed	TMDL implementation and reduction of stream temperature - including riparian vegetation and habitat enhancement, increased in-stream flows
			Toxics	In progress	Needed	Needed	Needed	Prevent and control introduction of pesticide residual into groundwater and surface waters - including monitoring , BMPs or demonstration components.
			Sediment, nutrients pH bacteria	Needed	Needed	Needed	Needed	Projects that include monitoring, education/demonstration strategies, innovative technologies, raising public awareness about NPS pollution in urban, agricultural, or forest
2001	Mile Creeks	All watersheds	Temperature	In progress	In progress	In progress	Needed	TMDL development and reduction of stream temperature - riparian vegetation and habitat enhancement, increased in-stream flows
			Sediment	In progress	Needed	Needed	Needed	TMDL development and reduction in sedimentation – including monitoring, BMPs or demonstration components
			Toxics, nutrients pH bacteria	Needed	Needed	Needed	Needed	Projects that include monitoring, education/demonstration strategies, innovative technologies, raising public awareness about NPS pollution in urban, agricultural, or forest
Eastern Region: Deschutes Basin								
TMDL Submission Date	Sub-Basin	Watershed	Listed Parameters	Programmatic Activity Needs for 319 Funds				Project Needs
				Assessment	TMDL Development	Planning	Implementation	
2002	Upper Deschutes	All watersheds	Temperature	In progress	Needed	Needed	Needed	Projects that address collection of data, assessment of conditions, education/demonstration strategies
			Sediment & Turbidity	Needed	Needed	Needed	Needed	Projects that address collection of data, assessment of conditions, education/demonstration strategies
			pH dissolved oxygen	Needed	Needed	Needed	Needed	Projects that address collection of data, assessment of conditions, education/demonstration strategies
2002	Little Deschutes	All watersheds	Temperature	In progress	Needed	Needed	Needed	Projects that address collection of data, assessment of conditions, education/demonstration strategies

Table 2-22: Groundwater-Related 319 Priorities

EASTERN REGION								
Investigation Area	319 Priorities/Needs	GWMA or Assessment Area	Characterization Complete	Implementation Documents	Milestones	Problem	Assessment	Projects Required By Action Plan
Priority Lower Umatilla Basin	<ul style="list-style-type: none"> ➤ On-site system demonstration projects ➤ Evaluation of nitrate leaching from food processing waste water land application during winter ➤ Evaluation of differential nitrate leaching due to irrigation water mgt., nutrient application, and/or crop rotation; ➤ Data management and GIS support to assist in analysis of water quality data. 	Groundwater Management Area	1995	<ul style="list-style-type: none"> ➤ 12/97 Action Plan ➤ MOA between SWCDs, ODA, & DEQ ➤ Action Plan Implementation Work Plan 	Annual Reports plus Evaluations at 12/2001, 12/2005, 12/2009 & every 4 years thereafter	Nitrate	Initial assessment complete, bimonthly sampling continuing	<ul style="list-style-type: none"> ➤ Develop options for local govt. to address cumulative impacts of septic systems ➤ Determine where septic system loadings could create WQ problems based on development and hydrogeology ➤ Determine how to incorporate WQ concerns into development proposals
Northern Malheur County (Owyhee & Malheur Basins)	<ul style="list-style-type: none"> ➤ Bi-monthly sampling of monitoring well network, ➤ Educational programs to teach irrigation mgt. practices to farm owners and workers ➤ Evaluation of differential nitrate leaching due to irrigation water mgt., nutrient application, and/or crop rotation ➤ Research economic viability of converting from flood irrigation to drip irrigation for lower-value crops 	Groundwater Management Area	1990	6/91 Action Plan	Informal annual reviews and trend analysis of first 5 years of data due in 1996	Nitrate	Initial assessment complete, bimonthly sampling continuing	<ul style="list-style-type: none"> ➤ Assist OSU Erg Exp. Station in their research projects (pg. 51 of Action Plan) ➤ Assist OSU Extension and SCS in their educational and demonstration projects (pg. 52-54 of Action Plan)

Table 2-22: Groundwater-Related 319 Priorities (continued)

WESTERN REGION		
Investigation Area	319 Priorities/Needs	Project Background
Upper Willamette Basin	<ul style="list-style-type: none"> ➤ Public education and community involvement in basin specific groundwater quality issues ➤ Outreach to private well owners ➤ Hydrogeologic investigations to assist in GWMA investigations ➤ Data management and GIS support to assist in data interpretation and presentation ➤ Investigations into groundwater surface water interactions ➤ Onsite system demonstration projects ➤ Sampling of monitoring network ➤ Evaluation of differential nitrate leaching due to irrigation water mgt., nutrient application, and/or crop rotation. 	<p>The Upper Willamette Valley has been targeted for future Ground Water Management Area (GWMA) investigations due to identification of extensive groundwater contamination in the area. Contaminants of concern are primarily nitrates, pesticides, and other pollutants.</p> <p>The Willamette is currently the focus of TMDL studies and is in the process of developing an Agricultural Water Quality Management Plan. Groundwater related 319 projects may integrate well with an overall watershed approach to water quality issues.</p>
STATEWIDE		
Investigation Area	319 Priorities/Needs	Project Background
Statewide Stormwater Management	<ul style="list-style-type: none"> ➤ Evaluation of potential impacts of stormwater injection and or infiltration on groundwater quality ➤ Analysis of pretreatment options and innovative technologies ➤ Development of BMPs for injection and infiltration of stormwater which ensure protection of both groundwater and surface water. ➤ Public outreach and community involvement projects 	<p>In areas of TMDL limited streams, where reduced input from stormwater is needed, communities are looking for alternative methods of stormwater management. Some of these practices, including infiltration or injection into the subsurface, have the potential to impact groundwater quality. Projects are needed that focus on stormwater management practices that will assist in enhancing natural groundwater recharge, while ensuring that pollutants associated with stormwater do not impact groundwater quality.</p> <p>These projects could be tied to the Upper Willamette Valley priority groundwater projects or integrated into the TMDL priorities.</p>

Note: Table revised since publication of *FY2001 Application Guidance for the Oregon 319 NPS Water Quality Program*

3. PARTNERSHIPS

3.1 SUMMARY

The State of Oregon uses a variety of formal and informal methods to coordinate the many water quality, watershed health, and aquatic habitat related activities. There are a myriad of partnerships engaged in work that addresses control of nonpoint source pollution. The focus and ultimate goal of many of these partnerships is salmonid recovery under *The Oregon Plan*. Others meet and coordinate in order to make funding decisions. Geographically-based partnerships focus on area-specific resource management issues. The State is discussing better ways to coordinate agency efforts through a regional structure. The Nonpoint Source Program used regional interagency review teams to make grant funding decisions for FY 2000. Southwest Oregon is working on a model for a regional structure to streamline delivery of support and technical assistance to Watershed Councils. For purposes of this document, key partnerships that deal most directly with control of nonpoint source pollution will be described. Those key partnerships are:

Environmental Quality - addressing water quality limited streams by developing and implementing TMDLs and Agricultural Water Quality Management Plans.

- Forest Practices Advisory Committee and other partnerships formed under *The Oregon Plan* to conduct sufficiency and effectiveness reviews of Oregon's Forest Practices Act.
- Oregon Watershed Enhancement Board—provides technical and financial support for Watershed Councils throughout the State.
- State Technical Committee, headed by USDA Natural Resources Conservation Service—makes decisions on EQIP and other agricultural programs.
- *The Oregon Plan* Monitoring Team and Scientific Workgroups.

3.1.1 Statewide

- Unified Watershed Assessment Interagency group—State, Federal, and Tribal participants collaborated on the statewide Unified Watershed Assessment, and make funding decisions for Watershed Restoration Action Strategies.
- The Healthy Streams Partnership, a coordinated effort under *The Oregon Plan*, headed by Oregon Department of Agriculture and Department of

3.1.2 Geographically-Based

- Watershed Councils, Soil and Water Conservation districts and local committees involved in Healthy Streams Partnership activities.
- Forest Province coordinating and advisory groups implementing the President's Forest Plan.
- Committees carrying out the Interior Columbia Basin Ecosystem Management Project.

- National Estuary Program committees for Tillamook Bay Estuary and the Lower Columbia Estuary.
- The Willamette Restoration Initiative.

The ensuing few paragraphs will briefly discuss each partnership, with specific focus on its role in controlling nonpoint source pollution.

3.2 STATEWIDE

3.2.1 *Unified Watershed Assessment Interagency Group*

In 1998, as a result of the Clean Water Action Plan, an interagency group was convened to develop a Unified Watershed Assessment for Oregon, under the leadership of Oregon Department of Environmental Quality and the U.S. Natural Resources Conservation Service's Oregon office. State, Federal, and Tribal participants collaborated on the statewide Unified Watershed Assessment, agreeing on and using criteria to determine watershed condition for purposes of restoration needs. For the two subsequent years, this group has met to review proposals for funding under CWA Section 319, making recommendations to DEQ based on technical and programmatic expertise as well as combined knowledge of situations in watersheds within the context of assessments and plans that function as Watershed Restoration Action Strategies. Agency representatives at the table are beginning to discuss ways to better coordinate other sources of funds, particularly SRF and the OWEB grants. Participating agencies are:

- Columbia River Intertribal Fisheries Commission,
- Oregon Department of Agriculture,
- Oregon Department of Environmental Quality,
- Oregon Department of Forestry,
- Oregon Watershed Enhancement Board,
- The U.S. Farm Services Agency,

- U.S. Bureau of Land Management,
- U.S. Environmental Protection Agency,
- U.S. Forest Service, and
- U.S. Natural Resources Conservation Service.

In the FY 2000 funding cycle, regional interagency groups evaluated proposals and made recommendations to the statewide group. This approach has great value and it is anticipated that, with some modifications, it will continue.

3.2.2 *Healthy Streams Partnership*

The Healthy Streams Partnership brings together public and private resources to improve the health of Oregon's aquatic systems and enhance beneficial uses of water for future generations using specific, focused efforts in watersheds such as development and implementation of TMDLs and Agricultural Water Quality Management Plans. The Partnership is comprised of representatives from agriculture, forestry, interest groups, local government, State agencies and the Governor's office. The Healthy Streams Partnership Agreement was initially developed by a diverse group of Oregonians assembled by Governor Kitzhaber. The 1997 Oregon Legislative Assembly subsequently approved and funded the partnership and created the Healthy Streams Partnership Committee, through Senate Bill 924. Groups represented on the Healthy Streams Partnership Committee are:

- Bureau of Land Management,
- Governor of Oregon,
- Oregon Cattlemen's Association,
- Oregon Dairy Farmers,
- Oregon Department of Agriculture,
- Oregon Department of Envelopment,
- Oregon Department of Fish and Wildlife,
- Oregon Division of State Lands,
- Oregon Farm Bureau,
- Oregon Forest Industry Counsel,
- Oregon Governor's Office,
- Oregon Trout,

- Oregon Water Resources Department,
- Oregonians for Food and Shelter Quality,
- Wallowa County Commissioner,
- Water for Life, and
- Water Watch.

The role of the Healthy Streams Partnership Committee is to provide information to the Joint Legislative Committee on Salmon and Stream Enhancement about the implementation of the programs from a local and regional perspective, and to recommend changes necessary to facilitate more efficient implementation of the initiative and other stream improvement programs at the local level. The Oregon Legislature endorsed the Healthy Streams Partnership through a funding package, which included \$5.8 million for 19 FTE's each in the Department of Agriculture and the Department of Environmental Quality. In addition, a stakeholders' oversight committee was created. Details of these can be found in Chapter 9 of *The Oregon Plan*.

Another important function performed by the Healthy Streams Partnership is to bring together many of the public and private agencies and interest groups involved in watershed management issues. Even those interests not formally represented on the Committee nevertheless have regular opportunities to participate in the process, often at the local level in conjunction with Watershed Councils and/or the field-based staff of the HSP agencies. One result of this is a clearer understanding by all involved of the range of issues, opinions, preferences, and priorities of the various interests. This understanding then factors prominently into all of the policy processes of *The Oregon Plan* partners, including DEQ, and specifically including the development of priorities and projects for OWEB and Section 319 grant funding.

3.2.3 Forestry And Agricultural Practices

The Oregon departments of Forestry (ODF) and Agriculture (ODA) have statutory authority to

manage programs designed to protect water quality on State and private forest lands and on agricultural lands in the state. ODF is required to establish "best management practices" and other rules to ensure that to the maximum extent practicable nonpoint source pollution from forest operations do not impair the achievement and maintenance of water quality standards established by DEQ (through its policy-making body, the Environmental Quality Commission). ODA is similarly charged with regulating agricultural practices for the same purpose. In both cases, a close partnership with DEQ is explicitly required by Oregon law. DEQ signed MOUs with ODF and ODA (in April and June of 1998, respectively) to formalize this relationship.

The agreement with ODF is focused on a bilateral review of the sufficiency of the Forest Practices Act (FPA) rules to protect water quality. The agreement with ODA is focused on the roles and responsibilities of the two partners in carrying out the Senate Bill 1010 program to develop and implement Agricultural Water Quality Management Area Plans. The FPA sufficiency review has been overshadowed during 1999 and 2000 by the larger, multi-partner Forest Practices Advisory Committee (see below), but with the FPAC recommendations due soon, DEQ and ODF will again continue their cooperation on studies to evaluate FPA water quality impacts.

Meanwhile, DEQ has participated closely with the SB 1010 Local Advisory Committees and with ODA's statewide staff in development of the AWQMAPs drafted to date. DEQ and ODA also have begun work on a "programmatic" description of the 1010 program intended to explain how the program as a whole addresses the requirements of the Clean Water Act and the Endangered Species Act. This new document is due for completion before the end of 2000. Copies of the MOUs are in Appendix D.

3.2.4 Forest Practices Advisory Committee

Forest Practices Advisory Committee and other partnerships formed under *The Oregon Plan* to conduct sufficiency and effectiveness reviews of Oregon's Forest Practices Act. The Board of Forestry has formed the Forest Practices Advisory Committee to review the FPA and make recommendations for needed changes if any are identified. The foundation of this committee's work is the body of scientific analysis and data that establish relationships between forest landscape condition, forest land management, and condition of the aquatic resources.

Participants in the FPAC process include both voting and non-voting members who represent a variety of public and private agencies and interest groups involved with forest practices and their effect on forest ecosystems, including water quality and aquatic habitat. The full membership is listed in Appendix E. As of June 2000, the FPAC had not yet published final recommendations for FPA rule changes. However, the direction of the group's deliberations suggests that additional riparian and stream channel protections will be recommended.

3.2.5 Agricultural Water Quality Management/Senate Bill 1010/Cafos

In 1993, the Oregon Legislature adopted Senate Bill 1010, an agricultural water quality management program. This legislation gives the Oregon Department of Agriculture (ODA) the authority to develop and implement water quality management plans for agricultural and rural lands where such plans are required by State or Federal law. The goal of the plans is to prevent and control water pollution from agricultural activities. The program applies to 303d listed waters, to groundwater management areas, and to the coastal zone management area. ODA consults with DEQ in the development of the plans, and the two agencies coordinate in a

number of ways to facilitate implementation and monitoring of the program.

In addition to the SB 1010 program, DEQ and ODA are partners in addressing confined animal feeding operations (CAFOs). Details on these programs may be found under the discussion of Oregon Plan management measures "ODA1" and "ODA2" in Section 5.3.

3.2.6 Oregon Watershed Enhancement Board

The Oregon Watershed Enhancement Board (OWEB) (formerly the Governor's Watershed Enhancement Board, GWEB) plays a key role in assisting Watershed Councils and Soil and Water Conservation Districts with technical support and funding. The OWEB administers a watershed restoration grant program, which annually disperses millions of dollars to local groups and individuals.

The OWEB recognizes that a vast number of grant opportunities are available to local groups and has an interest in providing a coordination function in this area. Some of the many funding sources that may be coordinated by the OWEB include:

- Agricultural Conservation Program,
- Clean Water Act grants,
- Conservation Reserve Enhancement Program,
- FEMA grants, and Farmers Home Administration programs,
- Hire-the-Fisher Program,
- Jobs-in-the-Woods Program,
- Lottery funds/local government grants,
- ODFW Restoration and Enhancement Board, and
- Stewardship Incentives Program.

The 1997 Legislative Assembly increased OWEB funding to over \$20,000,000 to provide grants to local Watershed Councils and others for watershed assessment, monitoring, technical assistance, action plan development and implementation, education and outreach, and

watershed coordinators. A watershed assessment guidance manual for local Watershed Councils was drafted and is being used by several Watershed Councils. A stream and watershed restoration inventory is being developed to track public and private efforts to restore watershed health. OWEB, after input from the Joint Legislative Committee on Salmon and Stream Enhancement, adopted priorities for funding for the Watershed Improvement Grant Fund, with emphasis on whole watershed approaches, beginning in the headwaters and uplands and working downslope and downstream.

Members of the Oregon Governor's Watershed Enhancement Board include one person from each of the bodies listed below:

Voting Board Members:

- Oregon Environmental Quality Commission;
- Oregon Water Resources Commission;
- Oregon Board of Agriculture;
- Oregon Fish and Wildlife Commission;
- Oregon Board of Forestry;
- Six members representing Watershed Councils, citizens, and First Nation Tribes.

Non-Voting Board Members:

- USDA Forest Service;
- USDI Bureau of Land Management;
- Oregon State University Cooperative Extension Service;
- USDA Natural Resources Conservation Service;
- Environmental Protection Agency; and
- National Marine Fisheries Service.

3.2.7 OWEB–DEQ Partnership

OWEB plays a very large and an ever-increasing role in Oregon's NPS control program. It is the principal funding source for implementation of *The Oregon Plan*, including the financial and technical support of Watershed Councils. In recent years, OWEB has published several important documents to guide watershed processes, including those mentioned at the end

of Section 2.1 that address watershed assessment, water quality monitoring, aquatic habitat restoration, and watershed scale restoration action plans. Each of these documents was prepared with DEQ input, and each has become central to the functioning of our NPS program. OWEB's regional and statewide advisory committees, as well as the Board itself, serve as highly energized forums for discussion and action on watershed issues of all kinds. DEQ personnel participate actively in all these groups, as well as in ad hoc groups formed to address particular topics (such as guidance development or interagency grant coordination reforms). From the first days of the Section 319(h) grant program, those CWA Federal funds have been deliberately matched with OWEB State funds to support many successful and important projects addressing water quality, habitat, watershed management, and public awareness of watershed functions and issues. DEQ pledges to continue and expand this successful partnership in the future.

3.2.8 USDA State Technical Advisory Committee

Jointly led by NRCS and FSA, the STAC makes policy and technical recommendations to those agencies on a number of programs relating to conservation practices and environmental quality. These include:

- Conservation Reserve Enhancement Program,
- Conservation Reserve Program,
- Environmental Quality Incentives Program,
- Farmland Protection Program,
- The Wetland Reserve Program, and
- Wildlife Habitat Incentives Program.

The STAC includes representatives from a number of public agencies and private interests concerned with natural resources and environmental quality. This group provides an excellent opportunity to coordinate policies and priorities on watershed enhancement technical and financial assistance programs.

3.2.9 The Oregon Plan Monitoring Team And Scientific Workgroups

The Monitoring Team and Science Workgroups provide leadership on scientific issues and coordinated inter-agency monitoring. Staff of the Governor's Natural Resource Office leads the monitoring team and science workgroups. Membership on the Monitoring Team includes State and Federal agency scientists, as well as representatives from industry and environmental groups. The Monitoring Team is charged with developing the monitoring strategy and protocols.

Science Workgroups are assembled strategically as needed to, for example, continue to refine understanding of the factors for decline for various species and how measures can support restoration. The Independent Multidisciplinary Science Team (IMST) was formed under Senate Bill 924 to:

- Review the implementation of programs for achieving healthy streams,
- Prepare and submit an annual report on the implementation of *The Oregon Plan*, including any recommendations for changes or adjustments,
- Serve as an independent scientific peer review panel to the State agencies responsible for developing and implementing *The Oregon Plan* and other salmon or stream enhancement programs throughout the State; and
- Report regularly to the Joint Legislative Committee on Salmon and Stream Enhancement concerning these duties. See Chapter 7 of *The Oregon Plan*: "Independent Multidisciplinary Science Team," as well as Chapter 15B: "Implementation of Monitoring Program" for more details.

A stream and watershed restoration inventory is being developed by the coordinator to track both

public and private efforts to restore habitat and improve the condition of watersheds in Oregon. The inventory is designed to capture information on a range of restoration approaches, including instream habitat structures, riparian fencing and planting, wetlands enhancement, upland grazing and vegetation management, and road improvements.

The purpose of the inventory is two-fold:

1. To provide watershed, ecoregion, and statewide summaries of restoration activities; and,
2. To support future research on the effectiveness of current restoration strategies.

3.3 GEOGRAPHICALLY-BASED

3.3.1 Watershed Councils, Soils And Water Conservation Districts, And Local Committees Involved In Healthy Streams Partnership Activities

There is a tremendous amount of coordination occurring among Watershed Councils and Soil and Water Conservation Districts regarding implementation of *The Oregon Plan*. The Governor's Watershed Enhancement Board provides coordination and capacity-building services to councils. The Healthy Streams Partnership uses the expertise of councils, districts, and local committees as analyses and plans are developed. Membership of councils and committees are intended to be fair representation of interested and affected parties. Membership varies widely, depending on the scale of the planning area or watershed, land ownership, and the issues at hand. As of publication of this updated NPS Program Plan, there are 87 Watershed Councils recognized by the Oregon Watershed Enhancement Board (see list in Appendix F).

3.3.2 Oregon's Coastal Nonpoint Pollution Control Program

Oregon's Coastal Nonpoint Pollution Control Program (CNPCP) has been developed in compliance with requirements adopted as part of the Coastal Zone Management Act Reauthorization Amendments of 1990 (CZARA). CZARA is administered at the federal level by the U.S. Environmental Protection Agency (EPA) and the National Oceanic and Air Administration (NOAA). The new requirements were designed to restore and protect coastal waters from nonpoint source pollution and require coastal states to implement a set of management measures based on guidance published by EPA. The guidance contains 56 management measures separated into six groups. There are measures for the following areas: agricultural activities, forestry activities, urban areas, marinas, hydromodification activities, and protecting wetlands.

In July of 1995, Oregon completed its Program Submittal for the CNPCP. Oregon's CNPCP Submittal described existing programs and proposed work tasks that would meet the terms of CZARA and EPA's guidance and work to improve water quality in Oregon's coastal zone. Current state water quality, wetland, and land use laws, as well as the Forest Practices Act and the early development of *The Oregon Plan* for Salmon and Watersheds, insured that the state already met many requirements of CZARA. In January 1998, after reviewing the state's program submittal, EPA and NOAA returned their findings to the state that granted a conditional approval to Oregon's program. The findings included 13 conditions of approval. To better respond to the conditions of approval, DEQ and Department of Land Conservation and Development (DLCD) divided them into 40 discrete tasks. The focus of the implementation activities for the CNPCP over the last two years has been addressing these tasks.

Since receipt of the conditional approval of the state's CNPCP the following activities have occurred:

- A statewide urban storm water task force has been formed of stakeholders to draft recommendations on a strategic approach to mitigating environmental impacts of urban runoff. The task force has prepared recommendations on construction site erosion and sediment control. The proposed program would provide support for voluntary adoption of more stringent erosion controls by local governments. Other storm water issues are to be addressed by the task force over the next several months. (DEQ)
- Received tentative approval by NOAA and EPA of the state's request to maintain the CNPCP boundary for the Columbia River at the existing Coastal Program boundary at Puget Island. (DEQ and DLCD)
- Received a Section 319 grant to facilitate the adoption of local ordinances designed to meet load reduction requirements resulting from TMDLs. (DLCD)
- Received tentative agreement by both EPA and NOAA to approve existing Oregon Plan commitments, along with provisions in current land use laws as meeting the urban watershed management measures. (DLCD)
- Received tentative agreement by both EPA and NOAA to exempt the state from meeting state and federal highway management measure due to ODOT's intention of covering all construction and maintenance activities under a statewide municipal storm sewer system National Pollutant Discharge Elimination System permit. (ODOT and DEQ)

The Flexibility Guidance stipulates that NOAA and EPA can approve those program elements for which states have proposed voluntary or incentive-based programs which are backed by existing state enforcement authorities, if the following is provided:

- A legal opinion from the state attorney general stating that existing enforcement authorities can be used to prevent nonpoint

pollution and require management measure implementation, as necessary;

- A description of the voluntary or incentive-based programs, including the methods for tracking and evaluating those programs, the states will use to encourage implementation of the management measures; and
- A description of the mechanisms or process that links the implementing agency with the enforcement agency and a commitment to use the existing enforcement authorities where necessary.

The following are prioritized (DEQ and DLCD) tasks under the CNPCP:

- Develop technical assistance program for local governments to facilitate the adoption of the urban component of basin-wide water quality management plans.
- Implement remaining management measures prioritized as commitments under *The Oregon Plan*. Continue monthly progress reporting by implementing state agencies as part of *The Oregon Plan*. Continue to prepare CNPCP yearly progress reports to NOAA and EPA on meeting program requirements and implementation of CNPCP Management Measures.
- Obtain federal funding (through EPA's Section 319 and Unified Watershed Assessment and NOAA) and state general funds for DEQ and DLCD's CNPCP Coordinator positions and to develop implementing mechanisms such as model ordinances, rules changes, guidance documents and education and technical training. In addition, funds will be requested for state and local agencies to provide start-up staffing and program development in implementing CNPCP Management Measures.
- Implement CNPCP Management Measures through Water Quality Management Plans being developed as required by the TMDL process, the agricultural water quality plans

(SB1010 Rules) and the State Forest Practices Act in the following *The Oregon Plan* priority basins: Umpqua, Rogue, South Coast, and Tillamook/North Coast Basins.

3.3.3 Forest Province Coordinating And Advisory Groups Implementing The President's Forest Plan

One of the foremost cooperative efforts that assists in achieving the goals and objectives of *The Oregon Plan* is the Northwest Forest Plan, which has established an interagency organization to coordinate and facilitate plan implementation. The objective of the aquatic conservation strategy (ACS) in the Northwest Forest Plan is to restore and maintain the ecological health of watersheds and aquatic ecosystems on lands managed by the U.S. Forest Service and the Bureau of Land Management within the range of the northern spotted owl. The ACS in the Northwest Forest Plan is considered by the State to be the cornerstone of salmon habitat restoration efforts in *The Oregon Plan*. Successful integration of the ACS in the Northwest Forest Plan with *The Oregon Plan*, along with changes in harvest, hatcheries, and hydropower programs, will promote recovery of salmon and steelhead populations and habitats across whole basins, regardless of ownership.

The NFP prescribes a comprehensive long-term management approach for 19 National Forests and six Bureau of Land Management districts in Oregon, Washington, and California. The NFP represents a shift to an ecosystem approach that crosses jurisdictional boundaries and puts in place analysis at the watershed scale to support decision making; active and meaningful public participation; and a balanced approach to management of Federal lands that accommodates both commodity outputs and ecosystem viability. The committee structure under the NFP coordinates policy and efforts at national, large region, and smaller region or province scales. The following describes these committees.

- The Regional Interagency Executive Committee serves as the senior regional entity to assure the prompt, coordinated, and successful implementation of the Northwest Forest Plan at the regional level, including ecosystem-scale monitoring and adaptive management. It serves as the principal conduit for communications between the region and the national Interagency Steering Committee. It is responsible for implementing the directives of the Interagency Steering Committee, reporting regularly on implementation progress, and referring issues relating to the policies or procedures for implementing the Northwest Forest Plan to the Interagency Steering Committee.
- The Regional Interagency Executive Committee is comprised of the chief regional official or director (as appropriate) of the Forest Service, Natural Resources Conservation Service, Bureau of Land Management, Fish and Wildlife Service, National Park Service, Bureau of Indian Affairs, National Marine Fisheries Service, Environmental Protection Agency, us Army Corps of Engineers, Pacific Northwest Research Station of the Forest Service, Office of Research and Development of the Environmental Protection Agency, and the Biological Resources Division of the U.S. Geological Survey.
- The Chair of the Committee will alternate between the Forest Service and the Bureau of Land Management representatives.
- The Intergovernmental Advisory Committee will continue to be chartered under the provisions of the Federal Advisory Committee Act to advise the Regional Interagency Executive Committee regarding implementation of the Northwest Forest Plan on Federal lands and to provide a forum for better integration of forest ecosystem management activities among Federal and

non-Federal governmental entities across jurisdictional boundaries.

- The Committee provides policy advice concerning Northwest Forest Plan issues including but not limited to:
 1. Concerns of Federal, State and local programs for economic, labor, and community assistance.
 2. Interagency research and monitoring goals.
 3. Complementary programs of Federal, State, Tribal, and local efforts to restore and maintain ecosystem health.
 4. Priorities for data management and applications.

The Intergovernmental Advisory Committee is comprised of:

- Members of the Regional Interagency Executive Committee,
- Representatives from State governments in California, Oregon, and Washington,
- Representatives from governments of affected counties in California, Oregon, and Washington,
- Representatives of Tribal governments, and
- Representation from regional and/or State Community Economic Revitalization Teams.

Province-Level Organizations: Provincial Interagency Executive Committees have been established for each of 12 provinces to support the successful implementation of the Northwest Forest Plan at the province level, under the general direction of the Regional Interagency Executive Committee. Each Provincial Interagency Executive Committee may, under guidance from the Regional Interagency Executive Committee, undertake specific activities within its province, including but not limited to:

- Coordinating landscape analyses to assess the health and condition of watersheds and to consider socio-economic conditions in local communities.
- Sharing information to support better decisions regarding the health of the ecosystem, including watersheds and local communities.
- Identifying mutual goals, objectives, and priorities to support coordinated watershed restoration and conservation strategies.
- Sharing technology and expertise within the province.
- Coordinating and conducting monitoring within the province.
- Encouraging complementary ecosystem management among Federal and non-Federal landowners within the province while respecting the rights of non-Federal landowners.
- Coordinating ecosystem management activities in concert with Federal, State, Tribal, and local programs for economic, labor, and community assistance.
- Landscape-level data analysis (such as river basin assessments) and monitoring undertaken by the Provincial Interagency Executive Committees should be based on appropriate joint data standards that tier to regional or watershed scales.

Provincial Advisory Committees will continue to be chartered under the provisions of the Federal Advisory Committee Act. Membership includes representatives of Federal, State, local and Tribal governments, and a variety of other interests. Provincial Advisory Committees shall make recommendations to Federal agencies through the Provincial Interagency Executive Committees regarding coordination and implementation of ecosystem strategies pursuant to the Northwest Forest Plan. They shall also participate, where appropriate, in collaborative planning at the province level across Federal and

non-Federal boundaries. In appropriate cases, Provincial Interagency Executive Committees may find it desirable to use mechanisms other than, or in addition to, Provincial Advisory Committees in order to obtain advice from non-Federal entities.

3.3.4 Interior Columbia Basin Ecosystem Management Project

An approach similar to the NFP is being proposed by the Interior Columbia Basin Ecosystem Management Project (ICBEMP) for aquatic habitats on public lands in the Middle and Upper Columbia River ESUs, and the Snake River Basin ESU. ICBEMP is a broad-scale, ecosystem-based project, developed in open collaboration with multiple agencies, governments, and tribes, and with unprecedented public input. It will guide future management of 72 million acres of public lands administered by the Forest Service (FS) and Bureau of Land Management (BLM) in the interior Columbia Basin and portions of the Klamath and Great Basins. One of the most important goals of the ICBEMP is to address, through the development of big-picture ecosystem management strategies, broad-scale issues such as the protection and recovery of a wide range of fish species.

3.3.5 National Estuary Program Committee For The Tillamook Bay Estuary And The Lower Columbia Estuary

The Coordinated Conservation and Management Plans (CCMPs) for these estuaries have been completed and adopted by the multiple committees that are formed to develop and carry out the estuary programs. Both plans address control of nonpoint source pollution and enhancement of habitat for fish. Summary materials from both CCMPs are located in Appendix G.

3.3.6 The Willamette Restoration Initiative

The Willamette Restoration Initiative is a new effort seeking to promote, integrate and coordinate efforts to protect and restore the health of the Willamette watershed. Designed as a public/private partnership, the Initiative will work closely with State and Federal agencies, while bringing a new focus to exploring the restoration interests and capabilities of businesses, landowners, non-profit organizations, local governments, and Watershed Councils in the basin.

WRI will develop a basin-wide strategy addressing:

- Accountable Institutions,
- Clean Water,
- Healthy Native Habitats,
- High Quality of Life,
- Shared Community Stewardship, and
- Strong Economy.

A wide-variety of organizations deal with impacts on the Willamette watershed, including more than 20 Watershed Councils, 11 Soil and Water Conservation Districts, about 100 cities, 10 counties, four regional government structures, and two resource conservation and development (RCandD) area councils. The basin is also subject to programs of at least nine State agencies and more than a dozen Federal agencies. The Initiative is charged to work closely with existing groups and programs, including Watershed Councils, the Lower Columbia River Estuary Program, and the Willamette Valley Livability Forum. In addition, WRI is to coordinate with all other relevant efforts, including Soil and Water Conservation Districts, local governments and *The Oregon Plan* for Salmon and Watersheds.

The WRI Board has also agreed to oversee the American Heritage River (AHR) program in the basin in order to assure that the local interests of

the basin's communities are not only protected, but benefit. While the Willamette was designated an American Heritage River before the Initiative was formed, the WRI Board supports AHR's stated purpose-getting Federal resources to implement local plans to restore and protect rivers environmentally, economically, and culturally. The Board is also aware that a number of communities have concerns about the Heritage River program and will address them, at a minimum, by guaranteeing local input on program development, requiring the river navigator (a Federally-funded AHR position) serve local needs, and explicitly recognizing property rights in AHR agreements.

Executive Order 98-18 directs WRI to "Oversee the preparation of a Willamette Restoration Strategy, including developing Willamette Basin amendments and supplements to *The Oregon Plan* for Salmon and Watersheds for approval by the Governor and the Legislature." The Initiative will fulfill this charge by working closely with the Legislature and the Governor's Office, using existing Oregon Plan structures and processes (including the Core, Implementation, Monitoring, and Outreach Teams; and the Independent MultiDisciplinary Science Team.) WRI has neither the authority, desire, or resources for a solo effort in this regard. Its contribution to *The Oregon Plan* will come primarily from WRI's ability to help engage new Willamette basin audiences (e.g., local governments, businesses, agriculture, watershed groups) in designing and implementing a plan that works for this unique basin.

WRI is overseen by a 26-member Board of Directors chaired by OSU President Paul Risser. The Board includes members from businesses, local government, utilities, tribes, communication media, academia, Watershed Councils, Soil and Water Conservation Districts, agriculture, forestry, environmental groups, and State and Federal government. The day-to-day activities of WRI are managed by an executive director under direction of the Board. The interim director is Rick Bastasch.

3.3.7 Willamette Restoration Initiative Board

Oregon Environmental Council, private fisheries biologist, Mayor of the City of Corvallis, the Eugene Water and Electric Board, Portland Metro, Stahlbush Island Farms, Inc., the Unified Sewerage Agency (USA) of Washington County, the Confederated Tribes of Grand Ronde Community of Oregon, editor of the Albany Democrat-Herald, the Conifer Group (real estate), the Smurfit Newsprint Corporation, the Oregon Department of Environmental Quality, Stop Oregon Litter and Vandalism, private individual well versed in urban design and development, commissioner for the Port of Portland, hunting and sports supply representative, president of Oregon State University, farmer of grass and legume seeds, watershed council coordinator, Linn County Commissioner, Portland City Council Commissioner, Defenders of Wildlife, Weyerhaeuser, the Oregon Business Council, Department of the Interior's Bureau of Land Management.

WRI has an informal committee and workgroup structure. Groups are formed to respond to ongoing or task-specific needs. With the exception of the Executive Committee and the American Heritage River Oversight Committee, members are not appointed; rather, participation is entirely voluntary and open to all interested parties.

Generally, "committees" have been authorized at Board meetings. Board members volunteer for participation; attendance varies by meeting. WRI "workgroups" have been formed as spin-offs of committees or in pursuit of Board action priorities. Again, Board members volunteer for participation. Both committees and workgroups are supported by staff volunteers from Board members' organizations and other interested groups. Participation varies by meeting.

Committees and workgroups report to the full Board. The following committees have tasks most closely related to nonpoint source issues:

3.3.8 Strategy Committee

Purpose: This committee is charged with articulating a restoration vision, principles and goals; developing an integrated framework for basin restoration strategies; conducting a restoration inventory; and designing a stakeholder and public involvement process.

1. Strategy Development Workgroups

Purpose: Refine issues and identify strategy, actions, timelines, and indicators to recommend to WRI Board for inclusion in Willamette Restoration Strategy. The Strategy Committee will help coordinate and integrate workgroup recommendations, as well as act as a resource for workgroup requests for assistance. The four workgroups focus on WRI restoration goals:

- Accountable Institutions,
- Clean Water,
- Healthy Native Habitats,
- High Quality of Life,
- Shared Community Stewardship, and
- Strong Economy.

2. Watershed Partnership Workgroup

Purpose: Promote close working relationships between basin watershed groups and WRI; identify issues and opportunities relating to watershed group operation in the basin.

3. Urban Coordination Forum

Purpose/Origin: The forum results from a spontaneous eruption of urban efforts in the basin to deal with ESA. WRI does not "run" the forum, but acts to support it and to promote a basin-wide approach to ESA issues in the urban landscape, and to channel thinking toward the development of urban-oriented provisions in the Willamette Restoration Strategy.

4. Technical Workgroup

Purpose: Aid in design of white paper and advise Strategy Committee and Board on other technical matters relating to strategy.

3.4 FEDERAL CONSISTENCY

The management of Federal lands is crucial to the control of NPS in Oregon, as well as to the implementation of TMDLs and most other water quality programs. Fortunately, all Federal agencies whose policies and activities have significant water quality implications are full and active partners in *The Oregon Plan* and its key components. As described in Chapter 5, several Federal agencies have committed to a number of critical objectives relating to water quality. In addition, Federal agency partnership in *The Oregon Plan* has resulted in considerable scrutiny of their policies and programs for consistency with the Plan. At this point, no Federal policies or programs have been determined to be inconsistent or in conflict with any aspect of this NPS Plan nor with any aspect of the overarching Oregon Plan.

As with any partnership, a clarification of details is in order. Accordingly, DEQ has undertaken the development of new interagency agreements (MOUs) with key partners, particularly with the Bureau of Land Management and the Forest Service. Development of these new MOUs began in early 2000 and is expected to produce final products by early 2001, one reason for the delay being the long process of developing new Federal rules for the Section 303d/TMDL program.

Along with the content listed below, the MOUs will be coordinated with the content of the latest version of the "Forest Service and Bureau of Land Management Protocol for Addressing Clean Water Act Section 303(d) Listed Waters." An update of this important Protocol is now being readied, with input from DEQ, and further progress in drafting the new MOUs will follow shortly thereafter. The MOUs will include:

- Adaptive management processes, timeframes, and products, and how adaptive management will be used,
- Communication mechanisms,
- Contacts,
- Expectations,
- Federal policies, programs, projects, or practices to review for consistency with Oregon water quality objectives,
- Geographic and programmatic priorities,
- Goals, objectives, and tasks, with products and timeframes specified,
- Integration of other related mandates and programs (e.g., the ESA, SB 1010, CZARA 6217),
- Monitoring, data development, handling, and sharing,
- Responsibilities,
- Review processes (for the Federal policies, the MOUs themselves, and for progress on the objectives),
- Roles,
- Site-specific projects, and
- The use of analytical tools for modeling.

4. CATEGORIES AND SUB-CATEGORIES OF NPS POLLUTION AND THEIR IMPACTS ON WATER QUALITY

4.1 INTRODUCTION

This section identifies the categories and sub-categories of nonpoint source pollution in Oregon, and briefly describes their impacts on water quality.

Compiling the results of a number of different assessment and management documents identifies the categories and sub-categories. The three most important such documents that represent this compilation are:

- ***The Oregon Plan*** identifies "factors for decline" of threatened and endangered fish species (steelhead). These factors are generally in the form of water quality or habitat parameters, such as temperature or dissolved oxygen. In addition to presenting a master list of factors for decline, *The Oregon Plan* also describes which factors are of particular concern in each of six "ecologically significant units" (ESUs) for salmonids which cover three-fourths of the State.
- **DEQ's 303d List** identifies known impairments of water quality, including NPS pollutants. The listed streams or segments include almost all river basins in the state.
- **DEQ's 305(b) Report** identifies the condition of all waterbodies and groundwater (including groundwater and

surface waters) of the State, and the extent they support the designated beneficial uses.

None of these three approaches attempts a positive identification of the land management practices that cause the water quality impairments. However, The Oregon Plan does suggest the sorts of land use types and management practices that typically cause the known problems. Also, a number of the component parts of The Oregon Plan (e.g., Federal lands management, 6217, the FPA, and so on) do connect land use types and land management practice.

In this chapter, we first provide a general summary of known water quality conditions, NPS issues, and categories of NPS pollution in terms of "factors for decline" for the most sensitive beneficial use, fish species and aquatic habitat and then identify the sources of pollution.

4.2 WATER QUALITY SUMMARY

The State of Oregon has completed many water quality assessments that do the following:

- Identify the water quality condition of ESU watersheds in supporting aquatic habitat for salmonids—*The Oregon Plan*.

- Identify those waterbodies that do not meet water quality standards or support beneficial uses—303(d) *List*.
- Identifies the condition of waterbodies of the State and the extent they support the designated beneficial uses—305(b) *Report*.
- Identifies ambient quality of groundwater resources statewide and any existing or emerging groundwater contamination problems. *Oregon Groundwater Quality Protection Act*.

4.2.1 Oregon Plan “Factors For Decline”

The water quality factors for decline have been identified based upon review of key scientific literature, review of water quality data, the professional judgment of State and Federal agency professional staff and the advice of National Marine Fisheries Service (NMFS). Not all identified factors are of equal weight in contributing to the decline of steelhead salmon. The factors for decline are generally listed in order of their importance to recovery of steelhead. It is believed that temperature and sedimentation are the two most significant water quality parameters of concern for salmonid recovery.

The following eight factors for decline, and associated biological objectives have been developed for six steelhead ESUs: Klamath Mountains Province, Oregon Coast, Southwest Washington, Lower Columbia River, Upper Willamette River, and Snake River Basin.

Agency management measures have been assigned to each biological objective. To see the details of individual measures, please refer to Chapter 6.

4.2.2 Temperature

Factors for Decline: Water temperatures are too warm for steelhead in many Steelhead ESU

watersheds. Altered water temperatures can adversely affect spawning, fry emergence, smoltification, maturation period, migratory behavior, competition with other aquatic species, growth and disease resistance. Altered water temperatures may occur due to factors such as: riparian canopy removal; changes in upland conditions like urbanization and other vegetative canopy removal over large portions of the watershed; water impoundment; surface water or groundwater withdrawals; water discharges (such as irrigation return flows and point source discharges); and changes in channel morphology such as widening and/or reducing the depth of stream beds.

4.2.3 Sediment

Factors for Decline: Gravel beds in a number of watersheds used by steelhead for spawning, incubating and emerging fry have been filled or covered by excessive sediment due to high sediment loads. High sediment loads can also adversely affect fish by: increasing mortality; reducing growth rates; causing physiological stress; impairing homing instincts; and reducing feeding rates. High levels of sediment can also produce changes in channel habitat by reducing pool frequency, depth and volume. Excessive sediment loads may result from factors such as degraded riparian areas and stream banks, erosion from agricultural lands, landslides, construction and maintenance of state, local and forest roads, urbanization, channel dredging, and other land or stream channel disturbing activities. Sediments may also provide attachment sites for contaminants that are then transported downstream, deposited and ultimately ingested by benthic organisms and passed up the food chain.

4.2.4 Dissolved Oxygen

Factors for Decline: Dissolved oxygen levels are too low to adequately support steelhead in some ESU waterbodies due to factors such as unnaturally high stream temperatures, high BOD and nutrient loads from point and nonpoint

sources, urban storm water runoff, dredging, combined sewer overflows, and sanitary sewer overflows.

4.2.5 Total Dissolved Gas

Factors for Decline: Elevated total dissolved gas (TDG) levels are being observed in the Mainstem Columbia River and Lower Snake River that may be adverse to steelhead and other aquatic species. These levels are largely due to spill of excess water at hydropower projects in the Columbia and Snake Rivers that result in the presence of dissolved atmospheric gases (especially nitrogen) at supersaturated levels in the water. Spill at other public and privately operated dams and hydropower projects in the steelhead ESUs can also cause elevated levels of TDG. High levels of TDG may result in gas bubble disease in exposed fish.

4.2.6 Biological Conditions

Factors for Decline: Resident biological community composition, species diversity, and functional organization have been altered in some steelhead-bearing streams. These alterations have adversely affected the ecological integrity of aquatic ecosystems. Alteration of biological conditions may be a result of factors such as habitat degradation, flow alteration, nutrient and sediment inputs, removal of riparian vegetation, pesticide applications, discharges from point sources, channel modification associated with land development, and introduction of non-indigenous species of plants and animals that compete for good habitat and predate on juvenile salmonids.

4.2.7 pH

Factors for Decline: Elevated pH levels are being observed in some Steelhead ESU watersheds that may be adverse to steelhead. These levels may be due to factors such as: excessive algal growth attributable to nutrient

loading from point and nonpoint sources; wide, shallow stream beds due to sediment inputs or other disturbances; altered riparian vegetation that allows increased solar radiation to reach waterbodies, urban storm water runoff, dams and reservoirs, and irrigation return flows.

4.2.8 Stream Fertility

Factors for Decline: Deviation from natural conditions of nutrient loading alters primary production, algal growth and ultimately the type and quality of food available to salmon. Nutrient loading may be reduced due to reductions in salmon carcass input, or increased as a result of added loads of nitrogen and phosphorus from activities such as fertilizer use and waste treatment plant discharges.

4.2.9 Toxics

Factors for Decline: Toxic substances can adversely affect aquatic life and aquatic habitat in the Steelhead ESUs. Potential adverse effects include acute or chronic toxicity, bioaccumulation in sediments and aquatic life, behavior modification and reduced growth, reduction of habitat and/or food, increased susceptibility to other stressors (organisms in a toxic environment may be more susceptible to disease), genetic alterations and reproductive effects. Factors affecting toxic levels in water and sediments include urban storm water runoff, point source discharges, disposal sites, dredging, combined sewer overflows, sanitary sewer overflows, irrigation return flows, pesticide applications, and contaminated groundwater.

4.2.10 DEQ'S "303(d)" List

1. Water quality in Oregon is improving in many areas, but many waterbodies do not fully meet standards developed to protect fish, drinking water and other beneficial uses. Over the past 50 years, major improvements have been made in controlling direct discharges from industry

and sewage treatment facilities. Now the primary problem confronting our waters is polluted runoff from a variety of daily activities. This type of pollution comes from diverse sources and takes a variety of forms. The pollutants include polluted storm water from urban areas; sediments from new construction or improper land clearing; fertilizers and pesticides from lawns and agriculture; increased stream temperature from habitat destruction, and water flow changes from a variety of sources.

2. The Federal *Clean Water Act* requires states to undertake specific activities to protect the quality of their rivers, streams, lakes and estuaries.
3. DEQ is mandated to protect water quality by establishing standards to protect beneficial uses. Beneficial uses are defined by law and include such things as recreation, aquatic life, fisheries, irrigation, and drinking water. While there may be opposing beneficial uses in a river or stream, Federal law requires DEQ to protect the *most sensitive* of these beneficial uses.
4. DEQ's standards include parameters such as bacteria, pH, turbidity, dissolved oxygen, temperature, total dissolved gas, certain toxic and carcinogenic compounds, habitat and flow modification, and aquatic weeds or algae that affect aquatic life.
5. Section 303(d) of the *Clean Water Act* requires each State to develop a list of waterbodies that do not meet standards, and to submit an updated list to the Environmental Protection Agency (EPA) every two years. The list provides a way for Oregonians to identify problems and develop and implement watershed recovery plans to protect beneficial uses while achieving Federal and State water quality standards.

The list is meant only as a means of identifying water quality problems and not the causes. Causes of water quality problems are determined when recovery plans are developed for the watersheds in which the listed segments are located.

DEQ compiles the list using existing scientific data and best professional judgment to assess water quality and determine which waterbodies should be listed. DEQ develops a draft list and presents the list for public comment. After all public comments are reviewed and taken into consideration a final list is developed and sent to EPA for approval. The final list is accompanied by a list of priorities that target resources for correcting water quality problems.

EPA listing guidelines require that Oregon demonstrate good cause for not placing a waterbody on the list. If available data indicates a waterbody is not meeting water quality standards, and the data meets listing guidelines, then DEQ must assume that the stream is water quality limited.

DEQ does not have information on all Oregon waterbodies. Those with no information, or information not compatible with the EPA guidelines, are not included on the 303(d) List. These streams and rivers with suspected problems would be identified as "Waterbodies of Potential Concern." Streams and rivers will not be placed on the 303(d) List until sufficient data is available that indicates a violation of water quality standards.

There are 1,067 streams and rivers, 32 lakes and 1,168 stream segments on the list. In 1994-96, there were 11,899 miles of rivers and streams and in 1998 that number increased to 13,892 miles. (See Table 4-1 and Table 4-2.)

Table 4-1: Oregon's 1998 303(d) List Stream Summary Report

General Information				
Number of streams reviewed: 2,375 ; Number of streams on the 303(d) list: 1,067 ; Number of streams with at least one parameter whose status is "Need Data" or "Potential Concern": 1,444 .				
Number of Streams Listed at Least Once for The Following Parameters				
Parameter	303(d) List	TMDL Approved	Need Data or Potential Concern	OK
Aquatic Weeds or Algae	19	4	70	1
Bacteria	146	0	66	154
Biological Criteria	34	0	24	23
Chlorophyll <i>a</i>	25	3	4	92
Dissolved Oxygen (DO)	58	8	149	113
Flow Modification	51	0	615	1
Habitat Modification	190	0	597	3
Nutrients	7	46	205	2
pH	46	5	20	170
Sedimentation	100	0	956	5
Temperature	869	0	506	553
Total Dissolved Gas	3	0	1	0
Toxics	23	6	87	53
Turbidity	4	0	11	1

* 1998 counts do not include waters which are either partially or entirely within Tribal Reservation Boundaries.

Table 4-2: Oregon's 1998 303(d) List Waterbody Summary Report

General Information				
Number of waterbody segments reviewed: 2,665 ; Number of waterbody segments on the 303(d) list: 1,168 ; Number of waterbody segments with at least one parameter whose status is "Need Data" or "Potential Concern": 1,558 .				
Number of Waterbody Segments Listed at Least Once for The Following Parameters				
Parameter	303(d) List	TMDL Approved	Need Data or Potential Concern	OK
Aquatic Weeds or Algae	20	4	70	1
Bacteria	156	0	68	188
Biological Criteria	36	0	24	23
Chlorophyll <i>a</i>	25	4	4	106
Dissolved Oxygen (DO)	64	10	154	141
Flow Modification	56	0	650	1
Habitat Modification	199	0	626	3
Nutrients	7	50	222	3
pH	56	5	20	204
Sedimentation	107	0	1,030	5
Temperature	940	0	510	563
Total Dissolved Gas	11	0	1	0
Toxics	37	17	98	60
Turbidity	5	0	12	1

* 1998 counts do not include waters which are either partially or entirely within Tribal Reservation Boundaries.

Table 4-3: Comparison Of Calculated And Projected Surface Water Quality Benchmarks

Benchmark	1990	1995	1996	1997	2000	2010
Percentage of monitored stream sites with significantly improving trends in water quality.	8%	21%	32%	52%	25%	25%
Percentage of monitored stream sites with significantly declining trends in water quality.	20%	8%	2%	0%	5%	0%

4.2.11 Statewide Trends In Water Quality

Oregon's surface water quality benchmark, as reported in the Oregon Progress Board's "Oregon Shines" report, is expressed in the following manner:

- Percentage of monitored stream sites with significantly increasing trends in water quality.
- Percentage of monitored stream sites with significantly decreasing trends in water quality.

Trends in water quality are measured using the Oregon Water Quality Index (OWQI). The OWQI analyzes a defined set of water quality parameters and produces a score describing general water quality. The water quality parameters included in the OWQI are temperature, dissolved oxygen (percent saturation and concentration), biochemical oxygen demand, pH, total solids, ammonia and nitrate nitrogen, total phosphorous, and fecal coliforms. OWQI scores range from 10 (worst case) to 100 (ideal water quality). The Department of Environmental Quality Laboratory maintains a network of ambient water quality monitoring sites. These sites were selected to provide representative statewide geographical coverage, and to include major rivers and streams throughout the state. The size of the network periodically changes due to logistical and budgetary constraints.

Each site with sufficient data is analyzed for the presence of significantly increasing or decreasing trends. Significant trends are reported at the 80 percent or greater confidence level. This procedure ensures that increasing or decreasing trends are consistent through most of the year and that the trends are not due to normal seasonal variation. This trend analysis did not consider variations in meteorological or hydrological conditions or variations in sample time. It is important to remember that this trend analysis assesses changes in general water quality, specifically those parameters included in the OWQI. This assessment does not consider

changes in toxics concentrations, habitat, or biology.

Both benchmarks represent the percentage of monitored stream sites with significantly increasing or decreasing trends in water quality, with respect to the total number of monitored stream sites having sufficient data for trend analysis. The stated years represent the last water year in a ten water-year time period. Water years start on October 1 and end on September 30. For instance, calculated benchmark results for 1990 represent trend analyses on data gathered from water year (WY) 1981 to WY 1990 or from October 1, 1980 to September 30, 1990.

Benchmark results were originally calculated for 1995. Projected results for 2000 and 2010 are challenging yet attainable goals based on results for 1995. Benchmark results for 1990 were calculated to provide a sense of the direction and magnitude of these changing trends. Interim benchmark results are calculated annually to measure progress towards the projected goals.

Table 4-3 compares the calculated and projected benchmark results. It can be seen from this table that the percentage of monitored stream sites with significantly improving trends in water quality has increased from 8 percent in 1990 to 52 percent in 1997. During the same time period the percentage of monitored stream sites with significantly declining trends in water quality has decreased from 20 percent in 1990 to 0 percent in 1997. Clearly, these results are very encouraging; with the caveat, they are based upon an overall water quality index and the limitations stated above.

4.2.12 Designated Use Support

Table 4-4 summarizes the extent to which rivers and streams in Oregon support the designated beneficial uses adopted by the Environmental Quality Commission in Oregon Administrative Rules (OAR), Chapter 340, Division 41, Tables 1 through 19. For Table 4-4, the 1988 Nonpoint Source Assessment (ODEQ, 1988) was used to

determine the evaluated miles of streams and rivers for Fully Supporting All Assessed Uses. The streams listed in the 1998 303(d) List was used to determine Monitored Categories in Table 4-4 (ODEQ, 1998).

The 1998 303(d) Decision Matrix's "Potential Concern and Needs Data" status was used to

determine the "Fully Supporting All Assessed Uses but Threatened for at Least One Use" category (ODEQ, 1998). Oregon does not designate waters as "Not Attainable for Any Use" and, therefore, does not have any streams which fall into the "Not Attainable for Any Use and Not Included Above" category.

Table 4-4: Summary of Fully Supporting, Threatened, and Impaired Rivers and Streams (miles)

Degree of Use Support	Assessment Category		Total Assessed Size
	Evaluated	Monitored	
Fully Supporting All Assessed Uses.	10,605	5,687	16,292
Fully Supporting All Assessed Uses but Threatened For at Least One Use.	23,506	–	23,506
Impaired for One or More Uses.	–	13,937	13,937
Not Attainable for Any use and Not Included Above.	–	–	–
Total Assessed.	34,263	19,624	53,735
Legend: (–) = Category applicable; no data available. ➤ Evaluated means: Relied on survey or study information. ➤ Monitored means: Relied on water quality monitoring data.			

4.2.13 Causes/Stressors And Sources Of Impairment Of Designated Uses

Table 4-5 summarizes the extent to which specific beneficial uses are supported in Oregon's rivers and streams. The amount of information DEQ has on the water quality of individual streams varies considerably. Information on numerous water quality parameters is available for some streams, while limited information on one or two parameters exists for other streams. DEQ has no information on about 58,265 miles of streams (there are approximately 112,000 miles of streams in Oregon, 53,735 mile has some type of assessment, leaving 58,265 without any assessment. DEQ has determined that 5,687 miles of stream are meeting water quality standards for those parameters for which we

have information to fully support designated uses. DEQ has not differentiated between partially and not supporting uses, and has not reported data for partially supporting.

Aquatic Life: Water quality standards are developed to protect the most sensitive use. In most cases aquatic life is usually the most sensitive use. A number of parameters can make water quality unsuitable to fully support aquatic life. In Oregon, temperature represents the majority of listings (12,102 miles) on the 1998 303(d) List which affect aquatic life.

Fish Consumption: The 703 stream miles that are not meeting the fish consumption beneficial use are due to mercury (435 miles), pesticides (153 miles), PCBs (133 miles) and dioxin (463 miles) contamination of fish tissue.

Table 4-5: Individual Use Support Summary: Rivers & Streams (miles)

Goals	Use	Size Assessed	Size Fully Supporting	Size Fully Supporting But Threatened	Size Partially Supporting	Size Not Supporting	Size Not Attainable
Protect & Enhance Ecosystems	Aquatic Life	53,735	16,292	23,506	+	13,937	+
Protect & Enhance Public Health	Fish Consumption	984	84	103	+	797	+
	Shellfishing	+	+	+	+	+	+
	Swimming	5,870	2,777	48	+	2,237	+
	Secondary Contact	5,870	2,777	48	+	2,237	+
	Drinking Water	2,078	678	–	+	–	+
Social and Economic	Agricultural	53,735	53,735	0	+	0	+
	Cultural or Ceremonial	+	+	+	+	+	+
Legend: (+) = Category not applicable. (–) = Category applicable; no data available.							

Shellfishing: There are no designated freshwater shellfishing areas in the State.

Swimming and Secondary Contact: Bacterial contamination is used to determine support for this use.

Drinking Water: Mileage is based on toxic contamination. Bacteria and turbidity are also important considerations for drinking water use, but are considered treatable so the water quality standards are set to protect swimming and aquatic life rather than drinking water.

Table 4-6 summarizes the causes and stressors that cause impairment of river and stream water quality in Oregon. Clearly, temperature is the

most commonly measured parameter which causes water quality impairment; however, other parameters such as sedimentation, habitat modification, flow modification, low dissolved oxygen, abnormal pH and toxics have an impact on aquatic life. A combination of water quality concerns is stressing aquatic life throughout Oregon and is of significant concern because of the widespread listings of salmonid species as threatened or endangered under the Federal Endangered Species Act.

Oregon does not differentiate its waterbodies into major, moderate, and minor stressors, therefore, records size under the Moderate/Minor sub-heading.

Table 4-6: Total Sizes of Waters Impaired by Various Cause/Stressors Categories (Rivers and Streams)

Type of Waterbody: Rivers and Streams (miles)		
Cause/Stressors Category	Size of Waters by Contribution to Impairment	
	Major	Moderate/Minor
Cause / Stressors Unknown	–	–
Unknown Toxicity	–	–
Pesticides	–	285
Priority Organics	–	–
Nonpriority Organics	–	–
PCBs	–	135
Dioxins	–	463
Metals	–	718
Ammonia	–	145
Cyanide	–	–
Sulfates	–	–
Chlorine	–	53
Other Inorganics	–	–
Nutrients	–	240
pH	–	1,083
Siltation	–	1,354
Organic Enrichment/Low DO	–	1,044
Salinity / TDS / Chlorides	–	–
Thermal Modifications	–	12,102
Flow Alternations	–	1,624
Other Habitat Alterations	–	2,103
Pathogen Indicators	–	2,429
Radiation	–	–
Oil and Grease	–	–
Taste and Odor	–	–
Suspended Solids	–	–
Noxious Aquatic Plants	–	–
Excessive Algal Growth	–	597
Total Toxics	–	1,131
Turbidity	–	66
Total Dissolved Gas	–	326
Biological Criteria	–	462
Exotic Species	–	–
Legend:		
(–) = Category applicable; no data available.		

4.2.14 Urban Runoff

To more fully evaluate the impact of urban runoff, the Department is using several tools currently in existence: the NPDES storm water regulations for municipalities and the total maximum daily load (TMDL) program. Both programs provide for the evaluation of urban runoff and require the implementation of management programs when necessary. While the NPDES program initially requires permits only for municipalities within urbanized areas, municipalities outside such areas will need to be evaluated to determine if a permit is required. Even the smallest municipalities can be subject to NPDES permitting requirements for runoff. If the Department determines that storm water controls are needed based on a TMDL allocation, a contribution to the violation of a water quality standard, or a significant contribution of pollutants, an NPDES permit can be required [40 CFR 122.26(a)(9)(i)(C) and (D)]. The majority of this evaluation will take place according to the TMDL schedule based on our watershed plan.

4.2.15 The Oregon Plan — “Water Quality”

There are five general classes of features or characteristics that determine the suitability of aquatic habitats for salmonids:

- Biotic interactions (Spence, et al. 1996),
- Flow regime,
- Food (energy) source,
- Habitat structure, and
- Water quality.

All of these characteristics are inter-related as are many of the individual water quality parameters. Figure 4-1, Figure 4-3, Figure 4-5, and Figure 4-7 identify the water quality parameters that impact steelhead recovery in the ESUs. Appendix H provides additional detail.

Flow regimes directly influence the depth and velocity of water and the total available habitat space for salmonids and their food organisms as

well as perform other functions such as redistributing sediments, flushing gravels, and dispersing vegetation propagates (Spence, et al. 1996). Flow alterations also affect the ability of a watershed to meet water quality standards where, for example, flows have been reduced to the extent that pollutants are concentrated or temperatures increased to the point water quality criteria are exceeded. Unnatural high flows can also impair water quality and beneficial uses.

Streams where flow modification has been documented as impairing beneficial uses have been identified by DEQ as water quality limited. That means they are listed on the *303(d) List* and the use impairment needs to be resolved. Most of the efforts to deal with the effects of flow modification on steelhead are addressed in the water quantity and dams and hydropower sections of the Supplement.

Important habitat structure attributes of streams include pools, riffles, substrate, cover (e.g., undercut banks, overhanging vegetation), depth, and hydraulic complexity. The presence of large woody debris enhances channel complexity, creating hydraulic heterogeneity, pools, side channels, back eddies, and other features that are used by salmonids and other aquatic organisms (Spence, et al. 1996). Changes in habitat can also affect the ability of a watershed to meet water quality standards. For example, damage to riparian areas can result in elevated stream temperatures or stream turbidity and sedimentation. As with flow modification, where habitat modification has been documented as impairing beneficial uses those streams have been identified by DEQ as water quality limited. Most of the efforts to deal with the effects of habitat modification on steelhead are addressed in the physical habitat section of the Supplement.

Degradation of riparian zones and streams diminishes their capacity to provide critical ecosystem functions, including the cycling and chemical transformation of nutrients, purification of water, attenuation of floods, maintenance of stream flows and stream temperatures, recharging of groundwater, and

establishment and maintenance of habitats for fish and wildlife (Kauffman, et al. 1997).

These interrelationships between water quality, water quantity and physical habitat make it imperative that the approach to addressing steelhead conservation be comprehensive and encompasses watersheds and ecosystems rather than individual streams and water quality parameters. Aquatic habitats critical to salmonids are the product of processes acting throughout watersheds and particularly within riparian areas along streams and rivers. Salmonid conservation can be achieved only by maintaining and restoring these processes and their natural rates. If ecosystems are allowed to function in a natural manner, habitat characteristics favorable to salmonids will result, and fish will be able to reinvade and populate historical habitats, recover from earlier stressors, and persist under natural disturbance regimes (Spence, et al. 1996).

The water quality requirements of salmonids include cool temperatures, high dissolved oxygen, natural nutrient conditions, and low levels of pollutants. Salmonids prefer cold water, and temperatures above 25°C are lethal to most species; individual species have specific preference ranges that vary by life stage. Variation in temperature is required to trigger spawning, support growth, initiate smoltification, and enable other parts of the salmonids life cycle. Salmonids require well-oxygenated water (> 6 mg/l) throughout their life cycles, and any level below saturation can be detrimental. Nutrient levels vary among streams and must be sufficient to support natural plant and animal assemblages (Spence, et al. 1996).

It is important to understand the interrelationships between various water quality parameters when undertaking steelhead conservation planning. The effects of individual water quality parameters are often related to the conditions of other parameters, so it is often beneficial to address water quality issues in a holistic integrated fashion to ensure the cure will really address the underlying problem.

One of the most obvious relationships is between nutrients, pH, dissolved oxygen (dissolved oxygen) and temperature. Biological processes affect dissolved oxygen and pH in surface water systems as a result of photosynthesis and respiration. In nutrient enriched (nitrogen or phosphorus) streams there often is an increase in the growth of aquatic plants during the time of year when air and water temperatures are warmest and where direct sunlight is available.

As aquatic plants and algae photosynthesize, they produce oxygen and consume carbon dioxide. In turn, when aquatic plants respire they consume oxygen and produce carbon dioxide. The rapid growth of the aquatic plants during the day when plenty of sunlight is available generates large amounts of dissolved oxygen. However, in the evening as sunlight recedes and temperatures decline photosynthesis ebbs and respiration predominates. The respiration phase uses large quantities of dissolved oxygen.

In addition, the diurnal pattern of photosynthesis and respiration results in diurnal fluctuations in dissolved oxygen, dissolved carbon dioxide, and pH. Diurnal peaks in dissolved oxygen and pH typically occur in late afternoon. The lowest dissolved oxygen and pH occur in early morning just prior to the initiation of photosynthetic activity (ODEQ 1995). These variations in the amount of dissolved oxygen in the system, and the low point of the swing in dissolved oxygen can result in oxygen depletion that is lethal to aquatic organisms.

Further, while the pH value does not directly affect temperature, temperature and pH together may affect the toxicity of certain chemical species (e.g., ammonia and metals). Un-ionized ammonia (NH_3) is toxic to aquatic organisms, and salmonids are especially sensitive. However, ammonium (NH_4^+) is not toxic. The balance between un-ionized ammonia and ammonium ion is controlled by a pH and temperature dependent equilibrium. At a given temperature, the higher the pH, the more un-ionized ammonia will be present for a given amount of total ammonia (ODEQ 1995).

Also, water quality in the lower portions of a watershed is often related to changes in water quality in upstream portions of the watershed. For example, exceedance of the temperature standard in mainstem streams is usually related to temperature increases in the tributaries and cannot be resolved without addressing the causes of temperature increases in the tributaries.

Because of these interrelationships between water quality parameters, physical habitat and flow and the watershed wide effects of these relationships the approach of the State to steelhead conservation envisions restoration efforts occurring at a watershed scale and comprehensively addressing water quality, water quantity and physical habitat characteristics. So, although the water quality summaries and factors for decline presented in this section are listed on an individual parameter basis the approach for addressing them will usually be integrated and comprehensive.

4.2.16 Steelhead ESU Water Quality Status

The following sections provide summaries of the status of water quality in the steelhead ESUs. The numbers presented reflect data evaluation made in developing Oregon's 1994/96 303(d) List (ODEQ 1996).

The 303(d) List represents an evaluation of data that were readily available to DEQ and information contained in the 1988 Nonpoint Source Assessment (ODEQ 1988). The results are not necessarily representative of conditions or the magnitude of problems found throughout each watershed, but they do indicate where problems have been identified and serve as a basis for planning. They are helpful in determining where the State should focus its resources to address the most significant water quality problems.

It should be noted that in some instances natural conditions are responsible for the water quality standard to be exceeded (e.g., a hot spring

discharging to a stream). Where natural conditions are responsible for the exceedance, the water quality standards provide that it will not be considered a violation of the standard. DEQ is preparing guidance to assist in making the determination of whether an exceedance of a standard is due to natural conditions.

Also note that a single exceedance of a water quality standard does not necessarily mean there is impairment of beneficial uses. The State uses the following EPA guidelines for determining impairment:

"In general, waters with less than or equal to 10 percent of the samples exceeding a standard are considered as meeting the standard, waters with greater than 10 percent and less than or equal to 25 percent of the samples exceeding a standard are considered moderately impaired, and waters with greater than 25 percent of the samples exceeding a standard are considered severely impaired (ODEQ 1994)."

For those who wish more detailed information on water quality in Oregon, DEQ has placed its 303(d) database on the Internet for the use of the public at the following address:

<http://www.deq.state.or.us/wq/303dlist/303dpage.htm>

The database is searchable for information on all waterbodies evaluated by DEQ in preparing the 1998 303(d) List. Searches can be performed by basin, by sub-basin, by type of waterbody, by waterbody name, by water quality parameter, and by listing status. The public can also comment on the information in the database through DEQ's Internet Website.

4.2.17 Klamath Mountains Province And Oregon Coast ESUs

Table H-1 in Appendix H is a summary of water quality information for each of the 19 fourth field hydrologic units in the combined

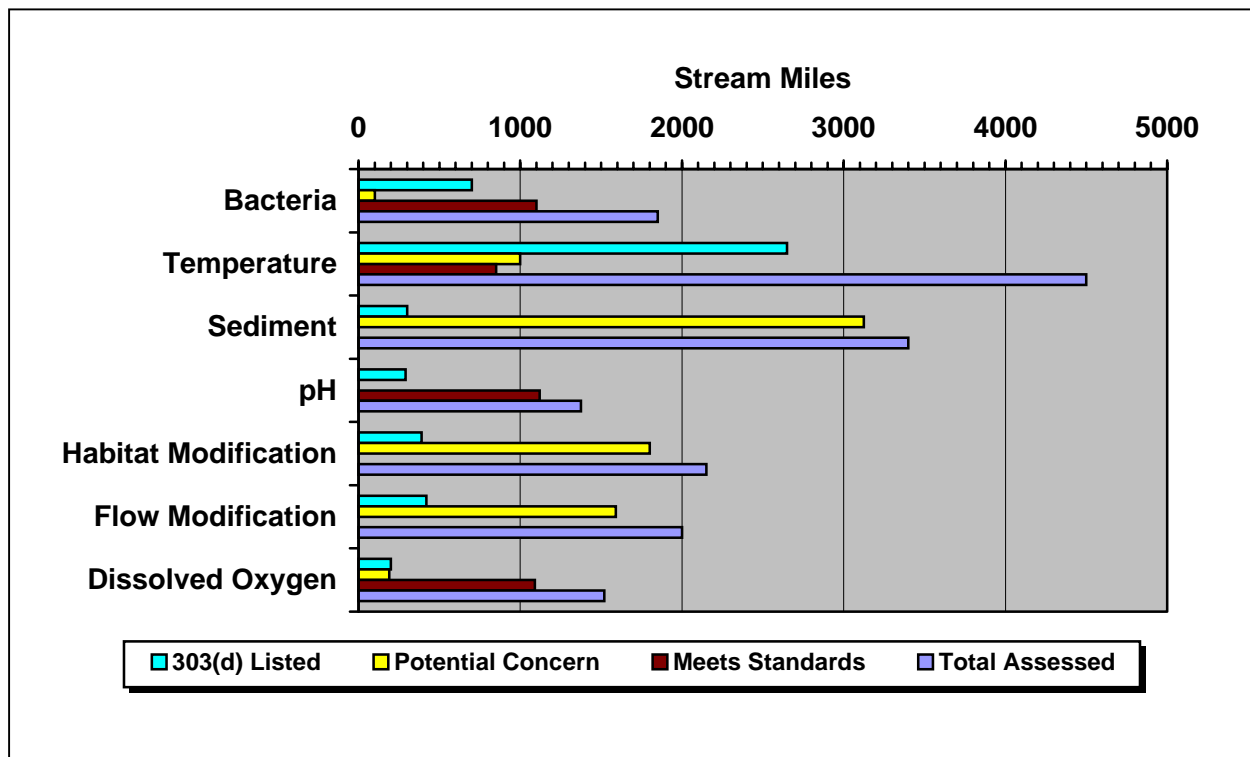


Figure 4-1: Significant Water Quality Parameters in Klamath Mountains Province and Oregon Coast Steelhead ESUs

Klamath Mountains Province and Oregon Coast ESUs. There are approximately 18,138 total stream miles in the combined ESUs. Of that number, approximately 6,089 stream miles (34%) have been assessed by DEQ using available water quality information. DEQ found 3,033 stream miles (50% of assessed miles) are water quality limited (not meeting standards), 4,311 stream miles (71% of assessed miles) need data or are of potential concern, and 714 stream miles (12%) meet water quality standards.

Figure 4-1 displays the most significant water quality parameters for the coastal ESUs from the data in Table H-1 of Appendix H. Temperature is the parameter of greatest concern with 2,657 stream miles of 4,481 assessed (59%) not meeting water quality standards. Sediment is also of significant concern with 298 stream miles (9%) water quality limited and 3,105 stream miles of 3,403 assessed (91%) designated as being of potential concern for water quality problems. Other parameters of concern include

dissolved oxygen (dissolved oxygen), pH, bacteria, and habitat and flow modification.

Flow modification and habitat modification are identified as being of concern because 1,569 and 1,792 stream miles respectively are listed in the needs data or potential concern category. Further, dissolved oxygen and pH are of concern with 209 and 274 stream miles respectively not meeting water quality standards. However, these problems are more localized than the widespread temperature and sediment issues. Dissolved oxygen shows up as a problem in the Umpqua, South Umpqua, Coos and Coquille watersheds, while pH is a concern in the Umpqua watersheds.

Bacteria are also of concern in the coastal ESUs, but primarily as a public health issue. The bacteria data represents species (e.g., fecal coliform) that are indicators of potential public health concerns but are not a known threat to salmonids. However, high bacteria levels can

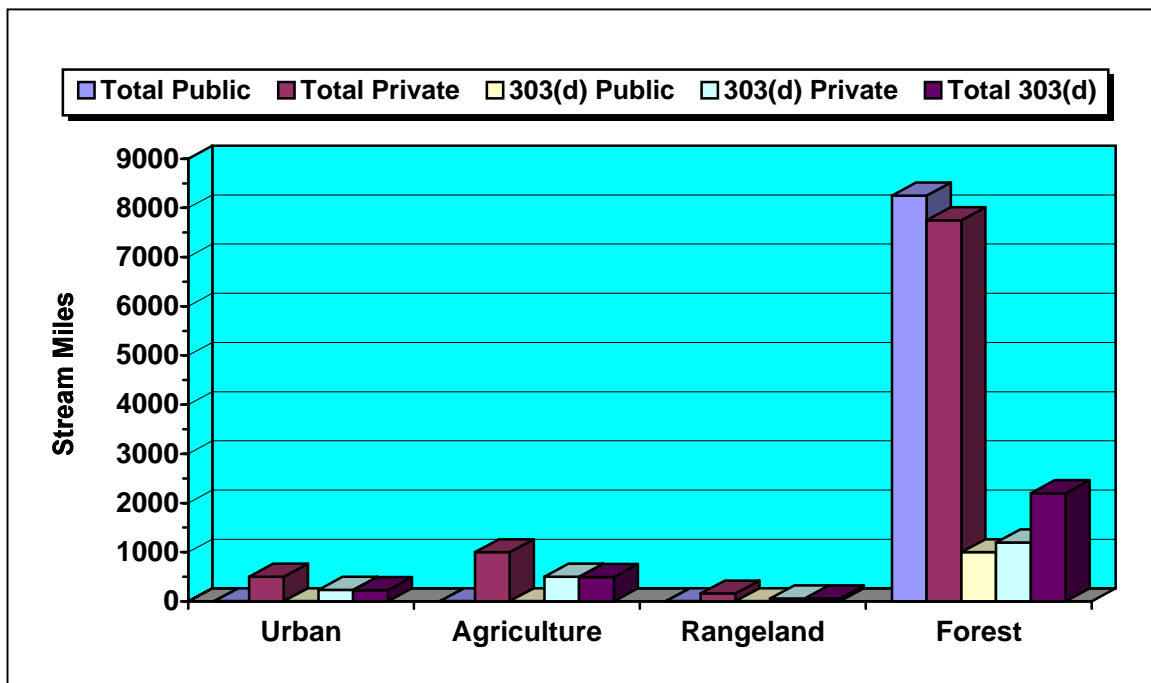


Figure 4-2: Land Use Adjacent to Streams in Klamath Mountains Province and Oregon Coast Steelhead ESUs

indicate problems, for example, with sewage treatment systems or runoff from confined animal feeding operations that may also include high levels of nutrients or oxygen demanding compounds. So, high bacteria levels should be investigated for indirect effects on salmonids, but meeting the bacteria water quality standard won't necessarily benefit salmonids.

Figure 4-2 is a summary of land use/land cover adjacent to streams in the coastal ESUs. Clearly the predominate streamside land uses are public and private forestlands representing approximately 91 percent of the total stream miles in the coastal ESUs. Table H-2 in Appendix H shows that 2,219 stream miles in forested areas are not meeting water quality standards representing approximately 76 percent of the water quality limited stream segments. (Note that only 34 percent of the total stream miles in the coastal ESUs have been assessed to date so the bars in Figure 4-2 labeled "303(d)" only relate to what is currently known about water quality conditions.) In addition, 511 stream miles in agricultural areas are water

quality limited. Agriculture land use is adjacent to approximately 7 percent of the total stream miles, and accounts for 17 percent of the water quality limited stream miles.

4.2.18 Southwest Washington And Lower Columbia River ESUs

Table H-3 in Appendix H is a summary of water quality information for each of the 6 fourth field hydrologic units in the Oregon portion of the combined Southwest Washington and Lower Columbia River ESUs. There are approximately 4,902 total stream miles in the combined ESUs. Of that number, approximately 1,628 stream miles (33%) have been assessed by DEQ using available water quality information. DEQ found 527 stream miles (32%) are water quality limited (not meeting standards), 1,320 stream miles (81%) need more data or are of potential concern, and 192 stream miles (12%) meet water quality standards in the combined ESUs.

Figure 4-3 displays the most significant water quality parameters based upon the data summaries presented in Table 4-5. Temperature is the parameter of greatest concern with 468 stream miles of 1,105 assessed (42%) not meeting water quality standards. Sediment is also of significant concern with 120 stream miles (13%) water quality limited and 794 stream miles of 914 assessed (87%) listed in the needs data or potential concern category. Other significant parameters include dissolved oxygen, pH, toxics, total dissolved gas, bacteria, and habitat and flow modification.

Dissolved oxygen problems are showing up primarily in the Youngs Bay and Clatskanie watersheds. Toxics are of most concern in the Lower Columbia and Lower Willamette rivers and tributaries. The Lower Columbia is water quality limited for pesticides (DDE, DDT) and PCBs (DEQ 1996). Additional toxics of concern in the Lower Columbia include: dioxin/furans, PCBs, pesticides, radionuclides, semi-volatiles, PAHs, and metals (Rosetta and Borys, 1996). In the Lower Willamette watershed, the Columbia Slough is water quality limited for pesticides (DDE, DDT), PCBs and 2,3, 7,8 TCDD in fish tissue and for water column lead (DEQ, July 1996). Total dissolved gas is primarily a concern in the Columbia River where abnormally high levels of dissolved atmospheric gases are being generated by voluntary and involuntary spill of excess water at Federal hydropower projects.

Habitat and flow modifications are identified as problems primarily in the Hood watershed. This watershed accounts for approximately 34 percent of the total stream miles in the Oregon portion of the combined Southwest Washington and Lower Columbia River ESUs.

Bacteria are also of concern in the Lower Columbia River ESUs, but primarily as a public health issue. The bacteria data represents species (e.g., fecal coliform) that are indicators of potential public health concerns, but are not a known threat to salmonids. However, high bacteria levels can indicate problems, for

example, with sewage treatment systems or runoff from confined animal feeding operations that may also include high levels of nutrients or oxygen demanding compounds. So, high bacteria levels should be investigated for indirect effects on salmonids, but meeting the bacteria water quality standard won't necessarily benefit salmonids.

Figure 4-4 is a summary of land use/land cover adjacent to streams in the Oregon portion of the Southwest Washington and Lower Columbia River ESUs. The predominate streamside land uses are public and private forestlands representing approximately 76 percent of the total stream miles. Table H-4 in Appendix H shows that 158 stream miles in forested areas are not meeting water quality standards representing approximately 51 percent of the water quality limited stream segments.

Most of the water quality limited waterbodies that are in forestland are contained in the Hood, Sandy and Clackamas watersheds (94%). (Note that only 33 percent of the total stream miles in the Lower Columbia River ESUs have been assessed to date so the bars in Figure 4-4 labeled "303(d)" only relate to what is currently known about water quality conditions.)

In addition, 87 stream miles in agriculture and rangeland areas are water quality limited. Agriculture and rangeland land use is adjacent to approximately 19 percent of the total stream miles. Approximately 59 percent of the water quality limited waterbodies that are adjacent to agricultural land use are contained in the Hood watershed. This watershed coincidentally also contains 59 percent of the agricultural lands in the Oregon portion of the combined Southwest Washington and Lower Columbia River ESUs.

Urban lands represent approximately 4 percent of the streamside land use, but account for 20 percent of the water quality limited streams. Not surprisingly most of the urban land use is in the Lower Willamette watershed, and it contains 90 percent of the water quality limited waterbodies that pass through urban areas in the ESU.

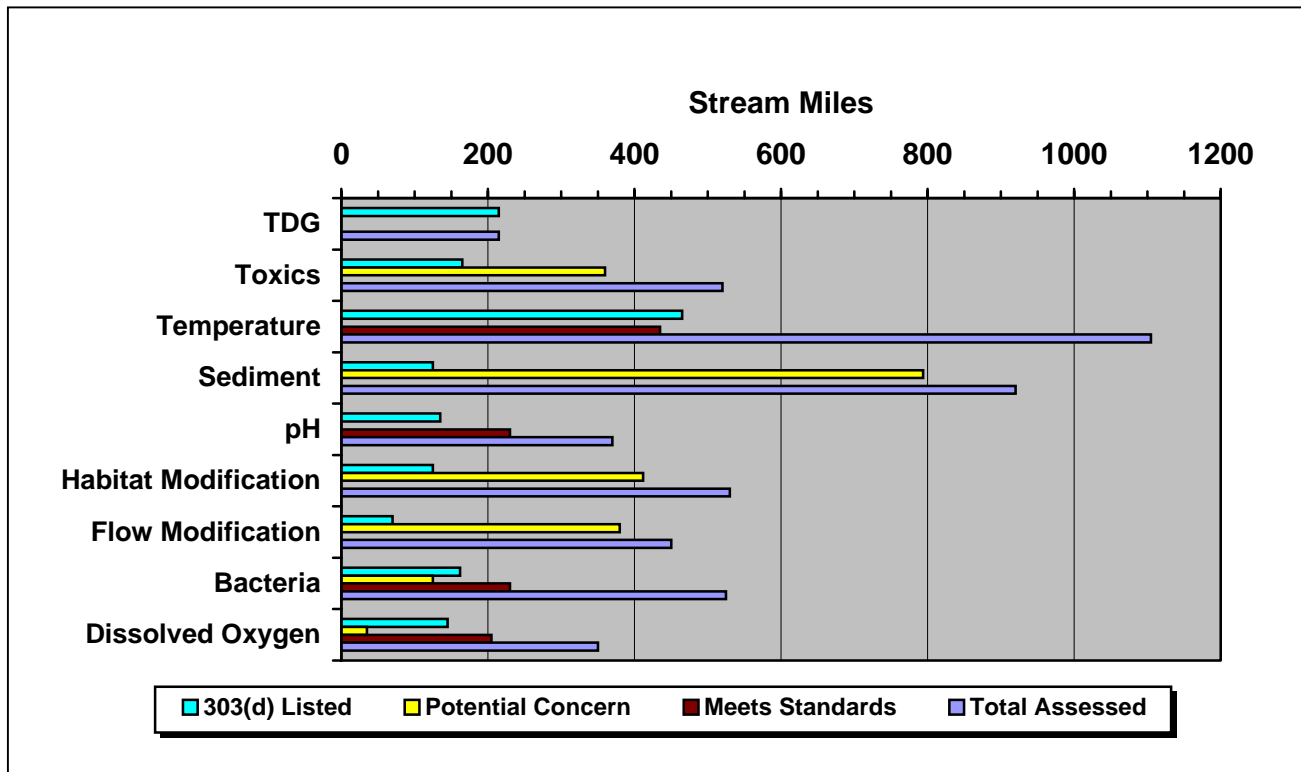


Figure 4-3: Significant Water Quality Parameters in Sw Washington and Lower Columbia River ESUs

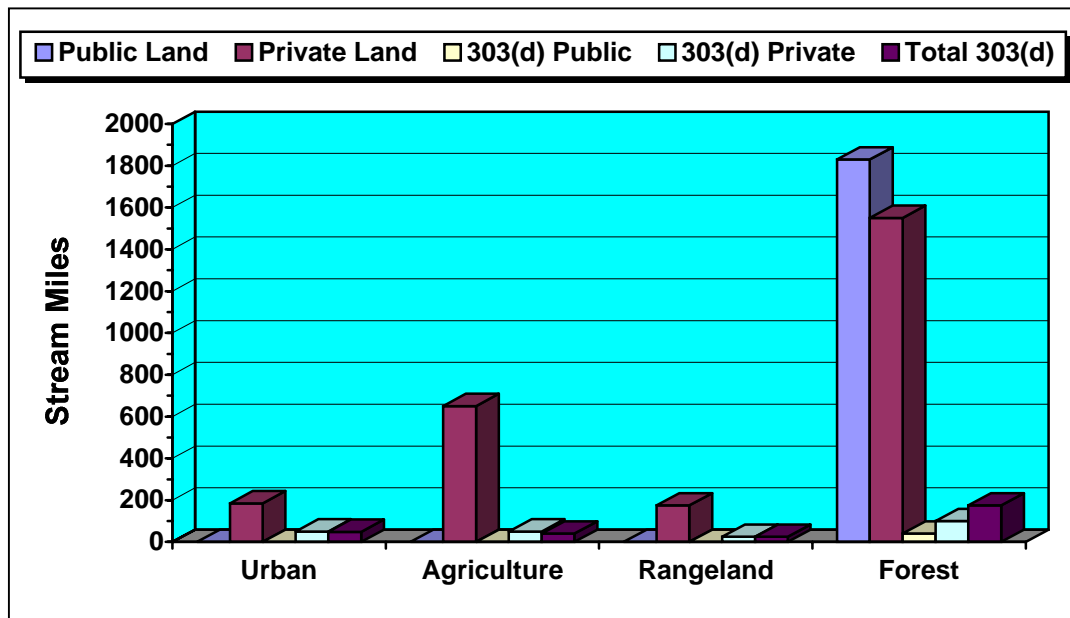


Figure 4-4: Land Use Adjacent to Streams in SW Washington and Lower Columbia River Steelhead ESUs

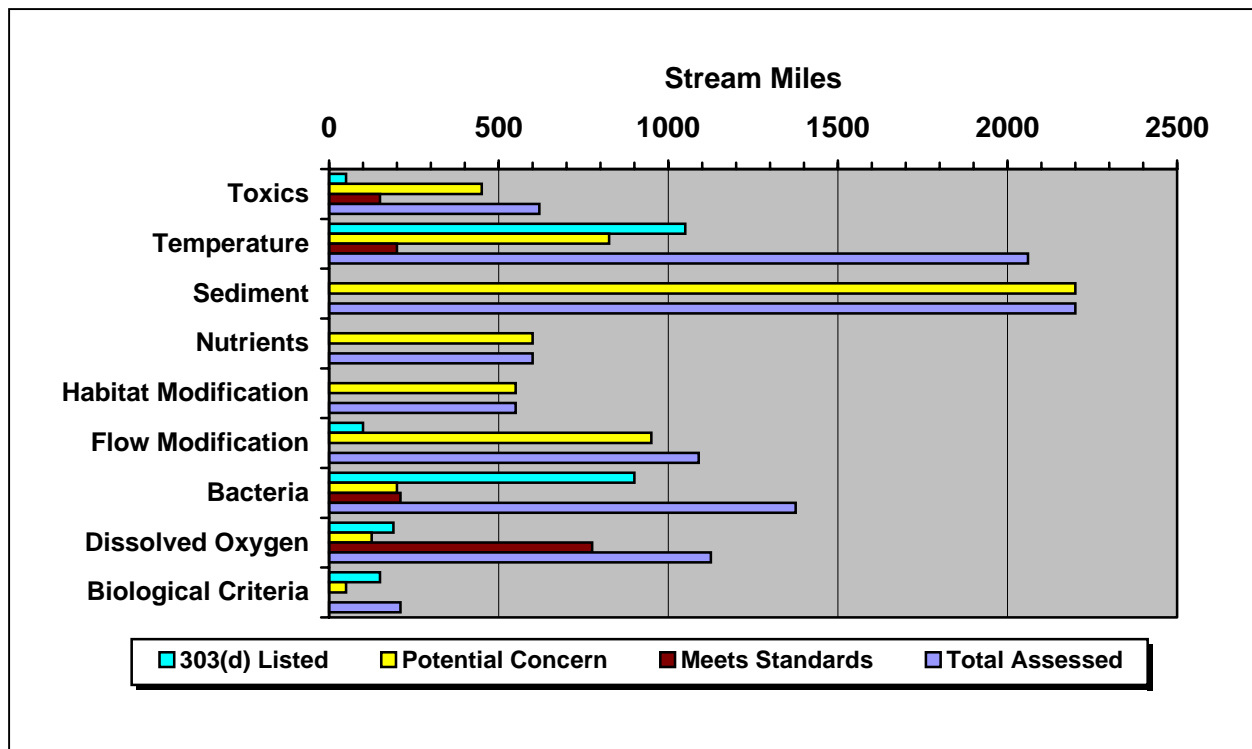


Figure 4-5: Significant Water Quality Parameters in Upper Willamette River Steelhead ESU

4.2.19 Upper Willamette River ESU

Table H-5 in Appendix H is a summary of water quality information for each of the 10 fourth field hydrologic units in the Upper Willamette River ESU. There are approximately 11,248 total stream miles in the ESU. Of that number, approximately 2,768 stream miles (25%) have been assessed by DEQ using available water quality information. DEQ found 1,300 stream miles (47%) are water quality limited (not meeting standards), 2,548 stream miles (92%) need data or are of potential concern, and 85 stream miles (3%) meet water quality standards in the ESU.

Figure 4-5 displays the most significant water quality parameters from the data summaries in Table 4-6. Temperature is the parameter of greatest concern with 1,038 stream miles of 2,071 assessed (50%) not meeting water quality standards. Sediment is also of significant

concern with 2,211 stream miles of 2,211 assessed (100%) designated as being of potential concern for water quality problems. Other significant parameters include dissolved oxygen, nutrients, toxics, biological criteria, bacteria, and habitat and flow modification.

There are 212 stream miles identified as water quality limited for dissolved oxygen and 138 of those (65%) are in the Tualatin watershed. Dissolved oxygen also appears to be a problem in the Upper Willamette and Yamhill watersheds. Biological criteria has been identified as a concern in the Upper Willamette, Middle Willamette, and Tualatin watersheds where 169 stream miles are water quality limited for this parameter.

There are 940 stream miles identified as of potential concern for flow modification, 563 miles for habitat modification, and 597 miles for nutrients. The streams identified seem to be

distributed fairly evenly throughout the 10 watersheds in the Upper Willamette ESU.

Toxics have been listed as a concern in the McKenzie, Middle Willamette, Yamhill, Molalla-Pudding, and Tualatin watersheds. Pesticides and metals are the toxics identified in these watersheds. Most of the stream miles identified as water quality limited for toxics (pesticides-DDT) appear in the Molalla-Pudding watershed (83%).

Bacteria are also of concern in the Upper Willamette River ESU, but primarily as a public health issue. The bacteria data represents species (e.g., fecal coliform) that are indicators of potential public health concerns but are not a known threat to salmonids. However, high bacteria levels can indicate problems, for example, with sewage treatment systems or runoff from confined animal feeding operations that may also include high levels of nutrients or oxygen demanding compounds. So, high bacteria levels should be investigated for indirect effects on salmonids, but meeting the bacteria water quality standard won't necessarily benefit salmonids.

Figure 4-6 is a summary of land use/land cover adjacent to streams in the Upper Willamette River ESU. Public and private forestlands are the major streamside land uses representing approximately 66 percent of the total stream miles. Table H-6 in Appendix H shows that 431 stream miles in forested areas are not meeting water quality standards representing approximately 36 percent of the water quality limited stream segments. (Note that only 25 percent of the total stream miles in the ESU have been assessed to date so the bars in Figure 4-6 labeled "303(d)" only relate to what is currently known about water quality conditions.) Agricultural land use accounts for approximately 30 percent of the streamside land use in the ESU. However, there are 633 stream miles in agricultural areas that are listed as water quality limited representing 52 percent of the total stream miles not meeting water quality standards. Most of the water quality limited waterbodies that are in agricultural areas are contained in the Upper Willamette, Middle Willamette, Yamhill, Molalla-Pudding, and Tualatin watersheds (89%).

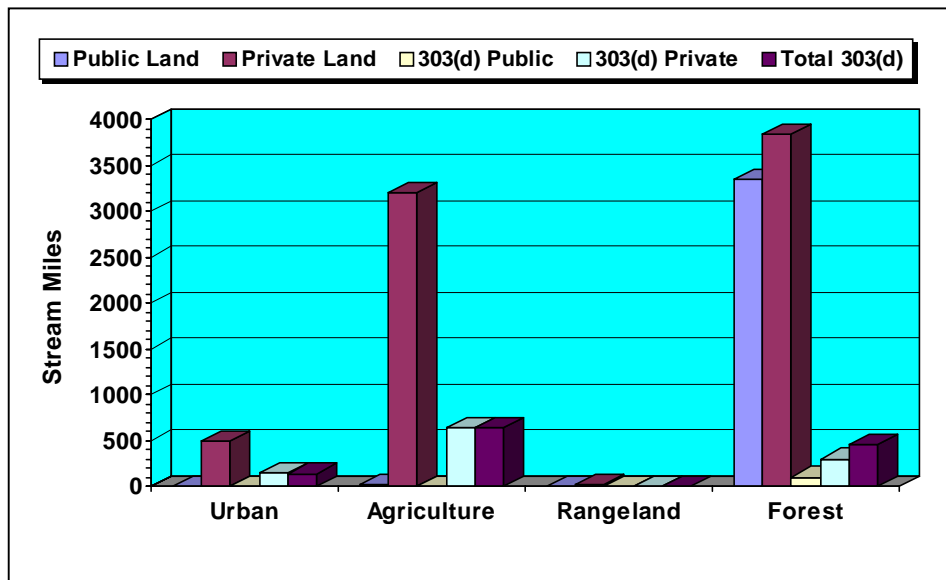


Figure 4-6: Land Use Adjacent to Streams in Upper Willamette River Steelhead ESUs

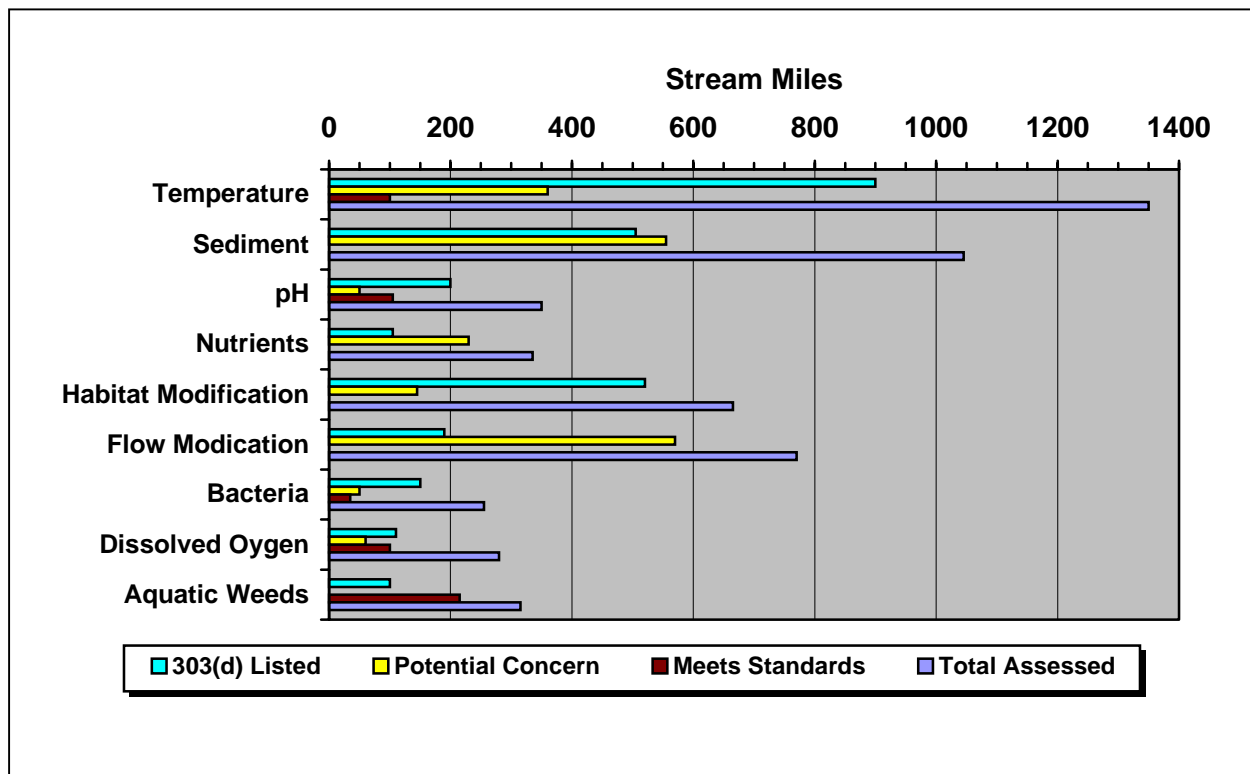


Figure 4-7: Significant Water Quality Parameters in Snake River Steelhead ESU

4.2.20 Snake River Basin ESU

Table H-7 in Appendix H is a summary of water quality information for each of the six, fourth field hydrologic units in the Oregon portion of the Snake River Basin ESU. There are approximately 5,565 total stream miles in the ESU. Of that number, approximately 1,404 stream miles (25%) have been assessed by DEQ using available water quality information. DEQ found 977 stream miles (70%) are water quality limited (not meeting standards), 1,066 stream miles (76%) need data or are of potential concern, and 60 stream miles (4%) meet water quality standards in the ESU.

Figure 4-7 displays the most significant water quality parameters from the data presented in Table H-7 in Appendix H. Temperature is the parameter of greatest concern with 888 stream miles of 1,339 assessed (66%) not meeting water quality standards. Sediment is also of significant concern with 485 stream miles (47%)

listed as water quality limited and 552 stream miles (53%) designated as being of potential concern for water quality problems. Habitat modification is also of significant concern with 509 stream miles (78%) listed as water quality limited and 143 miles designated as being of potential concern. Other parameters of concern include dissolved oxygen, nutrients, pH, aquatic weeds, bacteria, and flow modification.

Aquatic weeds, dissolved oxygen, nutrients and pH are primarily of concern in the Upper Grande Ronde watershed. The aquatic weeds issue results from high levels of Periphyton found in Catherine Creek, the Grande Ronde River and the State Ditch during summer months. High levels of phosphorus are also found in these three waterbodies during the summer months.

Bacteria are also of concern in the Snake River Basin ESU, but primarily as a public health issue. The bacteria data represents species (e.g., fecal coliform) that are indicators of potential

public health concerns but are not a known threat to salmonids. However, high bacteria levels can indicate problems, for example, with sewage treatment systems or runoff from confined animal feeding operations that may also include high levels of nutrients or oxygen demanding compounds. So, high bacteria levels should be investigated for indirect effects on salmonids, but meeting the bacteria water quality standard will not be necessarily benefit salmonids.

Figure 4-8 is a summary of land use/land cover adjacent to streams in the Snake River Basin ESU. Public and private forestlands are the major streamside land uses representing approximately 69 percent of the total stream miles. Table H-8 in Appendix H shows that 542 stream miles in forested areas do not meet water quality standards representing approximately 61 percent of the water quality limited stream segments. (Note that only 25 percent of the total stream miles in the ESU have been assessed to date so the bars in Figure H-8 labeled "303(d)" only relate to what is currently known about water quality conditions.)

Agriculture and rangeland account for

approximately 30 percent of the streamside land use in the ESU. Rangeland represents approximately 20 percent of the streamside land use in the ESU and accounts for approximately 20 percent of the water quality limited waterbodies. Together, there are 332 stream miles in agricultural and rangeland areas that are listed as water quality limited representing 37 percent of the total stream miles not meeting water quality standards. Most of the water quality limited waterbodies that are in rangeland areas are contained in the Imnaha, Upper Grande Ronde, and Lower Grande Ronde watersheds (97%).

Figure 4-9 shows the percentage of stream miles assessed in Coastal (Klamath Mountains Province and Oregon Coast), Lower Columbia (SW Washington and Lower Columbia River), Upper Willamette River and Snake River Basin ESUs that meet State water quality standards for temperature, dissolved oxygen and pH. The assessment was made by DEQ in preparation of the 1994/96 *303(d) List* and represents all water quality data that was readily available to DEQ. These numbers are useful in estimating the current status of water quality in biological Objective 2 for temperature, dissolved oxygen, and pH.

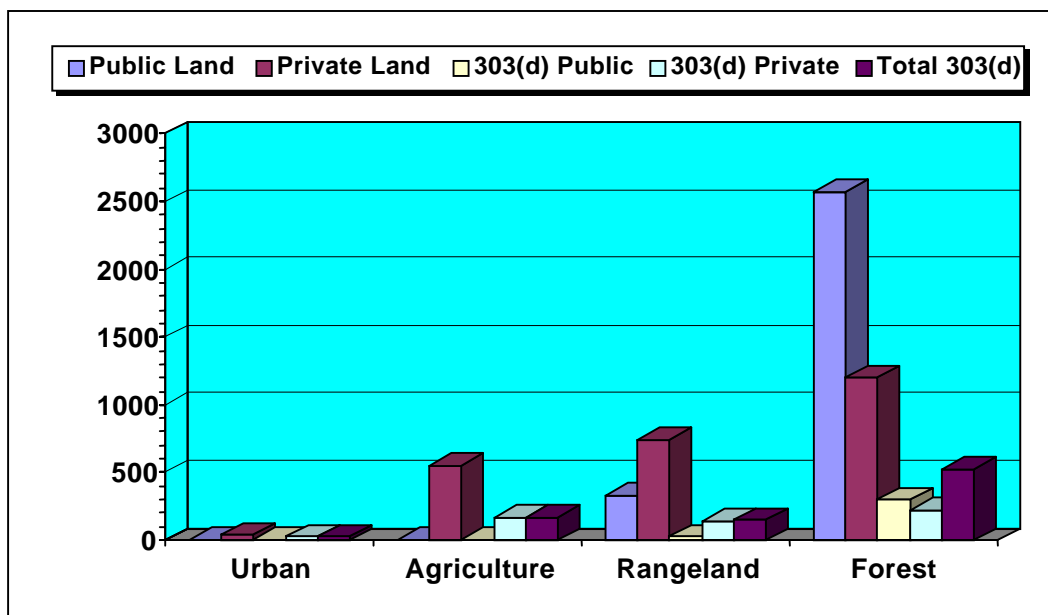


Figure 4-8: Land Use Adjacent to Streams in Upper Snake River Steelhead ESU

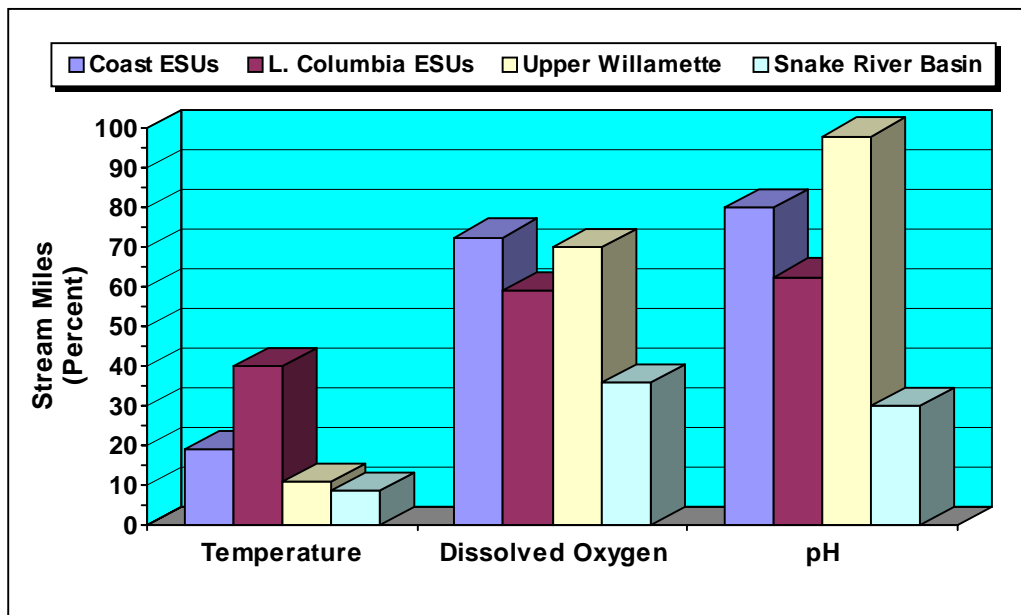


Figure 4-9: Percent of Stream Miles Assessed that Meet Water Quality Standards for Temperature, Dissolved Oxygen, and pH

4.2.21 Oregon Groundwater Quality Protection Act

One of the requirements of the Groundwater Quality Protection Act is to conduct an ongoing statewide groundwater monitoring and assessment program to identify and characterize the quality of Oregon's groundwater resources. Specific requirements are to evaluate areas of the State that are especially vulnerable to contamination; identify long-term trends in groundwater quality; evaluate the ambient quality of groundwater resource; and identify any emerging groundwater quality problems.

The State has utilized two primary methods to conduct these assessments. One method used is to evaluate individual residential drinking wells. This effort is overseen by the Oregon Health Division (OHD), and includes mandatory real estate transaction testing and volunteer nitrate testing. Testing is only for nitrate-nitrite as nitrogen (nitrate), which is the most prevalent groundwater contaminant and considered an indicator contaminant. The second method of assessment is a more thorough groundwater

investigation, done by DEQ, and includes a brief hydrogeological and land use evaluation, careful well screening, and quality-controlled sampling and analysis.

Using both DEQ and OHD data to date, however, only 30.8% of the area in Oregon where groundwater is used has been assessed. This represents approximately 6.4% of the total land area of the state. Groundwater quality in 93.6% of the State is unknown and groundwater quality in 69.2% of the State where groundwater uses are recorded is unknown.

Groundwater assessments conducted by DEQ Water Quality Monitoring are one of three kinds; ambient groundwater assessment; Groundwater Management Area (GWMA) characterization study, or long term trending network. Table 4-7 provides a summary of groundwater assessments, contaminants found, and the levels of impairment.

Ambient groundwater assessments are one-time assessments of geographic regions where vulnerability to groundwater contamination

exists from land use practices and/or nonpoint source activities. These assessments generally cover an area of from 50 to 400 square miles and involve sampling from 20 to 80 wells for an extensive suite of inorganic and organic constituents. Pesticide scans for pesticides used in the area are included.

The Department has conducted 45 regional groundwater studies since 1985. As a result of those studies, two areas have been declared Groundwater Management Areas under the Groundwater Quality Act, Malheur and the lower Umatilla Basin. Some evidence of groundwater contamination has been detected in 26 of the 45 areas studied. The most common contaminant is nitrate, followed by: pesticides, volatile organic compounds, and bacteria. Many areas have a high percentage of the wells exceeding the drinking water standard for nitrates. Recent studies have been conducted in the Milton-Freewater area. Future studies are planned for the Upper Willamette Valley where extensive contamination by nitrates has been found.

4.2.22 Malheur County And Lower Umatilla Basin Groundwater Management Areas

The Northern Malheur County GWMA was declared in 1989 after groundwater contamination was identified in an 115,000-acre area in the northeastern portion of the County where land use is dominated by agriculture. Groundwater samples from private water wells identified nitrate contamination and the presence of the pesticide Dacthal. Traditional fertilizer and agricultural chemical application practices are believed to be the main source of the contamination.

Sampling confirmed that most of the contaminated groundwater is present in the shallow alluvial sand and gravel aquifer which receives a large proportion of its recharge from canal leakage and irrigation water. Therefore, the shallow aquifer is the focus of the Northern

Malheur County Groundwater Management Action Plan.

The Northern Malheur County Groundwater Management Committee, the Technical Advisory Subcommittee, and representatives from the Oregon Department of Environmental Quality (ODEQ), the Oregon Department of Agriculture (ODA), the Oregon Water Resources Department (OWRD), the Oregon Health Division (OHD), and Oregon State University (OSU) conducted an 18-month cooperative effort with the approval of a work plan aimed at reducing the County's groundwater contamination.

The Action Plan (dated December 1991) includes detailed information on water quality, identification of contaminant sources, and recommendations for implementation of Best Management Practices (BMPs) to improve groundwater quality. This approach will allow farmers to customize a sequence or system of available BMPs to their individual farm operation conditions. The Committee chose to implement the Action Plan on a voluntary basis recognizing that individuals, businesses, organizations, and governments will, if given adequate information and encouragement, take positive actions and adopt or modify practices and activities to reduce contaminant loading to groundwater.

The Lower Umatilla Basin Groundwater Management Area was declared in 1990 after nitrate contamination was identified in a 352,000-acre area in the northern portions of Umatilla and Morrow Counties. Groundwater samples from private wells identified nitrate contamination above the Federal safe drinking water standard in many samples collected from the area. A four-year comprehensive study of the area was conducted in the early 1990s by ODEQ, OWRD, and OHD. The 1995 report titled "Hydrogeology, Groundwater Chemistry, and Land Use in the Lower Umatilla Basin Groundwater Management Area" identified five potential sources of nitrate loading to groundwater:

- Confined Animal Feeding Operations,

- Irrigated Agriculture,
- Land Application of Food Processing Water,
- Septic Systems (rural residential areas), and
- The Umatilla Chemical Depot Washout Lagoons.

The Lower Umatilla Basin Groundwater Management Area Action Plan was finalized in December 1997. The Action Plan details the activities to be conducted by the various agencies and organizations involved. The Umatilla and Morrow County Soil and Water Conservation Districts are the local agencies leading implementation of the Action Plan. The Action Plan recommends general activities and specific tasks to be conducted by involved agencies and groups representing the five sources of nitrate loading. The Action Plan identifies methods and a schedule for evaluation of the Action Plan progress. Like the Northern Malheur County Groundwater Management Action Plan, the Lower Umatilla Basin Groundwater Management Area Action Plan is also voluntary.

Long-term trending networks of 40 wells each are maintained in the Lower Umatilla and Malheur County Groundwater Management areas. Wells are sampled six times per year for nitrates and pesticides. Trending analysis of the data is conducted using a Seasonal Kendall Test to determine long term trends and the effectiveness of the GWMA management plan. Progress is being made at land surface, but it may take years or even decades for groundwater quality to return to natural background levels.

4.2.23 Upper Willamette Groundwater Characterization Study

Due to budget reductions, limited groundwater staffing levels has made full implementation of the Groundwater Protection Act infeasible. Therefore the Groundwater Program is focusing existing staff resources on targeted areas where available data has documented significant groundwater problems. The Upper Willamette Basin is proposed as the next priority area for

addressing non-point source groundwater quality problems for two primary reasons:

1. Severity and extent of groundwater contamination, and
2. Integration of groundwater protection strategies with other ongoing water quality improvement efforts in the Willamette Valley.

The Department has compiled information that documents severe groundwater contamination from nitrates and other pollutants in the N. Eugene to Albany corridor. These pollutants are known to exist in quantities and concentrations that exceed safe exposure levels, thus posing threats to public health especially for rural residents using private wells for drinking water. Within the North Eugene to Albany area over 40% of >200 domestic wells sampled contain concentrations of nitrate exceeding the Federal drinking water standard of 10 mg/l.

Implementation of a Groundwater Management Area project in the Upper Willamette fits well into *The Oregon Plan* and the Department's overall watershed protection strategy. Recommendations made by the Governor's Willamette River Basin Task Force include implementation of the Groundwater Protection Act and designation of critical groundwater management areas where contaminants exceed warning levels. The task force recognized the interconnectivity of surface water and groundwater and calls for the protection and management of these resources for beneficial uses. The timeframe for establishment of TMDLs in the Willamette Basin has been accelerated to 2003. The ODA is in the process of developing Water Quality Management Plan under SB1010 for the Willamette Basin. DEQ and OHD are currently conducting Source Water Assessments for public water systems in the Willamette Basin as required by the Federal Safe Drinking Water Act. Both Junction City and the City of Coburg are within the Upper Willamette area of concern and are in the process of developing Drinking Water Protection Plans within delineated areas. Groundwater protection strategies developed under the GWMA

designation will be coordinated with these efforts.

Groundwater is a principal source of drinking water and irrigation via private and public wells for a large number of residents in the Upper Willamette Valley. This area is already very populated, and estimates are that it will be one

of the fastest growing parts of the state. Demands on groundwater will rise with the increases in population. Left unchecked, groundwater contamination will increase as the population rises. Local governments, residents, and stakeholders are aware of the groundwater quality concerns, and are ready to move toward resolving problems in this area.

Table 4-7: Groundwater Quality Assessment Projects

Summary as of January 2000

Basin	Project Name	No. of Sample Events	No. of Wells Sampled	Degree of Use Supported	Contaminants Of Concern	Contaminants Found	Suspected Contaminant Sources	Date Last Monitored
Deschutes	Bend	1	8	S	Nitrates, Pesticides	None	-	1990
Deschutes	LaPine	6	65	NS	Nitrates	Nitrates	Septic	1982
Deschutes	LaPine	2	103	NS	Nitrates	Nitrates	Septic	1995
Deschutes	Mosier	4	12	S	General	None	-	1987
Deschutes	Prineville	1	11	S	Nitrates, Pesticides	Benzene	Underground Storage Tanks	1990
Deschutes	Prineville	1	20	NS	Nitrates	Nitrates	Septics/Agriculture	1993
Deschutes	Rufus	2	4	NS	Nitrates, Pesticides, Organic Comp.	Nitrates	Municipal, Agriculture	1996
Grande	City of Imbler	2	24	NS	Nitrates, Pesticides	Nitrates	Agriculture, Septic	1986
Grande	Upper Grande Ronde	1	36	S	Nitrates, Other	Nitrates, VOC	Varied	1993
Hood	Hood River	1	11	S	Nitrates, Pesticides, Organic Comp.	Nitrates	Septic	1995
Klamath	Klamath Falls	3	50	PS	Nitrates, Pesticides	Nitrates, Ammonia	Natural, Agriculture, Septic	1990
Malheur	Northern Malheur County GMA	Ongoing	213	NS	Nitrates, Pesticides	See footnote 1 below	Agriculture	1999
Malheur Lake	Burns/Hines	1	17	S	Nitrates, Pesticides, Organic Comp.	None	-	1994
Multnomah	Mid-Multnomah	107	25	PS	Nitrates	Nitrates, VOCs	Septic, Urban, Industrial	1995
Multnomah	Sauvie Island	1	3	T	Nitrates, pesticides	Nitrates	Not Confirmed	1985
North Coast	Clatsop Plains	10	83	PS	Bacteria, VOCs, Nitrates	Nitrates	Septic/Municipal	1998
North Coast	Tillamook	2	25	S	Nitrates, Bacteria, VOCs, Inorganics	Nitrates, VOCs	Septic, CAFO, Industrial	1998
Powder	Haines	2	14	T	Picloram	Picloram	County Highway Maintenance	1989
Rogue	Grants Pass	12	53	S	General	VOCs	-	1994
Rogue	Jackson County	1	30	-	Inorganic, Organic, Pesticides	None	-	1992
Rogue	North Bear Creek Valley	1	19	PS	Nitrates, Pesticides, Organic Comp.	Nitrates, Pesticide, VOCs	Septic, Agriculture	1995
South Coast	Harbor Bench	3	15	PS	Nitrates, Aldicarb, DCP	1,2 DCP, Aldicarb, Nitrates	Agriculture	1991
Statewide	Health Div. Public Water Supply Survey	1	70	PS	Nitrates, pesticides, Organics	Nitrates, DCPA, PCP, EDB	Various	1987
Statewide	Health Div. Real Estate Transaction	Ongoing	8,920	PS	Nitrates, Bacteria	Nitrates, Bacteria	Various	1993

Table 4-7: Groundwater Quality Assessment Projects (continued)

Basin	Project Name	No. of Sample Events	No. of Wells Sampled	Degree of Use Supported	Contaminants Of Concern	Contaminants Found	Suspected Contaminant Sources	Date Last Monitored
Statewide	National Pesticide Survey (OR)	1	7	S	Nitrates, Pesticides, Organics	None	-	1989
Statewide	Voluntary Nitrate Testing	28	1,641	ST	Nitrates	Nitrates	Varied; Unknown	1993
Umatilla	Lower Umatilla Basin GMA	Ongoing	198	PS	Nitrates, Pesticides	Nitrates, EDB, Atrazine, Dacthal, Dicamba, Picloram	Agriculture, Industry	2000
Umatilla	Milton-Freewater	2	40, 30	NS	Bacteria, Nitrates, Pesticides	Bacteria	Septic, Agriculture	1999
Willamette	Boring	14	25	PS	General	VOC	Agriculture	1990
Willamette	Canby	2	21	PS	Nitrates, Pesticides	Nitrates, Dacthal	Agriculture, Septic	1993
Willamette	Coburg	4	28	T	Nitrates, Pesticides	Nitrates	Agriculture	1994
Willamette	Dever-Conner Albany	1	3	T	Nitrates, Pesticides	Nitrates	Not Confirmed	1984
Willamette	Farmington/Hillsboro	3	15	PS	Nitrates, Pesticides	EDB	Agriculture	1986
Willamette	Florence-Clear Lake Aquifer	12	24	S	Nitrates, Phosphorus	None	-	1981
Willamette	French Prairie	1	9	S	Nitrates	None	-	1985
Willamette	Jefferson	1	5	PS	Nitrates, pesticides	Bromocil, Dinoseb	Agriculture	1985
Willamette	Junction City	2	20	NS	Nitrates, Pesticides	Nitrates, VOC	Agriculture, Septic; Unknown	1993
Willamette	Lake Labish	1	3	T	Nitrates, Pesticides	Nitrates	Not Confirmed	1985
Willamette	Lebanon-Albany	1	19	S	Nitrates, Pesticides	Nitrates	Unknown	1993
Willamette	Milwaukie	2	34	PS	Volatile Organics	VOCs	Industry and Commerce	1989
Willamette	Mission Bottom	7	90	NS	Heavy Metals, Nitrates, pesticides	Nitrates, EDB	Agriculture, Municipal, Septic	1986
Willamette	North Albany Groundwater	14	33	ST	Nitrates, VOC, Bacteria	VOCs, Nitrates	Unknown; Septic	1996
Willamette	Santa Clara/River Road	12	26	NS	Nitrates, Bacteria	Nitrates, Bacteria	Septic	1980
Willamette	Scio Groundwater Study	3	14	NS	Bacteria	Bacteria	Septic, Livestock	1988
Willamette	Woodburn	2	21	S	Nitrates	Nitrates, 2,4 Tetra-chloroethylene	Unknown	1993

Notes:

1. Nitrates, Dacthal, Solid Phase Extraction Pesticides: 2,6-Diethylaniline, methyl Parathion, Dimethoate, DDE, Eptam, Metolachlor, Pendimethalin, Trifluralin, Alachlor, Atrazine, desethyl Atrazine, Propargite, Simazine, Prometon, Metribuzin
2. "S" = Supported (< 10% of wells had a contaminant level over the drinking water standard)
3. "ST" = Supported but threatened (25% or more of wells had nitrate levels of 5 mg/L or more, but < 10mg/L, and any well had an organic compound detected)
4. "PS" = Partially Supported (10% - 25% of wells had a contaminant level over the drinking water standard)
5. "NS" = Not Supported (> than 25% of wells had a contaminant level over the drinking water standard)
6. "GWMA" column = Groundwater Management Area

4.3 POLLUTION SOURCES

The DEQ's 305(b) *Water Quality Summary Report*, Table 4-8, Table 4-9, and Table 4-10 lists the number of impaired stream miles adjacent to various land use categories. Unfortunately, DEQ doesn't have adequate data available to determine the extent of impairment caused by point sources. However, it is believed that nonpoint sources are the most significant sources of water quality impairment in Oregon at this time. Silviculture and agriculture account for the largest portion of uses adjacent to

impaired streams and rivers that may account for associated water quality impairment with urban runoff accounting for some impacts in urbanized areas.

Table 4-11 provides information on the major sources of ground water contamination in Oregon, and identifies the 16 Highest Priority Sources and types of contamination. Identification of the Highest Priority Sources was based upon available data and best professional judgment.

Table 4-8: Total Sizes of Waters Impaired by Various Source Categories: Rivers and Streams (miles)

Source Category		Associated Land Use
Industrial Point Sources		—
Municipal Point Sources		—
Combined Sewer Overflows		—
Collection System Failure		—
Domestic Wastewater Lagoon		—
Agriculture	Crop-Related Sources	2,577
	Grazing-Related Sources	2,028
	Intensive Animal Feeding Operations	—
Silviculture		7,707
Construction		—
Urban Runoff / Storm Sewers		505
Resource Extraction		—
Land Disposal		—
Hydromodification		1,624
Habitat Modification (non-hydro)		2,103
Marinas and Recreational Boating		—
Erosion From Derelict Land		—
Atmospheric Deposition		0
Waste Storage / Storage Tank Leaks		—
Leaking Underground Storage Tanks		—
Highway Maintenance and Runoff		—
Spills (accidental)		—
Contaminated Sediments		—
Debris and Bottom Deposits		—
Internal Nutrient Cycling (lakes)		*
Sediment Resuspension		—
Natural Sources		—
Recreational and Tourism Activities		—
Salt Storage Sites		*
Groundwater Loadings		—
Groundwater Withdrawal		—
Unknown Source		—
Source Outside State Jurisdiction / Borders		—
Legend: (*) = Category not applicable, (—) = Category applicable, no data available		

Table 4-9: Total Sizes of Waters Impaired by Various Source Categories: Lakes (acres)

Source Category	Contribution to Impairment	
	Major	Moderate/ Minor
Industrial Point Sources	–	0
Municipal Point Sources	–	0
Combined Sewer Overflows	–	0
Collection System Failure	–	–
Domestic Wastewater Lagoon	–	0
Agriculture:	–	98,145
Crop-Related Sources	–	–
Grazing-Related Sources	–	–
Intensive Animal Feeding Operations	–	–
Silviculture	–	2,755
Construction	–	–
Urban Runoff / Storm Sewers	–	10,866
Resource Extraction	–	895
Land Disposal	–	–
Hydromodification	–	–
Habitat Modification (non-hydro)	–	–
Marinas and Recreational Boating	–	–
Erosion From Derelict Land	–	–
Atmospheric Deposition	–	0
Waste Storage / Storage Tank Leaks	–	–
Leaking Underground Storage Tanks	–	–
Highway Maintenance and Runoff	–	–
Spills (accidental)	–	–
Contaminated Sediments	–	–
Debris and Bottom Deposits	–	–
Internal Nutrient Cycling (lakes)	–	–
Sediment Resuspension	–	–
Natural Sources	–	111,231
Recreational and Tourism Activities	–	–
Salt Storage Sites	–	–
Groundwater Loadings	–	–
Groundwater Withdrawal	–	–
Other — Septic Tanks	–	13,129
Unknown Source	–	–
Source Outside State Jurisdiction / Borders	–	–
Legend: (–) = Category applicable; no data available.		

Table 4-10: Total Sizes of Waters Impaired by Various Source Categories (Estuaries)

Source Category	Contribution to Impairment	
	Major	Moderate/ Minor
Industrial Point Sources	–	41.7
Municipal Point Sources	–	57.2
Combined Sewer Overflows	–	–
Collection System Failure	–	49.5
Domestic Wastewater Lagoon	–	–
Agriculture:	–	56.2
Crop-Related Sources	–	–
Grazing-Related Sources	–	–
Intensive Animal Feeding Operations	–	14.1
Silviculture	–	–
Construction	–	–
Urban Runoff / Storm Sewers	–	31.0
Resource Extraction	–	–
Land Disposal	–	–
Hydromodification	–	–
Habitat Modification (non-hydro)	–	–
Marinas and Recreational Boating	–	–
Erosion From Derelict Land	–	–
Atmospheric Deposition	–	–
Waste Storage / Storage Tank Leaks	–	–
Leaking Underground Storage Tanks	–	–
Highway Maintenance and Runoff	–	–
Spills (accidental)	–	–
Contaminated Sediments	–	–
Debris and Bottom Deposits	–	–
Internal Nutrient Cycling (lakes)	–	–
Sediment Resuspension	–	–
Natural Sources	–	–
Recreational and Tourism Activities	–	–
Salt Storage Sites	–	–
Groundwater Loadings	–	–
Groundwater Withdrawal	–	–
Unknown Source	–	–
Source Outside State Jurisdiction / Borders	–	–
Legend: (–) = Category applicable; no data available.		

Table 4-11: Major Sources of Groundwater Contamination

Contaminant Source	Highest Priority Sources (✓)	Factors Considered in Selecting A Contaminant Source	Contaminants
Agricultural Activities			
Agricultural Chemical Facilities	✓	1,3,4,8	A,B
Animal Feedlots	✓	1,3,4,6,7,8	E,J,L,M
Drainage Wells	✓		
Fertilizer Applications	✓	1,3,4,8	A,B
Irrigation Practices	✓		
Pesticide Applications	✓	1,3,4,8	A,B
On-Farm Agricultural Mixing and Loading	–		
Land Application of Manure (unregulated)	–		
Storage & Treatment Activities			
Land Application (regulated)	–		
Material Stockpiles	–		
Above Ground Storage Tanks	✓	1,2,3,4,8	D,H,M
Underground Storage Tanks	✓	4,8,1,3,2	D,H (Lead), M (MTBE)
Surface Impoundments	–		
Waste Piles	–		
Waste Tailings	–		
Disposal Activities			
Deep Injection Wells	NA		
Landfills (HW + SW)	✓	1,3,4,8	A,B,C,H,M
Septic Systems	✓	6,3,1,2,4,5	A,B,C,D,E,J,K,G,I (Organics)
Shallow Injection Wells	✓	6,3,1,5,8	A,B,E,J,K,L
Other			
Hazardous Waste Generators	✓	1,3,4,8	C,H,A,B,I (Organics)
Hazardous Waste Sites	✓	1,3,4,8	C,H,A,B,I (Organics)
Large Industrial Facilities	✓	1,3,4,8	C,H,A,B,I (Organics)
Material Transfer Operations	NA		
Mining and Mine Drainage	NA		
Pipelines and Sewer Lines	NA		
Salt Storage and Road Salting	NA		
Salt Water Intrusion	NA		
Spills	✓	1,3,5,8	C,D
Transportation of Materials	–		
Urban Runoff	✓	6,7,4,5,1,3,8	A,B,C,D,E,J,K,G,I (Organics)
Small-Scale Manufacturing / Repair Shops	✓	1,3,4,8	C,D,H
Other Sources	✓ (UST)	4,8,1,3,2	D
Legend: (–) = Category applicable; no data available. NA = Not Available or Not Applicable. UST = Underground Storage Tanks.			
Factors considered in selecting contaminant sources: Human health and/or environmental risk (toxicity). Size of the population at risk. Location of the sources relative to drinking water sources. Number and/or size of contaminant sources. Hydrogeologic setting. State findings; other findings. Documented from mandatory reporting. Geographic distribution / occurrence. Other criteria.		Contaminants: A. Inorganic pesticides. B. Organic pesticides. C. Halogenated solvents. D. Petroleum compounds. E. Nitrate. F. Fluoride. G. Salinity / brine. H. Metals. I. Radionuclides. J. Bacteria. K. Protozoa. L. Viruses. M. Other.	

5. MANAGEMENT MEASURES

5.1 INTRODUCTION

This chapter describes the management measures that are being or will be utilized to achieve the goals and objectives of this NPS Management Program.

It is expressly intended that all *The Oregon Plan* measures listed here, as well as additional measures that may be added in the future and those measures contained in the related mandates of Oregon Plan partner agencies, be eligible for funding through Section 319(h) or Oregon's State Revolving Fund (SRF) Loan programs.

Section 5.2 lists the measures as they apply to each Oregon Plan objective. This listing identifies the management measure by the agency involved, by *The Oregon Plan* objective number (where applicable), and by the name or title. This listing does not convey detail about the activities involved with the measures nor about the specific outcomes intended, but does serve as a quick reference to the broad array of measures being brought to bear on NPS control.

Sections 5.3 and **5.4** describe each management measure more fully. In this sections the measures carry the same names as in the previous **Section 5.2** but are grouped by agency rather than by objective. Many of the measures address more than one objective. A particular measure may thus be listed several times in different parts of **Section 5.2** but is described in greater detail only once in **Sections 5.3** and **5.4**.

Still more detail on the tasks, time lines, and products associated with each management

measure may be found in *The Oregon Plan* Agency Workplans available on *The Oregon Plan* Internet site at: www.oregon-plan.org/toc.html.

Much of the language in this chapter is excerpted directly from Chapter 14 of the Steelhead Supplement, the most recent expression of *The Oregon Plan* and its objectives. A number of the objectives describe work that was to be done or started prior to preparation of this NPS Program Plan update (e.g., in 1998 or 1999). In most cases, these older objectives were begun on time by the responsible parties. In some cases, the objective describes work that has been completed, and in other cases describes work that is essentially ongoing—that is, which may have begun in 1998 (for example) but is still continuing today. This language has been left in its original form in order to give the clearest possible indication of *The Oregon Plan's* goals, objectives, and schedules. Also, the updating of this language would have essentially entailed the updating of the whole Oregon Plan, a process beyond the scope of this NPS Program Plan.

Sections 5.2, 5.3, and 5.4 focus on Oregon Plan objectives and measures. *The Oregon Plan* is oriented toward salmonid habitat. While this orientation results in a program that broadly addresses watershed issues, the language of the objectives and measures does tend to emphasize streams and fish. However, other sections at the end of this chapter address other waterbody types and beneficial uses in order to definitively include these other waters and uses in Oregon's NPS program.

5.2 IDENTIFICATION OF MEASURES TO ACHIEVE BIOLOGICAL OBJECTIVES

The management measures identified by State and Federal agencies to achieve the biological objectives listed under each of the factors for decline are referenced below for each objective.

5.2.1 Objective 1—Prevent Degradation Of High Quality Waters

The first objective listed under each of the eight factors for decline is designed to ensure the high quality waters used by steelhead salmon are protected from degradation. The first principle of aquatic conservation planning is to protect the remaining healthy stocks and their habitat to ensure species survival while you go about the business of restoring impaired habitat. Therefore, the first objective of water quality in this plan is to protect the high quality waters utilized by steelhead in Oregon.

◆ *Oregon Department of Agriculture (ODA):*

- ODA1: Implementation of SB1010 Program (all factors except total dissolved gas).
- ODA2: Implementation of CAFO Program (all factors except temperature and total dissolved gas).

◆ *Oregon Department of Environmental Quality (DEQ):*

- DEQ6S: Implement Antidegradation Water Quality Standard (all factors).
- DEQ7S: Apply for Instream Water Rights on Streams with TMDLs (all factors).
- DEQ12S: Designation of Salmon Critical Habitat as Outstanding Resource Waters (all factors).
- DEQ13S: Implementation of SDWA Source Water Protection Program (sediment and toxics).

- DEQ25S: Implementation of Three Basin Rule in Clackamas, North Santiam and McKenzie River Basins (all factors except total dissolved gas).

◆ *Oregon Department of Fish and Wildlife (ODFW):*

- ODFWIVA3: Protect Instream Flows (temperature, dissolved oxygen).
- ODFWIVA8: Identify Instream Flow Priorities (temperature, dissolved oxygen).
- ODFWIVB3: Promote Use of Beavers to Restore Salmonid Habitat (biological conditions).

◆ *Oregon Department of Forestry (ODF):*

- ODF1S: Road Erosion and Risk Project (temperature, sediment, biological conditions).
- ODF2S: State Forest Lands Road Erosion and Risk Project (temperature, sediment, biological conditions).
- ODF3S: Technical and Policy Review of Rules and Administrative Processes Related to Slope Stability (temperature, sediment, biological conditions).
- ODF4S: Stream Habitat Assessments (biological conditions).
- ODF5S: North Coast Salmonid Habitat Restoration Project (sediment, biological conditions).
- ODF6S: Mid-Coast Restoration Project (sediment, biological conditions).
- ODF7S: Fund 7 New Fish Biologists to Provide Technical Assistance for Salmonid Habitat Restoration (biological conditions).
- ODF8S: Riparian Hardwood Conversions (biological conditions).
- ODF9S: Northwest State Forest Lands Management Plan (temperature, biological conditions).
- ODF15S: Evaluation of Road and Timber Harvest BMPs too Minimize Sediment Impacts (temperature, sediment).
- ODF17S: Site-Specific Plans for Vegetation Retention within RMAs on Northwest and Southwest (Grants Pass) Oregon State Forest Lands (temperature, biological conditions).

- ODF18S: Wildlife Tree Placement on State Forest Lands (temperature, biological conditions).
- ODF19S: Additional Conifer Retention along Fish-Bearing Streams in Core Areas (temperature, biological conditions).
- ODF20S: Limited RMA For Small Type N Streams (temperature, biological conditions).
- ODF21S: Active Placement of LWD During Forest Operations (biological conditions).
- ODF22S: 25 Percent In-Unit Leave Tree Placement and Additional Voluntary Retention (temperature, biological conditions).
- ODF23S: BMP Compliance Audit Program (temperature, sediment, biological conditions).
- ODF24S: State Forest Lands Stream Habitat Assessment and Instream Projects (biological conditions).
- ODF25S: Fish Presence/Absence Surveys and Fish Population Surveys (temperature, sediment, biological conditions).
- ODF26S: Elliott State Forest Habitat Conservation Plan (temperature, sediment, biological conditions).
- ODF27S: Increased Riparian Protection (temperature, sediment, biological conditions).
- ODF28S: Protection of Significant Wetlands, Including Estuaries (temperature, sediment, biological conditions).
- ODF29S: Forest Practice Chemical Protection Rules Increased Buffers (temperature, toxics).
- ODF30S: Large Woody Debris Recruitment Incentives (biological conditions).
- ODF31S: Large Woody Debris Placement Guidelines (biological conditions).
- ODF32S: Fish Presence Survey (OAR 629-635-200(11)) (temperature, sediment, biological conditions).
- ODF33S: Increase Number of Streams and Stream Miles Protected (temperature, sediment, biological conditions).
- ODF34S: Improve Fish Passage BMPs on Stream Crossing Structures (biological conditions).

- ODF35S: Increase Design for Larger Flows (sediment).
- ODF36S: Upgraded Road Construction and Fill Requirements (sediment).
- ODF37S: Upgraded Skid Trail Construction and Fill Requirement (sediment).
- ODF39S: Lobster Creek Whole-Basin Coordination Restoration Project (biological conditions).
- ODF40S: Upper Siuslaw Enhancement (biological conditions).
- ODF53S: Oregon Professional Logger Program (temperature, sediment, biological conditions).
- ODF61S: Analysis of "Rack" Concept for Debris Flows (sediment).
- ODF62S: Voluntary No Harvest in Riparian Management Areas (temperature, sediment, biological conditions).

🔹 ***Oregon Department of Land Conservation and Development (DLCD) for temperature, sediment and biological conditions:***

- DLCD1: Implement the Coastal Nonpoint Pollution Control Program (CNPCP).
- DLCD2: Riparian Area Technical Assistance.
- DLCD4: Implement New Goal 5 Rules for Riparian and Wetland Protection.
- DLCD5: Implement Urban Management Measures under the CNPCP.

🔹 ***Lower Columbia River Estuary Program (LCREP):***

- LCREP1: Lower Columbia River Estuary Program.

🔹 ***Oregon Division of State Lands (DSL) for temperature and sediment:***

- DSL1: Update Standard Permit Conditions.

🔹 ***Oregon Department of Transportation (ODOT):***

- ODOT1: Protection and Replacement of Riparian Vegetation (temperature).

- ODOT2: Erosion and Sediment Management (sediment).
- ODOT3: Protection of Aquatic Habitat (biological conditions).
- ODOT4: Chemical Management (toxics).
- ODOT5: Stream Fertility (stream fertility).

◆ ***Bureau of Land Management (BLM) and U.S. Forest Service (USFS):***

- BLM/USFS1: Watershed/Habitat Restoration (temperature, sediment, dissolved oxygen, biological conditions, pH, stream fertility).
- BLM/USFS13: Hydropower Licensing and Relicensing Coordination (temperature, total dissolved gas, biological conditions).

◆ ***U.S. Fish and Wildlife Service (USFWS):***

- USFWS11: Comments and Prescriptions on Federal Energy Regulatory Commission Hydropower Projects (temperature, total dissolved gas, biological conditions).
- USFWS14: Response to Oil and Hazardous Substances Spills (biological conditions, toxics).
- USFWS15: Natural Resource Damage Assessment (biological conditions, toxics).

◆ ***National Marine Fisheries Service (NOAA-NMFS):***

- NOAA-NMFS13: Hydropower Facilities (temperature, total dissolved gas, biological conditions).
- NOAA-NMFS14: Non-Hydropower Facilities (temperature, total dissolved gas, biological conditions).
- NOAA-NMFS35: Hazardous Materials Response and Assessment (biological conditions, toxics).

5.2.2 Objective 2—Restore Degraded Water Quality Where Steelhead Are Impaired

The second objective listed under each of the factors for decline is designed to address watersheds where water quality standards are

being violated and steelhead habitat is impaired. As can be seen from the water quality summaries above the amount of impaired waterbodies in the steelhead ESUs is significant, even though only a third of the stream miles have been assessed to date. Thus, a significant effort is required to restore good water quality for steelhead and the number of agency measures developed to assist with this restoration is large.

◆ ***Oregon Department of Agriculture (ODA):***

- ODA1: Implementation of SB1010 Program (all factors except total dissolved gas).
- ODA2: Implementation of CAFO Program (all factors except temperature and total dissolved gas).

◆ ***Oregon Economic Development Department (OEDD):***

- OEDD7: Assist Dairy Industry to Reduce Nonpoint Source Pollution (sediment, dissolved oxygen, biological conditions, pH, and stream fertility).

◆ ***Oregon Department of Environmental Quality (DEQ):***

- DEQ1S: Implementation of Recently Revised Water Quality Standards for Temperature, Dissolved Oxygen, and Sedimentation (temperature, sediment, dissolved oxygen).
- DEQ2S: Development of 303(d) List and Identification of Priorities for TMDL Development (all factors).
- DEQ3S: Watershed Council Support (all factors except total dissolved gas).
- DEQ4S: Enhanced 401 Certification for Fill and Removal Operations (all factors except total dissolved gas).
- DEQ5S: Revise Water Quality Standard for Sediment (sediment).
- DEQ7S: Apply for Instream Water Rights on Streams with TMDLs (all factors except total dissolved gas).

- DEQ9S: Implement Water Quality Standards for Biological Criteria, Nutrients, Toxics and pH (biological conditions, pH, stream fertility, toxics).
- DEQ10S: Develop Water Quality Standards for Wetlands (biological conditions, pH, stream fertility).
- DEQ11S: Revise Water Quality Standards for Nutrients (dissolved oxygen, biological conditions, pH, stream fertility).
- DEQ13S: Implementation of SDWA Source Water Protection Program (sediment, toxics, pH, stream fertility).
- DEQ16S: Revise SRF Loan Criteria to Help Protect Salmon (all factors except total dissolved gas).
- DEQ17S: Implement On-Site Program to Control Nutrient Loads to Surface Waters (dissolved oxygen, pH, stream fertility).
- DEQ18S: Implement Groundwater Protection Act to Prevent Adverse Impacts to Salmonid-Bearing Watersheds (dissolved oxygen, pH, stream fertility, toxics).
- DEQ20S: Coastal Nonpoint Pollution Control Program (all factors except total dissolved gas).
- DEQ21S: Tillamook Bay National Estuary Program (all factors except total dissolved gas).
- DEQ22S: Coastal Nonpoint Pollution Control Program in Columbia River Estuary (all factors except total dissolved gas).
- DEQ23S: Lower Columbia River Estuary Program (all factors).
- DEQ25S: Implementation of Three Basin Rule in Clackamas, North Santiam and McKenzie River Basins (all factors except total dissolved gas).
- DEQ26S: Development of TMDLs for Temperature and TDG on Lower Columbia and Lower Snake Rivers (temperature, total dissolved gas).
- DEQ27S: Willamette River Basin Project (all factors).
- DEQ29S: Section 401 Review of Powerdale Hydropower Project on Hood River (all factors).
- DEQ30S: Section 401 Review of Hydropower Projects on Snake River (all factors).

- DEQ32S: Evaluate and Require Mitigation for the Impacts of Dams and Hydroelectric Projects on Water Quality During Re-licensing or Reauthorization (all factors).
- DEQ33S: Evaluate and Require Mitigation for the Impacts of Dams and Hydroelectric Projects on Water Quality During Development of TMDLs (all factors).
- DEQ34S: Compliance Rate Monitoring Plan (all factors).

◆ ***Oregon Department of Fish and Wildlife (ODFW):***

- ODFWIVA1: Provide Technical Assistance to Regulatory Agencies for Habitat Protection (total dissolved gas).
- ODFWIVA3: Protect Instream Flows (temperature, dissolved oxygen).
- ODFWIVA8: Identify Instream Flow Priorities (temperature, dissolved oxygen).
- ODFW IVB3: Promote Use of Beavers to Restore Salmonid Habitat (biological conditions).

◆ ***Oregon Department of Forestry (ODF):***

- ODF1S: Road Erosion and Risk Project (temperature, sediment, biological conditions).
- ODF2S: State Forest Lands Road Erosion and Risk Project (temperature, sediment, biological conditions).
- ODF3S: Technical and Policy Review of Rules and Administrative Processes Related to Slope Stability (temperature, sediment, biological conditions).
- ODF4S: Stream Habitat Assessments (biological conditions).
- ODF5S: North Coast Salmonid Habitat Restoration Project (sediment, biological conditions).
- ODF6S: Mid-Coast Restoration Project (sediment, biological conditions).
- ODF7S: Fund 7 New Fish Biologists to Provide Technical Assistance for Salmonid Habitat Restoration (biological conditions).
- ODF8S: Riparian Hardwood Conversions (biological conditions).

- ODF9S: Northwest State Forest Lands Management Plan (temperature, biological conditions).
 - ODF15S: Evaluation of Road and Timber Harvest BMPs to Minimize Sediment Impacts (temperature, sediment).
 - ODF17S: Site-Specific Plans for Vegetation Retention within RMAs on Northwest and Southwest (Grants Pass) Oregon State Forest Lands (temperature, biological conditions).
 - ODF18S: Wildlife Tree Placement on State Forest Lands (temperature, biological conditions).
 - ODF19S: Additional Conifer Retention along Fish-Bearing Streams in Core Areas (temperature, biological conditions).
 - ODF20S: Limited RMA For Small Type N Streams (temperature, biological conditions).
 - ODF21S: Active Placement of LWD During Forest Operations (biological conditions).
 - ODF22S: 25 Percent In-Unit Leave Tree Placement and Additional Voluntary Retention (temperature, biological conditions).
 - ODF23S: BMP Compliance Audit Program (temperature, sediment, biological conditions).
 - ODF24S: State Forest Lands Stream Habitat Assessment and Instream Projects (biological conditions).
 - ODF25S: Fish Presence/Absence Surveys and Fish Population Surveys (temperature, sediment, biological conditions).
 - ODF26S: Elliott State Forest Habitat Conservation Plan (temperature, sediment, biological conditions).
 - ODF27S: Increased Riparian Protection (temperature, sediment, biological conditions).
 - ODF28S: Protection of Significant Wetlands, Including Estuaries (temperature, sediment, biological conditions).
 - ODF29S: Forest Practice Chemical Protection Rules; Increased Buffers (temperature, toxics).
 - ODF30S: Large Woody Debris Recruitment Incentives (biological conditions).
 - ODF31S: Large Woody Debris Placement Guidelines (biological conditions).
 - ODF32S: Fish Presence Survey (OAR 629-635-200(11)) (temperature, sediment, biological conditions).
 - ODF33S: Increase Number of Streams and Stream Miles Protected (temperature, sediment, biological conditions).
 - ODF34S: Improve Fish Passage BMPs on Stream Crossing Structures (biological conditions).
 - ODF35S: Increase Design for Larger Flows (sediment).
 - ODF36S: Upgraded Road Construction and Fill Requirements (sediment).
 - ODF37S: Upgraded Skid Trail Construction and Fill Requirement (sediment).
 - ODF39S: Lobster Creek Whole-Basin Coordination Restoration Project (biological conditions).
 - ODF40S: Upper Siuslaw Enhancement (biological conditions).
 - ODF53S: Oregon Professional Logger Program (temperature, sediment, biological conditions).
 - ODF61S: Analysis of "Rack" Concept for Debris Flows (sediment).
 - ODF62S: Voluntary No Harvest in Riparian Management Areas (temperature, sediment, biological conditions).
- ◆ ***Oregon Department of Geology and Mineral Industries (DOGAMI):***
- DOGAMI1: Sediment Management at Mine Sites (sediment).
 - DOGAMI2: Mine Operator Assistance to Watershed Councils (sediment).
 - DOGAMI3: Good Mine Operators Award (sediment).
 - DOGAMI4: Best Management Practices Manual (sediment).
 - DOGAMI5: Storm Water Management at Mine Sites (sediment).
 - DOGAMI6: Chemical Management at Mine Sites (toxics).

● ***Oregon Department of Land Conservation and Development (DLCD):***

- DLCD1: Implement the Coastal Nonpoint Pollution Control Program (CNPCP).
- DLCD2: Riparian Area Technical Assistance.
- DLCD4: Implement New Goal 5 Rules for Riparian and Wetland Protection.
- DLCD5: Implement Urban Management Measures under the CNPCP.

● ***Lower Columbia River Estuary Program (LCREP):***

- LCREP1: Lower Columbia River Estuary Program

● ***Oregon Division of State Lands (DSL):***

- DSL 1: Update Standard Permit Conditions (sediment).
- DSL5-8: Revised General Authorizations (temperature).
- DSL20: Revised Standard Waterway Lease (stream fertility).

● ***Oregon State Marine Board (OSMB):***

- OSMB1: Increase Number of Streams Adopted through Adopt-A-River Program (temperature).
- OSMB2: Increase Number of Boat Waste Pump-Outs and Dump Stations (stream fertility).

● ***Oregon Department of Transportation (ODOT):***

- ODOT1: Protection and Replacement of Riparian Vegetation (temperature).
- ODOT2: Erosion and Sediment Management (sediment).
- ODOT3: Protection of Aquatic Habitat (biological conditions).
- ODOT4: Chemical Management (toxics).
- ODOT5: Stream Fertility (stream fertility).

● ***Bureau of Land Management (BLM) and U.S. Forest Service (USFS):***

- BLM/USFS1: Watershed/Habitat Restoration (temperature, sediment, dissolved oxygen, biological conditions, pH, stream fertility).
- BLM/USFS13: Hydropower Licensing and Relicensing Coordination (temperature, total dissolved gas, biological conditions).
- BLM/USFS14: *Clean Water Act* Section 303 Compliance (temperature, sediment, biological conditions, stream fertility).

● ***U.S. Fish and Wildlife Service (USFWS):***

- USFWS1: Jobs-in-the-Woods Program (temperature, sediment, dissolved oxygen, biological conditions, pH, stream fertility).
- USFWS8: Northwest Forest Plan Implementation Assistance (temperature, sediment, dissolved oxygen, biological conditions, pH, stream fertility).
- USFWS11: Comments and Prescriptions on Federal Energy Regulatory Commission Hydropower Projects (temperature, total dissolved gas, biological conditions).
- USFWS13: Review of Dredge and Fill Projects (temperature, sediment, biological conditions).
- USFWS14: Response to Oil and Hazardous Substances Spills (biological conditions, toxics).
- USFWS15: Natural Resource Damage Assessment (biological conditions, toxics).
- USFWS23: Environmental Contaminant Investigations (biological conditions).

● ***National Oceanic and Atmospheric Administration (NOAA):***

- NOAA-NMFS1: Habitat Restoration (temperature, sediment, dissolved oxygen, pH, stream fertility).
- NOAA-NMFS13: Hydropower Facilities (temperature, total dissolved gas, biological conditions).
- NOAA-NMFS14: Non-Hydropower Facilities (temperature, total dissolved gas, biological conditions).

- NOAA-NOS19: Coastal Management and Nonpoint Sources (dissolved oxygen, biological conditions, pH, stream fertility).
- NOAA-NMFS35: Hazardous Materials Response and Assessment (biological conditions, toxics).
- NOAA-NOS36: National Status and Trends Program (toxics).
- NOAA-NOS37: Estuary Eutrophication (dissolved oxygen, biological conditions, pH, stream fertility).

U.S. Environmental Protection Agency (EPA):

- EPA6: Water Quality Standards for Temperature and Total Dissolved Gas (temperature, total dissolved gas).

5.2.3 Objective 3—Identify Watersheds Not Meeting Water Quality Standards

As can be seen from the water quality data summaries above, only about one third of the stream miles in the steelhead ESUs have been assessed to date to determine whether water quality standards are being met and whether beneficial uses are being protected. That leaves two thirds of the stream miles yet to be assessed. The reason so many stream miles are still unassessed is largely due to lack of water quality monitoring data available to DEQ. The purpose of this set of objectives is to systematically assess over time the water quality status of all the watersheds in the steelhead ESUs.

This objective combined with Objectives 4, 5, and 6 will help determine the status and trend of water quality in the steelhead ESUs and whether milestones for improvement in water quality are being met. Objective 3 appears under all the factors for decline, except biological criteria and toxics. It does not appear under toxics because the sampling for these parameters is very expensive and time consuming, and the current database of water quality data for toxics covers only a small portion of the watersheds in the steelhead ESUs. Consequently, it is not likely the State will be able to collect adequate data to

determine water quality status throughout the steelhead watersheds for toxics. Instead the State will invest its scarce monitoring resources in assessing where the problems are occurring for toxics and addressing them rather than attempting to determine the toxic status of all waterbodies in the steelhead ESUs.

◆ ***Oregon Department of Environmental Quality (DEQ):***

- DEQ2S: Development of 303(d) List and Identification of Priorities for TMDL Development.
- DEQ19S: Water Quality Monitoring and Assessment.
- DEQ26S: Development of TMDLs for Temperature and Total Dissolved Gas (TDG) on Lower Columbia and Lower Snake Rivers.
- DEQ28S: Abatement Plan for Hydropower Projects on Mainstem Columbia River. (TDG)
- DEQ30S: Section 401 Review of Hydropower Projects on Snake River. (TDG)

◆ ***Oregon Department of Forestry (ODF) for temperature:***

- ODF10S: Forest Practices Monitoring Program.
- ODF11S: Monitoring Of Riparian Management Areas Under The Forest Practice Act.
- ODF14S: Monitoring Water Temperature Protection BMPs.
- ODF41S: South Siletz Monitoring.
- ODF42S: North Fork Coquille Monitoring Assessment.
- ODF45S: Coquille, Siletz And Sixes Watershed Monitoring.
- ODF47S: Coos, Milliacoma And Upper Siuslaw Rivers Watershed Analysis.
- ODF48S: South Fork Siletz Watershed Analysis.
- ODF49S: Ecola Creek Watershed Analysis.
- ODF50S: Kilchis Watershed Analysis.
- ODF59S: Integrated Forest Assessment.

💧 ***Oregon Department of Fish and Wildlife (ODFW) for total dissolved gas:***

- ODFW IVA1: Provide Technical Assistance to Regulatory Agencies for Habitat Protection.

💧 ***Lower Columbia River Estuary Program (LCREP):***

- LCREP2: Long Term Monitoring for the Lower Columbia River (total dissolved gas).

Bureau of Land Management (BLM) and U.S. Forest Service (USFS) for temperature, dissolved oxygen, pH and stream fertility:

- BLM/USFS 14: *Clean Water Act* Section 303 Compliance.

Environmental Protection Agency (EPA) for total dissolved gas

- EPA6: Water Quality Standards for Temperature and Total Dissolved Gas.

5.2.4 Objective 4—Identify Water Quality Conditions in Unimpaired Reference Sites

The purpose of this set of objectives is to identify water quality conditions within unimpaired or least impaired reference sites in the steelhead ESUs. This objective combined with Objectives 3, 5, and 6 will help determine the status and trend of water quality in the steelhead ESUs and whether milestones for improvement in water quality are being met. Objective 4 appears under all the factors for decline, except total dissolved gas.

💧 ***DEQ:***

- DEQ19S: Water Quality Monitoring and Assessment.

💧 ***LCREP:***

- LCREP2: Long Term Monitoring for the Lower Columbia River (sediment, biological conditions, toxics).

5.2.5 Objective 5—Determine Water Quality Status and Trends

The purpose of this set of objectives is to determine the status and trend of water quality in the steelhead ESUs through randomly selected monitoring sites. This objective combined with Objectives 3, 4, and 6 will help determine the status and trend of water quality in the steelhead ESUs and whether milestones for improvement in water quality are being met. Objective 5 appears under all the factors for decline, except total dissolved gas.

💧 ***DEQ:***

- DEQ19S: Water Quality Monitoring and Assessment.

💧 ***ODF:***

- ODF10S: Forest Practices Monitoring Program.
- ODF12S: Monitoring Effectiveness Of BMPS In Protecting Water Quality During Aerial Applications Of Forest Pesticides.
- ODF59S: Integrated Forest Assessment.

💧 ***LCREP:***

- LCREP2: Long Term Monitoring for the Lower Columbia River (temperature, sediment, dissolved oxygen, biological conditions, toxics, pH).

5.2.6 Objective 6—Evaluate The Effectiveness Of Restoration Projects And Plans

The purpose of this set of objectives is to evaluate the effectiveness of restoration projects, TMDLs, and agricultural water quality management plans at improving water quality. This objective combined with Objectives 3, 4, and 5 will help determine the status and trend of water quality in the steelhead ESUs and whether milestones for improvement in water quality are being met. Objective 6 appears under all of the factors for decline except total dissolved gas and toxics.

DEQ:

- DEQ19S: Water Quality Monitoring and Assessment.

ODF:

- ODF4S: Stream Habitat Assessments (biological conditions).
- ODF10S: Forest Practices Monitoring Program (temperature and sediment).
- ODF11S: Monitoring of Riparian Management Areas Under The Forest Practice Act (temperature, sediment and biological conditions).
- ODF13S: Storms Of 1996 Monitoring Project (temperature, sediment and biological conditions).
- ODF14S: Monitoring Water Temperature Protection BMPs (temperature).
- ODF24S: State Forest Lands Stream Habitat Assessment And Instream Projects (biological conditions).
- ODF41S: South Siletz Monitoring (temperature).
- ODF42S: North Fork Coquille Monitoring Assessment (temperature and biological conditions).
- ODF45S: Coquille, Siletz And Sixes Watershed Monitoring (temperature and biological conditions).

- ODF47S: Coos, Milliacoma And Upper Siuslaw Rivers Watershed Analysis (temperature, sediment and biological conditions).
- ODF48S: South Fork Siletz Watershed Analysis (temperature, sediment and biological conditions).
- ODF49S: Ecola Creek Watershed (temperature, sediment and biological conditions).
- ODF50S: Kilchis Watershed Analysis (temperature, sediment and biological conditions).
- ODF59S: Integrated Forest Assessment (sediment and biological conditions).

LCREP:

- LCREP2: Long Term Monitoring for the Lower Columbia River (temperature, sediment, biological conditions).

BLM and USFS:

- BLM/USFS3: Monitoring and Evaluation (temperature and sediment).
- BLM/USFS14: *Clean Water Act* Section 303 Compliance (temperature, sediment, biological conditions, and stream fertility).

EPA:

- EPA3: Best Management Practices Monitoring and Evaluation.

USFWS:

- USFWS23: Environmental Contaminant Investigations.

5.2.7 Objective 7—Regular Review and Update of Water Quality Standards

The purpose of this set of objectives is to ensure that State water quality standards are regularly reviewed and updated to reflect the most current scientific information on criteria necessary to protect steelhead and other salmonids. Objective 7 appears under all the factors for decline.

💧 **DEQ:**

- DEQ8S: Review and Revise Water Quality Standards during Triennial Review Process.

5.2.8 Objective 8—Revise Sediment Water Quality Standards

The purpose of Objective 8 is to review State water quality standards for sedimentation and turbidity to determine if more appropriate standards can be developed to provide adequate protection for steelhead and other salmonids. This objective addresses transport and distribution of sediment not contaminated sediments. Objective 8 only appears under the sediment factor for decline.

💧 **DEQ:**

- DEQ5S: Revise Water Quality Standard for Sediment.

5.2.9 Objective 9—Revise Nutrient Water Quality Standards

The purpose of Objective 9 is to review State water quality standards for nutrients to determine if numeric criteria for phosphorus should be developed, or other criteria revised, to adequately protect steelhead and other salmonids. Objective 9 only appears under the stream fertility factor for decline.

💧 **DEQ:**

- DEQ8S: Review and Revise Water Quality Standards during Triennial Review Process.
- DEQ11S: Revise Water Quality Standards for Nutrients.

5.2.10 Objective 10—Use of Salmon Carcasses to Improve Stream Fertility

The purpose of objective 10 is to use placement of salmon carcasses in spawning areas of streams where spawner abundance is depressed to increase the growth and survival of juvenile salmonids. Objective 10 only appears under the stream fertility factor for decline.

💧 **DEQ and ODFW:**

- DEQ will work with ODFW to issue NPDES permits allowing placement of salmon carcasses in streams that are determined to be deficient in nutrients and where it would benefit salmonids.
- ODFWVIB4: Use Hatchery Carcasses to Increase Wild Salmonid Production.
- ODFW ID: Use of Volunteers.

5.2.11 Measures Applying To All Biological Objectives

The following measures were identified by the responsible agency as supporting achievement of the biological objectives for all of the water quality factors for decline listed above:

💧 **OEDD:**

- OEDD1: Regional Strategy Board Review of Projects to Avoid Adverse Impacts on Salmon.
- OEDD2: Reviewing Water and Wastewater Project Applications to Ensure those Funded have No Adverse Effect on Salmon Habitat or Populations.
- OEDD3: Use of Hazard Mitigation Funding in Restoring Salmon Habitat.
- OEDD6: Fund Water and Wastewater Projects which Improve Water Quality and Storm Drainage.

💧 **ODFW:**

- ODFWVIB2S: Inventory and Monitor Wild Steelhead Habitat and Distribution.
- ODFWVIB3: Habitat Restoration Evaluation.
- ODFW ID1: Use of Volunteers.
- ODFW IVA1: Provide Technical Assistance to Regulatory Agencies for Habitat Protection.

- ODFW IVA3: Protect Instream Flows.
- ODFW IVA6: Promote and Assist Voluntary Habitat Protection Actions.
- ODFWIVA8: Identify Instream Flow Priorities.
- ODFWIVB2: Promote Habitat Restoration.
- ODFWIVB3: Promote Use of Beavers to Restore Salmonid Habitat.
- ODFWIVB4: Use Hatchery Carcasses to Increase Wild Salmonid Production.
- ODFWIVB7: ODFW Job Rotations.
- ODFWVA1: Conduct an Outreach Program

💧 ***BLM and USFS:***

- BLM/USFS1: Watershed / Habitat Restoration.
- BLM/USFS2: Research.
- BLM/USFS3: Monitoring and Evaluation.
- BLM/USFS5: Planning and Assessment.
- BLM/USFS8: Education/Interpretation/Outreach.
- BLM/USFS10: Interagency and Tribal Coordination.
- BLM/USFS15: Safe Drinking Water Act Implementation.

💧 ***USFWS:***

- USFWS1: Jobs-in-the-Woods Program.
- USFWS2: Habitat Conservation Plan Development.
- USFWS3: Aquatic Habitat Conservation Agreement Development and Conservation Activities.
- USFWS4: Technical Assistance on 1996 and 1997 Floods.
- USFWS5: Partners for Wildlife Program.
- USFWS6: Greenspaces Program.
- USFWS7: Assistance to Watershed Councils.
- USFWS8: Northwest Forest Plan Implementation Assistance.
- USFWS9: Biological Opinions to Prevent or Reduce Impacts to Listed Species.
- USFWS10: Fish and Wildlife Coordination Act Reports on Federal Projects.
- USFWS11: Comments and Prescriptions on Federal Energy Regulatory Commission Hydropower Projects.

- USFWS12: Acquisition and Restoration of Coastal Wetlands for National Wildlife Refuges (NWR).
- USFWS16: Technical Assistance for Planning.
- USFWS17: Adopt-A-River and Salmon Watch Programs.
- USFWS18: Support to Ongoing Educational Programs (Outdoor School and Salmon Camp).
- USFWS19: Natural Resource Education and Community Awareness of Aquatic Resources.
- USFWS20: National Estuary Program.
- USFWS21: Conservation Strategy for Bull Trout Phase 2.
- USFWS24: Interior Columbia Basin Ecosystem Management Project.

💧 ***NOAA-NMFS:***

- NOAA-NMFS1: Habitat Restoration.
- NOAA-NMFS2: Watershed Councils.
- NOAA-NMFS3: Habitat Conservation Plans.
- NOAA-NMFS4: Habitat Matrix.
- NOAA-NMFS5: NW Forest Plan and Regional Ecosystem Office.
- NOAA-NMFS11: Section 404/10 Actions.
- NOAA-NMFS12: Highway Projects.
- NOAA-NMFS15: Water Supply Projects.
- NOAA-NMFS17: National Estuary Program, Columbia River.
- NOAA-NMFS18: Coastal Change Analysis.
- NOAA-NOS19: Coastal Management and Nonpoint Sources.
- NOAA-NOS20: South Slough National Estuarine Research Reserve.
- NOAA-OAR22: Oregon Sea Grant.
- NOAA-COP23: Pacific Northwest Coastal Ecosystem Regional Study.
- NOAA-NMFS26: Estuarine and Ocean Ecology Research.
- NOAA-NMFS29: For the Sake of the Salmon.
- NOAA-NMFS30: Snake River Recovery Plan.

◆ **EPA:**

- EPA1: Aligning Water Quality Priorities with Salmon Recovery.
- EPA3: Best Management Practices Monitoring and Evaluation.
- EPA4: Technical Assistance.
- EPA5: Funding Assistance.

◆ **Bureau of Reclamation (BOR):**

- BOR1d: Technical Assistance for Watershed Council Activities.
- BOR1g: Water Conservation in the Bear Creek Drainage.
- BOR1h: Technical Assistance for the Umpqua River Basin Water Management Program.
- BOR3a: Technical Assistance to Irrigation Districts on Federal Projects.
- BOR3d: Funding for a Water Quality Survey in Bear Creek.
- BOR3e: Funding for Upper Rogue Basin Conservation Districts.
- BOR4b: Demonstration Project for Wetland Construction and Restoration.

◆ **Bureau of Indian Affairs (BIA):**

- BIA1: Co-Manager Consultation.

◆ **Bonneville Power Administration (BPA):**

- BPA9: Access to Computer and GIS Databases.

5.3 STATE AGENCY MANAGEMENT MEASURE SUMMARIES

This section contains summary descriptions of the State agency management measures referenced in the preceding section. The measures are organized by agency in this order:

- Department of Agriculture;
- Economic Development Department;
- Department of Environmental Quality;

- Department of Geology and Mineral Industries;
- Department of Fish and Wildlife;
- Department of Forestry;
- Department of Land Conservation and Development;
- Lower Columbia River Estuary Program;
- Division of State Lands;
- State Marine Board;
- Department of Transportation.

5.3.1 Oregon Department Of Agriculture

The Oregon Department of Agriculture's Senate Bill 1010 and Confined Animal Feeding Operations (CAFOs) programs are the primary means by which agricultural activities affecting Coho Salmon and Steelhead will be addressed.

The agricultural water quality management planning program is a process which achieves water quality goals and objectives by maximizing landowner involvement and commitment in development/implementation of strategies to address water pollution from agricultural activities and soil erosion on a watershed basis. The intent of SB1010 is to provide a role for the Oregon Department of Agriculture to assist producers in addressing those agricultural activities in watersheds known to contribute to water quality problems, to prevent pollution problems wherever possible, and to mitigate any existing problems. This is achieved through providing for local input to the development of and responsibility for implementation of watershed based Agricultural Water Quality Management Area Plans (AWQMAPs). SB1010 provides the department with enforcement authority to deal with situations where corrective action is needed, but is not voluntarily being taken by an operator. In those cases where a farmer or rancher refuses to take action, the law authorizes the department to require corrective measures or use civil penalties to address the issue.

Agricultural water quality management plans will be developed under SB1010 authorities to achieve compliance with State water quality standards under the Federal *Clean Water Act*. Water quality standards are set to achieve the beneficial use to be protected and include numeric or narrative criteria designed to ensure the beneficial use is not impaired. State water quality standards include temperature and chemical criteria, antidegradation standards, and a biological conditions standard. All of these standards work together to protect aquatic species, specifically salmonids, in addition to other beneficial uses. Agricultural water quality management plans developed under SB1010 therefore, will address physical habitat and riparian function, as well as chemical water quality parameters, in order to adequately protect all beneficial uses.

During the 1997–99 biennium, the Oregon Department of Agriculture (ODA) will develop AWQMAPs for all of Oregon's coastal basins, in addition to the inland Umpqua and Rogue sub-basins, the Yamhill sub-basin, the Lost River sub-basin (Klamath Basin), Umatilla sub-basins, and Upper Grande Ronde sub-basins. It is anticipated that plans for the highest priority basins (Tillamook, inland Umpqua and Rogue) will be completed by June 1998. After plans have been adopted and implementation has begun, ODA's intent is to focus on voluntary compliance and educational outreach activities before aggressive enforcement efforts are pursued. In addition, aggressive compliance assurance efforts by the CAFO program will continue in the Tillamook, Coos and Coquille Basins.

A baseline condition assessment of the contribution of agricultural activities to water quality concerns does not exist for Oregon's drainage basins. For this reason, State agency staff are not able to specify expected improvement in water quality or benefits to fisheries due to AWQMAPs at this time. ODA will provide for assessment and monitoring of progress once AWQMAP implementation activities begin.

To address the need to implement practices prior to completion of AWQMAPs, and to have a system in place for developing farm and ranch water quality plans, ODA has been meeting with the Natural Resources Conservation Service (NRCS) to insure compatibility between NRCS developed farm and ranch plans and the department's AWQMAPs. A Memorandum of Understanding presently exists between the NRCS and ODA, and a working agreement will be developed as necessary to more specifically identify expectations of each agency in developing individual water quality management plans.

ODA1—IMPLEMENT SB1010 PROGRAM

In passing SB1010 in 1993 and SB502 in 1995, the Oregon Legislature provided for the Oregon Department of Agriculture (ODA) to be the lead State agency working with agriculture to address nonpoint source water pollution. The Oregon Department of Agriculture is authorized to develop and carry out a water quality management plan for any agricultural or rural lands area where a water quality management plan is required by State or Federal law (e.g., TMDL basins, groundwater management areas, and coastal zone management areas).

The Federal *Clean Water Act* requires each State to identify streams, rivers and lakes that do not meet water quality standards, and to establish a list of those that are designated water quality limited. The Oregon Department of Environmental Quality (DEQ) has updated the State's "water quality limited" (a.k.a., The 303(d) List) list to include nearly 900 stream segments that do not meet water quality standards. Watersheds on this list are candidates for involvement by the ODA through development of Agricultural Water Quality Management Area Plans (AWQMAPs).

Senate Bill 1010 directs ODA to work with farmers and ranchers to develop overall Water Quality Management Plans for listed watersheds. The watershed plans identify problems in the watershed that need to be addressed and outline ways to correct those

problems. The intent of SB1010 is to provide a role for ODA to assist producers in addressing those agricultural activities in watersheds known to have the most problems with water quality, to prevent pollution problems wherever possible, and to alleviate any existing problems. AWQMAPs provide objective-based performance standards for landowners in a local area which will be the basis for on farm activities to prevent and control water pollution resulting from agricultural activities and soil erosion.

Plans may require those actions on the land and other measures necessary for the prevention or control of water pollution resulting from agricultural activities and soil erosion. "Pollution" or "water pollution" means such alteration of the physical, chemical or biological properties of any waters of the state, including change in temperature, taste, color, turbidity, silt or odor of the waters, or such discharge of any liquid, gaseous, solid, radioactive or other substance into any waters of the state, which will or tends to, either by itself or in connection with any other substance, create a public nuisance or which will or tends to render such waters harmful, detrimental or injurious to public health, safety or welfare, or to domestic, commercial, industrial, agricultural, recreational or other legitimate beneficial uses or to livestock, wildlife, fish or other aquatic life or the habitat thereof. (ORS 468B.005)

ADMINISTRATIVE RULES DEVELOPMENT

SB1010 directed the department, in consultation with the Board of Agriculture, to develop administrative rules to effectuate portions of the bill. A rules development advisory committee was formed in November 1993, consisting of representatives from agricultural production groups, the agricultural service industry community, environmental organizations, the USDA Soil Conservation Service, USDA Agricultural Stabilization and Conservation Service, Oregon State University Extension, the Department of Fish and Wildlife, the Department of Environmental Quality, the Soil and Water Conservation Commission, the Senate Committee on Agriculture and Natural Resources, and the State Board of Agriculture.

The final rules were filed with the office of the Secretary of State on July 26, 1994.

A water quality management plan has been developed and filed for the Tualatin River sub-basin in accordance with ORS 183.715. A plan for the Bear Creek sub-basin (Medford area) has also been developed and is to be filed in December 1997 with administrative rules to follow.

The rules outline a uniform process to be followed as water quality issues are addressed under ODA's authority basin by basin across the state. The rules:

1. Set general policy guidelines for the agricultural nonpoint source pollution program;
2. Provide guidelines for the formation, composition, duties, and functions of Local Advisory Committees (LACs). The specific duties of the LAC include:
 - a) Participation in the development of a local agricultural water quality management area plan.
 - b) Recommendation of strategies necessary to achieve water quality goals and objectives.
 - c) Review of progress of local agricultural water quality management area plan implementation.
 - d) Recommendation of modifications to an existing plan.
3. Establish the uniform content of agricultural water quality management area plans.
4. Outline the procedures and criteria for requesting alternate measures at the farm site level.
5. Articulate uniform enforcement procedures to be followed in the event that voluntary compliance with agricultural water quality management area plans is not achieved.

IDENTIFICATION OF PRIORITY GEOGRAPHIC AREAS FOR IMPLEMENTATION

The Department will consult with the Governor's Natural Resources Office, the Department of Environmental Quality (DEQ), the National Marine Fisheries Service (NMFS) and others in order to help identify and prioritize critical areas for ODA program implementation. Attempts will be made to identify where Federal and State programs interface, and to reach consensus on the selection of high priority areas for early implementation efforts. Priority areas for implementation include:

- TMDL watersheds where agriculture has been allocated nonpoint source pollutant loads by the Environmental Quality Commission (Tualatin River, Bear Creek), TMDL watersheds where agriculture may be allocated nonpoint source pollutant loads (Grande Ronde River, Klamath River, Umatilla River, and South Umpqua River).
- Oregon's Coastal Zone, as required by the 1990 reauthorization of the Coastal Zone Management Act.
- Areas with proposed, threatened or endangered species.

LOCAL IMPLEMENTATION

- The Department may describe the lands subject to water quality management planning:
 - Delineation of the geographic area to be included in the plan.
 - Identification of agricultural issues to be addressed.
 - Identification of rural issues other than agricultural such as streambank erosion, roadside erosion or riparian restoration to be addressed.
- The department may define the role of Soil and Water Conservation Districts (SWCDs) and other cooperating agencies through agreements.

- Development of the plan with local participation:
 - Formation of a local advisory committee (LAC) to initiate the planning process.
 - Public hearings must be held on the draft water quality management area plan.
- Implementation of the plan:
 - Adoption of the agricultural nonpoint source plan by rule in consultation with the Board of Agriculture.
 - Day-to-day implementation activities are expected to be conducted through a local management agency such as a Soil and Water Conservation District.

TIMEFRAME

The Department has made a commitment to developing agricultural water quality management area plans for each of the 91 sub-basins in Oregon that require a plan in the next four to five years. The timeframe for developing each plan is one year, with initial implementation of a plan lasting two to three years. ODA has targeted the Rogue, Umpqua and Tillamook Basins as high priority for water quality planning and implementation efforts.

The Coos and Coquille Basins and several additional coastal sub-basins have significant agricultural activity that could impact salmonids. ODA is implementing the SB1010 planning process in Oregon's coastal zone through regional ODA employees working in these specific areas so they can initiate, participate, and coordinate effectively with the local community.

Through *The Oregon Plan* funding package, as well as funds from an EPA CWA Section 319 grant, ODA has hired seven regional basin planners and located them throughout the state. The basin planners, with assistance from ODA senior water quality staff, initiated the SB1010 planning process in the North Coast Basin (Tillamook sub-basin), South Coast Basin (Coos and Coquille sub-basins), Rogue and Umpqua sub-basins, Yamhill sub-basin, Lost River sub-basin (Klamath Basin), Umatilla sub-basins, and Upper Grande Ronde sub-basins in late

1997/early 1998. The regional planners will identify critical sub-areas of the basins for agricultural water quality management area plan development, and estimate technical assistance, administrative, and landowner costs for development and implementation of the agricultural water quality management area plans. In addition, the regional planners will conduct education and outreach activities to familiarize agricultural and rural landowners and land managers with the SB1010 planning process, and the other Federal and State mandates/priorities which would be covered under an agricultural water quality management area plan (e.g., Coastal Nonpoint Pollution Control Program, 303(d) List/TMDL priorities, Endangered Species Act issues).

EFFECTS

As plans are developed, adopted, and implemented, improvements in overall watershed condition are expected as the management of agricultural lands and the adjacent riparian areas associated with these agricultural lands is refined. Improvements would include decreased erosion, increased bank stability, improved riparian habitat, and a decrease in pathogens and nutrients in water. Long-term changes in overall watershed condition will be determined through the state's monitoring program, DEQ monitoring efforts, and specific monitoring programs identified in AWQMAPs.

BENCHMARKS

The recent timeline for AWQMP development and implementation:

- September–October 1997: Regional basin planners hired and located;
- Winter 1998: Development of technical foundations;
- Ongoing Initial watershed assessments;
- Winter 1998: Initiate basin plan development process; Local Advisory Committees formed;
- July 1998: Develop draft Agricultural Water Quality Management Area Plans;
- Fall 1998: Implementation of plan;
- Ongoing Tracking implementation of plans;

- January 1999: Review and maintenance of existing plans.

To implement practices prior to completion of SB1010 plans and to have a system in place for developing farm and ranch water quality plans, ODA has been meeting with the Natural Resources Conservation Service (NRCS) to insure compatibility between NRCS developed farm and ranch plans and SB1010 basin agricultural water quality management plans. An MOU presently exists between the NRCS and ODA and a working agreement will be developed as necessary to more specifically identify expectations of each agency in developing individual water quality management plans.

PROGRAM STATUS AND DIRECTION

As of July 2000, Agricultural Water Quality Management Plans (and their associated administrative rules) had been adopted for the following areas:

- Bear Creek Subbasin
- Lower Deschutes River Subbasin
- North Coast Basin
- Tualatin River Subbasin
- Umatilla River Subbasin
- Upper Grande Ronde River Subbasin

Plans and rules are developed and awaiting adoption for these areas:

- Umpqua River Basin
- Yamhill River Subbasin

In addition, plan development is significantly advanced in over a dozen other basins and subbasins. Details on the status and schedule of AWQMP development and adoption may be obtained from this Internet site: http://www.oda.state.or.us/Natural_Resources.

SB 1010 rules require that each AWQMP include "...a schedule for implementation of the necessary measures that is adequate to meet applicable dates established by law ... and a strategy for ensuring that the necessary measures are implemented." Plans begin implementation as soon as they are approved and the accompanying rules are adopted. These rules establish the measures and dates necessary to

initiate ODA's enforcement authority where necessary. Standard practice is to reconvene the Local Advisory Committee after two years to evaluate implementation of the plan, evaluate the effectiveness of the measures, and make recommendations for changes in the plan and/or the rules where desirable.

◆ **ODA2—IMPLEMENT CONFINED ANIMAL FEEDING OPERATION (CAFO) PROGRAM**

The State of Oregon is authorized by Oregon Revised Statutes, Chapters 468 and 468B, and by the Environmental Protection Agency (EPA) under the provisions of Section 402 of the *Clean Water Act*, to administer the National Pollutant Discharge Elimination System (NPDES) program. With this authorization, the State assumes responsibility to ensure that NPDES or equivalent permits are issued which are protective of State water quality standards and that permittee comply with the conditions of the issued NPDES permits. EPA remains responsible for oversight of the state's program.

The Oregon Department of Agriculture (ODA) was granted new authority and responsibility for regulation of Confined Animal Feeding Operations (CAFOs) by ORS 468B.217 on January 1, 1994. Following is the framework in which ODA and EPA are addressing the significant water quality risks associated with improperly managed CAFOs.

EPA has developed a regional strategy which includes the following elements:

- Acknowledgment of ODA as the lead agency for CAFO compliance and enforcement activities in Oregon.
- Development and maintenance of an effective partnership relationship between EPA and ODA which will best address a significant threat to water quality with the limited resources available.
- Development and maintenance of a statewide regulatory program for CAFOs

that is effective in protecting the environment and fair to the industry.

- Develop and implement a statewide strategy for permit development and issuance, inspection activity, and enforcement for noncompliance with the permit.
- Utilize, when appropriate, a geographic approach to conduct concentrated inspection and enforcement activities. It is anticipated that such efforts will be conducted using both State and Federal staff.
- Establish a uniform and satisfactory level of protection of water quality from point and nonpoint source pollution associated with CAFO facilities.

The following delineates the responsibilities and cooperative efforts which will be conducted to regulate CAFOs in Oregon.

ODA RESPONSIBILITIES

The ODA has these CAFO responsibilities:

- Conduct an education program for CAFO operators in cooperation with the OSU Cooperative Extension Service to impart Best Management Practices (BMPs) for animal waste control facilities.
- Advise CAFO owner/operators about available State, Federal, and private sources of technical and financial assistance for planning, designing, and implementing appropriate BMPs for animal waste management systems.
- Act as DEQ's agent in receiving and reviewing registration/application forms for coverage under the CAFO general permit (General Permit Category 0800), and assigning coverage by general permit to those applicant CAFO facilities which qualify, in accordance with detailed procedures described in Section VI.A, which follows:
- Act as DEQ's agent in receiving and reviewing permit application forms and plans for existing or new propose CAFO

facilities, and issuing individual permits, if necessary, in accordance with procedures in Section VI.B of this document. This would include applications from CAFOs previously operating under the general permit.

- Review for approval or rejection animal waste management system plans and specifications for animal waste control facilities to verify the plans and specifications have been prepared pursuant to OAR 340-51 and the *Oregon Animal Waste Installation Guidebook* design criteria, in accordance with Section X of this document. Prior to approval and if appropriate, the ODA may request that the DEQ review plans and specifications for construction, modification, or expansion of CAFOs to determine whether the proposed construction conforms with groundwater protection requirements. The ODA may also request that DEQ review plans and specifications for CAFO systems not covered by Division 51 or the design guide, such as mechanical treatment systems, or subsurface disposal systems.
- Strive to conduct at least one inspection per year for those CAFOs which have individual permits, or Corrective Orders in addition to their permit, and at least one inspection every five years for CAFOs under general permit.
- Respond promptly to citizen complaints pertaining to the operation of CAFO facilities. The ODA has first responsibility for response to complaints received from the public, and for investigation of known or suspected violations of laws, rules, orders, permits, or water quality standards associated with CAFO facilities. The ODA may negotiate separate agreements with Soil and Water Conservation Districts for complaint investigation and response.
- Negotiate with a permittee the terms and conditions to be included in a Corrective Order for CAFOs not in compliance with the conditions of the wastewater permit. The ODA will issue a unilateral Corrective Order

when a negotiated Order cannot be achieved. The Corrective Order shall be in addition to the wastewater permit and not in lieu of it. The Corrective Order shall be issued by the ODA and signed by the Director of ODA or a designee.

- Take prompt enforcement action when CAFO facilities violate permit conditions, water quality statutes, rules or orders in accordance with ODA enforcement procedures. For non-CAFO livestock operations, the ODA may refer unresolvable complaints and violations to DEQ for investigation and enforcement.
- Impose civil penalties, when appropriate, on the owner or operator of a CAFO facility for failure to comply with the provisions of ORS 468 or 468B, or any rules adopted thereunder, or for violations of a permit issued pursuant to ORS 468B, relating to the prevention and control of water pollution from a CAFO, subject to the provisions for civil penalties contained in ORS 183.415 and ORS 468B.230.
- Develop and maintain a program database on all permit activities, and provide to EQC or DEQ, when requested, a report on the status of CAFO permits, complaint investigations, corrective orders, enforcement actions, and civil penalties imposed.

DEQ RESPONSIBILITIES

The DEQ agrees to:

- Provide advice, assistance, training, and program guidance relative to surface and ground water quality problems associated with animal waste, including but not limited to groundwater protection and monitoring requirements, permit writing, lagoon leakage testing, annual compliance inspections, data analysis, and sampling parameters and protocols.
- Recommend to EQC the issuance of tax credit certificates in accordance with procedures described in Section XII, below.

- Retain administrative oversight for the three existing individual permits until these permits are transferred to ODA oversight in accordance with the schedule contained in Section XIV, below.
- Retain enforcement responsibilities for existing individual permits (until transferred to ODA), and for other non-CAFO livestock operations.
- Refer all water pollution citizen complaints received on CAFOs and information regarding suspected violations of permits, rules, or water quality standards by CAFOs to ODA for investigation and follow-up, excepting those permits for which oversight has not yet been transferred to ODA.
- As allowed by statute and by this MOU, the ODA may perform any function of the EQC or DEQ relating to the control and prevention of water pollution from a CAFO. The ODA may on behalf of EQC and DEQ, modify, or revoke the general permit (General Permit 800), or issue new general permits in accordance with the requirements of OAR 340-45-033.
- Fees for processing general permits may be charged in accordance with the fee schedule in OAR 340-45-075, and collected by the ODA.

DETAILED PROGRAM PROCEDURES

General Permit (0800):

- The ODA will distribute application forms to CAFO facilities which need to be covered by the general permit (Formally called General Permit 0800, WPCF Permit, covering any CAFO with a wastewater disposal system), unless ODA determines that an individual WPCF permit for the particular CAFO facility is necessary. Applications for general permits shall include pertinent general information and description of the activity, and if appropriate, a LUCS, an animal waste management system plan, and detailed plans and specifications.
 - Upon receipt of an application, the ODA will screen it for completeness, review the application to determine if the CAFO qualifies for a general permit, assign a maximum number of animals, and then assign coverage by the general permit if appropriate.
 - Facilities which would otherwise qualify for coverage by the general permit, but for whatever reason cannot immediately comply with all provisions, shall be issued a Corrective Order by ODA in addition to general permit coverage.
- Individual Water Pollution Control Facilities (WPCF) Permits:***
1. CAFO facilities which meet the following criteria shall be issued individual permits by the ODA:
 - a) For new CAFOs, if the proposed facility or system design cannot meet the requirements of the general permit; or
 - b) If the CAFO is not in compliance with conditions of the general permit, and ODA determines that resolution would take more than 2 years; or
 - c) If the ODA determines that the CAFO needs to monitor the waste management system or its environment and provide periodic reports to ODA to demonstrate compliance with water quality requirements; or
 - d) For systems with treatment lagoons, if there is evidence that the lagoon leakage rate exceeds 1/8 inches per day, as evidenced by a DEQ acceptable leakage test; or
 - e) If groundwater quality monitoring data indicates that the CAFO adversely affects groundwater quality or surface waters into which the groundwater discharges; or
 - f) If the CAFO employs unconventional, experimental or unproven treatment methods (including constructed wetlands, mechanical treatment, or subsurface disposal systems), which require monitoring and periodic reporting to ensure proper performance

and compliance with water quality requirements.

2. CAFOs which meet the criteria of Section VI.B.I.d and e, above or any CAFOs which are otherwise known or presumed to adversely impact groundwater quality, shall be issued individual permits containing requirements for performing hydrogeologic characterizations of groundwater. The hydrogeologic characterizations shall be completed in accordance with DEQ guidelines. If the hydrogeologic characterization indicates that the CAFO has the potential to adversely impact groundwater quality, then the CAFO shall be required to develop and undertake a groundwater monitoring program, and the permit will include specific groundwater concentration limits, pursuant to OAR 340-40-030.
3. Individual WPCF permit application forms will be distributed by the ODA, and the application instructions shall include requirements for inclusion of a general description of the activity, relevant exhibits and supporting information, and a LUCS. The ODA will accept applications, review information, and follow the procedures set forth in OAR 340-14-005 through 045 for the issuance, renewal, modification, denial, revocation, transfer, and suspension of WPCF permits. Fees for processing individual permits may be charged in accordance with OAR 340-45-075, and collected by the ODA.

CAFOs Located in Water Quality Management and Protection Areas:

- Some CAFOs are now or may in the future be located in areas specially designated for water quality protection, such as groundwater management areas, wellhead protection areas, or a water quality management areas (e.g., Total Maximum Daily Loads (TMDLs) for surface water). To manage CAFO facilities in these areas, the ODA shall work with the DEQ to develop CAFO management strategies for

the designated area, and the ODA shall be responsible for implementing the strategies.

- A management strategy may include, but not be limited to, compiling an inventory of CAFOs, inspection of all CAFO facilities in the area, establishing BMPs pertinent to the affected area, and working with area advisory committees to co-develop CAFO pollution prevention and control action plans and schedules. If CAFOs are determined to contribute to parameters of concern or otherwise adversely impact beneficial uses within a specially designated area, the management strategy may include provisions for more frequent source monitoring and inspection, more stringent permit conditions, enforceable animal-waste management system plans for all CAFOs, issuing a general permit specific to the area, or requiring individual permits.

Alternative Permits:

- The ODA may develop and implement an alternative permit for CAFOs apart from the general permit (800) and individual WPCF permits. The permit would be developed in consultation with DEQ and in accordance with public information requirements. Alternative CAFO permits would provide enforceable conditions equivalent to the existing permitting program.
- The ODA shall be responsible for administration of the alternative permit and provide information as needed to the DEQ.

Corrective Orders:

- When a CAFO facility is not in compliance with the general permit or individual permit because of inadequate pollution control facilities, management, or waste disposal area, the ODA will issue a Notice of Noncompliance (NON) or Corrective Order, pursuant to OAR 603-74-040. The NON may include a Corrective Order that specifies a schedule of actions to be taken. The NON and/or Order will be in addition to the general permit or individual permit, and will not replace it. The ODA will make reasonable attempts to negotiate a

Corrective Order with the permittee; however, the Director of ODA or designee may issue a unilateral Corrective Order if a negotiated Order is not possible. The Director of ODA or designee will sign and issue the NON and/or Corrective Order to the permittee.

- Several CAFO facilities operating under the general permit have been issued Stipulated and Final Orders (SFOs) or Mutual Agreement and Orders (MAOs) by the DEQ. The ODA may act on behalf of the DEQ in enforcing all provisions of these orders until such time as the CAFO satisfies the conditions of the order, or the ODA and DEQ determine that the order should be replaced by a ODA-issued Corrective Order. If violation of a DEQ-issued order poses an immediate risk to public health or the environment, as determined by the ODA, the ODA may refer the violations to DEQ for enforcement.

Plans and Specification Review:

- Oregon Revised Statutes (ORS) 468B.055 requires plans and specifications for water pollution control facilities to be reviewed by DEQ prior to construction, unless exempted from DEQ review by Commission rule, pursuant to OAR 340-52-045(3). The DEQ may exempt submittal of such plans where it has been determined that adequate review is conducted by another State agency. Pursuant to that rule, DEQ waives the requirement for plan submittal on animal waste control facilities where facilities have been designed and animal waste management system plans prepared in accordance with OAR 340-51 and the *Oregon Animal Waste Installation Guidebook* design criteria and so certified by ODA.
- The ODA may request technical assistance from the DEQ in the review of plans and specifications, particularly with regard to design criteria and requirements for mechanical treatment systems, subsurface disposal systems, constructed wetlands, and groundwater quality protection.

Coordinating Emergency Response:

- The ODA shall have the lead responsibility for responding to complaints and taking actions to address public concerns about CAFO facilities. When investigating citizen complaints about known or suspected releases of waste from a CAFO facility, the ODA shall obtain information about the material released, how the release occurred, actions underway to remediate the release, and potential for public health threat or environmental injury. If the ODA determines that public health or the environment may be harmed by releases from a CAFO facility, the ODA shall notify DEQ and other appropriate State and local authorities, and oversee efforts to obtain samples, clean up the site, or contain the release, as necessary.
- The DEQ shall refer all citizen complaints pertaining to CAFO and other non-CAFO livestock operations to the ODA for investigation and follow-up. If a citizen complaint is received outside of normal business hours, and DEQ determines that no threat to public health or the environment exists, the DEQ shall document the complaint, and forward the documentation to ODA immediately next business day. If the DEQ determines that an emergency situation exists, the DEQ shall immediately contact the designated ODA representative to coordinate investigation and follow-up activities.

TAX CREDITS

Tax Credit Certification:

The DEQ is responsible for the review of all tax credit applications for water pollution control facilities. The ODA will inform CAFOs of the opportunity for tax credits and the requirement to have plans approved prior to construction. If ODA reviews plans and specifications pursuant to Section X above, and provides documentation of such to DEQ, the DEQ will accept that plan review as meeting the plan review requirements associated with tax credit certification without making an independent plan review.

Certificates:

When DEQ receives a request for a tax credit certificate, ODA will be requested to verify that the claimed facilities are in place and are working properly. The ODA will provide such verification within 60 days of the request. Once verification has been received, the DEQ will review the application and prepare a recommendation for the Environmental Quality Commission.

RAPID SCREENING CRITERIA ASSESSMENT (RSC)

A neutral system has been developed for identifying which CAFOs have the highest potential for water quality compliance problems. The method is known as the Rapid Screening Criteria Assessment (RSC). Using aerial photographs, as well as information on file, each CAFO in the area of interest is scored for a set of pre-determined criteria. The pre-determined criteria are the observable permit conditions in a CAFO permit, which include direct discharge of solid or liquid waste to surface water, indirect discharge of solid or liquid waste to surface water, failure to manage solid and liquid waste facilities in a manner to prevent discharge, and over application of waste to cropland. These criteria are equivalent to a permit violation. The score for each criterion ranges from 1 to 10, with 1 being the lowest. The score given for each criterion is based on an evaluation of the likelihood that a violation would occur given the visual evidence in the aerial photograph and any information about a particular CAFO on file with ODA. The individual criteria scores are then added together and ranked based on the cumulative scores. Based on past experience with the RSC assessment methodology, those CAFOs receiving a RSC score of 30 or more are most likely to be violating water quality standards.

Point of Interest—Rapid Screening Assessment for Selected Watersheds:

- Approximately two thirds of all permitted CAFOs have gone through the Rapid Screening Assessment.
- Assessment criteria are based on permit conditions related to serious pollution

problems (e.g., direct discharge, manure application exceeding agronomic rates, mismanagement of liquid/solid storage facility).

- Information assessed: aerial photos, manure application information and enforcement histories (if any).
- Ground truthing of 41 CAFO in Tualatin and 17 in Tillamook shows assessment is highly reliable (e.g., approximately 80 to 90%).
- Distribution of scores shows population grouping at middle to high end of scoring. Interpretation: most CAFOs have better than even chance of significant violation of water quality laws.

EFFECTS

Improved management of waste storage facilities and upland agricultural areas as management practices are implemented. Effects would include decreased erosion and sedimentation, improved riparian habitat, decreased pathogens and nutrients in water, and increased DO. The effects of this program would depend on the number of CAFOs located in a watershed.

BENCHMARKS

Based on present resources, the CAFO program will inspect 30 operations annually as identified through the rapid screening assessment program, and issue notices of non-compliance and correct deficiencies where needed. The timeframe for recent CAFO Program implementation activities has been:

- January–May 1997: Formal on-farm compliance inspections of CAFOs in the Tillamook Basin through the EPA/ ODA Compliance Initiative;
- June–December 1997: Compliance schedule development; report writing, data analysis, etc.;
- June–December 1997: Follow-up on corrective actions required by CAFO operators;

- June–December 1997: Administration of enforcement actions.

ODA has hired three new CAFO inspectors, including two regional enforcement inspectors to augment compliance assurance efforts in priority basins and one consulting/courtesy inspector to provide voluntary compliance assistance opportunities to CAFO operators. The new positions will be established for the North Coast and Eastern Oregon, with an existing position serving the Willamette Valley and southern Oregon.

ODA is also waiting to hear whether continued funding of the CAFO program will be forthcoming from the EPA 104b(3) grant program. Additional funding would allow for:

- An update of the rapid screening aerial assessments to re-evaluate priorities.
- Continued development and maintenance of the CAFO database.
- Inspection of 60 additional operations identified through the rapid screening program.

💧 **ODA3—OREGON'S HABITAT RESTORATION JOBS PROGRAM (A.K.A., THE HIRE THE FISHER PROGRAM)**

The U.S. Dept. of Commerce developed the Northwest Emergency Assistance Plan (NEAP) in order to provide financial assistance to salmon fishers in the Pacific Northwest who have been affected by a fishery resource disaster during 1992–1995. The Habitat Restoration Jobs Program is one component of the NEAP, and allocated funds have been used for hiring eligible fishers to perform work on private lands which has a long-term beneficial impact on west coast salmon resources.

The Natural Resources Conservation Service (NRCS) receives the disaster relief funds from the Department of Commerce and transfers them to the Oregon Department of Agriculture

(ODA). ODA distributes the funds to the Soil and Water Conservation Districts (SWCDs) through a grant application process, and the SWCDs provide the administrative oversight necessary to carry out the program at the local level.

The role SWCDs play in natural resource issues has expanded greatly through their involvement in the Habitat Restoration Jobs Program. Partnerships have been strengthened between the districts, ODFW field staff, Watershed Councils and others to ensure the successful implementation of habitat restoration and enhancement activities in the project areas. To the greatest extent possible, the SWCDs are also coordinating their activities with similar restoration efforts undertaken in the watersheds. The program has been in effect since April of 1995, and will be implemented through May of 1998.

IMPLEMENTATION ASSURANCE

The Habitat Restoration Jobs Program is a voluntary program. In September 1994, ODA was authorized to receive up to \$2,200,000 in Northwest Emergency Assistance Plan funds from the U.S. Department of Commerce (via the Natural Resources Conservation Service) to help mitigate the west coast salmon fishery disaster. In late 1996, the department received an additional \$2,500,000 to continue the program.

The only obstacles which exist to the successful implementation of this program are inadequate communication/support networks between the SWCDs and other local groups working on similar habitat restoration and enhancement projects. In order to ensure a high degree of success, effective partnerships need to be developed and nurtured between all the agencies/groups who are involved with these activities in the local areas.

MONITORING BENCHMARKS

To the greatest extent possible, implementation and effectiveness monitoring activities are occurring for all Habitat Restoration Jobs Program projects.

EFFECT

- Increased employment of displaced fishers and increased understanding by the fishers and their communities of stream ecology and watershed enhancement.
- Improved habitat and watershed conditions through decreased erosion, increased streambank stability, improved riparian habitat, and a decrease in pathogens and nutrients in water.

ODA4—GOVERNOR'S WATERSHED ENHANCEMENT BOARD AND SOIL AND WATER CONSERVATION DISTRICT PROGRAMS

The Natural Resources Division of the Oregon Department of Agriculture provides assistance to the Governor's Watershed Enhancement Board by administering several programs through the Soil and Water Conservation Districts. These include:

DISTRICT GRANT PROGRAM

Since 1987, OWEB has allocated funds to support a Soil and Water Conservation Districts Small Grant Program. For the 1997-99 biennium OWEB allocated \$225,000 to the Soil and Water Conservation Districts (SWCD) Small Grant Program. This program provides \$5,000 to each Soil and Water Conservation District for funding projects consistent with OWEB guidelines.

This program is viewed as providing seed money to individuals or groups in a SWCD to initiate actions that may not have occurred otherwise. Over the past eight years this has included both technical and educational projects that revolve around resource management, enhancement, monitoring, and assessment.

LANDOWNER WORKSHOP

Since 1993, the Governor's Watershed Enhancement Board has authorized funding of Soil and Water Conservation District sponsored land owner workshops. OWEB feels these are very effective educational tools to address pertinent land owner concerns that effect watersheds. During the last biennium, workshop

subjects included riparian management, watershed council development, CAFO management, and farming practices. This program is available statewide, and ten workshops have been approved for the current biennium.

WATERSHED COUNCIL COORDINATOR PROGRAM

In the 1995-97 biennium, \$350,000 of OWEB funds were targeted to provide funding through Soil and Water Conservation Districts for support of the human resources needed to contribute technical assistance to local efforts in watershed council formation and development. Nine proposals were partially or completely funded (the SWCC established a cap of \$46,000 per any one grant to maximize number of districts assisted). Districts awarded grants have worked with the Watershed Councils to develop position descriptions, and to advertise, interview, and fill the positions. This program was not funded for the current biennium.

SOIL AND WATER CONSERVATION COMMISSION PLANNING AND IMPLEMENTATION GRANT PROGRAM

This grant program has been providing funds to SWCDs for data gathering, strategic development, construction and start-up costs for natural resource conservation projects. The Soil and Water Conservation Commission Planning and Implementation grant program was allocated \$110,000 for the 1997-1999 biennium.

TECHNICAL ASSISTANCE FOR OREGON PLAN IMPLEMENTATION

\$2.4 million in OWEB funds has been passed through to ODA for allocation to Soil and Water Conservation Districts for Oregon Plan implementation activities. Funding will be provided for technical staff assistance and individual farm and ranch plan development, and is aligned with the goals of the Healthy Streams Partnership.

\$1.2 million was appropriated to SWCDs in "high priority" areas of the State as specified in *The Oregon Plan*. It is anticipated the 13 Watershed Technical Specialists will work

cooperatively with a number of SWCDs in the high priority areas.

\$1.2 million was made available to all Oregon SWCDs through a competitive grant process for the December 1, 1997 deadline.

5.3.2 Oregon Economic Development Department

💧 OEDD1—REGIONAL STRATEGY BOARD REVIEW OF PROJECTS TO AVOID ADVERSE IMPACTS ON SALMON

A checklist will be used by project applicants in order to evaluate and mitigate potential negative impacts on water quality and salmon habitat. This measure will be coordinated with ODFW technical assistance.

💧 OEDD2—REVIEWING WATER AND WASTEWATER PROJECT APPLICATIONS TO ENSURE THOSE FUNDED HAVE NO ADVERSE EFFECT ON SALMON HABITAT OR POPULATIONS

A checklist will be used by project applicants in order to evaluate and mitigate potential negative impacts on water quality and salmon habitat. This measure will be coordinated with ODFW technical assistance.

💧 OEDD3—USE OF HAZARD MITIGATION FUNDING IN RESTORING SALMON HABITAT

The Department has secured funding from the Federal Emergency Management Administration to conduct salmon habitat restoration projects that will improve water quality and salmon habitat. OEDD is working in coordination with the Governor's Watershed Enhancement Board and the Oregon Wildlife Heritage Foundation to provide project oversight.

💧 OEDD6—FUND WATER AND WASTEWATER PROJECTS WHICH IMPROVE WATER QUALITY AND STORM DRAINAGE

The Department will continue to fund infrastructure projects that improve water quality, which will have beneficial secondary impacts on fish habitat.

💧 OEDD7—ASSIST DAIRY INDUSTRY TO REDUCE NONPOINT SOURCE POLLUTION

OEDD is providing technical assistance to the Methane Energy and Agriculture Development project in Tillamook County. The project, a joint venture of the Tillamook County Soil and Water Conservation District and the Tillamook People's Utility District, is a broad effort to solve the dairy industry's problems with nonpoint source pollution created by manure.

5.3.3 Department Of Environmental Quality: Phase 1 Measures

Phase 1 measures are those that can be implemented with currently approved budget limitation, or that require additional resources that will be sought through DEQ's program budget requests.

💧 DEQ2S—DEVELOPMENT OF 303(D) LIST AND IDENTIFICATION OF PRIORITIES FOR TMDL DEVELOPMENT

Under Section 303(d) of the *Clean Water Act*, DEQ recently revised its list of water quality limited waterbodies and has developed a priority list for TMDL development over the next two years. DEQ prioritized its 1994/96 list of water quality limited waters to address limiting factors for salmonid recovery. The presence of threatened or endangered species within a given watershed is a criterion for Priority 1 ranking of waterbodies for TMDL action.

DEQ updated the 303(d) List and TMDL priority list again in April 1998 and will continue to do so every two years thereafter (or at an alternative frequency identified by EPA). The updates to the list include an analysis of all water quality data available to the Department, and over time should provide a comprehensive list of all watersheds in Oregon where water quality standards are not being met.

◆ **DEQ4S—ENHANCED 401
CERTIFICATION FOR FILL AND
REMOVAL OPERATIONS**

Section 401 of the *Clean Water Act* requires State certification that water quality standards will be met when federally permitted dredge and fill operations are conducted in the state. DEQ will improve review and enforcement of 401 certification conditions for activities in steelhead ESUs to ensure adequate protection of all salmonid life stages. With the approval of the Healthy Streams Partnership budget, DEQ will enhance its review and enforcement of 401 certifications in the coastal basins. If additional resources are provided, DEQ will provide enhanced review and enforcement of 401 certifications in the Southwest Washington, Lower Columbia River and Snake River Basin ESUs. DEQ will target projects for enhanced review and enforcement that have the greatest potential to adversely affect salmonids.

◆ **DEQ5S—REVISE WATER QUALITY
STANDARD FOR SEDIMENT**

During the next Triennial Review of water quality standards, beginning in the 1997–99 biennium, DEQ will undertake a major review of its sediment standard with the intent of significantly upgrading it to better address stream attributes related to sediment loads such as cobble embeddedness, particle size distribution and residual pool volume.

◆ **DEQ6S—IMPLEMENT
ANTIDEGRADATION WATER
QUALITY STANDARD**

DEQ will implement its antidegradation water quality standard in steelhead ESUs to address

degradation of water quality that is currently cleaner than parameter specific water quality standards would allow. DEQ will ensure that point source discharges are subjected to antidegradation review as permits are issued for new or increased discharges, and will work with ODF, ODA and other State and Federal natural resource agencies to ensure the antidegradation is implemented for nonpoint sources.

◆ **DEQ7S—APPLY FOR INSTREAM
WATER RIGHTS ON STREAMS WITH
TMDLs**

As TMDLs are developed for steelhead ESU waterbodies, DEQ will request as necessary instream water rights from WRD at flow levels necessary to ensure water quality standards can continue to be met once the TMDL is implemented. Of course, this will not affect senior water rights but it will give WRD the ability to limit additional appropriations that would adversely affect water quality and beneficial uses.

◆ **DEQ8S—REVIEW AND REVISE
WATER QUALITY STANDARDS
DURING TRIENNIAL REVIEW
PROCESS**

Under Section 303(c) of the *Clean Water Act*, the State is required to review and, as appropriate, revise its water quality standards every three years. As DEQ undertakes this process it will make it a priority to update standards that primarily benefit salmonids to ensure they remain protective of the beneficial uses based upon the most current scientific information. DEQ will also investigate standards that go beyond parameter specific criteria and focus on habitat condition and the overall health of aquatic communities.

◆ **DEQ13S—IMPLEMENTATION OF
SDWA SOURCE WATER PROTECTION
PROGRAM**

The source water protection requirements of the 1996 Safe Drinking Water Act Amendments include provisions for delineating or identifying public water system source areas that supply

drinking water to citizens, assessing the source areas to determine potential sources of contamination, and implementing measures to protect the source waters from contamination. To address these requirements, Oregon will expand its successful voluntary "Wellhead Protection Program" which protects groundwater sources of drinking water.

The new voluntary "Drinking Water Protection Program" will include protection for groundwater and surface-water-supplied public water systems. The Health Division will conduct the delineations for systems utilizing groundwater. DEQ will conduct the delineations for systems utilizing surface water, assess source areas for potential sources of contamination, and provide technical assistance to communities as they determine how to protect their local drinking water sources. While the protection of drinking water sources is not undertaken to protect salmonid habitat, it does address many of the same issues (e.g., sedimentation, toxics, and nutrients) that are important to salmonids, and thus will significantly benefit steelhead habitat.

Additional resources are required to implement this new program, and are available from USEPA. DEQ will request these resources from the Emergency Board.

◆ ***DEQ16S—REVISE SRF LOAN
CRITERIA TO HELP PROTECT
SALMON***

The State Revolving Fund (SRF) is primarily used by the State to fund improvements to municipal sewage treatment plants to assist in meeting water quality standards. DEQ currently has a loan portfolio of approximately \$180 million that is used to provide loans to municipalities for sewage treatment improvements that qualify for the SRF Project Priority List developed under OAR 340-54-025. During the next review of the priority list rules, DEQ will consider changes to make protection of salmon critical habitat a high priority for funding eligibility. DEQ will also consider SRF rule revisions to allow funding of nonpoint source projects, undertaken by either public or

non-public entities, which enhance and protect critical salmon habitat.

◆ ***DEQ17S—IMPLEMENT ON-SITE
PROGRAM TO CONTROL NUTRIENT
LOADS TO SURFACE WATERS***

DEQ has adopted standards for construction of on-site sewage disposal systems and oversees their installation through licensing of installers and construction permits. The construction standards are designed to prevent threats to public health and minimize nutrient loading (esp. nitrogen) to groundwater and surface water from the on-site treatment of human sewage. DEQ will review the program to determine whether adverse impacts are occurring to salmonid-bearing streams in the steelhead ESUs and make appropriate corrections as necessary.

◆ ***DEQ18S—IMPLEMENT
GROUNDWATER PROTECTION ACT
TO PREVENT ADVERSE IMPACTS TO
SALMONID-BEARING WATERSHEDS***

The Groundwater Quality Protection Act Program is a critical component in Oregon's overall water quality protection and management strategy. The program ensures that Oregon's groundwater is protected as a resource for all present and future beneficial uses. Program implementation will help clean up Oregon's rivers and streams by improving and protecting the quality of groundwater that interacts with surface waters. The Groundwater Protection Program is the only mechanism that addresses non-point source pollution of groundwater and protects rural drinking water supplies as well as other beneficial uses of groundwater.

Under the State Groundwater Protection Act, DEQ assesses groundwater quality throughout the State to determine where groundwater contamination has occurred due to nonpoint source practices. Where groundwater contamination is an area-wide problem due to nonpoint sources, DEQ designates Groundwater Management Areas and works with other State agencies and local stakeholders to develop best management practices to halt or reverse the decline of groundwater.

As DEQ implements its statewide assessment of groundwater, it will look for groundwater contamination that is affecting or threatening salmonid-bearing watersheds, and designate Groundwater Management Areas as appropriate to ameliorate the impacts of contaminated groundwater on surface water.

◆ **DEQ20S—COASTAL NONPOINT POLLUTION CONTROL PROGRAM**

Nonpoint sources of pollution will be minimized in the Oregon coast ESUs through implementation of comprehensive State and local programs developed under Section 6217 of the Coastal Zone Act Reauthorization Amendments of 1990 (CZARA). Full implementation of the management measures designed by EPA and NOAA is expected by 2004, with benefits to salmonids continuing beyond full implementation.

DEQ will implement the Coastal Nonpoint Pollution Control Program through its existing program authorities and by developing new programs to address the following issues:

- Erosion from construction sites disturbing less than five acres,
- Failing onsite sewage disposal systems resulting from inadequate maintenance of septic tanks and drainfields, and
- Pollutant runoff from road and bridge construction, maintenance and operation by local highway departments.

◆ **DEQ21S—TILLAMOOK BAY NATIONAL ESTUARY PROGRAM**

DEQ will continue to support and provide technical assistance for the development of a Coordinated Conservation Management Plan (CCMP) in the Tillamook Bay watershed that addresses salmon concerns. Tillamook Bay is an estuary of national significance as recognized through the National Estuary Program. A local management committee is charged with

developing and implementing a conservation plan that will ensure water quality standards supportive of coastal salmon and other coldwater fisheries are attained.

◆ **DEQ23S—LOWER COLUMBIA RIVER ESTUARY PROGRAM**

DEQ will continue to support and provide technical assistance for the development of a Coordinated Conservation Management Plan for the Lower Columbia River watershed that addresses salmon concerns. The Lower Columbia River is an estuary of national significance as recognized through the National Estuary Program. A local management committee is charged with developing and implementing a conservation plan that will ensure water quality standards supportive of salmon and other coldwater fisheries are attained.

The National Estuary Program (NEP) was established in 1987 to identify nationally significant estuaries that are threatened by overuse, development, and pollution. The goal of the program is to facilitate the development of locally developed management plans that will improve and protect the water quality and ecological integrity of these resources.

The Lower Columbia River Estuary Program (LCREP) study area is defined as that portion of the Columbia River and its tributaries that are tidally influenced. This includes the Mainstem River from the Ocean to Bonneville Dam at River Mile 146, and those portions of tributaries that are influenced by tidal changes. The study area also includes the ocean out to the 3-mile limit, where those waters are influenced by the plume of fresh water from the Columbia River.

The Lower Columbia River entered the NEP in July 1995. For the five previous years, the Lower Columbia River Bi-State Water Quality Program collected a substantial body of data on the lower river and concluded that the Columbia River had suffered damage largely due to human activities in the last hundred years. From that data, the LCREP has identified seven priority issues it will address:

- Biological Integrity of the System,
- Conventional Pollutants, pH, temperature, fecal coliform, dissolved gas,
- Habitat Loss and Modification,
- Impacts of Population Growth,
- Institutional Constraints,
- Public Awareness and Stewardship, and
- Toxics in Sediments and Fish Tissue.

These issues will be addressed as the LCREP develops a Coordinated Conservation Management Plan for the Lower Columbia River.

◆ **DEQ25S—IMPLEMENTATION OF THREE BASIN RULE IN CLACKAMAS, NORTH SANTIAM, AND MCKENZIE RIVER BASINS**

The Three Basin Rule, OAR 340-41-470(1) to (8), prohibits new or increased discharges from point sources in the Clackamas, North Santiam and McKenzie river basins. DEQ implementation of this rule will ensure that steelhead habitat is not adversely affected by point source discharges in these basins.

◆ **DEQ27S—WILLAMETTE RIVER BASIN PROJECT**

After several years of study by DEQ of the environmental health of the Willamette River Basin showed that significant issues remained to be resolved, the Governor formed the Willamette River Basin Task Force. The Task Force mission has been assess the current status of basin waters, gather information concerning water quality and related problems, assess the need for further study, build consensus among the many groups whose activities affect the river, and prepare a set of recommendations to address water quality related problems for the Governor. To date the Task Force has identified four primary goals for action:

- **Goal 1:** Determine the status of basin water quality and quantity and the effects upon human and aquatic health. Establish an effective, ongoing monitoring system to track changes in the watershed health.

- **Goal 2:** Maintain and restore riparian floodplain areas.
- **Goal 3:** Develop an ongoing, coordinated approach to Willamette watershed health, emphasizing the community aspect of the basin.
- **Goal 4:** Increase public awareness of water quality, quantity and use issues within the basin.

DEQ will continue to provide support to the Task Force, and will implement the recommendations of the Task Force that relate to its areas of responsibility to the extent they are accepted and funded by the Governor and Legislature in the 1999-2001 biennium.

◆ **DEQ29S—SECTION 401 REVIEW OF POWERDALE HYDROPOWER PROJECT HOOD RIVER**

The Powerdale Hydroelectric Project is a 6-Megawatt run-of-the-river project, located near the mouth of the Hood River. PacifiCorp is currently in the process of applying for a new operating license from the Federal Energy Regulatory Commission. Under Section 401 of the *Clean Water Act*, the State of Oregon must certify that the project will comply with water quality standards and other applicable water quality-related rules.

Most water quality-related impacts occur in a three mile de-watered reach (known as the "bypass" reach) that is caused when most of the water is channeled through a canal that leads to the turbines instead of through the natural stream channel. The major water quality problem in the bypass reach is temperature, which has exceeded the salmonid rearing and spawning criteria for periods during July/August and October/November, respectively. DEQ is working with PacifiCorp to increase flow during these periods.

pH violations have been observed in the bypass reach in late spring. Studies are ongoing to determine the cause of these violations and

potential steps PacifiCorp might take to eliminate their contribution to the violations.

◆ ***DEQ30S—SECTION 401 REVIEW OF HYDROPOWER PROJECTS ON SNAKE RIVER***

The Hells Canyon Complex of dams owned by Idaho Power includes: Brownlee at 585 Megawatts, Oxbow at 190 Megawatts, and Hells Canyon at 425 Megawatts. Idaho Power owns a number of hydroelectric projects on the Snake River which are up for re-licensing now or in the near future from the Federal Energy Regulatory Commission. Three of these projects, Brownlee, Oxbow, and Hells Canyon, are on the Idaho/Oregon border, and are therefore subject to certification by Oregon under Section 401. Under Section 401 of the *Clean Water Act*, the State of Oregon must certify that the project will comply with water quality standards and other applicable water quality-related rules.

Each project includes a large dam across the Snake River, and a spillway. The Oxbow project also diverts water from an oxbow in the river, leaving a largely de-watered reach. Idaho Power has proposed studies to determine the effects of the three projects on water quality.

Idaho Power did not include much information on existing water quality in their initial consultation document. However, the report did note that total dissolved gas in excess of the 110 percent Oregon/ Idaho water quality standard has been documented below Hells Canyon Dam. The Company is proposing to study the effects of spill from the three projects on total dissolved gas levels throughout and below the three-project area.

Temperature and dissolved oxygen problems have been reported in the reservoir behind Brownlee dam, and have been associated with fish kills. Temperature problems are likely in the Oxbow bypass, but little is known about water quality in this reach.

Brownlee reservoir has accumulated significant sediment since construction and sandbars below the three projects have been reported as disappearing. A study of the effects on downstream habitat of sediment deposition due to the dams is planned.

◆ ***DEQ32S—EVALUATE AND REQUIRE MITIGATION OF THE IMPACTS OF DAMS AND HYDROELECTRIC PROJECTS ON WATER QUALITY DURING RE-LICENSING OR REAUTHORIZATION***

When hydroelectric projects come up for re-licensing by FERC or for re-authorization by Water Resources, DEQ will evaluate the water quality impacts of the projects and require appropriate mitigation to assure that water quality standards are met and beneficial uses are protected. For standards which allow some implementation and enforcement flexibility, DEQ will give special consideration to the needs of steelhead and other at-risk aquatic species. DEQ will also include a re-opener in certifications that allows for a re-evaluation of certification conditions if the mitigation proves inadequate to meet water quality standards. (This could occur if the mitigation is not as effective as anticipated, or if TMDL allocations indicate a need for greater improvement from the dam/hydroelectric project.)

5.3.4 Department Of Environmental Quality: Phase 2 Measures

Phase 2 measures are those that require additional resources to implement.

◆ DEQ1S—IMPLEMENTATION OF RECENTLY REVISED WATER QUALITY STANDARDS FOR TEMPERATURE, DISSOLVED OXYGEN, AND SEDIMENTATION

In January 1996, water quality standards for dissolved oxygen and temperature were modified to improve protection of cold water aquatic species, and a new standard was developed for inter-gravel dissolved oxygen to address sedimentation impacts on spawning gravels. Implementation plans will be developed for both point and nonpoint sources of pollution to reduce pollutant loads such that the new water quality standards can be achieved. Particular attention will be paid to steelhead ESU waterbodies, as these parameters are critical limiting factors in every stage of salmonid fresh water life cycles. With the approval of the Healthy Streams Partnership budget, DEQ will use the additional resources to complete watershed assessments and TMDLs related to temperature, dissolved oxygen and inter-gravel dissolved oxygen for all 303(d) Listed (1994/96 update) watersheds in steelhead ESUs by 2007. Additional resources will be required to develop TMDLs at a faster pace in the Lower Columbia and Upper Willamette steelhead ESUs.

◆ DEQ3S—WATERSHED COUNCIL SUPPORT

The Department will enhance and improve support of local watershed council efforts to improve water quality in salmon-bearing waterbodies. DEQ will enhance its current watershed council technical assistance by providing additional monitoring support, additional support for management plan development, and targeted support for basin and project level site implementation in watersheds

with mature programs. In areas where watershed activity is beginning or unfocused, additional technical assistance staff will be assigned to primarily provide program development, project guidance, and linkages to government programs and funding. Additional monitoring work will be provided as programs mature. With the approval of the Healthy Streams Partnership budget, DEQ will use the additional resources to provide technical assistance to all functioning, sanctioned Watershed Councils in the steelhead ESUs. Additional resources will be required to develop TMDLs at a faster pace in the Lower Columbia and Upper Willamette steelhead ESUs.

◆ DEQ9S—IMPLEMENT WATER QUALITY STANDARDS FOR BIOLOGICAL CRITERIA, NUTRIENTS, TOXICS, AND PH

With the approval of the Healthy Streams Partnership budget, DEQ will use the additional resources to complete watershed assessments and TMDLs related to biological criteria, pH, nutrients, and toxics for all 303(d) Listed (1998 update) watersheds in steelhead ESUs by 2007. Additional resources will be required to develop TMDLs at a faster pace in the Lower Columbia and Upper Willamette steelhead ESUs.

◆ DEQ10S—DEVELOP WATER QUALITY STANDARDS FOR WETLANDS

DEQ will complete work on the issue paper for wetlands water quality standards and propose standards for adoption.

◆ DEQ11S—REVISE WATER QUALITY STANDARDS FOR NUTRIENTS

DEQ will review EPA's nutrient criteria, including nitrogen and phosphorus, to determine if revisions to State water quality standards are appropriate to address beneficial use impairment due to excessive nutrient loads. In the interim, DEQ will assess watersheds that don't meet its dissolved oxygen, pH, biological criteria, or deleterious aquatic growth standards, or its *chlorophyll a* target level, for indications of

whether excessive nutrient loads are a source of the problem.

◆ **DEQ12S—DESIGNATION OF
SALMON CRITICAL HABITAT AS
OUTSTANDING RESOURCE WATERS**

DEQ will consider designating coho core areas and steelhead critical habitat areas as outstanding resource waters under the State Outstanding Resource Waters Policy, OAR 340-41-026(1)(a)(D), as it reviews waters nominated for designation. Identification of steelhead critical habitat areas will require assistance from ODFW, NMFS, USFWS and other agencies with expertise in this area.

◆ **DEQ9S—WATER QUALITY
MONITORING AND ASSESSMENT**

Water quality parameters identified as Factors for Decline include stream temperature, sediment, dissolved oxygen, Total Dissolved Gas, biological communities, toxics, pH, and stream fertility. To meet assessment goals, and determine if milestones for improvement are being met, a monitoring strategy consisting of three interrelated sampling design approaches is proposed:

- Randomized site selection for regional status and trend assessments.
- Strategic site selection for BMP effectiveness monitoring and core area assessments.
- Watershed level monitoring for TMDL and Agricultural Water Quality Management Plan implementation.

RANDOMIZED DESIGN

This monitoring approach is based on sampling randomly selected sites within each ESU. It provides a cost effective and statistically unbiased means of characterizing the status and trends of stream conditions (physical, chemical, and biological) within each ESU. A fixed number of sites will be randomly selected (normally 100+) from which a subset will be sampled each year. The entire sample set will be sampled over a five-year cycle. After all sites

have been sampled, the cycle will be repeated by re-sampling the same sites for trends.

Parameters evaluated at each site will include the following:

- **Temperature:** Continuous temperature recorders will be placed at each site for a period of two to three months to coincide with maximum summer water temperatures.
- **Sediment:** To evaluate potential sediment problems, the percent surface fines will be measured within riffle areas of each site, plus qualitative measures of bank erosion, bank stability, and riparian vegetation condition will be made.
- **Dissolved Oxygen and pH:** Continuous D.O. and pH monitors will be placed at a set of random sites for a period of 3 to 5 days to determine if these parameters are a significant issue.
- **Biological Communities:** Macroinvertebrate and fish communities will be sampled and evaluated at each site, and an Index of Biological Integrity (IBI) score calculated and corrected for annual climatic effects by using reference sites.
- **Toxics:** The above biological assessments will be used as indicators of potential toxic chemical contamination. This will provide a general indication of the level of toxic chemical problems in each ESU. (For direct chemical monitoring for toxics see "strategic" and "watershed" sampling design discussions below.)
- **Stream Fertility:** Water samples will be collected at each site and analyzed for nutrient concentrations. These data will indicate general nutrient levels for streams in specific ESUs, and help determine if stream fertility is a significant issue.

STRATEGIC DESIGN

This monitoring approach is based on identifying specific sites for assessment. Sites will be selected where restoration projects have been implemented, where a TMDL or

Agriculture WQMP will be completed, and in areas identified as core or critical habitat areas for salmonid populations. Parameters sampled within the strategic sample design include:

- **Temperature:** Stream temperature will be monitored at sites where restoration activity or BMPs have been implemented to reduce excessive water temperatures. A monitoring strategy will be developed for restoration projects as part of a watershed management plan that will address temperature, D.O., pH, sediment, turbidity, and biological conditions. These results will be extrapolated to other similar restoration efforts. *(Note: DEQ will rely largely on data collected by Watershed Councils or other agencies for these data.)*
- **Dissolved Oxygen and pH:** Where these parameters are at levels of concern, they will be monitored with continuous monitoring equipment to determine diel fluctuations and minimum and maximum values. Areas where restoration projects or BMPs are being implemented will be targeted for this sampling. Ambient site monitoring data will also provide trend information. *(Note: Continuous-monitoring data will require DEQ lab personnel to audit and move equipment.)*
- **Sediment/Turbidity:** Storm related turbidity measurements will be collected above and below restoration projects to evaluate their effectiveness in sediment control. A monitoring strategy will be developed for restoration projects as part of a watershed management plan that will address temperature, D.O., pH, sediment, turbidity, and biological conditions. Ambient site monitoring data will also provide trend information. *(Note: DEQ will utilize data collected by Watershed Councils or other agencies for some of these assessments.)*
- **Biological Communities:** A set of reference sites (sites that represent conditions that are unimpaired or minimally impaired by human activities) will be

selected within each ESU. A subset will be sampled each year for macroinvertebrate and fish communities. The complete set of reference sites will be sampled over a five-year cycle. These data will be analyzed in conjunction with the randomly selected biological sample sites, and provide the basis for determining the stream conditions. Duplicate samples will be collected at some sites each year to evaluate sampling and natural variability.

- **Toxics:** Areas with potential toxics contamination will be identified. These would include areas near industrial sources, present or past mining activity, forest application of pesticides, agricultural use of pesticides, and urban stormwater runoff. Areas where contaminants may impair salmonid spawning, rearing, or passage will be considered. A subset of identified sites will then be sampled and analyzed for the presence of toxic chemicals. *(Note: DEQ will utilize data collected by other agencies for some of these assessments.)*
- **Total Dissolved Gas:** Total dissolved gas (TDG) will be measured in the forebays and tailraces of the Bonneville, The Dalles, John Day, McNary, Ice Harbor, Lower Monumental, Little Goose, and Lower Granite Dams, and below the Dworshak Reservoir. The U.S. Army Corps of Engineers (COE) currently monitors TDG at these locations from mid April to the end of August for the spill season which was required by the National Marine Fisheries Service (NMFS) Biological Opinion for endangered Chinook and sockeye salmon. Twenty-four hour average, minimum, and maximum TDG levels are reported. The Department of Environmental Quality (DEQ) will request that the COE monitor TDG year round. The Department will request that the owners of Willamette Falls, Lost Creek Dam, Oxbow, Hells Canyon, and Brownlee Dams collect TDG data from the forebay and tailrace areas of their facilities. Twenty-four hour average, minimum, and maximum TDG levels will be monitored

year round. Additional data to be collected will be total flows, spill flow, the percentage of spill due to voluntary (power market, turbine outages) and involuntary (hydraulic capacity) causes.

- **Ambient Water Quality:** Ambient sampling networks for water chemistry assessments exist in all identified ESUs. Ambient sites are generally located at the lower reaches of major basins or sub-basins, and will be sampled four to eight times per year depending on the site. Data are used to identify trends in water quality, and will help indicate whether water quality in a basin is improving or not over time. Dissolved oxygen, pH, and nutrients are included in ambient sample analysis.

WATERSHED DESIGN

The watershed design will rely on collecting and analyzing data at the watershed level. For most purposes this will be at the 6th field watershed scale, however the sub-basin (5th field) and basin (4th field) scale may also be utilized.

Because Watershed Councils will often be working at this scale (6th and 5th field levels) they will be important sources for watershed

level information. The U.S. Forest Service and BLM will also provide important information at the watershed scale for Federal lands.

The "strategic" and "watershed" monitoring designs are closely linked, and in many ways overlap. The watershed design, however, will take available data (or identify new data needs) and use it to describe the overall condition within the watershed, rather than site specific conditions related to specific restoration activities or management practices (strategic design). Monitoring strategies will be developed as part of the water quality management plans developed for nonpoint source TMDLs (ref: Guidance for Developing Water Quality Management Plans that will Function as TMDLs for Nonpoint Sources, DEQ, April 15, 1997).

The number of fifth field and sixth field scale watersheds in the steelhead ESUs have been approximated as shown in Table 5-1. DEQ will be developing TMDLs for watersheds with 303(d) Listed streams at the fifth or sixth field scale. Table 5-1 estimates the number of TMDLs required depending on the watershed scale chosen. DEQ will complete these TMDLs by 2007.

Table 5-1: An Estimate of the Number of TMDLs Required

Evolutionary Significant Unit	TMDLs Required at Fifth Field Scale	Fifth Field Watersheds	TMDLs Required at Sixth field Scale	Sixth Field Watersheds
Klamath Mountain Province	41	48	74	120
Oregon Coast	65	86	117	215
Southwest Washington	2	5	4	13
Lower Columbia River	11	23	20	58
Upper Willamette River	45	69	81	173
Snake River Basin	49	80	88	195
Totals	213	311	384	774

Parameters measured for watershed assessments may include all those listed as factors for decline, depending on the identified key problems within a watershed. While Watershed Councils will provide useful data for watershed analysis, citizen collected data will come with certain limitations. Expected data quality for citizen collected data is listed below for the major parameter types:

- **Temperature:** Data quality high if appropriate protocols and QA procedures are followed.
- **DO and pH:** Data quality low due to natural diurnal variability and potential for operator or equipment error.
- **Nutrients:** Data quality low due to equipment requirements.
- **Biological Community Surveys:** Data quality moderate due to taxonomic expertise limitations.
- **Sediment/Turbidity:** Data quality high for turbidity measurements if appropriate protocols and QA procedures are followed. Data quality low for sediment.
- **Toxics:** Citizens would not normally be expected to provide information on toxics due to equipment requirements and analytical expertise required.

💧 ***DEQ22S—COASTAL NONPOINT POLLUTION CONTROL PROGRAM IN COLUMBIA RIVER ESTUARY***

Nonpoint sources of pollution will be minimized in the Lower Columbia River estuary up to Puget Island through implementation of comprehensive State and local programs developed under Section 6217 of the Coastal Zone Act Reauthorization Amendments of 1990 (CZARA). Full implementation of the management measures designed by EPA and NOAA is expected by 2004, with benefits to salmonids continuing beyond full implementation.

DEQ will implement the Coastal Nonpoint Pollution Control Program (CNPCP) through its existing program authorities and by developing new programs to address the following issues:

- Erosion from construction sites disturbing less than five acres,
- Failing onsite sewage disposal systems resulting from inadequate maintenance of septic tanks and drainfields, and
- Pollutant runoff from road and bridge construction, maintenance and operation by local highway departments.

The current management boundary extends to the eastern end of Puget Island. DEQ will consider implementing the three new programs in the remainder of the Southwest Washington and Lower Columbia River ESUs.

💧 ***DEQ26S—DEVELOPMENT OF TMDLS FOR TEMPERATURE AND TDG ON LOWER COLUMBIA AND LOWER SNAKE RIVERS***

DEQ will work cooperatively with USEPA, and other State and Federal agencies, in development of TMDLs for temperature and total dissolved gas for the Columbia and Snake River systems. EPA is taking the lead on development of these TMDLs, as the solution will require multiple State and Federal agency cooperation to implement. Refer to management measure EPA6 for further details.

💧 ***DEQ33S—EVALUATE AND REQUIRE MITIGATION FOR THE IMPACTS OF DAMS AND HYDROELECTRIC PROJECTS ON WATER QUALITY DURING DEVELOPMENT OF TMDLs***

DEQ has committed to set Total Maximum Daily Loads (TMDLs) for 303(d) Listed waterbodies throughout the State within the next ten years. During the initial reconnaissance and studies to determine causes of water quality violations, DEQ will evaluate the effects of dams and hydroelectric projects. As

appropriate, DEQ will include load allocations for dams and hydroelectric projects in the TMDLs.

5.3.5 Department Of Geology And Mineral Industries

🔥 DOGAMI1—SEDIMENT MANAGEMENT AT MINE SITES

We will strive to perform annual inspections on all mine sites in the coastal watersheds and steelhead watersheds to not only look for any infractions of rules or permit conditions, but also to specifically look for practices that are not fish-friendly, for example turbid runoff from the mine sites. This is made more difficult by the expanded nature of the area including steelhead (ORS 517.830, 517.840, 517.850, 517.990 and 517.992). Where possible, we will promote and facilitate actions above the requirements of the law utilizing the Best Management Practices Manual and other sources of information.

🔥 DOGAMI2—MINE OPERATOR ASSISTANCE TO WATERSHED COUNCILS

We are identifying mine operators who would be willing to donate time, labor and equipment to help Watershed Councils with their projects. We then match them to councils who have projects. (ORS 517.840 (e))

🔥 DOGAMI3—GOOD MINE OPERATORS AWARD

Our annual award system now has fish-friendly reclamation of mine sites as a criterion for an award. This will encourage mine operators to compete for the awards by performing extraordinary reclamation over and above minimum requirements. (ORS 517.850 (e))

🔥 DOGAMI4—BEST MANAGEMENT PRACTICES MANUAL

We hold workshops for miners to explain and encourage use of our Best Management Practices Manual. This manual describes proper and above minimum requirements and methods for mine reclamation. These methods protect salmon habitat through extra high quality reclamation of sites. (The manual was prepared and workshops conducted through funding and cooperation of Region 10 USEPA and the states of Idaho and Washington.)

🔥 DOGAMI5—STORM WATER MANAGEMENT AT MINE SITES

DOGAMI, in cooperation with DEQ, may participate in a cooperative venture with DEQ to greatly increase the number of mine sites coming into the stormwater runoff program. In connection with this we would also expect to see some stream monitoring to see whether or not there was a measurable benefit to streams.

🔥 DOGAMI6—CHEMICAL MANAGEMENT AT MINE SITES

We will strive to perform annual inspections on all mine sites in the coastal watersheds and steelhead watersheds to not only look for any infractions of rules or permit conditions, but we will look for and measure where possible, or ask DEQ to measure, toxic substances emitted from mine sites. This is made more difficult by the expanded nature of the area including steelhead (ORS 517.830, 517.840, 517.850, 517.990 and 517.992). Where possible, we will promote and facilitate actions above the requirements of the law utilizing the Best Management Practices Manual and other sources of information. There are a very small number of sites, if any, in the coastal watersheds; virtually all (maybe all) sites are aggregate sites, not metal ore sites, and therefore do not emit toxics (ORS 517.830). Grandfathered metal mine sites that do not come under our jurisdiction may be a consideration.

5.3.6 Oregon Department Of Fish And Wildlife

◆ ODFW IB2S—INVENTORY AND MONITOR WILD STEELHEAD HABITAT AND DISTRIBUTION

(This full version may also appear in Section 2, "Physical Habitat," which should be the primary place for it.)

Provide information base for protection and restoration of steelhead spawning and rearing habitat through inventory of habitat quality and distribution and steelhead population distribution, and through determination of steelhead production capacity. ODFW will seek to improve criteria for describing good steelhead habitat and expand inventories of steelhead habitat quality and quantity to identify areas of good and poor habitat as a source of information to cooperators in habitat protection and restoration efforts and to serve as the baseline against which to compare the effects of restoration activities.

PHASE 1

Continue support of Habitat Inventory Project staff and continue contract-funded surveys, but review and refine as needed to best serve needs of steelhead.

SPECIFICS/PRIORITIES FOR THE TWO COASTAL STEELHEAD ESUs.

Complete stream surveys in the following areas:

- Nehalem River basin (upper main river plus Foley, Cook, Lost, Cronin, Humbug, Baxter, Fishhawk #2, and Oak Ranch creeks),
- North Fork Nehalem River basin (upper main river plus Sweet Home and Northwest creeks),
- Upper North Umpqua and South Umpqua basins.

SPECIFICS/PRIORITIES FOR THE THREE LOWER COLUMBIA ESUs.

Complete stream surveys in the following areas:

- Bear and Goble Creeks in the SW Washington ESU.

SPECIFICS/PRIORITIES FOR THE TWO EASTERN OREGON ESUs.

No priorities are identified at this time.

PHASE 2

Complete habitat and fish distribution surveys for all streams containing steelhead in Middle Columbia and Snake River Basin ESUs. Resurvey a representative sampling of steelhead streams in each ESU around the State at about 10-year intervals to monitor changes from the early 1990s baseline surveys.

◆ ODFW IB3—HABITAT RESTORATION EVALUATION

(This full version may also appear in Section 2, "Physical Habitat", which should be the primary place for it.)

Evaluate representative restoration projects to quantify the effectiveness of techniques used and to determine appropriate restoration strategies for use in specific situations. This will provide meaningful feedback to assist in design and technique selection for subsequent projects.

PHASE 1

SPECIFICS/PRIORITIES FOR THE TWO COASTAL STEELHEAD ESUs:

Continue Salmonid Habitat Study evaluating production of habitat features and effects of habitat restoration projects on coho, steelhead, and cutthroat. Continue evaluations of habitat restoration project conducted under the Umpqua Basin Fisheries Restoration Initiative, the North Coast Salmonid Habitat Restoration Project, and the Mid-Coast Salmonid Habitat Restoration Project.

SPECIFICS/PRIORITIES FOR THE THREE LOWER COLUMBIA ESUs:

Continue evaluations of habitat restoration project conducted under the North Coast Salmonid Habitat Restoration Project in Columbia River tributaries downstream from the Willamette River. Review results of ongoing evaluations of habitat restoration projects conducted by the USFS on their projects in the Clackamas, Sandy, and Hood basins.

SPECIFICS/PRIORITIES FOR THE TWO EASTERN OREGON ESUs:

Continue photopoint and temperature monitoring on a substantial number of restoration projects and continue to coordinate with local schools for additional temperature, water quality, and riparian vegetation monitoring. Continue monitoring fish species composition, water chemistry, and macroinvertebrates on a few selected restoration projects.

- ***Middle Columbia ESU***—Continue photopoint and temperature monitoring of restoration work in Fifteenmile Creek with current level of BPA funding (over 80 miles of fence have been installed to protect over 45 miles of stream and over 900 instream structures have been placed in recent years).
- ***SNAKE RIVER BASIN ESU***—Continue to participate in the Grande Ronde Model Watershed (GRMW) process to track the monitoring of watershed enhancement projects in the Grande Ronde and Imnaha basins. All projects have a monitoring component associated with them that may include photopoints, temperature, stream flow, vegetation, or other monitoring.

PHASE 2

Conduct evaluations of the effectiveness of representative OCSRI restoration projects and the specific restoration techniques applied. Broaden evaluation efforts to include effects of "Jobs for Fisherman" projects administered by National Resources Conservation Service and expand photopoint and temperature monitoring of riparian and instream restoration work in more Columbia Basin streams to include instream habitat and macroinvertebrate sampling for comparison with pre-project baseline (need increased level of BPA funding, or another source).

◆ ODFW ID1—USE OF VOLUNTEERS

(This full version also given in Section 4 under Factor for Decline: Loss of Genetic Adaptation of Wild Populations from Interbreeding with Genetically Dissimilar, Less Fit Hatchery Fish.)

PHASE 1

Expand emphasis and scope of volunteers to help implement OCSRI salmon and steelhead restoration actions, including compliance monitoring. A variety of restoration activities will benefit significantly from assistance by existing volunteer programs (e.g., STEP) and new voluntary efforts from landowners, sporting and conservation clubs, Watershed Councils, and other cooperating groups. Activities could include habitat restoration projects, wild broodstock collection, carcass placement, outplanting juveniles from wild broodstock, hatchery salmon carcass placement in streams, field surveys of habitat or fish abundance, etc.

This measure is similar to what WDFW is proposing in their draft *Lower Columbia Steelhead Conservation Initiative* for the portions of the SW Washington and Lower Columbia ESUs that are in Washington.

◆ ODFW IVA1—PROVIDE TECHNICAL ASSISTANCE TO REGULATORY AGENCIES FOR HABITAT PROTECTION

(This full version may also appear in Section 2, "Physical Habitat," which should be the primary place for it.)

ODFW will promote and assist with increased habitat protection on private land and land administered by other agencies by working with Federal agencies, other State agencies, and local governments that have regulatory authority over activities that occur in salmon, steelhead, and cutthroat trout habitat. ODFW will do so through technical assistance; data sharing; review and comment on rule making, plans, permits and NEPA documents; and direct participation in interagency planning efforts. ODFW will continue to provide other agencies information on violations of habitat protection regulations detected during normal ODFW fish management and research activities.

PHASE 1

A priority in all ESUs will be to work with ODA and local SWCDs to reduce impacts of

agricultural operations on stream habitat (cooperative efforts with other agencies on instream flow and "push-up dam" problems are high priorities covered under other ODFW measures). Another priority will be to work with DSL and DEQ to assure "emergency" fill and removal operations are conducted only for true emergencies and to work with DSL and WRD to be more restrictive about exempting agricultural activities from guidelines on instream work timing and allowing activities during early spring when steelhead are spawning and smolts are migrating (ODFW will pursue improved notification and opportunity to review such proposed operations and activities).

SPECIFICS/PRIORITIES FOR THE TWO COASTAL STEELHEAD ESUs:

Increase emphasis on sharing data and technical assistance with county and city governments in areas where development in urban and rural areas is increasing rapidly. Pursue and provide technical advice on proposed planning rules and ordinances to increase protection of stream habitat.

SPECIFICS/PRIORITIES FOR THE THREE LOWER COLUMBIA ESUs:

Diseases related to low flow/warm water are a major documented problem for smolts migrating through the Willamette River in spring, affecting the Upper Willamette and Lower Columbia ESUs (and possibly even the SW Washington ESU through effects on Columbia River water). Continue studies at Willamette Falls to refine relationships between river conditions and disease incidence. Continue to work with the USACE to provide optimum flow/temperature conditions in the mainstem Willamette River through May for outmigration of wild steelhead smolts (and other anadromous salmonids) every year. This might involve all upper basin storage dams and not just the tributaries with steelhead. Continue to seek reauthorization of these USACE reservoir projects to specifically allocate storage volumes to instream purposes, including flow and water quality needs of steelhead and other indigenous fish. Increase emphasis on sharing data and technical assistance with county and city governments in areas where development in urban and rural

areas is increasing rapidly. Pursue and provide technical advice on proposed planning rules and ordinances to increase protection of stream habitat.

SPECIFICS/PRIORITIES FOR THE TWO EASTERN OREGON ESUs:

ODFW will continue to participate in the Grande Ronde Model Watershed (GRMW) process for the Snake River Basin ESU. Continue technical information and advice to USFS, BLM, DEQ, SWCDs, and others in both eastern Oregon ESUs. ODFW will continue to promote reduction in total dissolved gasses in the mainstem Columbia River and lower Snake River through working with USACE and DEQ to review USACE study plans, evaluate study results, and pursue decisions on hydroelectric system management that are favorable to survival of steelhead and other salmonid smolts.

PHASE 2

Heightened interest by other agencies participating in salmon, steelhead, and cutthroat trout restoration will lead to increased need for technical assistance from ODFW. We see this as a key component of our involvement in protecting salmonids habitat under the OCSRI.

🔹 ODFW IVA3—PROTECT INSTREAM FLOWS

(This full version also given in Section 3 under Factor for Decline: Inadequate Streamflows to Complete Salmonid Life History.)

PHASE 1

ODFW will prepare and submit applications for new Instream Water Rights (IWR) where existing data on flow requirements of fish are available, or where flows of existing IWRs are not adequate to protect fish resources. ODFW will prepare a plan for collecting data on streams that do not have existing information on flow requirements and submitting applications for new IWRs. The plan will be based on priorities established under ODFW IVA8.

SPECIFICS/PRIORITIES FOR THE SNAKE RIVER ESU:

- **Imnaha River**—ODFW will use existing streamflow requirement information on 17 reaches or streams from ODFW's Basin Investigation Studies to apply for new IWRs in the Imnaha River basin.

PHASE 2

Obtain funding and staff necessary to collect flow requirement information and prepare applications for new IWRs. In May, 1997 HCD submitted a proposal to ODFW Fish Division for funding through the Federal Sport Fish Restoration (SFR) program adequate to collect flow requirement information and prepare applications for up to 30 new IWRs. If the SFR funding is approved, ODFW will conduct the necessary studies and submit the applications. ODFW will prepare and submit a budget request for funding and staff necessary to collect flow requirement information and prepare applications for new IWRs. Increased staff requested in other actions may also be used to increase survey activity to identify instream flow needs and monitor or spot-check for compliance with IWRs in priority areas for steelhead and other salmonids, and work with partners to increase flow protection.

◆ **ODFW IVA6—PROMOTE AND ASSIST VOLUNTARY HABITAT PROTECTION ACTIONS**

(This full version may also appear in Section 2, "Physical Habitat", which should be the primary place for it.)

Provide technical assistance to private landowners, Watershed Councils, and other cooperators to promote and guide protection of high priority salmon, steelhead, and cutthroat trout habitat areas on forest, agriculture and other lands. Without specific authority for habitat protection, ODFW's role is one of encouragement through cooperative efforts and technical assistance. As the primary agency with expertise in this area, we consider this one of our primary roles in the initiative.

PHASE 1

ODFW staff will continue to provide technical assistance to landowners, agencies, Watershed Councils and others on habitat protection programs and projects, especially to prevent habitat-damaging "cleanup" and removal of large wood from streams and estuaries following floods or windstorms. ODFW will continue to work with ODF to jointly encourage private forest landowners to voluntarily provide riparian protection on streams containing wild steelhead that is beyond the protection required by the Forest Practices Act. A strong effort will be made across all land ownerships to:

1. Advocate for the protection of fully functioning riparian habitats in wild steelhead areas, and
2. Advocate for minimal increases in roading in watersheds that are production areas for wild steelhead. Work with land managers to reduce road densities and improve the quality of construction and maintenance on necessary roads in heavily roaded areas.

SPECIFICS/PRIORITIES FOR THE TWO COASTAL STEELHEAD ESUs:

Continue to promote voluntary habitat protection through work with the numerous Watershed Councils, the Umpqua Basin Fisheries Restoration Initiative, the North Coast Salmonid Habitat Restoration Project and its counterparts on the Mid-Coast, South Coast, and Coos-Coquille areas, the Rogue Valley Council of Governments, the SWCDs, and other interested parties. Continue to seek funding for fencing materials (e.g., through the R and E Board) and seek landowners willing to help install fences to protect riparian areas from grazing, particularly in spawning and rearing areas for summer steelhead in the Rogue Basin.

SPECIFICS/PRIORITIES FOR THE THREE LOWER COLUMBIA ESUs:

Continue to promote voluntary habitat protection through work with urban and rural interest groups, particularly Watershed Councils, the North Coast Salmonid Habitat Restoration Project, SWCDs, and utility companies with

hydroelectric dams on anadromous salmonid streams.

SPECIFICS/PRIORITIES FOR THE TWO EASTERN OREGON ESUs:

Continue to promote voluntary habitat protection through participation in the Grande Ronde Model Watershed (GRMW) process for the Snake River Basin ESU. Continue providing technical information and advice to SWCDs and other local interests in both eastern Oregon ESUs. Continue to seek changes in grazing practices near streams, seek funding for fencing materials (e.g., through the RandE Board), and seek landowners willing to help install fences to protect riparian areas from grazing that is very widespread on steelhead streams in these two ESUs.

PHASE 2

We have requested increased staff to increase our ability to provide technical assistance on habitat protection, since the overall demand from OCSRI cooperators is expected to increase and is already exceeding our capacity. One duty for these positions will be to promote and/or coordinate additional multi-agency seminars, such as the "grange hall seminars" conducted in sub-basins of the Umpqua Basin, to inform landowners of habitat requirements for salmonids, regulations and incentives to protect and restore habitat, and the proper channels and processes to pursue to obtain technical and financial help.

💧 **ODFW IVA8—IDENTIFY INSTREAM FLOW PRIORITIES**

(This full version also given in Section 3 under Factor for Decline: Inadequate Streamflows to Complete Salmonid Life History.)

PHASE 1

ODFW will identify streams where quantity of flow is limiting steelhead trout production and establish priorities for obtaining new Instream Water Rights (IWR). ODFW will identify and prioritize the areas where steelhead habitat is most dependent on restoration of streamflows,

and will establish a schedule for annual incremental restoration of flows over time as the targets for WRD and ODFW streamflow restoration measures.

SPECIFICS/PRIORITIES FOR THE TWO COASTAL STEELHEAD ESUs:

- **Summer Steelhead**—Summer steelhead are an uncommon and valuable resource in coastal rivers. Adults must have adequate summer streamflow and water quality to survive holding through the summer low flow period. Basins where summer steelhead are indigenous (Rogue, Umpqua and Siletz Rivers) will be considered as one of the highest priorities for stream flow protection measures.

SPECIFICS/PRIORITIES FOR THE THREE LOWER COLUMBIA ESUs:

- **Upper Willamette ESU**—Completion of the conversion of Minimum Perennial Streamflows (MPS) in the Willamette River basin is considered a priority by ODFW. The benefit that converting these unconverted MPSs may have for protection and restoration of steelhead populations in the Willamette River will be considered in establishing priorities for new IWRs. Passage, stranding, delay, spawning and other flow related problems at diversion dams and other obstructions, such as at Geren Island near Stayton on the North Santiam, will be considered during prioritization. Opportunities to resolve problems through obtaining new IWRs may be limited and these concerns may be better resolved through development of flow and/or operational agreements.

💧 **ODFW IVB2—PROMOTE HABITAT RESTORATION**

(This full version may also appear in Section 2, "Physical Habitat", which should be the primary place for it.)

ODFW recognizes that habitat restoration must be secondary to adequate habitat protection because habitat restoration alone will never be adequate to bring steelhead back near historical

abundance and distribution. Restoration will only be a small part of correcting landscape, watershed, and stream habitat problems for fish. The main focus of recovery has to be adequate restraint on land use practices (voluntary or otherwise) that will allow streams and their watersheds to heal naturally over the long term for the benefit of fish.

ODFW will promote, support, and conduct habitat restoration and guide efforts to achieve maximal efficiency and effectiveness with the resources available. ODFW will actively work with landowners, cooperators and agencies to promote habitat restoration and other actions to restore watershed functions, and will also support and conduct some restoration projects directly. As a technical advisor, will guide the prioritization and conduct of restoration activities to achieve the greatest result for salmon, steelhead, and cutthroat trout restoration with available resources. As the agency with the greatest expertise in habitat restoration, but without direct statutory authority over land management, our primary role will be as a technical resource to various OCSRI partners. We see this as one of our key roles in the initiative. Legislative concept to continue the R and E program was submitted and legislative approval appears highly likely.

PHASE 1

Existing staff will continue to provide technical guidance. Prioritization of habitat restoration will be based on assessment of limiting factors and projects which contribute the most to long term salmonid sustainability.

SPECIFICS/PRIORITIES FOR THE TWO COASTAL STEELHEAD ESUs:

ODFW will complete habitat restoration guides for the major coastal drainages, which provide guidance helpful to steelhead habitat restoration, but are more focused on coho habitat and must be updated as new habitat information and funding for updating the guides becomes available. In addition to permanent habitat and STEP biologists throughout the coast, funding for habitat restoration biologists to implement projects identified in the guides is secure for:

- North Coast area (Necanicum-Nestucca basins) 2 biologists;
- Mid Coast area (Salmon-Siuslaw basins) 1 biologist;
- South Coast area (south of Coquille River) 1 biologist.

ODFW will continue to work on watershed restoration with the numerous Watershed Councils, the Umpqua Basin Fisheries Restoration Initiative, the North Coast Salmonid Habitat Restoration Project and its counterparts on the Mid-Coast, South Coast, and Coos-Coquille areas, the Rogue Valley Council of Governments, the SWCDs, and other interested parties. We will continue to seek funding and help others seek funding (e.g., through the RandE Board and OWEB) for cooperative restoration projects where landowners are willing, particularly in spawning and rearing areas for summer steelhead in the Rogue, Umpqua, and Siletz basins.

SPECIFICS/PRIORITIES FOR THE THREE LOWER COLUMBIA ESUs:

ODFW will continue to work on watershed restoration with urban and rural interest groups, particularly Watershed Councils, the North Coast Salmonid Habitat Restoration Project, SWCDs, and utility companies with hydroelectric dams on anadromous salmonid streams. We will continue cooperative efforts with the USFS, such as the helicopter-assisted placement of large wood in 0.5 mile of the West Fork of the Hood River during 1996 that added to the 8 miles that agency treated with large wood and rock placement over the last 3-5 years.

SPECIFICS/PRIORITIES FOR THE TWO EASTERN OREGON ESUs:

ODFW will continue to work on watershed restoration through participation in the Grande Ronde Model Watershed (GRMW) program, the Lower Umatilla River Enhancement (LURE) program, and through work with SWCDs and other local interests in both eastern Oregon ESUs. ODFW will continue to work with the CTUIR and Union Pacific Railroad to plan approximately \$2.5 million of mitigation work in Meacham Creek (Umatilla Basin) and Dry Creek (upper Grande Ronde Basin) as part of the

UPRR Blue Mountain Expansion Project. We will continue to work with CTUIR, and NRCS, and landowners to reestablish multiple meandering channels and move riparian fencing farther from the channels on McCoy Creek (upper Grande Ronde Basin).

PHASE 2

We have requested funding to expand field staff specifically to increase capability to promote, guide and support habitat restoration. The need for habitat biologists is expected to increase dramatically.

With positions funded without restrictions on focus (such as private timberland focus), ODFW will increase efforts devoted to Watershed Councils, SWCDs, extension agencies, and other groups that have direct contact with private landowners, especially those that have the best rapport with agricultural landowners. We will also increase efforts to provide county and city planning departments with written information on habitat restoration (technical papers for staff and brochures for distribution to landowners) because these local agencies are often the first contact for landowners seeking to alter instream and upland areas.

SPECIFICS/PRIORITIES FOR THE TWO COASTAL STEELHEAD ESUs:

Additional habitat restoration biologists for the Umpqua, Coos/Coquille, and Upper Rogue basins to work with public/ private cooperatives connected with the OWHF to implement projects that have already been identified in ODFW guide books to priority restoration sites, similar to the programs underway on the north, mid, and far south coast areas since 1995, 1996, and 1997, respectively.

SPECIFICS/PRIORITIES FOR THE THREE LOWER COLUMBIA ESUs:

Additional habitat restoration biologists for the Sandy/Clackamas/Lower Willamette basins and the Upper Willamette basin to develop guide books to priority restoration sites and work with public/private cooperatives connected with the OWHF to implement projects, similar to the programs underway on the north, mid, and far south coast areas since 1995, 1996 and 1997,

respectively. Continue cooperative support, as needed, to the USFS for their habitat restoration projects, including projects planned for:

- East Fork of Hood River (place large wood in 1-2 stream miles);
- Lake Branch of Hood River (place large wood in 0.5 stream mile);
- Clear Branch of Hood River (place large wood in 0.5 stream mile).
- Continue cooperative support, as needed, to the CTWS for their habitat restoration projects in the Hood River Basin.

SPECIFICS/PRIORITIES FOR THE TWO EASTERN OREGON ESUs:

Funding to cover maintenance of the many riparian protection/restoration fences installed with BPA, R and E, and other funds is a high priority as the terms of maintenance contracts expire. Funds will be needed for the Lower Umatilla River Enhancement (LURE) program in which ODFW is participating to develop a greenway from the mouth to the headwaters.

◆ ODFW IVB3—PROMOTE USE OF BEAVERS TO RESTORE SALMONID HABITAT

(This full version may also appear in Section 2, "Physical Habitat", which should be the primary place for it.)

ODFW will promote the use of beaver to restore salmonid habitat through providing technical assistance and information to landowners and local agencies. Beaver dams provide critically needed over winter habitat for juvenile salmonids and are natural features requiring little human maintenance.

PHASE 1

ODFW will use a cooperative approach with land owners, and will recommend beaver control only in cases of specific damage. We will work with BLM and USFS to identify locations on Federal lands where salmonid habitat can benefit from transplanting "problem" beavers from other lands and to simplify the Federal permitting process for such actions.

SPECIFICS/PRIORITIES FOR THE TWO COASTAL STEELHEAD ESUs:

Continue the recently increased communication with landowners and local public works departments in the Lincoln Fish District on the importance of beavers to salmonids and alternative ways to solve beaver damage problems; increase the effort throughout the coast. Continue developing the cooperative process for transplanting "problem" beavers to desirable sites for salmonids on Federal lands initiated in the Coos/Coquille Fish District. Continue the radio-tag study on transplanted beavers in the Umpqua Basin.

SPECIFICS/PRIORITIES FOR THE THREE LOWER COLUMBIA ESUs:

No priorities are identified at this time.

SPECIFICS/PRIORITIES FOR THE TWO EASTERN OREGON ESUs:

ODFW will continue to use some successful examples of past landowner cooperation to inform more landowners of the value of beaver dams to the maintenance of water tables and meadows, as well as habitat for steelhead and other fish.

PHASE 2

With increased field staff (ODFW IVB2) we will increase contacts and take a more proactive approach on the value of beavers with more land owners.

◆ **ODFW IVB4—USE HATCHERY CARCASSES TO INCREASE WILD SALMONID PRODUCTION**

(This full version also given in Section 4 under Factor for Decline: Reduced Nutrients (Carcass Nutrient Cycle) from Depressed Runs.)

Pursue landowner cooperation, DEQ permits and labor to restore benefits to juvenile salmonid production through placement of hatchery salmon carcasses in priority stream reaches. Salmonid production has been shown to benefit directly from food and nutrients derived from adult salmonid carcasses. Carcass placement

will be considered only in streams that are not water quality limited.

This measure is similar to what WDFW is proposing in their draft *Lower Columbia Steelhead Conservation Initiative* for the portions of the SW Washington and Lower Columbia ESUs that are in Washington.

PHASE 1

Requests have been submitted to DEQ to allow use of surplus hatchery carcasses to boost natural salmonid production in streams until restored runs can contribute this function naturally. About a dozen streams in the two coastal ESUs and the Lower Columbia ESU received carcasses in the winter of 1996/97. Volunteer contributed to the placement of carcasses in the winter of 1996/97 and efforts are being organized to place carcasses in selected test streams again starting in the fall of 1997.

SPECIFICS/PRIORITIES FOR THE TWO COASTAL STEELHEAD ESUs:

Complete the design of a placement and evaluation program for about 40 coastal streams in time for permit approval and placement starting in the fall of 1997.

SPECIFICS/PRIORITIES FOR THE THREE LOWER COLUMBIA ESUs:

Continue the cooperative carcass placement and evaluation program with the USFS on Still Creek in the Sandy Basin.

SPECIFICS/PRIORITIES FOR THE TWO EASTERN OREGON ESUs:

Complete the design of a placement and evaluation program for several streams within the Snake River Basin ESU in time for permit approval and placement starting in the fall of 1997.

PHASE 2

Efforts will increase, as new field staff become available (ODFW IVB2) and if results from test streams are encouraging.

🔥 **ODFW IVB7—ODFW JOB ROTATIONS**

(This full version may also appear in Section , "Physical Habitat," which should be the primary place for it.)

PHASE 1

Pursue job rotation opportunities for ODFW fishery biologists in other State agencies through temporary assignments to provide technical assistance in restoring salmonid habitat. Efforts are underway to share ODFW habitat restoration expertise through temporary assignment to other agencies. The cooperating OCSRI agencies will also explore opportunities for cost sharing fish habitat specialist positions.

🔥 **ODFW IVA1—CONDUCT AN OUTREACH PROGRAM**

(This full version may also appear in Section 2, "Physical Habitat", which should be the primary place for it.)

Develop a program to prepare and distribute information and materials in support of OCSRI activities. These materials will be used to promote participation in habitat restoration and other OCSRI activities, and provide technical guidance for landowners and Watershed Councils on how to conduct various kinds of restoration. We will continue our current programs, and expand them as funding can be found, to inform a broad spectrum of Oregonians on how human activities can fit into the landscape without excessive impact on fish and wildlife if activities are done in "fish and wildlife friendly" ways.

PHASE 1

We will continue preparation of informational leaflets, news releases, Oregon Wildlife articles, and other informational vehicles with existing staff. Particular emphasis will be placed on outreach activities identified for assisting with habitat protection and restoration.

PHASE 2

We will hire an OCSRI outreach coordinator to expand our ability to develop informational materials for distribution to our cooperators.

5.3.7 Oregon Department Of Forestry: Phase 1 Measures

🔥 **ODF1S—ROAD EROSION AND RISK PROJECT**

Many forest roads built prior to the development of the Oregon Forest Practices Act or prior to the current BMPs pose increased sediment risk to fish habitat. Industrial forest landowners have agreed to implement a voluntary program to identify risks from roads and to address those risks. This project is currently being implemented within the range of coho salmon in Oregon. Negotiations with key stakeholders are taking place to expand this program into all steelhead ESUs under consideration.

🔥 **ODF2S—STATE FOREST LANDS ROAD EROSION AND RISK PROJECT**

State forest landowners have agreed to implement a voluntary program on state-owned lands to identify risks from roads and to address those risks. This effort will upgrade at least 130 miles of road in each of the next three biennia. Many of the road systems were built prior to the Oregon Forest Practices Act to salvage Tillamook burn timber in the 1950's. The State forestland was in private ownership at that time.

🔥 **ODF3S—TECHNICAL AND POLICY REVIEW OF RULES AND ADMINISTRATIVE PROCESSES RELATED TO SLOPE STABILITY**

To analyze the effects of the February 1996 and November 1996 storms, the Department is in the process of collecting and analyzing landslide information from study zones within the storm areas, this project is described in measure ODF 13. As a follow-up of the monitoring effort the Board of Forestry will review the existing Forest practice rules and program in relation to slope stability to determine if changes in rules or

administration procedures are needed. The review process will be two fold focusing on public safety and impacts on fish habitat and water quality.

💧 ***ODF4S—STREAM HABITAT ASSESSMENTS***

For the last three years, industrial forest landowners and State forestlands have contracted with ODFW to complete stream habitat surveys following modified Hankin and Reeves protocol (ODFW protocol). Assessments to date have included approximately 5,000 miles of stream statewide.

💧 ***ODF5S—NORTH COAST SALMONID HABITAT RESTORATION PROJECT***

The North Coast Salmonid Habitat Restoration Project is an existing program that's been in place for two years. Membership is open to all landowners that share a commitment to stream habitat conservation, restoration and enhancement through cooperative means and who can contribute valuable resources (time, equipment, dollar) to support the Project's objectives.

💧 ***ODF6S—MID-COAST RESTORATION PROJECT***

The Mid-Coast Restoration Project has been modeled after the North Coast Restoration Project. Membership is open to all landowners that share a commitment to stream habitat conservation, restoration and enhancement through cooperative means and who can contribute valuable resources (time, equipment, dollar) to support the Project's objectives.

💧 ***ODF7S—FUND 7 NEW FISH BIOLOGISTS TO PROVIDE TECHNICAL ASSISTANCE FOR SALMONID HABITAT RESTORATION***

This voluntary measure by the Oregon Forest Industries Council (OFIC) landowners, will function to provide technical assistance in western Oregon to forest landowners conducting salmonid habitat restoration projects. Current in

place grassroots efforts such as the north and mid coast initiatives (ODF 5 and 6) lack stable funding, this action will absorb these and create five additional areas covering all of western Oregon providing long term stable funding. This project area will include the western slopes of the Cascades to the Pacific Ocean.

💧 ***ODF8S—RIPARIAN HARDWOOD CONVERSIONS***

FP rules have been developed to allow and provide incentives for the conversion of hardwood dominated RMAs (on conifer sites) to establish conifers. This process enables sites capable of growing conifers to contribute conifer LWD in a timelier manner. This process will be modified to require an additional review process before implementation for hardwood conversions within core areas.

💧 ***ODF9S—NORTHWEST STATE FOREST LANDS MANAGEMENT PLAN***

Oregon Department of Forestry is preparing a NW Oregon State Forest Management Plan. A draft plan was completed by the summer of 1997. The plan will cover over 600,000 acres of State forestland and will address the full array of statutory mandates and Board and department policies. ODF is working closely with ODFW in developing the plan, and has solicited input from stakeholders through a variety of forums.

💧 ***ODF10S—FOREST PRACTICES MONITORING PROGRAM***

The FP monitoring program evaluates: the implementation of forest practices BMPs, determines if BMPs are meeting their intended purposes, and validates assumptions upon which rules may have been developed.

💧 ***ODF11S—MONITORING OF RIPARIAN MANAGEMENT AREAS UNDER THE FOREST PRACTICE ACT***

The riparian monitoring project will look at the effectiveness of the 1994 water protection rules in maintaining and creating sources of current

and potential LWD and in maintaining effective riparian stand structure in terms of stream protection and wildlife habitat.

◆ ***ODF12S—MONITORING
EFFECTIVENESS OF BMPs IN
PROTECTING WATER QUALITY
DURING AERIAL APPLICATIONS OF
FOREST PESTICIDES***

The Board of Forestry recently reviewed and revised the State's forestry chemical application rules. As part of the chemical rule revisions the Board adopted OAR 629-620-700 committing Oregon Department of Forestry to monitoring compliance with and the effectiveness of the chemical and other petroleum rules.

◆ ***ODF13S—STORMS OF 1996
MONITORING PROJECT***

The storms of 1996 resulted in many landslides, channel changes, and other effects to natural resources, and public and private resources. The goal of the project is to determine which forest practices and designs successfully minimized or contributed to impacts. The project includes intensive on-the-ground data collection regarding landslides, debris torrents, roads, channel impacts, and fish habitat.

◆ ***ODF14S—MONITORING WATER
TEMPERATURE PROTECTION BMPS***

This project was initiated in 1994 and will continue for the next several years throughout the state. The general approach for this project has been to record stream temperatures and physical characteristics of a variety of streams under various silvicultural activities allowed under the water protection rules.

◆ ***ODF15S—EVALUATION OF ROAD
AND TIMBER HARVEST BMPS TO
MINIMIZE SEDIMENT IMPACTS***

The purpose of this project is to provide land managers and appropriate agencies with specific information on road drainage practices that minimize sediment entry into streams and how

these practices are implemented in western Oregon.

◆ ***ODF17S—SITE-SPECIFIC PLANS
FOR VEGETATION RETENTION
WITHIN RMAs ON NORTHWEST AND
SOUTHWEST (GRANTS PASS)
OREGON STATE FOREST LANDS***

Until the Northwest Forest Plan is completed, this measure will be used to ensure that the desired future condition for RMAs established under the Forest Practices Act is achieved to the maximum extent practicable on State Forest Lands. Actual site-specific stocking will be used to calculate BA targets following the procedures used in developing the standard targets.

◆ ***ODF18S—WILDLIFE TREE
PLACEMENT ON STATE FOREST
LANDS***

Wildlife trees required to be retained in harvest units will be retained along Type N streams on all NW and SW (Grants Pass) State forest lands unless otherwise directed by ODFW.

◆ ***ODF19S—ADDITIONAL CONIFER
RETENTION ALONG FISH-BEARING
STREAMS IN CORE AREAS***

Within coho salmon core Areas, currently OFIC members have voluntarily agreed to harvest no more than 25 percent of the conifer that are in excess of the standard basal area target in those situations when the actual stocking in the RMA exceeds the standard target. Negotiations are underway to expand this program to high priority steelhead basins as well.

◆ ***ODF20S—LIMITED RMA FOR SMALL
TYPE N STREAMS***

For coastal coho salmon core areas, establishes limited RMAs of 20 feet for small type N streams for the purpose of retaining snags and downed wood. Negotiations are underway to expand this program to high priority steelhead basins as well.

◆ ***ODF21S—ACTIVE PLACEMENT OF
LWD DURING FOREST OPERATIONS***

Following ODF/ODFW placement guidelines, implement an aggressive and comprehensive effort to place more LWD in streams during forest operations on OFIC member lands within the range of the coastal coho salmon. Recommended placement targets will be developed jointly by ODF/ODFW. Negotiations are underway to expand this program to high priority steelhead basins as well.

◆ ***ODF22S—25 PERCENT IN-UNIT
LEAVE TREE PLACEMENT AND
ADDITIONAL VOLUNTARY
RETENTION***

This is a voluntary measure to retain up to 100 percent of the in-unit trees along Type N or F streams in coastal coho salmon "core areas" and other special areas along specific stream reaches when ODF in consultation with ODFW determine additional retention along streams is beneficial to coho salmon recovery. Negotiations are underway to expand this program to high priority steelhead basins as well.

◆ ***ODF23S—BMP COMPLIANCE AUDIT
PROGRAM***

Within this measure ODF will conduct compliance auditing. Compliance auditing will be planned and implemented within the next two years by the Department. Compliance auditing programs provide a statistically valid sample of the level of compliance and help establish how identified compliance problems are best resolved.

◆ ***ODF24S—STATE FOREST LANDS
STREAM HABITAT ASSESSMENT
AND INSTREAM PROJECTS***

During 1994 and 1995, 305 miles of stream have been surveyed for habitat on State forestlands by ODFW biologists. Fish distribution surveys have been done on 260 streams and stored on GIS. Contracts with ODFW are planned to complete

assessments for the remaining streams and adjacent riparian areas.

◆ ***ODF25S—FISH PRESENCE/ABSENCE
SURVEYS AND FISH POPULATION
SURVEYS***

This is a voluntary program in which industrial forest landowners and State lands conduct or have contracted with ODFW to survey for absence and presence of salmonids. This allows for greater precision in applying forest practice rules (BMPs) to protect water quality.

◆ ***ODF26S—ELLIOTT STATE FOREST
HABITAT CONSERVATION PLAN***

The Elliott State Forest (ESF) Habitat Conservation Plan developed for Northern Spotted Owls and Marbled Murrelets also enhances riparian areas. The forest covers approximately 93,000 acres in the Oregon coast range.

◆ ***ODF27S—INCREASED RIPARIAN
PROTECTION***

1994 Forest Practices rule changes have increased vegetation retention requirements in RMAs to increase protection and the potential delivery to near optimal for LWD.

◆ ***ODF28S—PROTECTION OF
SIGNIFICANT WETLANDS,
INCLUDING ESTUARIES***

Forest practice rules requiring protection of riparian management areas around significant wetlands, including all estuaries were implemented in late 1991. While all wetlands are protected under the forest practice rules, this change requires the retention of riparian vegetation around the wetland in addition to retention of vegetation within the wetland.

◆ ***ODF29S—FOREST PRACTICE
CHEMICAL PROTECTION RULES
INCREASED BUFFERS***

The Board of Forestry has recently reviewed and revised the state's forestry chemical application rules. The changes include providing protection

to vegetation required to be protected by the water protection rules, increasing distances for the exclusion of direct aerial application of fungicides and non-biological insecticides from 60 to 300 feet from the aquatic areas of Type F and Type D streams, large lakes and any lakes with fish use, any areas of standing open water larger than one-quarter acre, and significant wetlands.

◆ ***ODF30S—LARGE WOODY DEBRIS
RECRUITMENT INCENTIVES***

Large woody debris placement incentives were included in the September 1994 Forest Practice Water Protection Rules. Forest Practice Rules have been developed to provide landowner incentives to work with ODF and ODFW in the voluntary placement of LWD and other material where appropriate.

◆ ***ODF31S—LARGE WOODY DEBRIS
PLACEMENT GUIDELINES***

ODF and ODFW have developed a guideline publication for operators to use in the placement of large woody debris in streams. If a proposed woody debris placement project meets the ODF guidelines contained in the publication the process for acquiring approval is streamlined. The landowner or operator still must obtain prior approval of a written plan before proceeding with the project.

◆ ***ODF32S—FISH PRESENCE SURVEY
(OAR 629-635-200(11))***

This measure will fund and complete an interagency "fish" (salmonids, game fish, and TandE fish) presence survey to improve efficiency of program deliveries and to ensure that protection is delivered as was intended by the forest practice rules and other programs. This survey also identifies barriers to fish passage. This allows for greater precision in applying forest practice rules (BMPs) to protect water quality.

◆ ***ODF33S—INCREASE NUMBER OF
STREAMS AND STREAM MILES
PROTECTED***

Through Forest Practice Rule changes protected stream miles have increased approximately 30 percent. This will allow for more stringent rules to be applied to protect water quality.

◆ ***ODF34S—IMPROVE FISH PASSAGE
BMPS ON STREAM CROSSING
STRUCTURES***

Modification of BMPs for stream crossing structures to require adult/juvenile passage upstream and downstream.

◆ ***ODF35S—INCREASE DESIGN FOR
LARGER FLOWS***

Modification of BMPs for stream crossing structures from 25 to 50 year storm events. This will reduce risk of fill failures.

◆ ***ODF36S—UPGRADED ROAD
CONSTRUCTION AND FILL
REQUIREMENTS***

Road construction BMPs have been changed to require excavation and fills to be minimized at stream crossings, and that any road fill greater than 15 feet deep must obtain prior approval. This will reduce the impacts of fill failures on sediment conditions.

◆ ***ODF37S—UPGRADED SKID TRAIL
CONSTRUCTION AND FILL
REQUIREMENT***

Skid trail construction BMPs have been changed to require excavation and fills to be minimized at stream crossings, and that any skid trail fills greater than 8 feet deep must obtain prior approval.

◆ ***ODF39S—LOBSTER CREEK WHOLE-
BASIN COORDINATION
RESTORATION PROJECT***

A whole basin restoration project to restore native salmonid populations modeled after Hancock Timber Resource Group's (HTRG)

strategy used in the Knowles Creek efforts in the Siuslaw basin. Partners in this project include HTRG, Oregon Department of Fish and Wildlife, the USDA Forest Service, and the Pacific Rivers Council.

💧 ***ODF40S—UPPER SIUSLAW
ENHANCEMENT***

This is a voluntary action coordinated through Weyerhaeuser, the Oregon Wildlife Heritage Foundation and Oregon Department of Fish and Wildlife (Mid-Coast Habitat Restoration Project) for fish habitat improvement on tributaries of the upper Siuslaw river.

💧 ***ODF41S—SOUTH SILETZ
MONITORING***

This is a voluntary action by Boise Cascade to quantify any changes in stream health after implementation of road enhancement projects on the South Fork Siletz river.

💧 ***ODF42S—NORTH FORK COQUILLE
MONITORING ASSESSMENT***

Menasha is conducting several long-term monitoring projects in the North Fork basin of the Coquille River. These projects include fish presence, extent surveys, aquatic habitat surveys, salmon spawning surveys and some temperature monitoring. This work was started in the summer of 1993.

💧 ***ODF45S—COQUILLE, SILETZ AND
SIXES WATERSHED MONITORING***

A long-term monitoring project has been implemented on Georgia Pacific lands in the three above basins. The project began in 1994 and will continue indefinitely.

💧 ***ODF47S—COOS, MILLIACOMA AND
UPPER SIUSLAW RIVERS
WATERSHED ANALYSIS***

Weyerhaeuser is completing watershed analysis for all of their ownership in Oregon. This analysis follows modified protocol used by the State of Washington under their FPA. The analysis will evaluate sediment sources, riparian

conditions, and document biological resources of the basin.

💧 ***ODF48S—SOUTH FORK SILETZ
WATERSHED ANALYSIS***

This is a voluntary action by Boise Cascade Corporation to assess the geomorphic vulnerabilities of the system, determine stream health and assess any road concerns. The analysis will evaluate sediment sources, riparian conditions, and document biological resources of the basin.

💧 ***ODF49S—ECOLA CREEK
WATERSHED ANALYSIS***

Analysis of Ecola Creek watershed (Cannon Beach) Willamette Industries (formally Cavenham) to identify sensitive or high risk areas, requiring special care in management decisions and operations. The analysis will evaluate sediment sources, riparian conditions, and document biological resources of the basin.

💧 ***ODF50S—KILCHIS WATERSHED
ANALYSIS***

Proposed assessment project to assess possible cumulative effects of changes in hydrology, sediment routing and other factors due to land use practices through out the Kilchis watershed channel network (Tillamook Bay NEP Monitoring Program). The analysis will evaluate sediment sources, riparian conditions, and document biological resources of the basin.

💧 ***ODF53S—OREGON PROFESSIONAL
LOGGER PROGRAM***

Logger training program of which elements will develop operator understanding of riparian protection and habitat development. This program is offered through Associated Oregon Loggers.

💧 ***ODF61S—ANALYSIS OF "RACK"
CONCEPT FOR DEBRIS FLOWS***

OFIC members will conduct surveys to determine the feasibility and value of retaining trees along small type N streams with a high

probability of debris flow in a "rack" just above the confluence with a Type F stream. The rack would extend from the RMA along the Type F stream up the Type N stream some distance for the purpose of retaining trees that have a high likelihood of delivery to the Type F stream.

◆ **ODF62—VOLUNTARY NO-HARVEST
RIPARIAN MANAGEMENT AREAS**

Forest landowners routinely elect not to harvest within forest practices rule designated riparian management areas (RMAs) bordering harvest units. Oregon's Forest Practices Act water protection rules require vegetation retention components within RMAs along fish use streams for forest harvest operations. Generally, no tree harvesting is allowed within 20 feet of all fish-bearing, domestic-use and all other medium and large streams unless stand restoration is needed. In addition, all snags and downed wood must be retained in every RMA (with exceptions related to safety). RMA widths are correlated to stream size. RMAs along large streams are 100 feet in width, medium streams 70 feet and small streams 50 feet.

The goal is to provide, on a site specific basis, land owners the opportunity to report voluntary retention of no-harvest RMAs. Also, to provide a process for tracking how often landowners elect to leave no-harvest RMAs.

**5.3.8 Oregon Department Of
Forestry: Phase 2 Measures**

◆ **ODF59S—INTEGRATED FOREST
ASSESSMENT**

Develop a Geographic Information System (GIS) hydrological layer for the range of the coastal coho. This would make information available to support regulatory and voluntary program implementation. This proposal will support watershed assessments to principally identify and correct road related risks and address other watershed problems. The assessments will be flexible and will be developed on an ad hoc and watershed specific basis.

**5.3.9 Department Of Land
Conservation And
Development: Base
Program**

◆ **DLCDP (BASE PROGRAM)—
STATEWIDE GROWTH
MANAGEMENT PROGRAM AND
PERIODIC REVIEW**

[DLCDP Applies Statewide]

Oregon's statewide Land Use Planning Program, first adopted in 1973, provides a basic level of resource protection through the mechanism of enforceable local comprehensive land use plans. Local comprehensive plans are the fundamental mechanism in Oregon for ensuring orderly growth and development patterns. All local jurisdictions in Oregon are required to develop comprehensive plans to comply with nineteen statewide planning goals. In simple terms, a local plan reflects the process of identifying and balancing both natural resource values and land use and development pressures. It is an enforceable policy document implemented through land use (zoning) and land division ordinances at the local level. Oregon's land use program relies on a process called Periodic Review to ensure that local plans are kept current. Under Periodic Review, local jurisdictions develop work programs to review and update their comprehensive plans to address new requirements and changing circumstances.

In working with local jurisdictions to develop new Periodic Review work programs in areas subject to a steelhead listing, DLCD will emphasize the importance of salmon-related plan improvements, particularly measures to implement the Goal 5 riparian rules.

(For a more extensive discussion of Oregon's Growth Management and Land Use Planning Program, see the Appendix chapter entitled "Oregon's Growth Management Program.")

5.3.10 Department Of Land Conservation And Development: Phase 1 Measures

(To be implemented with existing resources)

DLCD1—IMPLEMENT THE COASTAL NONPOINT POLLUTION CONTROL PROGRAM (CNPCP)

[DLCD1 Only Applies to Steelhead ESUs 6 and 7 and the Western Half of ESU 3]

With DEQ, continue to manage the overall development of the Coastal Nonpoint Pollution Control Program (CNPCP) as required under 1990 amendments to the Coastal Zone Management Act. Within the first five years of implementing the CNPCP—essentially by the beginning of 2002—the State is required to ensure the implementation of a comprehensive set of 56 nonpoint source pollution control management measures described in a Federal guidance document available from EPA, Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters. Federal review of Oregon's program to address the CNPCP requirements is expected to be completed in mid-1997.

The fundamental purpose of the CNPCP is to implement enforceable nonpoint source pollution controls to address virtually all land and resource uses in coastal watersheds. Thus, upon full implementation of the CNPCP, all land uses in coastal watersheds will have implemented basic pollution prevention and control measures. The primary responsibility for ensuring the implementation of such measures lies with several agencies. Therefore, this task requires that DEQ and DLCD maintain partnerships with ODA, DSL, ODFW, WRD, ODOT, ODF, the Marine Board, and local jurisdictions, for the purpose of providing technical assistance, financial support where possible, and strategies and guidance for implementing nonpoint source pollution control measures.

Many of the CNPCP measures are already being

implemented in Oregon through State and local programs. For example, Oregon's system for regulating commercial forest management activities implements the CNPCP measures for forestry activities. The State's Removal-Fill law implements important components of the CNPCP measures to protect wetlands. The CNPCP measures for agriculture will be implemented through the state's process for developing agricultural water quality management area plans under Senate Bill 1010.

The purpose of this Phase 1 measure is to ensure the implementation of several CNPCP measures through State and local programs, as appropriate. In addition, this measure includes the development of partnerships with local governments and State agencies to implement the CNPCP in areas outside the coastal zone in the Rogue and Umpqua basins, as necessary and appropriate.

DLCD2—RIPARIAN AREA TECHNICAL ASSISTANCE

DLCD will contract to develop model ordinances and other materials, as necessary and appropriate, for use by local government in amending local land use regulations to implement the riparian area protection and restoration provisions in the newly-amended administrative rules for statewide Planning Goal 5, Open Spaces, Scenic and Historic Areas, and Natural Resources. As agency resources permit, DLCD will also contract to produce technical assistance materials for use by individuals in their management of riparian areas on private residential lands in both urban and rural areas.

DLCD3—IDENTIFY ESTUARINE RESTORATION OPPORTUNITIES

[DLCD3 Only Applies to Steelhead ESUs 6 and 7 and the Western Half of ESU 3]

DLCD will provide consultation and assistance to local governments that want to amend the restoration site inventories in their estuary management plans. The initial effort will emphasize the identification of diked tidelands inside UGBs which may be zoned for development.

◆ **DLCD5—IMPLEMENT URBAN
MANAGEMENT MEASURES UNDER
THE CNPCP**

[DLCD5 Only Applies to Steelhead ESUs 6 and 7 and the Western Half of ESU 3]

This task is a part of the program described in DLCD1. Some of the Urban Management Measures in the Coastal Nonpoint Pollution Control Program (CNPCP) are designed to be implemented through local planning and development review processes, and by local public works officials in their management of road systems. These particular Urban Management Measures are designed:

1. To reduce nonpoint source pollution generated in areas subject to urban levels of development,
2. To reduce nonpoint source pollution generated by road system development, operation, and maintenance, and
3. To reduce peak stormwater runoff rates from newly developing areas.

Again in partnership with DEQ and local governments, DLCD will facilitate implementation of these measures by developing rules, providing technical assistance, or administering grants to local governments as necessary to implement CNPCP requirements related to urban areas. As with all of DLCD's measures, this task requires developing partnerships and work plans with coastal local governments.

**5.3.11 Department Of Land
Conservation And
Development: Phase 2
Measures**

(To be implemented only with new resources)

◆ **DLCD4—IMPLEMENT NEW GOAL 5
RULES FOR RIPARIAN AND
WETLAND PROTECTION**

[Oregon's Coastal Salmon Recovery Initiative already includes this measure for coastal ESUs. Therefore, in this steelhead supplement, DLCD4, as a Phase 2 measure, only applies to steelhead ESUs outside coastal drainages (ESUs 4, 5, and 15)]

Administrative Rules for the implementation of statewide Planning Goal 5 were amended in June 1996. The new rules include improved provisions for protecting riparian areas and wetlands. The emphasis of this task is to implement the rules for protecting riparian areas and wetlands inside riparian buffers. Under Oregon's comprehensive planning program, local jurisdictions are required to address the new rules before or upon the next regularly-scheduled Periodic Review of their comprehensive plans.

The task of DLCD4 is to ensure that local governments integrate the new requirements into their comprehensive plans and development ordinances. A total of one hundred and twenty-two (122) local jurisdictions fall within steelhead ESUs 4, 5, and 15. DLCD's strategy will be to:

1. Emphasize the very high priority of implementing the new Goal 5 rules in new Periodic Reviews,
2. Where resources become available, attempt to accelerate implementation of the new rules under existing Periodic Reviews, and
3. Consult with jurisdictions that are not now legally required to implement the new rules until after 2000 to attempt to get the rules implemented sooner, outside the framework of Periodic Review. Finally, DLCD may consider discussing with the LCDC the possibility of adopting an accelerated implementation schedule if necessary to get the new rules implemented by 2002. A revised Goal 5 riparian implementation schedule will require that DLCD acquire resources to pass through to local

governments, and then develop partnerships and work plans with those local governments. Under an accelerated implementation schedule, DLCD would focus its initial efforts on counties.

5.3.12 Lower Columbia River Estuary Program

🔹 LCREP1—LOWER COLUMBIA RIVER ESTUARY PROGRAM

The Lower Columbia River Estuary Program is developing a comprehensive management plan for the lower river to protect and enhance the water quality and biological integrity of the lower river.

In 1995, the Lower Columbia River was recognized as an estuary of national significance through National Estuary Program. The National Estuary Program (NEP) was established in 1987 to identify nationally significant estuaries that are threatened by overuse, development, and pollution. The goal of the program is to facilitate the development of locally developed management plans that will improve and protect the water quality and ecological integrity of these resources. To do so, the program provides a forum for consensus building among interested parties and users, identify environmental problems, evaluate existing management framework, and recommend priority actions.

The Lower Columbia River Estuary Program (LCREP) is a cooperative effort between the states of Oregon and Washington and the Federal government. The LCREP study area is defined as that portion of the Columbia River and its tributaries that are tidally influenced. This includes the Mainstem River from the Ocean to Bonneville Dam at River Mile 146,

and those portions of tributaries that are influenced by tidal changes. The study area also includes the ocean out to the 3-mile limit, where those waters are influenced by the plume of fresh water from the Columbia River.

From 1990 to 1995, the Lower Columbia River Bi-State Water Quality Program (predecessor to LCREP) collected a substantial body of data on the lower river. It concluded that the Columbia River had suffered degradation as a result of human activities over the last hundred years. The LCREP management committee analyzed the data and identified seven priority issues to address in the management plan. The seven issues are:

1. Biological Integrity of the System,
2. Habitat Loss and Modification,
3. Toxic Contaminants in Sediments and Fish Tissue,
4. Conventional Pollutants (pH, temperature, fecal coliform, dissolved gas),
5. Impacts of Human Activities and Growth,
6. Public Awareness and Stewardship, and
7. Institutional Constraints.

🔹 LCREP2—LONG TERM MONITORING FOR THE LOWER COLUMBIA RIVER

From 1990 to 1995, the Lower Columbia River Bi-State Water Quality Program collected a substantial body of data on the lower river. An analysis of that data by the LCREP Management Committee determined that a long-term monitoring program would be necessary to further define problem areas and to evaluate long term trends in the health of the river.

5.3.13 Division Of State Lands

◆ **DSL1—DEVELOP STANDARDIZED PERMIT CONDITIONS REFLECTING BEST MANAGEMENT PRACTICES FOR REMOVAL-FILL ACTIVITIES**

The Division of State Lands will work with ODFW, DEQ, the Corps of Engineers, NMFS, and other agencies to update its standard permit conditions to reflect Best Management Practices (BMPs) for various types of removal-fill activities (e.g., commercial gravel removal, erosion control).

◆ **DSL5-8—REVISED GENERAL AUTHORIZATIONS**

DSL revised its General Authorizations for road construction, erosion control, fish habitat enhancement, and wetland restoration and enhancement to require permittees to minimize disturbance of rooted woody vegetation, and to re-vegetate with native trees on streams listed as water quality limited for temperature.

◆ **DSL20—REDUCE WATER POLLUTION FROM WATERWAY LEASEES**

In 1996, the Division of State Lands revised its standard waterway lease to require lessees (e.g., marinas, houseboats) to meet applicable DEQ and OMB requirements for sewer hookups, disposal stations, etc.

5.3.14 Oregon State Marine Board

◆ **OSMB1—INCREASE NUMBER OF STREAMS ADOPTED THROUGH ADOPT-A-RIVER PROGRAM**

Work with Stop Oregon Litter and Vandalism (SOLV) to increase efforts to gain adoption of streams and rivers, particularly source and recovery reaches.

◆ **OSMB2—INCREASE NUMBER OF BOAT WASTE PUMP-OUTS AND DUMP STATIONS**

Implement the existing Vessel Waste Disposal Plan using Federal Clean Vessel Act funds, giving priority to projects on coastal bays and rivers.

5.3.15 Oregon Department Of Transportation

◆ **ODOT1—PROTECTION AND REPLACEMENT OF RIPARIAN VEGETATION**

Impacts to riparian vegetation by construction or maintenance activities will be kept to the lowest level consistent with safety and facility maintenance. Unavoidable impacts to riparian vegetation will be mitigated by replanting at the ratio of 1.5:1 (replacement to impact length), to the extent allowed by local conditions.

- **Intent:** To maintain or increase riparian shading;
- **Regulatory Control:** Clean Water Act Section 401 Clean Water Certification;
- **Institutional Controls:** Proposed ODOT policy on riparian areas. Incorporated in ODOT Maintenance Management System Water Quality and Habitat Guide (June 1997);
- **Applicable ODOT Enhancement Actions:**
 - #6 Environmentally Sensitive Designs,
 - #13 Preferential use of Bioengineering Solutions,
 - #15 Habitat for Fish in Wetland Mitigation,
 - **Status:** Riparian policy currently being enforced by ODOT's Environmental Services Biology Team for new projects, and
 - ODOT MMS Water Quality and Habitat Guide adopted June 1997.

ODOT2—EROSION AND SEDIMENT MANAGEMENT

Reduce sediment from ODOT activities and rights-of-way by instituting effective erosion control on all construction projects, modification of maintenance activities, and identifying erosion and slide prone areas along State highways in preparation for remedial actions.

- **Intent:** Prevent erosion and stop sediment from entering streams;
- **Regulatory Controls:** NPDES 1200-CA permit for discharge of storm water from construction sites:
 - NPDES municipal storm water permits;
 - *Clean Water Act* Section 401 Clean Water Certification; and
 - Local erosion control regulations.
- **Institutional Controls:** ODOT policy to implement NPDES permit and program requirements for all ODOT activities in Oregon, as formalized by a memo from the Deputy Director of ODOT:
 - ODOT Standard Specifications Section 00280;
 - Project specific special conditions;
 - ODOT Maintenance Management System Water Quality and Habitat Guide (including winter maintenance activities).
- **Applicable ODOT Enhancement Actions:**
 - #3 Responding to sources of sediment;
 - #6 Environmentally sensitive design; and
 - #9 Review and development of a geographically-appropriate program for winter maintenance activities and sidecast sweeping.
- **Status:** Program of identifying landslide-prone areas along State highways is under revision. A team has been assigned to implement the survey.
 - NPDES permit requirements and programs are being implemented on all ODOT projects statewide per the memo from the Deputy Director of ODOT,

- Winter maintenance practice review completed in September 1996,
- Maintenance practice review completed in January 1997, and
- Maintenance Management System Water Quality and Habitat Guide adopted June 1997.

ODOT3—PROTECTION OF AQUATIC HABITAT

The design, construction and operation of ODOT facilities will minimize impacts to aquatic habitat and provide mitigation to ensure no net loss of aquatic habitat or complexity. Specific actions include:

- Road and bridge designs will incorporate features to minimize impacts on aquatic and riparian systems.
- When channel impacts or relocations are unavoidable, provide equal or superior channel morphological diversity.
- Culverts hindering fish migration will be prioritized and replaced with facilities that allow fish passage.
- Woody debris from ODOT construction or maintenance operations will be made available for placement in streams.
- Soil bioengineering will be used where appropriate. Designers and engineers will receive the necessary training to gain awareness and skills in soil bioengineering design.
- Incorporate fish habitat features in wetland mitigation where appropriate.
- ODOT facility design and maintenance practices will minimize impacts to riparian zones. Unavoidable impacts will be mitigated at a replacement ratio of 1.5:1 where feasible.
- ODOT IPM practices will minimize impacts to riparian zones, and avoid chemical pollution of receiving waters.

Regulatory Controls:

Clean Water Act Section 404:

- *Clean Water Act* Section 401;
- Oregon DSL Removal/Fill permit regulations; and
- Integrated Pest Management Ordinance ORS 634.122.

Institutional Controls:

ODOT policy to implement NPDES permit and program requirements to all ODOT activities statewide:

- ODOT's IPM program; and
- ODOT Hydrology Manual Section 4.4.9, Hydraulic Design Criteria and Policy for Fish Passage.

Applicable ODOT Enhancement Actions:

- # 2 Culvert Inventory, Assessment and Remediation;
- # 3 Responding to Sources of Sediment;
- # 6 Environmentally sensitive design;
- # 7 Storage and Disposal Plan for Woody Debris;
- #11 Integrated Pest Management;
- #12 Education;
- #13 Preferential Use of Bioengineering Solutions;
- #14 Habitat for Fish in Wetland Mitigation; and
- #17 Aquatic Pest Plant Management Plan.

Status:

- Coastal culvert inventory is complete, and the Oregon Transportation Commission has approved \$3,000,000 for culvert replacement for the next year.
- NPDES permit requirements and programs are being implemented on all ODOT projects statewide per the memo from the Deputy Director of ODOT:
- Maintenance Management System Water Quality and Habitat Guide adopted June 1997;
- IPM program at ODOT is ongoing;
- Habitat modification for salmon course was presented to ODOT personnel, including engineering, management and environmental staff;
- Woody debris stockpiling and agreements have begun in selected locations;
- Soil bioengineering has been used on a few test projects; and
- Select wetland mitigation projects have specifically incorporated fish habitat features.

◆ ***ODOT4—CHEMICAL MANAGEMENT***

ODOT will design, construct and operate its facilities so that chemical pollution from highway runoff, construction or maintenance activities will not adversely affect the beneficial uses of the receiving waters. Specific measures include:

- Evaluation of the impact of its projects on chemical water quality, and provision of treatment adequate to prevent adverse effects to the beneficial uses of the receiving waters.
- Pollution prevention plans will be developed and implemented for all construction projects to prevent accidental or incidental discharge of toxic chemical into any water body.
- Maintenance activities will be modified to reduce the chances of accidental hazardous materials spills or discharges.
- Integrated pest management (IPM) will continue to be implemented for roadside maintenance, in order to ensure proper pesticide selection and use, while minimizing chemical usage.
- Reduce the potential for accidental hazmat spills to damage receiving waters by reviewing and prioritizing vulnerable sites for remedial actions.

Regulatory Controls:

- NEPA;
- NPDES storm water discharge permits (municipal and 1200-CA);
- *Clean Water Act* Section 401 certification; and
- Integrated Pest Management Ordinance ORS 634.112.

Institutional Controls:

- ODOT policy to implement NPDES permit and program requirements to all ODOT activities statewide.
- ODOT's IPM program.

Applicable ODOT Enhancement Actions:

- # 6 Environmentally sensitive design;
- #11 Integrated Pest Management; and
- #16 Minimize Potential Impacts of Accident Spills.

Status:

- NPDES permit requirements and programs are being implemented on all ODOT projects statewide per the memo from the Deputy Director of ODOT.
- Maintenance Management System Water Quality and Habitat Guide adopted June 1997;
- IPM program at ODOT is ongoing; and
- Site vulnerability assessment still pending. Remedial action assessment incorporated into project development.

◆ **ODOT5—STREAM FERTILITY**

ODOT facilities will be designed, constructed and operated in a manner that will avoid adversely affecting stream fertility. Specific measure include:

- Minimization of riparian vegetation removal, with a replacement ratio of 1.5 to 1 where feasible.
- Woody debris from ODOT construction or maintenance operations will be made available for placement in streams.
- Road and bridge designs will incorporate features to minimize impacts on aquatic and riparian systems.
- When channel impacts or relocations are unavoidable, provide equal or superior channel morphological diversity.

Regulatory Controls

Clean Water Act Section 404.

Institutional Control

ODOT policy to implement NPDES permit and program requirements to all ODOT activities statewide.

Applicable ODOT Enhancement Actions:

- #6 Environmentally Sensitive Design;
- #7 Storage and Disposal Plan for Woody Debris;
- #13 Preferential Use of Bioengineering Solutions; and
- #15 Habitat for Fish in Wetland Mitigation.

Status:

- NPDES permit requirements and programs are being implemented on all ODOT projects statewide per the memo from the Deputy Director of ODOT.
- Maintenance Management System Water Quality and Habitat Guide adopted June 1997.
- Woody debris stockpiling and agreements have begun in selected locations.
- Select wetland mitigation projects have specifically incorporated fish habitat features.

5.4 FEDERAL AGENCY MANAGEMENT MEASURES

This section contains summary descriptions of the Federal agency management measures referenced in the preceding section. For a more detailed version of the measures, turn to the Federal chapter. The measures are organized by agency:

- Bureau of Land Management and Forest Services;
- Fish and Wildlife Department;
- National Oceanic and Atmospheric Administration;
- Environmental Protection Agency;
- Bureau of Reclamation;
- Bureau of Indian Affairs;
- Natural Resources Conservation Service;
- U.S. Army Corps of Engineers;
- Bonneville Power Administration.

◆ **BLM/USFS1—WATERSHED/HABITAT RESTORATION**

Continue implementation of comprehensive watershed restoration programs on coastal systems. This measure involves many ongoing tasks throughout the system of National Forests and BLM Districts in Oregon, and also involves DEQ in many ways through our close partnership with these two Federal agencies, a partnership now being renewed through new interagency agreements relating to water quality

and watershed assessment and management. For related remarks, see "BLM/USFS14."

◆ **BLM/USFS2—RESEARCH**

Work with local Watershed Councils, ODFW personnel, universities, and the Pacific Northwest Region Experimental Station staffs to improve coordination, integration, and information sharing on key research topics.

◆ **BLM/USFS3—MONITORING AND EVALUATION**

Explore expanded coordination with the State and Watershed Councils on NFP implementation and effectiveness monitoring.

◆ **BLM/USFS5—PLANNING AND ASSESSMENT**

Seek to expand opportunities for State and watershed council involvement in watershed analysis and will continue to share results of these analyses with all interested and involved parties.

◆ **BLM/USFS8—EDUCATION / INTERPRETATION / OUTREACH**

Work with the State and Watershed Councils in expanding ongoing cooperative outreach and environmental education programs.

◆ **BLM/USFS10—INTERAGENCY AND TRIBAL COORDINATION**

Continue to work with other Federal, State, and County agencies and Tribal governments to ensure coordination and sharing of information between the involved entities.

◆ **BLM/USFS13—HYDROPOWER LICENSING AND RELICENSING COORDINATION**

Per authority under Section 4(e) of the Federal Power Act (FPA), prescribe mandatory terms and conditions for FERC licensed projects. The agencies will increase coordination on these projects to ensure each agency's respective authorities are fully exercised in the relicensing

process.

◆ **BLM/USFS14—CLEAN WATER ACT SECTION 303 COMPLIANCE**

Develop a joint strategy for compliance with section 303(d) of the *Clean Water Act*. Such a strategy is represented in the April 1999 document "Forest Service and Bureau of Land Management Protocol for Addressing Clean Water Act Section 303(d) Listed Waters." This document serves as a guidance to Federal employees in development of Water Quality Restoration Plans (WQRPs) to address 303(d) Listed waters on Federal lands. DEQ and EPA were actively involved in preparing the Protocol as well as in working closely with the Federal agencies as they implement it. DEQ is now engaged with the Forest Service and BLM in revising the Protocol to reflect new EPA rules on CWA Section 303(d).

◆ **BLM/USFS15—SAFE DRINKING WATER ACT IMPLEMENTATION**

Develop a joint strategy to organize implementation of the Safe Drinking Water Act.

5.4.1 U.S. Fish And Wildlife Service: Phase 1 Measures

◆ **USFWS1—JOBS-IN-THE-WOODS PROGRAM**

USFWS funding is used to hire displaced workers from timber-dependent communities to implement watershed enhancement projects on non-federal lands to benefit species of Federal significance and their habitats.

◆ **USFWS2—HABITAT CONSERVATION PLAN DEVELOPMENT**

Work with non-federal applicants, under section 10(a)(1)(B) of the Endangered Species Act, to develop habitat conservation plans (HCPs) to minimize and mitigate for the impacts of land and water management activities on listed species and their ecosystems.

☛ ***USFWS3—AQUATIC HABITAT
CONSERVATION AGREEMENT
DEVELOPMENT AND
CONSERVATION ACTIVITIES***

Establish Conservation Agreements with cooperating private landowners and agencies to conserve special status species.

☛ ***USFWS4—TECHNICAL ASSISTANCE
ON 1996 AND 1997 FLOODS***

Provide technical assistance in response to recent floods to Federal and State agencies in three areas:

1. Site-specific damage repairs;
2. Longer-term rehabilitation efforts; and
3. Planning efforts that address floodplain restoration at the watershed level.

☛ ***USFWS5—PARTNERS FOR
WILDLIFE (PFW) PROGRAM***

Through the PFW Program, provide financial and technical assistance to private (primary focus) and non-federal landowners to restore and enhance wetland, riparian, instream and associated upland habitats in partnership with local Watershed Councils, SWCDs, COGs, Tribes, NRCS, ODFW, OPRD, or any non-profit or governmental entity willing and fiscally able to participate.

☛ ***USFWS6—GREENSPACES PROGRAM***

Provide financial and technical assistance to support 1991 Interagency Agreement with Metro Regional Center (Metro) involving regional efforts to jointly develop programs to restore and protect natural areas within the Portland-Vancouver metropolitan area.

☛ ***USFWS7—ASSISTANCE TO
WATERSHED COUNCILS***

Provide technical assistance to local Watershed Councils to assist in development of watershed assessments, regulatory requirements, identification of restoration needs, development of restoration projects, and support for watershed council coordinators.

☛ ***USFWS8—NORTHWEST FOREST
PLAN IMPLEMENTATION
ASSISTANCE***

Coordinate with USFS and BLM staff on all aspects of planning and analysis related to implementation of the Northwest Forest Plan (NFP), to include assisting and advising watershed analysis teams, working on adaptive management area planning, advising and reviewing late successional reserve assessments, and providing early input on project-level planning.

☛ ***USFWS9—BIOLOGICAL OPINIONS
TO PREVENT OR REDUCE IMPACT
TO LISTED SPECIES***

Provide consultation technical assistance to Federal agencies trying to meet obligations under section 7(a)(2) of the Endangered Species Act, recommending or requiring minor modifications to projects that reduce impacts to listed species and their habitat.

☛ ***USFWS10—FISH AND WILDLIFE
COORDINATION ACT REPORTS ON
FEDERAL PROJECTS***

Provide recommendations under authority of the Fish and Wildlife Coordination Act into water development programs of the Army Corps of Engineers, Bureau of Reclamation, and Natural Resources Conservation Service.

☛ ***USFWS11—COMMENTS AND
PRESCRIPTIONS ON FEDERAL
ENERGY REGULATORY
COMMISSION HYDROPOWER
PROJECTS***

Participate in planning and review of nonfederal hydroelectric projects to be licensed by the Federal Energy Regulatory Commission under the Federal Power Act (FPA), in coordination with other Federal and State natural resource agencies.

☛ ***USFWS12—ACQUISITION AND RESTORATION OF COASTAL WETLANDS FOR NATIONAL WILDLIFE REFUGES (NWR)***

Through USFWS realty program, identify and seek purchase of important and biologically valuable coastal wetlands for incorporation into the NWR system.

☛ ***USFWS13—REVIEW OF DREDGE AND FILL PROJECTS***

Review applications for permits issued by the U.S. Army Corps of Engineers for construction activities in waters of the United States, including wetlands. Evaluate work proposals for effects on fish and wildlife and recommend measures to avoid or minimize any adverse impacts.

☛ ***USFWS14—RESPONSE TO OIL AND HAZARDOUS SUBSTANCES SPILLS***

Respond to spills of oil and hazardous substances in order to reduce threats to aquatic resources and protect water quality.

☛ ***USFWS15—NATURAL RESOURCE DAMAGE ASSESSMENT***

Assess monetary damages for injury to aquatic biota and their habitats from oil and hazardous material spills, at Superfund and other contaminated sites, and for mining activities.

☛ ***USFWS16—TECHNICAL ASSISTANCE FOR PLANNING***

Provide technical assistance in statewide, city and county planning actions to encourage use of environmentally sound methods. In providing guidance and recommendations, consider conservation needs of all species, including anadromous fish.

☛ ***USFWS17—ADOPT-A-RIVER AND SALMON WATCH PROGRAMS***

Provide \$10,000 annually in funding to the Oregon Adopt-A-River Program, which encourages and coordinates restoration,

enhancement, and protection of waterways, riparian areas, and watersheds throughout the state. Provide \$10,000 annually to support Salmon Watch, an environmental education program coordinated by Oregon Trout that emphasizes importance of wild fish conservation in watershed management.

☛ ***USFWS18—SUPPORT TO ONGOING EDUCATIONAL PROGRAMS (OUTDOOR SCHOOL AND SALMON CAMP)***

Provide \$10,000 annually to support Outdoor School Programs in Multnomah County (\$5,000) and the Northwest Regional Educational Service District (\$5,000) for the education of sixth-grade students in ecological and environmental concerns. Also provide \$10,000 annually to the Salmon Camp Program, an environmental education project for Native American youth that focuses on ecological systems and watersheds and the life-cycle of salmon.

☛ ***USFWS19—NATURAL RESOURCE EDUCATION AND COMMUNITY AWARENESS OF AQUATIC RESOURCES***

Develop natural resource education and general information materials, conduct teacher workshops on special status species, and regularly participate in educational public events promoting natural resource conservation.

☛ ***USFWS20—NATIONAL ESTUARY PROGRAM***

Serve on the Science and Technical Advisory Committee for the Tillamook Bay National Estuary Project (TBNEP), and on the Science and Technical Advisory and Management committees for the Lower Columbia River Estuary Program. Identified priority problems are fish and wildlife habitat and excessive sedimentation for the TBNEP, and habitat loss and modification for the Lower Columbia.

🔥 ***USFWS21—CONSERVATION
STRATEGY FOR BULL TROUT***

Continue working with Oregon Department of Fish and Wildlife in designing and implementing bull trout conservation plans for the Upper Willamette, Deschutes and Hood River basins.

**5.4.2 U.S. Fish And Wildlife
Service: Phase 2 Measures**

🔥 ***USFWS22—AVIAN PREDATOR
MANAGEMENT***

Work with ODFW to develop policy on management of avian salmonid predators. Also create or serve on steering committees to oversee research and consider subsequent recommendations for avian predator management.

🔥 ***USFWS23—ENVIRONMENTAL
CONTAMINANT INVESTIGATIONS***

Conduct investigations on impacts of environmental contaminants on aquatic resources. Investigations address various aspects of assessment, monitoring, and research necessary to reduce impacts on resident and anadromous fish.

🔥 ***USFWS24—INTERIOR COLUMBIA
BASIN ECOSYSTEM MANAGEMENT
PROJECT***

Assist in development and review of ecosystem management strategies. According to the Draft Eastside EIS, the Service will help design and implement ecosystem restoration activities by participating in watershed analyses and subbasin reviews.

**5.4.3 National Oceanic And
Atmospheric
Administration**

🔥 ***NOAA-NMFS1—HIRE THE FISHER
HABITAT RESTORATION PROGRAM***

Under the Northwest Emergency Assistance Plan (NEAP), hire fishers to complete priority habitat restorations to benefit coastal salmon. In 1997, \$2.7 million was provided for riparian restoration, spawning surveys, watershed surveys, culvert reconstruction, rock weirs, etc.

🔥 ***NOAA-NMFS2—WATERSHED
COUNCILS***

Develop technical guidance documents and provide staff assistance to Watershed Councils.

🔥 ***NOAA-NMFS3—HABITAT
CONSERVATION PLANS***

Issue incidental take permits where appropriate. Also encourage non-federal entities to develop Habitat Conservation Plans (HCPs) to minimize take and to conserve salmon while conducting other activities.

🔥 ***NOAA-NMFS4—HABITAT MATRIX***

Encourage use of the NMFS habitat matrix to identify environmental baselines of watersheds and to evaluate potential adverse effects of proposed actions on salmonids and their habitats.

🔥 ***NOAA-NMFS5 —NORTHWEST
FOREST PLAN (NFP) AND REGIONAL
ECOSYSTEM OFFICE***

Provide policy, technical and funding assistance to implement the NFP.

🔥 ***NOAA-NMFS6—IRRIGATION
SCREENING AND FISHWAYS***

Fund about \$1.9 million annually for the construction and maintenance of irrigation diversion screens and fishways in Oregon, and \$8 million for repair of the Willamette Falls fishway recently destroyed by floods.

🔥 ***NOAA-NMFS7—EXOTIC FISHES***

The NMFS will work with ODFW to co-host a

workshop on the effects and efficacy of management of warm-water fish population in steelhead waters.

🔥 ***NOAA-NMFS8—FISHERIES
HARVEST***

Promote harvest plans that protect listed species; fund marking of hatchery steelhead to enable selective fisheries with minimal impacts to wild steelhead.

🔥 ***NOAA-NMFS9—SUPPLEMENTATION***

Work with ODFW to review hatchery operations to ensure they are compatible with wild fish production; fund staff person to address use of hatcheries to support self-sustaining populations of wild salmonids.

🔥 ***NOAA-NMFS10—HATCHERY
RESEARCH***

Evaluate whether more natural rearing conditions in hatcheries result in higher instream survival.

🔥 ***NOAA-NMFS11—SECTION 404/10
ACTIONS***

Provide recommendations to reduce impacts from waterway development projects; help develop streamlined permit process.

🔥 ***NOAA-NMFS12—HIGH PROJECTS***

Provide recommendations to reduce impacts from highway projects; support streamlined environmental review processes.

🔥 ***NOAA-NMFS13—HYDROPOWER
FACILITIES***

Dedicate bioengineering and fisheries staff to provide recommendations on measures to protect and mitigate damage to salmonids to the FERC during licensing and relicensing of facilities.

🔥 ***NOAA-NMFS14—NON-HYDROPOWER
FACILITIES***

Provide recommendations to protect and mitigate damage to salmonids to the Corps of Engineers and Bureau of Reclamation during environmental reviews of dams.

Provide recommendations to protect and mitigate damage to salmonids to sponsors of new water storage projects and increased water withdrawals.

🔥 ***NOAA-NMFS16—FISH PASSAGE
RESEARCH***

Investigate flow augmentation, submersible screens and transportation to improve survival of juvenile salmonids in Columbia River Basin; develop improved passage conditions for adults.

🔥 ***NOAA-NMFS17—NATIONAL
ESTUARY PROGRAM, COLUMBIA
RIVER***

Strive to provide greater policy, technical and science support to the Columbia River National Estuary program.

🔥 ***NOAA-NMFS18—COASTAL CHANGE
ANALYSIS***

Provide satellite images of coastal wetlands and uplands and computer syntheses of these images with other digitized data such as water quality.

🔥 ***NOAA-NOS19—COASTAL
MANAGEMENT AND NONPOINT
SOURCES***

Provide funding for Oregon's Coastal Management Program. With EPA, review Oregon's Coastal Nonpoint Source Program for compliance with Federal standards and guidance.

🔥 ***NOAA-NOS20—SOUTH SLOUGH
NATIONAL ESTUARINE RESEARCH
RESERVE***

Fund research, monitoring, restoration, and public education in the South Slough National

Estuarine Research Reserve.

🔹 ***NOAA-NOS21—COASTAL SERVICES CENTER***

Fund project to digitize and synthesize environmental data in Coos Bay. Provide annual funding (\$1.9 million in 1997) for research, education and outreach; support extension agents who assist Watershed Councils; support publication of newsletters, books.

🔹 ***NOAA-COP23—PACIFIC NORTHWEST COASTAL ECOSYSTEM REGIONAL STUDY***

Fund \$5 million for a five-year study of linkages between coastal and offshore waters near Coos Bay and two sites in Washington.

🔹 ***NOAA-NMFS24—STEELHEAD GENETICS***

Continue to use biochemical and molecular genetic techniques to investigate population structure of Pacific salmonids, including steelhead. Comprehensive databases and analytical tools have been developed for an ongoing NMFS genetics program that allow estimation of stock composition in mixed-stock fisheries.

🔹 ***NOAA-NMFS25—POPULATION STATUS***

Complete series of coastwide population status reviews of five species of Pacific salmonids, with information on biology and ecology of each species.

🔹 ***NOAA-NMFS26—ESTUARINE AND OCEAN ECOLOGY RESEARCH***

Fund and staff a new program investigating the relationship of the environment to marine life; initial research is on juvenile salmonids in Oregon estuaries.

🔹 ***NOAA-COP27—U.S. GLOBAL OCEAN ECOSYSTEM DYNAMICS PROGRAM (GLOBEC)***

Fund and participate in long-term studies of ocean circulation and climate change, and their effects on ecosystem functions, including productivity and salmon abundance. These projects include one that will seek to formulate models for certain species of salmon influenced by the California current, with the purpose of linking changes in the physical environment to population projections, and another that will try to reconstruct trends in salmon abundance over the past 500-2000 years and determine the relationship between salmon abundance and climate change.

🔹 ***NOAA-NOS28—HYDROLOGIC AND HYDRODYNAMIC MODEL OF COOS BAY AND WATERSHED***

Fund workshop to identify management questions that would determine the design of a model; refine proposal for funding of a model to assist managers and decision-makers.

🔹 ***NOAA-NMFS29—FOR THE SAKE OF THE SALMON***

Fund and participate in For the Sake of Salmon, an organization created to protect, restore and sustain salmon, and which assists Watershed Councils.

🔹 ***NOAA-NMFS30—SNAKE RIVER RECOVERY PLAN***

Proposed plan contains many measures pertaining to physical habitat and an improved regional decision-making forum which benefits all migratory fish.

🔹 ***NOAA-NMFS31—ACCESS REMOTE SENSING DATA THROUGH THE GLOBAL FIDUCIAL PROGRAM***

Submit a proposal to use the remote sensing capability available through the Global Fiducial Program (GFP) to monitor watershed and river reach changes over time. The purpose of the

GFP is to utilize the unique capabilities of classified remote sensing assets to create a legacy of long-term environmental data to benefit the environmental missions of civil Federal agencies. This data would be combined with data on steelhead and salmon abundance and distribution to understand the influence of habitat conditions on salmon populations.

◆ ***NOAA-NOPP32—NATIONAL OCEAN PARTNERSHIP PROGRAM***

Research on relationship of ocean climate to ecosystem effects.

◆ ***NOAA-NOS33—EFFECTS OF EL NINO***

Fund \$1.5 million of proposals to capture unusual conditions or impacts of El Nino, to increase our understanding of effects of climate on marine ecosystems.

◆ ***NOAA-NMFS34—DATA COLLECTION***

Fund \$4.9 million in 1997 for fisheries data collection along Pacific Coast; includes sea lion tagging.

◆ ***NOAA-NMFS35—HAZARDOUS MATERIALS RESPONSE AND ASSESSMENT***

Provide technical tools and specialists to respond to chemical spills; conduct damage assessments to support claims after spills.

◆ ***NOAA-NOS36—NATIONAL STATUS AND TRENDS PROGRAM***

Provide a data bank dating from 1983 on toxic chemicals in marine life and sediments from estuaries; provide tools to evaluate sources, impacts.

◆ ***NOAA-NOS37—ESTUARY EUTROPHICATION***

Publish completed study of estuaries on Pacific coast to aid in non-point source abatement.

◆ ***NOAA-NMFS40—MEMORANDUM OF UNDERSTANDING WITH THE NATURAL RESOURCE CONSERVATION SERVICE***

The NMFS will continue working with State agencies, the U.S. Fish and Wildlife Service, the Environmental Protection Agency and the Natural Resources Conservation Service (NRCS) to streamline the process for private land users and NRCS to comply with the Endangered Species Act and contribute to the conservation of species of concern and their habitats. Under a nearly completed Memorandum of Understanding, one of the first efforts will be to jointly review the NRCS Field Office Technical Guides and identify any enhancements or adjustments that could better address conservation of species of concern or their habitat.

◆ ***NOAA-NMFS41—INTEGRATION OF ENDANGERED SPECIES ACT WITH WATER QUALITY MANAGEMENT PLANNING***

NMFS will continue to work with the Environmental Protection Agency and Oregon State agencies, particularly the Department of Environmental Quality (DEQ) and the Department of Agriculture (ODA), to implement pilot programs on integrating *Clean Water Act* and Endangered Species Act considerations with watershed council activities and overall watershed planning efforts. These efforts include ODA's Agricultural Water Quality Management Plan (AWQMP) process and DEQ's Total Maximum Daily Load (TMDL) plans.

5.4.4 Environmental Protection Agency

◆ ***EPA1—ALIGNING WATER QUALITY RECOVERY PRIORITIES WITH SALMON RECOVERY***

Work with Department of Environmental Quality and others to identify and develop water quality recovery priorities that closely support

salmon recovery efforts. Both the selection and sequencing of geographic priorities and the clustering of water quality parameters into a watershed-based approach will better support coastal salmon life history needs.

💧 ***EPA2—DEVELOPMENT OF WATER QUALITY STANDARDS THAT MORE CLOSELY MATCH SALMON LIFE HISTORY NEEDS***

Work with National Marine Fisheries Service and Department of Environmental Quality to develop instream habitat guidelines for eventual inclusion in the *Clean Water Act* water quality standards.

💧 ***EPA3—MONITORING AND EVALUATION OF BEST MANAGEMENT PRACTICES***

Work with Oregon Department of Environmental Quality to track implementation and effectiveness of the current water quality standards in protecting aquatic resources and beneficial uses. Monitoring is needed specifically to support the assumption that Best Management Practices are effective in preventing incremental loss of aquatic resource integrity, such as that resulting from altered stream temperature and sedimentation regimes.

💧 ***EPA4—TECHNICAL ASSISTANCE***

Work with Federal, State, and local groups to provide greater technical assistance to the OCSRI in the following ways:

- Continue to work with local watershed groups to use multi-scale assessments for aligning and sequencing both geographic and risk-based priorities across selected coastal basins and across land ownership patterns. In addition, EPA will make available recently acquired remote temperature data for selected coastal sub-basins to help in understanding the distribution of water temperature problems.
- Work with other agencies and local watershed groups to provide Geographic

Information Services support in the form of maps with data relevant to salmon recovery for Oregon coastal basins.

- Work with Oregon to identify programmatic and geographic areas where more effective methods and approaches are needed to control nonpoint source pollution and begin development of those methods and approaches.
- Provide experienced fisheries biologist to participate on the OCSRI's Science Team.
- Provide two new full-time staff to work in Oregon Department of Environmental Quality to help develop technical elements of TMDL water quality recovery plan for selected coastal basins such as the Umpqua, Rogue, and Tillamook.
- Provide part-time staff to work with the Natural Resources Conservation Service, Soil and Water Conservation District staff, and/or private landowners to identify wetland restoration and nonpoint source pollution control opportunities that would support salmon life history needs over the mid-term and long-term.
- Provide outreach and education assistance through the Seattle Office Outreach Unit.
- Commit Northwest Forest Plan Oregon Coastal Province representatives to facilitate involvement of the Provincial Advisory Committees to support the OCSRI more specifically. This effort will help integrate strategies for Federal and private lands.

💧 ***EPA5—FUNDING ASSISTANCE***

Continue to support and develop funding opportunities, including the following:

- Work with the Department of Environmental Quality and Oregon Department of Agriculture in utilizing annual EPA grant funding to better align and implement State water quality and

agricultural programs to support salmon recovery priorities.

- Work with both NOAA and the State to identify and develop funding strategies for implementation of Oregon's Coastal Nonpoint Source Pollution Control Program.
- Provide support to the Tillamook Bay National Estuary Project (TBNEP). Through the TBNEP, promote both on the ground projects relating to salmon habitat and development of appropriate management measures to be implemented in the future.
- Work with Oregon to prepare a nomination package for designation of priority coastal areas as an EPA Regional Geographic Initiative in FY 97. Such designation would provide financial assistance beyond the traditional EPA grant to the Department of Environmental Quality and the Oregon Department of Agriculture.
- Provide approximately \$333,000 of Federal funding to For the Sake of the Salmon (FSOS) in FY 97 to fund local scientific, technical, and public involvement coordinators who will directly support watershed management forums working to restore the functions and productive capacity of Oregon's coastal watersheds.

💧 ***EPA6—ATTAINING WATER QUALITY STANDARDS FOR TEMPERATURE AND TOTAL DISSOLVED GAS***

Work with the Corps, BOR, PUDs, Canada, and other entities toward the goal of meeting the water quality standard of 110 percent for total dissolved gas on the Columbia and Snake River main stems. Also work with Federal, State, local, and Tribal entities toward the goal of meeting water quality standards for maximum water temperature basin-wide.

5.4.5 Bureau Of Reclamation

💧 ***BOR1d—TECHNICAL ASSISTANCE FOR WATERSHED COUNCIL ACTIVITIES***

Propose initiation of an Oregon statewide program in FY 1999 that would provide technical assistance for watershed council activities.

💧 ***BOR1g—WATER CONSERVATION IN THE BEAR CREEK DRAINAGE***

Conduct a feasibility study of water conservation opportunities in the Bear Creek drainage to improve streamflows, enhance water quality in Bear Creek, and improve the reliability of irrigation water supplies.

💧 ***BOR1h—TECHNICAL ASSISTANCE FOR THE UMPQUA RIVER BASIN WATER MANAGEMENT PROGRAM***

Discuss potential partnership with Douglas County, Oregon to provide BOR technical assistance to update the County's Umpqua River Basin Water Management Program for incorporation into the OCSRI.

💧 ***BOR3a—TECHNICAL ASSISTANCE TO IRRIGATION DISTRICTS ON FEDERAL PROJECTS***

Provide technical assistance to irrigation districts on Federal projects to prepare and implement water conservation plans and monitoring programs.

💧 ***BOR3d—FUNDING FOR A WATER QUALITY SURVEY IN BEAR CREEK***

Request Federal funding to implement a water quality survey of drainage from the Federal project in Bear Creek. This should help identify the quality of water leaving the Federal project and its effect on Bear Creek, as well as set the stage for discussing potential remediation actions if required.

◆ ***BOR3e—FUNDING FOR UPPER ROGUE BASIN CONSERVATION DISTRICTS***

Propose to provide some financial assistance to Upper Rogue basin irrigation districts on the Federal project to implement water conservation measures that improve stream flows and water quality.

◆ ***BOR4b—DEMONSTRATION PROJECT FOR WETLAND CONSTRUCTION AND RESTORATION***

Work with USFS, RVCOG, and Medford and Rogue Valley Irrigation Districts on a demonstration program to construct/restore wetlands. The goal is to treat irrigation return flows to improve water quality and instream habitat conditions in Bear Creek and in the upper Rogue River basin.

5.4.6 Bureau Of Indian Affairs

◆ ***BIA—CO-MANAGER CONSULTATION***

Respond to requests for consultation on plans and policies that may affect Tribal resources. This would include habitat protection and restoration projects, as well as development of terminal and selective fishing sites. The BIA can act as liaison between Oregon, local Watershed Councils, private landowners, and individual Tribes regarding issues that affect Tribal resources.

5.4.7 Natural Resources Conservation Service

◆ ***NRCS1—CONSERVATION OPERATIONS***

Provide technical services and programs to private land users and Tribes to assist in following NRCS guidelines, criteria, and standards for planning and applying conservation treatments on a site-specific basis.

◆ ***NRCS—NATIONAL RESOURCES INVENTORY (NRI)***

Conduct comprehensive inventory assessments of use, treatment, condition, and trends of natural resources on nonfederal lands to help public and private sector make environmental and land-use decisions.

◆ ***NRCS5—PLANT MATERIALS PROGRAM***

Cooperate with various entities to assemble, test, and release plant material to help solve natural resource problems; determine techniques for their successful use; provide for their commercial increase; and promote use of plant materials.

◆ ***NRCS6—FARM BILL FINANCIAL ASSISTANCE PROGRAMS***

Provide assistance through various programs:

- Conservation Reserve,
- Environmental Quality Incentives,
- Wetland Reserve,
- Emergency Watershed Protection, and
- Wildlife Habitat Improvement.

◆ ***NRCS9—HIRE-THE-FISHER HABITAT RESTORATION PROGRAM***

Hire fishers to collect data on salmon and complete priority habitat restoration projects to benefit coastal salmon.

◆ ***NRCS10—COOPERATIVE RIVER BASIN AND SMALL WATERSHED PROGRAM***

Provide technical and financial assistance for watershed planning and implementation of projects.

◆ ***NRCS11—ASSISTANCE AND GUIDANCE***

Assist landusers, within the limits of budgets and staffing levels, to meet expectations for private lands in *The Oregon Plan* by providing technical assistance and managing numerous

programs that benefit special status species and water quality in Oregon.

5.4.8 U.S. Army Corps Of Engineers

☛ COR1—DEVELOP ANNUAL OPERATING PLAN FOR WILLAMETTE RIVER BASIN DAMS

Continue to meet with State and Federal agencies to jointly develop an annual operating plan by June 1 of each year that ensures the most efficient use of water stored at each of the Corps dams on the Willamette River Basin for downstream fisheries.

☛ COR4—UNDERTAKE WILLAMETTE BASIN FLOODPLAIN RESTORATION STUDY (FOR OBJECTIVE BII-1)

The Corps has just begun a Willamette River Floodplain Restoration Study in fiscal year 1998. Within one year, the Corps will complete the reconnaissance phase. (Phase I)

5.4.9 Bonneville Power Administration

☛ BPA1—ASSISTANCE AND FUNDING FOR GRANDE RONDE MODEL WATERSHED PLAN

Provide assistance and funding (\$301,000) in development of Grande Ronde Model Watershed Plan. Work will include watershed coordination, project administration, project development and implementation, monitoring and evaluation, watershed assessments, and information and education.

☛ BPA2—COOPERATIVE WATERSHED EFFORT ON WALLOWA RIVER

Cooperate with Bureau of Reclamation on Wallowa River watershed planning, coordination, and project planning.

☛ BPA3—FUNDING FOR HABITAT PROJECT PLACEHOLDER

Provide funding for Habitat Project Placeholder. To date, 51 separate projects have been funded at cost of approximately \$1.1 million.

☛ BPA4—FUNDING AND ASSISTANCE ON WALLOWA/NEZ PERCE SALMON HABITAT RESTORATION

Assist with Wallowa/Nez Perce Salmon Habitat Restoration project. Provide \$50,000 to fund habitat restoration projects and watershed assessment and planning.

☛ BPA5—MONITORING ASSISTANCE AND FUNDING FOR MEADOW CREEK HABITAT RESTORATION

Provide \$50,000 in funds and cooperate with USFS and OSU on Meadow Creek habitat restoration monitoring.

☛ BPA6—FUNDING FOR HABITAT RESTORATION AND PROJECTS

Fund \$50,000 in cooperative effort with ODFW on habitat restoration and project operations and maintenance in Grande Ronde Watershed.

☛ BPA7—ASSISTANCE ON MCKENZIE WATERSHED

Provide funding (\$44,235) and assistance for watershed coordination, project administration, project development and implementation, monitoring and evaluation, watershed assessments, and information and education.

☛ BPA8—ASSIST WITH MOHAWK WATERSHED PLANS

Assist with planning and coordination and also provide funding (\$10,000) on Mohawk watershed in cooperative effort with East Lane County SWCD.

◆ **BPA9—ACCESS TO COMPUTER AND GIS DATABASES**

Provide State and private parties with access to the Bonneville-funded Computer Information System (CIS) and Geographic Information System (GIS) resources. Access to the CIS and the GIS resources will be through the Pacific States Marine Fisheries Commission based in Portland.

5.5 GROUNDWATER, LAKES, AND ON-SITE SYSTEMS

The preceding sections in this chapter, based as they are on *The Oregon Plan* objectives and management measures, are focused more on surface water in general and on streams and estuaries in particular because of the importance of these waters in providing habitat for salmonids. However, management measures to protect lakes and groundwater also are important elements in NPS control. Table 5-2 and Table 5-3 list a number of these programs and measures now in use. No funds have been available for "watershed treatments" over the 1996–98 reporting period and, as a result, no projects have been undertaken.

5.5.1 Oregon's NPS Groundwater Protection Program

Groundwater is a critical natural resource. Ninety-five percent of the available freshwater in the State resides underground in its aquifers. Groundwater is the primary source for drinking water. Seventy percent of all Oregonians, and over ninety percent of its rural residents rely on groundwater as their drinking water source. Groundwater also supplies the base flow for the state's rivers and streams.

Groundwater is vulnerable to contamination from both point and non-point source activities. Once groundwater becomes contaminated it is very difficult to clean up. Because groundwater moves very slowly, the contamination may

persist for tens, hundreds, or even thousands of years. Likewise, groundwater that is currently being contaminated may not affect beneficial uses until sometime far in the future. This contamination may ruin groundwater for its use as drinking water without expensive treatment, and affect the quality of the surface waters to which it discharges. As the population of Oregon grows, the importance of the groundwater resource to meet the demands of that population will increase.

The Groundwater Quality Protection Act, which was passed in 1989, set out a program to protect and restore groundwater quality through a strategy that uses monitoring and assessment to identify problems; and then uses local groundwater management committees to develop local groundwater management plans. Public education, research and demonstration projects are to be established to increase public awareness. Nonpoint source groundwater contamination is addressed through the development and implementation of best management practices that are included in the locally developed groundwater management plans.

The Oregon Groundwater Quality Protection Act of 1989 focuses on statewide prevention of groundwater contamination while conserving the resource and maintaining its quality for present and future beneficial uses. State agency responsibilities under the Act include:

- Statewide Groundwater Quality Monitoring,
- Domestic Well Testing,
- Groundwater Management Areas and Areas of Concern,
- Development and Use of Best Practicable Management Practices,
- Interagency Coordination,
- Public Education Activities,
- Wellhead Protection,
- Research and Demonstration Projects, and
- Establishment of a Groundwater Information Repository.

Table 5-3 summarizes the status of groundwater protection programs in Oregon and identifies the responsible State agencies.

5.5.2 On-Site Systems

Another program area that spans point source and nonpoint source issues is that dealing with onsite systems, perhaps better known by their colloquial name as "septic systems." Prominent program needs include:

- A funding base for repair and upgrade of existing on-site systems.
- Technical assistance and cost share assistance for installation of advanced denitrification technology.
- Continued field testing of innovative systems for use in difficult or sensitive sites in Groundwater Management Areas and/or TMDL basins.
- Establishment of local on-site management entities where they presently do not exist.

5.6 DRINKING WATER PROTECTION PROGRAM

The 1996 Safe Drinking Water Act (SDWA) Amendments provided new resources to the Department of Environmental Quality (DEQ) and the Oregon Health Division (OHD) to provide *drinking water protection* assistance to public water systems and communities. Developing a complete Drinking Water Protection Plan to protect a public water system will remain voluntary in Oregon, but the 1996 SDWA Amendments mandated that State agencies conduct "source water assessments" for every public water system regulated under the SDWA. With the help of a citizens advisory committee, a "Source Water Assessment Plan" was developed to describe the approach that Oregon will take to meet the requirements. EPA

approved the plan in July 1999. A source water assessment includes:

- A delineation of the geographic area that supplies water to the well, spring or intake,
- An inventory of potential point and non-point sources of contamination within the delineated area, and
- An evaluation of the most susceptible areas at risk for contamination.

DEQ and OHD will be completing source water assessments for 2656 public water systems by the end of 2002. Of those, 1156 will receive full assessments and 1500 will receive limited assessments which will include assistance through focused outreach from OHD. DEQ's drinking water protection team is responsible for Source Water Assessments for all three steps of the assessment for public water systems using surface water and the inventory portion of the assessment only for groundwater systems.

In Oregon, the Drinking Water Protection Program is built on the concept of "community-based protection," as are many other water quality programs. Community-based protection simply refers to the concept of allowing local control and decision-making to implement the water quality protection effort. Therefore, it is not required that communities use the source water assessments to develop a "drinking water protection plan," although it is strongly encouraged. Developing a protection plan facilitates local decision-making as the community determines how to protect its own drinking water sources. DEQ and OHD provide guidance, technical assistance, and review for communities interested in developing a drinking water protection plan beyond the minimum assessments to be done by the State.

Additional details on this program are in Appendix I.

Table 5-2: Lake Rehabilitation Techniques

Rehabilitation Technique	Number of Lakes Where Technique Has Been Used	Acres of Lakes Where Technique Has Been Used
In-Lake Treatments		
Phosphorus Precipitation / Inactivation	–	–
Sediment Removal / Dredging	1	27
Artificial Circulation to Increase Oxygen	–	–
Aquatic Macrophyte Harvesting	–	–
Application of Aquatic Plant Herbicides	1	69
Drawdown to Desiccate and/or Remove Macrophytes	–	–
Hypolimnetic Aeration	–	–
Sediment Oxidation	–	–
Hypolimnetic Withdrawal of Low DO Water	–	–
Dilution / Flushing	2	3,778
Shading / Sediment Covers or Barriers	–	–
Destratification	–	–
Sand or Other Filters Used to Clarify Water	–	–
Food Chain Manipulation	–	–
Biological Controls	1	678
Other In-Lake Treatment	–	–
Watershed Treatments		
Sediment Traps / Detention Basins	–	–
Shoreline Erosion Controls / Bank Stabilization	–	–
Diversion of Nutrient Rich In-Flow	–	–
Conservation Tillage	–	–
Integrated Pest Management Practices	–	–
Animal Waste Management Practices	–	–
Porous Pavement	–	–
Redesign of Streets / Parking Lots to Reduce Runoff	–	–
Road or Skid Trail Management	–	–
Land Surface Roughening for Erosion Control	–	–
Riprapping	–	–
Unspecified BMP	–	–
Other Watershed Controls	–	–
Other Lake Protection / Restoration Controls		
Local Lake Management Program	–	–
Public Information / Education Program	3	3,403
Local Ordinance / Zoning Regulations	–	–
Point Source Controls	1	90
Other	–	–
Legend: (–) = Category applicable; no data available.		

Table 5-3: Summary Of State Groundwater Protection Programs

Programs or Activities	Check (✓)	Implementation Status	Responsible State Agency
Active SARA Title III Program	✓	Fully Established	State Fire Marshal
Ambient Groundwater Monitoring System	✓	Continuing Efforts	DEQ
Aquifer Vulnerability Assessment	✓	Under Development	DEQ
Aquifer Mapping	✓	Under Development	DEQ
Aquifer Characterization	NA		
Comprehensive Data Management System	✓	Under Development	DEQ
EPA-Endorsed Core Comprehensive State Ground Water Protection Program (CSGWPP)	NA		
Groundwater Discharge Permits	NA		
Groundwater Best Management Practices	✓	Continuing Efforts	DEQ/ODA
Groundwater Legislation	✓	Fully Established	DEQ / OHS / ODA
Groundwater Classification	NA		
Groundwater Quality Standards	✓	Fully Established	DEQ
Interagency Coordination for Groundwater Protection Initiatives	✓	Continuing Efforts	DEQ / ODA / OHD / WRD
Nonpoint Source Controls	✓	Continuing Efforts	DEQ / ODA / OHD
Pesticide State Management Plan	✓	Fully Established	ODA
Pollution Prevention Program	✓	Fully Established	DEQ
Resource Conservation & Recovery Act (RCRA) Primacy	✓	Fully Established	DEQ
Source Water Assessment Program	✓	Under Development	DEQ / OHD
State Superfund	✓	Fully Established	DEQ
State RCRA Program Incorporating More Stringent Requirements Than RCRA Primary	✓	Fully Established	DEQ
State Septic System Regulations	✓	Fully Established	DEQ
Underground Storage Tank Installation Requirements	✓	Fully Established	DEQ
Underground Storage Tank Remediation Fund	✓	Under Revision	DEQ
Underground Storage Tank Permit Program	✓	Fully Established	DEQ
Underground Injection Control Program	✓	Under Development	DEQ
Vulnerability Assessment for Drinking Water / Wellhead Protection	✓	Under Development	DEQ / OHD
Well Abandonment Regulations	✓	Fully Established	WRD
Wellhead Protection Program (EPA-Approach)	✓	Fully Established	DEQ
Well Installation Regulations	✓	Fully Established	WRD
Other Program or Activities	NA		

5.7 OREGON'S COASTAL NONPOINT POLLUTION CONTROL PROGRAM: FIVE YEAR IMPLEMENTATION PLAN

Appendix J is organized by the federal Coastal Nonpoint Pollution Control Program (CNPCP) management measures. It briefly describes the state's strategy for implementing the measures, gives benchmarks for implementing those measures that are not ongoing, and specifies the agency or organization with authority or responsibility for the management measure. In many cases, oversight of the management measures is linked with efforts under the Oregon Plan and the development of TMDL implementation plans. It is intended that monitoring and reporting requirements under the CNPCP will also be linked to monitoring and reporting provisions in the Oregon Plan. The state programs through which the management measures will be implemented are described elsewhere in the state Nonpoint Plan. The table in the appendix is provided to highlight the

specific CNPCP management measures and to help map the location of these objectives within the larger plan.

Implementation strategies marked with an asterisk are existing programs which have not been approved by EPA and NOAA as meeting the CNPCP standards for the specific management measure. In some cases they have not yet been presented to the federal program managers. Others are now being negotiated.

5.8 OTHER MANAGEMENT MEASURES

Beyond the measures committed to in *The Oregon Plan*, a number of watershed management practices are well known and widely used. Examples of these kinds of activities, as summarized in *The Oregon Plan's Oregon Aquatic Habitat Restoration and Enhancement Guide*, are listed in Table 5-4.

Table 5-4: Summary of List of Oregon Plan Restoration Activities

Restoration Activity		Permit Required	Page Number
Upslope Watershed Function			
Correcting Road / Stream Crossing Problem		Yes — ODF / DSL ^{1,2}	5
Road Reconstruction / Obliteration		Yes — ODF / DSL ^{1,2}	7
Upland Erosion Control	Water and Sediment Control Basins	Projects involving sediment control basins may require a permit from WRD.	8
	Windbreaks		
	Upland Terracing		
	Planting Unproductive Areas		
Riparian / Wetlands Watershed Function			
Estuarine and Wetlands Projects		Yes — DSL ²	12
Riparian Vegetation Planting		No	14
Riparian Fencing		No	14
Water Gap Development		No	16
Grazing Management Plans		No	17
Livestock Water Development		Yes — WRD	19
Brush / Weed Control / Eradication		Forestland — Yes ODF	21
Riparian Hardwood Conversion		Yes — ODF	23
In-Channel Watershed Function			
Beaver Management		Yes — ODFW	25
Whole Channel Alterations	Re-Establish Historical Channel	Yes — DSL ²	27
	Develop Meanders / Side Channels		
	Relocation		
Habitat Construction Projects	Off Channel Habitat	Yes — DSL ²	29
	Miscellaneous Full Spanning Weirs		
	Pool Construction		
	Miscellaneous Deflector Structures		
	Artificially Anchored Log, Rootwad, Boulder Structures		
Large Wood Placement		Yes — ODF / DSL ^{1,2,3}	32
Instream Boulder Placement		Yes — ODF / DSL ^{1,2,3}	34
Fish Passage Structures		Yes — DSL / ODFW ²	36
Push Up-Dam Alternatives		Yes — DSL / WRD ²	38
Salmonid Carcass Placement		Yes — DEQ	40
Artificial Bank Stabilization	Rip-Rap	Yes — DSL ²	42
	Barbs		
	Bioengineering		
	Bank Sloping		

Legend:

¹ These projects on forestland in conjunction with a forest operation require notification to the Oregon Department of Forestry and an approved written plan. Projects proposed on non-forestland or not as part of a forest operation may require a permit from the Division of State Lands. In these situations, contact DSL to determine if a permit is required.

² Activities that require DSL approval of 404 permits also require a 401 certification from DEQ.

³ If the project is on a stream that is a designated floodway, concerns over increased flooding due to wood placement may outweigh fish habitat concerns. The Federal Emergency Management Agency (FEMA) under the National Flood Insurance Program (NFIP), has designated floodways within many of Oregon’s developed communities as part of a partnership with local communities to reduce the extent of flood damages. Any activity — such as placement of fill, boulders, or logs — that would lead to any increase in flood elevation may not be permitted within a floodway. All proposed activities in a FEMA floodway must be assessed to determine their effect on the base flood elevation.

6. OREGON UNIFIED WATERSHED ASSESSMENT AND WATERSHED RESTORATION ACTION STRATEGY

6.1 UNIFIED WATERSHED ASSESSMENT

In September of 1999 a Unified Watershed Assessment (UWA) was completed for the State of Oregon in response to the *Clean Water Action Plan* (CWAP), released by the President in February 1998. Oregon's UWA, which was developed by Federal, State, and Tribal stakeholders with public input, categorizes watersheds and prioritizes them for restoration. The UWA builds on the extensive planning, assessment, and restoration efforts that were already in place in Oregon such as *The Oregon Plan*, Wy-Kan-Ush-Mi-WA-Kish-Wit: Columbia River Anadromous Fish Restoration Plan, and the Northwest Forest Plan.

In addition to identifying watersheds that are a high priority for restoration, the UWA identifies watersheds that have been collectively targeted for protection and restoration by Oregon's stakeholders. The UWA provides an initial framework for watershed restoration action strategies (WRAS) in Oregon. By utilizing the screens in the UWA effort, the WRAS for Oregon will be linked to the State's TMDL development and implementation schedules. Federal, state, and Tribal stakeholders in Oregon have met since the completion of the UWA to identify opportunities to improve tracking, coordination, funding, analysis, and planning efforts that will support watershed restoration in Oregon.

6.2 UWA CATEGORIZATION

The "June 9, 1998 Framework for Unified Watershed Assessments, Restoration Priorities, and Restoration Action Strategies," issued by the United States Department of Agriculture (USDA) and the Environmental Protection Agency (EPA), asks states to categorize "watersheds" into four categories:

1. Watersheds not meeting, or in imminent threat of not meeting, clean water or natural resource goals,
2. Watersheds meeting goals but needing action to sustain water quality,
3. Watersheds with pristine/sensitive aquatic system conditions on federal/state/tribal lands, and
4. Watersheds where more information is needed to assess conditions.

6.2.1 First Level Screen — Categorization Of Watersheds

The June 1998 USDA/EPA UWA guidance calls for categorizing "watersheds" at the sub-basin scale (800,000 to 1,000,000 acres in size). Putting sub-basins into a single UWA category is problematic in Oregon because many sub-

basins meet the definition of all four categories and no sub-basins fall in only one category. However, most of Oregon's sub-basins do have waters that do not meet water quality standards (WQS) or natural resource goals (Category 1). Therefore, all sub-basins containing waters listed or proposed for listing through the Oregon DEQ's *Clean Water Act* Section 303(d) process are categorized as UWA Category 1 sub-basins.

The 303(d)-categorization approach places all sub-basins, with the exception of the Thousand Virgin, Crooked-Rattlesnake, and the East Little Owyhee sub-basins within UWA Category 1. Sufficient water quality information was not provided for these three sub-basins during the 303(d) process so they fall within UWA Category 4.

Identifying sensitive and pristine watersheds (Category 3 watersheds) is important because protection of functioning habitats, fish stocks, and high quality waters is a critical component of a successful restoration strategy in Oregon. However, designation within Category 3 is more appropriately done at the watershed or subwatershed scale. Many of the Category 1 sub-basins include watersheds that could fall under Category 3. More detailed data and watershed assessments can be used to address Category 3 designations in future UWA/restoration prioritization efforts in Oregon.

6.2.2 Second Level Screen — Fishery/ Water Quality Status, Watershed Conditions/Uses

The second level screen was used to identify the UWA Category 1 sub-basins that are a restoration priority in any one of the Federal, State or Tribal prioritization efforts described below. The results of the initial and second level screens demonstrate that there are significant opportunities to link restoration efforts within the State.

♦ OR 1998 SECTION 303(D) LIST PRIORITIES AND TARGETS

This DEQ prioritization and targeting effort proposed stratification of sub-basins on the Oregon 303(d) List into 4 priority levels based on fishery and water quality factors. These factors included concerns about fish with Endangered Species Act listing status, health advisories, water supply status, closures to shellfish harvesting, concerns regarding water contact recreation, Wild and Scenic River/State Scenic Waterway status, resident fish and aquatic life spawning and rearing, and other water resource related factors. The DEQ application of the above factors resulted in 51 Priority 1 sub-basins and two Priority 1 interstate rivers, 16 Priority 2 sub-basins, 12 Priority 3 sub-basins, and 12 sub-basins without an assigned priority. Subsequent to the completion of the UWA for Oregon, DEQ's 1998 303(d) List has been approved and DEQ has developed a new schedule for completion of total maximum daily loads (TMDLs). The new 303(d) List and TMDL development schedule do not alter State priorities within the near-term (2 years). However, the Umatilla sub-basin, already a high priority for restoration under two of the second level UWA screens, is scheduled for TMDL development in the year 2000.

♦ WY-KAN-USH-MI-WA-KISH-WIT- SPIRIT OF THE SALMON, THE COLUMBIA RIVER ANADROMOUS FISH RESTORATION PLAN OF THE NEZ PERCE, UMATILLA, WARM SPRINGS, AND YAKIMA TRIBES, JULY 1996

This long-term plan provides a foundation for meeting Tribal treaty and trust obligations, addresses the causes of anadromous fish declines, provides information on fish stock status and habitat and makes recommendations to halt declines in fish populations. This plan looks at 21 sub-basins and the Columbia and Snake River mainstems. Based on the status of fish stocks and habitat, treaty rights, usual and accustomed fisheries and uses, and other Tribal

values there are 14 "sub-basins" and 2 mainstem rivers that are a Columbia River Basin Tribal priority for restoration and protection.

◆ ***NORTHWEST FOREST PLAN/ICBEMP DATA***

These two large-scale Forest Service/BLM efforts include aquatic restoration and assessment components. The Northwest Forest Plan designates Key Watersheds based on the presence of at-risk fish stocks and high quality waters and targets watershed restoration efforts in those Key Watersheds. There are 25 sub-basins west of the Cascades that contain Key Watersheds that are a priority for Forest Service/BLM restoration efforts. Data from the ICBEMP identifies known strong populations of seven salmonid species and also populations of these salmonids that have high genetic integrity. Sub-basins containing these core and fringe salmonid populations present key opportunities for restoring fisheries and water quality. There are 29 sub-basins that have strong or unique genetic populations of seven salmonid species in Eastern Oregon. Stage 1 Watershed Assessment, Final Report, Oregon Division of State Lands (DSL): This DSL Assessment created a priority list of sub-basins based on a combination of the following criteria: The greatest natural resource value (e.g., largest number of Federally listed species, largest percent area of wetlands, largest number of vegetation complexes); the least impact to condition (e.g., fewer of polluted sites, lowest population and road density); and the greatest risk to condition (e.g., projected population increase, smallest percent of area managed for protection of biodiversity). These three categories of criteria were used to establish priority rankings for sub-basins that could most benefit from a watershed management or restoration approach. There are 21 priority ranked sub-basins in Oregon. (See Table 6-1.)

6.2.3 Third Level Screen— Restoration Plans And Assessments Or Multiple Priorities

A third level screen should be considered in restoration funding decisions for sub-basins identified as UWA Category 1 sub-basins that are a high priority for restoration (sub-basins which meet the first and second level screens). The third screen helps identify sub-basins where restoration timing and/or combined funding and resources could enhance the success of restoration. The third level screen considers the following criteria:

- Assessments or restoration plans have been completed at the watershed, sub-basin, or basin-scale.
- The sub-basin is identified as a priority in two or more second level screen prioritization efforts, or
- The sub-basin lies within Oregon and an adjacent State and the neighboring State's UWA/ prioritization effort has designated the shared sub-basin as a Category 1 sub-basin that is a high priority for restoration. Although not a mandatory screen for funding decisions, watershed/basin-scale assessments and restoration plans in Oregon should be considered in State, Tribal, and Federal agency restoration funding decisions. There are sub-basins that meet multiple second level screen criteria. Coordination with adjacent States to identify opportunities for collaborative restoration efforts will be pursued for shared sub-basins.

◆ ***WATERSHED-TO-BASIN SCALE PLANS AND ASSESSMENTS***

In addition to the above-referenced Wy-Kan-Ush-Mi-Wa-Kish-Wit Tribal restoration plan there are individual Tribal restoration plans that can be used to identify and prioritize restoration efforts. Both the Northwest Forest Plan and ICBEMP call for watershed analysis and other types of landscape level analyses over most of the area administered by the Forest Service and BLM which help further define and direct restoration priorities. U.S. Fish and Wildlife Service and National Marine Fisheries Service biological opinions, recovery plans, and habitat

conservation plans for Federally-listed fish and aquatic species can help target and identify appropriate watershed protection and restoration measures. NRCS PL-566 land treatment watershed plans, Environmental Quality Incentive Program (EQIP) geographic priority plans, coordinated resource management plans, and a number of Oregon Plan related efforts utilize a watershed approach to restoration. Under *The Oregon Plan* many of the Watershed Councils and Soil and Water Conservation Districts in Oregon have developed or are developing watershed assessments and restoration action plans.

Water quality management plans are being developed or implemented throughout Oregon, based on geographic priorities tied directly to the 303(d) List and Oregon's schedule for development of total maximum daily loads

(TMDLs). Implementation plans have been or will be developed to implement TMDLs, and water quality management plans are being developed under DEQ guidelines to address non-point source pollution in 303(d) Listed waters. For agricultural lands the Oregon Department of Agriculture is developing quality management area plans (known as Senate Bill 1010 plans). Drinking water protection plans, source water assessments, and groundwater management area action plans are additional examples of assessments and plans that will facilitate implementation of restoration activities. Completion of the above watershed to basin-scale assessments/restoration plans will enhance the potential success of restoration efforts, especially from a timing and implementation perspective.

Table 6-1: Prioritization of Oregon Sub-Basins by the 1998 UWA

Basin	Sub-Basin Name	HUC	Level	Restoration Priority (#s) Ranking (Greater No., Greater Need)	TMDL Status
Grande Ronde	Imnaha	17060102	1	4	
Grande Ronde	Wallowa	17060105	1	4	
Grande Ronde	Lower Grande Ronde	17060106	1	4	
Grande Ronde	Upper Grande Ronde	17060104	1	3	January 15
John Day	North Fork John Day	17070202	1	3	
Klamath	Williamson	18010201	1	3	
Klamath	Upper Klamath Lake	18010203	1	3	
Klamath	Upper Klamath	18010206	1	3	
Mid Coast	Alsea	17100205	1	3	
Rogue	Upper Rogue	17100307	1	3	
Rogue	Lower Rogue	17100310	1	3	
Rogue	Illinois	17100311	1	3	Done
South Coast	Sixes	17100306	1	3	
Umpqua	North Umpqua	17100301	1	3	
Umpqua	South Umpqua	17100302	1	3	
Willamette	Middle Fork Willamette	17090001	1	3	
Deschutes	Upper Deschutes	17070301	1	2	
Deschutes	Lower Deschutes	17070306	1	2	
Goose & Summer Lakes	Warner Lakes	17120007	1	2	
Grande Ronde	Lower Snake / Asotin	17060103	1	2	
John Day	Upper John Day	17070201	1	2	
John Day	Middle Fork John Day	17070203	1	2	
John Day	Lower John Day	17070204	1	2	
Klamath	Sprague	18010202	1	2	
Malheur	Upper Malheur	17050116	1	2	
Malheur Lake	Silvies	17120002	1	2	
Malheur Lake	Alvord Lake	17120009	1	2	
Mid Coast	Siletz / Yaquina	17100204	1	2	
Mid Coast	Siuslaw	17100206	1	2	
Mid Coast	Siltcoos	17100207	1	2	
North Coast / Lower Columbia	Wilson / Trask / Nestucca	17100203	1	2	Done
Rogue	Applegate	17100309	1	2	
Sandy	Lower Columbia / Sandy	17080001	1	2	
South Coast	Coos	17100304	1	2	
South Coast	Coquille	17100305	1	2	
South Coast	Chetco	17100312	1	2	
Umatilla	Walla Walla	17070102	1	2	
Umatilla	Umatilla	17070103	1	2	March 1
Umpqua	Umpqua	17100303	1	2	
Willamette	Upper Willamette	17090003	1	2	
Willamette	McKenzie	17090004	1	2	
Willamette	North Santiam	17090005	1	2	
Willamette	Molalla / Pudding	17090009	1	2	
Deschutes	Upper Crooked	17070304	1	1	
Deschutes	Lower Crooked	17070305	1	1	
Goose & Summer Lakes	Summer Lake	17120005	1	1	
Goose & Summer Lakes	Goose Lake	18020001	1	1	
Hood	Middle Columbia / Hood	17070105	1	1	May 1

Table 6-1: Prioritization of Oregon Sub-Basins by the 1998 UWA (continued)

Basin	Sub-Basin Name	HUC	Level	Restoration Priority (#s) Ranking (Greater No., Greater Need)	TMDL Status
Klamath	Smith	18010101	1	1	
Klamath	Lost	18010204	1	1	
Malheur Lake	Harney / Malheur Lakes	17120001	1	1	
Malheur Lake	Guano	17120008	1	1	
North Coast / Lower Columbia	Lower Columbia / Clatskanie	17080003	1	1	
North Coast / Lower Columbia	Lower Columbia / Youngs	17080006	1	1	
North Coast / Lower Columbia	Necanicum	17100201	1	1	
North Coast / Lower Columbia	Nehalem	17100202	1	1	
Owyhee	Upper Quinn	16040201	1	1	
Owyhee	South Fork Owyhee	17050105	1	1	
Owyhee	Middle Owyhee	17050107	1	1	
Owyhee	Jordon	17050108	1	1	
Powder	Brownlee Reservoir	17050201	1	1	
Powder	Burnt	17050202	1	1	
Powder	Powder	17050203	1	1	
Rogue	Middle Rogue	17100308	1	1	
South Coast	Smith	18010209	1	1	
Willamette	Coast Fork Willamette	17090002	1	1	
Willamette	South Santiam	17090006	1	1	
Willamette	Middle Willamette	17090007	1	1	
Willamette	Yamhill	17090008	1	1	
Willamette	Tualatin	17090010	1	1	
Willamette	Clackamas	17090011	1	1	
Willamette	Lower Willamette	17090012	1	1	
Deschutes	Little Deschutes	17070302	1	0	
Deschutes	Beaver / South Fork Crooked	17070303	1	0	
Deschutes	Trout	17070307	1	0	
Goose & Summer Lakes	Lake Abert	17120006	1	0	
Grande Ronde	Hells Canyon	17060101	1	0	
Klamath	Butte	18010205	1	0	
Malheur	Middle Snake / Payette	17050115	1	0	
Malheur	Lower Malheur	17050117	1	0	
Malheur	Bully	17050118	1	0	
Malheur	Willow	17050119	1	0	April 1
Malheur Lake	Donner and Blitzen	17120003	1	0	
Malheur Lake	Silver	17120004	1	0	
Owyhee	Middle Snake / Succor	17050103	1	0	
Owyhee	Lower Owyhee	17050110	1	0	
Umatilla	Middle Columbia / Lake Wallula	17070101	1	0	
Umatilla	Willow	17070104	1	0	
Malheur Lake	Thousand / Virgin	16040205	4		
Owyhee	East Little Owyhee	17050106	4		
Owyhee	Crooked / Rattlesnake	17050109	4		

6.3 WATERSHED RESTORATION ACTION STRATEGIES (WRAS)

Some of the most extensive watershed assessment and restoration efforts in the Nation have been undertaken in Oregon. *The Oregon Plan*, developed to address fishery and water quality issues, directs and funds watershed assessments, planning, and restoration efforts statewide. The Northwest Forest Plan and the Interior Columbia Basin Ecosystem Management Project (ICBEMP) provide a comprehensive assessment for Forest Service and BLM administered lands in Oregon. Both Tribes and the Columbia River Intertribal Fish Commission (CRITFC) have completed detailed assessments and restoration plans in Oregon and Columbia Basin watersheds. Other State and locally led restoration and assessment efforts have been completed or are underway in Oregon. These efforts include extensive public input, integrate numerous fishery and water quality criteria, and address issues at a variety of scales. The UWA for Oregon does not revise or replace Federal, State, Tribal, and local watershed efforts but is intended to identify potential opportunities to link *The Oregon Plan*, Tribal restoration plans, Federal plans and other collaborative watershed assessment and restoration efforts.

Therefore, Oregon's Watershed Restoration Action Strategies are comprised primarily of the following products:

- Oregon's *Clean Water Act* Section 303(d) TMDL implementation plans (generally referred to as Water Quality Management Plans or "WQMPs").
- Agricultural Water Quality Management Plans produced by ODA's "Senate Bill 1010" program.
- Watershed restoration and protection action plans adopted by Watershed Councils, Soil and Water Conservation Districts, National

Estuary Programs, the CZARA 6217 Coastal NPS Program, and other local organizations and special area-specific programs.

- Action Plans governing the management of National Forests, BLM lands, State Forests, wildlife refuges, State parks, national parks, military installations, and other State and Federal lands.
- Action Plans governing the management of Tribal lands.

Taken together, these watershed Action Plans cover virtually the entire State, and generally do so in ways that connect and coordinate the management strategies and activities from one jurisdiction to another. The Forest Service and BLM lands alone account for over 50 percent of the state. The 87 Watershed Councils (existing as of January 2000) cover all but a few relatively small drainages in the state, and most of those are within the Willamette Basin, in which public and private watershed management efforts are now coordinated within the Willamette Restoration Initiative. TMDL implementation plans and SB 1010 plans for 49 sub-basins are already being implemented or will be adopted by the end of 2003, and Action Plans for the remaining 42 sub-basins will be adopted by the end of 2007. The schedule for development and implementation of these Action Plans follows the priorities established by the UWA.

6.4 WRAS IMPLEMENTATION

A good example of how the UWA priorities and resulting WRAS plans are already being used is Oregon's 319 grant solicitation and selection process for fiscal years 1999 and 2000. Appendix J of this report includes a series of tables from the *FY 2000 Application Guidelines for the Oregon 319 NPS Water Quality Program* that detail sub-basin and watershed priorities along with management or "programmatic" activity needs. Section 6.5 of this chapter also includes summarized excerpts from previous years' 319 grant guidance or intended use plans. All of these geographic and

programmatic action priorities are derived from watershed action plans in existence or in development.

6.5 EXAMPLES

6.5.1 Eastern Region Priorities

💧 *Primary:*

- Grande Ronde River (Upper Grande Ronde River HUC including Catherine Creek);
- Klamath River Basin;
- Umatilla River Basin (including the Lower Umatilla Groundwater Management Area);
- Hood River Basin.

💧 *Secondary:*

- Deschutes River Basin; and
- John Day River Basin.

6.5.2 Northwest Region Priorities

💧 *Primary:*

- North Coast watersheds, identified as high priority by *The Oregon Plan* (but not including the Columbia River tributaries).

Secondary:

- Columbia River tributaries in the North Coast watershed;
- Clatsop Plains aquifer; and
- Urban areas with the DEQ Northwest Region (including the greater Portland metropolitan area).

6.5.3 Western Region Priorities

💧 *Primary:*

- Umpqua Basin, especially the South Umpqua sub-basin and the Umpqua-Smith River Estuary;
- Coos River sub-basin;
- Coquille River sub-basin; and

- Rogue River sub-basin.

💧 *Secondary:*

- Sixes River sub-basin;
- New River sub-basin; and
- Mid-Coast sub-basin.

6.5.4 Programmatic Priorities

Because of the ecological differences between the eastside and westside of the State, the following specific project priorities have been identified for each region:

6.5.5 Eastside Programmatic Targets

💧 *Temperature*

Because of widespread surface water temperature concerns throughout the area, projects are sought that offer high visibility, temperature control demonstration projects and/or projects which would protect or enhance cold water refugia for fish. In order to qualify as a demonstration project, proposals must include a strong education/public out-reach component.

💧 *Nutrients*

Dissolved oxygen, pH, and excess algae growth concerns have been identified in the Grande Ronde valley and portions of the Klamath basin. These problems are primarily associated with excess nutrient contributions from both point and nonpoint sources. In the Grande Ronde, for example, nutrients are known to enter the river from diffuse, nonpoint sources through shallow groundwater and seeps. Projects are needed to promote demonstrations of nutrient control strategies in these basins. Such projects may include using vegetation to remove excess nutrients from shallow groundwater before it enters surface waters, demonstrate practices to prevent or reduce the movement of animal waste from feed lots into surface waters, demonstrate pollution reduction in surface runoff from urban and agricultural lands.

💧 *Sediment Control*

Nutrients in surface waters are often associated with sediment or particulates. In some cases the sediment itself can create serious problems. Projects are needed to address erosion control.

💧 *Fish Habitat*

Declining habitat for endangered fish is a widespread concern in the region. Projects that include the enhancement or protection of fish habitat, while addressing one or more of the above pollution issues, are encouraged.

💧 *Education*

Many individuals will voluntarily choose to participate in nonpoint source pollution control if they are adequately informed, equipped, and empowered. Successful projects will contain an element that informs the public about nonpoint sources of pollution and actions that can be taken to reduce this type of pollution.

💧 *Volunteer Assessment and Monitoring*

Voluntary collection of data has the potential to vastly improve our knowledge of stream and/or groundwater conditions. Additionally, while working in their watersheds, volunteers become educated and invested in the resource. They become stewards of water quality in their own back yard. Successful projects will train and manage volunteer assessment and monitoring which includes rigorous quality assurance and quality control components.

BMP Demonstration: These relatively small-scale projects are designed to refine and/or demonstrate the viability of sound watershed management techniques, to promote best management practices, and to help galvanize local activism. Successful projects will accomplish these goals and have statewide applicability.

💧 *BMP Effectiveness Analysis*

Evaluating the cause/effect relationships between land management practices and the resulting water quality is critical to developing sound watershed management strategies and protecting water quality. Of particular interest are projects that develop riparian condition and/or erosion control standards that can be applied statewide.

💧 *Pollution Prevention*

In most cases, the easiest, least expensive, and most effective way to protect water quality is to modify watershed management practices so as to prevent pollution from occurring in the first place. Successful projects will replace pollution-generating practices with non-polluting ones.

6.5.6 Westside Project Targets

💧 *Aquatic Organisms and Habitat*

Temperature, dissolved oxygen and sediment are the principal parameters of concern with regard to salmonid reproduction and survival. Because of widespread evidence of elevated surface water temperature and concerns stimulated by the recent proposal to widely list temperature as water quality-limiting throughout the area, projects are sought that:

- Promote good, high visibility, temperature control demonstration projects and/or projects which would protect or enhance cold water refugia for fish. In order to qualify as a demonstration project, proposals must include a strong education/ public outreach component.
- Promote the establishment of healthy riparian areas. These projects will provide multiple benefits and may include off-channel livestock watering, fencing, planting, and nutrient buffer zone management components.

- Target areas critical to managing cooler water delivery lower into the system. These projects may require data collection and interpretation prior to implementation. Projects of this nature will target areas where significant heating is identified in diurnal fluctuations.

💧 *Sediment*

Sediment loading has been identified as a parameter of concern widely throughout the region. The cumulative effects of a variety of sediment producing activities have resulted in the serious consideration of many areas for identification as water quality limited based upon sediment loading. Because of these factors projects are sought that:

- Provide visibility of sediment control demonstration projects and/or projects which would protect or enhance critical fishery habitat. In order to qualify as a demonstration project, proposals must include a strong education/ public out-reach component.
- Promote the establishment of healthy riparian areas to address streambank erosion. These projects will provide mullet-fold benefits and may include the implementation of soil bioengineering techniques, off channel livestock watering, fencing, planting, and nutrient buffer zone management components.
- Target upland sediment source management. Projects of this nature will target areas where significant sediment sources are identified within upland settings. Projects might include road and landing treatments, return water management, etc.
- Target implementation of alternatives to instream sediment-producing activities such as pushup dam construction. These will be seriously considered because of their potential benefits to both water quality and salmonid species.

💧 *Flow Modification*

Flow modification has been identified as water quality-limiting in some areas. Widespread habitat losses have occurred historically through stream channelization, tide-gating, and wetland-impacting activities. Opportunities to address these factors targeting improvement of water quality and/or fishery habitat will strongly be considered. Projects identified as targeting increased flows will be seriously considered because of their potential benefits to water quality inclusive of temperature. Proposals must include a strong education/ public outreach component.

💧 *Wetland Function Restoration*

Projects assessing the environmental impacts of alternative crops that have the potential to restore wetland functions, including flood storage, to riparian areas, are also encouraged.

💧 *Physical/Biological Water Quality Parameters*

Scarcity of spawning and rearing habitat can be a limiting factor in salmon reproduction rates along the North Coast. In-stream habitat modification projects will have the greatest benefit for salmon survival when water quality concerns such as excess temperature and sediment are also addressed. Projects are sought that link in-stream habitat modification projects with water quality issues in adjacent stream segments.

💧 *Watershed Approach*

Local programs and organizations focused on watershed issues are in the early stages of development on the North Coast. Several State and Federal programs are available to provide technical support for local watershed councils and other forms of citizen involvement. However, grant cycles for funding projects provide limited windows of opportunity. Existing Watershed Councils' work and development of new councils is encouraged. Priority consideration will be given to projects

that focus on the immediate needs for coho survival and watershed/basin restoration.

💧 *Urban Pollutants*

Debates surrounding the implementation of urban stormwater permitting and the listing of many urban streams on the 303(d)(1) list demonstrate the need to develop effective urban nonpoint source management practices. The Northwest part of the State seeks proposals for demonstration projects using innovative BMPs to reduce urban stormwater impacts to water quality limited streams. Proposals must demonstrate a long-term commitment and be incorporated into basin strategies for achieving TMDLs. Additional consideration will be given to projects that provide models for smaller urban centers.

Rapid population growth throughout the region has increased the pace of development, including residential construction on small sites. In addition to erosion and sediment concerns, such development can increase pollutant loading from septic systems, household use of fertilizers and toxics, and changes to natural drainage systems. To address these concerns, projects are sought that:

- Reduce erosion from construction sites, especially those emphasizing education and technical assistance to construction firms.
- Improve and maintain lake water quality by educating landowners about septic system operation and maintenance and the appropriate use of lawn, garden, and household chemicals.

💧 *Education*

The public does not generally recognize sources and impacts of nonpoint source pollution. The Coastal Zone Management Act Reauthorization Amendments, Senate Bill 1010 and the greatly expanded 303(d)(1) list pressure State and local governments to regulate nonpoint sources. The development of effective and workable nonpoint source controls depends on local knowledge of the issues and participation in the process.

Proposals that respond to the need for community education are desirable in the Northwest part of the state. Action based projects involving interaction with citizens, and presenting information through several avenues will be most effective at meeting this goal.

💧 *Volunteer Assessment and Monitoring*

Voluntary collection of data has the potential to vastly improve our knowledge of stream and/or groundwater conditions. Additionally, while working in their watersheds, volunteers become educated and invested in the resource. They become stewards of water quality in their own back yard. Successful projects will consist of opportunities to train and manage volunteer assessment and monitoring which includes rigorous quality assurance and quality control components.

💧 *BMP Demonstration*

These relatively small-scale projects are designed to refine and/or demonstrate the viability of sound watershed management techniques, to promote best management practices, and to help galvanize local activism. Successful projects will accomplish these goals and have statewide applicability.

💧 *BMP Effectiveness Analysis*

Evaluating the cause/effect relationships between land management practices and the resulting water quality is critical to developing sound watershed management strategies and protecting water quality. Of particular interest are projects that develop riparian condition and/or erosion control standards that can be applied statewide.

💧 *Pollution Prevention*

In most cases, the easiest, least expensive, and most effective way to protect water quality is to modify watershed management practices so as to prevent pollution from occurring in the first place. Successful projects will replace pollution-generating practices with non-polluting ones.

7. OREGON'S SECTION 319(h) GRANT PROGRAM

7.1 THE SECTION 319(h) GRANT PROGRAM AND OREGON'S NPS PROGRAM PLAN

Section 319(h) of the *Clean Water Act* established a grant program to provide Federal funds for implementation of State NPS Program Plans. Oregon's original NPS Plan, assembled during 1989 and 1990 and finally approved fully by EPA in 1991, continues to guide allocation and expenditure of 319 grant funds even as this NPS Program Plan update is being prepared. Oregon's approach, then and now, has been to adopt an NPS Program Plan that includes a wealth of objectives addressing the whole range of NPS need in the state, and then to select a sub-set of these objectives each year as high priorities to receive 319 grant funds. More accurately, these annual priorities are actually detailed elaborations on the more general objectives in the long-term Plan. The selection of these annual priorities is based on the circumstances, needs, and opportunities of the moment. While some objectives may rise to the top for one year only, it is more typical for them to be high priorities for several years running—long enough for resources to be accumulated from a variety of sources and applied to solve or prevent a problem, implement an action plan, or otherwise address the need.

DEQ uses its two annual 319(h) grant documents to describe current priorities. First to be published and distributed is the "Application Guidelines" for that particular year, which serves as a request for proposals to be submitted

for funding. This document identifies geographic and programmatic needs and opportunities and explains that project proposals that address these designated high priorities will have the greatest chance of receiving 319(h) grants funding. Once the proposals have been received, reviewed, and ranked, DEQ presents the selected projects and their workplans to EPA in a submission often referred to as the "Intended Use Document." In addition to their functions within the 319(h) grant program, these documents are overtly intended to update the overarching NPS Program Plan by showing which of the Plan's objectives are the highest priorities at the moment.

For reference, a copy of the "Fiscal Year 2000 Application Guidelines" is included in Appendix J. Although the priorities and objectives shown in the various tables are a "snapshot" representing FY 2000 only, the document provides a succinct description of the 319(h) grant program.

7.2 PROJECT SELECTION PROCESS

Submitted project proposals are reviewed and ranked first by regional teams built around field-based DEQ staff specializing in TMDLs, NPS, watershed conditions, and working with Watershed Councils in the context of *The Oregon Plan* Healthy Streams Partnership. These reviewers include those from DEQ who serve on the regional proposal review teams for the state-funded OWEB grant program, thus assuring coordination between the OWEB and

319(h) grant programs at the local level. Also, DEQ's regional reviewers are those individuals who work most closely with the field-based staff from other State and Federal agencies, thus assuring coordination with the priorities and activities of those partners at the local level. The recommendations and rankings from the regional reviews, along with projects of a statewide nature that didn't receive regional review, are then considered by a panel that includes representatives of DEQ's principal Oregon Plan partners. This assures that the projects selected each year to receive 319(h)

funds have the consensus support of those partners and are coordinated with their activities to the extent possible.

7.3 FISCAL YEAR 2000 APPLICATION GUIDELINES

The "*Fiscal Year 2000 Application Guidelines for the Oregon 319 NPS Water Quality Program*" report can be seen in Appendix J.



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