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Washington's Water Quality Management Plan to Control Nonpoint Sources of Pollution

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Washington's Water Quality Management Plan to Control Nonpoint Sources of Pollution

by
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Olympia, Washington

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Executive Summary

This document outlines Washington State's approach to addressing water quality impacts from nonpoint sources (NPS) of pollution. This statewide management plan meets U.S. Environmental Protection Agency (EPA) Clean Water Act requirements, and ensures Washington State's eligibility for Section 319 (federal NPS Program) funding.

The Washington State Department of Ecology (Ecology) is the regulatory agency charged with protecting the quality of Washington State's water. Ecology acts as the lead agency in restoring, maintaining and enhancing water quality collaboratively with citizens, stakeholder groups, tribes, local governments, state agencies, and federal agencies. Ecology's NPS program uses a combination of technical assistance, financial assistance, and regulatory tools to help citizens understand and comply with state and federal water quality laws and regulations.

The passage of the state Water Pollution Control Act and federal Clean Water Act helped Washington State make important progress in cleaning up our rivers, lakes, and coastal waters largely by controlling pollution from factories, sewage plants, and other "point" sources of pollution.

Yet, based on the available water quality data, there remain a significant number of waterways that are not meeting the state Water Quality Standards which protect all beneficial uses.

Runoff from streets, farms, forest lands and other sources continue to pollute our waters. These are considered NPS of pollution, and they represent the largest remaining challenge in achieving compliance with state Water Quality Standards. Both point and NP sources of pollution must be addressed to reverse the trend of impairment and achieve the goals outlined in state and federal law.

This plan aims to protect public health and restore our state's waters by setting clearer goals and standards, and emphasizing the implementation of proven suites of best management practices to prevent pollution.

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Chapter 1: Nonpoint Source Pollution in Washington State

Land use and Nonpoint Source Pollution

Nonpoint source pollutants are introduced into water through:

- Runoff (typically rainfall and snow melt washing pollutants from the land into rivers, streams, lakes, oceans, and underground aquifers).
- Direct deposition of pollutants into state waters.
- Habitat alteration and hydromodification (the alteration of the natural flow of water across a landscape, including channel modification or channelization).
- Atmospheric deposition.

Land use is strongly correlated to nonpoint pollution. Therefore, to manage nonpoint source (NPS) pollution, we must focus on land use activities. The major sources of nonpoint pollution can be divided into the following categories.

Categories	Associated Land Uses
Agriculture	Livestock keeping; crop production; grazing; non-commercial agriculture.
Atmospheric Deposition	Emissions from various sources; wind borne erosion.
Forest Practices	Road construction and maintenance; harvesting; chemical applications.
Habitat Alteration/ Hydromodificcation	Filling of wetlands and alteration of riparian areas; shoreline development; stream channelization; dikes; dredging; riprap; and dams.
Recreation	Marinas and boats, off-road vehicles.
Urban/Suburban Areas	Stormwater runoff; on-site sewage systems; hazardous materials; construction and maintenance of roads and bridges; residential use of fertilizers and pesticides.

What is the quality of Washington State's water?

Water quality assessment

Ecology's primary means of reporting on the status of water quality is through the development of an integrated water quality monitoring and assessment report, based on EPA's *2002 Integrated Water Quality Monitoring and Assessment Report Guidance* (November 2001).

Washington State's Water Quality Assessment satisfies Clean Water Act requirements for both Section 305(b) water quality reports and Section 303(d) lists, Washington's Integrated Report combines the statewide assessment of all of the state's waters, which is required by Section 305(b), and the list of impaired waters, which is required by Section 303(d).

Ecology's Water Quality(WQ) Program has adopted Policy 1-11 that describes the methods used for assessing information to evaluate attainment of WQ Standards. The policy includes criteria for compiling, analyzing, and integrating data on ambient conditions with project implementation information. The policy describes how the state integrates data from numerous sources, collected for a variety of purposes under a variety of quality control practices. *Washington State's Water Quality Assessment* places waterbody segments into one of five categories. All waters in Washington (except those on reservation lands) fall into one of the five categories which describe the status of water, from clean to polluted. *Washington State's Water Quality Assessment* may be found on Ecology's website at:
http://www.ecy.wa.gov/programs/wq/303d/index.html

The assessment helps us prioritize the use of state resources more efficiently by focusing on water bodies that need the most work, and to address the problem pollutants that show up most often. It should be noted, however, that the water quality assessment is not a full accounting of the water quality problems in Washington. There are still many water bodies that have not been monitored yet.

Nonpoint pollution in Washington State

To support development of the NPS Plan, Ecology conducted a study of existing information regarding nonpoint source pollution in Washington.[1] The objective of this study was to research and document the current known extent of NPS pollution, evaluate the land uses and human activities that can generate NPS pollution, and look at the linkage between land uses, human activities, and NPS pollution in Washington.

To accomplish this, Ecology evaluated technical reports and other information sources produced since 2005. The study employed several distinct areas of research:

- A review of existing U.S. Environmental Protection Agency guidance.
- A review and summary of recent research on NPS pollution relevant to Washington State.
- Compilation of calculated NPS load reduction targets in 49 Total Maximum Daily Load (TMDL) studies conducted in Washington since 2005.
- An exploratory analysis of TMDL load allocations and associated land uses, using Geographic Information Systems.
- An evaluation of Section 319 grants used for NPS pollution control.
- Four case studies in data-rich watersheds: Walla Walla River, Lower Yakima River, Dungeness River and Bay, and Samish Bay.

Results of these areas of analysis were synthesized to draw conclusions for different categories of nonpoint pollution sources, including agriculture, urban and residential areas, hydromodification, marinas and boating, forests, atmospheric deposition, and natural sources.

[1] To access the full report see Appendix A.

The study found that nonpoint pollution sources are widespread in Washington and cause a variety of water pollution problems. Application of best management practices will help reduce and prevent these pollution impacts.

The impacts of land use practices - summary

Agricultural

Agricultural areas have consistently been cited as a significant source of impairment in freshwaters nation-wide. Documented water quality impacts from agricultural areas include elevated levels of fecal coliform bacteria, suspended sediment, turbidity, pesticides, PCBs, nutrients, and pH, as well as decreased levels of dissolved oxygen, and elevated water temperatures through loss of riparian shade.

Table 1 Pollutant categories associated with nonpoint pollution from agricultural areas.

Pollutant Category	Typical Sources	Impacts
Fecal coliform bacteria	Direct animal access to streams; manure overspray, or runoff; runoff from pastures, grazing areas, application areas, manure piles, or heavy use areas	Human health, shellfish harvest
Suspended sediment/ Turbidity	Erosion from animal access to stream banks, runoff from heavy use areas or cultivated fields, runoff from irrigated farm fields	Aquatic life uses, aesthetics
Pesticides	Direct overspray, runoff from fields	Human health, aquatic life uses
Nutrients/ Dissolved oxygen/pH	Direct animal access to streams, manure or fertilizer overspray or runoff, runoff from pastures, grazing areas, heavy use areas or cultivated fields	Aquatic life uses, aesthetics
Shade/Temperature	Loss of riparian shade due to clearing, suppression of riparian vegetation by grazing animals, degradation of riparian condition from animal access or cultivation in riparian areas	Aquatic life uses

Atmospheric Deposition

Atmospheric deposition of nitrogen, sulfur, mercury, and other toxic compounds such as polychlorinated biphenyls (PCBs) and dioxins enter surface waters via direct fallout or when soils contaminated via atmospheric deposition erode and enter surface waters. Fallout may occur as wet deposition, in which emissions react with water vapor in the air and fall as precipitation (e.g., nitric and sulfuric acids—*acid rain*), or as dry deposition, in which emissions fall in gaseous or particulate form. Emission sources include industrial facilities, vehicle exhaust, and agriculture-related activities, as well as volatilization, or open burning of PCB/dioxin-laden materials. Surface water deposition from atmospheric emissions have been found to occur at local, regional, and global scales.

Table 2 Pollutant categories associated with nonpoint pollution from atmospheric deposition.

Pollutant Category	Typical Sources	Impacts
Nitrogen (ammonia, nitrate), Phosphorus, Sulfur dioxide	Vehicle, agricultural, and industrial emissions, wind-borne erosion	Aquatic life uses
Mercury	Mining, coal burning	Human health, aquatic life uses
PCBs, Dioxin, Furans	Backyard burning of pollutant-laden trash, volatilization from soils or water	Human health, aquatic life uses

Forest Practices

The main pollutants associated with activities in forested areas include temperature, sediment, and nutrients. Nonpoint pollution from toxic chemicals, including heavy metals and pesticides, has also been associated with forest activities.

Table 3 Pollutant categories associated with nonpoint pollution from forested areas

Pollutant Category	Typical Sources	Impacts
Suspended sediment/ Turbidity	Loss of riparian vegetation, concentration of flow from roads, road failures	Aquatic life uses
Temperature	Loss of riparian vegetation	Aquatic life uses
Nutrients/dissolved oxygen	Loss of riparian vegetation, forest fertilization	Aquatic life uses
Toxic chemicals (heavy metals, pesticides)	Sedimentation, aerial forest pesticide applications	Human health, aquatic life uses

The primary means by which timber harvest impacts water quality is through: 1) removal of the trees which provide shade, leaf litter and woody debris, 2) removal of trees and vegetation in sufficient amounts to change the flow of water and nutrients, and 3) compacting and disturbing soils such that excess sediment is delivered to streams with precipitation events.

Poorly located roads, outdated construction practices, and lack of maintenance of forest roads can have a large impact on water quality. Road activities can increase sedimentation through soil compaction and increased runoff from these compacted surfaces.

The loss of shade through removal of streamside canopy is a well-established mechanism leading to elevated stream temperatures. Elevated stream temperatures can contribute to lowered dissolved oxygen levels. Other riparian functions and watershed characteristics, including streambank stability, filtration, and surface water-groundwater connectivity, are affected by forestry and can affect stream temperatures.

The mechanisms and specific risks of water quality impacts from forestry may change with the location in the watershed. Areas in the upper portions of watersheds tend to have steeper, more unstable slopes relative to lower-gradient areas further downstream, and are thus more prone to sediment erosion and debris flows affecting water quality, both locally and downstream. Throughout the watershed forest harvest activities and their associated roads can impact water quality with higher sediment loads when those activities directly discharge to streams or are located too near to streams.

Habitat Alteration/Hydromodification

Hydromodification or habitat alteration, a category found widely in EPA NPS guidance, is comprised of a variety of impacts ranging from large dams to development in riparian zones. Typical forms of hydromodification include:

- Dams and weirs forming reservoirs or ponded areas
- Channelized streams
- Bank armoring and levees
- Bank excavation and removal of riparian vegetation
- Streambank and shoreline erosion

- Removing vegetation and/or large woody debris
- Drain or fill of wetlands
- Irrigation diversions
- Culverts

This category overlaps with many of the other categories since agriculture, urban and residential development, and forestry can affect riparian zones. However, many hydromodification impacts occur directly from channel modification, or from activities on vacant or open space lands. In general, the term "hydromodification" used in this context refers to modifications to the geomorphological channel structure that impair water quality or aquatic habitat. Restoration activities may involve a channel "remodification" to restore ecological function.

The critical aspects of hydromodification are that:

- It can affect any kind of water body – marine, river, stream, lake, or wetland.
- It can be associated with almost any kind of land use or human activity.
- It impacts the aquatic ecosystem physically through loss of habitat and ecosystem function.
- It also impacts the aquatic ecosystem through the discharge of contaminants from construction, building materials, erosion, and the lack of a riparian vegetated buffer to prevent the transport of contaminants from overland flow.

Table 4 Pollutant categories associated with nonpoint pollution from hydromodification.

Pollutant Category	Typical sources	Impacts
Temperature	Loss of riparian canopy, changes in channel morphology, changes in surface water-groundwater interactions	Aquatic life uses
Suspended sediment/ Turbidity	Erosion, alteration of transport and deposition dynamics	Aquatic life uses
Bacteria, Nutrients/ Dissolved oxygen/pH, Pesticides	Loss of the riparian buffer	Aquatic life uses, human health, aesthetics

Recreation

Although generally a less pervasive nonpoint issue compared to agriculture and urban/residential areas, the impacts of NPS pollution from marinas and recreational boating can be present in our coastal areas and lakes.

This is especially true in Puget Sound waters that are poorly flushed and mixed. At the same time, Puget Sound waters contain economically important fish and shellfish areas, marine protected areas, aquatic reserves, and public beaches.

Table 5 Pollutant categories associated with nonpoint pollution from recreation and marine/boating areas.

Pollutant Category	Typical sources	Impacts
Fecal coliform bacteria	Direct sewage discharge	Contact recreation, shellfish harvest
Toxic chemicals (heavy metals, organic toxics)	Anti-fouling paint, solvents, sealers, lubricants	Human health, aquatic life uses
Nutrients from soaps and detergents	Direct sewage discharge, boat cleaning	Aquatic life uses, aesthetics
Petroleum hydrocarbons	Engine fueling and operation, bilge water	Human health, aquatic life uses, aesthetics

Urban and Residential Areas

Urban (including commercial, industrial, and residential) areas and non-urban residential areas have long been recognized as one of the top sources of nonpoint pollution across the United States. A mix of land use and human activities typically contribute to overall nonpoint pollution issues in urbanized watersheds.

The key transport mechanism involved is stormwater runoff from impervious surfaces, although direct dumping and hydromodification also contribute. The most common pollutants associated with nonpoint pollution in urban areas are fecal coliform, toxic chemicals, suspended sediment and turbidity, and nutrients.

Table 6 Pollutant categories associated with nonpoint pollution from urban areas.

Pollutant Category	Typical Sources	Impacts
Fecal coliform bacteria	Onsite sewage systems, pet waste, urban wildlife	Contact recreation, shellfish harvest
Suspended sediment/ Turbidity	Erosion from construction or landscaping, road runoff, road maintenance, bank erosion from increased peak flows	Aquatic life uses, aesthetics
Toxic chemicals (heavy metals, pesticides)	Landscaping chemicals, road runoff, commercial or industrial spills, leaking storage tanks	Human health, aquatic life uses
Nutrients/Dissolved oxygen/pH	Landscaping chemicals, road runoff, commercial or industrial spills, pets, and urban wildlife	Aquatic life uses, aesthetics
Petroleum hydrocarbons	Road runoff, commercial or industrial spills, leaking storage tanks	Aquatic life uses
Temperature	Loss of riparian canopy, changes in channel morphology, changes in surface water-groundwater interactions	Aquatic life uses

Chapter 2: Washington State's Regulatory Framework

This chapter describes Washington State's statutory and regulatory framework for implementing the NPS program. The authority to implement the NPS program is based primarily on the State Water Pollution Control Act and two federal laws—the Clean Water Act (CWA) and Coastal Zone Act Reauthorization Amendments of 1990 (CZARA). Further, three additional state laws provide enforceable mechanisms that address NPS pollution from forest practices, dairies, and on-site-sewage systems. Finally, other relevant state, and local laws are also included to provide a full picture of the legal framework in Washington State.[2]

State water quality laws-regulatory

In Washington State, the Water Pollution Control Act (Chapter 90.48 RCW) is the principal state law governing water quality. It provides the primary authority to regulate NPS pollution, achieve compliance with the state WQ Standards, and require the implementation of best management practices (BMPs) to address NPS pollution. Other state and local authorities can also provide authority to address NPS pollution. In addition to the Water Pollution Control Act, this section describes three other state laws and associated regulations (the Forest Practices Rules, the Dairy Nutrient Management Act, and On-Site Sewage Systems Regulations) that provide enforcement authority to address nonpoint sources of pollution.

Washington State Water Pollution Control Act

The Washington State Water Pollution Control Act (Chapter 90.48 RCW) is the principal law governing water quality in Washington State. It establishes a comprehensive program to protect water quality and the beneficial uses of water. The goal of the Water Pollution Control Act is to "maintain the highest possible standards to insure the purity of all waters of the state...."[3] Further, to achieve this goal the state will "require the use of all known available and reasonable methods by industries and others to prevent and control the pollution of the waters of the state…."[4] The Water Pollution Control Act applies to surface waters, wetlands and ground water.

Under the Washington State Water Pollution Control Act, Ecology is given the jurisdiction "to control and prevent the pollution of… waters of the state of Washington."[5] Pollution is broadly defined in RCW 90.48.020, and includes the contamination or other alteration of the physical, chemical, or biological properties of any waters of the state. Under state law, it does not matter whether the pollution comes from a point or NP sources, all pollution of state waters is subject to Ecology's authority to control and prevent pollution.

[2] While this chapter discusses most of the relevant authorities in Washington State, it is not intended to be comprehensive of all possible legal authorities that can be used to address nonpoint sources of pollution. In some cases other legal authorities may be better suited to address a specific nonpoint pollution problem.
[3] See RCW 90.48.010.
[4] See RCW 90.48.010.
[5] See RCW 90.48.030.

The Water Pollution Control Act makes it unlawful for any person to "cause, permit or suffer to be thrown, run, drained, allowed to seep or otherwise discharged … any organic or inorganic matter that shall cause or tend to cause pollution of" waters of the state.[6] Any person who violates or creates a substantial potential to violate the provisions of Chapter 90.48 RCW is subject to an enforcement order from Ecology pursuant to RCW 90.48.120. Ecology is authorized to "issue such order or directive as it deems appropriate under the circumstances[.]"[7]

In addition to administrative orders, violating Chapter 90.48 RCW may result in injunctions, civil penalties, and notices of violations.[8] Finally, any "person who conducts a commercial or industrial operation of any type which results in the disposal of solid or liquid waste material into the waters of the state" must obtain a state waste discharge permit before discharging to state waters.[9] Ecology issues three types of wastewater discharge permits: (1) State Waste Discharge Permit; (2) National Pollutant Discharge Elimination System (NPDES)/State Waste Discharge Permits; and (3) General Permit (may be issued under combined NPDES/State or State-only authority).

It is worth noting that while RCW 90.48.120 gives Ecology the authority to take action in response to NPS pollution, the statute also gives Ecology the authority to take action based on a "substantial potential" to pollute state waters via either a point or nonpoint pollution source. Consequently, Ecology not only has authority to take action following a NPS pollution occurrence (i.e. there was a discharge), but has specific statutory authority to act proactively to prevent NPS pollution from occurring in the first place.

Finally, Ecology's authority includes the ability to require a nonpoint source polluter to implement specific best management practices (BMPs). Ecology's authority can be used to prevent nonpoint pollution and require BMPs, as necessary.[10]

Forest Practices Rules

The Forest Practices Rules establish protection standards for forest practices activities such as timber harvest, pre-commercial thinning, road construction and maintenance, fertilization, forest chemical application, required reforestation, and specific riparian and wetland protection measures.[11] They give direction on how to implement the Forest Practices Act[12] and the Stewardship of Non-industrial Forests and Woodlands.[13] The rules are designed to protect public resources, such as water quality and fish habitat while maintaining a viable timber industry. They are under constant review through an adaptive management program.

The Forest Practices Board, an independent state agency, adopts Forest Practices Rules. The Department of Ecology needs to concur with proposed rules involving water quality protection prior to adoption by the Forest Practices Board.

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[6] See RCW 90.48.080.
[7] See RCW 90.48.120.
[8] See RCW 90.48.037, RCW 90.48.144, RCW 90.48.120, and RCW 90.48.240.
[9] See RCW 90.48.160.
[10] See Appendix B.
[11] See Title 222 WAC.
[12] See Chapter 76.09 RCW.
[13] See Chapter 73.13 RCW.

The Forest Practice Rules requires trees to be left within streamside areas to shade streams (which keep them cool), to protect stream bank integrity, to capture surface run-off sediment, and to provide the woody debris that builds in-stream salmon habitat. They also establish road construction standards and required road maintenance, provide protection for wetlands, and set restrictions on pesticide use. An approved Forest Practices Application from the state Department of Natural Resources (DNR) is required for any forest practices activities on forestlands in the state meeting certain criteria. DNR is authorized to inspect operations and enforce all rules related to forest practices. Ecology is also authorized to take enforcement action if needed to prevent damage to water quality.

Dairy Nutrient Management Program (DNMP)

The Dairy Nutrient Management Act[14] is administered by the Washington State Department of Agriculture (WSDA). Chapter 90.64 RCW requires all grade "A" licensed dairies under Chapter 15.36 RCW to:

- Register with the DNMP.
- Develop a nutrient management plan (NMP) that describes how manure and process waste water will be managed including collection, storage and utilization. The NMP must be approved within six months of licensing, and certified within twenty-four months of licensing by their local conservation district.
- Prevent discharges to waters of the state.
- Maintain land applications records demonstrating agronomic use of all nutrients.

Chapter 90.64.026 required the Washington State Conservation Commission (WSCC) to develop a document the clearly describes the elements that a dairy nutrient management plan must contain to gain local conservation district approval by Novemeber 1, 1998. In addition, WSCC may authorize other methods and technologies than natural resources conservation service if they meet specific standards (see RCW 90.64.026(3)).

The NMP development process is completed by the dairy producer in consultation with a local conservation district, the Natural Resources Conservation Service (NRCS), or a private planner. The NMP development includes a process to assess the number of animals and nutrient inventory, surface and ground water risk(s), manure and process waste water collection, conveyance and storage needs, crop production history, and land application acreage needs. The NMP process identifies the producer's goals, resource risk(s), and BMPs to protect the resource.

Chapter 16-611 WAC specifies requirements for recordkeeping and the penalty matrixes for recordkeeping and water quality violations.

Chapter 90.64 RCW requires DNMP to implement an inspection program to monitor dairy operations for NMP implementation, recordkeeping violations, and water quality violations (actual or potential). If the water standards (WAC 173-201A) are violated, DNMP has the authority to issue civil penalties. In addition, Chapter 43.05 RCW (Technical Assistance) requires DNMP to identify dairies that could benefit from additional technical assistance. This could be a need for regulatory technical assistance solved by explaining what the laws and rules

[14] Chapter 90.64 RCW.

are, or this could be what is commonly thought of as technical assistance from local conservation districts or private consultants and engineers. Often the local conservation districts are the first stop as they can provide cost share dollars for some projects.

The program is managed in conformance with a Memorandum of Understanding between WSDA and Ecology. Ecology is responsible to EPA for Clean Water Act compliance for animal feeding operations (AFO)s and confined animal feeding operations (CAFOs) and retains the authority under Chapter 90.48 RCW to take compliance actions on any livestock operations where human health or environmental damage has or may occur due to potential or actual discharges. However, in accordance with the MOU, Ecology recognizes WSDA as the lead on all compliance actions against non-permitted dairies.

On-Site Sewage Systems

Small On-Site Sewage Systems

Small on-site sewage systems (OSS), also known as septic systems, treat domestic sewage from private residences, restaurants, and other small-scale developments. They are used extensively statewide in rural and suburban infill settings.[15] In Washington State, small OSS are regulated by Chapter 246-272A WAC (state OSS rule), Chapter 70.118A RCW (marine recovery area statute), Chapter 43.20 RCW, and Chapter 70.05 RCW. The state OSS rule is adopted by the State Board of Health[16] (SBOH) and administered by the State Department of Health. Local codes must be consistent with, and at least as stringent as the state laws.[17]

Chapter 246-272A WAC provides minimum requirements for the location, design, and performance of OSS. Anyone proposing the installation, repair, modification, connection to, or expansion of an OSS, is required to obtain a permit from the local health officer prior to construction.

Local Health Jurisdictions (LHJs) work with local boards of health to adopt and administer the local codes. The LHJs are responsible for permitting all OSS and implementing other significant aspects of the state OSS rule. This includes developing and overseeing management plans (see next section), approving OSS designs, inspecting installations, certifying industry professionals, maintaining system records, and educating homeowners on program requirements and the proper use and care of systems.

OSS owners are responsible for operating, monitoring and maintaining OSS to minimize the risk of failure. Owners are required to have systems pumped when necessary, to avoid damage or improper use of the system, and to ensure the flow of sewage does not exceed the approved design in both quantity and waste strength.

[15] Small on-site sewage systems (OSS) are those sewage systems that have flows of less than 3,500 gallons per day. See Chapter 246-272A WAC. There are about 950,000 OSS in Washington. See

[16] RCW 43.20.050 authorizes the State Board of Health to "adopt rules for the design, construction, installation, operation, and maintenance" of small on-site sewage systems.

[17] The State Department of Health's On-site Sewage Program reviews local health jurisdiction codes to ensure they are consistent with state regulations.

The State Department of Health may take enforcement action if an LHJ fails to regulate OSS in compliance with state law. The Department of Ecology also has authority to take enforcement actions under the Water Pollution Control Act if there is a discharge to state waters.

On-Site Sewage System-Management Areas

The state OSS and marine recovery area (MRA) laws require LHJs to designate areas where OSSs present added risk to public health or water quality. Areas adjacent to Puget Sound that have pollution problems linked to OSS may be designated as MRAs. Consistent with the state OSS rule, Chapter 70.118A RCW requires LHJs to adopt management plans, and implement enhanced programs in these areas to protect public health and Puget Sound water quality. As part of the enhanced programs in MRAs, LHJs are required to:

- Inventory and inspect all OSS.
- Identify failing systems and ensure they are either repaired or replaced.
- Develop and maintain electronic data systems capable of sharing OSS information with other regulators.

The state OSS rule complements this with the following management plan requirements from WAC 246-272A-0015 for Puget Sound counties:

- Progressively inventory all systems.
- Identify high-risk areas and designate MRAs.
- Develop and tailor operation and maintenance (O&M) requirements to these areas.
- Facilitate education of owners on their O&M responsibilities for all types of systems.
- Remind and encourage system owners to inspect their systems.
- Maintain records of O&M activities.
- Find failing systems, and enforce system owner requirements.
- Assure coordination with local comprehensive plans.
- Assess the capacity of the LHJ to adequately fund the program.

For most Puget Sound counties, requirements are higher and tracked more closely inside designated areas than in other parts of the county. Efforts continue at the State Department of Health and LHJs to strengthen and standardize both baseline and enhanced program requirements.

To see a map that shows counties with management plans, please see:

http://www.doh.wa.gov/CommunityandEnvironment/WastewaterManagement/OnsiteSewageSystemsOSS/ManagementStrategy/ManagementAreas

Large On-Site Sewage Systems

Large On-site Sewage Systems (LOSS) convey, store, treat, and provide subsurface soil treatment and disposal of domestic sewage. Their design flow is between 3,500 and 100,000 gallons per day.

LOSS offer an alternative to centralized municipal sewage treatment plants. They can serve about 10 to 370 individual residences, or equivalent flows from schools, churches, campgrounds, recreation vehicle parks, resorts or state park sites, or smaller cities or towns.

The state Department of Health reviews and approves all LOSS project applications. The state LOSS rule is Chapter 246-272B WAC, developed under authority of Chapter 70.118B RCW. The rule took effect July 1, 2011. Among other significant policy changes captured in the rule, it consolidated previously piecemeal regulatory and permitting authority for LOSS at the Department of Health, and assigned responsibility for public health and environmental protection to the agency. The rule is not a SBOH rule.

All existing LOSS are required to obtain and renew annual operating permits from the Department of Health. There are approximately 570 LOSS statewide, and about 290 in the Puget Sound region.

Additional State Authorities (Regulatory and Non-regulatory)

State Environmental Policy Act

Washington's State Environmental Policy Act (SEPA)[18] requires that all state and local agencies consider the likely consequences of agency actions before making decisions that affect the natural and built environment. Among other things, the law requires all state and local governments within the state to:

- "Utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision making which may have an impact on man's environment;" and
- Ensure that "...environmental amenities and values will be given appropriate consideration in decision making along with economic and technical considerations...."[19]

The policies and goals in SEPA supplement those in existing authorizations of all branches of government of this state, including state agencies, counties, cities, districts, and public corporations. Any governmental action may be conditioned or denied pursuant to SEPA.[20]

SEPA is intended to ensure that environmental values are considered during decision-making by state and local agencies.

Land Use Planning: Growth Management Act, and Shoreline Management Act

The Shoreline Management Act (SMA)[21] and, Growth Management Act (GMA)[22] are the two primary state statutes related to land use planning. They share some commonalities, but are separate statutes with different purposes, jurisdictions, and requirements.

[18] Chapter 43.21C RCW
[19] RCW 43.21C. 030(2)(a) and (2)(b)
[20] RCW 43.21C.060
[21] Chapter 90.58 RCW, and more information at: http://www.ecy.wa.gov/programs/sea/shorelines/smp/handbook/index.html.
[22] Chapters 36.70A and 36.70B RCW.

The overarching goal of the SMA is, "to prevent the inherent harm in an uncoordinated and piecemeal development of the state's shorelines." Under the SMA, each city and county with "shorelines of the state" must prepare and adopt a Shoreline Master Program (SMP) that is based on state laws and rules, but is tailored to the specific geographic, economic, and environmental needs of the community. The local SMP is essentially a shoreline-specific combined comprehensive plan, zoning ordinance, and development permit system.

The SMA establishes a balance of authority and partnership between local and state government. Towns, cities, and counties are the primary regulators. The state Department of Ecology acts primarily in a support and review capacity. Ecology provides technical assistance to local governments. Ecology also provides funding in the form of grants. Finally, Ecology is also required to review certain kinds of permits (*conditional use* and *variance permits*) for compliance with the law, and must review local shoreline master programs to ensure they also comply.

Local governments may modify (amend) master programs to reflect changing local circumstances, new information, or improved shoreline management approaches. There are two types of amendments: limited and comprehensive. All changes to master programs require public notice. Comprehensive amendments require more extensive public involvement.

SMPs and any amendments are effective only after Ecology approval. In reviewing and approving master programs, Ecology is limited to a decision on whether or not the proposed changes are consistent with the policy and provisions of the SMA and the shoreline master program guidelines.[23]

The GMA requires that each Washington city and county establish a public participation program and procedures for amendments, updates, and revisions of comprehensive plans and development regulations.

The GMA requires all jurisdictions in the state to designate and protect critical areas; designate farm lands, forest lands, and other natural resource areas; and determine that there are appropriate public services and facilities for new residential subdivisions. In addition, 29 of the state's 39 counties, and the 218 cities within them, are planning for growth. These jurisdictions develop comprehensive land use plans.

All cities and counties in Washington are required to adopt critical areas regulations by the GMA.[24] As defined by the GMA, "Critical areas" include the following areas and ecosystems: (a) wetlands; (b) areas with a critical recharging effect on aquifers used for potable water; (c) fish and wildlife habitat conservation areas; (d) frequently flooded areas; and (e) geologically hazardous areas.[25]

[23] WAC 173-26, Part III.
[24] RCW 36.70A.060. More information on the GMA and CAO can be found at: http://www.commerce.wa.gov/Services/localgovernment/GrowthManagement/Growth-Management-Planning-Topics/Pages/default.aspx.
[25] RCW 36.70A.030(5).

Counties and cities are required to include the best available science in developing policies and development regulations to protect the functions and values of critical areas.[26]

The Voluntary Stewardship Program (VSP) was passed in 2011 as an amendment to the GMA. Its goals are to protect and enhance critical areas, maintain and improve the long-term viability of agriculture, and reduce the conversion of farmland to other uses. To accomplish these goals the VSP relies primarily on incentives and voluntary stewardship practices. Counties that opt into the VSP are responsible for designating a local watershed group that will develop a watershed plan that describes how critical areas on agricultural lands will be protected and enhanced.

Shellfish Protection Districts

Chapter 90.72 RCW encourages, and in some cases, requires counties to establish shellfish protection districts and programs to curb the loss of productive shellfish beds caused by nonpoint sources of pollution, such as stormwater runoff, failing on-site sewage systems, and runoff from farm animal wastes.

Salmon Recovery Act, and Salmon Enhancement Program

In response to Endangered Species Act listings, Washington State passed the Salmon Recovery Act, Chapter 77.85 RCW. The Act provides for a planning and implementation process that is focused on fish habitat. The Salmon Recovery Funding Board provides grants to local organizations in watersheds to restore and protect salmon habitat.

Regional Fisheries Enhancement Groups (RFEGs) are a statewide network of non-profit, community-based, salmon enhancement organizations. Created by the Washington State Legislature in 1990, the RFEG program involves citizen volunteers and landowners in the state's salmon recovery efforts.[27] The RFEG program consists of 14 sanctioned non-profit community-based organizations, with program support provided by the Washington Department of Fish and Wildlife. The long-term vision of the RFEG program is that Washington State communities actively care for, and become stewards of, abundant salmon populations for future generations.

Biosolids

Biosolids are the nutrient-rich organic materials resulting from the treatment of sewage sludge (the name for the solid, semisolid or liquid untreated residue generated during the treatment of domestic sewage in a treatment facility). Biosolids facilities in Washington operate under a statewide General Permit for Biosolids Management issued by Ecology.[28] This permit covers land application of biosolids and other related processes and aspects of operations related to biosolids.[29] The state biosolids program regulates biosolids (including septage) applied to the land, biosolids sold or given away in a bag or other container, biosolids being stored, biosolids transferred from one facility to another, and sewage sludge disposed in a municipal solid waste

[26] RCW 36.70A.172.
[27] Chapter 77.95 RCW and Chapter 220-140 WAC.
[28] Chapter 70.95J RCW and Chapter 173-308 WAC.
[29] More information on the biosolids program can be found here: http://www.ecy.wa.gov/programs/swfa/biosolids/; More information on the permit can be found here: http://www.ecy.wa.gov/programs/swfa/biosolids/pdf/BiosolidsManagement.pdf

landfill. The existing general permit expires on August 20, 2015. Ecology is currently in the process of developing a new general permit. There are currently about 200 applicable facilities in the state.

Oil and Hazardous Substance Spill Prevention and Response Act

Oil and hazardous materials spills present a danger to human health and the environment. Ecology is responsible for rapidly responding to, and overseeing the cleanup of oil spills and hazardous material incidents. The law also includes prevention and preparedness requirements, and authorizes Ecology to assess and collect damages and fines for spills.[30]

Toxics Cleanup, Hazardous Waste, Solid Waste, and Air Quality

Various other laws administered by Ecology can have a nexus with nonpoint pollution. Examples include the Model Toxics Control Act,[31] Hazardous Waste Management Act,[32] Solid Waste Management-Reduction and Recycle Act,[33] and Washington Clean Air Act.[34] For additional information on laws and regulations administered by Ecology visit our website: http://www.ecy.wa.gov/laws-rules/index.html

Hydraulic Project Approval (HPA)

Anyone planning any construction activity or other work that uses, diverts, obstructs, or changes the natural flow or bed of state waters is required to obtain an environmental permit commonly known as an HPA. Thousands of HPAs are issued each year for activities ranging from work on bulkheads, piers, and docks to culvert replacement.

The Washington Department of Fish and Wildlife administers the HPA program under the state Hydraulic Code,[35] which was specifically designed to protect fish life.

All hydraulic projects associated with forest practices activities are administered by the DNR. These projects require an approved Forest Practices Application containing a request for approval of Forest Practices Hydraulic Projects.

Aquatic Invasive Species (AIS) Program

Aquatic invasive species pose an ongoing threat to Washington's environment and economy. The Washington Department of Fish and Wildlife (WDFW) administer the AIS program.[36] Penalties for transporting aquatic invasive species in Washington include up to one year in jail and a maximum fine of $5,000. Additionally, WDFW administers the state's ballast water management laws under Chapter 77.120 RCW. Ballast water management regulations are found at Chapter 220-150 WAC.

[30] Chapter 90.56 RCW and Chapter 88.46 RCW & Chapter 173-182 WAC, and Chapter 173-183 WAC.
[31] Chapter 70.105 D RCW.
[32] Chapter 70.105 RCW.
[33] Chapter 70.95 RCW.
[34] Chapter 70.94 RCW.
[35] Chapter 77.55 RCW and Chapter 220-110 WAC.
[36] Chapter 77.135 RCW.

Secondary Containment Rules (Fertilizer and Pesticide)

The Secondary Containment Rules[37] are administered by the Washington State Department of Agriculture (WSDA). Fertilizer and pesticide secondary containment rules were implemented to protect ground and surface water. Secondary containment rules are not intended to prevent spills in the event of a catastrophic incident occurring to the primary container. The rules are intended to contain the spill of bulk pesticides or fertilizers in the event the primary bulk container should fail.

Chemigation and Fertigation Technical Assistance Program (CFTAP)

WSDA has regulatory authority involving the application of pesticides[38] and fertilizers[39] through irrigation systems. The Chemigation and Fertigation Rules apply to any irrigation system that is used to apply a pesticide or plant nutrient in a greenhouse or to a plant nursery, farm, residential or commercial property.

These rules require that chemigation and fertigation systems must have the appropriate safety devices in place and must be properly installed, maintained, and operating to protect human health and the environment. Equipment performance standards, operational procedures, and applicator competencies are protective of existing and future uses of surface water and groundwater quality.

Individuals who chemigate must also adhere to provisions of the Washington Pesticide Control Act[40] concerning the formulation, distribution, storage, transportation, and disposal of any pesticide; the Washington Pesticide Application Act,[41] involving the use of various pesticides, application recordkeeping, and applicator licensing; the General Pesticide Rules[42] and the Worker Protection Standards,[43] which are co-enforced with the Washington State Department of Labor and Industries. In instances where the water source is a public water system or a domestic water supply, Chemigation and Fertigation Technical Assistance Program (CFTAP) staff collaborate with the Washington State Department of Health, Drinking Water Unit. In counties that have codified the Uniform Plumbing Code to include irrigation wells used in agricultural operations, CFTAP staff advise growers about local permitting requirements and inspection procedures.

[37] Chapter 16-201 WAC (Fertilizers) and Chapter 16-229 WAC (Pesticides).
[38] WAC 16-202-1000.
[39] WAC 16-202-2000.
[40] Chapter 15.58 RCW.
[41] Chapter 17.21 RCW.
[42] Chapter 16-288 WAC.
[43] Chapter 16-233 WAC.

Federal Laws (Regulatory and Non-Regulatory)

Clean Water Act

The Federal Clean Water Act (CWA)[44] is the principal federal statute for water quality protection. The CWA's goal is "to restore and maintain the chemical, physical and biological integrity of the Nation's waters."[45]

In Washington State, the Department of Ecology is designated "as the state water pollution control agency for all purposes of the federal clean water act…" and is "authorized to participate fully in the programs of the act as well as to take all action necessary to secure to the state the benefits and to meet the requirements of the act."[46]

Historically, efforts to protect water quality under the CWA focused on the establishment of technology-based limitations on individual discharges into navigable waters from point sources. Point sources are "any discernible, confined and discreet conveyance . . . from which pollutants are or may be discharged," such as any pipe, ditch, channel, or tunnel.[47] This technology-based approach to addressing point source discharges has had demonstrated success.

Much of the improvement in our waters is attributable to the control of traditional point sources through permits. A majority of the remaining water quality impairments are largely caused by NP sources. While the CWA does not authorize EPA to control NP sources of pollution through a permit system, several sections of the CWA provide a basis for addressing NP sources. In general, the federal CWA addresses nonpoint sources by:

(1) Supporting the development of state NPS plans and programs.
(2) Requiring the development of WQ Standards, the identification of impaired waters (including waters impaired by nonpoint sources) and the development of clean-up plans (TMDLs) for those waters.
(3) Providing financial incentives to states to accomplish those tasks.

This section will cover the key sections of the CWA that address nonpoint pollution.

Section 319-Nonpoint Source Management Programs

In the 1987 CWA Amendments, Congress added Section 319[48] to the act. Section 319 required states to develop Assessment Reports that described the states' NPS problems, and establish Management Programs to address these problems. The required elements of state management programs are outlined at 33 USC §1329(b)(2). EPA supports implementation of NPS programs by providing funding to states. Ecology is designated as the section 319 lead agency for Washington State's nonpoint program. As the lead agency, Ecology is responsible for the administration of Section 319 pass-through and internal grant funds, the identification and

[44] 33 U.S.C. §§1251 et seq.
[45] 33 U.S.C. § 1251(a).
[46] RCW 90.48.260.
[47] 33 U.S.C. § 1362(14).
[48] 33 USC §1329

establishment of priorities for NPS-related water quality problems, and the development of the state's NPS pollution control plan.

According to EPA guidance,[49] under section 319(b) of the CWA, Washington State's NPS management program must include all of the following components:

> (i) An identification of measures (i.e., systems of practices) that will be used to control NPS pollution, focusing on those measures which the state believes will be most effective in achieving and maintaining WQ Standards. These measures may be individually identified or presented in manuals or compendiums, provided that they are specific and are related to the category or subcategory of NPS. They may also be identified as part of a watershed approach towards achieving WQ Standards, whether locally, within a watershed, or statewide.
>
> (ii) An identification of the key programs to achieve implementation of the measures, including, as appropriate, nonregulatory or regulatory programs for enforcement, technical assistance, financial assistance, education, training, technology transfer, and demonstration projects. The state is free to decide the best approaches for solving NPS problems. These approaches may include one or all of the following:
>
> - Watershed or water quality-based approaches aimed at meeting WQ Standards directly.
> - Iterative, technology-based approaches based on best management practices or measures, applied on either a categorical or site-specific basis.
> - An appropriate mix of these approaches.
>
> (iii) A description of the processes used to coordinate and, where appropriate, integrate the various programs used to implement NPS pollution controls in the state.
>
> (iv) A schedule with goals, objectives, and annual milestones for implementation at the earliest practicable date; legal authorities to implement the program; available resources; and institutional relationships.
>
> (v) Sources of funding from federal (other than section 319), state, local, and private sources.
>
> (vi) Federal land management programs, development projects, and financial assistance programs.
>
> (vii) A description of monitoring and other evaluation programs that the state will conduct to help determine short- and long-term NPS management program effectiveness.[50]

[49] See *Section 319 Program Guidance: Key Components of an Effective State Nonpoint Source Managemnet Program (November 2012).*

[50] Further according EPA guidance, "In addition, the state incorporates existing baseline requirements established by other applicable federal or state laws to the extent that they are relevant. For example, a coastal state or territory with an approved coastal zone management program incorporates its approved state coastal nonpoint pollution control programs required by section 6217 of the Coastal Zone Act Reauthorization Amendments (CZARA) of 1990, into its NPS management program since CZARA requires implementation through the state's NPS

EPA expects all states to review and, as appropriate, revise their NPS program at least every five years. An updated program allows EPA and states to ensure that resources are efficiently and effectively directed in a manner that will support state's efforts to address water quality issues.

Section 303(d) and 303(c)-Water Quality Standards and Water Clean-up Plans (TMDLs)

WQ Standards are regulations comprised of: 1) a description of the designated use or uses of a water body; 2) the criteria necessary to protect the use or uses; and 3) a statement by the applicable state that the standard will maintain and protect the existing use and the water quality of the water body (antidegradation requirements). Additionally, CWA Section 303(d) requires states to list surface waters not attaining (or not expected to attain) WQ Standards after the application of technology-based effluent limits. States must complete a total maximum daily load (TMDL, water clean-up plan) for all waters on the Section 303(d) list.

In Washington State, the WQ Standards (Chapter 173-201A WAC) are the basis for protecting and regulating the quality of surface waters. The WQ Standards are established to sustain public health and public enjoyment of state waters, and for the propagation and protection of fish, shellfish, and wildlife. A three-part approach was designed to set limits on pollution in Washington State's lakes, rivers, and marine waters in order to protect beneficial uses such as aquatic life, swimming, and fishing. The three-part approach covers:

- Designated uses, such as fishing, swimming, and aquatic life habitat.
- Numeric and narrative water quality criteria limits to protect the uses.
- Policies, such as antidegradation, to protect higher quality waters from being further degraded.

Washington's antidegradation policy is designed to protect waters of a quality that is higher than the state standards. The policy has three tiers.

- **Tier I**. WAC 173-201A-310
  Tier I is used to ensure existing and designated uses are maintained and protected. It does this by focusing on fully applying the water quality criteria and correcting problems using our existing regulatory and TMDL processes. Tier I applies to all waters and all sources of pollution.
- **Tier II**. WAC 173-201A-320
  Tier II is used to ensure that waters of a higher quality than the criteria assigned in the standards are not degraded unless such lowering of water quality is necessary and in the overriding public interest. Tier II applies only to new or expanded sources of pollution from specific types of activities directly regulated by Ecology (e.g., NPDES, 401, 404, Forest Practices). Any new or expanding dischargers that would cause a measurable degradation of water quality:
    a. Must go through a technology review to identify and apply any feasible alternatives to that degradation.

management program. In this manner, the state ensures that this program and other relevant baseline programs are integrated into, and consistent with, Section 319 programs."

b. Must show that overriding public benefits would occur from allowing the lowering of water quality..

- **Tier III**. WAC 173-201A-330
  Tier III is used when a high-quality water is designated as an "outstanding resource water." The water quality and uses of these waters must be maintained and protected against all sources of pollution.

  A request for designation of Tier III may be made by the Department of Ecology (department). A Tier III designation may also be requested through public nominations that are submitted to the department in writing. Public nominations must include sufficient information to show how the water body meets the appropriate conditions of an outstanding resource water. If the information proposed demonstrates that the waterbody meets the eligibility requirements, the department will schedule a review of the nominated water for designation. The review will include a public process and consultation with recognized tribes in the geographic vicinity of the water. The rules allow two levels of Tier III protection. A qualifying water body may be designated as:
  - Tier III(A), which prohibits any and all future degradation [WAC 173-201A-330(5)(A)].
  - Tier III(B), which allows for de minimis (below measurable amounts) degradation from well-controlled activities [WAC 173-201A-330(5)(B)].

To fully achieve and maintain compliance with the WQ Standards in Washington, the standards state that the intent of Ecology is to "apply the various implementation and enforcement authorities at its disposal."[51] The primary means to be used for "controlling municipal, commercial, and industrial waste discharges shall be through the issuance of waste discharge permits, as provided for in RCW 90.48.16, 90.48.162, and 90.48.260."[52] Further, "[w]aste discharge permits, whether issued pursuant to the National Pollutant Discharge Elimination System or otherwise, must be conditioned so the discharges authorized will meet the WQ Standards."[53]

The standards require activities which contribute nonpoint source pollution to use best management practices (BMPs) to prevent exceedences of water quality criteria.[54] The Standards define BMPs as "physical, structural, and/or managerial practices approved by the department that, when used singularly or in combination, prevent or reduce pollutant discharges."[55] Given that much of nonpoint pollution cannot easily be measured, the Standards express compliance with the law by implementing Ecology approved BMPs.[56]

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[51] WAC 173-201A-500

[52] WAC 173-201A- 510(1) states that "[a]ctivities which generate nonpoint source pollution shall be conducted so as to comply with the water quality standards. The primary means to be used for requiring compliance with the standards shall be through best management practices required in waste discharge permits, rules, orders, and directives issued by the department for activities which generate nonpoint source pollution."

[53] Id. See also, 40 C.F.R. § 130.2(i).

[54] WAC 173-201A- 510(3)(c)

[55] WAC 173-201A-020

[56] WAC 173-201A- 510(3)(a) states that the "primary means to be used for requiring compliance with the standards shall be through best management practices required in waste discharge permits, rules, orders, and directives

Washington's WQ Standards, along with the Washington Water Pollution Control Act, provide Ecology with the tools to fully implement TMDLs, including the requirement that the state provide reasonable assurance that nonpoint sources can be required to meet TMDL load allocations if the wasteload allocations established for point sources depend on those nonpoint reductions being made in the TMDL area.

Section 312-No Discharge Zone

Under Section 312 of the CWA, vessel sewage may be controlled through the establishment of areas in which discharges of sewage from vessels are not allowed. These areas are also known as "no discharge zones."[57] A No Discharge Zone (NDZ) is a designated body of water where the discharge of sewage (blackwater/toilet waste) from boats, whether treated or not, is prohibited. Under Section 312 of the CWA, the U.S. Coast Guard and the state in which the NDZ has been designated may enforce the NDZ requirements.[58]

Under existing federal regulations, treated sewage may be discharged anywhere in Puget Sound, and untreated sewage may be discharged as long as the boat is more than three miles from shore. If a NDZ is established, no boat, whether a freighter, a cruise ship, or a sailboat, could discharge anywhere within the designated NDZ. All boats and vessels would have to store their sewage until they could safely dispose of it at an onshore or mobile pumpout facility, or hold it until it can be discharged in the open ocean beyond three miles from shore.

Section 320-National Estuary Program

The National Estuary Program (NEP) was established under the 1987 CWA amendments as a program to "restore and maintain the chemical, physical, and biological integrity of the estuary, including restoration and maintenance of water quality, a balanced indigenous population of shellfish, fish, and wildlife, and recreational activities in the estuary, and assure that the designated uses of the estuary are protected".

The NEP is designed to encourage local communities to take responsibility for managing their own estuaries. Each NEP is made up of representatives from federal, state, and local government agencies responsible for managing the estuary's resources, as well as members of the community such as citizens, business leaders, educators, and researchers. These stakeholders work together to identify problems in the estuary, develop specific actions to address those problems, and create and implement a formal management plan to restore and protect the estuary.

Coastal Zone Act Reauthorization Amendments of 1990 (CZARA)

The Coastal Zone Management Act (CZMA) of 1972[59] established a national framework for effective management, protection, development, and beneficial use of the coastal zone.

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issued by the department for activities which generate nonpoint source pollution." Additionally, WAC 173-201A-020 defines best management practices as "physical, structural, and/or managerial practices approved by [Ecology] that, when used singularly or in combination, prevent or reduce pollutant discharges."

[57] 33 USC §1322

[58] 33 USC §1322(k)

[59] 16 USC §§1451 et seq.

Recognizing that the CZMA did not specifically mention water quality, in 1990 Congress amended CZMA Section 306(d)(16)[60] and added Section 6217[61] to focus on NPS pollution problems and the protection of coastal waters. Coastal Zone Act Reauthorization Amendments (CZARA) Section 6217 requires state water quality agencies to develop and implement management measures to restore and protect coastal waters from adverse impacts of NPS pollution. States are to implement this requirement through updates to their state nonpoint and coastal zone programs. CZMA Section 306(d)(16)[62] requires that state nonpoint and CZM programs contain enforceable policies and mechanisms to implement applicable requirements of CZARA Section 6217. To achieve these goals, states were directed to coordinate and integrate their existing CZM and water quality plans and programs, including the states' NPS plans. Washington State has yet to receive CZARA program approval.

Safe Drinking Water Act

The Safe Drinking Water Act (SDWA)[63] is the main federal law that ensures the quality of Americans' drinking water. Under SDWA, EPA sets standards for drinking water quality and oversees the states, localities, and water suppliers who implement those standards.

The SDWA includes drinking water standards, sampling, treatment, and public notification requirements. The 1996 amendments added new requirements related to annual water quality reports, operator certification requirements, system capacity, and source water assessment and protection. The Washington State Department of Health, through an agreement with EPA, is authorized and responsible for implementing the SDWA in Washington.

Generally, the SDWA applies to water systems with 15 or more connections, or those regularly serving 25 or more people daily, 60 or more days per year. Approximately 4,200 public water systems in Washington are subject to the SDWA.

Sole Source Aquifer (SSA) Protection Program

The Sole Source Aquifer (SSA) Protection Program is authorized by Section 1424(e) of the Safe Drinking Water Act, which states:

> "If the Administrator determines, on his own initiative or upon petition, that an area has an aquifer which is the sole or principal drinking water source for the area and which, if contaminated, would create a significant hazard to public health, he shall publish notice of that determination in the Federal Register. After the publication of any such notice, no commitment for federal financial assistance (through a grant, contract, loan guarantee, or otherwise) may be entered into for any project which the Administrator determines may contaminate such aquifer through a recharge zone so as to create a significant hazard to public health, but a commitment for federal assistance may, if authorized under another provision of law, be entered into to plan or design the project to assure that it will not so contaminate the aquifer."

[60] 16 USC §1455(d)(16)
[61] 16 USC §1455b
[62] 16 USC §1455(d)(16)
[63] 42 U.S.C. 300 et seq.

EPA defines a sole or principal source aquifer as one which supplies at least 50 percent of the drinking water consumed in the area overlying the aquifer. EPA guidelines also stipulate that these areas can have no alternative drinking water source(s) which could physically, legally, and economically supply all those who depend upon the aquifer for drinking water. For convenience, all designated sole or principal source aquifers are usually referred to simply as "sole source aquifers."

If an SSA designation is approved, proposed federal financially-assisted projects which have the potential to contaminate the aquifer are subject to EPA review.[64] Proposed projects that are funded entirely by state, local, or private concerns are not subject to EPA review. Examples of federally funded projects which have been reviewed by EPA under the SSA protection program include:

- Highway improvements and new road construction.
- Public water supply wells and transmission lines.
- Wastewater treatment facilities.
- Construction projects that involve disposal of storm water.
- Agricultural projects that involve management of animal waste.
- Projects funded through Community Development Block Grants.

Endangered Species Act

The Endangered Species Act provides for the conservation of ecosystems upon which threatened and endangered species of fish, wildlife, and plants depend. The Act:

- Authorizes the designation and listing of species as endangered and threatened.
- Prohibits unauthorized taking, possession, sale, and transport of endangered species.
- Provides authority to acquire land for the conservation of listed species, using land and water conservation funds.
- Authorizes establishment of cooperative agreements and grants-in-aid to states that establish and maintain active and adequate programs for endangered and threatened wildlife and plants.
- Authorizes the assessment of civil and criminal penalties for violating the Act or regulations.
- Authorizes the payment of rewards to anyone furnishing information leading to arrest and conviction for any violation of the Act or any regulation issued thereunder.

Section 7 of the Endangered Species Act requires federal agencies to consult with the Fish and Wildlife Service and/or the National Marine Fisheries Service (Services) to ensure that actions the agencies authorize, fund, or carry out are not likely to jeopardize threatened or endangered species or destroy or adversely modify their critical habitat.

[64] Information on sole source aquifers in Washington State can be found here: http://yosemite.epa.gov/r10/water.nsf/Sole+Source+Aquifers/SSA. A map of sole source aquifers in Washington State can be found here: http://yosemite.epa.gov/r10/water.nsf/sole+source+aquifers/ssamaps.

Federal Farm Bill Programs

The 2014 Farm Bill was enacted on February 7, 2014. The Farm Bill funds several conservation programs that can benefit agricultural producers and forest landowners along with the environment[65]. Additionally, the 2014 Farm Bill re-linked highly erodible land conservation and wetland conservation with eligibility for premium support paid under the federal crop insurance program. These eligibility criteria should encourage the implementation of better conservation practices. See Chapter 5 for more information on some of the Farm Bill's financial incentive programs.

State Revolving Fund Program

The United States Congress established the Clean Water State Revolving Fund (CWSRF) as part of the Clean Water Act (CWA) Amendments of 1987. The EPA offers states capitalization grants each year according to a formula established in the CWA. The capitalization grants are required to be matched with 20 percent state funds and are added to payments of principal and interest from previous loans. The combined funds are loaned out to eligible public bodies and repaid to the CWSRF with interest. This means that the CWSRF continues to revolve and grow, and more money becomes available to fund water quality projects. Today, the majority of the fund consists of repaid principal and interest.

The CWSRF must be managed in accordance with federal regulations associated with timely use of funds, adherence to specific accounting principles, fund perpetuity, project eligibility, financial capacity assessments of borrowers, implementation of state rules, extensive public outreach and public accountability, and strong coordination of multiple environmental cross-cutters required under the State Environmental Review Process, such as the Endangered Species Act, and state and federal regulations for archeological and cultural resources.

The CWSRF supports a variety of water quality projects, including NPS BMP implementation projects, on-site septic system projects, stormwater projects, and wastewater facility projects.

Additionally, CWSRF has the potential to address a wide range of additional projects. For example, within urbanized areas where sewer service is available, service connections from individual homes and businesses can be a source of NPS pollution. Once the wastewater from homes and businesses reaches the sewer pipes in the public right-of-way, it is collected and treated at the local wastewater treatment facility. However, sewage leaking from the pipe that connects buildings to the public sewer can be a problem. These side sewers, or service laterals, are very near the surface (compared to sewer lines buried in the street) and are susceptible to damage. Tree roots, landscaping, digging, and heavy vehicles can all damage side sewer laterals. Maintenance, repair, and inspection of these privately-owned service laterals is generally the responsibility of the individual property owners. CWSRF could support projects that address problems from side sewers or service laterals.

[65] More information on the 2014 Farm Bill can be found at: http://www.usda.gov/wps/portal/usda/usdahome?navid=farmbill.

Local Ordinances and Regulations

Local ordinances can supplement federal and state law. While a comprehensive review of local authorities is outside the scope of this section, the most common sources of authority that can be used to address nonpoint pollution sources at the local level are found in local solid waste regulations, illicit discharge ordinances, and animal or pet waste disposal ordinances. Additionally, planning and development codes and regulations can provide authority to address NPS pollution. For example, critical area ordinances can provide protection to critical areas that have a nexus with water quality.

Following are two examples of local regulatory tools that can be used to address nonpoint pollution: Kitsap County Board of Health's Onsite Sewage System and General Sewage Sanitation Regulations and Solid Waste Regulations, and Kitsap County's illicit discharge code.

Example - Kitsap County Public Health:

Kitsap County Board of Health Ordinance 2008-01A, *Onsite Sewage System and General Sewage Sanitation Regulations*, May 1, 2008 and Amended June 7, 2011. Regulatory authority includes nonpoint discharges from failing onsite sewage systems, recreational vehicle dumping, and broken sanitary side sewers.

> Section 6. B. Sewage Discharged to Approved or Health Officer-Accepted Systems, Only.
>
> 1. All plumbing fixtures in residences, places of business, or other buildings, structures, etc., where sewage is created shall be connected to, and discharge to, an approved public sewer system, large onsite sewage system, onsite sewage system, or other Health Officer-accepted system, only (e.g., temporary holding tanks, portable toilets, RV sewage dumpsites, certified septic tank pumping trucks or facilities, etc.).
> 2. Sewage shall not be discharged to the surface of the ground, surface water, ground water, cesspools, un-permitted sewage systems, or allowed to backup.

Kitsap County Board of Health Ordinance Number 2010-1, *Solid Waste Regulations*, July 6, 2010. Regulatory authority includes nonpoint sources from animal manure as related to pollution of water. Other typical solid wastes, such as vehicle fluids, paint, and construction are included in other sections.

> Section 305 1.(c)
> (c) Animal Manure. Animal manure shall not be deposited, or allowed to accumulate, in any ditch, gulch, ravine, river, stream, lake, pond, marine water, or upon the surface of the ground, or on any highway or road right of way, where it may become a nuisance or menace to health, as determined by the Health Officer, through the breeding of flies, harboring of rodents, or pollution of water. Manure shall not be allowed to accumulate in any place where it can pollute any source of drinking water.

Example - Kitsap County:

Kitsap County has an illicit discharge code, as required for the Phase II National Pollutant Discharge Elimination Permit, which specifies the prohibition of non-stormwater discharges into or from the municipal storm sewer system, including pipes and ditches.

Kitsap County Code Title 12.30

12.30.020 *Illicit Discharges*

Illicit discharges to storm water drainage systems are prohibited.

12.30.020 *Illicit Connections and Uses.*

The storm water system of Kitsap County, natural and artificial, may only be used to convey storm water runoff. Violation of this chapter can result in enforcement action being taken as prescribed in Chapter 12.32.

No person shall use this system, directly or indirectly, to dispose of any solid or liquid matter other than storm water. No person shall make or allow any connection to the storm water system which could result in the discharge of polluting matter. Connections to the storm water system from the interiors of structures are prohibited. Connections to the storm water system for any purpose other than to convey storm water or ground water are prohibited and shall be eliminated.

In summary, regulatory authority and enforcement for nonpoint sources can be a combination of efforts by Washington State and local jurisdictions.

Chapter 3: Strategies for Addressing Nonpoint Source Pollution

The Washington State Department of Ecology (Ecology) is the regulatory agency charged with protecting the quality of Washington State's water. Ecology acts as the lead agency in restoring, maintaining, and enhancing water quality collaboratively with citizens, stakeholder groups, tribes, local governments, local governmental entities, state agencies, and federal agencies. Ecology's NPS program uses a combination of public education, technical assistance, financial assistance and regulatory tools to help citizens understand and comply with state and federal water quality laws and regulations that protect water quality.

The NPS plan aims to protect public health and restore our state's waters by setting clear goals and objectives. Ecology's strategy to address NPS pollution focuses on cleaning up impaired watersheds, completing watershed evaluations to identify NPS pollution issues, and implementing suites of best management practices (BMPs) to address identified pollution sources and ensure compliance with the WQ Standards.

Ecology will apply the following key principles in the implementation of this nonpoint strategy:

- Communicate clear standards and compliance expectations.
- Implement BMPs that ensure compliance with state WQ Standards and state law.
- Implement watershed-based plans/strategies designed to meet WQ Standards.
- Identify and correct nonpoint pollution sources in impaired watersheds.
- Be proactive in addressing pollution problems (i.e. incentives/education and outreach).
- Escalate to enforcement when education, outreach, and technical assistance fail.
- Be accountable by collecting data on watershed evaluations and tracking BMP implementation.
- Target effectiveness monitoring where implementation of BMPs has occurred.
- Promote adaptive management.
- Develop and/or strengthen partnerships to achieve water quality goals.

The primary tools that Ecology will use to guide and promote the implementation of this strategy are:

1. Water Clean-Up Plans - TMDLs, which are plans for restoring impaired waters, as required by the federal Clean Water Act.
2. Straight to Implementation (STI) projects, which implement BMPS to achieve compliance with state water quality law using Ecology's state nonpoint authority.
3. Grant and loan programs.
4. Complaint Response and Inspectors.
5. Education and outreach, and voluntary programs.
6. Partnerships.

Ecology will also support locally led programs that are designed to identify nonpoint pollution sources and cleanup those sources of pollution. For example, locally led Pollution Identification

and Correction (PIC) programs have been developed around the Puget Sound. Also, Shellfish Protection Districts provide a framework for locally led programs to address areas where pollution is impacting shellfish resources.

When an opportunity exists we will support the development and use of other tools to address NPS pollution. Current examples include:

- Water Quality Trading.
- Certification/Certainty Programs.

Ecology will continue to support the implementation of the following key regulatory programs:

- State's Forest Practice Rules.
- Dairy Nutrient Management Program.
- Local regulation of on-site sewage systems
- NPDES/State Waste Discharge Permit program.

Finally, Ecology will coordinate our nonpoint program with key state initiatives connected to water quality:

- Results Washington.
- Governor's Shellfish Initiative.
- Puget Sound Action Agenda.
- No discharge zone designation for Puget Sound.
- Ocean acidification/Washington Marine Resources Advisory Council.
- Washington's efforts to recover salmon species.

The state has many programs designed to address some segment of the nonpoint problem. However, these efforts are generally not coordinated and are not necessarily designed to achieve compliance with state water quality law. The ideal is to have all of the agencies managing these disparate programs working together to create a single unified program that links all of these efforts into a more cost-effective program to address nonpoint pollution and achieve compliance with the WQ Standards. While we have a long way to go to achieve that ideal, Ecology will continue to work with partner agencies to better align programs and coordinate activities to address nonpoint problems and achieve compliance with the water quality standards.

Details of each of these implementation areas follow.

Balancing Restoration and Protection

Solving the state's water quality problems requires correcting existing problems as well as preventing future degradation. With limited resources, Ecology's first priority is to correct known water quality impairments from nonpoint source pollution. Our second priority is to support projects that protect threatened and high quality waters from present and future nonpoint source pollution impacts. Ecology will follow the WQ Standards' antidegradation policy when supporting projects that protect threatened and high quality waters.

Watershed Clean-up Programs

Total Maximum Daily Loads and Straight to Implementation

Ecology's primary strategy for addressing nonpoint pollution is implementing watershed clean-up projects. There are two related approaches that Ecology uses to clean up impaired water bodies: Total Maximum Daily Load (TMDL) and Straight to Implementation (STI) projects. Additionally, Ecology supports locally led programs to clean-up impaired water bodies such as; Pollution Identification Correction (PIC) programs, and Shellfish Protection District efforts discussed later in this chapter.

Both TMDL and STI projects utilize a combination of education and outreach, technical assistance, financial incentives, and enforcement to meet the requirements of the WQ Standards, and promote compliance with water quality laws.

Total Maximum Daily Loads (TMDLs)

As required by Section 303 of the federal Clean Water Act, Ecology develops TMDLs for water bodies on the state's list of impaired waters. TMDLs are a regulatory tool that sets the maximum quantity (or "load") of a pollutant that may be added to a water body from all sources, including natural background sources, at levels necessary to attain and maintain the applicable narrative and numerical water quality standards. It must take into consideration seasonal variations in water quality conditions, and must include a margin of safety to account for any lack of knowledge concerning the relationship between effluent limitations and water quality.

There are two types of loads that are allocated by TMDLs: wasteload allocations (WLAs) that include the portion of the TMDL allocated to existing and future point sources with NPDES permits; and load allocations (LAs) that include the portion of the TMDL allocated to existing and future nonpoint pollution sources and natural background sources.

The TMDL Process in Washington State

Washington State's TMDL process starts by choosing where TMDLs will be developed. Once a TMDL area is finalized, Ecology typically conducts field monitoring and computer modeling of watershed conditions. A TMDL study identifies pollution sources within a watershed and determines what needs to change so that pollution is reduced or eliminated.

Pollution sources are broken down into two categories. The first is *nonpoint pollution*, where the source runs directly off the land into the water. The allowable discharge from all the nonpoint sources is called the *load allocation*. The second category is *point source pollution*, which typically flows out of a pipe and is regulated by a NPDES permit. The allowable discharge from a permitted point source is called a *wasteload allocation*. The TMDL then sets out the actions required for each point source and land use in the project area to ensure TMDL allocations are met.

In short, our TMDL approach:

- Assigns load allocations to specified nonpoint pollution sources.

- Assigns wasteload allocations to point sources which may require more protective NPDES permit limits.
- Designates suites of BMPs for various land-use categories.
- Details the technical data, analyses, and actions needed to attain standards and return waters to good health.

Each TMDL project is unique, but there are essential elements common to all. As long as these elements are included, the TMDL project should result in a water quality improvement plan that is complete, acceptable to the public, and approvable by EPA. These elements include:

- *An initial study of water quality problems*. This includes a monitoring study identifying the sources and amounts of pollutants causing the water quality problem, and a technical analysis to determine how much pollution sources must be reduced to protect the water.
- *Public involvement*. Public involvement, along with coordination with tribal governments and consideration of environmental justice issues (as appropriate), is important at all key decision steps of the process.
- *Loading capacity for the pollutant*. This is the sum total of all of the pollutant loading the waterbody can absorb without violating WQ Standards.
- *Load allocations (LAs) for nonpoint sources*. The LA quantifies how much of the pollutant(s) can be discharged from nonpoint sources, along with the other sources, and have the water body still meet WQ Standards.
- *Wasteload allocations (WLAs) for point sources*. The WLA quantifies how much of the pollutant(s) can be discharged from point sources, along with other sources, and have the water body still meet WQ Standards.
- *A margin of safety*. An allowance so that surface WQ Standards will be met under the worst conditions likely to be experienced.
- *A reserve capacity*. This factor estimates the effect of population growth and future land uses on pollutant WLAs and LAs so they will continue to be adequate in the future.
- *Consideration of seasonal variation of flows and contaminant concentrations*. This ensures that WQ Standards are met during all seasons of the year.
- *An implementation plan.* A detailed plan to prevent, reduce, or clean up excess pollution.
- *A follow-up monitoring plan*. To demonstrate the success of pollution controls contained in the implementation plan or the need for additional action.
- *Reasonable assurance*. For TMDLs that allocate pollutant loads to both point and nonpoint sources, the state must demonstrate reasonable assurance that the LAs will be achieved and WQ Standards will be attained. The purpose of reasonable assurance is to ensure that the WLAs and LAs established in the TMDL are not based on overly generous assumptions regarding the amount of nonpoint source pollutant reductions that will occur.
- An *administrative record*.
- An *estimate* of when the waterbody will meet WQ Standards.

TMDLs and Nonpoint Source Pollution

Ecology relies on TMDL implementation plans to ensure that we accomplish the reductions needed from nonpoint pollution sources to meet the LA required by the TMDL. Our goal is to secure the load reductions required of nonpoint sources through voluntary implementation and the use of education and outreach, technical assistance, and financial assistance. However, enforcement authority under state law provides a regulatory backstop. This regulatory backstop is necessary because there must be *reasonable assurance* that the abatement strategies for

nonpoint sources will actually take place. If nonpoint sources are not addressed, federal law shifts reduction requirements to point source dischargers.

History of TMDLs in Washington State

Starting in 1998, Ecology was placed on a schedule to produce 1,566 TMDLs in 15 years as the result of a citizens' suit filed against EPA. For the first few years, TMDL production met the schedule. However, as time went on, TMDL development became more complicated and controversial for several reasons.

- Instead of focusing on individual segments and individual pollutants when developing TMDLs, Ecology began to focus on entire watersheds and multiple pollutants. Focusing on multiple pollutants for an entire water body provided the opportunity for the same set of actions being able to address an array of related pollutants. Although focusing on multiple pollutants and the entire watershed gained more for the same set of actions, these TMDLs required more data, more analyses, and more time to complete.
- As it became necessary to set more and more stringent wasteload allocations in TMDLs, point source dischargers concerned about the costs of installing advanced treatment technologies began debating Ecology's technical work supporting TMDLs. Additional and more detailed modeling was required to predict outcomes of TMDL implementation and support TMDL wasteload allocations.

When the TMDL settlement agreement completion date passed in 2013, significant work remained to produce the required 1,566 TMDLs.

Additionally, implementing the load allocations in TMDLs has been an increasing challenge, because it has been more controversial as we identify solutions to address the problem. This is in spite of the fact that compared to the technology and investments required of point source industries to meet wasteload allocations, the remedial measures necessary to meet load allocations are usually simple, straight forward, practical, low-tech and inexpensive.

Slow-paced implementation of the load allocation component in TMDLs puts at risk the state's ability to provide reasonable assurance that load allocations will be met. This would have serious consequences for point sources. If Ecology is unable to require nonpoint sources to meet the load allocations in TMDLs, then the loads assigned to nonpoint sources must be assigned to the point sources and required by the point sources' NPDES permits. This is not Ecology's preferred option. We would rather assign pollutant loads to the sources discharging them and then use our nonpoint authority to require the nonpoint sources to meet their load allocations.

Aligning Ecology's Nonpoint and TMDL Programs

As Ecology moves forward, we will deploy our resources in a more systematic manner by aligning our TMDL and NPS programs. Ecology has already taken several important steps to more closely align our TMDL and NPS programs to better leverage an array of staff expertise and to orient programmatic efforts toward cleaning up impaired watersheds. For example, all TMDLs include an implementation plan that contains the required elements of a watershed based plan.

Moving forward, we intend to continue improving implementation plans to designate the specific actions necessary to comply with TMDL load allocations. Additionally, while Ecology will continue to work with and rely on partners to implement load allocation requirements, Ecology will utilize watershed evaluations to identify sites with nonpoint pollution issues and secure the implementation of BMPs that ensure compliance with the WQ Standards and state law. The watershed evaluation process is used most often in agricultural lands, and it has been vetted through the Ecology director's Agriculture and Water Quality Committee as an approach that the group understands and supports. Once problem sites are identified, Ecology will first work with partners in the watershed to implement those suites of BMPs that will address the identified pollution problems. If implementation stalls, for instance because of recalcitrant landowners, Ecology will utilize enforcement tools as necessary and appropriate.

Straight to Implementation (STI)

Straight to Implementation (STI) is a strategy that uses Ecology's nonpoint authority and state resources to clean up a watershed. In watersheds in which the sources of nonpoint pollution are known and the suites of BMPs necessary to control those sources have been identified by Ecology, we simply begin working directly with landowners to implement those BMPs.

In general, Ecology identifies watersheds that are good candidates for STI using the following criteria:

- Are the pollution problems in the watershed caused primarily by nonpoint sources?
- Are there a limited number of land uses in the watershed?
- Do we understand which land uses are causing pollution problems?
- Do we have suites of known effective BMPs that will solve the pollution problems caused by land uses in the watershed?

If the answer to any of these questions is no, then a TMDL is most likely a better tool.

As with implementing TMDLs, Ecology's emphasis is on a collaborative approach to addressing pollution problems. Once Ecology has identified the specific suites of BMPS that will achieve compliance, it will use education programs and outreach to landowners and potential implementation partners to inform citizens about the necessary BMPs. Ecology will first use technical assistance and incentives to secure the proactive implementation of BMPs to address nonpoint sources of pollution. However, Ecology also identifies and utilizes all available federal, state, and local enforceable authorities to secure implementation if the technical and financial assistance fails to address nonpoint sources of pollution. This is a similar approach to that used by local Pollution Identification and Correction programs outlined later in the report.

While a STI project is being implemented, Ecology monitors the rate of implementation and, when possible, performs water quality monitoring to ensure that the water body is actually getting cleaner.

If STI is successful, the impaired water bodies will be cleaned up and move from Category 5 (impaired water body) to Category 1 (clean water body) of the Water Quality Assessment without the need to develop a TMDL. While a STI project is being implemented, the affected water bodies will remain in Category 5. If they do not move to Category 1 by the end of the project, Ecology will develop a TMDL.

STI projects are intended to implement nonpoint source controls as quickly as possible. When we use STI, compliance with the WQ Standards is to be achieved in no more than 10 years after the start of STI work in the watershed. The only exception to this time requirement is for parameters such as temperature, which might take longer because of the time it takes for trees to grow and achieve site potential shade. However, even in this case, all implementation actions necessary to achieve compliance must be completed within 10 years.

STI is more appropriate for watersheds with few pollution inputs, and rural watersheds with few contributors tend to make the best candidates for this methodology. STI projects are guided by an internal staff work plan that includes EPA's required elements of a watershed based plan, which makes project implemented in support of STIs eligible for Section 319 grants.

Focus on Implementation - TMDLs and STIs

Ecology uses watershed evaluations to support STI and TMDL implementation efforts by identifying specific nonpoint pollution problems and prioritizing sites to be contacted for technical and financial assistance. While watershed evaluations can be used to identify and address multiple types of nonpoint source pollution, Ecology primarily uses them to address agricultural nonpoint pollution sources because there is no specific statewide regulatory oversight/permit program designed to meet WQ Standards for this sector.[66]

Watershed Evaluations

During watershed evaluations, Ecology assesses site-specific conditions to determine if water quality problems exist. While water quality monitoring may be used to help document pollution in the water body and/or stormwater flowing into surface water,[67] Ecology relies on visual site conditions as the primary evidence for identifying nonpoint source pollution problems. An evaluation of site conditions is supported by numerous scientific studies that clearly link site conditions to pollutant discharges. It is also important to use site conditions because unlike many point sources, nonpoint pollution does not discharge continuously. Instead, nonpoint source pollution discharges are intermittent; pollution is moved to state waters through run-off events, atmospheric deposition, direct deposition and irrigation. It is not possible to be on a site every time there is a discharge. Evaluating site conditions provides a more constant and reliable tool for identifying most nonpoint source pollution issues.

In general, when evaluating a site for nonpoint pollution problems Ecology considers the following questions:

- Are there sources of nonpoint pollution present?
- Is surface water present at the site or in proximity to the site? Are there groundwater concerns?
- Are there pathways for pollution to get to state waters?

[66] As covered below the other major sources of nonpoint source pollution are addressed through permit or other regulatory programs: urban/suburban development and stormwater is addressed through permits and requirements in TMDLs, forestry is addressed through the state Forest Practices Rules, and on-site sewage systems are regulated through local ordinances and regulations. Additionally, dairies are regulated through the Dairy Nutrient Management Program and are also not addressed by Ecology through watershed evaluations.

[67] See Chapter 7 for more information on Ecology's monitoring efforts.

- Is there evidence that pollutants have left the site and entered state waters?
- Are management practices in place for identified sources of nonpoint pollution to prevent the delivery of pollution to state waters?

After a site is identified as having a nonpoint source pollution problem, Ecology then promotes the use of technical and financial assistance to correct the problem. If technical and financial assistance fail to address the pollution issue, Ecology may utilize enforcement tools to secure compliance.

Watershed Evaluation Process:

- Coordination with partners (local conservation districts, local government, health districts, producer groups, tribes, environmental groups, etc.).
- Secure resources—Technical and financial assistance.
- Complete watershed outreach with partners.
- Complete watershed surveys and site prioritization.
- Contact producers or landowners.
- Complete site visits and/or inspections.
- Work cooperatively to implement recommended BMPs to address identified problems.
- Complete follow-up outreach.
- Use of enforcement tools if technical and financial assistance tools fail.

The watershed evaluation process provides accurate and specific information about pollution problems in a watershed. A statewide system of suites of BMPs that could be used for different land uses would likely be as effective at addressing pollution problems.

Implementing Key Changes Recommended by the Agriculture and Water Quality Advisory Committee

Ecology strives to continually improve the way it performs its work. As part of this process, in 2014 the Director of Ecology convened the Agriculture and Water Quality Advisory Committee[68] to give us input on our water quality work on agricultural lands. One of the areas where Ecology received input is on ways to improve our watershed evaluation process when using it in agricultural areas. The group made several recommendations, which Ecology is implementing.

- Increasing education and outreach efforts in watersheds where we work, communicating with willing conservation districts, and engaging with producer groups when conducting education and outreach in watersheds.
- When contacting producers our letters will include specific information on the pollution problem observed at the site, a clear timeline for producers to contact Ecology, and an offer for the producer to access the documentation related to their operation and an offer for Ecology staff to make a site visit.

[68] For more information on the Agriculture and Water Quality Advisory Committee see Chapter 4.

- Ecology will send letters as close as possible to when we observe the site, with the goal of sending letters to prioritized sites within sixty days of observing the site. Letters will provide producers thirty days to contact Ecology and/or set up a site visit. After the thirty days, Ecology will send second letters to producers who fail to contact Ecology and/or set up a site visit.
- If we can verify that land is being leased, Ecology will send the first communication to the lessee.

These changes were made to promote better upfront communication, better engage producer groups, increase clarity around nonpoint pollution problems and promote consistency between regions of our state.

TMDLs and Stormwater

Stormwater pollution from new and existing development and roads is a significant contributor of pollution to state waters. However, due to their coverage under the National Pollution Discharge Elimination System (NPDES)/State Waste Discharge permit program, many stormwater sources of pollution have shifted from our NPS program to our point source pollution/permit program. These include:

- New Development (geographically limited)
- Construction Site Erosion and Sediment Control
- Construction Site Chemical Control
- Existing Development (geographically limited)
- Road, Highway and Bridge Construction Projects
- Road, Highway and Bridge Construction Site Chemical Control
- Road, Highway and Bridge Operation and Maintenance (geographically limited)
- Road, Highway and Bridge Runoff Systems (geographically limited)

Where there is a legal requirement to obtain a permit the NPS program does not address or cover that source. However, stormwater sources that are not required to obtain a permit remain a nonpoint source of pollution. Ecology's primary strategy to address those sources is to utilize TMDLs.

For TMDLs that cover watersheds that contain Municipal Separate Storm Sewer Systems (MS4s) that are not legally required to obtain an NPDES permit, Ecology will:

1. Design the TMDL study to clearly identify whether or not the MS4 causes or contributes to a violation of a water quality standard or is a significant contributor of pollutants to waters of the state.
2. Establish, to the extent possible, specific load or wasteload allocations to areas of MS4s where they are identified as a potential source of impairment.
3. If the MS4 is deemed a significant and/or contributing source of the water quality impairment Ecology will, at a minimum, specify and include by reference in the TMDL the management practices in Ecology's most recently issued Stormwater Manuals as the minimum required BMPs necessary to achieve compliance with the TMDL allocations.

4. If the TMDL contains information relevant to the determination of whether the MS4s meet the criteria for coverage as specified in *Ecology's Municipal Stormwater Permit Criteria for Designating Phase II Bubble Cities*, the TMDL will be used to support the designation of the jurisdiction as needing to discharge under a new or existing MS4 permit issued by Ecology pursuant to CWA Section 402(p)(2)(E) and 40 C.F.R. § 122.26(a)(9)(i)(C) and (D).

Data Tracking, Effectiveness Monitoring, and Adaptive Management

Tracking implementation data is important for accountability, transparency, effectiveness monitoring and adaptive management. At a minimum, Ecology will track the following implementation data for TMDL and STI projects:

- The location of nonpoint source problems identified by Ecology during watershed evaluations.
- Sites that Ecology has contacted after the evaluations.
- The BMPs that were implemented in the watershed and their location.

A specific description of the BMPs that are implemented at a site is the most important information to track in order to support effectiveness monitoring efforts and promote accountability and transparency. For BMPs implemented with funds from an Ecology grant, specific information is collected on our BMP approval form. For other BMPs implemented in support of a TMDL or STI project, Ecology will collect data consistent with the BMP approval form. Additionally, we will work with partners to promote the collection of consistent implementation data, and share that data with partners and the public.

Finally, to support implementation tracking, Ecology is working to develop a TMDL and Nonpoint database.

Ecology Grant and Loan Programs

Ecology's Water Quality Program administers four major funding programs that provide grants and low-interest loans: The Centennial Clean Water Fund, The State Revolving Fund, Section 319 grants, and Stormwater Financial Assistance Program. These funding programs are for projects to protect and improve water quality in Washington State. Applicants use one integrated financial assistance application to apply for funds to address both point and nonpoint source water pollution. Ecology reviews, rates, and ranks applications and then distributes funds to the highest priority projects.

Each of the funding programs, based on fund source, has different eligibility requirements and limitations and may have specific set-asides or funding priorities. All projects are rated and ranked on a standard set of criteria. Scoring criteria cover:

- Scope of Work - The Scope of Work represents a complete and concise description of the project tasks and outcomes, including deliverables and timelines, and the project directly and measurably addresses a water quality problem.

- Task and Project Budget - The cost estimate process is reasonable, and the project budget represents a good value for the work and water quality benefits achieved. For nonpoint source activity projects requesting grant funding, the applicant identifies adequate matching funds.
- Water Quality and Public Health Improvements - Consideration of the severity of the water quality problem, whether the project will achieve substantial water quality and public health benefits, how project success can be measured, and how the project will provide long-term water quality benefits.
- Coordination with State and Federal Priorities - TMDL or STI implementation, other state or federal water quality requirements, the Puget Sound Partnership Action Agenda or current approved plan or program specifically designed to address water quality problems such as a watershed-based plan containing EPA's required elements.[69] Also, consideration is given to how well the applicant and the project address greenhouse emission reductions in accordance with RCW 70.235.070.
- Project Team - Applicant defines team members' roles and responsibilities. Additionally, scoring considers team members' past experience, and whether the staffing commitment is well described.
- Project Development, Local Support, and Past Performance—A comprehensive decision-making process was used to arrive at the proposed project, and plans for long-term project success and sustainability were considered during project development. Additionally, scoring considers the level of local support and commitment for the project, and the applicant's past performance on other water quality projects, including Ecology funded projects.
- Readiness to Proceed - Project elements are in place for the project to proceed and documentation is provided.

Successful proposals will demonstrate how the project solves or addresses a water quality problem and how the applicant will document that benefit. Projects must have a well-defined scope of work that has goals, objectives, timelines, and measurable outcomes in addition to an accurate and reasonable budget. Proposals are also prioritized based on their readiness to proceed through documentation that items are in place to begin as soon as funds may be offered.

The funds for nonpoint source pollution help to provide an incentive to support the achievement of clean water objectives and meet the WQ Standards. Eligible activities covered by these nonpoint source funds include implementation of one or more of a limited set of effective BMPs, education and stewardship programs, pollution identification and correction, water quality monitoring, and watershed planning. Ecology prioritizes nonpoint projects that implement eligible BMPs such as livestock exclusion fencing, agricultural waste management, restoring riparian vegetation, irrigation system improvements, stream habitat restoration, control of invasive species, bank stabilization projects, and promoting practices that decrease soil erosion such as direct seed.

To ensure that effective BMPs are implemented, Ecology funds only a small set of BMPs that we have determined will achieve compliance with state law if implemented, operated, and maintained correctly. The program funding guidelines are reviewed and updated annually to

[69] See Appendix C.

ensure that funded projects meet WQ Standards and to decide whether additional known effective BMPs should be made eligible for funding. Eligibility requirements apply statewide to all proposed projects. The guidelines for state fiscal year 2016 are found at https://fortress.wa.gov/ecy/publications/publications/1410045.pdf. The funding guidelines also include statutory requirements, the administrative rule defining uses and limitations of funds, and program and agency policy that guide our programs.

Additionally, Ecology recognizes the need to measure outputs and outcomes, as well as, BMP costs to improve accountability and better target future clean water investments. To better track BMP implementation Ecology started collecting more specific implementation data through a BMP approval form. The form includes specific BMP metrics that must be reported by the grantee, and the requirement to submit a site plan that clearly identifies the location of BMPs that will be implemented by the project. Ecology will work with other funding programs to collect consistent data to measure the effectiveness of funded projects.

In addition to our combined funding program, other grant programs can help with implementation. More detailed information on other funding programs is provided in Chapter 5. Important sources of financial assistance come from local conservation districts, Natural Resource Conservation Service, the State Conservation Commission, Salmon Recovery Funding Board, and EPA. Ecology will look to support our partners' grant programs and pursue opportunities for coordinated investment.

In state fiscal year 2015, Ecology implemented a new online grant and loan management system called Ecology Administration of Grants and Loans (EAGL). This implementation followed an agency wide Lean effort to standardize agency grant and loan procedures for all programs to be used in the system. Lean is a management concept that has been adopted as part of the governor's Results Washington performance management system. It promotes improvement in work processes and results by evaluating factors such as how each worker goes about a task, how the separate tasks function as a system, how those tasks are arranged to arrive at a final product, and what happens between tasks. Because of system improvements adopted through the Lean process, applicants now apply for and manage their funded projects in EAGL throughout the grant and loan life cycle.

Complaint Response and Inspectors

Ecology's complaint response system provides a tool to address reported nonpoint pollution problems through technical assistance, education, referrals, or in limited circumstances, escalating enforcement. All of Ecology's regional offices have staff dedicated to responding to nonpoint source pollution complaints.

Ecology complaint response staff and field inspectors are the first line of Ecology employees that a nonpoint discharger will interact with after a discharge is reported. These staff are responsible for verifying complaints, conducting field visits or inspections, providing technical assistance, highlighting financial assistance opportunities, and referring landowners (if need be) to local conservation districts or other resources for additional support.

Ultimately, Ecology is responsible for ensuring that individuals comply with state law, and that the BMPs implemented at a site are sufficient to address the identified water quality problem.

Finally, nonpoint inspectors can also support the implementation of TMDLs and STIs, local programs (PIC and Shellfish Protection), and other programs with a nexus to water quality.

Education and Outreach, and Voluntary Programs

Public outreach and education are an important part of the state's NPS program. Developing education and outreach programs that increase the public's understanding of nonpoint source pollution, the technical and financial assistance resources available to address nonpoint pollution, and how the public can be involved in preventing pollution before it happens, are fundamental to the success of our nonpoint strategy. Our education and outreach efforts take advantage of a variety of delivery mechanisms.

Ecology will continue to work with partners including producer groups, tribes, state and federal agencies, local governments, conservation districts, environmental organizations, and other stakeholder organizations in a collaborative effort to maximize participation and increase stakeholder adoption of practices that protect and enhance water quality. These collaborative efforts take advantage of the skills and knowledge of partner organizations to complement education and outreach expertise at Ecology.

Ecology will also support locally led voluntary programs that address nonpoint sources of pollution and promote compliance with the WQ Standards. This includes programs designed specifically to address nonpoint pollution, as well as programs that focus on broader natural resource goals that have a nexus with water quality including salmon recovery programs, voluntary stewardship programs, irrigation efficiencies, and floodplains by design projects.

Partnerships

Ecology works collaboratively with other key state and local entities to coordinate the implementation of NPS control measures. In some cases a partner agency or local government is the lead regulatory agency. In other cases they are the on-the-ground implementers of nonpoint pollution control activities. The importance of partnerships to addressing nonpoint pollution sources cannot be overstated. Whether it is implementing TMDL or STI projects, administering our grants and loans program, responding to complaints, or developing education and outreach programs, partners are fundamental to successfully implementing our nonpoint program.

Additionally, we recognize the importance of existing locally led efforts (both voluntary and regulatory) to reduce nonpoint pollution. We will look for ways to help strengthen and augment existing programs that address and prevent the harmful effects of nonpoint pollution. Further, we will look to support programs that bring together farmers, landowners, communities and local organizations to address nonpoint pollution.

Chapter 4 provides a detailed description of current and future partnership efforts.

Locally Led Water Clean-up Programs

Pollution Identification and Correction (PIC) Programs

Pollution Identification and Correction (PIC) programs identify and address pathogen and nutrient pollution from a variety of nonpoint sources, including on-site sewage systems, farm animals, pets, sewage from boats, and stormwater runoff. The corrective actions taken by local agencies or tribes may include outreach and education, technical assistance, incentives for best management practices, and enforcement.

To promote PIC programs, the state Departments of Health and Ecology have offered short term federally-funded grants to county governments, local health jurisdictions, and tribal governments adjacent to Puget Sound to establish or enhance PIC programs.[70] The goal of these grants is to launch new, and improve existing PIC programs that can eventually be sustainable in the long term by integrating planning across local water quality programs, interests, and concerns.

An effective program will have the following components:

- The ability to reduce or eliminate pathogen and nutrient pollution caused by on-site sewage systems, farm animal waste, pet waste, boat sewage, and stormwater. The capacity to address diverse sources may be accomplished through partnerships.
- An on-going assessment and monitoring program to identify and prioritize problem areas for correction. A monitoring program should include both targeted monitoring to identify pollution sources and monitoring to assess effectiveness of control efforts to ensure that waters stay clean. Assessments from other programs can be used to identify and prioritize water quality problems, for instance the Washington State Water Quality Assessment.
- Corrective action work which includes outreach and education, technical assistance, and incentives, such as cost share for the installation of best management practices. The program includes enforcement as a backstop when other methods don't fix the problem.
- A sustainable funding source.

While PIC programs are administered at the local level, Ecology will continue to take an active role in supporting these programs because our nonpoint strategy shares the objectives of identifying and addressing water pollution issues. Additionally, Ecology provides the regulatory enforcement backstop for counties to help implement the agriculture-related components of their programs.[71] Specifically, as EPA pushed for National Estuary Program (NEP) funding to be focused on local PIC programs, there was an acknowledgement that it would take some local programs time to have a complete and sustainable program similar to Kitsap County's program. Ecology was asked to provide enforcement backup until those local programs developed their own comprehensive enforcement programs that address all sources of nonpoint pollution.

[70] EPA is providing the funding for these grants through the National Estuary Program grant program. They are currently available from November 2011 through September 2014.

[71] See Appendix D.

Example: Kitsap County's Clean Water Kitsap Program
Kitsap County's Clean Water Kitsap Program is a comprehensive, interagency partnership to address local issues related to stormwater management, nonpoint source pollution, and water quality. County leaders created the program in 1993 to protect public health and natural resources, meet state and federal requirements, minimize costs, and provide stable, ongoing funding to address nonpoint source pollution.

This partnership is led by Kitsap County Public Works Stormwater Division. Stormwater management fees fund the Stormwater Division and, through interlocal agreements, also fund selected programs at Kitsap Public Health District, Kitsap Conservation District, Washington State University Kitsap Extension, and the Kitsap County Department of Community Development.

Through this interagency model, the partners work collaboratively to accomplish many programs and projects for the ultimate goal of clean water. The following descriptions are some programs that are uniquely relevant to the State NPS Plan.

Water Pollution Identification & Correction (PIC) at Kitsap Public Health District

Kitsap's PIC program is nationally recognized for its innovation and effectiveness. Their mission is to protect the public from waterborne illness and other water quality related hazards. Water that is polluted with fecal bacteria is the primary concern. Kitsap defines their job as ensuring that surface waters are safe and sanitary so you don't get sick when you swim in them or eat the shellfish. Their work includes:

- Collecting water samples
- Investigating fecal bacteria sources of water pollution
- Taking steps to correct problems

How it Works
Kitsap uses standard procedures for doing PIC work, as outlined in:

- Pollution Identification and Correction Protocol Manual 2012
- Pollution Identification and Correction Guidance Document 2014 (written with the Washington State Departments of Health and Ecology).

Looking For Trends
Kitsap starts with the big picture by monitoring long-term water quality trends for Kitsap County's marine (salt) waters, lakes and streams (known as surface waters). All Kitsap streams run into the Puget Sound or Hood Canal, so if the streams are polluted, they can impact marine waters. The streams are relatively small, so signs of pollution appear early and damage occurs more quickly.

Early Warnings
Surface water quality gives an early warning that development, land uses, and other human activities are beginning to harm the public's health, shellfish resources, and the environment.

The primary sources of pollution are:

- Failing septic and sewer systems
- Faulty storm water systems
- Pet and livestock waste
- Runoff from farms.

Correcting Pollution Problems: Strength of the Clean Water Kitsap Partnership
Each year Kitsap's PIC team uses their monitoring data to prioritize a list of the waterways that are the most polluted. Working through this list, they investigate to find the source of the pollution. When they locate the source, they work with property owners to eliminate it. When sources are from failing septic systems or other sewage issues, Kitsap Public Health spearheads the education, enforcement, and technical assistance to work through the correction process.

When the source is animal waste from a farm, the Kitsap Conservation District is available for non-regulatory technical assistance while the owner has the option of a voluntary compliance process to address the documented water quality problem. When the source is a faulty stormwater system, Kitsap Public Works will perform smoke and dye testing to find and confirm an illicit connection to the storm drain system and follow up with the established escalating enforcement strategy required in the stormwater NPDES Permit.

Water Quality Reports
Public communication about the state of the public's local water bodies is an important part of the PIC Program. Kitsap's PIC team publishes annual reports about the relative fecal coliform levels in streams, bays and lakes, their ongoing efforts to improve water quality, and the current priority list of polluted areas. The Kitsap PIC has demonstrated success at cleaning up polluted waters. On the 2015 WQ Assessment, seven polluted segments covered by the PIC program were moved into Category1—meets WQ Standards.

Shellfish Protection Districts

RCW 90.72 authorizes counties to establish shellfish protection districts to include areas in which nonpoint pollution threatens the water quality upon which the continuation or restoration of shellfish farming or harvesting is dependent. The shellfish protection program should be designed to address the pollution sources that affect shellfish, including, but not limited to requiring the elimination or decrease of contaminants in storm water runoff, establishing monitoring, inspection, and repair elements to ensure that on-site sewage systems are adequately maintained and working properly, assuring that animal grazing and manure management practices are consistent with best management practices, and establishing educational and public involvement programs to inform citizens on the causes of the threatening nonpoint pollution and what they can do to decrease the amount of such pollution.
The State Department of Health routinely samples water around commercial and recreational shellfish growing areas to make sure it meets health standards. If water quality fails to meet those standards, they restrict or close that area to shellfish harvest. This is called a classification downgrade.

When a shellfish area's classification is downgraded due to poor water quality, the county authority must create a shellfish protection district (SPD) and implement a program to find and correct the pollution source(s) that are causing water quality to decline (see RCW 90.72.045). Shellfish protection districts have proven to be very effective in reversing pollution of

Washington's saltwater beaches, preventing new pollution sources, and reopening shellfish areas to harvest.

More information on Shellfish Protection Districts can be found at: http://www.doh.wa.gov/CommunityandEnvironment/Shellfish/GrowingAreaRestoration/ShellfishProtectionDistrictsLibrary

Other Tools to Promote Implementation

In addition to the ongoing nonpoint efforts outlined previously, Ecology continues to pursue and support other tools and strategies to address nonpoint source pollution.

Draft Water Quality Trading Framework

Ecology's Water Quality Program developed a water quality trading framework[72] to guide the development of trading programs in watersheds in which the point sources determine that they will need trading to meet TMDL wasteload allocations and the subsequent NPDES permit limits. Water quality trading has the specific goal of helping point source dischargers meet permit limits through the purchase of pollution reduction credits from a source of the same pollutant that is able to reduce pollution at a lower cost than the point source. This narrow definition of trading is the only one supported by EPA's trading guidance, which Washington must follow.

EPA's trading policy recommends:

- Timely public access to information on trades.
- Public participation during program development and implementation.
- Mechanisms to monitor progress, evaluate program effectiveness, and revise the program as necessary.
- Legal mechanisms to facilitate trading.
- Clearly defined units of trade.
- Methods to quantify credits and address uncertainty.
- Compliance and enforcement provisions.
- Accountability for all trades. Assurance that NPDES permit holders meet their permit limits.

Ecology supports the concept of pollution trading markets that:

- Meet the requirements and objectives of Washington's WQ Standards and the federal Clean Water Act.
- Promote cost-effective water quality protection and restoration.
- Result in water quality trades that are verifiable and fully enforceable.
- Ensure credits generated by a nonpoint source from the installation of best management practices must be beyond those required to meet the most stringent load allocation applicable to that nonpoint source.

[72] See http://www.ecy.wa.gov/programs/wq/swqs/progs.html and http://www.ecy.wa.gov/biblio/1110027.html.

- Measure or calculate nonpoint source credits and trading ratios from the same baseline used in the TMDL and consistent with the assumptions used to develop the load allocation.

Ecology considers the most logical pollutants for trading are phosphorus, nitrogen, other oxygen-related pollutants, and sediment. We will consider trades involving temperature, although the lengthy time lag to produce shade may prohibit temperature trades in many watersheds.

Certification and Certainty Programs

Certification programs take a market-based approach to address environmental problems. They can verify to retailers and consumers that a product has been produced using environmentally sustainable management practices. Ecology supports the concept of certification programs that include a focus on protecting water quality from nonpoint sources of pollution and support the key principles of Ecology's nonpoint source pollution strategy. Additionally, when organizations develop certification programs in consultation with Ecology, we can provide regulatory certainty to participating landowners, businesses, and agricultural producers who participate in the program.

A current example is the Farmed Smart Certification. The Farmed Smart Certification is a sustainable farm certification program developed by the Pacific Northwest Direct Seed Association (PNDSA) and a conservation farming technical stakeholder committee, comprised of conservation producers, managers from conservation districts, Ecology, and researchers with NRCS and Washington State University. The certification criteria were developed using best management practices from multiple environmental and conservation entities including NRCS and Ecology. The certification program was vetted by SureHarvest, a third party certification company and several regional commodity marketing companies with positive feedback that this is a market-ready program.

The Farmed Smart certification objectives include:

- Define a set of conservation standards that will provide a clear understanding of economic and environmental benefits of direct seeding.
- Certify producers that are utilizing sustainable practices.
- Educate and develop environmental markets for certified sustainable products and producers.

Further, the Farmed Smart certification has six initiatives that will be evaluated and proven in order to become certified:

- *Improving Water Quality* – through less soil disturbance, less soil erosion, precision placement of fertilizers and implementing buffer strips along water sources.
- *Improving Air Quality* – by keeping crop residue on the field to avoid wind erosion, and reducing fuel emissions from equipment.
- *Improving Soil Quality* – by reducing the amount of tillage which increases organic matter, earthworm activity, and yield potential.
- *Improving Wildlife habitat* – by providing food and cover for wildlife and fish habitats.

- *Conserving Energy and Reducing Carbon Footprint* – through planting in 1 – 2 passes allowing a significant reduction in fossil fuel usage and sequestering carbon in the soil.
- *Improving Economic Viability and Sustainability* – Reducing input costs of fuel, labor, and chemicals through precision agriculture and direct seeding practices ensures the family farm can continue to produce a safe food supply for the growing population.

Continued Implementation of Key Regulatory Programs

Forest Practices

Washington's streams benefit from a well-regulated Forest Practices Program. In Washington, forest practices are mandated under law to meet the state WQ Standards, and are implemented using forestry prescriptions developed and refined through a science-based adaptive management system. In response to the strength and focus of the current regulatory system, the Department of Ecology in cooperation with the United States Environmental Protection Agency established the Clean Water Act Assurances. To the extent that the current rules continue to be tested and refined as appropriate by a well-funded adaptive management program, the rules will be relied upon to ensure streams in the forested environment meet the state WQ Standards.

History of the Current Forest Practices Rules

The Forests & Fish Report

Leading up to the current Forest Practices Rules was the Forests and Fish Report (FFR). This document, issued in 1999, was the result of the collaboration of stakeholders including tribes, forest landowners, local governments, environmental groups, and state and federal resource agencies. These diverse stakeholders outlined ways to protect water quality and aquatic and riparian-dependent species on non-Federal forestlands in Washington.

The FFR identified four goals:

1. Provide compliance with the federal Endangered Species Act for aquatic and riparian-dependent species on state and private forestlands.
2. Restore and maintain riparian habitat to support a harvestable supply of fish.
3. Meet the requirements of the Clean Water Act for water quality.
4. Keep the Washington timber industry economically viable.

The Salmon Recovery Act of 1999

Following the release of the Forests and Fish Report was passage and enactment of the state's Salmon Recovery Act of 1999 (sometimes called the 'Forests and Fish Law'). This act directed the adoption of the goals of the Forests and Fish Report into the State Forest Practices Rules. Those rules are guided by the state's Forest Practices Board, and set standards for timber harvests, pre-commercial thinning, road construction, and other forest practices on over 10 million acres of state and private forestland.

The Forest Practices Habitat Conservation Plan

The Washington State Forest Practices Habitat Conservation Plan (HCP) is a direct result of the Forests and Fish Report. The HCP was approved in 2006 by the U.S. Fish and Wildlife Service and NOAA's Marine Fisheries Service. Covering 60,000 miles of stream habitat across 9.3 million acres of private and state forestlands, this 50-year agreement protects the habitat of aquatic species, supports economically viable and healthy forests, and creates regulatory stability for landowners.

The Forest Practices Act

The Washington State Legislature found that the 1999 Salmon Recovery Act and the resulting Forests and Fish Rules "...taken as a whole, constitute a comprehensive and coordinated program to provide substantial and sufficient contributions to salmon recovery and water quality enhancement in areas impacted by forest practices…" (RCW 77.85.180(2)). It also recognized that federal and state agencies, tribes, county representatives, and private timberland owners have spent considerable effort and time to develop the Forests and Fish Report (RCW 76.09.055), and authorized the development of Forest Practices Rules based on the analyses and conclusions of the Forests and Fish Report (FFR). The rules include the development of an adaptive management program to:

> *. . . make adjustments as quickly as possible to forest practices that are not achieving the resource objectives . . . (and) shall incorporate the best available science and information, include protocols and standards, regular monitoring, a scientific and peer review process, and provide recommendations to the board on proposed changes to forest practices rules to meet timber industry viability and salmon recovery. (RCW 76.09.370(7))*

These provisions for the forest practices Adaptive Management Program are designed to meet the goals and objectives for water quality and fish habitat within the jurisdiction of the Forest Practices Program.

The state Forest Practices Act (Chapter 76.09 RCW) and the Stewardship of Non-industrial Forests and Woodlands (Chapter 76.13 RCW) set up the foundation for management by the state and private landowners in Washington. Landowners must either follow the prescriptions established in the state Forest Practices Rules (Chapter 222 WAC), or follow prescriptions established in federal Habitat Conservations Plans established for their specific lands. There are currently eight other HCPs that cover some of the state and private forest lands.

The Forest Practices Rules

The Forest Practices Rules in Washington are detailed and comprehensive. The rules cover a wide range of issues associated with forest harvesting, roads, and unstable slopes. The specific prescriptions are dependent on site factors such as the size of streams and the type and size of wetlands, as well as the productivity of the soils and the method of harvest (e.g. clear cutting vs. thinning, ground based vs. cable yarding). As such, the rules are too complicated to restate here. However, some generalized elements related to water quality protection are worth noting. These include leaving streamside forested buffers that range from 90 - 200 feet wide along each side of fish-bearing streams west of the Cascade Mountains and 75-130 feet wide buffers on the east side of the mountains (the dry side). Fifty-foot wide buffers typically protect most of the flowing reaches of the non-fish-bearing waters on the westside, with an allowance for more variable width buffers on the eastside to mimic historic forest fire cycles.

All new forest roads must be constructed to the rule standards and Road Maintenance and Abandonment Plans exist statewide to replace barriers to fish passage and bring roads into compliance with current road standards. Based on current rates of improvement, most ownerships will meet the initial target date of 2016 for bringing all of their roads up to current standards, with only a small number of ownerships formally granted a 5 year extension due to economic hardship incurred during the economic recession that began in 2008.

The enhancements made to the forest practices rules in response to the 1999 Forests and Fish Report targeted the protection five key riparian functions: shade, stream bank stability, woody debris availability and recruitment, sediment filtering, and nutrients and leaf litter fall. This occurs through the combined results of maintaining mature forested stands along streams, rivers, and wetland impoundments; by disconnecting road runoff from natural drainages to the fullest extent feasible; and identifying and protecting potentially unstable slopes which if otherwise were allowed to fail could contribute deleterious amounts of sediment to waterways.

It is important to note that the Forest Practices Board may not adopt or amend any rule that would affect water quality without the agreement of the Director of Ecology.

Framework for Administering the Forest Practices Rules

Overview of the Adaptive Management Program
The Adaptive Management program was created to provide science-based recommendations and technical information to assist the Forest Practices Board in determining if and when it is necessary or advisable to adjust rules and guidance for aquatic resources to achieve the resource goals and objectives of the Forests and Fish Report.

The Forest Practices Adaptive Management Program is a multi-caucus program that includes representatives from state departments (including Fish and Wildlife, Ecology, and Natural Resources), federal agencies (particularly National Marine Fisheries Service, U.S. Fish and Wildlife Service, and Environmental Protection Agency), forest landowners, county governments, the environmental community, and tribal governments. Representatives of these caucuses participate on two key Adaptive Management Program committees established by the Forest Practices Board: the Timber, Fish and Wildlife Policy Committee (Policy) and the Cooperative Monitoring, Evaluation, and Research Committee (CMER).

The Policy Committee makes recommendations to the Board for decision. CMER reviews existing science and contributes original research to the program. This science function is designed to produce unbiased technical information for consideration by the Policy Committee and the Board, as illustrated by the interactive structure of the Adaptive Management Program in the following diagram. The Department of Natural Resources (DNR) operationally implements the Forest Practices Program. The Department of Ecology, the Department of Fish and Wildlife, and many of the state's Tribes are active cooperators with DNR in implementing key provisions of the state's Forest Practices Rules in the field.

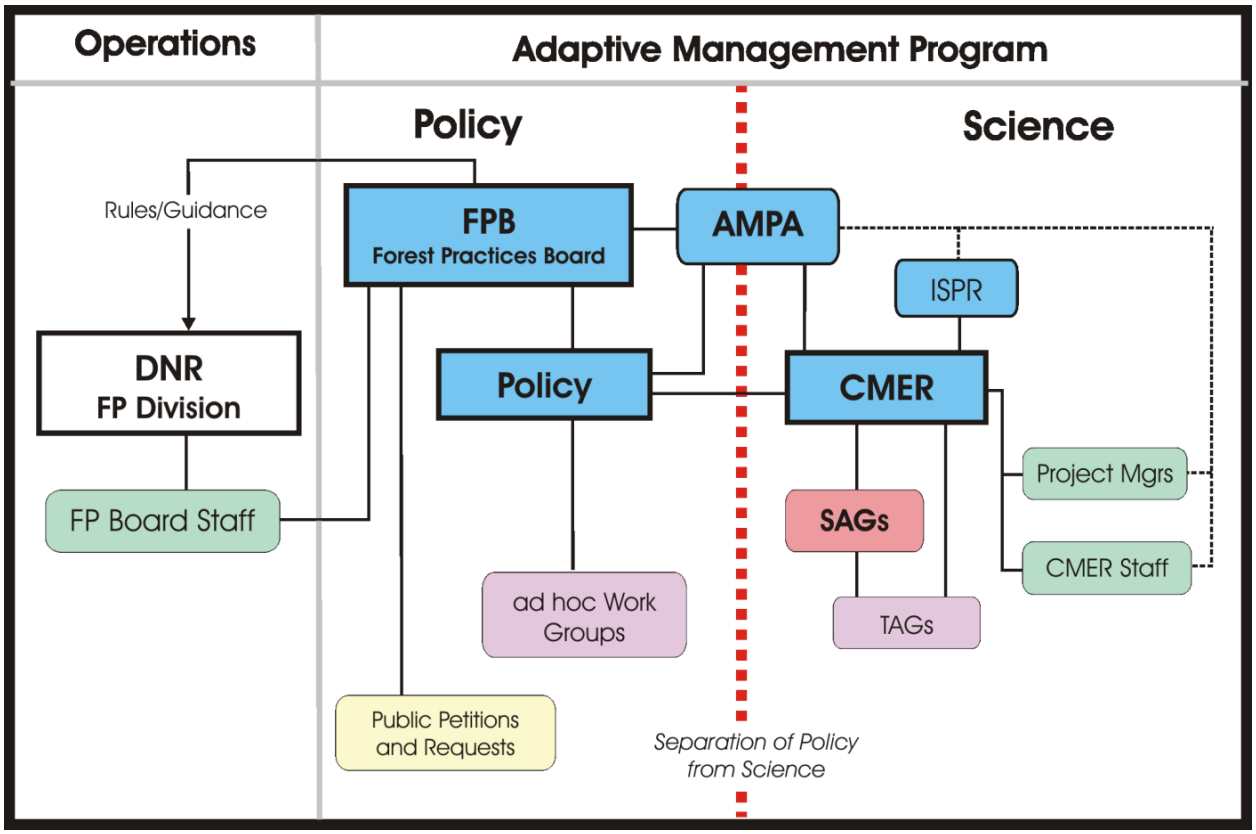

Figure 1 Forest Practices Adaptive Management Program

Forest Practices Board (Board)
The Board has approval authority over proposed CMER projects, annual work plans, and expenditures. It establishes resource objectives to inform and guide the activities of the program and sets priorities for action. If consensus or an otherwise acceptable conclusion is not reached in Policy, the Board makes the final determination. The Board also:

- Directs the program to complete work according to the CMER master project schedule.
- Determines whether the program is in substantial compliance with the CMER master project schedule.
- Notifies the National Marine Fisheries Service and the US Fish and Wildlife Service if the program is not in substantial compliance with the CMER master project schedule.
- Approves nominations for CMER committee members.
- Ensures that fiscal and performance audits of the Adaptive Management Program are conducted.
- Forwards to the Adaptive Management Program all proposals affecting aquatic resources for new rules and board manual content.
- Approves proposed updates to Schedules L-1 and L-2 of the Forests and Fish Report, "Key Questions, Resource Objectives, and Performance Targets for Adaptive Management."

Timber, Fish and Wildlife Policy Committee (Policy Committee)
The Policy Committee is a consensus- based policy forum to support the Adaptive Management Program. The Policy Committee consists of members selected by and representing the following State of Washington Timber, Fish, and Wildlife (TFW) caucuses:

- Industrial private timber owners.
- Nonindustrial (small) private timber owners.
- Environmental community.
- Western Washington tribal governments.
- Eastern Washington tribal governments.
- County governments.
- Department of Natural Resources.
- Departments of Fish and Wildlife and Ecology.
- Federal agencies (National Oceanic & Atmospheric Administration Fisheries, US Fish and Wildlife Service, and US Environmental Protection Agency).

The function of the Policy Committee is to develop solutions to issues that arise in the Forest Practices Program. These issues may be raised by science reports on rule or program effectiveness, or policy questions on implementation of forest practices. Solutions may include the preparation of rule amendments and/or guidance recommendations.

The Policy Committee also assists the Board by providing guidance to CMER and recommendations on adaptive management issues. The Policy Committee reviews and makes recommendations on the key questions, resource objectives, and performance targets, and recommends CMER program priorities for CMER work plans containing specific research projects to the Board. In cooperation with CMER, the Policy Committee reports to the Board the status of the CMER master project schedule prioritizing CMER research and monitoring projects, and provides an update of the CMER master project schedule at least every four years.

The Cooperative Monitoring Evaluation and Research Committee (CMER)
The purpose of CMER is to advance the science needed to support adaptive management. For the Adaptive Management Program, best available science is considered to be relevant science from all credible sources including peer-reviewed government and university research, other published studies, and CMER research products. Applicable historic information, privately produced technical reports, and unpublished data may have value and are considered as long as they can be assessed for accuracy and credibility. CMER is responsible for understanding available scientific information that is applicable to the questions at hand, selecting the best and most relevant information, and synthesizing it into reports for the Policy Committee and the Board.

CMER is composed of scientific representatives of TFW participating caucuses who are expected to maintain an objective scientific perspective. CMER operates on the basis of consensus. Because CMER is charged with producing credible, peer-reviewed technical reports based on best available science, participating caucuses are encouraged to nominate research scientists with research and publication experience.

The CMER work plan provides a long-term integrated strategy for how CMER supports the Adaptive Management Program. The work plan identifies six objectives towards this goal:

1. State critical research and monitoring questions that are pertinent to evaluating rule, guidance, and DNR products (i.e., rule tools) effectiveness.
2. Organize these questions into coherent program groupings.
3. Assess feasibility, resource risk, and scientific uncertainty addressed by each program.

4. Develop an integrated strategy for accomplishing the work.
5. Rank programs/projects for implementation.
6. Develop budget estimates and timelines.

The Clean Water Act Assurances

Overview
Under Washington State law (Chapters 90.48 RCW & 76.09 RCW) Forest Practices Rules are to be developed so as to achieve compliance with the state WQ Standards and the federal Clean Water Act (CWA). Ecology has been designated as the state water pollution control agency for all purposes of the CWA, and has been directed to take all action necessary to meet the requirements of that Act. The original Clean Water Act assurances (CWA assurances) granted by Ecology in 1999 as part of the Forests and Fish Report (FFR) were reviewed after June 30, 2009. The assurances established that the state's Forest Practices Rules and programs, as updated through a formal adaptive management program, would be used as the primary mechanism for bringing and maintaining forested watersheds into compliance with the state WQ Standards.

The foundation for granting the CWA assurances was the belief that the Forest Practices Rules were a substantial step forward in environmental protection, and when implemented would provide the quickest and most efficient means for achieving environmental goals and compliance with the state's WQ Standards. Developing CWA mandated TMDLs to serve as regulatory water cleanup tools for forested watersheds was therefore viewed as a low priority, and the CWA assurances established that Ecology would rely on the FFR-based forest practices program for an initial ten-year period. It was assumed in 1999 that research and monitoring would occur to demonstrate that implementing the Forest Practices Rules would improve water quality and eventually bring forested waters into full compliance with the state's surface WQ Standards and thereby also satisfy the conditions under Section 303 of the federal CWA. The value of offering formal assurances is that they provide landowners and agencies with a predictable and consistent regulatory system, and in doing so provide an additional motivation for stakeholders to participate in the adaptive management program.

In July of 2009, Ecology completed a re-examination on progress in meeting the conditions for providing the CWA Assurances (2009 Clean Water Act Assurances Review of Washington's Forest Practices Program). At that time, Ecology determined the forest practices program had not achieved the level of information needed to verify that water quality in the forested environment will meet WQ Standards, or to verify that the conditions for offering the assurances in 1999 had been satisfied. In spite of these shortcomings, Ecology believed the forest practices program still offered a viable and compelling management strategy for achieving water quality goals in the forested environment. As such, Ecology concluded that continuation of CWA assurances would be warranted if specific actions were taken to improve the program's performance.

Taken in total, the forest practices program provides a substantial framework for bringing the Forest Practices Rules and activities into full compliance with the WQ Standards. Ecology concluded it remained in the best interests of water quality, and was most consistent with legislative intent, to work with the other participants to make needed improvements to the existing program. Ecology therefore conditionally extended the CWA assurances with the intent

to stimulate needed improvements to the forest practices and adaptive management programs. Ecology, in consultation with key stakeholders, established specific corrective milestones. The extension of the assurances remains conditioned on meeting these research and administrative milestones by the specific target dates described. These milestones serve as a corrective action plan necessary to retain the assurances into the foreseeable future.

The key result of the corrective milestones was to more directly prioritize water quality-based operational and science issues and concerns. But even before the assurances review had been completed, steps were already being taken to proactively address some of the corrective milestones associated with operational issues, compliance monitoring, and assessing progress under Road Maintenance, Abandonment, and Planning (RMAP) rules.

Compliance with the corrective milestones is intended to demonstrate sufficient progress to satisfy the CWA assurances and the adaptive management provisions of the state WQ Standards (WAC 173-201A-510(3)). Because extending the assurances was based on meeting the specific research and administrative milestones by the specific dates listed, failure to meet any milestone would be considered a basis for potentially withdrawing the assurances at that time.

The 2009 corrective milestones included 21 operational or administrative milestones, and phase-specific milestones covering 20 research projects examining prescription effectiveness questions. Between 2009 and the 2015 Ecology has made changes in the milestones in response to new information, natural disasters, and the global economic recession. While the initial list in 2009 is different from that today, neither the number nor the complexity of the milestones has been reduced in scale, and the priority research remains focused on water quality protection issues. As of this time, only a few operational and administrative milestones remain incomplete, and most of the priority water quality research is either in field implementation or in the study design phase.

Currently the CMER research program invests about 3.2 million dollars per year in examination of the effectiveness of the Forest Practices Rules. To be successful in meeting these milestones and consequently retaining the CWA assurances, the caucus principals will need to continue to work together to ensure continued funding and support for the actions needed to meet the specific milestones. Based on ongoing progress and the continued commitment by key stakeholders, Ecology fully expects these steps to be successful. More information about CMER's work may be found here:
http://www.dnr.wa.gov/AboutDNR/BoardsCouncils/CMER/Pages/Home.aspx

Small Forest Landowners - Alternate Rules

The state legislature enacted special rules for some landowners. Small forest landowners are defined as entities that harvest less than 2 million board feet per year on average. The vast majority of these small forest landowners own less than 20 contiguous acres. These smaller landowners were provided with rules that allow for greater harvests near streams and they are only required to correct problems on their roads at the time the associated land is harvested. The Legislature established the Small Forest Landowner Office to be housed in the Washington State Department of Natural Resources to help landowners and to proactively improve environmental

conditions on their lands through the use of targeted financial, technical, and regulatory opportunities, as well as education.

Small landowners are provided with limited cost share funding and technical assistance to fix road crossing fish barriers on their properties, and limited additional appropriations to help compensate them for leaving trees along streams to protect water quality and other public resources in recognition of the disproportionate impact the Forest Practices Rules when established, were estimated to have on small forest landowners.

With the exception of those rules established directly by the legislature, all the programs provided to small forest landowners were initially designed with the intention of meeting the goals of the federal Clean Water Act and the state WQ Standards, and are scheduled to be tested through science based adaptive management. While no programs exist to directly examine the effectiveness of the rules established for small forest landowners, research designed to evaluate the rules applied to larger landowners will have value in providing feedback to the state legislature and the state Forest Practices Board on the effectiveness of the small forest landowner rules as well.

Agricultural

Ecology and Agriculture

As detailed elsewhere in this Chapter, Ecology will continue to use its nonpoint source authority to address pollution problems on agricultural lands, and to develop additional strategies that might help us accomplish the goal of achieving clean water in Washington. As the state water quality agency, Ecology will continue to work on better defining what compliance with state water quality law means and to provide that feedback to landowners so they can make informed decisions.

Dairy Nutrient Management Program-Washington State Department of Agriculture (WSDA)

The Dairy Nutrient Management Program (DNMP) currently has 3.5 dedicated staff for inspection activities. DNMP utilizes several tools to work with dairy, CAFO permitted livestock, and non-dairy operations including:

- DNMP conducts routine inspections at all dairy and permitted CAFO operations approximately every 22 months, and a wet-weather inspection every five years to identify actual or potential violations of water quality and recordkeeping requirements.
- DNMP conducts focused inspections, such as fall and spring lagoon assessment to ensure adequate storage is available and being operated and managed appropriately and to monitor agronomic applications.
- DNMP partners with other agencies (Ecology, Health, local agencies) to identify and correct actual or potential violations from non-dairy livestock operations in watersheds with documented water quality issues, such as Samish, Portage Bay, and the Lower Yakima Valley.
- DNMP established a compliance pathway to provide clarity for dairy producers and encourage compliance with water quality laws through the use of regulatory technical assistance, warning letters, notices of correction and, when necessary, civil penalties. RCW 43.05 (Technical Assistance) requires WSDA to provide technical assistance before issuing a civil penalty for violations.

- DNMP is working with local conservation districts to provide training and tools to help producers meet recordkeeping requirements.

DNMP is working with state and local agencies to identify gaps in authorities and strategies to fill those gaps such as:

- Requesting additional funding to provide additional inspections and training to livestock producers.
- Evaluate and update WAC 16-611 to include additional recordkeeping requirements to ensure land applications of nutrients are not exceeding the agronomic needs of crops.
- Evaluating and identifying regulatory gaps in RCW 90.64 to address significant potential to pollute issues.

Challenges and Gaps in the Current Program Identified by WSDA

The following are challenges and gaps in the current program identified by WSDA. During the term of this plan we will work collaboratively and find opportunities to address these gaps and challenges. WSDA had identified the following gaps:

Program Requirements - Regulatory agency does not control specific program requirements so can't directly respond to evolving water quality or industry issues.

- Conservation Commission sets minimum elements of dairy plans based on NRCS standards.
    - Elements not updated since 1998, no requirement to incorporate updated standards.
- Conservation Districts approve and certify plans as meeting minimum elements.
- Operators not required to meet plan timelines if district does not have resources.

Enforcement Authority - The state lacks the enforcement authority and penalties for dairies that do not get plans updated or properly implement their plans, which limits water quality enforcement effectiveness.

- Plan Updates: Dairies have no effective requirement to update a plan when there are changes to dairy operations.
    - Updates are only required if the plan contributes to a discharge to waters of the state; generally, management decisions, not the plan, are the primary contribution to discharges.
    - No agency has authority to require the update.
    - No penalty is established for failing to update a plan.

- Plan Implementation: Dairies have no requirement to follow an approved and certified plan.
    - No penalty for failure to follow the plan except for when proper records have not been kept to show agronomic applications or discharge occurs (2010 legislation).
    - Plan development relies on practice standards that are intended as guidelines, subject to interpretation and are updated periodically.

- Water Quality Enforcement: State has limited enforcement authority except where dairy actions cause a discharge or create a potential to pollute.

    - WSDA can issue a Notice of Correction based on creating a potential to pollute.
    - WSDA may issue a penalty if:
        - There is a water quality standard violation.
    - Records are not kept to show agronomic applications. Actual over-application is not subject to penalty unless a discharge is documented.

- Violations/Penalties: The Dairy Nutrient Management Act narrowly defines what a violation is and establishes specific penalties for violations.
    - Violating water quality standards —civil penalty up to $10,000 per day.
    - Failure to obtain an approved and certified initial plan—a civil penalty of $100 per month past due date with $5000 max penalty (RCW 90.64.030).
    - Records violation added in 2009—penalty established in 2010 for up to $5,000 per violation and maximum of $5,000 in one year.

More information about the program may be found here:
http://agr.wa.gov/FoodAnimal/Livestock-Nutrient/

On-Site Sewage Systems (OSS) Regulation

There are about 950,000 small on-site sewage systems (OSS) in Washington. Failing on-site sewage systems can pose a threat to shellfish resources, impact groundwater, and cause nutrient enrichment of receiving waters.

In Washington, on-site sewage systems are regulated by Chapter 246-272A of the Washington Administrative Code, "On-site Sewage System." This rule is adopted by the State Board of Health, developed and administered by the state Department of Health, and primarily implemented by local health jurisdictions for small systems with flows less than 3,500 gallons per day.

The regulations prohibit the discharge of sewage to surface waters and provide a permitting system for on-site sewage systems. Conditions for permits and system design requirements are set in state and local code, including minimum land area, horizontal setback and other site characteristics, soil and treatment standards, and more. Circumstances are described which require connection to a public sewer system. On-site sewage system designers must be licensed by the state Department of Licensing, and installers and pumpers must be certified by local health jurisdictions. Local health jurisdictions are authorized to inspect on-site systems under construction as part of the permitting process.

As noted previously, local health jurisdictions implement front-line provisions of Chapter 246-272A WAC and have authority to promulgate more stringent regulations (RCW 70.118.050). Enforcement of rules related to onsite sewage systems is authorized in Chapter 70.05 RCW.

The state Department of Health has back-up enforcement authority under RCW 43.0.130, "Powers and duties of the Secretary of Health." The Department of Ecology also has the authority to take enforcement action under the Water Pollution Control Act.

To ensure that local programs are consistent with the state rule, the state Department of Health must approve local health codes. If a local government does not follow the state rule, the Department of Health works with the local health officer and local board of health to bring the local code into compliance with the state rule. If necessary, the Secretary of Health may exercise enforcement authority if a local health jurisdiction fails to enforce the state public health rules.

The Department of Health uses a technical advisory group made up of government and industry representatives to provide advice on technical wastewater issues and guidelines governing the design and use of public domain and proprietary on-site sewage treatment and distribution technologies approved for use in the state.

The state recognizes that proper operation and maintenance of on-site systems is essential to ensure they function properly. Chapter 246-272A WAC describes the operation, monitoring, and maintenance responsibilities of system owners and the local health jurisdictions. System owners are responsible for properly operating their systems, periodically evaluating them, and pumping when necessary to avoid problems and to ensure ongoing performance. The Department of Health and local health jurisdictions provide technical support, oversight services, and information on proper operation and maintenance (O&M) to homeowners. One example of an information source on the Department of health website: http://www.doh.wa.gov/CommunityandEnvironment/WastewaterManagement/OnsiteSewageSystemsOSS/HomeownerEducation

Local health jurisdictions are responsible for developing and implementing management plans describing their methods and financial capacity to educate and remind system owners of their O&M responsibilities. The state rule and chapter 70.118A RCW on marine recovery areas, establishes more rigorous requirements for the 12 Puget Sound counties. The Department of Health has produced numerous guidance documents and administers a small amount of state grant funding (about $1.2 million biennially) to support implementation of these management plans. The local plans and programs are all uniquely designed and implemented, and involve such activities as inventorying systems, tracking system status and inspection/maintenance activities, facilitating and enforcing work on failures, and educating system owners. Funding for the local management programs is limited and uneven. The department is working closely with the local health jurisdictions and other interests to establish dedicated sustainable funding for these programs.

In implementing the plans, local health jurisdictions generally focus their oversight on more complex systems that require regular O&M and in areas where site risks are greatest, such as marine recovery areas and other sensitive areas.

To supplement this regulatory framework, the Washington Department of Ecology (Ecology) has loaned significant money from the Water Pollution Control State Revolving Fund (SRF) to local governments to set up low-interest loan programs to repair or replace failing on-site sewage systems. The following is an overview of the funding program:

- Water Pollution Control State Revolving Fund loans can be used by counties and cities to, in turn, loan money to land owners to repair or replace their failing systems.

- Centennial Clean Water Program grant funds can help defray some of the operating costs and lending risks for these programs. Counties and cities can use the grant funds to cover operating costs for the program, provide small grants to property owners, and to establish a loan loss reserve account to cover their obligations if a property owner defaults on a loan.

To capture greater economies of scale, Ecology is working with the Department of Health and counties to establish and capitalize a regional scale loan program that would complement or potentially replace many county-based loan programs in the state's coastal counties. Once established, this program could scale up to cover additional parts of the state.

Shellfish restoration projects provide an important opportunity to address on-site sewage systems. When a shellfish bed is downgraded, the state works with the local government and other interests to develop and carry out a restoration strategy, which typically includes work to find and fix failing on-site systems. The local jurisdiction must also create a shellfish protection district to implement long-term solutions to the problems, including on-site septic measures such as inspections, corrections, education, and operation and maintenance. Local watershed plans must include nonpoint pollution control strategies for addressing on-site septic systems which can include voluntary, educational, and regulatory programs. The good news is that stronger local septic management programs are helping to effectively protect shellfish beds and preempt reactive work in many areas.

When a TMDL or a ground water study indicates that further restrictions must be placed on on-site systems, Ecology may impose those restrictions.

Additives to and loadings from onsite sewage systems have been addressed by restrictions at the retail level:

- Chapter 70.118 RCW prohibits the use of Chemical additives in onsite sewage systems unless certified by the state Department of Health.
- Chapter 70.95L RCW bans the retail sale of laundry and dishwashing detergents which contain 0.5 percent or more phosphorus by weight.

Complementing the management and regulation of small on-site sewage systems, the Department of Health directly regulates and permits large on-site sewage systems with flows between 3,500 and 100,000 gallons per day. There are approximately 570 LOSS statewide, roughly half of which are located in the Puget Sound region. The Department of Health provides oversight to approve plans and inspects newly constructed systems, issues and renews permits annually for all systems, and tracks annual operation and maintenance reports to monitor system performance and operational activities.

Water Quality Permits

Ecology will work to ensure that the nonpoint program is well-integrated with our regulation of point source pollution. Specifically, Ecology will focus on connections between the nonpoint and TMDL programs, and the regulation of stormwater and confined animal feeding operations.

State Initiatives

Several important initiatives are underway that our nonpoint program supports. Ecology can support these efforts through our TMDL and STI implementation efforts, grant and loan programs, technical expertise and research support, and by providing a regulatory backstop.

Governor's Results Washington

Governor Inslee believes we can do more to ensure a faster, smarter and more accountable state government — a government focused on key goals that will help strengthen our economy, improve our schools, and make Washington an ideal place to live and do business.

By setting clear goals and continually tracking results, the state will be better equipped to engage its employees, partners, and the public in building a healthier, better-educated and more prosperous Washington. Indeed, the Governor is delivering on his inaugural address promise that "We will provide efficiency, effectiveness and transparency."

In 2014 the state launched Results Washington, a new system combining the best aspects of Government Management Accountability and Performance (GMAP) with a significantly expanded Lean initiative that involves all state agencies. Results Washington will use the latest technology to routinely gather, review, and display performance data which will make it easier for citizens to see for themselves how well state government and its many partners are delivering services and meeting key performance goals.

The Results Washington Measure that most clearly aligns with the objectives of the NPS plan is under the category of Healthy Fish and Wildlife. Under this category the state has committed to the following:

2.1 Increase improved shellfish classification acreage in Puget Sound from net increase of 3,038 acres from 2007-13 to net increase of 8,614 acres by 2016.

2.1.a. Increase percentage of inspections that are current for on-site sewage systems in marine recovery areas and other specially designated areas from 37% to 50% by 2016.

2.1.b. Increase the number of implemented agricultural BMPs to improve water quality in shellfish areas in Puget Sound, Grays Harbor, and Pacific counties from 345 in 2008 to 750 by 2016.

More information on Results Washington can be found at:
http://www.results.wa.gov/

Washington Shellfish Initiative

The Washington Shellfish Initiative is an agreement among federal and state governments, tribes, and the shellfish industry to restore and expand Washington's shellfish resources, to promote clean-water industries and create family-wage jobs.

To restore and expand shellfish resources, Washington must renew its protection, restoration and enhancement efforts. These efforts will pay off in increased recreation, additional clean water jobs, and a healthier Puget Sound and coastal marine waters. The Puget Sound Partnership has targeted a net increase from 2007 to 2020 of 10,800 harvestable shellfish acres, which includes 7,000 acres where harvest is currently prohibited in Puget Sound.

Shellfish Initiative:

1. Create a Public/Private Partnership for Shellfish Aquaculture
2. Promote Native Shellfish Restoration and Recreational Shellfish Harvest
3. Ensure Clean Water to Protect and Enhance Shellfish Beds

More information on the Washington Shellfish Initiative can be found at: http://www.psp.wa.gov/shellfish.php

Puget Sound Action Agenda

The Puget Sound Action Agenda is a shared regional road-map for prioritizing Puget Sound recovery and protection actions to ensure resources are invested effectively and efficiently. The 2014/2015 Action Agenda[73] identifies key ongoing programs, local priorities for different areas of Puget Sound (which participate through Local Integrating Organizations [LIOs]) and 290 specific actions intended to be implemented over a two-year period. These actions advance the region's efforts towards shared recovery targets. Approximately half of these actions are regional in scope; the other half are locally developed and focused. Each of nine existing LIOs developed and contributed these actions, demonstrating significant local commitment to this recovery effort.

The 2014/15 Puget Sound Action Agenda addresses nonpoint source pollution at multiple levels in the document (strategies, sub-strategies, actions and targets) and by addressing a number of relevant topics such as stormwater runoff, on-site sewage system runoff, runoff from timber harvest, and agricultural runoff. There are targets ranging from reducing specific types of nonpoint pollution (e.g., from on-site sewage systems) to protecting natural resources and local economies by reducing resulting harms from nonpoint pollution. For more information about the targets (the "Vital Signs") see: http://www.psp.wa.gov/vitalsigns/index.php.

The current Action Agenda emphasizes three areas of priority, referred to as the Strategic Initiatives, as follows:

1. *Prevent pollution from urban stormwater runoff*. Polluted runoff from roads, roofs, parking lots, and other paved areas is the biggest threat to Puget Sound's water quality. Although many tools and technologies exist for reducing stormwater pollution, much broader use of them needs to be made for the scale of impact that is necessary for Puget Sound.
2. *Protect and restore habitat*. The rate of habitat destruction still outpaces recovery efforts, a fact that must be reversed. Restoring damaged shorelines and protecting salmon habitat along the many rivers and streams that flow into Puget Sound is necessary to save salmon (as a keystone species) and honor tribal treaty rights.

[73] http://www.psp.wa.gov/2014_action_agenda_download.php

3. *Restore and re-open shellfish beds*. Shellfish harvesting is a major Puget Sound industry, and a tribal treaty right. Both are threatened by pollution that has closed more than 7,000 acres of Puget Sound beaches. Shellfish health begins on land, through reduction of pollution from rural and agricultural lands and maintenance and repair of failing septic tanks.

State statute requires an update of the Action Agenda every two years. Accordingly, the Puget Sound Partnership will conduct an update in the course of this year, working closely with all partners, including state and federal agencies, the LIOs, and the tribes.

No Discharge Zone Designation-Puget Sound

A No Discharge Zone (NDZ) is a designated body of water where the discharge of sewage (blackwater/toilet waste) from boats, whether treated or not, is prohibited. There are currently 90 NDZs in 26 states. Washington State has no designated NDZs. Consistent with the plan to restore Puget Sound, Ecology is considering a NDZ for all or parts of Puget Sound.

A state can petition EPA for NDZ status under the Clean Water Act under three approaches: 1) the water body requires greater protection and has adequate pumpout facilities; 2) protection and enhancement of a water body requires establishment of a NDZ – do not have to show pumpout capacity; or 3) there is a drinking water intake. In order to assure feasibility of a NDZ, Ecology is verifying that adequate pumpout facilities exist.

Over the last three years Ecology has been conducting a detailed evaluation process which has included gathering data on Puget Sound vessels, pumpout facilities, the conditions of Puget Sound, marine sanitary device performance, boater surveys, research on other states with NDZs, an evaluation of implementation, and outreach to stakeholders. Ecology sent out a draft petition for public comment in 2014 and received more than 26,000 public comments, with the vast majority supporting the draft petition. Ecology provided a response to the comments.

In response to the comments, Ecology is:

- Continuing to meet with stakeholders on concerns.
- Working on adding additional pumpout facilities for certain commercial vessels.
- Conducting an analysis of water and pollution movement in areas of Puget Sound.
- Conducting an analysis of cost impacts to certain commercial vessels.

A potential final petition to EPA will be submitted, at the earliest, in the fall of 2015.

When Ecology submits a final petition to EPA, EPA reviews it and if it is accepted, it will be published in the Federal Register for formal comment prior to a final determination by EPA.

More information on this topic can be found at:
http://www.ecy.wa.gov/programs/wq/nonpoint/CleanBoating/nodischargezone.html

Ocean Acidification/Marine Resources Advisory Council

The 2013 Legislature enacted Engrossed Senate Bill 5603 Section 4 creating the Washington Marine Resources Advisory Council, within the Office of the Governor. The Marine Resources Advisory Council's membership includes legislative, executive, and elected officials,

nongovernmental organizations, and the private sector. The Governor invited representatives from academic institutions and federal agencies to participate.
The Marine Resources Advisory Council has the following powers and duties:

1. To maintain a sustainable coordinated focus on ocean acidification.
2. To advise and work with the Washington Ocean Acidification Center on the effects and sources of ocean acidification.
3. To deliver recommendations to the Governor and Legislature on ocean acidification.
4. To seek public and private funding resources to support the Advisory Council's recommendations.
5. To assist in conducting public education activities regarding ocean acidification.

The Marine Resources Advisory Council will be informed by the extensive work of the Washington Blue Ribbon Panel on Ocean Acidification. The Council has identified reducing local land-based contributions to ocean acidification as one of its key areas for early action. Specifically, their strategy looks to implement effective nutrient reduction programs in locations where these pollutants are causing or contributing to multiple water quality problems.

More information can be found at:
http://www.ecy.wa.gov/water/marine/oceanacidification.html

Salmon Recovery in Washington

To recover salmon, Washington is trying to protect the wild salmon that remain and help them increase their numbers by restoring where they live.

The network of individuals dedicated to restoring salmon starts with people in communities and includes watershed groups, regional organizations, state and federal agencies, city and county governments, tribes, conservation districts, nonprofit groups, as well as the legislature, Governor, and Congress.

Regional Organizations - To coordinate the work of recovery planning and implementation, seven regional organizations formed, and recovery plans in each of those regions have been accepted by the federal government and are being implemented.

Lead Entities - Lead entities are watershed-based organizations authorized by the Legislature in 1998 (Revised Code of Washington 77.85.050 - 77.85.070) to develop habitat restoration and protection strategies, and look for projects to meet those strategies.

Project Applicants - Project applicants develop habitat restoration and protection projects based on regional recovery plans or strategies developed by lead entities. Project applicants typically are regional fisheries enhancement groups, local governments, tribes, state agencies, community groups, land trusts, and others. They apply for grants from the Salmon Recovery Funding Board and others to pay for projects to protect or restore salmon and bull trout habitat.

More information on Salmon Recovery in Washington can be found at:
http://www.rco.wa.gov/salmon_recovery/index.shtml

and http://www.stateofsalmon.wa.gov/

Chemical Action Plan (CAP) Development

Toxic chemicals pollute stormwater, streams and lakes in Washington. Exposure to these chemicals affects people's health and the health of the environment. Ecology will continue to use our TMDL and STI approaches to address impairments caused by toxics. In addition, Ecology will look for additional tools outside the Clean Water Act to address toxics. For example, we will continue to support the development of chemical action plans (CAP).

A CAP is a comprehensive plan to identify, characterize and evaluate all uses and releases of a specific persistent, bioaccumulative toxic (PBT), a group of PBTs or metals of concern. A CAP is a plan, not legislation or a rule. It recommends actions to protect human health and the environment. Some of the recommendations may lead to new legislation or rules. These would go through the normal legislative or rulemaking process.

The CAPs can serve as a list of BMPs for our TMDLs in identifying actions to get particular toxic out of the water.

The PBT Initiative focuses on one toxic substance at a time. Ecology develops each CAP in collaboration with other agencies and experts representing various business, agricultural and advocacy sectors.

More information can be found at:
http://www.ecy.wa.gov/programs/swfa/pbt/caps.html

The Voluntary Stewardship Program (VSP)

The VSP is a relatively new program implemented by the Washington State Conservation Commission. The VSP was passed in 2011 as an amendment to the Growth Management Act (GMA). Its goals are to protect and enhance critical areas, maintain and improve the long-term viability of agriculture, and reduce the conversion of farmland to other uses. To accomplish these goals, the VSP relies primarily on incentives and voluntary stewardship practices. Counties that opt into the VSP are responsible for designating a local watershed group to develop a watershed plan that describes how critical areas on agricultural lands will be protected and enhanced.

Counties opting into this program are eligible for funding for the development of watershed work plans to set goals and benchmarks for protection and enhancement of wetlands and other critical areas on agricultural lands. At this time, only two counties (Thurston and Chelan) have received funding to develop watershed work plans. If additional funding is not received, counties that have opted into the program and not received funding will need to develop regulations addressing agriculture and critical areas.

Improved compliance with state and federal clean water law was a critical part of the Ruckelshaus agreement that led to the creation of the VSP. While this "regulatory backstop"—which was to take the form of better enforcement of clean water law *separate* from the VSP—was not included in the VSP statutory language, it was seen as a critical element by those involved with the Ruckelshaus

process. The expectation that state and federal clean water laws will serve as a regulatory backstop is documented in correspondence to legislative leadership, the implementation budget for the law, and other sources.

Finally, even though they have different purposes and standards, both clean water laws and the VSP should provide protection to the riparian corridor. This provides an opportunity for the two programs to take advantage of each other to achieve shared goals and intended outcomes. An effective VSP program could complement the protection and pollution reduction goals of federal and state clean water laws by helping to implement the best management practices needed to meet the water quality standards and clean water laws.

More information can be found at:
http://scc.wa.gov/voluntary-stewardship/

More information on the relationship between VSP and clean water laws can be found in Appendix E”

Chapter 4: Water Quality Partnerships

Working with Local, State, Tribal, and Federal Agencies

It is important that Ecology's NPS Program take a lead role in coordinating interagency efforts related to the NPS Plan. It is the responsibility of the NPS Program to reach out to its partner organizations, support them in their efforts related to NPS pollution, and coordinate with them to ensure that mutual goals are met.

Developing and strengthening partnerships is a continuous process. Efforts to address nonpoint source pollution are most effective when local partners engage in getting implementation on the ground. Further, the scope of the nonpoint source pollution issue and the effect it has on NPDES permittees in the state necessitates multiple agencies and entities working to address pollution problems.

Ecology works collaboratively with key local and state entities to coordinate the implementation of NPS control measures in high priority watersheds. While recognizing the importance of statewide coordination, Ecology also emphasizes the need to coordinate with partners at the local level. Regional offices lead local coordination efforts through multiple avenues.

Statewide Coordination

State Advisory groups that Ecology uses to coordinate with stakeholders:

- Agriculture and Water Quality Advisory Committee.
- Water Quality Partnership.
- Water Quality Financial Assistance Council.

Agriculture and Water Quality Advisory Committee

In 2014, Ecology Director Maia Bellon created the Agriculture and Water Quality Advisory Committee. The committee includes a broad array of agricultural interests. The goal of the committee is to improve working relationships, and ensure both water quality protection and a healthy agricultural industry.

The committee discusses issues and provides advice and guidance associated with the work Ecology does to prevent agricultural pollution, including issues related to the implementation of our nonpoint program. The purpose is to provide an open forum for producers and stakeholders to meet our staff, learn about our work, and provide guidance as we tackle the challenge of ensuring water quality protection and a healthy agricultural community.

The Committee meets quarterly, and alternates meeting locations between the west and east sides of the state. The public can attend the meetings. More information on the committee, previous meetings, and future meetings can be found at:

http://www.ecy.wa.gov/programs/wq/nonpoint/Agriculture/AgWQACmtg.html

Representation-Invitations were sent to the following organizations:

Producers

- Cattle Producers of Washington
- Hop Growers of Washington
- Pacific Coast Shellfish Growers Association
- Pacific NW Direct Seed Association
- Poultry Growers Association
- Washington Association of Conservation Districts
- Washington Association of Wine Grape Growers
- Washington Cattleman's Association
- Washington Cattle Feeders Association
- Washington Hay Growers Association
- Washington State Dairy Federation
- Washington State Farm Bureau
- Washington State Water Resources Association
- Washington Horticulture Association
- Washington Tilth Producers
- Washington Potato Commission and
- Washington Wheat Growers

Environmental Organizations

- Center for Environmental Law & Policy
- Puget Sound Waterkeepers
- The Nature Conservancy and
- Washington Environmental Council

Tribal

- Columbia River Inter-Tribal Fish Commission
- Northwest Indian Fisheries Commission

Water Quality Partnership

The Water Quality Partnership is the standing stakeholder group for the Ecology's Water Quality Program. The goal of the Water Quality Partnership is to:

- Help the Water Quality Program maintain a dialogue with key interests about our work.
- Give key interests regular access to decision makers in the Water Quality Program.

The Water Quality Partnership meets quarterly at the Ecology headquarters building. Stakeholders that attend the Water Quality Partnership meetings include representatives from agricultural producer groups, tribes, environmental groups, state and federal agencies, businesses, and local government.

Financial Assistance Council

The Water Quality Financial Assistance Council (Council) provides Ecology with advice and guidance for the effective and efficient administration of its state and federal grant and loan programs. The Council is not mandated in state law, but was formed by Ecology to help ensure that the process of administering state and federal grants and loans is transparent and is supported by Ecology's clients and stakeholders. The Council is comprised of representatives from cities, counties, tribes, conservation districts, special purpose districts, environmental groups, and state and federal agencies.

Landowners, Businesses, and Agricultural Producers

Private landowners in both urban and rural areas, business owners, and agricultural producers are the most important partners in protecting water quality. Ultimately, they are the ones responsible for implementing BMPs that address nonpoint sources of pollution. Garnering their support and participation provides one of the best ways to make direct changes to protect water quality in the watersheds where they live.

In many areas of the state, Ecology staff have created strong and productive relationships with landowners. This is usually through a person to person approach, in which the Ecology staff works directly with a landowner to offer technical assistance to solve a nonpoint pollution problem. When there is a conservation district willing to work with Ecology, the landowner contact is often made by Ecology and the conservation district together. This approach has resulted in the implementation of BMPs in several watersheds in the east side of the state and grant projects on the ground.

In addition to this landowner by landowner approach, the Agriculture and Water Quality Committee proposed that Ecology do more outreach to inform citizens and producer groups in the area about what is needed to address water quality problems before it starts work in a watershed. Ecology has begun to implement this recommendation. Ecology will continue to look for ways to better communicate and partner directly with landowners, businesses and producers.

Agricultural Producer Groups

Based on feedback from the Agriculture and Water Quality Advisory Committee, Ecology is committed to better utilizing and engaging producer groups as partners in conducting education and outreach in watersheds where we are working to address nonpoint pollution problems. Producer groups can help provide a more direct line to producers, and their forums (conventions, newsletters, and meetings) to communicate our nonpoint goals and strategies.

Grant Recipients

One of our primary strategies to implement the NPS program is our grant program. Our grant recipients are the on-the-ground organizations that implement BMPs, provide technical

assistance, and work with landowners and producers to address pollution problems. One of Washington's strengths is the wide range of recipients that have received grants. Past recipients have included conservation districts, salmon enhancement groups, tribes, cities, counties, health districts, environmental groups, land conservancies, reclamation districts, universities, and groups supporting specific watersheds.

Ecology's funding guidelines allow funds to be used only for a limited number of BMPs that Ecology determined will achieve compliance with state water quality law. The BMPs must be implemented as suites of BMPs, for instance, we will not provide funds for off-stream watering or for a winter feeding area unless cattle exclusion from a stream is also installed. The wide range of grant recipients who have used funds for these BMPs now understand what Ecology has determined is required to achieve compliance with the water quality standards.

Local Governments

The three basic forms of local government in Washington are:

- Counties
- Cities
- Special purpose districts

The 39 counties of Washington were established by acts of the legislature, and are considered subdivisions of state government. Basically, the county was designed to serve as an administrative unit of the state in rural areas. The same holds true for cities and special purpose districts. As subdivisions of state government, all three are called upon to implement state legislative mandates.

Prior to 1960, several types of districts were formed to deal with an array of issues, which sometimes include environmental protection:

- Conservation districts
- Health districts
- Water districts
- Sewer districts
- Public utility districts
- Weed control districts

Since 1960, many new types of special purpose districts have been authorized by the legislature, especially with regard to environmental protection. These environmentally-oriented districts include:

- Groundwater protection districts
- Lake protection districts
- Shellfish protection districts
- Solid waste management districts
- Stormwater utility districts

Many state laws are implemented by local governments, with state agencies in an oversight and/or support role. With regard to the environment, local governments and special districts have primary authority or major implementation efforts in:

- Solid waste management.
- Growth management and land use.
- Stream restoration and rehabilitation.
- Sewage systems, both on- and off-site.
- Road construction and maintenance.
- Shorelands management.
- Stormwater management.
- Drinking water protection.
- Used oil and household toxics.
- Irrigation water and return flows.

Local governments and special purpose districts are the on-the-ground implementers of many nonpoint pollution control activities. Ecology relies heavily on the continued commitment of energy and resources by these entities. Additionally, local governments can often play an important role in monitoring and correcting nonpoint source pollution. Ecology is committed to assisting local governments with monitoring and enforcement.

State agencies can also assist with financial assistance to local governments through the various funding programs they administer. Ecology supports the goals of the nonpoint program by funding local projects and programs designed to achieve the WQ Standards and support the implementation of watershed based plans.

Conservation Districts and State Conservation Commission

Conservation districts are county-based, non-regulatory governmental entities that assist in meeting local resource needs with technical assistance and financial resources. These districts report to the Washington State Conservation Commission (WSCC) and help landowners with on-the-ground conservation projects that enable them to be good stewards of their property. Each conservation district is directed by a board of supervisors: three elected locally, two of which must be landowners or operators of a farm. This ensures a local perspective on projects to protect both working lands and ecological functions.

WSCC is the coordinating state agency for all 45 conservation districts in Washington State. WSCC was established in 1939 as a nonregulatory state agency providing assistance to conservation districts across the state. WSCC has no regulatory function, but works primarily through education and through facilitating dialogue between land owners, land managers, local stakeholders, and state and federal agencies on critical natural resource conservation issues.

Incentive-based programs at the WSCC provide funding and technical assistance for the protection of water quality and other important resources. Programs implemented by the WSCC include the Conservation Reserve Enhancement Program, which provides rental payment to landowners to lease riparian habitat for protection from agricultural activities. The WSCC also administers a Water Quality grant program.

The Voluntary Stewardship Program is a relatively new program implemented by the WSCC. It's an alternative planning process that uses incentives instead of regulations to promote the protection of critical areas on agricultural lands. Counties opting in to this program are eligible for funding for the development of watershed work plans to set goals and benchmarks for protection and enhancement of wetlands and other critical areas on agricultural lands. At this time, only two counties (Thurston and Chelan) have received funding to develop watershed work plans. If additional funding is not received, counties that have opted into the program and not received funding will need to develop regulations addressing agriculture and critical areas.

Districts offer a range of voluntary services including assistance with erosion control, habitat restoration, manure management, wildfire prevention/mitigation, stormwater management, forest plans, irrigation efficiency, noxious weed control, fish barrier removals, livestock stream crossings, and more. [74]

Beyond grant programs, districts are a key partner in the delivery of technical and financial assistance to private landowners and producers. Further, districts play a critical role in landowner and producer outreach and engagement, and help create support for water quality goals in their communities.

Many districts are active participants in the development and implementation of TMDLs. Districts represent one of the major recipients of federal 319 grant funds, and many conduct monitoring projects to determine effectiveness of completed projects.

Although not all districts work with Ecology, those that accept Ecology grants to implement BMPs follow our funding guideline that allow the use of only a few specific suites of BMPs that Ecology determined will achieve compliance with state water quality law.

Through grants and other opportunities, Ecology partners with districts working on soil erosion, stream protection and restoration, and livestock projects. In addition, Ecology supports districts working on direct-seed projects and the Farmed Smart certification program, along with other efforts that support the implementation of the goals of the NPS plan. Some districts have also expanded their services to include implementing stormwater BMPs and Ecology sees this as an emerging opportunity. Ecology will continue to look for the right opportunities to partner on stormwater projects, low impact development, and green infrastructure strategies/initiatives.

Districts are a key partner in our watershed evaluation process. Districts have helped with education and outreach efforts, partnered on site visits, and have been a primary resource for technical and financial assistance. Ecology will continue to partner with districts during watershed evaluations, and look to tailor how we work with individual districts to meet their local needs. Across all districts we will work on increasing communication around what we are seeing and about the best fixes to assist districts in being able to better serve landowners.

Finally, Ecology will work to respond to feedback from districts that highlighted the need for Ecology to be clear about the BMPs needed to protect water quality. With that guidance they

[74] For more information on the services provided by conservation districts as well as the financial and technical assistance programs they administer please see: http://scc.wa.gov/about-the-districts/.

can reduce risk for the landowners they work with. Additionally, they expressed their desire to provide flexibility, and recognize that there can be multiple ways of achieving equivalent water quality results. We will also work to respond to feedback that our strategies and programs need to be cost effective and balance environmental goals, available funding, cost benefits, return on investment, and landowner participation.

Local Health Departments and Districts

Washington has 31 county health departments, three multi-county health districts, and two city-county health departments. We refer to them as local health jurisdictions. They are local government agencies that carry out a wide variety of programs to promote health, help prevent disease, and build healthy communities. Related to nonpoint source pollution, they regulate on-site sewage systems (see Chapter 3), and can fill key roles in PIC programs.

Interagency Project Team

The Interagency Project Team (Team) consists of staff from the surface water departments of Clark, King, Kitsap, Pierce, Snohomish and Thurston counties and staff from the Washington State Department of Transportation (WSDOT). The Team formed to improve implementation of the Clean Water Act (CWA) Section 303(d) and total maximum daily load (TMDL) programs in Washington State. They developed a report and set of recommendations which they sent to Ecology in 2014. The recommendations focused on improving the Water Quality Assessment and Total Maximum Daily Load Programs in Washington State, inclusive of the nonpoint program. Their recommendations related to nonpoint pollution included:

- Recommendation 2: Implement existing regulatory authority related to unpermitted and nonpoint sources— Utilize existing legal authority (WAC 173-201-510 and RCW 90.48.080) to control unpermitted and nonpoint sources and ensure that LAs and WLAs are equitable.
- Recommendation 9: Develop consistent TMDL implementation expectations.

Both of these recommendations are consistent with actions Ecology believes are necessary if we are to address nonpoint pollution in Washington.

Washington Tribes

Washington is home to 29 federally recognized and seven non-federally recognized Native American tribes.[75] Traditional fishing areas for tribes encompass essentially all of Washington.

Tribal representatives participate in the development and implementation of TMDLs, and are also recipients of federal 319 grant funds. They provide technical expertise on natural resource issues and are an important partner in implementing the state's nonpoint program.
Tribal resources, including shellfish and salmonids, continue to be negatively impacted by nonpoint source pollution. Many rivers and streams in the state exceed temperature standards.

[75] Governor's Office of Indian Affairs, 2015. March 2015 access to web link: Tribal Map at the following link: http://www.goia.wa.gov/tribal_gov/documents/WAStateTribalMap.pdf and Governors Office of Indian Affairs at: http://www.goia.wa.gov/.
Governor's Salmon Recovery Office. 1999. Summary Statewide Strategy to Recovery

High water temperatures threaten the health and survival of salmon. Likewise, nonpoint source pollution in the form of sediment and nutrient inputs threaten the health and survival of salmon. Pathogen pollution from a variety of nonpoint sources, including on-site sewage systems, farm animals, pets, sewage from boats, and stormwater runoff can cause shellfish bed closures.

Ecology recognizes the importance of salmon and shellfish resources to the tribes and will utilize the following regulations, policies and guidance to implement the NPS plan:

- Clear guidance related to BMPs necessary for all nonpoint sources to achieve compliance with all WQ Standards.
- Enforceable mechanisms in place to ensure compliance with the WQ Standards.
- Transparency and accountability for collecting sufficient implementation data to determine whether programs are achieving compliance with WQ Standards.
- Ecology will work collaboratively to address improper manure management and application that affect tribal fishing areas and shellfish beds. At a minimum we will look to work on the following issues:
    - Need for manure sources to be analyzed for nutrient content prior to application, and include an accurate accounting of N-P-K rates.
    - Manure application timing that optimizes nutrient uptake by plants and eliminates runoff or leaching.
    - Manure application occurring in the right location, including adequate setbacks from surface waters, drainage, and other locations that are likely to result in transport away from the root zone.
    - Manure being applied in correct amounts, i.e., agronomic rates, such that the nutrients applied will be utilized by target crops, and excess nutrients will not accumulate in or on soils and be subject to runoff or leaching.
    - Manure storage and location and the potential for leaching to groundwater via unlined lagoons, overtopping due to insufficient storage capacity, or subject to breaches and leaks.
- Implementation of temperature standards and addressing thermal loading.
- Address hydromodification issues including the following sources: agricultural ditching, dredging and maintenance of degraded streamside and instream conditions; transportation projects, stream crossings, and culverts; flood control projects; and land development.
- Sediment loading issues.
- Water quality and water withdrawal issues and their nexus with water quality.
- The need for a consistent outreach program that can uniformly convey to the public the practices needed to achieve compliance with the WQ Standards.

Additionally, Ecology will work to gain approval for the state's CZARA program.

State Agencies

State agencies play a key role in implementing authorities that can help in preventing and controlling NPS pollution. No single state agency has all the tools to solve nonpoint source pollution problems. The state natural resource agencies in the following outline have some type of program or resources that can support the implementation of the NPS plan. The primary authorities of state agencies are outlined in Chapter 2. Ecology recognizes the need to share

resources, coordinate efforts and programs, and send consistent messages on what is needed to meet WQ Standards and the goals of the NPS plan.

State agencies include:

- Washington State Department of Health (DOH) – The mission of the DOH is to protect and improve the health of people in Washington State. Its programs and services help prevent illness and injury, promote healthy places to live and work, provide education to help people make good health decisions and ensure the state is prepared for emergencies. DOH and local health districts regulate on-site sewage systems.
- Puget Sound Partnership (PSP) - PSP serves as the backbone agency for Puget Sound recovery. The PSP coordinates the efforts of tribes, scientists, businesses, and non-profit groups to set priorities, implement a regional recovery plan, and ensure accountability for results.
- Washington State Recreation and Conservation Office (RCO) - RCO is a state agency that manages grant programs to create outdoor recreation opportunities, protect the best of the state's wildlife habitat and farmland, and help return salmon from near extinction. The Salmon Recovery Fund managed by RCO provides financial assistance to a wide variety of projects that address nonpoint sources of pollution.
- Washington State Conservation Commission (WSCC) - The WSCC is the coordinating state agency for all 45 conservation districts in Washington State. Together, the WSCC and conservation districts provide incentive-based programs that make it easier and more affordable for private landowners to implement conservation on their property (see previous section on Conservation Districts and State Conservation Commission for more information on these entities).
- Washington State Department of Agriculture (WSDA) - is headquartered in Olympia, with employees in every county in the state. Their staff carries out a broad spectrum of activities that support the producers, distributors, and consumers of Washington's food and agricultural products. WSDA manages the Dairy Nutrient Management program.
- Washington State Department of Natural Resources (DNR) - In partnership with citizens and governments, the Washington State DNR provides innovative leadership and expertise to ensure environmental protection, public safety, perpetual funding for schools and communities, and a rich quality of life. DNR is the primary implementer of the state Forest Practices Rules.
- Washington State Department of Fish and Wildlife (WFDW) - The mission of WDFW is to preserve, protect and perpetuate fish, wildlife and ecosystems while providing sustainable fish and wildlife recreational and commercial opportunities.
- Washington State Department of Commerce (Commerce) - Grow and improve jobs in Washington State by championing thriving communities, a prosperous economy, and sustainable infrastructure. Commerce oversees the state Growth Management Act.
- Washington State University (WSU) - WSU Extension is the front door to the University. Extension builds the capacity of individual, organization, businesses and communities, empowering them to find solutions for local issues and to improve their quality of life. The WSU Puyallup Research and Extension Center is the home of the Stormwater Center, which serves as a clearinghouse for stormwater technology, information, and permittee assistance.

- Washington State Department of Transportation (DOT)--The Washington State Department of Transportation is the steward of a multimodal transportation system and responsible for ensuring that people and goods move safely and efficiently. Many of the roads, highways and bridges managed by DOT are covered by stormwater permits.
- Washington State Parks and Recreation Commission - The Washington State Parks and Recreation Commission cares for Washington's most treasured lands, waters, and historic places. State parks connect all Washingtonians to their diverse natural and cultural heritage and provide memorable recreational and educational experiences that enhance their lives.
- University of Washington SeaGrant (WSG) - Washington Sea Grant (WSG) identifies, addresses, and funds important marine issues, shares its expertise with coastal businesses and communities, provides tools for the management of ocean and coastal resources, and engages the public in protecting and sustainably using those resources.

Federal Agencies

There are many federal agencies in Washington that operate with different mandates and responsibilities. This is, in large part, due to the diversity and complexity of Washington's natural environment.

For example, the strategic location of the Puget Sound region makes it an ideal home for several military installations such as Joint Base Lewis-McChord, Puget Sound Naval Shipyard, Bangor submarine base, and Whidbey Island Naval Air Station. The Puget Sound region is surrounded by U.S. Forest Service (USFS) lands and the Olympic National Park.

The Palouse region of eastern Washington is the home of some of the most productive nonirrigated agricultural lands found anywhere in the United States. These lands are in close proximity to the Snake River and Columbia River. Interested federal agencies are the Natural Resource Conservation Service (NRCS), Farm Service Agency (FSA), The Bureau of Reclamation (BOR), Bonneville Power Administration (BPA), and the Army Corps of Engineers (COE).

The Yakima Valley is another good example of federal agency presence. Not only are NRCS and FSA actively engaged with agricultural activities, the BOR, the COE, and the BPA all have responsible roles and mandates. In addition, the US Army's Yakima Firing Range is one of the largest military bases in the United States.

These are a few examples of the roles federal agencies play in using and managing land in the state. Federal agencies are the second largest group of landowners in the state (next to private individuals), and a major source of funding for cost share and restoration efforts.

If Ecology identifies federal lands and activities that are not managed consistently with state nonpoint program objectives, we will work with EPA and those federal agencies to resolve issues at the federal agency level.

List of Federal Agencies and Responsibilities

Many federal agencies in Washington either contribute to nonpoint source pollution, or help control nonpoint source pollution through their water quality programs – or both.

- Army Corps of Engineers (COE) - is responsible for maintenance of harbors and navigable waterways and wetlands management. COE operates and maintains many large dams along the Columbia and Snake Rivers.
- Bonneville Power Administration (BPA)-controls numerous dams along the Columbia and Snake Rivers.
- Bureau of Land Management (BLM) - has relatively small holdings within the state on which grazing activities occur.
- Bureau of Reclamation (BOR) - owns and manages hundreds of miles of irrigation canals in eastern Washington, and some hydroelectric dams.
- Department of Energy (DOE) - manages the Hanford Reservation.
- Department of Defense (DOD) - has several bases in Washington, due to the strategic location of the state and its access to the Pacific Rim.
- Environmental Protection Agency (EPA) administers the Clean Water Act. It also partners with NOAA's National Ocean Service to administer the Coastal Nonpoint Program under CZARA.
- Federal Highway Administration (FHA) - has hundreds of miles of highways in Washington.
- Fish and Wildlife Service (FWS) - is responsible for habitat conditions related to the health and well-being of fish and wildlife. FWS works to protect ESA-listed resident fish such as bull trout and cutthroat trout.
- U. S. Geological Survey (USGS) - routinely monitors both surface and ground water through its National Water Quality Assessment Program.
- Natural Resource Conservation Service (NRCS) - develops conservation practices for its *Field Office Technical Guides,* and provides financial and technical assistance to landowners to implement the practices that a landowner chooses.
- National Park Service (NPS) - owns thousands of acres of parkland, including Mount Rainer National Park, Olympic National Park, and North Cascades National Park.
- National Oceanic and Atmospheric Administration (NOAA) - The National Marine Fisheries Service oversees the status of endangered species and the National Ocean Service partners with EPA to administer the Coastal Nonpoint Program under CZARA.
- US Forest Service (USFS) - manages about 20% of the land area in the state.

Federal Lands - Forestry

Federal agencies are required to conduct their activities so as to be at least as protective as the complementary state programs. Thus in Washington, federal agencies must design their programs in a manner that will comply with the state WQ Standards. They need not use the same forestry prescriptions as those required by the state Forest Practices Rules, but the results

need to achieve the same regulatory objective of meeting the state WQ Standards. Ecology will continue to work with federal agencies to ensure their actions are designed to be as protective as what is required by state rules, and that they comply with the WQ Standards.

Although there are numerous federal agencies that affect forest management in Washington, it is primarily the USDA Forest Service that affects water quality attainment through forest management activities.

United States Department of Agriculture-Forest Service

The US Department of Agriculture (USDA) - Forest Service manages its lands under federal land and resource conservation plans and strategies such as those established under the Northwest Forest Plan. Ecology entered into a Memorandum of Agreement (MOA) with the USDA Forest Service, Region 6 in 2000. The purpose of the MOA is to clarify roles and Ecology's expectations so that the Forest Service would achieve compliance with state WQ Standards. Ecology hopes to continue to strengthen its formal working relationship with the US Forest Service to ensure the WQ Standards are met on these key federal lands.

The MOA contains a specific requirement that roads on Forest Service lands would be brought up to current state standards by 2015. Approximately five years into the MOA, however, the Forest Service recognized it would not be able to comply with the road requirements at current funding levels.

There are 22,000 miles of USDA Forest Service roads in Washington. Deteriorating, unmaintained, and poorly located forest roads add sediment-laden runoff into streams, changing stream flow dynamics and harming dwindling runs of threatened and endangered salmon that need cold, clear water to thrive and reproduce. Sediment decreases drinking water quality and increases the need for expensive community water filtration systems. Two-thirds of the runoff from problem roads drains into an already ailing Puget Sound. Unlike private and state forests, there has been no program designed to aggressively identify and correct road problems on federal forest lands. Ecology working in partnership with other key stakeholders in Washington has helped the Forest Service receive congressional funding to help address its growing backlog of road projects as part of the Legacy Roads and Trails program. This funding, while helpful, has not kept pace with the growing backlog of needed road repairs. While addressing road problems is being done only as the limited appropriation funds permit, all National Forests are now working to have updated road analysis plans in place by October 2015.

Other Federal Landowners

Bonneville Power Administration (BPA) and Bureau of Land Management (BLM) (only about 10,000 acres) are the two federal agencies besides the USDA Forest Service with noteworthy presence in Washington's forested watersheds. Similar to the USDA Forest Service, the BLM may establish roads and harvest timber so long as the prescriptions applied result in compliance with the state WQ Standards.

The BPA primarily harvests timber within and adjacent to power transmission line rights of way. BPA rights of way situated adjacent to streams are often targeted for heavy use by recreational off-road vehicle users. This can result in significant localized damage to stream beds and excessive sedimentation. The responsibility of federal agencies to manage their lands in compliance with state regulations is unfortunately not always matched with the necessary

commitment of resources to accomplish that objective. Ecology currently has no written agreement with either of these agencies on managing their lands for water quality.

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Chapter 5: Financial Incentive Programs

Both state and federal funding programs are available to landowners, businesses, and agricultural producers which can support the goals of the nonpoint program. Ecology will work with partners to coordinate funding and promote consistency with the goals of the state NPS plan. Additionally, Ecology will work to coordinate the collection of consistent and detailed implementation data to better understand the effectiveness of financial incentive programs.

Coordinated Investment

Ecology will look to support coordinated investment strategies that help meet the goals of the NPS plan. Specifically, Ecology will look to support coordinated investments that target projects that implement TDMLs and STIs, while also solving multiple environmental problems in a more efficient way. Where possible we will work to leverage multiple sources of funding and fund projects that meet water quality, salmon and shellfish goals. Further, we will look to support efforts that include multiple parcels in a watershed and maximize opportunities to secure continuous BMP implementation over longer stretches of streams and rivers.

Key coordinated investment principles include:

- Focusing on the implementation of BMPs and projects that ensure compliance with state WQ Standards at the parcel level.
- Supporting projects communicating clear standards and compliance expectations.
- Supporting the implementation of TMDLs and STIs.
- Supporting projects that provide multiple environmental benefits—water quality, salmon and shellfish goals.
- Focusing on outcomes and accountability through collecting specific BMP implementation data.
- Maximizing opportunities to secure continuous BMP implementation over longer stretches of streams and rivers.

In March 2015, Ecology formalized creation of a Coordinated Strategic Investment Group made up of Ecology managers. The purpose of the group is to coordinate agency investments that support salmon recovery, habitat restoration, and toxics cleanup. The idea is that the agency can use funds from different sources to create integrated investment packages that will advance watershed-based ecosystem improvement and recovery.

Financial Assistance Sources

Here is a summary of key sources of financial assistance available in Washington State:

Ecology Water Quality Combined Financial Assistance Program
Department of Ecology runs an annual competitive water quality funding cycle program that includes funding from the state Centennial Clean Water program, federal Section 319 nonpoint grant program, State Revolving Fund loan program, and the state Stormwater Financial Assistance grant program. Centennial Grants are state funds that provide grants for water quality infrastructure and nonpoint source pollution projects. Eligible nonpoint projects include:

livestock fencing, off-stream water development, stream crossings, riparian plantings, and subsidization of on-site sewage repair and replacement local loan programs. There is also limited funding available for education and outreach.

In addition, the federal EPA provides Section 319 grant funds to Washington State. The Section 319 program offers funds for nonpoint source pollution control projects similar to the state Centennial program. These two funding sources are combined with the Clean Water State Revolving Fund loan program and stormwater grant program into a single combined financial assistance funding cycle. The Revolving Fund loan program can also fund nonpoint source projects. The Stormwater Financial Assistance Program provides funds to reduce impacts of non-point source stormwater runoff from existing development. Projects may integrate green infrastructure solutions.

Conservation Reserve Enhancement Program (CREP)
CREP provides funding to farmers and ranchers to help protect stream corridors and conserve priority salmon stocks. Landowners enroll land located along water bodies to create buffer zones. These buffers are planted with native trees and shrubs to cool stream temperatures and filter polluted run-off. Participants are reimbursed for 100% of the costs to establish the buffer. They also receive an annual rental payment per acre enrolled based on NRCS soil rental rates. CREP is funded by the USDA Farm Service Agency and the state of Washington. The state portion is managed by the Conservation Commission.

Continuous Conservation Reserve Program (Continuous CRP)
The Continuous CRP program is similar to CREP. It provides cost-share to producers to implement riparian buffers on agricultural land. Continuous CRP program pays 90% cost-share for fencing, livestock water, and tree planting, and has a rental payment per acre over the 10-15 year contract. The main difference between CREP and Continuous CRP is that CREP is primarily available on streams where threatened runs of salmon or steelhead are currently present or part of their historic range.

Bonneville Power Administration (BPA)
BPA funds salmon recovery projects. The funding is appropriated through a process developed by the Northwest Power and Conservation Council (NWCC). Over 60 subbasins exist within the Columbia basin and each has developed a subbasin plan to help guide salmon recovery and wildlife habitat protection. Millions of dollars are made available every year to address priority projects throughout the Columbia Basin.

Environmental Quality Incentive Program (EQIP)
The Environmental Quality Incentives Program (EQIP) is designed to promote agricultural production, forest management, and environmental quality. Through EQIP, NRCS provides financial assistance to eligible farmers and ranchers to address soil, water, and air quality, wildlife habitat, surface and groundwater conservation, energy conservation, and related natural resource concerns. The program requires the development of lists showing practices eligible for payment, allowed payment rates, criteria used to rank applications, and a description of the program and the application process. This is a locally driven process where “local work groups” made up of local governments, agencies, and agricultural producers identify specific annual priorities for funding.

Salmon Recovery Funds
In 1999, the Washington State Legislature created the Salmon Recovery Funding Board. The board provides grants to protect or restore salmon habitat and assist related activities. Since 1999, the board has awarded more than $477 million in grants to more than 1,700 projects in 31 of the state's 39 counties. The Salmon Recovery funds are offered through an annual competitive process. The funds can be utilized for many types of fish passage and habitat improvements including projects that can help to protect water quality.

Ecology Direct Implementation Funds (DIF)
The Department of Ecology may identify a small amount of the federal Section 319 funds it receives to implement a TMDL or install nonpoint pollution control BMPs in support of an STI project. These are small grants that focus on specific implementation actions. The projects are sponsored by Ecology staff to achieve a specific water quality objective. Often, these projects involve funding riparian protection and planting.

Ecology Coastal Protection (Terry Husseman) grants
The Coastal Protection (Terry Husseman) grants are small grants (less than $50,000) available for specific on-the-ground actions. The coastal protection account was created to utilize money collected via water quality penalties for water quality protection. Availability of funds varies.

Floodplains by Design
The Department of Ecology's Floodplains by Design program is intended to reduce flood risk to communities while also improving natural ecosystem functions and improving habitat. The program seeks to combine efforts for flood reduction and salmon and habitat recovery, while also protecting working lands like agriculture, forestry, and shellfish production. It relies on broad stakeholder support to promote approaches that are beneficial to all involved parties.

State Conservation Commission grants
The WSCC has historically made funds available for projects proposed by conservation districts. Additionally, the WSCC has provided salmon and shellfish grants for projects proposed by conservation districts.

Regional Conservation Partnership Program
The Regional Conservation Partnership Program (RCPP) fund is part of the 2014 Farm Bill. It promotes coordination between NRCS and its partners to deliver conservation assistance to producers and landowners. The Columbia River Basin is one of eight priority watersheds that will receive 35% of the annual funding available through the program. Projects that address multi-state issues are also prioritized. The fund is competitive and uses the rules of existing NRCS programs (EQIP, CSP, ACEP and HFRP).

National Estuary Program Funds
The EPA provides federal funding to support efforts to protect and restore Puget Sound. Most of the funds are used for financial assistance to state, local and Tribal governments for their efforts to implement the Puget Sound Action Agenda. EPA passes these grants through state agencies.

Family Forest Fish Passage Program

The Family Forest Fish Passage Program (FFFPP) provides state cost share money to private forestland owners for replacing culverts and other stream crossing structures that keep trout, salmon, and other fish from reaching upstream habitat. Road culverts and other structures that are aging, too small, or improperly installed can block fish from reaching their spawning grounds. The same barriers then impede the movement of young rearing salmon to the ocean. FFFPP funds the replacement of eligible barriers with new structures. Since 2003, nearly 200 landowners have taken advantage of the program that has replaced 244 barriers and opened more than 524 miles of stream habitat. Fish passage barrier replacement also provide for the effective movement of woody debris downstream where it contributes to the physical and chemical integrity of the stream to the benefit of water quality.

Forestry Riparian Easement Program

The Forestry Riparian Easement Program compensates eligible small forest landowners in exchange for a 50-year easement on "qualifying timber." This is the timber the landowner is required to leave unharvested as a result of forest practices rules protecting Washington's forests and fish. Landowners cannot cut or remove the qualifying timber during the easement period. The landowner still owns the property and retains full access, but has "leased" the trees and their associated riparian function to the state. The intent of this program is to reduce the economic incentive to take land out of forestry in recognition that well-managed forest lands provide significant benefits to water quality and the fish and wildlife that depends on healthy streams.

Chapter 6: Recommended Management Measures

Best Management Practices (BMPs) can be implemented to prevent, mitigate, or eliminate nonpoint source pollution resulting from a particular land-use activity. Under the Federal Clean Water Act (CWA) and the Coastal Zone Act Reauthorization Amendments of 1990 (CZARA), Ecology is responsible for designating management measures and suites of BMPs that comply with Washington State's WQ Standards. Additionally, Ecology is the agency responsible for articulating how nonpoint pollution sources can comply with the state Water Pollution Control Act and the state WQ Standards.

Nonpoint source pollution has been documented to occur from urban and residential development, hydromodification, marinas and boating areas, agricultural activities, and forest practices. Ecology recognizes the need to have specific guidance covering all categories of nonpoint source pollution.

When identifying suites of BMPs and measures to control each category and subcategory of nonpoint sources, Ecology will meet the following objectives:

- Identified suites of BMPs and measures will be designed to comply with the WQ Standards at the site level and contribute to the protection of beneficial uses of the receiving waters, and ensure compliance with state and federal law.
- Utilize best available science to identify BMPs and measures.
- Apply the concept of AKART.[76]

This chapter lays out the process that Ecology will use to identify management measures and BMPs for each category of nonpoint pollution in compliance with the CWA and CZARA.

Federal Requirements

Section 319 of the CWA requires that state nonpoint source (NPS) management programs "*identify best management practices and measures to control each category and subcategory of nonpoint sources…*" EPA guidance for NPS programs reinforces that state NPS management programs must include an "identification of measures (i.e., systems of practices) that will be used to control NPS pollution, focusing on those measures which the state believes will be most effective in achieving and maintaining WQ Standards." Furthermore, EPA guidance allows for states to identify measures "individually … or presented in manuals or compendiums, provided that they are specific and are related to the category or subcategory of nonpoint sources."

[76] WAC 173-201A-020 states: "AKART" is an acronym for "all known, available, and reasonable methods of prevention, control, and treatment." AKART shall represent the most current methodology that can be reasonably required for preventing, controlling, or abating the pollutants associated with a discharge. The concept of AKART applies to both point and nonpoint sources of pollution. The term "best management practices," typically applied to nonpoint source pollution controls is considered a subset of the AKART requirement.

CZARA requires states to develop management measures necessary to ensure attainment of the WQ Standards. Management measures are defined as "economically achievable measures" reflecting the "greatest degree of pollutant reduction achievable" through the "best available nonpoint pollution control practices, technologies, processes, siting criteria, operating methods or other alternatives." Management measures are intended to prevent and control nonpoint source pollution, and are implemented through the use of management practices.
While the management measures must be developed to ensure attainment of WQ Standards, the "management measure" approach is more akin to a technology-based rather than water-quality-based approach to addressing nonpoint pollution.

Any manuals, compendiums, or other guidance that identify BMPs and measures adopted by Ecology to fulfill the requirements of Section 319 do not have any independent regulatory authority and will not establish new environmental regulatory requirements.

Existing Guidance

Ecology presently has manuals that identify appropriate BMPs in place for several kinds of land uses that can generate pollution. Current Ecology manuals and guidelines include:

- Stormwater Management Manual for Western Washington
- Stormwater Management Manual for Eastern Washington

Additionally, Ecology's grant and loan funding guidelines include information on BMPs that are eligible for funding with Section 319 grants. One of the key objectives of the funding guidelines is to ensure that BMPs implemented with Ecology grants comply with the WQ Standards at the site level. In 2013 the EPA and NOAA notified Ecology that it must take additional actions to protect salmon and salmon habitat. EPA required Ecology to include conditions on federal pass-through grants to be consistent with National Marine Fisheries Service (NMFS) buffer guidance to ensure compliance with the WQ Standards and help protect and recover Washington's salmon runs.

Outside of the information provided in our funding guidelines, Ecology recognizes our state lacks freestanding manuals, compendiums, or other guidance that identify BMPs for agriculture that ensure compliance with the WQ Standards. However, we will continue to address agriculture sources of pollution as outlined in Chapter 3.

Existing Regulatory Programs and Permits

Where existing regulatory programs provide specific oversight and enforcement authority related to a category of NPS pollution, Ecology will generally defer to the implementation of those programs, and not develop independent guidance. Current regulatory programs include:

- Forest Practices Rules
- Onsite Sewage Systems Regulations and Ordinances
- Dairy Nutrient Management Program

Additionally, some sources that previously may have been considered nonpoint pollution sources are now regulated as point source discharges and covered under NPDES and/or State Waste

Discharge general permits. Any source that is ultimately regulated under a NPDES permit is no longer subject to the BMP guidance requirements of Section 319 and CZARA. However, as covered in Chapter 3, Ecology will work to ensure that our nonpoint pollution source, CZARA, and TMDL programs are well-integrated with our permit programs by clearly defining when an activity requires a permit versus being covered under our NPS program, and utilizing consistent guidance to inform the implementation of both programs. Further, state waste discharge permits can cover sources that may be considered nonpoint in nature.

Current permits include:

- Aquatic Pesticide Applications
- Boatyards
- Bridge and Ferry Terminal Washing
- Concentrated Animal Feeding Operation (CAFO) - Facilities that have a discharge
- EPA Vessel General Permit
- Fresh Fruit Packing
- Sand and Gravel mining operations
- Stormwater:
    - Construction Stormwater
    - Industrial Stormwater
    - Municipal Phase I and Phase II Permits
    - WSDOT Municipal Stormwater
- Upland Fin-Fish Hatching and Rearing
- Vessel Deconstruction

Information on these statewide regulatory programs and permits is provided in Chapters 2 and 3, and details on the above permits can be found at: http://www.ecy.wa.gov/programs/wq/permits/genpermits.html.

Stakeholder Involvement

Ecology recognizes the need for early stakeholder involvement in any process that develops new management measure and BMP guidance, or updates existing guidelines or manuals. Ecology will seek involvement from local, state, tribal and federal agencies, as well as public interest groups, industries, academic institutions (including the Washington Stormwater Center), private landowners and producers, and concerned citizens during all steps of this process. Further, Ecology will seek the input of the Agriculture and Water Quality Advisory Committee (agriculture-related management measures), the Water Quality Partnership and the Financial Assistance Council on developing any processes necessary under this chapter.

Next Steps

To ensure compliance with Section 319 and CZARA requirements, Ecology will take the following actions:

- Perform a gaps analysis:

    - Work with EPA and NOAA to identify current "manuals or compendiums" for categories or subcategories of nonpoint pollution that fulfill the requirements of CWA Section 319 and CZARA.
    - Work with EPA to identify gaps where Ecology does not have current "manuals or compendiums" for categories or subcategories of nonpoint pollution that fulfill the requirements of CWA Section 319 and CZARA.
- As necessary work with EPA, NOAA, stakeholders and tribes to design a process to identify measures "individually … or presented in manuals or compendiums" that fulfill the requirements of CWA Section 319 and CZARA for any gaps that are identified, or alternatively consider covering under a general permit with the goal of incorporating guidance in the next update to the NPS plan (2020).
    - EPA and NOAA have identified agriculture as a gap. Ecology will complete work with the Agriculture and Water Quality Advisory Group, Tribes, and other stakeholders to develop a process to address gaps in BMP guidance for agriculture categories of nonpoint pollution.
- As necessary, update funding guidelines and Chapter 3 to support implementation of suites of BMPs that are identified through the above process.

Additionally, Ecology will support updates to BMP guidance as necessary to ensure compliance with the WQ Standards.

- Support updates to the Stormwater Management Manual for Western Washington.
- Support updates to the Stormwater Management Manual for Eastern Washington.
- Support the Forest Practices Rules' adaptive management process.
- Support adaptive management and updates to any new BMP guidance that is developed to ensure that the state WQ Standards are achieved and maintained.

July 2015-June 2016 Timeline

EPA and NOAA have identified BMP guidance for agricultural sources as a gap in our program. Ecology will work with stakeholders to develop and implement a process to develop BMP guidance for agriculture categories of nonpoint pollution. The following is a list of steps Ecology will take in the next year to address this gap:

- By December 31, 2015 Ecology will meet with stakeholders [including the Agriculture and Water Quality Advisory Committee, Tribes, environmental organizations, local governments, conservation districts, state agencies (WSCC, WSDA, DOH, Department of Fish and Wildlife, etc.), federal agencies (EPA, NOAA, NRCS, etc.), and other interested stakeholders] to receive input on what type of process we should use to develop BMP guidance for agricultural sources. Based on stakeholder input, Ecology will design a proposed process.
- By March 31, 2016 Ecology will meet with stakeholders [including the Agriculture and Water Quality Advisory Committee, Tribes, environmental organizations, local governments, conservation districts, state agencies (State Conservation Commission, Washington State Department of Agriculture, Department of Health, Department of Fish and Wildlife, etc.), federal agencies (EPA, NOAA, NRCS, etc.), and other interested stakeholders] to receive feedback on the proposed process. Based on feedback Ecology will finalize the process we will use to develop BMP guidance.

- By June 15, 2016 Ecology will submit to EPA and NOAA the process we will use to develop BMP guidance for agricultural sources.

Ecology will update this chapter to include information on the process and timelines for completing the process after we submit that information to EPA and NOAA.

Each BMP developed using this process will become part of Ecology's nonpoint program as soon as it is finalized. As necessary we will update our funding guidelines and Chapter 3 to support the implementation of suites of BMPs that are developed and finalized through this process.

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Chapter 7: Monitoring

The federal Clean Water Act (CWA) gives states the primary responsibility for implementing programs to protect and restore water quality, including monitoring and assessing the nation's waters and reporting on their quality. In Washington State, Ecology is the delegated agency primarily responsible for implementing the requirements and provisions of the CWA. Consequently, Ecology is also the agency responsible for satisfying the majority of the water quality monitoring and reporting requirements of the CWA. The purpose of this section is to describe Washington State's current water quality monitoring program.[77]

While the monitoring program's focus is broader in scope than the nonpoint program, it supports the nonpoint program in a variety of ways. For example, the monitoring program is used to identify waters of the state that have impairments, help connect impairments to nonpoint sources of pollution, help identify unimpaired waters, help prioritize waters for implementation, and support effectiveness monitoring.

This section starts by describing the overall state monitoring strategy and Water Quality Assessment (WQA). Then key monitoring programs are briefly described to provide an overview of ongoing monitoring efforts in the state. After describing these key Ecology monitoring efforts, a brief description of other monitoring programs in the state is included to provide a more complete picture of ongoing monitoring that can support the state's nonpoint program. Finally, this section concludes with a description of effectiveness monitoring, quality assurance, and data management.

Ecology's Monitoring Strategy

Washington State adopted a tiered approach to monitoring in order to most efficiently meet its highest priority monitoring objectives at the various geographic and temporal scales needed for effective environmental management. This means that Ecology and its partner agencies will continue to conduct a variety of extensive and intensive, short- and long-term monitoring programs, and employ a number of monitoring designs to meet a wide range of monitoring objectives.

At Ecology the Environmental Assessment Program (EAP) serves as the technical arm of the agency and conducts much of the water quality monitoring needed to inform regulatory actions. The mission of EAP is to "To measure, assess, and communicate environmental conditions in Washington State."

[77] More information on Ecology's Monitoring program and strategy can be found at [Report title] and [link to EAP's webpage].

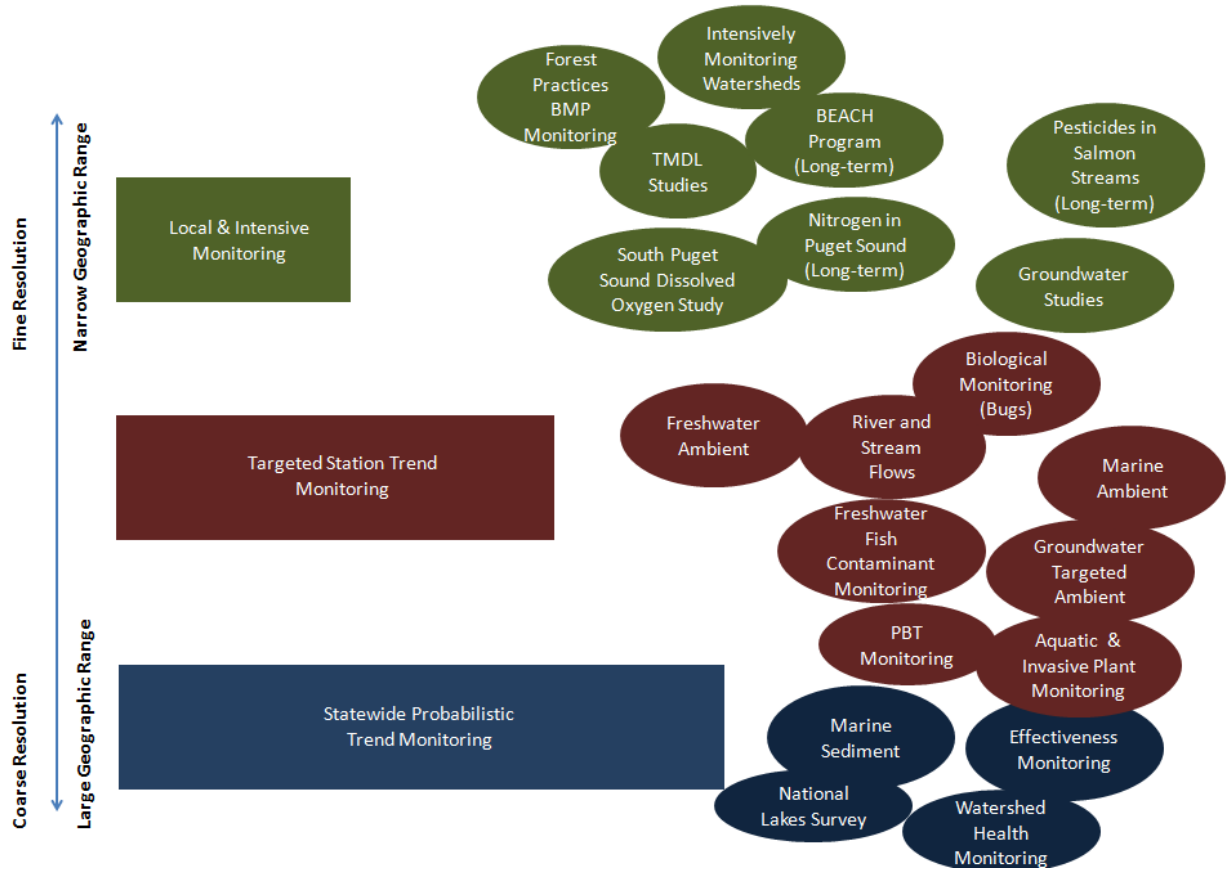


Figure 2 Ecology's Tiered Monitoring Strategy

Water Quality Assessment

The Water Quality Assessment (WQA) is the main tool for identifying impaired waterbodies for clean-up projects. The WQA uses all available data from Ecology's monitoring programs, plus data submitted by external entities.

Compiling Existing Sources of Data and Information

Ecology encourages all interested parties to submit data for the water quality assessment. Data are specifically solicited from many sources including federal, state, and local government agencies, and tribal governments. Ecology also publicizes a "call for data" period and assesses all data from all sources that are received.

Data Quality Requirements

Ecology's policy specifies the quality assurance requirements that must be met by all data used for the assessment. Sampling and analysis must be conducted under a documented Quality Assurance (QA) Project Plan or other quality assurance procedures that Ecology determines to be equivalent for providing high quality data. Documentation must be provided with all data submitted for assessment indicating that the objectives of the QA Project Plan or equivalent quality assurance procedures were met. If this documentation (or other equivalent assurance) is

not provided, the data are not to be used in the assessment. If Ecology determines there are flaws in quality assurance planning or implementation that significantly reduce confidence in any submitted data, including in data previously provided during earlier assessment cycles, then those data are not to be used as a basis for placing a water segment on the CWA Section 303(d) list, known as Category 5.

Data Review, Verification, and Validation

Once the measurement results have been recorded, they are examined to ensure that:

- Data are consistent, correct, and complete, with no errors or omissions.
- Results for quality control (QC) samples accompany the sample results.
- QC results indicate that acceptance criteria were met.
- Data qualifiers are properly assigned where necessary.
- Data specified in the sampling design were obtained.
- Methods and protocols specified in the QA Project Plan were followed.

Data review involves examination of the data for errors or omissions. Data verification involves examination of the QC results for compliance with acceptance criteria. Laboratory results are reviewed and verified by qualified and experienced laboratory staff and documented. Data validation involves detailed examination of the complete data package using professional judgment to determine whether the procedures in the methods, standard operating procedures, and QA Project Plan were followed. Validation is the responsibility of the project manager, who may wish to arrange for a qualified specialist to conduct the validation and document it in a technical report.

Once the data have been verified and validated, they are examined to determine if the management quality objectives (MQOs) have been met. MQOs are established for precision, bias, and required reporting limit. An experimental design for preliminary estimation of precision and bias and the use of control charts provide the best way to determine whether MQOs have been met. Results of QC samples analyzed during the project can also provide an indication as to whether the MQOs have been met.

Data Analysis Procedures

Ecology's Policy 1-11 specifies assessment criteria and describes assessment methods for different media and indicators. Specific assessment criteria are described for toxic pollutants in sediment and water, temperature, dissolved oxygen as well as for fecal coliform bacteria and other pollutants. In addition to assessing data using numeric standards, the assessment of water quality can be based on narrative information. For example, listings may be based on toxics in edible fish tissue, or swimming, fishing, or shellfish advisories from appropriate agencies. Impairments can also be caused by non-pollutants, as legally defined. Examples of non-pollutants are: Physical habitat alterations (e.g., stream channelization, loss of spawning gravels, reduced pool/riffle ratios, loss of large woody debris), physical barriers to fish migration (e.g., dams and culverts), loss of habitat due to invasive exotic species, flow alterations (e.g., low flows and flashier systems), and impaired biologic communities.

Reporting

Ecology's primary means of reporting on the status of water quality is through the development of *Washington State's Water Quality Assessment,* based on EPA's guidance, which integrates Clean Water Act requirements for both Section 305(b) water quality reports and the Section 303(d) list of impaired waters. Ecology's Water Quality and Environmental Assessment programs have jointly adopted Policy 1-11 that describes the methods used for assessing information to evaluate attainment of WQ Standards. The Policy includes criteria for compiling, analyzing, and integrating data on ambient conditions with project implementation information.

In preparing the assessment, Ecology evaluates data from *all* sources that are received during the "call for data" period. This includes not only data from Ecology's freshwater and marine ambient monitoring program and other Ecology studies, but also data from a wide array of entities external to Ecology who collect and submit data, including:

- Federal, state, and local government agencies
- Tribes
- Quasi-governmental entities, such as watershed planning councils
- Businesses
- Academic institutions
- Not-for-profit groups
- Private citizens

Ecology uses the *Water Quality Assessment* report to assign waterbody segments into one of five categories (see the following descriptions). All waters in Washington State (except on tribal reservation lands) fall into one of the five categories describing our knowledge of the status of that waterbody.

> ***Category 1*** **- Meets tested standards for clean waters**: placement in this category does not necessarily mean that a water body is free of all pollutants. Most water quality monitoring is designed to detect a specific array of pollutants, so placement in this category means that the water body met standards for all the pollutants for which it was tested. Specific information about the monitoring results may be found in the individual listings.
>
> ***Category 2*** **- Waters of concern**: waters where there is some evidence of a water quality problem, but not enough to require production of a water quality improvement (WQI) project (including total maximum daily load [TMDL]) at this time. There are several reasons why a water body would be placed in this category. A water body might have pollution levels that are not quite high enough to violate the WQ Standards, or there may not have been enough violations to categorize it as impaired according to Ecology's listing policy. There might be data showing water quality violations, but the data were not collected using proper scientific methods. In all of these situations, these are waters that we want to continue to test.
>
> ***Category 3*** **- Insufficient data:** water where there is insufficient data to meet minimum requirements according to Policy 1-11.
>
> ***Category 4*** **- Polluted waters that do not require a TMDL**: waters that have pollution problems that are being solved in one of three ways:

- ***Category 4a*** - has a TMDL: water bodies that have an approved TMDL in place and are actively being implemented.
- ***Category 4b*** - has a pollution control program: water bodies that have a program in place that is expected to solve the pollution problems. While pollution control programs are not TMDLs, they must have many of the same elements and there must be some legal or financial guarantee that they will be implemented.
- ***Category 4c*** - is impaired by a non-pollutant: water bodies impaired by causes that cannot be addressed through a TMDL. These impairments include low water flow, stream channelization, and dams. These problems require complex solutions to help restore streams to more natural conditions.

Category 5 - Polluted waters that require a TMDL or other WQI project: the traditional list of impaired water bodies traditionally known as the **303(d) list**. Placement in this category means that Ecology has data showing that the WQ Standards have been violated for one or more pollutants, and there is no TMDL or pollution control program in place. TMDLs or other approved WQI projects are required for the water bodies in this category.

Washington State's Water Quality Assessment can be found on Ecology's website at http://www.ecy.wa.gov/programs/wq/303d/index.html. Policy 1-11, which Ecology uses to assess water quality data and determine if water bodies are polluted is found here: http://www.ecy.wa.gov/programs/wq/303d/policy1-11.html.

Ecology Monitoring Programs

Water Quality Improvement (WQI) Projects

Under the CWA and implementing federal regulations, Ecology is required to develop Water Quality Improvement Projects for impaired waters listed under Category 5 of the Water Quality Assessment (the 303(d) list). These projects could be Total Maximum Daily Load (TMDL) projects, or could involve simply implementing the appropriate pollution controls in watersheds impaired by nonpoint pollution. Implementing nonpoint pollution controls without a TMDL in place works well in watersheds in which the pollution problems are easy to identify and the solutions are known. Many of these projects are led by Ecology staff, but successful projects are also being implemented by a county, a watershed planning group, and the U.S. Forest Service.

When an impaired body is selected as a priority for a TMDL project, Ecology conducts scientific studies to identify sources and amounts of pollutants causing the water quality problem, and a technical analysis to determine how much pollution sources must be reduced to protect the water. These studies typically consist of multiple, several-day field surveys over the course of several months to a year or more. The studies may focus on conventional pollutants, or they may be conducted for a variety of metals and organic compounds. The most complex toxic projects may require sampling a wide range of media including surface water, stormwater, effluents from municipal and industrial facilities, suspended particulates, bottom sediments, bottom cores, and resident fish. In addition, biological evaluation of surface waters is being incorporated into TMDL study designs to provide a broader approach because degradation of sensitive ecosystem processes is more frequently identified. Since many of the waters identified on the CWA Section

303(d) list have diffuse pollutant sources, Water Cleanup Plans are usually conducted on a broad watershed scale. Implementation plans are developed to implement TMDLs.

River and Stream Ambient Monitoring

Ecology's river and stream monitoring program will continue to rely predominantly on a fixed station monitoring design. Ecology currently collects samples monthly from 66 long-term (core) and 11 basin, and 5 sentinel monitoring stations (82 total) (Hallock and Von Prause 2013). The 66 core stations were all selected using a "*judgmental sample survey monitoring design"* (EPA, 1997) which is based on the nonrandom selection of sampling sites to infer estimates of overall water quality for these basins. Core stations are generally located in a downstream reach of a mainstem river (often at bridge crossings for efficient sampling).

Data from these stations are used to assess overall condition or status of their respective basin, and to evaluate long-term trends. A few core stations are located in upper watersheds to reflect un-impacted conditions. Many core stations have been sampled for extended periods (some for over 40 years) allowing for site-specific trend analyses.

Basin stations are sampled monthly for (usually) one year, and new station locations are chosen each year to support Ecology's five-year watershed management process or to target specific concerns identified by Ecology's regional office staff. Ecology also records continuous temperature data at about 60 stations to determine compliance with current and proposed WQ Standards. Furthermore, Ecology conducts continuous monitoring for temperature, dissolved oxygen, pH, and conductivity at 10 stations, including six stations in support of "Intensively Monitored Watersheds" (IMW) research which is funded by the Salmon Recovery Funding Board (SRFB) and two stations supporting effectiveness monitoring efforts. Results are delivered in near-real-time to the Internet by satellite telemetry at most continuous stations.

Marine Water Ambient Monitoring

Ecology's Marine Waters Monitoring (MWM) Program employs a monitoring strategy composed of multiple components in order to assess marine ecosystem processes and water quality status and trends at various spatial and temporal scales. The Marine Flight and Joint Effort to Monitor the Straits (JEMS) programs focus on monthly sampling of the water column at 39 core monitoring stations in Puget Sound, the Strait of Juan de Fuca, and from Willapa Bay and Grays Harbor on the Washington coast, using consistent techniques to determine long-term trends in water quality over sufficiently long temporal scales. Station redundancy in each basin allows for a better statistical representativeness of monthly conditions. A monthly temporal resolution allows for a representative description of the seasonality of the system. While physical variables are continuously resolved in the vertical with in-situ sensors, discrete samples are resolved at higher resolution in the upper 30m of the water column to account for the connectivity between nutrient loading and freshwater inputs.

Data from the monthly water column monitoring provides the temporal backbone of Ecology's Marine Waters Monitoring program. These data are augmented by continuous in-situ mooring observations, higher spatially-resolved information from en route ferry transects, and aerial photography.

The program deploys in-situ sensors in restricted waterways or at key sites in Puget Sound and coastal bays to capture the variability of the inter-basin mass (water, biomass), and solute (salt and oxygen) transport. Monitoring focuses on events such as tides, weather, stormwater discharge, and large-scale oceanographic intrusions. The moorings provide high temporal resolution to understand:

- Variability of inter-basin transport (e.g. visualizing intrusions)
- Impact of water exchange on low-oxygen and local water quality
- Day-to-day variability and real time information.

Within the complex morphology of Puget Sound, near-surface variability in physical, chemical, and biological constituents is very high. Regional influences by rivers, local winds, density structure, tides, variable phytoplankton species and growth create a horizontally patchy and dynamic environment. Taking representative near-surface point samples is therefore challenging, and to overcome this challenge the program expanded monitoring by using en route ferry observations to capture this variability and integrate these observations into a spatially and temporally nested monitoring approach. En-route sensors obtain comprehensive data records with high horizontal and good temporal resolution which can be used to reconstruct the evolution of near surface features (e.g. stormwater, algal bloom, location of isotherms and isohalines). Fundamental to the en-route ferry approach is its integration into large-scale, regional products by using the information to provide spatially calibrated information for remote sensing observations.

Remote sensing and aerial observations from aircraft and satellite cover a wide range of geographic scales. Spatial distribution maps of debris, freshwater, suspended sediments and algae are information products of high public interest and are delivered on a monthly basis. Satellite images and processing procedures are obtained from available sources. The goal of remote observations is to statistically describe the extent and location of hydrographical boundaries and optical features (e.g., water clarity, water color, suspended sediment concentration, algae blooms and the accumulation of debris and oil) and relate them to physical processes. Environmental anomalies in surface water characteristics can be monitored using time-averaged baseline conditions and statistical distribution maps that delineate geographic change. Over time, remote sensing provides the statistical, spatial and historical context to identify regions with frequent biological responses to eutrophication. Remote sensing also supports the strategic placement of monitoring stations and focused studies (e.g. TMDL).

The scale of the sampling network allows for the quantitative separations of internal and external drivers of water quality. By separating the drivers, environmental management can raise water quality issues to the appropriate levels of attention.

Marine Sediment Monitoring

Ecology maintains a network of ten long-term, fixed marine sediment stations, which are sampled annually for infaunal community structure and every fifth year for chemical contaminants, to estimate trends in chemical contamination and benthic community structure. Annual analyses of benthic communities at some of these stations date back to the 1960s with research conducted by the University of Washington and others. Beginning in 1997, Ecology also developed a program to collect samples from an additional 40 sediment stations each year,

using a probabilistic (random), rotating panel design. Stations are selected from one of eight estuarine regions defined by the Puget Sound Ecosystem Monitoring Program (PSEMP) according to their unique hydrologic, bathymetric, and geological features. Separate Chemistry, Toxicity, and Benthic Indices, and an overarching Sediment Quality Triad Index are used to characterize sediments based on levels of chemical contamination and toxicity of the sediments, and on the composition of the benthic invertebrate communities. In 2007, funding from Ecology's Urban Waters Initiative was secured to begin similar sampling and characterization of sediments in six urban bays, with sampling conducted at 30 stations collected from one bay/year over a 6-year period.

Stream Biological Monitoring

Traditional measurements of chemical and physical components for rivers and streams may not provide sufficient information to detect all surface water problems. Biological evaluation of surface waters provides a broader approach because degradation of sensitive ecosystem processes is more frequently identified.

The Environmental Assessment Program at Ecology has three major projects monitoring biological condition in Washington's streams and rivers. The Sentinel and Ambient Biological Projects monitor macroinvertebrates and periphyton from 80 reference or "least impacted" sites throughout the state. Sixteen Sentinel sites are sampled annually, while an additional 64 sites are sampled on a rotating basis for the Ambient Biological Project. Since 2009, Ecology has collected samples from 159 reference site visits throughout Washington. This monitoring has provided a base of information describing biological characteristics of reference or "least impacted' condition. Additionally, since 2009 the Watershed Health Monitoring Project has sampled macroinvertebrates from over 375 randomly selected sites throughout Washington. Using a Washington master sample list and a probabilistic sampling design, 50 sites from each of seven Status and Trends Regions (STRs) throughout the state are sampled on a rotating basis (i.e. 1-2 STRs sampled per year). Each time an STR is revisited, 25 new randomly selected sites are sampled and another 25 sites visited previously are sampled again.

One of the goals of Ecology's monitoring program is to develop biocriteria using benthic macroinvertebrates, and to apply these biocriteria appropriately within the framework of the CWA. Two types of numeric biocriteria, based on biometrics and predictive modeling, are being developed for use throughout Washington State. When used alone or together, these criteria can give a statistically defensible case for determining the overall condition of a stream or waterbody.

Ecology now uses macroinvertebrate samples to assess potential streams for listing on the state's 303(d) list.

Stream Flow Monitoring

Ecology manages 73 streamflow monitoring stations across the state. Sixty-six of the 73 stations consist of automated, telemetered capabilities providing near real time reporting. Streamflow, as well as other parameters depending on the configuration of individual stations are presented on Ecology's web site.

The remaining seven stations include two stand-alone and five manual-stage-height stations. Stand-alone stations record continuous flow data, however they do not have near real time reporting capabilities. The manual-stage-height stations provide instantaneous flow information, although not a continuous record. Stand-alone and manual stage height stations are usually associated with special projects and operate through the duration of the project, typically one or two years.

Washington's *Comprehensive Monitoring Strategy* recommends additional stream gages be installed on ungaged mainstem rivers and major tributary streams in priority (i.e., salmon-critical) watersheds first, but in all watersheds eventually.

Invasive Aquatic Plant Monitoring

Ecology has been monitoring the occurrence and distribution of aquatic plants in lakes and rivers throughout the state since 1991. The program's main objective is to track aquatic plant community changes, concentrating on invasive non-native species such as Eurasian milfoil. Other objectives are to provide technical assistance on aquatic plant identification and control of invasive species, and to conduct special projects evaluating the impacts of invasive non-native species and their control. To date, aquatic plant (macrophyte) data have been obtained from approximately 550 lakes, reservoirs, and rivers across Washington. Monitoring locations are targeted each year based on requests or problems identified by regional office staff and local cooperators.

Beach Environmental Assessment, Communication and Health (BEACH) Prgm

EPA initiated the Beaches Environmental Assessment, Communication, and Health (BEACH) Program in response to the passage in 2000 of the BEACH Act. The Act amends the Clean Water Act and authorizes EPA to appropriate funds to states for the development of monitoring and notification programs to provide a more uniform system for protecting the users of marine waters.

In Washington, a BEACH Coordinator manages the development and implementation of the Program, including facilitating the Inter-agency BEACH Committee. The committee includes Ecology, the state Department of Health, and nine county health jurisdictions including Grays Harbor, Tacoma-Pierce, Seattle-King, Whatcom, Clallam, Jefferson, Island, Thurston and Kitsap.

The monitoring program focuses on sampling for indicator bacteria at about 60 public marine beaches in Washington State. Ecology implements the BEACH program collaboratively with the Department of Health and with the assistance and cooperation of local county health jurisdictions, non-profit organizations, volunteers and universities. The information is communicated to the public on Ecology's BEACH Program website and by signs posted on the beaches.

Freshwater Fish Contaminant Monitoring Program

The Freshwater Fish Contaminant Monitoring Program (FFCMP) was developed to address continuing concerns about toxic compounds in Washington's aquatic environments. Historical

monitoring efforts identified many areas where levels of contamination were high enough to harm humans and wildlife, sometimes resulting in fish consumption advisories issued by the state Department of Health. The goal of the FFCMP is to provide information to resource managers and the public about the status of toxic contamination in edible fish tissue from freshwater lakes, rivers, and streams that have not yet been monitored, or to track trends over time in areas that are undergoing cleanup activities. The FFCMP has conducted exploratory monitoring to identify occurrences of toxic contamination in fish tissue since 2003. Approximately 10-15 lakes, reservoirs, and rivers are sampled annually.

Lake/Reservoir Monitoring

National Lakes Assessment
Ecology participated in EPA's National Lakes Assessment (NLA) in the summers of 2007 and 2012. Sites were randomly selected using a probability-based sampling design which resulted in locations throughout the state. These surveys help to assess current conditions, evaluate change over time, and monitor the impacts of key stressors on lake environments (NLA; EPA 2012). Sites sampled include:

- 30 lakes in 2007
- 33 lakes in 2012

Aquatic Plants Monitoring
Aquatic plant monitoring, focused on invasive species, takes place at 40 to 60 lakes per year. Results are maintained in a publically accessible database http://www.ecy.wa.gov/programs/eap/lakes/aquaticplants/index.html.

Lakes Coastal Atlas Module
Information about lakes was added to Ecology's Coastal Atlas database in 2014. The lakes module will provide cohesive access to Ecology's lake data.

Toxic Algae Program
Ecology's Water Quality Program hosts the toxic algae program. In 2005, the Washington State Legislature established funding for an algae control program and asked the Washington Department of Ecology (Ecology) to develop the program. Reducing nutrient input to lakes is the only long-term solution to prevent algae blooms. However, the amount of money available for this program (about $250,000 per year) is not enough to fund comprehensive lake-wide and watershed-wide nutrient reduction projects. Instead, the program focuses on providing local governments with the tools they need to manage algae problems. The program targets blue-green algae (also known as cyanobacteria) because these algae pose a health risk to humans, pets, and livestock. http://www.ecy.wa.gov/programs/wq/plants/algae/index.html

Groundwater Monitoring

There is currently no state-level program to monitor ambient groundwater quality trends over time in Washington, and no long-term funding source has been identified to date to support such an effort. In late 2007, Ecology's Watershed Advancement Group (WAG) convened an internal agency workgroup to develop a strategy for implementing a state-level ambient groundwater monitoring and reporting program to support the sustainable management of Washington's groundwater resources. The resulting 2008 report, adopted by WAG, laid out a phased approach

which we are using as a road map to form a foundation for a statewide program, in the absence of dedicated funding. To date, accomplishments include:

- Inventory and consolidation of Ecology groundwater monitoring data (ongoing).
- Standardization of data collection and quality assurance procedures (ongoing).
- Development of an agency-level groundwater data management interface for Ecology's EIM system (completed).
- Creation of an agency-level web site to improve access to state groundwater information (completed).

Future steps include:

1. Capture and, where appropriate, migration of external groundwater data to Ecology's EIM system.
2. Evaluation of existing ambient groundwater data.
3. Expansion of regional water level monitoring networks already in operation.
4. Establishment of a state-level groundwater status and trends monitoring program, by compiling data from an established network of index wells.

Intensively Monitored Watersheds

Ecology and the Washington Department of Fish and Wildlife are cooperating on a program to intensively monitor water quality, habitat conditions, and salmon response in paired sets of watersheds at four key locations in Washington (Hood Canal, Lower Columbia River, northern Olympic Peninsula, and the Skagit River estuary). The main objective of this approach is to understand the complex relationships between salmon habitat restoration actions and the response of fish habitat, and targeted salmonids species (parr numbers, overwinter survival, smolt production, and number of spawners). The cause-effect relationships between restoration actions and salmon response is needed to assess the effectiveness of habitat restoration actions implemented to restore salmon. Concentrating and integrating monitoring and research efforts at a few locations may enable enough data on physical and biological attributes of the system to be collected to develop a comprehensive understanding of the factors affecting salmon production in fresh water.

Water Quality Grants Projects

Ecology grant projects capture environmental outcomes and performance measures in the grant and loan competitive application process and in funding agreements. The program does not require water quality monitoring, but where monitoring is conducted under a grant or loan, monitoring data must be entered into EIM as a funding condition. The program coordinates with the technical arm of Ecology regarding BMP effectiveness monitoring and use of this data to help quantify benefits. The grant program has integrated "post project assessment" language in agreements that ensures follow-up to review the status and capture a summary of ongoing environmental outcomes or water quality improvements after 3 years.

Stormwater Work Group

The Stormwater Work Group (SWG) is a coalition of federal, tribal, state, and local governments; business; environmental; agriculture; and research interests that was convened at the request of the Puget Sound Partnership and Department of Ecology to develop a Stormwater Monitoring and Assessment Strategy for the Puget Sound Region. The strategy is intended to

provide a coordinated, integrated approach to quantifying the stormwater problem in Puget Sound and to help us efficiently and effectively manage stormwater to reduce harm to the ecosystem.

The SWG has numerous subgroups overseeing implementation of regional stormwater monitoring and developing recommendations. Each subgroup has its own purpose and goals. The chair, staff, and meeting schedule support each work group in achieving its goals. Subgroups include:

- Agricultural Runoff
- Effectiveness Study Selection
- Small Streams Status and Trends Oversight
- Marine Nearshore Status and Trends
- Pooled Resources Oversight
- Source Identification and Diagnostic Monitoring
- Roads and Highways

Other Monitoring Programs

U.S. Geological Survey

The U.S. Geological Survey (USGS) conducts monitoring for the National Water Quality Assessment (NAWQA) Program. Data collected from NAWQA are used to summarize the status and trends of the surface water and groundwater quality, describe the processes affecting water quality and aquatic ecology, and provide timely results to watershed managers, policy makers, and the public.

The USGS also operates and maintains the National Streamgaging Network collecting long-term streamflow data nationwide. Although the National Streamgage Network is operated primarily by the USGS, it is funded by a partnership of federal, state, tribal, and local agencies.

USGS also manages the National Streamflow Information Program which was created in response to Congressional and stakeholder concerns about (1) a loss of streamgages, (2) a disproportionate loss of streamgages with a long period of record, (3) the inability of the USGS to continue operating high-priority streamgages when partners discontinue funding and (4) the increasing demand for streamflow information due to new resource-management issues and new data-delivery capabilities.

U.S. Forest Service

The U.S. Forest Service conducts monitoring of aquatic resources in support of two broad scale plans: (1) the Northwest Forest Plan (i.e., Western Washington) and (2) Pacfish/Infish Biological Opinion (PIBO). Both plans require implementation and effectiveness monitoring of management activities that address issues with the Endangered Species Act. The goal of the regional monitoring program under the Northwest Forest Plan (NWFP) is to evaluate its effectiveness in achieving management objectives which include restoring and maintaining the ecological integrity of watersheds and aquatic ecosystems. The individual forest plans also have implementation and effectiveness monitoring of BMPs. Each national forest produces a Forest

Plan Monitoring Report each year that covers all the implementation and effectiveness monitoring accomplished. Additionally, to assess the effectiveness of the Legacy Roads and Trails Program in decreasing the potential risk of forest roads impacting water quality, the US Forest Service – Rocky Mountain Research Station is monitoring 47 sites across the western United States.

Habitat Conservation Plans

Habitat Conservation Plans (HCPs) are administered by the National Oceanic and Atmospheric Administration (NOAA) Fisheries and the U.S. Fish & Wildlife Service. Most of the HCPs in Washington are focused on the conservation of salmonids. These include programs administered under the Endangered Species Act, the Federal Power Act, the Clean Water Act, and the Magnuson-Stevens Act, among others. The HCP program provides policy and technical expertise to non-federal entities that want to develop HCPs.

Monitoring is a mandatory element of all HCPs and is part of the permittee's implementation obligation. The scope of a monitoring plan is directly related to the significance of the HCP's biological impacts. Monitoring data are needed to ensure proper compliance with an HCP and to determine whether biological goals and objectives are being met. Monitoring serves not only to ensure compliance and gage the effect and effectiveness of HCPs, it also informs choices under the adaptive management provisions and assists in redefining biological goals. Applicants work with the Services to determine the level of monitoring appropriate for their specific HCP.

Four HCPs have been issued by NOAA Fisheries in Washington for the protection of anadromous salmonids.

Shellfish Growing Area Monitoring

The Office of Environmental Health and Safety of the Washington State Department of Health (DOH) is mandated to evaluate commercial shellfish growing areas to determine if shellfish are safe to eat. To this end, DOH operates a variety of monitoring programs that track conditions in marine waters. One program monitors the level of the marine biotoxins Paralytic Shellfish Poison (PSP), Diarrhetic Shellfish Poison (DSP) and Amnesic Shellfish Poison (ASP) in mussels sampled biweekly from sentinel mussel cages or scraped off substrate from 70-80 points throughout Puget Sound and the coastal estuaries. In addition, commercial shellfish species from active commercial harvest areas are sampled. When biotoxin levels in the mussels or commercial shellfish species from individual areas exceed the appropriate FDA levels, DOH informs the public and orders a halt to commercial/recreational harvest. DOH also operates a phytoplankton monitoring program that acts as an early warning system for Harmful Algal Bloom (HAB) events. This network helps the DOH to prioritize where shellfish samples are collected and to test samples more frequently during HAB events resulting in more effective closures that better protect public health.

DOH also operates other monitoring programs to support the classification of commercial shellfish areas. At present, there are 102 actively classified growing areas. DOH uses standards and guidelines set by the National Shellfish Sanitation Program Guide for the Control of Molluscan Shellfish to monitor and classify the growing areas. Classification is based on analysis of water quality, meteorology, hydrography, and an intensive survey of shoreline and

uplands for fecal pollution sources. An area cannot be approved for harvest if there are significant pollution threats despite acceptable water quality.

Once classified, all active growing areas are regularly monitored. Marine water samples are collected throughout the year. Shoreline surveys are conducted less frequently, but each year dozens of shellfish growing areas are surveyed. During those surveys, all potential pollution sources that may impact water quality are evaluated. The purpose of continued water sampling and shoreline surveys is to make sure that growing areas continue to meet the standards associated with their classification, to modify classifications when needed, and to notify the responsible agencies about identified and potential pollution sources. If a commercial shellfish growing area has its classification downgraded due to nonpoint pollution, state law calls for local governments to form a shellfish protection district within 180 days. The shellfish protection district is tasked with developing a shellfish closure response in order to address the pollution sources and improve water quality.

Salmon Recovery Act

The Salmon Recovery Funding Board funds several types of monitoring related to salmon recovery. These include project effectiveness monitoring, intensively monitored watersheds for validation monitoring, and implementation monitoring of the funded projects. In the past, they funded habitat status and trends monitoring. This is now funded by the Department of Ecology.

Strategy to Recover Salmon

In 1999, the State of Washington Joint Natural Resources Cabinet published the statewide strategy to recover salmon (JNARC, 1999). To evaluate success of the recovery strategy, the state uses the Salmon Recovery Scorecard published in the biennial *State of the Salmon* report. The Scorecard essentially is the state's business plan for salmon recovery. It's a performance management system for tracking data, measuring progress, and changing course where needed. However, of the 18 indicators tracked on the scorecard, only one is an outcome indicator related to nonpoint pollution sources. Scorecard element E-2 tracks the percentage of WRIAs that have acceptable scores according to Ecology's Water Quality Index (WQI).

The WQI is represented by numbers ranging from 1 to 100, indicating the general water quality at each station. The higher index numbers are indicative of better water quality. Multiple constituents of the water quality measured are combined, and the results are aggregated to produce a single score for each sample station. The WQI was calculated for the long-term monitoring locations in each WRIA sampled by Ecology in 2002. Results show that 5% of the WRIAs are in poor condition, 61% are fair, and 34% are considered in good condition.

Aquatic Nuisance Species Management Plan

The purpose of the Washington State Aquatic Nuisance Species (ANS) Management Plan is to coordinate all ANS management actions currently in progress within Washington, and to identify additional ANS management actions, especially those relating to ANS animals. The development of a state management plan is called for in Section 1204 of the National Invasive Species Act of 1996, which provides an opportunity for federal cost–share support for the implementation of state plans approved by the National Aquatic Nuisance Species Task Force. Management actions are undertaken and funded by the responsible state agencies. The Washington State Plan,

published in December 1998, was developed by the Washington State Aquatic Nuisance Species Planning Committee.

Several agencies are responsible for current efforts to monitor for ANS populations already present in Washington. The Washington State Aquatic Nuisance Species Planning Committee continues to revise the monitoring program to quickly detect new ANS introductions or the spread of those already present. They are working to collect accurate information about which ANS are present, where they are present, and an estimate of their population numbers and/or densities. The Committee established the following "Strategic Action"**:** Monitor waters that are vulnerable to new ANS introductions and track the distribution of existing ANS populations. Survey Washington lakes, rivers, estuaries, wetlands, and coastlines on a periodic basis to establish an accurate assessment of the presence of non-native species that have become, or have the potential to become, nuisance species, and make these data available statewide.

Yakima Ground Water Management Area

Washington State Department of Agriculture (WSDA) has been heavily involved with the nitrate groundwater contamination issues in the lower Yakima valley for over a decade. Recent work on the groundwater management area (GWMA) included staffing the technical committees and committing resources through an interagency agreement to conduct a comprehensive nitrogen loading assessment. Completion of this assessment will allow members of the GWMA to focus nitrogen management actions on land uses that contribute excess nitrogen most significantly to degradation of groundwater quality in the area.

Surface Water Monitoring for Pesticides in Salmon-Bearing Streams

WSDA's Surface Water Monitoring Program for Pesticides in Salmon-Bearing Waters is entering its 13th year of existence and 2nd year where all field work, data analysis, and report writing is completed exclusively by WSDA. The study assesses pesticide-presence in salmon-bearing streams during a 27-week typical pesticide use period (March – September). Currently, the assessment evaluates samples for more than 200 pesticide active ingredients and their breakdown products, and compares those results with known toxicity criteria. The 2015 season will include glyphosate (Roundup™) monitoring at all sample locations (14 statewide) for five weeks in the spring. This is a first for WSDA's program and it is hoped it will alleviate some concerns about possible glyphosate concentrations. Finally, sediment samples will be collected at 5 of their sites during three different seasons (spring, summer, fall) for pyrethroids and other chemical classes that bind to organic material.

The data generated by the monitoring program is used by WSDA, the U.S. Environmental Protection Agency, (EPA), the National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service, and the U.S. Fish and Wildlife Service (USFWS) to refine exposure assessments for pesticides registered for use in Washington State. Understanding the fate and transport of pesticides allows regulators to assess the potential effects of pesticides on endangered salmon species while minimizing the economic impacts to agriculture.

Identifying Viable Mitigation for Reducing Malathion Pollutant Loading to Streams

WSDA is working cooperatively with the Washington Red Raspberry and Blueberry Commissions to conduct a study assessing the effectiveness of streamside vegetation in reducing pesticide loading during aerial applications of malathion. The Biological Opinion (BiOp) for malathion is scheduled to be completed by 2017, and WSDA worked closely with National Marine Fisheries Service (NMFS) to design a study that would generate data that could offer growers buffer mitigations when the BiOp is complete. The goal is to assess aerial (helicopter) applications of malathion to red raspberry and blueberry plants in Whatcom County during the Summer of 2015.The sites will include three raspberry (two vegetated, one control) and three blueberry (two vegetated, one control) fields. Both water and depositional samples will be collected.

Assessing Effectiveness of Pesticide Rule Pertaining to Cranberry Growing Areas

Since 2011 WSDA has conducted surface water monitoring and provided technical assistance to growers of cranberries in the Grayland, Washington area. Using the EPA-approved *Pesticide Management Strategy*, and implementation of new regulations, WSDA sampled the Grayland Ditch for two insecticides, residues of which resulted in the waterbody's listing on the states class 5 303(d) list. The results of the sampling show continued improvement and were the basis for a targeted effort by WSDA compliance staff to assess operations at each farm in the area. Sampling will continue in 2015, coinciding with the application of the insecticides to assess progress and compliance with the rule.

Tribal Monitoring

Most of the monitoring reported by tribal governments has a geographic focus at the watershed level and, to a lesser degree, upon the area within the jurisdictional boundaries. More information on monitoring programs conducted by tribal governments is available in Crawford et al. (2003).

Local Government Monitoring

Most of the monitoring conducted by local governments has a geographic focus at the watershed level and, to a lesser degree, upon the area within the local government's jurisdictional boundaries. Only 26% of local governments surveyed for the Comprehensive Monitoring Strategy (2002) had been monitoring for more than five years. More information on monitoring programs conducted by local governments is available in Crawford et al. (2003).

Effectiveness Monitoring

Effectiveness monitoring uses a combination of monitoring types to evaluate whether specified activities have achieved the desired effect. It is an essential component to the adaptive management process when BMPs are implemented to control human-caused pollution. It is also one of the several required components when (1) we develop Total Maximum Daily Loads (TMDLs) or other watershed-based pollution control plans, or (2) state and federal funds are used to implement nonpoint-source pollution control strategies.

In Washington State, the Department of Ecology is the agency primarily responsible for implementing the requirements and provisions of the Clean Water Act, including monitoring the effectiveness of water pollution cleanup plans. In 2013, Ecology released the guidance document "*Guidance for Effectiveness Monitoring for Total Maximum Daily Loads in Surface Waters*" (Collyard, S 2013). This document will serve as a guide for determining the effectiveness of TMDL projects and other water quality clean-up efforts, and informing adaptive management.

Effectiveness monitoring evaluates whether management activities have achieved the desired effect. Rather than monitoring the effectiveness of a particular project, it is the intent of Ecology's NPS effectiveness monitoring program to measure the cumulative effect of all activities in the watershed.

Effectiveness monitoring is a fundamental component of any water clean-up project and its associated implementation activity. It is an important tool in the adaptive management process because it informs and allows restoration strategies to be adjusted if clean-up goals are not being achieved. If implemented thoughtfully, it will increase the likelihood that activities to control NPS pollution will succeed.

The benefits of effectiveness evaluation include:

- More efficient allocation of funding.
- Optimization in planning/decision-making (program benefits).
- Watershed recovery status (how much restoration has been achieved, how much more effort is required).
- Adaptive management or technical feedback to refine restoration treatment design and implementation.

The effectiveness evaluation addresses four fundamental questions about restoration or implementation activity:

- Is the restoration or implementation work achieving the desired goal of significant improvement?
- How can restoration or implementation techniques be improved?
- Is the improvement sustainable?
- How can the work become more cost-effective?

Effectiveness Monitoring of the Forest Practices Rules

Ecology is participating in a monitoring program to evaluate the performance of the riparian management prescriptions in the Washington Forest Practices Rules. Statutes and rules governing the Forests & Fish program include a multi-stakeholder monitoring component that systematically evaluates the effectiveness of the forest practices rules. The program includes a full time administrator, a scientific monitoring committee, independent scientific peer review, and a policy committee. To date, the program has completed more than 28 peer-reviewed monitoring and effectiveness studies. Seventeen studies are under way and several more are in the process of being scoped. An additional $5.9 million/biennium for studies and science is currently being considered by the Washington Legislature and supported by all of the Forests & Fish collaborators. DNR established a compliance monitoring program in 2006 that is now in its fifth biennial measurement cycle. The compliance monitoring team includes specialists from the Ecology and the Department of

Fish and Wildlife. Tribes are also invited to participate. The compliance monitoring has reported on riparian protection and road construction and maintenance activities -- the two areas of forest practices most likely to affect water quality. Each time, substantial overall compliance with the rules exceeds 80% or better.

Forest practices research examines the effectiveness of current and alternative riparian buffering strategies in protecting key water quality (stream temperature, water chemistry, sediment), habitat/channel stability (large woody debris [LWD]), and riparian (vegetation type, mortality rates, LWD recruitment) resources. The following table illustrates the type of projects and the current pace of monitoring the effectiveness of Washington's forestry rules. See the discussion in Chapter 3 for a more detailed discussion of the Forest Practices Rules and the adaptive management program.

Table 7 Projects-Forest Practice Rules Effectiveness

Projects Completed in 2014
Forest Practices and Wetlands Systematic Literature Review
Wetlands Program Research Strategy
Eastside Type N Forest Hydrology (model and characterization)
RMZ birds (response to harvest)
Projects in Study Design or Initial Field Phase in 2015
Eastside Type N Riparian Effectiveness
Unstable Slopes Criteria Evaluation and Development
Westside Type F Riparian Prescription Monitoring
Forested Wetlands Effectiveness Monitoring Study
Road Prescription-Scale Effectiveness Monitoring
Van Dykes Salamander Project
Extensive Alternative (remote sensing pilot study)
Projects Completed or expected in 2015-2016
Tailed Frog Literature Review
Glacial Deep Seated - Develop Research Strategy
Glacial Deep Seated – Literature Review
Buffer Integrity - Shade effectiveness (amphibian response)
Type N Experimental Buffer Treatment Project in Hard Rock Lithologies (initial 2 year post harvest response)
Eastside Riparian Assessment Project (riparian vegetation)
Ongoing Projects to be completed by 2017-2020
Type N Experimental Buffer Treatment Project - Hard Rock-Amphibian Genetics, Nutrients, Temperature – (longer-term effects and recovery pattern analysis)
Type N Experimental Buffer Treatment Project - Soft Rock Lithologies (initial 2 year post harvest response)
Riparian Hardwood Conversion (efficacy – post year 5 and 10)

Unstable Slopes Criteria Evaluation and Development
Projects to be completed or designed after 2020
Eastside Type N Riparian Effectiveness
Westside Type F Riparian Prescription Monitoring
Road Prescription-Scale Effectiveness Monitoring
Van Dykes Salamander Project
Research priorities after 2020
Wetlands Management Zone Effectiveness Monitoring
Wetlands Intensive Monitoring
Road Sub-Basin-Scale Effectiveness Monitoring (Resample)
Watershed Scale Assessment of Cumulative Effects (roads and riparian)
Amphibians in Intermittent Streams
Windthrow Data Synthesis

As these research projects are completed their findings are provided to the Forests and Fish Policy Committee. The Policy committee then determines what action, including changes in regulations or further clarifying research, should be recommended to the State's Forest Practices Board.

Quality Assurance

Most of the monitoring activities conducted by Ecology identify the primary use of the data in a Quality Assurance (QA) Project Plan. Ecology's Executive Policy 22-01 states that "A Quality Assurance Project Plan is prepared for each environmental study/activity that acquires or uses environmental measurement data." It further states that "This policy applies to environmental data collection studies/activities conducted or funded by Ecology." The *Guidelines for Preparing Quality Assurance Project Plans for Environmental Studies* (Ecology, 2004b) describes 14 elements to be addressed in a plan and provides supporting information and examples relevant to the content of each element.

Quality assurance and quality control responsibilities for management and staff are described in the most recent *Ecology Quality Management Plan*, which can be found at http://www.ecy.wa.gov/programs/eap/quality.html. EPA's approval of the *Quality Management Plan* delegates to Ecology the authority to review and approve QA Project Plans prepared in that agency.

Washington State's Water Quality Assessment has specific quality assurance requirements identified in Water Quality Policy 1-11. Policy 1-11 directs the reader to several sources for guidance on how to develop the proper QA Project Plan.

- Washington State Department of Ecology: *Guidelines for Preparing Quality Assurance Plans for Environmental Studies*, publication 04-03-030 (available at https://fortress.wa.gov/ecy/publications/SummaryPages/0403030.html).

- *Sediment Sampling and Analysis Plan Appendix: Guidance on the Development of Sediment Sampling and Analysis Plans Meeting the Requirements of the Sediment Management Standards*, December 1995 Draft.
- Washington State Department of Natural Resources: *Timber/Fish/Wildlife Monitoring Program Method Manual for the Stream Temperature Survey*, TFW-AM9-99-005, DNR publication 107.
- U.S. Environmental Protection Agency: *The Volunteer Monitor's Guide To Quality Assurance Project Plans*, EPA 841-B-96-003.

In 2004, the Washington State Legislature passed the Credible Data Act (engrossed substitute Senate Bill 5957) with the intent to ensure that credible water quality data are used as the basis for the assessment of the status of a waterbody relative to the surface WQ Standards.

The Act requires Ecology to use credible information for:

- Determining whether any water of the state is to be placed on or removed from any Section 303(d) list.
- Establishing a Total Maximum Daily Load (TMDL) for any surface water of the state.
- Determining whether any surface water of the state is supporting its designated use or other classification.

The Act further states that data interpretation, statistical, and modeling shall be those methods that are generally acceptable in the scientific community as appropriate for use in assessing the condition of water.

In collecting and analyzing water quality data for any of these purposes, the Credible Data Act specifies that data will be considered credible if:

- Appropriate quality assurance and quality control procedures were followed and documented in collecting and analyzing water quality samples.
- The samples or measurements are representative of water quality conditions at the time the data were collected.
- The data consist of an adequate number of samples based on the objectives of the sampling, the nature of the water in question, and the indicators being analyzed.
- Sampling and laboratory analysis conform to methods and protocols generally acceptable in the scientific community as appropriate for use in assessing the condition of the water.

Data Management

Environmental Information Management System (EIM and MyEIM)

The Environmental Information Management System (EIM) is the Department of Ecology's main database for environmental monitoring data. EIM is a database containing data collected by the Washington State Department of Ecology and affiliates such as local governments and cleanup sites. EIM contains records on physical, chemical, and biological analyses and measurements. Supplementary information about the data (metadata) is also stored, including information about environmental studies, monitoring locations, and data quality. In 2013, EIM was upgraded and now includes a new search app with an improved map. Many fields were

updated in the database and the ability to accept time series data from field instruments was added.

Finally, MyEIM was added to EIM. It is an advanced toolset for searching and analyzing data. MyEIM replaced SEDQUAL, the former sediments database. MyEIM allows users to customize searches, analyze chemical and biological data, and map EIM data.

http://www.ecy.wa.gov/eim/

303(d)/305(b) Integrated Report Viewer (formerly known as WATS)

Washington State's Water Quality Assessment uses the 303(d) / 305(b) Integrated Report Viewer (WATS) to manage the five category listings of waterbody segments in the state. Data come from a variety of Ecology sources as well as sources outside of Ecology. The 303(d) / 305(b) Integrated Report Viewer was upgraded in 2013 with improved search and mapping tools and the ability to create and save queries.

http://apps.ecy.wa.gov/wats/

Ecology Administrative Grants and Loans Database (EAGL)

EAGL is an integrated web-based grant and loan management system. EAGL allows Ecology's grant and loan clients to complete grant applications, submit payment requests with progress reports, collect specific BMP implementation data, submit closeout reports, and request amendments online. The system provides a streamlined application and reporting process for both external clients and Ecology staff. EAGL is used to manage State Revolving Fund loans; Centennial Grants; and Clean Water Act Section 319 Grants.

http://www.ecy.wa.gov/funding/EAGL.html

Laboratory Information Management System

The Laboratory Information Management System (LIMS) is a database that contains analytical data for samples analyzed by Ecology's Manchester Environmental Laboratory. It is also a software system that provides capabilities in project management, sample scheduling, sample receiving, and sample control. The LIMS also interfaces with analytical instrumentation allowing direct upload of data results. The LIMS provides a platform allowing for statistical analyses of data, quality assurance monitoring and data review, approval and reporting in both electronic and hardcopy formats.

The Pacific Northwest Water Quality Data Exchange

The Pacific Northwest Water Quality Data Exchange (Exchange) comprises a number of related information management projects that collectively seek to facilitate the aggregation of and access to a comprehensive source of data related to water quality in the Pacific Northwest. The project is supported by funds allocated from the EPA Network Challenge Grant program, and with these projects the States are applying the concepts embodied in the National Environmental Information Exchange Network.
http://deq12.deq.state.or.us/pnwwqx/

Coastal Atlas

The Coastal Atlas contains information about Washington's marine shorelines and the land areas near Puget Sound, the outer coast, and the estuarine portion of the Columbia River, including public access and beach closures.
https://fortress.wa.gov/ecy/coastalatlas/

TMDL and Nonpoint Source Implementation Tracking Database

As stated in Chapter 3, tracking implementation data is important for accountability, transparency, effectiveness monitoring, and adaptive management. At a minimum, Ecology will track the following implementation data for TMDLs and STI projects:

- The location of nonpoint source problems identified by Ecology during watershed evaluations.
- Sites that Ecology contacted after the evaluations.
- The BMPs that were implemented in the watershed and their location.

A specific description of the BMPs that are implemented at a site is the most important information to track to support effectiveness monitoring efforts and promote accountability and transparency. For BMPs implemented with funds from an Ecology grant, specific information is collected on our BMP approval form. For other BMPs implemented in support of a TMDL or STI, Ecology will collect data consistent with the BMP approval form. Additionally, we will work with partners to promote the collection of consistent implementation data and share that data with partners and the public.

Finally, to support implementation tracking, Ecology is working to develop a TMDL and Nonpoint implementation database.

Chapter 8: Groundwater

A majority of Washington State citizens (approximately 60%) get drinking water from groundwater. Not counting Seattle, which is supplied by a surface water reservoir, the percentage of citizens who rely on groundwater is even higher. In fact, most rural residents get water from groundwater wells, although some get water from springs and surface water. A significant number of wells in specific areas of the state have been shown to violate standards. Impacts to groundwater are not distributed evenly throughout the state.

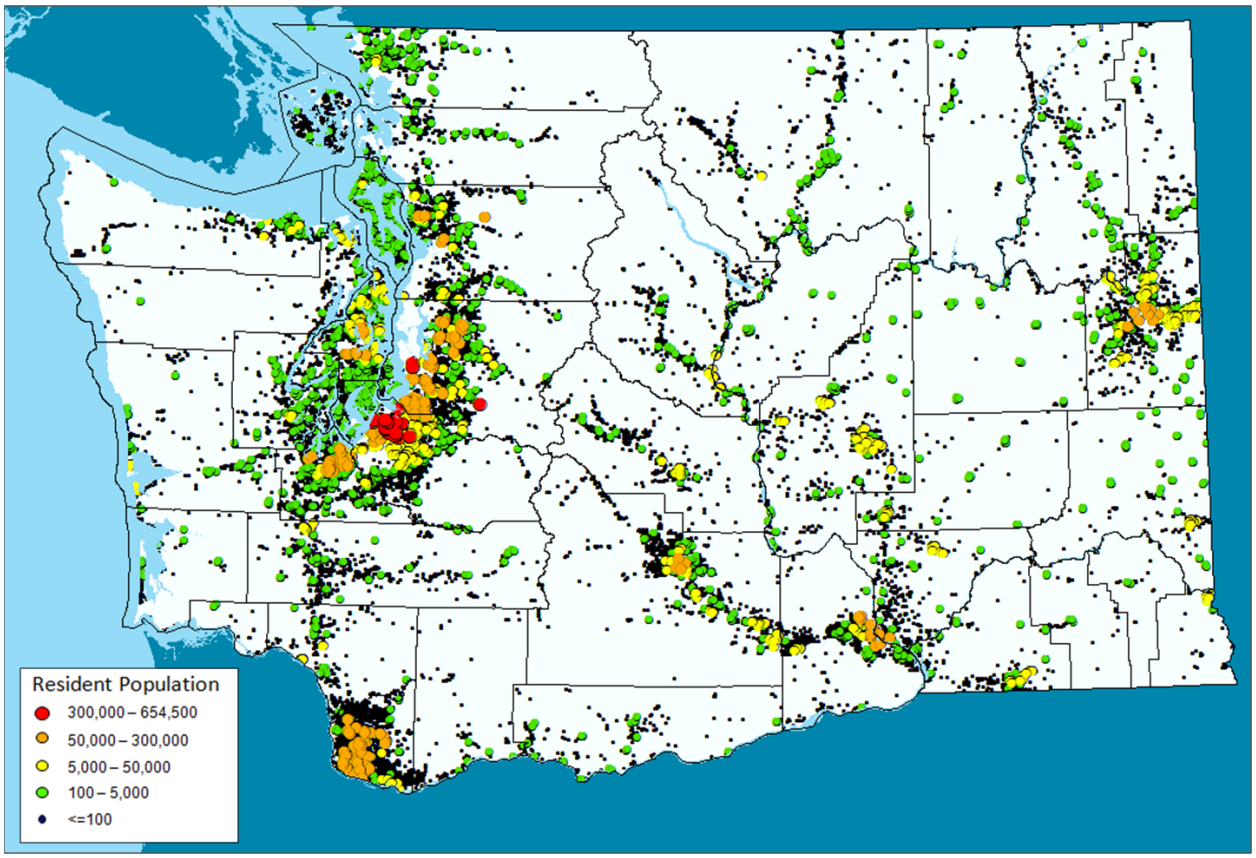


Figure 3 Public water supply system groundwater sources

Because groundwater is recharged from precipitation and snow melt, various chemicals and constitutes of other materials used or dumped on the ground's surface can infiltrate into the ground, and pollute groundwater. Once these pollutants enter groundwater, they can be difficult to detect by taste or smell, and difficult to remove. The pollutants can then end up in drinking water and water used for irrigation. Because groundwater also supplies many of our rivers and streams, especially in the late summer, pollutants such as nutrients in groundwater can end up in those water bodies and negatively affect surface water quality.

The most typical nonpoint pollutants associated with groundwater pollution are nitrates, pathogens, and chemical constituents of pesticides, fungicides and herbicides. Failed residential septic systems, forestry and agriculture are common sources of these pollutants.

The affects of nonpoint source pollution of groundwater is costly. Costs are typically incurred when wells must be deepened or replaced, treatment systems are installed and maintained, water delivery infrastructure to alternative sources are developed, and when bottled water has to be supplied to affected citizens until permanent clean water sources can be secured.

For example, millions of dollars have been spent to address nitrate contamination of groundwater in Washington State. Royal City alone had to remove an existing well due to high nitrates and then construct a new well at a cost of nearly $1.5 million dollars (Washington State Dept. of Health, 2012.

Causes of Nonpoint Pollution in Groundwater

Cities, rural residences, agriculture, and forestry can all contribute to nonpoint pollution of groundwater. Pesticides and fertilizers are used on crops, lawns, park fields, and golf courses. Animal manure is used as a fertilizer, and human waste is delivered to the ground by septic systems or land application of biosolids. Constituents of fertilizers, pesticides, and septic waste have all migrated to groundwater, causing groundwater pollution in multiple areas of the state. There are demonstrably many locations in various areas of the state where nitrate has exceeded 10 mg/L in groundwater. Over-application of commercial fertilizers and manure in sensitive areas is a nonpoint nitrate contamination source.

Regulatory Framework Nonpoint Pollution Control for Groundwater

Water Pollution Control Act

Under Chapter RCW 90.48 RCW, Ecology has authority for water pollution control. Under RCW 90.48.030, Ecology has the jurisdiction to "control and prevent the pollution of streams, lakes, rivers, ponds, inland waters, salt waters, water courses, and other surface and underground waters of the state of Washington."

Under RCW 90.48.80 it is illegal to pollute waters of the state including groundwater. Discharges to waters of the state, including groundwater, require a State Waste Discharge Permit.

Ground WQ Standards

Groundwater Quality Standards list criteria for a variety of groundwater contaminants. The numeric criteria values and the narrative standards represent contaminant concentrations which are not to be exceeded in groundwater.

WQ Standards are designed to protect the beneficial uses of the waters of the state. Examples of such beneficial uses are drinking water and other domestic uses, stockwatering, industrial, commercial, and agricultural uses, and fish and wildlife maintenance and enhancement. For example, the criteria for nitrate is 10 mg/L, which is established to protect drinking water uses.

Washington's Groundwater Quality Standards require that groundwater is kept as clean as possible and to prevent man-made groundwater pollution. To achieve this, dischargers must implement "all known, available, and reasonable methods of prevention, control and treatment" (AKART) to reduce the contaminant load sufficiently to assure the criteria will not be exceeded, and AKART must be applied to all wastes prior to entry into groundwater.

Additionally, antidegradation policy mandates the protection of background water quality, and prevents degradation of water quality which would harm a beneficial use or violate the Groundwater Quality Standards. Whenever groundwaters are of a higher quality than the criteria assigned for said waters, the existing water quality shall be protected. Additional treatment may be necessary to achieve the antidegradation policy.

Washington State's Safe Drinking Water Act

Washington has a formal agreement with the Environmental Protection Agency (EPA) (PDF, 75 KB) for meeting the requirements of the federal Safe Drinking Water Act (SDWA), which was passed in 1974 and amended in 1986 and 1996.

The SDWA includes WQ Standards, sampling, treatment, and public notification requirements. The 1996 amendments added new requirements related to annual water quality reports, operator certification requirements, system capacity, and source water assessment and protection.

Generally, the SDWA applies to water systems with 15 or more connections, or those regularly serving 25 or more people daily, 60 or more days per year. Approximately 4,200 public water systems in Washington are subject to the SDWA.

Current Groundwater Pollution Control for Nonpoint Sources

Nonpoint pollution control programs that have a nexus to groundwater in Washington State include the following:

Washington State Department of Ecology

Ecology has regulatory authority to prevent pollution, require the Groundwater Quality Standards to be complied with and require that dischargers to waters of the state obtain a permit. Permits include the Concentrated Animal Feeding Operation General Permit, Biosolids General Permit and individual State Waste Discharge permits for land application of wastewater.

Ecology has regulatory authority over Ground Water Management Areas, which apply both to water resources and water quality. The department also administers state financial assistance for pollution prevention/mitigation through grants and loans.

Washington State Department of Agriculture

Washington State Department of Agriculture (WSDA) administers the following programs:

- Dairy Program under the Dairy Nutrient Management Act.

- Pesticide use, which regulates the use of pesticides under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA).

On-Site Sewage System Regulation

See Chapter 3 for more information on the regulation of on-site sewage systems.

Washington State Department of Health Drinking Water Program

The DOH Drinking Water program requires that public water systems inventory potential contamination sources within their wellhead protection zones and report results to the state.

Ground Water Management Areas (GWMAs)

Washington State Law (RCW 90.44.400) allows the Department of Ecology to identify groundwater management areas in order to protect groundwater quality, to assure groundwater quantity, and to provide for efficient management of water resources for meeting future needs. The intent of GWMAs is to develop partnerships between local, state, tribal and federal interests to cooperatively protect the state's groundwater resources. Chapter 173-100 WAC establishes rules for establishing GWMAs.

Columbia Basin Ground Water Management Area
The Columbia Basin GWMA consists of Adams, Franklin, Grant and Lincoln counties. Nitrate control efforts focused on voluntary incentives. Incentives included distributing cost-share funds for converting irrigation systems to conserve water. They also conducted soil tests so that producers could find out how much nitrogen was being lost below the root zone. This was an educational effort to encourage producers to use less fertilizer.

Lower Yakima Valley Groundwater Management Area
In 2011, the Lower Yakima Valley GWMA was formed to address nitrate contamination in groundwater. The GWMA is a response to the elevated nitrate levels found in the Lower Yakima Valley which often exceed the state groundwater standard of 10.0 mg/L. The goal of the Lower Yakima Valley GWMA is to reduce nitrate contamination concentrations in groundwater below state drinking water standards.

Yakima County requested that Ecology recognize the GWMA and provide assistance for helping reduce the nitrate level in the groundwater. Tasks include:

- Data collection, monitoring and analysis.
- Public education and outreach.
- Problem identification.
- Potential measures or practices for reducing groundwater contamination.

Pollution prevention will be a guiding principle for all work in the Yakima GWMA. Further, they are looking to get nitrate contamination addressed by:

- Identifying the primary sources of nitrate contamination using scientific data.
- Identifying or develop practices that will minimize nitrate contamination of groundwater.
- Developing a plan that recommends strategies for implementing improved practices.

- Providing appropriate education and outreach on health risks and how to prevent exposure.

Nitrate

Nitrate is a primary indicator of nonpoint groundwater pollution and is one of the most widespread known nonpoint contaminants of groundwater in Washington State. Groundwater contamination by nitrate has increased as use of fertilizer, and manure production has increased, and the population of the state has increased.

Many studies over the years have clearly demonstrated that there are areas of the state where groundwater has been particularly susceptible to contamination from nonpoint sources. Both public water supply wells and individual residential wells have been contaminated in multiple areas of the state. The detection of excessive levels of nitrate in groundwater also indicates that chemicals used on land can reach groundwater.

The primary way nitrate pollution of groundwater is prevented and controlled is to reduce loading at the land surface. Nitrate is needed to grow crops, and this makes it especially challenging to regulate as a pollutant. Loading can be reduced by applying only what is needed by growing crops and lawns; timing nutrient applications closest to plant utilization; placing nutrients away from surface waters; eliminating late season nutrient applications; and managing irrigation to prevent over-watering and subsequent nitrate leaching.

Although most drinking water wells in Washington State have not been contaminated by nitrates (see Figure 5 at the end of this chapter), a significant number in specific areas have (see Figure 4 at the end of this chapter). Among others, these include the Sumas Blaine Aquifer in Whatcom County, the Lower Yakima Valley, and the Columbia Basin. Millions of dollars have been spent to cope with nitrate contamination of groundwater.

- Sumas Blaine aquifer in Whatcom County is impacted. Several public water supply systems are under state compliance orders for exceeding the nitrate limit. New treatment systems are being installed, bottled water is being provided and the area is investigating ways to transport in clean water.
- The Columbia Basin GWMA was formed to address widespread nitrate contamination in Adams, Franklin, Grant and Lincoln Counties.
- In the Lower Yakima Valley many people depend on ground water as a drinking water source. Past study results show that 12% of the valley's wells that have been tested do not meet drinking WQ Standards for nitrate. About 20% have elevated levels of nitrates, and many are above the background level for the area.

Nitrate Prioritization Project

This project was an outcome of a multi-agency discussion, at the director level which focused on how resource agencies could coordinate their data to produce tools to help address identified water quality concerns. This project aggregated available groundwater data throughout the state

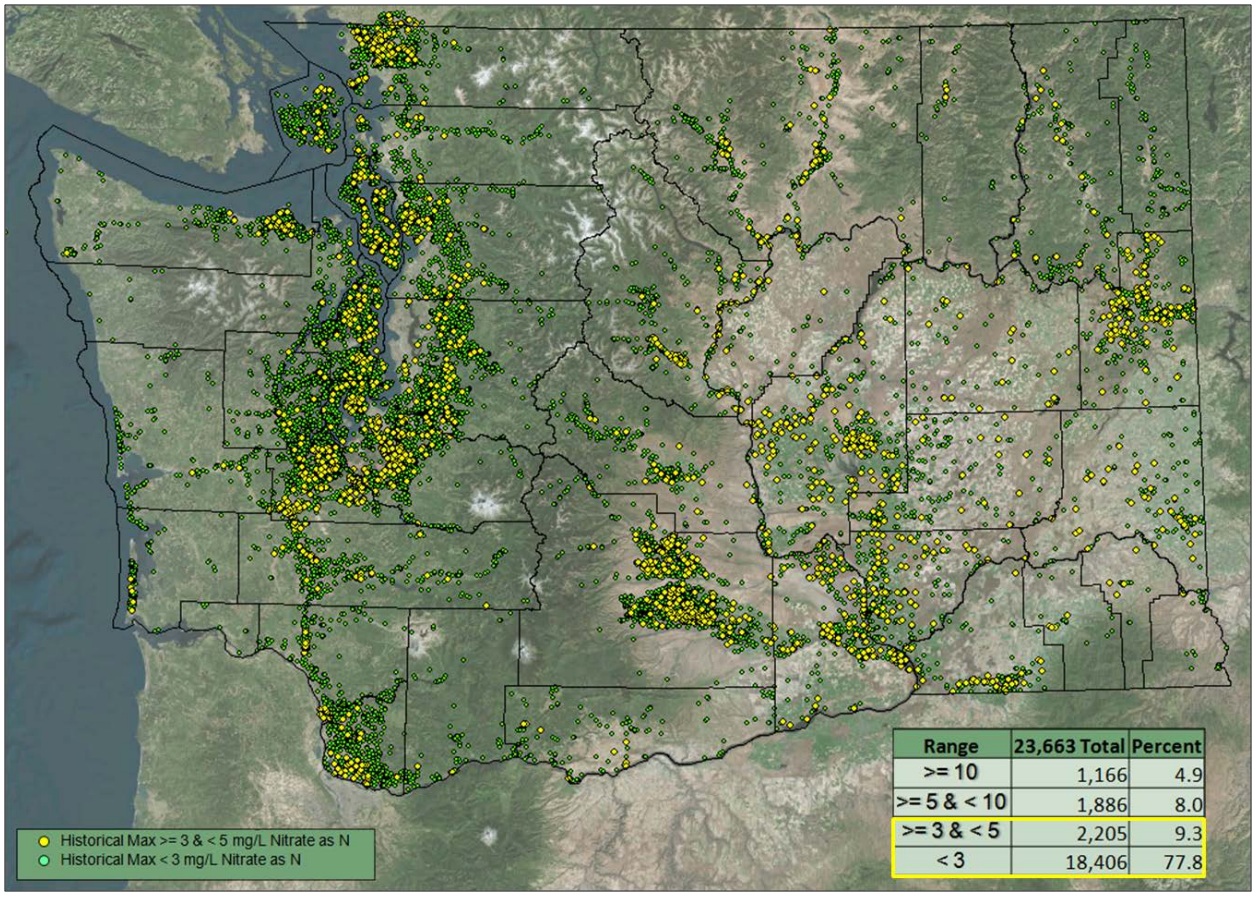
to identify areas where nitrate contamination of groundwater is of greatest concern, and to examine information that would help us understand why these areas are more at risk of contamination than other area.
Objectives:

- Identify areas of the state where groundwater has been contaminated by nitrates.
- Examine the conditions that lead to contamination.
- Prioritize these areas by the affected population and severity of contamination.

Through the nitrate prioritization project, Ecology collected and aggregated nitrate sampling data collected by the U.S. Geological Survey, DOH and Ecology. The sampling history shows where monitoring was done and where nitrates were found to be high.

Ecology also examined the conditions that lead to contamination. This information is used to understand where the nitrate contamination "hot spots" are in our state. Based on the nitrate monitoring data and examination of regional conditions, Ecology developed preliminary nitrate prioritization boundaries and risk categories. These area boundaries and categorization may change upon review.

Maps in the report show statewide landscape patterns of conditions that tend toward nitrate contamination of groundwater or indicate these conditions are present. These include where soils and geologic materials drain water quickly, where loading sources are concentrated and where numerous wells that have tested for high nitrates are clustered.



Range	23,663 Total	Percent
>= 10	1,166	4.9
>= 5 & < 10	1,886	8.0
>= 3 & < 5	2,205	9.3
< 3	18,406	77.8

Figure 4 Groundwater Nitrate Sample Record Max <5 mg/L as N.

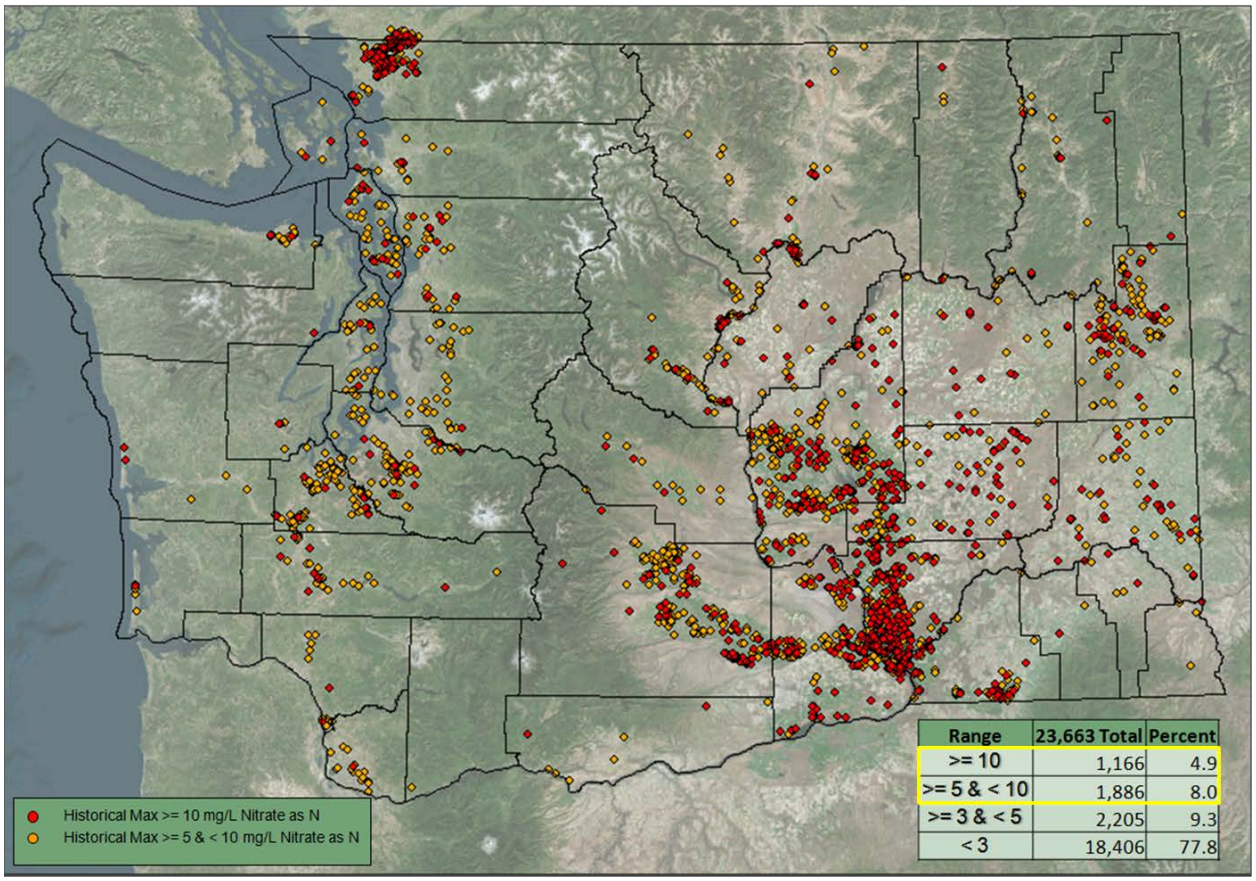


Figure 5 Groundwater Nitrate Sample Record Max >5 mg/L as N.

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Chapter 9: Goals and Strategies

This chapter addresses Element No. 1 of the *"Key Components of an Effective State Nonpoint Source Management Program"* guidance issued by the USEPA in April 2013. It contains set of goals, objectives, and strategies to restore and protect surface water and groundwater in Washington State. The table also provides measurable outputs that could be used to track progress and specific measurable milestones that will be used over the next five years.

Ecology's ultimate goal for tracking our goals, strategies, and accomplishments is to use a database instead of the following table. Use of a database would offer several advantages:

1. Track implementation in real time, instead of simply providing a snapshot in time.
2. Provide an up-to-date accounting of what's been implemented and what hasn't.
3. Contain information that would help us assess the effectiveness of our implementation work and to make management decisions if we need to change or adapt strategies.

Table 8 Goals, Objectives, Strategies and Measurable Milestones

Goal 1: Clean-up impaired waters and meet water quality standards.			
Objectives	*Strategies*	*Measurable Outputs*	*Measurable Milestones (2015-2020)*
Provide incentives to drive implementation of watershed based plans.	Provide grants and loans to applicants for projects that will meet WQ Standards, ensure compliance with state law and implement a watershed based plan.	• Number and types of BMPs implemented. Number of sites where complete suites of BMPs were implemented.	
Develop and implement watershed clean-up plans (TMDLs and STI projects).	Complete TMDLs and STI individual work plans that include all elements of a watershed based plan.	• Number of TMDLs and STI workplans completed. • Number of watershed evaluations completed. • Number of sites identified as having nonpoint source pollution problems. • Number of these sites that now have BMPs that protect water quality • Number and type of BMPs implemented to address nonpoint sources of pollution. • Watersheds where we are doing effectiveness monitoring and results of that effectiveness monitoring	Complete 265 TMDLs/STI by 2020 (average 53 per year).
	Implement TMDLs and STIs.		• Focus on a minimum of 8 priority watersheds to implement our nonpoint strategy per year. • In the 8 watersheds implement 10% of the STI/TMDL per year.
	Completing watershed evaluations. • Identify sites with nonpoint pollution sources. • Implement BMPs (stormwater, septic, forestry, agricultural) that ensure compliance with the WQ Standards.		
	If working in agricultural areas, implement the key changes to Ecology's Watershed evaluation process as recommended by the Agriculture and Water Quality Advisory Committee.		
Respond to complaints received.	Resolve complaints received by confirming whether a water quality problem exists and implementing BMPs as necessary.	• Number of complaints received, and responded to by Ecology. • Number of complaints resolved.	Respond to 100% of complaints received.
Support local PIC Programs that help meet WQ Standards and promote compliance with state law	• Ecology and DOH will provide technical and policy support to develop PIC programs as necessary. • Ecology will provide a regulatory backstop for PIC programs as necessary.	• Number of PIC programs developed. • Number and type of BMPs implemented to address nonpoint sources of pollution.	4 PIC programs established in accordance with DOH and Ecology guidance.

Support market based programs that help meet WQ Standards and support compliance with state law.	Support water quality trading programs that address WQ Standards and promote compliance with state law. • Continue to coordinate with regional partners in Idaho, Oregon and EPA Region 10 as water quality trading markets emerge in the Pacific Northwest. • Coordinate with State Conservation Commission to complete its project of determining whether there are potential credit purchasers.(add bill number) • Provide technical and policy support to develop water quality trading programs as necessary.	• Number and type of BMPs implemented to address nonpoint sources of pollution in these programs. • Conservation Commission report completed. • Number of NPDES Permits using water quality trading as a method to meet their permit limits.	
	Support certification/certainty programs address WQ Standards and promote compliance with state law. • Support the implementation of the Farmed Smart certification program. • Continue to coordinate with the Pacific Northwest Direct Seed Association on the Farmed Smart Certification. • Work with other groups interested in similar certification or certainty programs.	• Number of acres enrolled in the Farmed Smart program. • Number of certification or certainty programs developed with Ecology support. • Number of BMPs implemented to address nonpoint sources of pollution.	
Support no discharge zone designation for the Puget Sound.	Complete final petition to EPA.	• Marine waters with no discharge zone designation.	Submit final petition to EPA by 2020 or earlier.
Work to coordinate our nonpoint program with state initiatives.	Support the Governor's Results Washington Support the Washington Shellfish Initiative Support the Puget Sound Action Agenda Support the Marine Resources Advisory Council and efforts to address ocean acidification. Support Salmon Recovery in Washington Support Chemical Action Plans (CAP) Development	• Each one of these initiatives has its own set of performance measures that have a connection to the goals and strategies in the Nonpoint Source Plan. More information on these initiatives is found in Chapter 3.	

Support implementation of other state authorities and promote consistency with the WQ Standards.	Support the implementation of forest practice rules statewide. Support implementation of the Dairy Nutrient Management Program. Ecology and WSDA continue to work on the gaps identified in the Dairy Nutrient Management Act. Support DOH and LHJ implementation of OSS laws.	• Periodic reviews of the Forest Practices Rules adaptive management program and the Clean Water Act Assurances performed. • MOU between Ecology and WSDA is followed and updated as necessary. • Continue to fund projects that will address failing OSS.	
Support education and outreach and support for voluntary programs.	Use public education and outreach to build support of Ecology's nonpoint program by explaining nonpoint problems in clear and engaging language and pictures. Support partners' education and outreach programs and voluntary programs	• Number of workshops. • Number of students/attendees. • Number of outreach tools used to explain nonpoint issues.	
Goal 2: Ensure clear standards			
Objectives	*Strategies*	*Measurable Outputs*	*Measurable Milestones (2015-2020)*
Identify BMPs and measures that are designed to comply with the WQ Standards and contribute to the protection of beneficial uses of the receiving waters, and ensure compliance with state and federal law. Utilize best available science.	Support updates to the forest practice rules based on adaptive management process. Support updates to stormwater manuals. Continue work to provide information about what BMPs or suites of BMPs Ecology considers provide presumed compliance with state water quality laws. Support DOH in updates to Washington's OSS rules if needed.	• Number and type of efforts Ecology initiates or participates in to achieve this goal. • Completed BMP guidance in the form of manuals, compendiums or other guidance documents for each category of nonpoint pollution.	• Complete gaps analysis as outlined in Chapter 6 by the end of 2016. • Develop a process to address gaps in BMP guidance for agricultural activities by June 15, 2016. • Complete guidance for all categories of nonpoint pollution where gaps have been identified by June, 30, 2020.

Goal: 3 Develop and strengthen partnerships			
Objectives	*Strategies*	*Measurable Outputs*	*Measurable Milestones (2015-2020)*
Strengthen relationships and receive input from stakeholders.	Continue using the Agriculture and Water Quality Advisory Committee to receive input and recommendations from agriculture stakeholders, environmental stakeholders and tribes on agriculture related issues.	• Ideas generated by these groups are used by Ecology to improve its work, to improve communication and understanding, and to help Ecology put improved policy and procedural changes into practice. • Number of meetings at which Ecology solicits ideas for improvement.	Hold a minimum of 4 meetings per year for each group.
	Continue using the Financial Assistance Council to receive input from stakeholders on Ecology administrated grants and loans.		
	Continue using the Water Quality Partnership to maintain a dialogue with key interests on our nonpoint source pollution work.		
Strengthen relationships with federal and state agencies, and local governments and special purpose districts.	Coordinate with local governments and special purpose districts including conservation districts, and local heath districts.	• Regional staff meet with CDs to talk about regional nonpoint priorities. • Meetings with the other resources agencies on water quality and better aligning programs to meet water quality standards.	Hold a minimum of 4 meetings with NRCS.
	Coordinate with other state agencies • Implement MOA with Department of Agriculture • Support DNRs implementation of the forest practices rules. • Continue to meet with state agencies to better coordinate work. Examples of agencies that we will coordinate with include the SCC, WDFW, Commerce, RCO, DOH, and PSP,		
	Coordinate with state and federal land managers to ensure they meet the WQ Standards and prevent nonpoint pollution from reaching state waters.		
	Coordinate with federal agencies.		
	Coordinate with Interagency Team to receive input on how to improve the Water Quality Assessment and TMDL programs in Washington.		

Strengthen relationships with Tribes.	Coordinate with tribes. Invite tribes to provide input on nonpoint policy development early in the process.		
Strengthen relationships with producer groups and agricultural producers.	Find opportunities to meet with producer groups and producers to explain nonpoint issues.	• Number of producer groups Ecology staff met with. • Increased implementation rates of BMPs that ensure compliance with the water quality standards as a result of meetings with producer groups and producers.	
Goal 4: Monitor waters for nonpoint source impairments, and program effectiveness.			
Objectives	*Strategies*	*Measurable Outcomes*	*Measurable Milestones (2015-2020)*
Continue monitoring efforts.	• Perform monitoring in locations and using methods that help Ecology make management decisions. • Ensure all Ecology monitoring efforts are supported with up-to-date QAPPs. • Ensure all Ecology funded monitoring efforts are supported with up-to-date QAPPs and work with partners to ensure the use of QAPPs for monitoring efforts and studies that will be used by Ecology.	• All projects (both Ecology projects and external projects) are guided by QAPPs. • All QAPPs are approved by Ecology environmental assessment program before data collection begins.	100% of Ecology led projects have an approved QAPP.
Effectiveness Monitoring.	Ensure adequate implementation data is collected prior to starting effectiveness monitoring.	• Number of effectiveness monitoring projects performed in which there is adequate implementation data to determine whether or not our efforts are driving a change in water quality.	Initiate 3 effectiveness monitoring studies per year in TMDL/STI watersheds.

Goal 5: Ecology will administer its Nonpoint Source Program as effectively and efficiently as possible.			
Objectives	*Strategies*	*Measurable Outcomes*	*Measurable Milestones (2015-2020)*
Align the nonpoint program with other relevant programs.	Align the nonpoint program with the following programs: • TMDL • CZARA • Point source program • National estuary program.	• Annual Section 319 project reports document accomplishments in aligning programs.	
Promote accountability.	Develop TMDL and nonpoint implementation tracking system.	• TMDL/nonpoint implementation tracking system completed. • Grants Reporting Tracking System (GRTS) data entered by EPA deadlines. • Ecology identifies gaps in implementation data.	• Initiate work on a TMDL/nonpoint implementation tracking system by the end of 2016. • Achieve the following estimated reductions per year: o 14,000 lbs. of phosphorous. o 8,000 tons of sediment. o 40,000 lbs. of nitrogen. • 70 OSS repair/ replacement projects completed by SRF/ Centennial funded local loan programs.
	Continue support of EAGL.		
	Continue using BMP approval form to track specific BMP implementation metrics.		
	Work with partners to collect consistent implementation data.		
	Information about projects funded with 319 funds entered into GRTS.		
Keep the nonpoint program up-to-date.	Update plan as necessary but at least once every five years.	• Nonpoint plan updated in 2020 or before.	One updated plan submitted to EPA in 2020.
	Complete interim updates as necessary.	• Interim updates completed to new certainty programs or other accomplishments as soon as they are achieved.	
Administer grants and loans.	Oversight of grants and loans ensures that projects proposed are completed and that public money is spent appropriately.	• Final project reports document that project was completed. • Projects are closed out as soon as possible after completion.	

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Appendices

Appendix A. Assessment of Nonpoint Pollution in Washington State

Appendix A, which includes the report titled *Assessment of Nonpoint Pollution in Washington State* is attached as a separate pdf on the web. See also:
https://fortress.wa.gov/ecy/publications/SummaryPages/1403028.html

Appendix B. Letter from Ron Lavigne, Assistant Attorney General

Ecology's authority to prevent Nonpoint Source Pollution and Require Implementation of Management Measures

STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

PO Box 47600 • Olympia, WA 98504-7600 • 360-407-6000

TTY 711 or 800-833-6388 (For the Speech or Hearing Impaired)

MEMORANDUM

July 14, 2004

TO: HELEN BRESLER, Water Quality Program

FROM: RONALD L. LAVIGNE, Assistant Attorney General RoN

SUBJECT: **Ecology's Authority to Prevent Non-Point Source Pollution and Require Implementation of Management Measures**

This memo is in response to your request for a legal analysis of Ecology's authority to prevent non-point source pollution and to require implementation of management measures. As discussed below, it is my opinion that ch. 90.48 RCW provides Ecology with statutory authority to both prevent non-point source pollution and require implementation of Section 6217 management measures pursuant to the Coastal Zone Act Reauthorization Amendments of 1990 (CZARA).

RCW 90.48.030 specifically gives Ecology the jurisdiction "to control and prevent the pollution of . . . waters of the state of Washington." Pollution is broadly defined in RCW 90.48.020 and includes the contamination or other alteration of the physical, chemical or biological properties of any waters of the state. Under state law, it does not matter whether the pollution comes from a point or a non-point source, all pollution of state waters is subject to Ecology's authority to control and prevent pollution.

RCW 90.48.080 makes it unlawful for any person to "cause, permit or suffer to be thrown, run, drained, allowed to seep or otherwise discharged . . . any organic or inorganic matter that shall cause or tend to cause pollution of" waters of the state. Any person who violates or creates a substantial potential to violate the provisions of ch. 90.48 RCW is subject to an enforcement order from Ecology pursuant to RCW 90.48.120. Ecology is authorized to "issue such order or directive as it deems appropriate under the circumstances[.]" RCW 90.48.120.

It is worth noting that while RCW 90.48.120 gives Ecology the authority to take action in response to non-point source pollution, the statute also gives Ecology the authority to take action based on a "substantial potential" to pollute state waters via either a point or non-point source. Consequently, Ecology not only has authority to take action following non-point source pollution but has specific statutory authority to act proactively to prevent non-point source pollution from occurring in the first place. Ecology's authority includes the authority to require a non-point source polluter to implement specific management measures. Ecology's authority can be used to prevent nonpoint pollution and require 6217 management measure implementation, as necessary.

For the reasons set out above, it is my opinion that the department of Ecology has the statutory authority to prevent non-point source pollution and to require implementation of specific management measures to address non-point source pollution.

RLL:tmr

Appendix C. Minimum Elements of a Watershed-based Plan

Although many different elements may be included in a watershed plan, EPA has identified nine minimum elements that are critical for achieving improvements in water quality. In general, EPA requires that nine-element watershed-based plans (WBPs) be developed prior to implementing project(s) funded with § 319 watershed project funding. In many cases, state and local groups have already developed watershed plans and strategies for their rivers, lakes, streams, wetlands, estuaries, and coastal waters that address some or all of the nine elements. EPA encourages states to use these plans and strategies, where appropriate, as building blocks for developing and implementing WBPs. If these existing plans contain all nine elements listed below, they can be used to fulfill the WBP requirement for watershed projects. If the existing plans do not address all nine elements or do not include the entire watershed planning area, they can still provide valuable components to inform, develop, and update WBPs.

For example, some watershed management plans contain information on hydrology, topography, soils, climate, land uses, water quality problems, and management practices needed to address water quality problems, but lack the quantitative analysis of current pollutant loads or expected load reductions from proposed management practices. In this case, the WBP developer could incorporate such existing information into the plan to help fulfill the nine WBP elements. If separate documents contain information that help meet the following list of nine WBP elements, but are too lengthy to be included in the WBP, they can be summarized and referenced in the appropriate sections of the plan, as long as the information is readily available.

Note: EPA recognizes that in select cases (outlined in section IX.B.ii of these guidelines) alternatives to WBPs can provide an effective roadmap to achieve the water quality goals of a § 319 funded watershed project. These alternative plans do not need to address the following nine elements, but must include the planning components listed in section IX.B.ii of these guidelines. EPA still encourages plan developers to build on prior planning efforts and incorporate related information, as described previously, when developing these alternative plans.

Nine Elements of Watershed-based Plans (WBPs)

Following are the nine elements, as well as short explanations of how each element fits in the context of the broader WBP. Although they are listed as *a* through *i*, they do not necessarily take place sequentially. For example, element *d* asks for a description of the technical and financial assistance that will be needed to implement the WBP, but this can be done only after you have addressed elements *e* and *i*.

The level of detail needed to address the nine elements of WBPs will vary in proportion to the homogeneity or similarity of land use types and variety and complexity of pollution sources. For example, densely developed urban and suburban watersheds often have multiple sources of pollution from historic and current activities (Superfund sites, point sources, solid waste disposal, leakage from road salt storage, oil handling, stormwater-caused erosion, road maintenance, etc.), in addition to some agricultural activities. Plans will be more complex than in predominantly rural settings in these cases. For this reason, plans for urban and suburban

watersheds may need to be developed and implemented at a smaller scale than watersheds with agricultural lands of a similar character.

Element a. Identification of causes of impairment and pollutant sources or groups of similar sources that need to be controlled to achieve needed load reductions, and any other goals identified in the watershed plan. Sources that need to be controlled should be identified at the significant subcategory level along with estimates of the extent to which they are present in the watershed (e.g., X number of dairy cattle feedlots needing upgrading, including a rough estimate of the number of cattle per facility; Y acres of row crops needing improved nutrient management or sediment control; or Z linear miles of eroded streambank needing remediation).

What does this mean?

Your WBP source assessment should encompass the watershed of the impaired waterbody(ies) throughout the watershed, and include map(s) of the watershed that locates the major cause(s) and source(s) of impairment in the planning area. To address these impairments, you will set goals to meet (or exceed) the appropriate WQ Standards for pollutant(s) that threaten or impair the physical, chemical, or biological integrity of the watershed covered in the plan.

This element will usually include an accounting of the significant point and nonpoint sources in addition to the natural background levels that make up the pollutant loads causing problems in the watershed. If a TMDL or TMDLs exist for the waters under consideration, this element may be adequately addressed in those documents. If not, you will need to conduct a similar analysis (which may involve mapping, modeling, monitoring, and field assessments) to make the link between the sources of pollution and the extent to which they cause the water to exceed relevant WQ Standards.

Element b. An estimate of the load reductions expected from management measures.

What does this mean?

On the basis of the existing source loads estimated for element *a*, you will similarly determine the reductions needed to meet WQ Standards. After identifying the various management measures that will help to reduce the pollutant loads (see element *c*), you will estimate the load reductions expected as a result of implementing these management measures, recognizing the difficulty in precisely predicting the performance of management measures over time.

Estimates should be provided at the same level as that required in the scale and scope described in element *a* (e.g., the total load reduction expected for dairy cattle feedlots, row crops, eroded streambanks, or implementation of a specific stormwater management practice). For waters for which TMDLs have been approved or are being developed, the plan should identify and incorporate the TMDLs. The plan needs to be designed to achieve the applicable load reductions in the TMDLs. Applicable loads for downstream waters should be included so that water delivered to a downstream or adjacent segment does not exceed the WQ Standards for the pollutant of concern at the water segment boundary. The estimate should account for reductions in pollutant loads from point and nonpoint sources identified in the TMDL as necessary to attain the applicable WQ Standards.

Element c. A description of the nonpoint source management measures that will need to be implemented to achieve load reductions in element b, and a description of the critical areas in which those measures will be needed to implement this plan.

What does this mean?

The plan should describe the management measures that need to be implemented to achieve the load reductions estimated under element *b*, as well as to achieve any additional pollution prevention goals outlined in the watershed plan (e.g., habitat conservation and protection). Pollutant loads will vary even within land use types, so the plan should also identify the critical areas (critical areas are those producing disproportionately high pollutant loads) in which those measures will be needed to implement the plan. This description should be detailed enough to guide needed implementation activities throughout the watershed, and can be greatly enhanced by developing an accompanying map with priority areas and practices. Thought should also be given to the possible use of measures that protect important habitats (e.g. wetlands, vegetated buffers, and forest corridors) and other non-polluting areas of the watershed. In this way, waterbodies would not continue to degrade in some areas of the watershed while other parts are being restored.

Element d. Estimate of the amounts of technical and financial assistance needed, associated costs, and/or the sources and authorities that will be relied upon to implement this plan.

What does this mean?

You should estimate the financial and technical assistance needed to implement the entire plan. This includes implementation and long-term operation and maintenance of management measures, information/education (I/E) activities, monitoring, and evaluation activities. You should also document which relevant authorities might play a role in implementing the plan. Plan sponsors should consider the use of federal, state, local, and private funds or resources that might be available to assist in implementing the plan. Shortfalls between needs and available resources should be identified and addressed in the plan.

Element e. An information and education component used to enhance public understanding of the plan and encourage their early and continued participation in selecting, designing, and implementing the nonpoint source management measures that will be implemented.

What does this mean?

The plan should include an involvement effort (I/E) component that identifies the education and outreach activities or actions that will be used to implement the plan. These I/E activities may support the adoption and long-term operation and maintenance of management practices and support stakeholder involvement efforts.

Element f. Schedule for implementing the nonpoint source management measures identified in this plan that is reasonably expeditious.

What does this mean?

You should include a schedule for implementing the management measures outlined in your watershed plan. The schedule should reflect the milestones you develop in *g*, and you should begin implementation as soon as possible. Conducting baseline monitoring and outreach for implementing water quality projects are examples of activities that can start right away. It is important that schedules not be "shelved" for lack of funds or program authorities; instead, they should identify steps towards obtaining needed funds as feasible.

Element g. A description of interim measurable milestones for determining whether nonpoint source management measures or other control actions are being implemented.

What does this mean?

The WBP should include interim, measurable implementation milestones to measure progress in implementing the management measures. These milestones will be used to track implementation of the management measures, such as whether they are being implemented according to the schedule outlined in element *f*, whereas element *h* will develop criteria to measure the effectiveness of the management measures by, for example, documenting improvements in water quality. For example, a watershed plan may include milestones for a problem pesticide found at high levels in a stream. An initial milestone may be a 30% reduction in measured stream concentrations of that pesticide after 5 years and 50 percent of the users in the watershed have implemented Integrated Pest Management (IPM). The next milestone could be a 40% reduction after 7 years, when 80% of pesticide users are using IPM. The final goal, which achieves the water quality standard for that stream, may require a 50% reduction in 10 years. Having these waypoints lets the watershed managers know if they are on track to meet their goals, or if they need to re-evaluate treatment levels or timelines.

Element h. A set of criteria that can be used to determine whether loading reductions are being achieved over time and substantial progress is being made toward attaining WQ Standards.

What does this mean?

As projects are implemented in the watershed, you will need water quality benchmarks to track progress towards attaining WQ Standards. The *criteria* in element *h* (not to be confused with *water quality criteria* in state regulations) are the benchmarks or waypoints to measure against through monitoring. These interim targets can be direct measurements (e.g., fecal coliform concentrations, nutrient loads) or indirect indicators of load reduction (e.g., number of beach closings). These criteria should reflect the time it takes to implement pollution control measures, as well as the time needed for water quality indicators to respond, including lag times (e.g., water quality response as it is influenced by groundwater sources that move slowly or the extra time it takes for sediment-bound pollutants to break down, degrade or otherwise be isolated from the water column). Appendix B of these guidelines, "Measures and Indicators of Progress and Success," although intended as measures for program success, may provide some examples that may be useful. You should also indicate how you will determine whether the WBP needs to be revised if interim targets are not met. These revisions could involve changing management practices, updating the loading analyses, and reassessing the time it takes for pollution concentrations to respond to treatment.

Element i. A monitoring component to evaluate the effectiveness of the implementation efforts over time, measured against the criteria established under element h.

What does this mean?

The WBP should include a monitoring component to determine whether progress is being made toward attaining or maintaining the applicable WQ Standards for the waterbody(ies) addressed in the plan. The monitoring program should be fully integrated with the established schedule and interim milestone criteria identified previously. The monitoring component should be designed to assess progress in achieving loading reductions and meeting WQ Standards. Watershed-scale monitoring can be used to measure the effects of multiple programs, projects, and trends over time. Instream monitoring does not have to be conducted for individual BMPs unless that type of monitoring is particularly relevant to the project.

For more detailed information on developing watershed-based plans, please see *A Handbook for Developing Watershed Plans to Restore and Protect Our Waters*, U.S. EPA, EPA 841-B-08-002 March 2008, water.epa.gov/polwaste/nps/handbook_index.cfm. Other resources for watershed planning are available on the Watershed Central website, including the Watershed Central Wiki and Plan Builder tool at water.epa.gov/type/watersheds/datait/watershedcentral/index.cfm.

Appendix D. Letter from the Department of Health to Ecology concerning shellfish protection

Appendix D, which includes the issue paper titled *The Voluntary Stewardship Program and Clean Water* can also be found here:
https://fortress.wa.gov/ecy/publications/SummaryPages/1310030.html

STATE OF WASHINGTON
DEPARTMENT OF HEALTH
OFFICE OF SHELLFISH AND WATER PROTECTION
PO Box 47824 • Olympia, Washington 98504-7824
(360) 236-3330 • TDD Relay Service: 1-800-833-6388

July 8, 2013

Kelly Susewind, P.E., P.G.
Water Quality Program Manager
Washington State Department of Ecology
P.O. Box 47600
Olympia, Washington 98504-7600

Dear Mr. Susewind:

The purpose of this letter is to express our support for the Department of Ecology's (Ecology's) assistance to the Department of Health (department) in protecting shellfish resources in Washington State. It relates our experience working with Ecology on controlling pathogen pollution in Puget Sound and explains why we think this partnership is important for achieving the shellfish restoration goals.

The shellfish industry in Washington is valued at over $270 million dollars and provides jobs in rural parts of the state. Shellfish are part of the cultural and tribal heritage in Puget Sound. Protecting this resource now and for future generations is a priority for Washington State and consequently was recognized as a major initiative in the Puget Sound Action Agenda.

We are one of the Lead Organizations that received a multi-year National Estuary Program (NEP) grant for shellfish restoration and other human health related targets in the Puget Sound Action Agenda. We're currently managing NEP investments of almost $5 million dollars to support Pollution Identification and Correction (PIC) programs. These PIC programs control pollution sources through monitoring, education, technical assistance, and incentives backed up by enforcement.

For many years our staff has worked with local communities to establish shellfish protection districts. These districts improve management of pollution sources when they impact water quality in shellfish growing areas. Working with counties to correct pathogen pollution has yielded insights into the strengths and weaknesses of local PIC programs. It has also provided insight into where we need help from partners in managing PIC awards. We believe that local governments are in the best position to deal with local pollution problems. Counties can carry out most of the activities of a comprehensive PIC program because most landowners are willing to clean up pollution when provided with technical and financial assistance.

Counties are challenged when landowners deny access to property or refuse to cooperate. For example; while counties have regulatory authority to require landowners to fix failing onsite sewage systems,

addressing livestock pollution from farm owners is difficult. If one county has difficulty with an area of enforcement, it's a local problem; when many counties are stymied over the same issue, it's a systemic problem. To address this problem, we turned to Ecology's Water Quality staff to fill the regulatory gap. Specifically, when local governments cannot secure the regulatory authority or there is not the willingness to utilize the authority where it exists, we look to Ecology to use their nonpoint authority and compliance staff to support local governments' PIC programs by providing the correction support for nonpoint sources of pollution such as livestock. While local governments should still lead the identification portion of PIC programs, by recognizing clear roles around the correction portion of these programs we hope to make PIC efforts as effective and long lasting as possible while recognizing the realities of who can most consistently address different sources of nonpoint pollution.

When we make an offer for a PIC award, we require that the county provides evidence of its regulatory authority or be willing to work with Ecology as the regulatory backstop. We rely on Ecology's broad water quality experience and experience managing pollution from agriculture as we negotiate awards and manage projects. Over the past year, we've seen progress in local/state PIC collaborations. For example: Ecology and Skagit County inspectors both work in the Samish watershed and have developed an integrated inspection protocol; they meet frequently to coordinate the work and Ecology plays a significant role on the Clean Skagit Initiative steering committee. Ecology has contributed leadership as well as financial, technical and staff resources to the Whatcom Clean Water Program, which was recently launched as a multi-agency shellfish initiative in the lower Nooksack basin to reverse declining water quality.

We expect to see these state/local collaborations grow as PIC programs become established in Puget Sound. They are fueled by NEP now, but to protect water quality, they need to transition into self-supporting programs. The success of long term sustainable PIC programs in Puget Sound depends on a supportive regional infrastructure with smart leveraging of local, state and federal resources, identification and sharing of best practices, and identification of the most effective roles for local and state partners. We are working with Ecology to develop criteria to guide grant funding and which would help create self-sustaining local PIC programs designed to meet state water quality standards.

Much work remains to establish comprehensive, stable, and effective PIC programs in Puget Sound. Every week, we work with local, tribal and state partners to identify barriers and figure out solutions. We appreciate the value that Ecology adds to shellfish recovery and encourage our local and federal partners to support Ecology in this work.

Sincerely,

Jerrod Davis, P.E.
Director

cc: Tom Eaton, US Environmental Protection Agency

Appendix E. The Voluntary Stewardship Program and Clean Water

A Department of Ecology Issue Paper

The Voluntary Stewardship Program and Clean Water

The purpose of this document is to clarify the relationship between the Voluntary Stewardship Program (VSP) and the state's clean water programs, as well as highlight the potential opportunities for the two programs to be consistent and reinforce shared goals.

The Voluntary Stewardship Program

The VSP was passed in 2011 as an amendment to the Growth Management Act (GMA). Its goals are to protect and enhance critical areas, maintain and improve the long-term viability of agriculture, and reduce the conversion of farmland to other uses. To accomplish these goals, the VSP relies primarily on incentives and voluntary stewardship practices. Counties that opt into the VSP are responsible for designating a local watershed group to develop a watershed plan that describes how critical areas on agricultural lands will be protected and enhanced.

> ***Statutory Language***—The VSP amended the Growth Management Act (GMA). It does not supersede or modify any state clean water law or regulation. The statute expressly states that it is not to be construed to:
>
> (5) Limit the authority of a state agency, local government, or landowner to carry out its obligations under any other federal, state, or local law.

The VSP sets broad goals and requirements that the watershed group must follow. However, it intentionally provides a great deal of flexibility to the local watershed groups in developing their work plans. One question that has arisen, as people have thought more about the VSP and the watershed work plans, is how the VSP will intersect with the clean water laws and programs administered by the Washington State Department of Ecology (Ecology).

As a starting point, improved compliance with state and federal clean water law was a critical part of the Ruckelshaus agreement that led to the creation of the VSP. While this "regulatory backstop"—which was to take the form of better enforcement of clean water law *separate* from the VSP—was not included in the VSP statutory language, it was seen as a critical element by those involved with the Ruckelshaus process. The expectation that state and federal clean water laws will serve as a regulatory backstop is documented in correspondence to legislative leadership, the implementation budget for the law, and other sources.

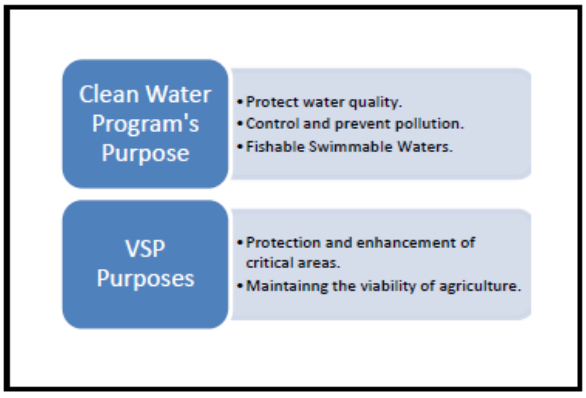
Given these dynamics, it is important to understand the contents of the VSP statute, and how implementation of the VSP does and does not affect state and federal clean water laws.

VSP and Clean Water Programs

Given the ecological relationship between critical areas and water quality, it is logical to assume that VSP and clean water programs have mutually reinforcing actions and outcomes. While this is largely true, they are not the same laws and may not necessarily achieve similar environmental outcomes. Compliance with state and federal clean water laws does not guarantee that landowners will also accomplish the relevant VSP protection and enhancement goals for their watershed. Likewise, landowners who implement actions in accordance with a county's VSP may have to take additional actions to comply with state and federal clean water laws. Implementation and/or compliance with one does not mean compliance with the other.

Different purposes

The purpose of the federal and state clean water laws is to prevent and control water pollution and protect water quality. The federal Clean Water Act (CWA) requires all states to restore their waters to be "fishable and swimmable." The state Water Pollution Control Act's policy statement sets the goal of maintaining "the highest possible standards to insure the purity of all waters of the state."



Water quality standards are a key tool for providing protection to state waters. The standards implement portions of the CWA by specifying the designated and potential uses of water bodies. They set water quality criteria to protect those uses. The standards also contain policies to protect high quality waters (antidegradation) and in many cases specify how criteria are to be implemented.

The VSP's purpose is to protect and enhance critical areas while maintaining the viability of agriculture and reducing the conversion of farmland to other uses in the watershed. Critical areas targeted by the VSP include critical aquifer recharge areas (CARAs), wetlands, frequently flooded areas, geologically hazardous areas, and fish and wildlife habitat conservation areas.

Critical areas perform key functions that enhance our environment and protect us from hazards. The beneficial functions and values provided by critical areas include maintenance of water quality, fish and wildlife habitat, food chain support, flood storage, conveyance and attenuation (the slow release) of flood waters, groundwater recharge and discharge, erosion control, wave attenuation, protection from natural hazards, historical, archaeological and aesthetic value protection, and recreation.

Different standards

Ecology is responsible for controlling and preventing the pollution of surface and underground waters of the state. State water pollution law prohibits the discharge of any polluting matter into the surface or groundwater of the state, and requires "the use of all known available and reasonable methods … to prevent and control the pollution of the waters of the state of Washington." Additionally, the water quality standards establish the basis for a water quality based approach to regulating waters that fail to

meet water quality standards despite the use of effluent limitations and other pollution control requirements.

Section 303(d) of the CWA establishes a process to identify and clean up polluted waters. Every two years, all states are required to perform a water quality assessment of the quality of surface waters in the state, including all the rivers, lakes, and marine waters.

The assessed waters are grouped into categories that describe the status of the water quality. The 303(d) list comprises those waters that are in the polluted water category, for which beneficial uses—such as drinking, recreation, aquatic habitat, and industrial use—are impaired by pollution.

The CWA requires that a water cleanup plan be developed for each of the water bodies on the 303(d) list. The technical name for a water cleanup plan is a Total Maximum Daily Load, or TMDL. A TMDL identifies how much pollution needs to be reduced or eliminated to achieve clean water. Further, the Washington State Water Pollution Control Act provides additional protection to state waters, as well as a basis for ensuring the implementation of nonpoint dominated TMDLs by prohibiting the discharge of nonpoint source pollution.

Under the CWA, a water body stays on the list until a TMDL has been developed for it, its pollution problem is addressed through some other pollution control process, or it meets water quality standards.

In comparison, the VSP sets the goal of protecting and enhancing critical areas. To "protect" critical areas generally means to preserve their functions and values. According to Washington State Department of Commerce guidance[1], the required standard of protection should be to prevent adverse impacts or to mitigate adverse impacts. At a minimum, VSP work plans should be written to ensure there is no net loss of the structure, functions, and value of the critical areas being protected. VSP work plans can go beyond the minimum standard of "protection" and include measures to enhance these critical areas.

In pursuing its goals, the VSP relies on voluntary actions and financial incentives to promote agricultural and environmental stewardship. Participation by landowners is voluntary. Even after electing to participate, a landowner may withdraw from the program and is not required to implement any voluntary measures after the expiration of an applicable contract.

Difference in enforcement

The VSP relies on voluntary actions and financial incentives to promote protection and enhancement of critical areas. If a landowner knowingly or unknowingly degrades a critical area, the VSP does not require that local governments have an enforceable mechanism to stop harm from being done (although local governments may take actions to enforce other existing development regulations to address impacts to a wetland, CARA, floodplain, or fish and wildlife habitat conservation area). The VSP only provides options to address impacts voluntarily and by using incentives.

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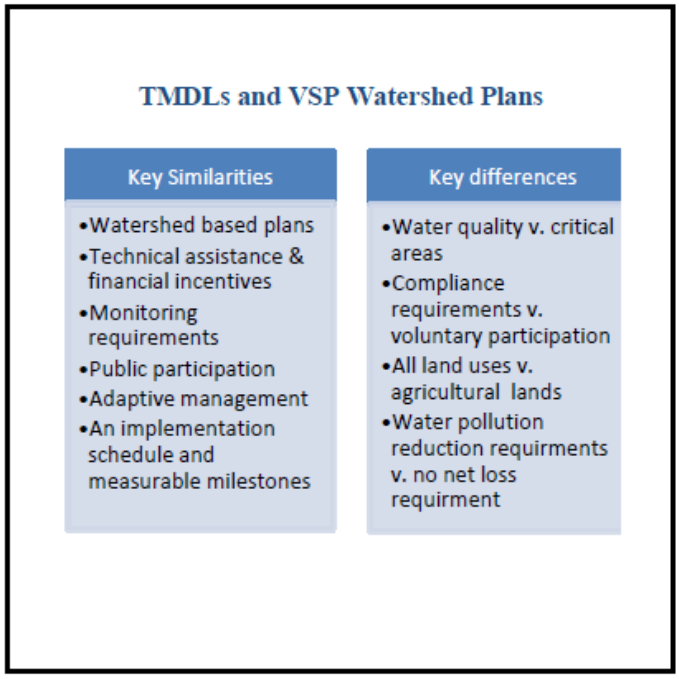
[1] See the Department of Commerce's *Critical Areas Assistance Handbook: Protecting Critical Areas Within the Framework of the Washington Growth Management Act* (http://www.commerce.wa.gov/DesktopModules/CTEDPublications/CTEDPublicationsView.aspx?tabID=0&alias=CTED&lang=en&ItemID=976&MId=944&wversion=Staging).

In comparison, the CWA and state Water Pollution Control Act provide enforcement authority to control and prevent discharges of pollutants from both point and nonpoint sources. If a landowner is discharging or creating a substantial potential to discharge, Ecology can use technical assistance, financial incentives, and enforcement to gain compliance. Wetlands are also protected under the CWA and the state Water Pollution Control Act. Both of these laws require that impacts to wetlands and their functions and values (beneficial uses) must be avoided and any unavoidable impacts must be mitigated through the restoration or creation of new wetland areas.

TMDLs and watershed plans: similarities/differences
TMDLs focus on meeting water quality standards. For impaired water bodies, Ecology must establish a TMDL that quantifies pollutant sources, establishes a margin of safety, and allocates allowable loads to the contributing point and nonpoint source discharges so that water quality standards are attained.

Some of the key elements of a TMDL include:

- *An assessment of the water quality problems*. This assessment includes a technical study identifying the pollutants causing the water quality problem and the sources of those pollutants, and a technical analysis to determine how much pollution must be reduced to protect the water.
- *Public involvement*. Public involvement, along with coordination with tribal governments and consideration of environmental justice issues (as appropriate).
- *An implementation plan*. Details how pollution will be prevented, reduced, and/or cleaned up to meet the water quality standards.
- *A follow-up monitoring plan*. Evaluates the success of pollution controls contained in the implementation plan or the need for additional actions.



Ecology uses many tools, including but not limited to permit requirements, technical assistance, financial incentives, educational programs, and nonpoint enforcement authority to bring impaired waters into compliance with the water quality standards.

In comparison, VSP work plans target critical areas. The work plan must include goals and benchmarks for the protection and enhancement of critical areas. Watershed groups seek input from farmers, tribes, local environmental groups, agencies and other involved parties, and develop goals for participation of agricultural operators, as well as provide technical assistance to farmers. Conservation districts or other qualified technical assistance organizations provide technical assistance to agricultural landowners and operators in developing individual stewardship plans. Voluntary

incentives for landowners are emphasized for all program phases. There is no requirement that the work plan include enforceable regulatory standards.

Can VSP watershed plans draw from TMDLs?
Yes. TMDLs are considered best available science and can inform VSP watershed plans. TMDLs describe the type, amount, and sources of water pollution in a particular water body, and then analyze how much of the pollution needs to be reduced or eliminated to meet water quality standards.

Considering the nexus that critical areas have with water quality, TMDL implementation plans are a valuable resource to use when developing protection strategies for fish and wildlife habitat conservation areas. Specifically, TMDL implementation plans' strategies to control nonpoint pollution could be utilized by watershed groups to inform how they can protect and enhance critical areas.

Wetland protection
The VSP work plans must protect critical areas to the extent they would be protected under a critical areas ordinance. Under critical areas ordinances, damages and losses of wetlands and their functions must be avoided and any unavoidable adverse impacts must be mitigated.

In agricultural areas, there are two conditions of wetlands. They may be in active agricultural production or they may exist in their natural state. Many productive farms contain farmed wetlands that have been partially drained for crop production. While these areas may meet the criteria for wetlands, these wetlands and their functions have been significantly altered. For wetlands in agricultural production, impacts are minimized through the use of best management practices, such as the use of buffers and timing of farming activities outside of the wettest portion of the year. Farmlands also include well-functioning natural wetlands such as old river oxbows, scrub shrub wetlands, and forested wetland areas. Any adverse impacts to existing natural wetlands, such as conversion to farming activities or drainage of existing natural wetlands through expanded drainage systems, must be mitigated.

In addition to protections afforded under critical areas ordinances, wetlands are protected under the CWA and the state Water Pollution Control Act. Both of these laws require that impacts to wetlands and their functions and values (beneficial uses) must be avoided and any unavoidable impacts must be mitigated through the restoration or creation of new wetland areas. Ecology issues 401 water quality certifications under the CWA and administrative orders under the state Water Pollution Control Act for projects affecting wetlands. VSP only provides for reducing local permitting for wetlands on agricultural lands. It does not change state or federal law. For new wetland impacts, permits are required under the CWA and Water Pollution Control Act.

Proposals to convert wetlands to agricultural use must still secure state, and in many cases federal approvals to impact wetlands. Ecology implements the state Water Pollution Control Act for protecting wetlands and addressing enforcement of unauthorized impacts to wetlands.

Implementing the VSP regulatory backstop

Under the VSP, there is no requirement that critical areas be protected through regulations in counties that opted-in unless the county is re-routed into the regular GMA critical areas process.

The VSP does not require counties to dedicate resources to encourage voluntary protection of existing critical areas until the VSP work plan is completed and approved by the executive director of the state Conservation Commission.

While the VSP does not include regulatory protection requirements, those involved in crafting the program decided to rely on enhanced enforcement of state and federal clean water laws to create a clear and immediate "regulatory backstop." Improved compliance with state and federal law is needed because the VSP does not require county governments to have a local regulatory backstop that could ensure that needed protection of critical areas is provided in cases where a land owner rejects voluntary and incentive approaches. For wetlands, Ecology will continue to regulate conversions of wetlands in agricultural areas under the state Water Pollution Control Act to ensure that wetlands and their functions are protected and maintained. Additionally, continued and improved implementation of TMDLs and increased use of Ecology's nonpoint enforcement authority under state law can provide protection to fish and wildlife habitat and CARAs.

Enhanced enforcement
Ecology currently dedicates staff in each region to compliance activities. Ecology staff engage in a variety of efforts including inspections, complaint response, technical assistance, and enforcement.

Ecology envisions implementing the regulatory backstop through additional enforcement and inspector staff. Their leads use water quality implementation plans—such as TMDL detailed implementation plans—along with ongoing complaint response to guide their compliance efforts. If a watershed does not have a completed TMDL, Ecology staff can use or develop a clean water compliance work plan to guide their efforts.

Coordination
While improved compliance with state and federal clean water laws is seen as a critical part of the Ruckelshaus agreement that led to the creation of the VSP, enhanced enforcement may create uncomfortable situations. The support of watershed groups is an important factor in the overall success of the program. Coordination between Ecology compliance staff, the watershed group (and the entity or entities designated to provide technical assistance) should be included in the VSP work plan.

Resources
Ecology currently does not have the resources available to adequately provide a regulatory backstop through enhanced enforcement. It is essential that proper levels of funding are provided to Ecology to be able to staff the compliance positions needed for on-the-ground compliance activities. The VSP draft budget calls for "6 FTE enforcement, phased in over 6 years." Ecology supports those staffing levels as being the minimum necessary statewide to provide the regulatory backstop.

Limits of the regulatory backstop
Even if the clean water backstop is adequately funded, there are limits to having clean water laws serve as a regulatory backstop to a critical areas protection law. While there is a nexus between critical areas and clean water, enhanced enforcement of clean water laws does not guarantee that VSP requirements—no net loss of critical areas function and values—will be met, because the two types of laws have different goals and standards. For example, there may be a water resources or habitat function and value that a critical area provides that cannot be adequately protected through enforcement of clean water laws. Likewise, compliance with VSP requirements also does not

guarantee that the requirements of clean water laws will be met. The regulatory backstop does not enforce critical areas ordinances or the VSP work plan. Instead, the "regulatory backstop" relies on the imperfect nexus between clean water laws and critical areas.

Further, while the VSP includes the provision that the watershed group can request enhanced enforcement to facilitate progress toward watershed plan goals, the regulatory backstop should be considered as a stop-gap protection strategy that provides time for program implementation. If the incentive and voluntary approaches of the VSP are not resulting in landowner participation and critical areas protection goals being met, the law requires that modifications be made to the watershed plans.

Again, the keys to a successful implementation of the VSP regulatory backstop include:

- *Resources*—Ecology needs additional resources to implement the regulatory backstop. The VSP Draft budget calls for "6 FTE enforcement, phased in over 6 years."
- *Compliance Staff*—If sufficient funding is provided, Ecology will dedicate compliance staff to implement the VSP regulatory backstop.
- *Coordination*—Support of Ecology's enhanced enforcement activities from VSP watershed groups and technical assistance providers (CDs) is important if the regulatory backstop is to be successful.

Ecology's enforcement philosophy

Enforcement is not an end, but a means to achieve compliance and environmental protection. Most people and businesses subject to Washington's environmental laws comply voluntarily. When they do not, it is usually because they do not understand what is required, and education and technical assistance remedy the problem. Unfortunately, there is a small percentage of people and businesses that require a more direct response to achieve compliance. In these cases, a spectrum of enforcement tools, ranging from relatively informal to significant, are available to be used by Ecology.

When enforcement actions are required, Ecology carefully matches the significance of the violation to the type of enforcement actions taken. Some compliance tools fall between cooperation-based and deterrent-based enforcement, such as compliance inspections. Ecology's goal is to ensure that all enforcement actions are based in fact and law, well documented, appropriate to the violation, and issued in a professional, equitable, and effective manner.

Ecology's current nonpoint compliance efforts

Ecology uses its nonpoint enforcement authority judiciously. Following Ecology's enforcement philosophy, Ecology staff provide technical assistance and financial incentives to correct nonpoint source pollution problems. Additionally, staff may refer landowners to the local conservation district. If nonpoint source pollution issues are not addressed, escalating enforcement may be used to gain compliance.

While there are some regional differences based on staff availability and regional priorities, Ecology continues to strive for clarity and consistency in its enforcement and technical assistance work. Recently, Ecology adopted inspection protocols to be used during livestock-related inspections and site visits. The inspection form and focus sheet outline what types of site conditions indicate past and continuing pollution, and/or future potential to pollute, as well as some best management practices that can help control and prevent pollution from happening.

Summary

Even though they have different purposes and standards, both clean water laws and the VSP should provide protection to the riparian corridor. This provides an opportunity for the two programs to take advantage of each other to achieve shared goals and intended outcomes. An effective VSP program could complement the protection and pollution reduction goals of federal and state clean water laws by helping to implement the best management practices needed to meet the water quality standards and clean water laws.

For more information

More information on Ecology's nonpoint pollution efforts can be accessed through Ecology's Web site. The address is:
www.ecy.wa.gov/programs/wq/nonpoint/index.html.

More information on TMDLs can be accessed through Ecology's Web site. The address is:
www.ecy.wa.gov/programs/wq/links/wq_assessments.html.

More information on the VSP can be accessed through the Washington State Conservation Commission's Web site. The address is:
www.scc.wa.gov/voluntary-stewardship/.

For special accommodations or documents in alternate format, call the Water Quality Program at 360-407-6600, 711 (relay service), or 877-833-6341 (TTY).

Appendix F. Response to comments received on the public review draft

Appendix F, which includes the response to comments received on the public review draft is attached as a separate pdf on the web. See also:

https://fortress.wa.gov/ecy/publications/parts/1510015part1.pdf