

# 2017 Oregon Nonpoint Source Pollution Program Annual Report

As required by the Federal Clean Water Act

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## **Watershed Management**

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DEQ is a leader in restoring, maintaining and enhancing the quality of Oregon's air, land and water.



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# Executive Summary

In 2017 Clean Water Act Section 319(h) funds paved the way for projects across Oregon that helped restore and protect riparian buffers, ensured best management practices were implemented on forests, farms, and rangeland, improved pesticide management and provided valuable education on water quality to Oregonians of all ages.

The Oregon Nonpoint Source Pollution Program 2017 Annual Report documents the activities and accomplishments of the Oregon Department of Environmental Quality's implementation of the state's Nonpoint Source Program. DEQ developed the report to meet the requirements of Section 319 of the federal Clean Water Act and the U.S. Environmental Protection Agency's 2014 Nonpoint Source Program and Grant Guidelines.

The report provides a summary of the nonpoint source activities implemented by the state during 2017 and highlights the progress Oregon is making toward meeting the substantial challenges presented by nonpoint source impairments such as temperature, dissolved oxygen, sedimentation and bacteria which account for approximately 74 percent of current impaired waters listings in the state. The report includes progress updates on milestones, implementation targets and annual reporting requirements identified in the 2014 Oregon Nonpoint Source Management Plan and 2016-2018 Performance Partnership Agreement with EPA. Annual status updates ensure that Section 319 funding, technical support and other resources are effective and efficient.

The 2014 Oregon Nonpoint Source Management plan and 2016-2018 Performance Partnership Agreement have 82 nonpoint source program related actions identified. 56 of those actions or milestones were scheduled to be ongoing or completed in calendar year 2017. DEQ completed 53 (or 95%) of the action milestones identified. In addition, DEQ completed two out of eight actions in 2017 that were scheduled to be complete in previous years.

DEQ actions not fully meeting scheduled milestones include:

- Issuing Watershed Basin Status and Action Plans;
- Developing TMDLs and WQMPs in accordance with 303(d) list schedule;
- Receiving a Five Year Report from the U.S. Bureau of Land Management;
- Discussing the United States Forest Service and Bureau of Land Management's programmatic strategy for agricultural activities on federal lands, such as grazing, at the annual check in meeting;
- Providing landscape condition information in water quality status and trends reports for ODA's biennial review process;
- Completing the georeferencing of Oregon's Water quality standards;
- Development of an approvable Coastal Nonpoint Pollution Control Program;
- Revising the DEQ/Oregon Department of Forestry MOU; and
- Documenting with EPA nonpoint source success stories and water quality progress under SP-12 and WQ-10.

In addition, a recommendation from EPA in the 2016 and 2017 Determination of Satisfactory Progress letters indicated a need for DEQ to fill key vacancies in the 319 Program. Due to limited program

resources, some of these key vacancies continue to remain open in 2017. The 319 workload was redistributed to existing staff in order to meet deadlines in a more timely and efficient manner.

Some significant activities and actions accomplished in 2017 include:

- Improving the nonpoint source annual report. Starting in 2016, the report was reorganized to be more succinct in response to EPA's recommendations. Among the revisions: a summary of nonpoint source accomplishments and a more in-depth look at nonpoint source implementation activities occurring statewide. The revisions continue in 2017 by adding additional accomplishments not included the 2016 report. Additional information added to the 2017 report includes reported project outputs from Section 319, Oregon Watershed Enhancement Board, Drinking Water, non-grant related Total Maximum Daily Load implementation actions by Designated Management Agencies, and Clean Water State Revolving loan nonpoint source projects or activities. Also included is the status of TMDL implementation plan annual reports submitted by Designated Management Agencies and reviewed by DEQ. There are also five additional Basin Reports for areas not included in 2016.
- The Environmental Quality Commission designated the North Fork Smith River and its tributaries and associated wetlands as Outstanding Resource Waters (ORW). The adopted policies and rules will prohibit new permitted point source discharges and other activities that could degrade the current high water quality, exceptional ecological characteristics and values of the waters. This is Oregon's first ORW designation, and it was considered in response to a citizen petition.
- The water quality standards program competed a Triennial Review as required under 40 CFR 131.20 to prioritize and plan the work of the water quality standards program for the next three years.
- The Drinking Water Program completed 50 of the highest priority "Updated Source Water Assessments" for coastal watersheds. Updates Source Water Assessments give public water systems information on geographic setting, and point and non-point risks to drinking water supply. The program also completed statewide "Resource Guides" for both groundwater and surface water sources that provide additional information and tools to determine local priorities and strategies for protecting the source water areas.
- Pesticide Stewardship Partnerships: Pesticide Stewardship Partnerships are a cooperative, voluntary process designed to identify potential concerns regarding surface and groundwater affected by pesticide use. Its purpose is to reduce pesticide residues in Oregon's water bodies where there is potential concern by working with local stakeholders and to provide a mechanism to share successful strategies with all Oregonians. The program's goal is to achieve measurable environmental improvements, making Oregon waters safer for people and aquatic life. The partnerships combine local expertise and water quality sampling to encourage voluntary changes in pesticide use and management practices. State partners including DEQ, the Oregon Watershed Enhancement Board, Oregon Health Authority, Oregon State University's Extension Service, Oregon Department of Agriculture and Oregon Department of Forestry work with diverse parties, including watershed and other natural resource groups, local landowners and growers, soil and water conservation districts and tribal governments to find ways to reduce pesticide levels while measuring improvements in water quality and crop management. Data collected as part of the partnerships appears to show the continued effect on pesticide management strategies as evidenced by a decline in the number of exceedances of benchmarks and a decline in the maximum level of the pesticides detected in certain watersheds.

- Water Quality Status and Trends Reports for Agricultural Rule and Plan Reviews continue to be developed. DEQ produced sixteen reports in 2017. Oregon statute and administrative rules require ODA to consult DEQ during the biennial review of Agricultural Water Quality Management Area Rules and Plans (Oregon Revised Statute 568.930). DEQ Total Maximum Daily Load and nonpoint source program staff conduct these reviews based on ODA's biennial review schedule of its area rules and plans. ODA's Agriculture Water Quality Program is outcome based, explicitly describing prohibited conditions, similar to DEQ's TMDL and nonpoint source programs which explicitly define water quality targets and goals. The reports present data and analysis that will help DEQ fulfill its roles in the biennial review process. The reports present an analysis of water quality data readily accessible from public databases and available in sufficient quantity to indicate status and trends.
- Conservation Effectiveness Partnership: The Conservation Effectiveness Partnership is a collaborative effort between Natural Resources Conservation Service, Oregon Watershed Enhancement Board, Oregon Department of Agriculture, Oregon Department of Fish and Wildlife, and DEQ with a mission to describe the effectiveness of cumulative conservation and restoration actions in achieving natural resource outcomes through collaborative monitoring, evaluation and reporting.  
In 2017, the partnership completed an analysis to evaluate the differences in water quality after completion of water use efficiency projects such as piping, and ditch removal projects in Prairie Creek watershed in Northeast Oregon. The data analysis showed improvements to nutrient and bacteria concentrations where conservation practices have been implemented. The partnership is also developing a technical approach with stakeholders to evaluate water quality improvements in the Dairy-McKay Creek Watershed in the Tualatin Subbasin.
- Over the past five years, DEQ has struggled with demonstrating water quality improvements because of the lack of accessibility to DEQ and third-party data. In EPA's 2016 Determination of Satisfactory Progress letter the agency urged DEQ to move forward with the development of a data system. In 2017 DEQ acquired and launched the Ambient Water Quality Monitoring System (AWQMS) to manage DEQ's environmental monitoring data. This system will manage data that is generated from DEQ's laboratory as well as third-party data. In addition, DEQ will use the system to upload data to the EPA's WQX/STORET database. Throughout 2017 and into the years ahead DEQ will be focusing on transitioning legacy data from the now retired LASAR database as well as other environmental monitoring data currently not in a database.

Overall the state's nonpoint source program continues to use innovative, cooperative, and community-based methods to protect and improve water quality affected by nonpoint sources of pollution. This is done by working with state, local and national partners as well as tribal nations on water quality protection and restoration, supporting and encouraging implementation of TMDLs and monitoring Oregon's water quality to support water quality program needs. It is through this collaborative process that Oregon can identify emerging issues, understand water quality status and trends and to inform management activities targeted at restoring Oregon's water quality and beneficial uses. The Oregon Nonpoint Source Program also leverages work from other Clean Water Act Programs within DEQ and relies on federal and state authority to protect and improve Oregon's water quality.

# 1. Introduction

This Oregon Nonpoint Source Pollution Program 2017 Annual Report meets the requirements of Section 319 of the Federal Clean Water Act. The report documents the activities and accomplishments of the Oregon Department of Environmental Quality's implementation of the state's Nonpoint Source Program.

This report provides a summary of activities implemented by the state during calendar year 2017 intended to address nonpoint sources. The summary includes progress on implementing the nonpoint source program including actions or milestones identified in the 2014 Oregon Nonpoint Source Management Plan and in the 2016-2018 Performance Partnership Agreement between Oregon DEQ and EPA. This report also highlights progress Oregon is making improving water quality in different parts of the state.

## 2. Oregon's Nonpoint Source Program

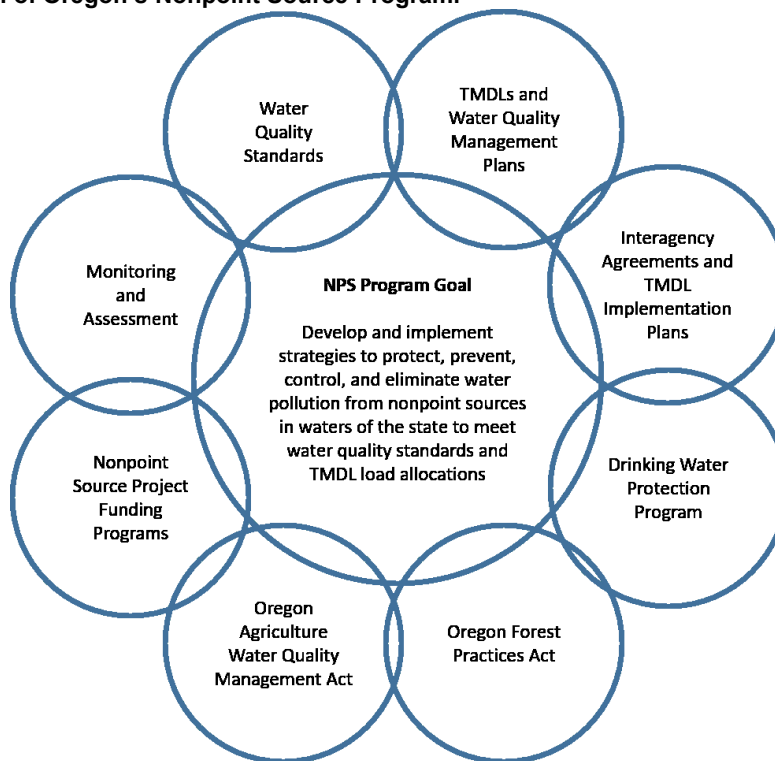
*This section provides a description of Oregon's nonpoint source program and the baseline regulatory statutes and non-regulatory programs.*

The nonpoint source program's long-term goal as identified in the 2014 Nonpoint Source Program Management Plan is to develop and implement strategies to protect, prevent, control, and eliminate water pollution from nonpoint sources in waters of the state to meet water quality standards and TMDL load allocations. Protecting water quality also protects beneficial uses, the environment and Oregon's economy by reducing capital costs for water treatment infrastructure and flood mitigation.

The program's short term goals, as outlined in the 2014 Nonpoint Source Management Plan and the 2016-2018 Performance Partnership Agreement with EPA, is to implement key actions and ongoing program activity. Progress in carrying out the short term goals is tracked through successful execution of multiple efforts (Figure 1) and documented in this annual report. Current links to Oregon's Nonpoint Source Program website can be found here: <http://www.oregon.gov/deq/wq/programs/Pages/Nonpoint.aspx>.

The program is built around a diverse set of programs, plans, and tools; which use regulatory, voluntary, financial, and technical assistance approaches to achieve a balanced program (Figure 1). These efforts and many of the funding sources are described immediately below and in more depth in subsequent sections.

**Figure 1: Illustration of Oregon's Nonpoint Source Program.**



## **Water Quality Standards**

The Water Quality Program's mission is to protect and improve Oregon's water quality. Protecting Oregon's rivers, streams, lakes and estuaries keeps these waters safe for multiple beneficial uses such as drinking water, fish and aquatic wildlife habitat, recreation and irrigation. This is accomplished by identifying the most sensitive beneficial use and establishing the water quality level or target that is protective of that use. Establishing water quality standards for Oregon is at the core of DEQ's Water Quality Program.

## **Monitoring and Assessment - Section 303(d) and 305(b)**

Collection and assessment of water quality data is important for the section 303(d) and 305(b) Integrated Report and other aspects of the Oregon Nonpoint Source Management Program. Oregon DEQ conducts both routine ambient monitoring and special studies such as toxics monitoring, groundwater monitoring, biological monitoring, and pesticide monitoring. In addition to samples collected by DEQ, the Volunteer Monitoring Program supports collection of data from third parties across the state, such as local watershed councils and Soil and Water Conservation Districts. The program provides technical guidance on monitoring efforts and maintains a loan program for water quality monitoring equipment. This assistance helps third parties identify and begin addressing the state's water quality problems. In addition to supporting local water quality awareness and management, data collected by third parties is submitted to the DEQ and is often a very valuable addition to DEQ's monitoring dataset.

Monitoring data is used in the nonpoint source program for understanding statewide water quality trends in major rivers and streams, identifying and characterizing toxic contaminants in water, supporting the development of new, or revised water quality standards, identifying impaired beneficial uses and waterbodies, and responding to environmental emergencies and investigations.

### **Total Maximum Daily Loads and Water Quality Management Plans**

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

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

The Water Quality Management Plan is the framework for TMDL implementation that is issued by Oregon along with the TMDL (Oregon Administrative Rules 340-042-0040(1)). The plan provides the blueprint for TMDL implementation for multiple sectors plan and includes the reasonable assurance that the TMDL will be implemented and allocations will be achieved.

### **Oregon Forest Practices Act**

Oregon's nonpoint source program for private non-federal forestlands is administered by the Oregon Department of Forestry (ODF) through the Oregon Forest Practices Act (FPA). ODF has exclusive jurisdiction over water quality regulation on non-federal forestlands unless additional protections are required by the federal Clean Water Act. Under ORS 468B.110(2), ORS 527.765, and ORS 527.770, the Board of Forestry establishes best management practices or other control measures by rule that, to the maximum extent practicable, will ensure attainment and maintenance of water quality standards. If the Environmental Quality Commission (EQC) does not believe that the FPA rules will accomplish this result, the EQC is authorized to petition the Board for rules that are more protective. If the EQC petitions the Board, the Board has two options: terminate review with the EQC concurrence, or begin rulemaking.

If the Board determines that BMPs should be reviewed, rules specifying the revised BMPs must be adopted not later than two years from the filing date of the petition for review, unless the Board, with concurrence of the EQC, finds that special circumstances require additional time. Upon the EQC's request, the Board is required to take interim action "to prevent significant damage to beneficial uses" while the BMPs are being reviewed. The "BMP shield" under ORS 527.770 is lost if the Board fails to complete BMP revisions, or makes a finding that revisions are not required, within the statutory deadline. In addition, under 468B.110(2), the EQC cannot adopt rules regulating nonpoint source discharges from forest operations and the DEQ cannot issue TMDL implementation plans or similar orders governing forest operations unless "required to do so by the CWA." This authority would also be triggered by the failure of the Board to adopt adequate BMPs to implement TMDL allocations for forestry or to avoid impairment of water quality such that standards are not met. The FPA rules are periodically evaluated to insure that forest practices do not contribute to violations of water quality standards and that changes to rules be evaluated if the Board of Forestry finds evidence of resource degradation and the public policy process under ORS 527.714 is completed.

## **Oregon Agriculture Water Quality Management Act**

The Agricultural Water Quality Management Act (ORS 568.900 to 568.933) authorizes the Oregon Department of Agriculture (ODA) to develop Agricultural Water Quality Management (AGWQMP) Area Plans (area plans) and rules throughout the state. The statute authorizes the development of Agricultural Water Quality Management Area Rules (area rules) to serve as a regulatory backstop to the voluntary efforts described in the area plans. ORS 561.191 states that ODA shall develop and implement any program or rules that directly regulate farming practices to protect water quality. The Agricultural Water Quality Management Program is the main regulatory tool to prevent and control nonpoint source pollution from agricultural lands. The area plans and rules are reviewed every two years for each management area. DEQ provides review and comment on the area plans and rules during these biennial reviews. Water quality standards and TMDL load allocations for agricultural lands should be met through implementation of area plans and enforcement of area rules. The program staff members are also involved with the development of Ground Water Management Act action plans, and lead implementation of action plans to improve groundwater quality. DEQ and ODA's program staff and management work collaboratively to address agricultural nonpoint sources.

## **Drinking Water Protection Program**

The Oregon Health Authority administers the Drinking Water Revolving Loan Fund (DWRLF). OHA, which regulates drinking water under state law and the Safe Drinking Water Act, works cooperatively with DEQ on source water protection efforts. Money from the loan fund is used to fund: Source Water Protection Grants (up to \$30,000 per water system) to fund source water protection activities, monitoring, and planning to reduce risk in Drinking Water Source Areas and loans for improving drinking water treatment, source water protection activities, or land acquisition in source areas. Oregon's Infrastructure Finance Authority is responsible for administering these projects. The loan fund also funds five Drinking Water Protection positions at DEQ. These positions delineate source areas, integrate Clean Water Act programs (including the Nonpoint Source Program) with source water protection needs, provide technical assistance to public water systems, and research the impacts of nonpoint source pollution on surface and ground drinking water sources.

The Drinking Water Providers Partnership is a collaboration of the Geos Institute, USDA Forest Service Region 6, DEQ, Washington Department of Health, EPA Region 10, the U.S. Bureau of Land Management OR/WA Office, and Wild Earth Guardians. Together, the partners coordinate an annual, competitive grant solicitation and award program for environmental conservation and restoration projects in municipal watersheds across the Northwest. The partners share a common vision that watershed restoration is an important and effective way to provide clean, inexpensive drinking water to communities and protect native fish populations, particularly when downstream and upstream users work together. Goals of the partnership are to:

- Restore and protect the health of watersheds which communities depend upon for drinking water while also benefiting aquatic and riparian ecosystems, including the native fish that inhabit them.
- Support local partnerships between drinking water providers, landowners, and restoration practitioners.



## **Clean Water State Revolving Fund (SRF)**

The Clean Water State Revolving Fund loan program provides below market rate loans to public agencies for the planning, design and construction of various projects that prevent or mitigate water pollution. Eligible agencies include federally recognized Indian tribal governments, cities, counties, sanitary districts, soil and water conservation districts, irrigation districts, various special districts and intergovernmental entities. DEQ partners with Oregon communities to implement projects that attain and maintain water quality standards, and are necessary to protect beneficial uses.

DEQ's Clean Water State Revolving Fund program offers below-market interest rate loans and bond purchases to public agencies for planning, design, construction or implementation of the following water quality improvement activities:

- Wastewater collection, treatment, water reuse and disposal systems
- Nonpoint source water pollution control projects
- Development and implementation of management plans for federally-designated estuaries in Oregon (Tillamook Bay and Lower Columbia River)

Eligible agencies include federally recognized Indian tribal governments, cities, counties, sanitary districts, soil and water conservation districts, irrigation districts, various special districts and intergovernmental entities. DEQ partners with Oregon communities to implement projects that attain and maintain water quality standards, and are necessary to protect beneficial uses. Applicants that submit applications for eligible projects are included on the project priority list in priority order. However, DEQ does not commit or reserve funds for individual projects until an applicant meets all loan requirements. This indicates the project's readiness to proceed. DEQ funds projects that are ready to proceed in priority order.

DEQ accepts applications at any time but reviews and scores applications three times a year.

In addition to offering loans for nonpoint source pollution control, DEQ also offers a Sponsorship Option loan that can offset the overall debt service for a point source, treatment works project and a nonpoint source project combined, when an eligible applicants submits applications for both a point source and nonpoint source loan.

The CWSRF loan program objectives include:

- Support emerging markets to obtain loans; these include irrigation districts, working with tribes and local community loans.
- Encourage innovative and non-traditional projects, such as green infrastructure, water and/or energy efficiency, climate resilience, and sustainability environmentally and financially sustainable projects.
- Encourage communities to focus on high priority, water quality improvements projects statewide, including stormwater, nonpoint and estuary projects.

## Oregon Watershed Enhancement Board (OWEB)

The Oregon Watershed Enhancement Board is a state agency that provides grants to help Oregonians take care of local streams, rivers, wetlands, and natural areas. Community members and landowners use scientific criteria to decide jointly what needs to be done to conserve and improve rivers and natural habitat in the places where they live. OWEB grants are funded from the Oregon Lottery, federal dollars, and salmon license plate revenue, along with other funding sources. The agency is led by a 18-member citizen board drawn from the public at large, tribes, state natural resource agency boards and commissions, and federal agencies.

OWEB offers a variety of grant types and programs:

<https://www.oregon.gov/OWEB/grants/Pages/grant-programs.aspx>

The OWEB mission of helping to protect and restore healthy watersheds and natural habitats that support thriving communities and strong economies implicitly recognizes that specific goals for improvement will vary between watersheds. OWEB grants fund a variety of activities that local partners have identified as priorities in watershed assessments, action plans, or regional plans such as ESA Recovery Plans, Groundwater Management Areas, or TMDLs. Restoration actions address watershed process and functions necessary to support natural processes that are indicative of healthy watersheds. This includes, but is not limited to improving water quality, water quantity, habitat complexity, flood plain interaction, vegetation structure, and species diversity. Examples of OWEB grant programs and initiatives that support voluntary actions helping to address nonpoint source pollution include, but are not limited to:

- *Coordinated Streamside Management and Strategic Implementation Areas* -- Under the interagency, collaborative approach titled Coordinated Streamside Management, OWEB is collaborating with Oregon Department of Agriculture (ODA) to provide grants to local partnerships in Strategic Implementation Areas (SIAs) for technical assistance that will design projects to restore riparian function, improve watershed health and increase water quality. SIAs are identified through ODA's Agriculture Water Quality Program as areas with water-quality concerns. SIAs result in an implementation plan outlining a set of coordinated restoration actions that to address such limiting factors as poor streamside vegetation and/or increased temperature, sediment, and nutrients. An important companion to the technical design work is watershed-scale effectiveness monitoring to track the cumulative effectiveness of coordinated projects that will be implemented. This monitoring is being led by an interagency partnership of OWEB, ODA, DEQ and Oregon Department of Fish and Wildlife (ODFW).
- *Conservation Reserve Enhancement Program (CREP)* -- Riparian habitat protection continues to be a focus through OWEB's partnership investments, including via CREP. This program is a partnership between the U.S. Department of Agriculture and the State of Oregon designed to protect and improve riparian habitat, primarily on agricultural lands, to benefit aquatic species, water quality and streamside habitat. Conservation practices implemented through CREP contracts (typically 10-15 years in length) are cost-shared by OWEB, which provides 20% of the project costs using state funds. OWEB recently completed an effectiveness monitoring study of CREP, and is using findings of this study to support adaptive management of the program.
- *Conservation Effectiveness Partnership (CEP)* -- CEP brings together technical staff from OWEB, DEQ, ODA, the Natural Resources Conservation Service (NRCS) and ODFW to evaluate the effects of conservation and restoration investments on agricultural water quality and

overall watershed health. DEQ, ODA, NRCS, and OWEB formed the partnership in 2010. Through a Memorandum of Understanding effective through 2020, the agencies have committed to participate in CEP. In 2016, ODFW joined the CEP as a technical advisor to help the team consider questions about the connections between water quality and fish species and habitats.

## **3. Nonpoint Source Activities and Accomplishments in 2017**

*This section provides a description of Oregon's administration and implementation of the nonpoint source management plan, description of the Performance Partnership Agreement (PPA), use of 319 funds, and identification of annual project implementation activities for various programs and projects.*

As outlined in Figure 1, Oregon's nonpoint source program includes a broad spectrum of program activities. The 2014 update to the Oregon Nonpoint Source Management Program Plan provides focus and direction to the program by identification of current and planned goals, priorities, actions and timeframe milestones for the five year period from 2014-2019. The Performance Partnership Agreement (PPA) between DEQ and EPA also clarifies how DEQ will use federal funds to implement programs, including the nonpoint source programs, over fiscal years 2016-2018.

The goals and priorities outlined in the plan and agreements address a broad spectrum of activities ranging from 319 grant administration, TMDL development and implementation, to working with partners in various land use sectors such as urban, forestry, and agriculture.

This annual report provides the basis for tracking annual progress under the program plan and Performance Partnership Agreement. The sections to follow describe the nonpoint source related activities and reported outputs accomplished in 2017 for each program area identified in the 2014-2019 nonpoint source program management plan and 2016-2018 Performance Partnership Agreement.

### **3.1. Water Quality Standards**

DEQ identified several water quality standards related action items (

Table 1) in the 2016-2018 Performance Partnership Agreement. The following sections describe progress on these action items in 2017.

**Table 1 Description of Water Quality Standards actions or outputs identified in the 2016-2018 Performance Partnership Agreement and the status in 2017.**

PPA Element	Action	Time Frame	2017 Status
PPA - 1.1	Temperature Cold Water Refugia Plan for the Lower 50 miles of the Willamette River. The purpose of the plan is to interpret the narrative Cold Water Refugia criterion and allow for implementation of the criterion through DEQ's Clean Water Act authorities.	November 2016- November 2018 Revised September 2019	In progress. See Section 3.1.6.
PPA - 1.2	Conduct a rulemaking process to revise Oregon's copper criteria. Track and comment on EPA's copper criteria promulgation.	December 30, 2016	Completed. See Section 3.1.4.
PPA - 1.3	Coordination on EPA federal water quality standard rulemakings for Oregon waters	January 16, 2017	Ongoing. See 2017 accomplishments in Section 3.1.4.
PPA - 1.4	Conduct a review and prepare for rulemaking to revise relevant water quality regulation(s) as they related to Oregon's temperature water quality standard. Determine how to address natural thermal regimes and variability for temperature.	March 2017	In progress.
PPA - 1.5	Address water quality standards-related action needs (e.g., variances, site-specific background pollutant criteria, UAAs and/or SSC) arising from implementation of revised human health criteria or the remaining effective portion of Oregon's temperature standard.	Ongoing	Ongoing.
PPA - 1.6	Describe antidegradation implementation procedures that address the remaining issues raised in EPA's review of Oregon's Antidegradation Implementation guidance document.	January 30, 2017 Revised 2018.	Mostly complete. See Section 3.1.3.
PPA - 1.7	Conduct rulemaking to amend bacteria standards for coastal waters, including adopting the enterococci criteria for coastal recreation, clarifying the application of fecal coliform criteria to shellfish harvesting waters, and documenting these uses.	September 30, 2016	Completed. See Section 3.1.4.

PPA Element	Action	Time Frame	2017 Status
PPA - 1.8	Identify and plan next set of standards work to be completed based on water quality program needs and stakeholder input (triennial review). Upon completion of this planning process, provide EPA with a list of possible additional water quality standards revisions that could be undertaken subject to resource availability and priorities.	March 30, 2017	Completed. See Section 0.
PPA - 1.9	Conduct Outstanding Resource Water Rulemaking to designate the NF Smith R. and its tributaries as ORWs and adopt policy to protect the high quality waters.	February 2017	Completed. See Section 3.1.1.
PPA - 1.10	In response to the July 2015 USFWS Biological Opinion, DEQ will revise bull trout use designations and the implementation methods for temperature to better protect suckers in the area downstream of Klamath falls.	June 2018.	Partially complete. Temperature implementation methods for Klamath River Suckers complete. Starting bull trout use designation revisions in 2019.
PPA - 1.11	Amend Oregon's rules to clarify the dissolved oxygen standard as it applies to resident trout spawning and cool water species designations.	April 2018	Starting in 2019.
PPA - 1.12	Georeferenced water quality standards for public access, transparency, consistency and to support DEQ's water quality programs, including the development of Oregon's Integrated Report and 303(d) lists.	December 2016. Revised to Fall 2018.	Partially complete. See Section 3.1.5.

### 3.1.1. Outstanding Resource Waters

The Environmental Quality Commission designated the North Fork Smith River and its tributaries and associated wetlands as Outstanding Resource Waters (ORW) on July 11<sup>th</sup>, 2017. Outstanding Resource Waters are high quality waters that constitute an outstanding state resource due to their extraordinary water quality or ecological values, or where special protection is needed to maintain critical habitat areas. Oregon's ORW policy, part of the state's antidegradation policy, was adopted by the Environmental Quality Commission in 1991 and may be found at OAR 340-041-0004(8). The adopted policies and rules will prohibit new permitted point source discharges to the waters and other activities that could degrade the current high water quality, exceptional ecological characteristics and values of the waters. This is Oregon's first ORW designation, and it was considered in response to a citizen petition. See OAR 340-041-0305(4) for the rule.

### **3.1.2. Triennial Review**

The standards program completed a Triennial Review as required under 40 CFR 131.20 to prioritize and plan the work of the water quality standards program for the next three years. The review recommended completing or initiating seven standards-related projects during the next three years:

1. A cold water refuge plan for the lower Willamette River,
2. A response to four individual variance applications received in summer 2017,
3. A regional or statewide methylmercury variance,
4. Fish and aquatic life use updates,
5. A temperature standard strategy, including temperature variances and potentially site specific criteria or other criteria revisions,
6. Clarification of the warm-, cool- and cold-water aquatic life definitions used in the dissolved oxygen standard, and
7. Evaluation of the need for and scope of rulemaking to adopt new or revised aquatic life criteria for selenium, acrolein, carbaryl, diazinon and nonylphenol.

In addition, DEQ plans to initiate one or more of the following projects in the next three to five years, as time allows, beginning with background research and defining the project scope:

- Implementation procedures for the narrative toxics criterion,
- Implementation procedures for the narrative sedimentation criterion, or
- Examining how water quality standards revisions or implementation procedures could fill potential gaps in wetlands protection.

### **3.1.3. Antidegradation Policy**

In 2017 DEQ prepared a series of memoranda clarifying antidegradation procedures that are contained in DEQ's antidegradation Internal Management Directive. These memoranda address areas in the IMD that EPA found were inconsistent with federal antidegradation regulations. The memoranda address the following issues:

- Determination of whether a new or increased discharge from a point source is considered a de minimis lowering of water quality.
- Clarification of antidegradation procedures for general permits; and
- Clarification of procedures to assure that, when allowing a lowering of water quality, the highest statutory and regulatory requirements for all new and existing point sources and cost-effective and reasonable best management practices for nonpoint source control are achieved.

The memoranda are expected to be finalized in 2018.

### **3.1.4. Water Quality Standards Rulemaking**

EPA approved revisions to Oregon's Aquatic Life Water Quality Standards for Copper on Jan. 9, 2017. The Oregon Environmental Quality Commission adopted the new rules on November 2, 2016. The revisions address EPA's January 31, 2013 disapproval of Oregon's freshwater copper criteria that the Oregon Environmental Quality Commission adopted in 2004. Copper is a pollutant that can cause adverse effects to salmon, trout and other aquatic species.

The updated copper criteria protects aquatic life based on EPA's latest 2007 national recommendations for copper. These criteria would generally apply to all freshwaters of the state.

EPA's recommendations for copper derive site-specific criteria using the Biotic Ligand Model. This model requires inclusion of 11 different water quality parameters that affect the bioavailability and toxicity of copper in freshwaters. Many studies show that this model is a better predictor of copper toxicity than water hardness alone. The rule language can be found at OAR 340-041-0033.

EPA approved revisions to Oregon's water quality standards for bacteria to protect people who recreate in coastal waters. EPA approved the revised standards on November 17, 2017. Exposure to high levels of bacteria from swimming and other full immersion water contact recreation is associated with increased gastrointestinal illness.

In addition to revising the bacteria criteria for coastal recreation waters, the rules clarify where freshwater and coastal recreation and shellfish harvesting uses occur in coastal estuaries and, therefore, where the different bacteria criteria (*E. coli*, *Enterococcus*, or fecal coliform) apply. The bacteria rule language can be found at OAR 340-041-0009 and web links to the use designations maps at <https://www.oregon.gov/deq/Regulations/Pages/OARDiv41.aspx>.

### **3.1.5. Water Quality Standards Mapping Project**

The objective of the Water Quality Standards Mapping Project is to georeference the beneficial use designations and associated water quality standards in order to simplify identification of applicable criteria for water quality programs and the public. The goal is to depict standards that apply to specific waterbodies, as defined in the state regulations, as more accessible maps and data layers. Significant progress was made on this project in 2017 including:

- Converting fish use and spawning maps to NHD hydrography (OAR Division 41 Figures 140 B – 340A and Figure 140B-340B);
- Mapped designated uses to NHD hydrography (OAR Division. 41 Tables 140A-340A);
- Mapped waterbody features for identifying application of temperature, bacteria, D.O., human health toxics, and aquatic life toxics criteria;
- Development of web-based mapping tool to make interactive maps available to public.

### **3.1.6. Cold Water Refuge Plans**

In 2017 DEQ began work on a Cold Water Refuge plan for the lower Willamette River, a Triennial Review recommendation. DEQ submitted a Cold Water Refuge plan scope of work to EPA and NOAA, coordinated with EPA on the Columbia Cold Water Refuge plan, and began assembling data for the Willamette River plan.



## 3.2. Monitoring and Assessment

DEQ identified several monitoring and assessment related action items (Table 2) in the 2016-2018 Performance Partnership Agreement. The following sections describe progress on these action items in 2017.

**Table 2 Description of Monitoring and Assessment actions or outputs identified in the 2016-2018 Performance Partnership Agreement and the status in 2017.**

<b>PPA</b>			
<b>Element</b>	<b>Action</b>	<b>Time Frame</b>	<b>2017 Status</b>
PPA - 1.13	DEQ will update Oregon's 2012 Integrated Report and 303(d) list websites and databases following EPA's approval and final action. DEQ will communicate the final 2012 303(d) list for agency and public use.	July 29, 2016	Completed
PPA - 1.14	DEQ will assist EPA to identify relevant data elements and georeferenced Integrated Report information to contribute to EPA's national water quality summaries and performance measure and 303(d) Vision tracking and analysis.	Ongoing	Ongoing. See 2017 accomplishments in Section 3.2.4
PPA - 1.15	DEQ will implement its WQ Strategic Plan to improve Oregon's Integrated Report and 303(d) list and will focus efforts on: Assessment information and data system infrastructure improvements and Assessment process, methods, and procedure improvements DEQ will implement these improvements to prepare assessment information and compile Oregon's 2018 Integrated Report and 303(d) list.	Ongoing tasks as needed to assemble and call for assessment data in early 2017.	Ongoing. See 2017 accomplishments in Section 3.2.4.
PPA - 1.16	DEQ's 2018 Integrated Report and 303(d) list will be submitted into EPA's ATTAINS data system. DEQ will continue its participation in ongoing ATTAINS development discussions to identify opportunities to use and build upon EPA's ATTAINS framework.	Ongoing DEQ work with EPA ATTAINS and Water Quality Framework design team.	Ongoing. See 2017 accomplishments in Section 3.2.4.
PPA - 1.17	DEQ will consider options and data system requirements needed to transition to ATTAINS in planning and designing DEQ's assessment data system improvements.	July 2016	Completed. See Section 3.2.4.

PPA Element	Action	Time Frame	2017 Status
PPA - 1.18	DEQ will review and prioritize assessment process, methods, and procedures improvements. Improvements will be planned and implemented to inform and provide specifications for data system improvements.	Improvements project plan: July 2016 Progress check- in on scope and scale of next assessment effort – October - November 2016 Draft revised assessment methodology – early 2017	Ongoing. See 2017 accomplishments in See Section 3.2.4.
PPA - 2.7	Work with EPA on 303(d) Vision timelines for prioritization, assessment, protection, alternatives, engagement, and integration.	Ongoing	Ongoing. Worked with EPA and incorporated vision into ATTAINS work (see Section 3.2.4) and preparation for 2018- 2020 PPA.
PPA - 7.2	Ambient Monitoring Network -DEQ will continue to monitor approximately 130 ambient water quality station 6 times annually throughout Oregon. These stations provide status and trends data for understanding water quality.	Ongoing	Ongoing. See 2017 accomplishments in Section 3.2.1.
PPA - 7.3	Collect water quality data to support TMDL development.	Ongoing	Ongoing. See 2017 accomplishments in Section 3.2.1.
PPA - 7.4	Statewide statistical survey of lakes.	As scheduled	Completed. See Section 3.2.1.
PPA - 7.5	Reporting of biological, chemical and habitat data at reference and study locations in Western Oregon, at statewide trends sites and in the Deschutes Basin.	2018	Scheduled for completion in 2018.
PPA - 7.6	Identify business requirements for migrating DEQ water quality, biology and habitat data into WQX.	2018	Scheduled for completion in 2018.

PPA Element	Action	Time Frame	2017 Status
PPA - 7.7	DEQ will collaborate with EPA, as resources allow, on EPA monitoring projects conducted in Oregon.	As scheduled by EPA	Ongoing. See 2017 accomplishments in Section 3.2.1.

In 2017 the Water Quality Monitoring section collected over 3900 water samples representing almost 34,000 analyses.

Monitoring efforts in 2017 focused on ongoing, long-term, ambient water quality monitoring, monitoring for the development of TMDL's, evaluating toxics and biological conditions in lakes and reservoirs; adaptive management of pesticide use in targeted watersheds; issuance of beach bacteria and harmful algae bloom advisories; and characterization of groundwater quality in vulnerable aquifers.

Highlights of the Monitoring and Assessment program for 2017 include:

- Acquired and launched the Ambient Water Quality Monitoring System (AWQMS) to manage DEQ's environmental monitoring data at <https://orwater.deq.state.or.us/>;
- Assessed the status and trends of Oregon's surface waters through the Ambient Monitoring Network - DEQ monitored approximately 160 (up from 130) ambient water quality stations 6 times annually in order to provide aggregate water quality information to local, state, and federal partners as well as members of the state legislature;
- Pesticide Stewardship Partnership (PSP), collected and analyzed over 550 water samples across nine PSP watersheds. For more on PSPs see Section 3.9.1.2;
- Collected samples to identify toxic chemicals in 54 lakes and reservoirs across Oregon by incorporating toxics monitoring as part of the National Lakes Assessment. Analysis includes current use pesticides, legacy containments such as PCBs, Dioxins and Furans, pharmaceuticals and personal care products, total and dissolved metals and steroid and hormones
- Monitored over 100 domestic wells in the Mid-Willamette Valley region to evaluate potential nitrate, arsenic, and pesticide contamination issues;
- Finalized a North Coast Groundwater Study Report which will be used to inform ongoing watershed planning efforts;
- Targeted sampling for TMDL development and implementation in the following basins with high priority water quality issues: Necanicum, Nehalem Nestucca , Siuslaw, Siletz, and Salmon River watersheds. Macroinvertebrate collections and conventional water quality and habitat measurements were taken at 14 sites in the Winchuck, Floras, Fourmile and Sixes watersheds. In addition, continuous monitoring below Wickiup Reservoir was maintained;
- Provided resources and technical assistance to local organizations to collect and assess data in their own watersheds through the volunteer monitoring program. See Section 3.7.3 for more information on 2017 activities of the volunteer monitoring program;
- Monitored 70 locations at 18 beaches along the Oregon Coast for bacteria to inform the Beach Action Value (BAV) that triggers beach advisories;
- Fifty-four supplemental macroinvertebrate samples and 25 zooplankton samples were collected at lakes as part of the National Lakes Assessment to assess the biological condition of these waterbodies. An additional 12 annual statewide biomonitoring reference sites were also sampled;

- Completed R code to automate data quality for volunteer monitoring data sets.

### **3.2.1. Surface Water Quality Monitoring**

Ongoing, long-term, ambient water quality monitoring of conventional water quality parameters and pollutants (e.g. temperature, dissolved oxygen, pH, bacteria, nutrients, turbidity, conductivity) at fixed stations around the state continues to provide valuable insights into long-term statewide trends in water quality. Data from this program are used for permit and TMDL development in addition to providing important data for water quality standards development. In addition to its internal use at DEQ, long-term ambient data are used to calculate water quality status and trend, which is used to support review and comment on agricultural water quality management area plans and rules (see section 3.10.2) and supports the Oregon Water Quality Index.

The Toxics Monitoring Program continues the second round of rotating basin assessments, which monitor a wide range of toxic substances in surface water, sediment and fish. Monitoring efforts are aimed at filling data gaps pointed out in the 2015 “Statewide Water Quality Toxics Assessment Report” and taking advantage of efficiencies by partnering with other monitoring efforts. In 2017 the Toxics Monitoring Program partnered with the USEPA National Aquatic Resource Survey of lakes characterizing toxics in lakes across the state for the first time. In 2018, the Toxics Monitoring Program will assess rivers and streams in Southeast Oregon for the second time.

TMDL monitoring activities in 2017 focused on data collection in Oregon’s mid-coastal watersheds. Water quality parameters and data collection efforts were specifically planned for use in the development or refinement of water quality models used to assign waste load and load allocations to designated management agencies.

The beach bacteria monitoring schedule was implemented in 2017 with the newly revised and reduced Beach Action Value (BAV) that triggers beach advisories. The BAV was revised to 158 from 158 because studies suggest that exposure to bacteria levels below 158 MPN may still cause gastrointestinal illnesses from accidental ingestion of water during recreational activities. There were no advisories on the Oregon Coast for the 2017 season. A report on the special investigation conducted in the Rockaway Beach area in 2016 was recently finalized. The investigation was conducted because in 2016 routine monitoring in the Rockaway Beach resulted in an increase in the number of beach advisories from the previous season.

### **3.2.2. Biomonitoring Program**

The Biomonitoring Program collected macroinvertebrates, and zooplankton samples at 54 randomly selected lakes and reservoirs in Oregon to characterize the biological condition of lakes statewide. Macroinvertebrates were also collected at 13 statewide reference sites. Macroinvertebrates and other aquatic communities like zooplankton and fish are indicators of water quality, habitat and other environmental conditions. As organisms live and adapt to the chemical and physical changes that occur daily, seasonally and over longer timeframes, aquatic communities come to represent the waterbody conditions. By looking at the relative abundance of individual organisms within a community, their unique requirements and tolerances depict the overall conditions of the water they live in and suggest some of the potential causes, if any, of impairments to the system. In addition, in most cases aquatic communities are a direct measure of the beneficial use the water quality standards are designed to protect.

The program also contributed stressor identification of macroinvertebrate samples collected along the Mid-Coast of Oregon for the TMDL in that area and worked on the development of a Biological Condition Gradient for Oregon.

### **3.2.3. Groundwater Monitoring Program**

In addition to surface water monitoring, the Statewide Groundwater Monitoring Program conducts regional groundwater studies throughout Oregon. DEQ completed one regional groundwater study in 2017. The study included two sampling events at approximately 100 wells to look into seasonal and climatic differences in groundwater quality. The study area was selected based on a variety of data including past studies as well as nitrate data collected during real estate transactions. The study area in 2017 was in the Mid-Willamette valley. The Southern Willamette Valley Groundwater Management Area monitoring continued at a reduced number of locations due to resource reductions. In the Umatilla, groundwater monitoring continued at existing locations quarterly. In the Northern Malheur sampling has been reduced to a single annual event in spring. In addition, a report on the findings of the North Coast Groundwater study conducted in 2015-16 was finalized. In general the report indicates the groundwater in this area is of sufficient quality to support uses. Three out of 69 wells had nitrates above the maximum contaminant level for nitrates (10mg/L). All of those wells were located in the vicinity of Gearhart. Several pesticides were also detected in wells in the Gearhart area but well below screening levels. The full report can be accessed here: <http://www.oregon.gov/deq/FilterDocs/grw-northcoast2015-16.pdf>

Several presentations on the findings of the Mid-Rogue Groundwater study conducted in 2015 were provided to local stakeholder groups in the Rogue Basin. Only four of 107 wells tested had nitrate levels above the Maximum Contaminant Level. Pesticides were detected in 41 wells but none exceeded screening levels. The full report can be accessed here: <http://www.oregon.gov/deq/FilterDocs/grw-northcoast2015-16.pdf>

Sampling of the three existing Groundwater Management Areas continued in 2017. The Lower Umatilla Basin Groundwater Management Area (GWMA) was sampled quarterly as in previous years. The Northern Malheur County GWMA was only sampled once in 2017, as opposed to quarterly, as a result of permanent reductions in the 2017-19 budget. Sampling in the Southern Willamette Valley GWMA was also reduced. The full well network in the Southern Willamette Valley GWMA was sampled once, and a sub-set of twelve wells was sampled quarterly.

### 3.2.4. Integrated Report - Section 303(d) and 305(b) Assessments

Progress continues in 2017 on the next sections 305(b) and 303(d) integrated report. DEQ presented proposed updates to the integrated report assessment methodology to stakeholder workgroups and EPA. The proposed updates include:

- New approach to defining Assessment Units (segments);
- Listing and delisting methodology;
- Updated template for the data submittal;
- Redesign of integrated report infrastructure to align with the new ATTAINS EPA reporting system.

### 3.2.5. Environmental Monitoring Database

DEQ acquired and launched the Ambient Water Quality Monitoring System (AWQMS) at <https://orwater.deq.state.or.us/> to manage DEQ's environmental monitoring data. This system will manage data that is generated from DEQ's laboratory as well as third-party data. In addition, DEQ will use the system to upload data to the EPA WQX/STORET database. In the years ahead DEQ will be focusing on transitioning legacy data from the now retired LASAR database into AQWMS.

## 3.3. Drinking Water Program

In 2017, approximately \$750,000 from DWRLF was used to fund five FTE at ODEQ to help implement the Drinking Water Source Protection program, a small portion of which is non-point source related. Nonpoint source drinking water projects and accomplishments for 2017 include:

- As of June 30, 2017 305 community water systems (34 percent of Oregon's community water systems) have "substantially implemented" a strategy to protect their drinking water. These water systems include many of Oregon's larger communities and serve approximately 2.9 million Oregonians, more than which accounts for 81% of Oregonians served by community water systems.
- Completed "Updated Source Water Assessments" to give public water systems information on geographic setting, and point and non-point risks to drinking water supply. Completed 50 of the highest priority assessments for coastal watersheds.
- Completed statewide "Resource Guides" for both groundwater and surface water sources that provide additional information and tools to determine local priorities and strategies for protecting the source water areas.
- Assisted multiple public water systems in various subbasins to encourage protection strategies on a watershed scale basis. This includes coordinating with surface water providers in the Rogue, Willamette, Umpqua, Siletz, and Clackamas subbasins. DEQ is also expanding on previous projects to help public water systems cost-effectively address similar risks. For example, work completed by the Clackamas River Water Providers using DWSRF funds to address septic system risks is now being used in the source area for Rivergrove Water District's groundwater supply and is being used in the Molalla watershed.
- Provided technical resources for Mid-Coast TMDL development especially as it relates to the drinking water intakes on the Siletz River.
- Assisted Clackamas River Drinking Water Providers in developing a spill reduction and response improvement project focused on stormwater in the industrial area upstream of several drinking

water intakes. Tasks completed in 2017 include developing brochures and business educational materials, marking all storm drains, conducting on-site technical assistance visits, and providing training.

- Promote the use of the Drinking Water Source Protection Fund for loans and grants primarily addressing nonpoint sources of pollution within drinking water areas. Seven drinking water protection projects were recommended for funding with funding awards totaling \$215,067.

Projects recommended for funding include activities such as: studies to prioritize forest road repair work that will reduce sediment erosion and turbidity; riparian zone invasive removal, repair, and revegetation; refine source water assessment results to identify areas of high priority and develop memos of understanding with management partners; installation of protective signage, cameras, and security fencing in highly sensitive locations within the source water watershed; land purchase and installation of fencing within a sensitive portion of the drinking water source area; and septic system and private well education and risk reduction programs. Specific project details are discussed in the Basin Reports in **Appendices A - R**.

- Collaborated with federal partners on the Pacific Northwest Drinking Water Providers Partnership which includes USDA Forest Service, BLM, EPA Oregon Ops, Washington Department of Health, and the Geos Institute to develop concepts for watershed restoration and improvement projects within municipal watersheds. All projects enhance habitat for listed species and improve water quality for the communities that rely on streams and rivers for drinking water. In 2017, a total of \$385,000 was awarded in Oregon. Specific project details are discussed in the Basin Reports in **Appendices A - R**.
- Continued to work with other state and federal agencies to raise the profile of the need for drinking water protection in Oregon, including the Department of Agriculture, Department of Forestry, US Forest Service, USDA, and the BLM, to raise the priority level for drinking water protection in Oregon. Source Water Assessment data is provided as needed to other agencies to facilitate incorporation of protection strategies into their respective programs. Furthermore, this coordination has identified new opportunities for DEQ and OHA to enhance the depth and quality of technical assistance provided to public water systems;
- work with OHA to address Harmful Algae Blooms (HAB) and implement testing and technical assistance;
- Participation in Southern Willamette Valley Groundwater Management Area events.

### 3.4. Clean Water State Revolving Fund (CWSRF)

In 2017, the Clean Water State Revolving Fund loan program targeted nearly eleven million dollars toward nonpoint source projects. Table 3 summarizes projects active or funded in 2017. More information about these projects including reported accomplishments in 2017 are in the Basin Reports in **Appendices A - R**.

**Table 3 CWSRF projects active or funded in 2017.**

Admin Basin	Project Name	Project Implementer	Budget
Deschutes	Watson & McKenzie Main Canal Pipeline Project	Three Sisters Irrigation District	\$1,080,500
Hood	Farmers Irrigation District Reservoir Enhancement Project-Multi-phased	Farmers Irrigation District	\$3,071,574
Mid Coast	Bay-Moore Sewer Upgrades	City of Newport	\$4,128,454
South Coast	6 <sup>th</sup> Avenue Culvert Replacement project	City of Coos Bay	\$2,200,000
Willamette	Septic System Loan Program	Clackamas Soil and Water Conservation District	\$250,000

### 3.5. Nonpoint Source Program Plans

DEQ identified four nonpoint source program plan related action items (Table 4) in the 2014 nonpoint source management program plan and 2016-2018 Performance Partnership Agreement. The following sections describe progress on these action items in 2017.

**Table 4 Description of specific nonpoint source program plan actions or outputs identified in the 2014 Nonpoint Source Management Program Plan, 2016-2018 Performance Partnership Agreement and the 2017 status.**

Goal #	Goal Topic	Action	Time Frame	Current Status
NPS - 1	Update Nonpoint Source Management Program Plan every 5 years	Update Oregon's Nonpoint Source Management Plan that describes how the state's Nonpoint Source management program achieves water quality standards and TMDL load allocations through restoration and protection.	2019	Not Complete. An update to the plan will start in 2018-2019. See Section 3.5.1.
NPS - 2	Implement Nonpoint Source Management Program Plan	Implement the Nonpoint Source Management Plan to achieve the Nonpoint Source Program goals and priorities.	Ongoing 2014 to 2018	See summary in Executive Summary of this report.



Goal #	Goal Topic	Action	Time Frame	Current Status
NPS – 3 and PPA 8.4	Issue Nonpoint Source Annual Report	The Nonpoint Source Annual Report describes the progress in implementing the Nonpoint Source Management Program Plan and achieving the Nonpoint Source Program goals and objectives. DEQ issues and submits annually to EPA.  PPA: Prepare an annual report of NPS program accomplishments	Annually 2014 to 2018	Complete. The 2016 Annual Report was approved by EPA in August 2017. See Section 3.5.2.
NPS – 4 And PPA 8.9	Complete the Coastal Nonpoint Pollution Control Program	Submit to EPA and NOAA a plan for achieving Additional Management Measures for Forestry, as needed, in response to federal comments on the state's strategy  PPA: DEQ works with ODA, ODF and EPA on CZARA Coastal Nonpoint Control Plan	2015-2016 Revised to Ongoing until full approval is obtained.	Not Complete. See Section 0.

### 3.5.1. Oregon's Nonpoint Source Program Management Plan

Oregon's nonpoint source program management plan describes how the state's NPS management program achieves water quality standards and TMDL load allocations. This annual report describes annual progress implementing the management plan. The current 2014 plan approved by EPA on June 15, 2015 is due to be updated and submitted to EPA in 2019. In 2017 there was no activity on drafting an update. An update to the plan will start in 2018-2019.

### 3.5.2. Oregon's Nonpoint Source Program Annual Report

Each year DEQ prepares a nonpoint source program annual report describing the annual progress implementing the management plan. This report serves as the annual report.

Starting in 2016, the report was reorganized to be more succinct in response to EPA's recommendations. The revisions include a summary of nonpoint source accomplishments and a more in-depth look at nonpoint source implementation activities occurring statewide. In 2017 the revisions included additional information and accomplishments not identified in the 2016 report. Additional information added to the 2017 report includes project outputs from Section 319, Oregon Watershed Enhancement Board, Drinking Water, non-grant related TMDL implementation actions by Designated Management Agencies, and Clean Water State Revolving loan nonpoint source projects or activities. Also included is the status of TMDL implementation plan annual reports submitted by Designated Management Agencies and reviewed by DEQ. There are also five additional Basin Reports for areas not included in 2016.

### 3.5.3. Coastal Nonpoint Pollution Control Plan

Under the Coastal Zone Act Reauthorization Amendments states and territories are required to develop Coastal Nonpoint Pollution Control Plan (CNPCP). In its program, a state or territory describes how it will implement nonpoint source pollution controls, known as management measures. This program is administered jointly with the National Oceanic and Atmospheric Administration (NOAA). The state of Oregon has not yet gained full approval and has committed to address the outstanding management measures.

DEQ and DLCD work with the other State of Oregon agencies for submittal to EPA and NOAA. In 2016, the state submitted a CNPCP plan to EPA and NOAA describing the state's plan to achieve the additional management measures for forestry.

No activity occurred in 2017 on revising or submitting a new CNCP although discussions between EPA and the state on how to move forward to obtain full approval of the program have been ongoing.

## 3.6. 319 Grant Program and Project Implementation

DEQ identified eight 319 grant program related action items (Table 5) in the 2014 nonpoint source management program plan and three 2016-2018 Performance Partnership Agreement (

Table 6). The following sections describe progress on these action items in 2017.

**Table 5 Description of 319 grant program actions or outputs identified in the 2014 Nonpoint Source Management Program Plan and the current status.**

Goal #	Goal Topic	Action	Time Frame	2017 Status
319 - 1	319 Grant Funding DEQ Nonpoint Source Program	DEQ uses 319 Grant funds to implement DEQ activities that achieve the Nonpoint Source Program goals and priorities.	Ongoing 2014-2018	Ongoing. See 2017 accomplishments in Section 3.6.1.
319 - 2	319 Grant Funding for pass through Grants	319 Grant funding of projects that address Oregon's Nonpoint Source Program priorities.	Ongoing 2014-2018	Ongoing. See 2017 accomplishments in Section 3.6.2.
319 - 3	Priority projects to receive 319 Grant Funding for pass through Grants	Region and HQ staff identifies and rank projects to receive pass through 319 grant funds for addressing Nonpoint Source Program priorities.	Ongoing 2014-2018	Ongoing. See 2017 accomplishments Section 3.6.3.

Goal #	Goal Topic	Action	Time Frame	2017 Status
319 - 4	319 Grant RFPs	Continue process improvement of 319 Grant RFPs for timely and efficient issuance. Provide training to DEQ Nonpoint Source and TMDL staff to increase efficiency and timeliness.	Annually 2014-2018	Ongoing. See 2017 accomplishments in Section 3.6.4.
319 - 5	319 Grant Administration	Provide guidance to DEQ staff and grant recipients for grant administration. Guidance includes, planning, contracting, invoicing and reporting.	2015. Revised to ongoing	Ongoing. See 2017 accomplishments in Section 3.6.4.
319 - 6	GRTS	Continue to report 319 Grant Data into GRTS; Meet annual reporting deadlines.	Annually 2014-2018	Ongoing. See 2017 accomplishments in Section 3.6.5.
319 - 7	Nonpoint Source Implementation	Collect information from NRCS, USFS, BLM and OWEB on annual Nonpoint Source project implementation activities including 319 Grant projects.	Annually 2014-2018	See 2017 accomplishments in Basin Reports Appendices A – R.
319 - 8	DEQ's Nonpoint Source Program Website	DEQ's Nonpoint Source Program Website updated as needed	Ongoing 2014-2018	Ongoing. See 2017 accomplishments in Section 3.6.7.

**Table 6 Description of 319 grant program actions or outputs identified in the 2016-2018 Performance Partnership Agreement and the status in 2017.**

PPA Element	Action	Time Frame	2017 Status
PPA - 8.1	Distribute 319 grants to fund project proposals to Oregon's priority basins based on TMDL development and implementation, drinking water source areas and GWMA's.	May 2017 and May 2018	Completed. See Section 3.6.2.
PPA - 8.2	DEQ develops a waiver from the 50/50 Section 319 grant fund requirement for years 2015 and 2016.	August 2016	Completed. See Section 3.6.2.
PPA - 8.3	DEQ develops an approach to begin in 319 Grant year 2017 where DEQ staff time used to implement Watershed Based Plans can be used for leverage exemption from the 50/50 319 Grant Program requirements.	December 2016	Completed. See Section 3.6.2.

PPA Element	Action	Time Frame	2017 Status
PPA - 8.6	Enter GRTS 319 mandated elements to 319 project tracking data by national deadlines, including load reductions as available.	February 2017, February 2018 load reduction, other GRTS data (National GRTS reporting deadlines	Complete. See 2017 accomplishments in Section 3.6.5.

Federal Section 319(h) funds are provided annually through the EPA to states for the development and implementation of each state's Nonpoint Source Management Program. In Oregon the 319 grant funding is divided between Performance Partnership Grant funds which fund nonpoint source staff positions and pass through funds which support priority projects that are funded through the Nonpoint Source Grant Program. The following sections describe use of these funds and implementation of 319 program action items.

### 3.6.1. Funding the Nonpoint Source Program at DEQ

DEQ uses 319 grant funds to implement DEQ activities that work toward achieving the nonpoint source program goals and priorities.

In 2017, the federal 319 program appropriation funded a total of 9.23 full-time equivalent positions within DEQ's performance partnership grant. These positions support the implementation of the Nonpoint Source Program and 319 funded activities such as: management of nonpoint sources of pollution, water quality standards and assessment, TMDLs, DEQ's groundwater program, and water quality data analysis, management and monitoring (Table 7).

The nonpoint source program also faces staffing and resource challenges. Due to limited state resources, some of the key 319 program positions continue to remain vacant. In order to provide program continuity and meet deadlines the highest priority workload was redistributed to existing staff. EPA made a recommendation in the 2016 and 2017 Determination of Satisfactory Progress letters indicating a need for DEQ to fill these key vacancies. DEQ is planning to fill the vacant positions in 2018.

**Table 7 Oregon's 2017 319 Grant funded positions for nonpoint source program activities.**

<b>Nonpoint Source Program Activity</b>	<b>FTE</b>
Nonpoint Source TMDL Modeling	1.89
Regional Nonpoint Source Implementation and Nonpoint Source TMDL Development and Implementation	3.34
Prorates and Management and Administrative Support	1.01
319 Grant Administration and Provision of Technical Assistance with Applicants, DEQ Staff and Coordination with Other Funding Agencies	1.00
Nonpoint Source Policy Development, Collaboration and Provision of Technical assistance with Stakeholders and other Local, State, and Federal Agencies	2.00
Total	9.23

Clean Water Act Section 319(h) National Program Guidance suggests states use at least 50 percent of the Section 319(h) funds to implement nonpoint source watershed projects guided by a watershed based plan (including TMDLs). States may use watershed project funds to support staff time spent implementing a watershed based plan. Eligible staff activities include:

- Implementing a local cost share program to fund BMPs in critical areas described in the watershed based plan or acceptable alternative plan.
- Providing one-on-one technical assistance to confirm landowner participation in watershed project(s) and to determine which suite of BMPs are most appropriate to achieve water quality targets articulated in a watershed based plan or acceptable alternative plan.
- Providing technical expertise with siting and designing BMPs.
- Tracking implementation efforts in the watershed to evaluate progress towards the water quality targets in the watershed based plan or acceptable alternative plan.
- Providing coordination support among key partners in addressing NPS pollution within the watershed.
- Leveraging and targeting other state, private, and non-§ 319 federal funds in the watershed.
- Conducting targeted local education/outreach events (such as technology transfer workshops) that promote the voluntary implementation of BMPs.
- Providing technical assistance to support the implementation of a watershed restoration or watershed protection project. Subgrantee time spent managing project work plans, deliverables, reimbursements, modifications, and reporting for watershed project(s).
- Water quality results monitoring to assess the effectiveness of on-the-ground activities to improve water quality as part of the implementation of a completed watershed based plan or acceptable alternative plan, regardless of the entity conducting this monitoring.

In 2017, \$645,116 of section 319 funds were used to support DEQ staff implementing eligible activities. Combined with pass through grants that directly funded watershed projects identified in Table 8, the total proportion of 319 funds spent on watershed based projects and eligible activities by DEQ staff was \$972,157. This sum represents 57% of the total 2017 appropriation and exceeds the 50% target outlined in EPA guidance.

The dollar amount was calculated using DEQ's timekeeping QTIME system and associated expenditure tables. Within QTIME, DEQ tracks staff time spent working on various activities or projects. Certain activities and projects have unique QTIME codes that staff enter into the system as they work. QTIME maps hours spent on activities and projects and the leave allocable to those activities to appropriate funds and accounting codes for upload into the state payroll system. Each basin has a unique QTIME code to track time spent on TMDL and nonpoint source implementation activities in that basin. The TMDL implementation codes track staff time spent on TMDL implementation activities and the nonpoint source implementation codes track staff time spent on nonpoint source pollution control activities for impairments that are not addressed by a TMDL. After review and input by EPA, it was determined that most of the activities associated with these codes are eligible activities described in EPA guidance. The ineligible activities include 319 grant administration, general statewide non-point source coordination, and TMDL development activities. In order to remove the dollars and time spent on ineligible activities, a separate spreadsheet was developed for staff to enter the proportion of their time spent on the ineligible activities. For each QTIME code and resulting expenditure tables the dollar amounts were reduced by the appropriate proportion before the total was calculated.

### 3.6.2. Funding Community or Partner Projects

DEQ uses a portion of 319 grant funds as "pass through" funds to support community or partner projects that address Oregon's nonpoint source program priorities. In 2017, DEQ recommended funding 21 community or partner projects with over \$300,000 in Section 319 grant funds (Table 8).

**Table 8 List of projects recommended for 2017 319 grant funding.**

DEQ Region	Project Name	Submitted by	Type of work	Budget
Eastern	Harney County WC Workplan	Harney County WC	Watershed assessment	\$20,625
Eastern	Klamath Basin Workplan	KBP	Watershed assessment	\$8,050
Eastern	Sherman County CAP Outreach Assistance 2	Sherman Co SWCD	Outreach/stewardship	\$15,206
Eastern	North Fork Burnt River and Deer Creek Stream Gauges	Powder Basin WC	Watershed monitoring	\$25,440
Eastern	Couse Creek Watershed Assessment	Walla Walla basin WC	Watershed study/assessment	\$24,679
Northwest	Tillamook SWCD 2017 Stream Enhancement & Restoration	Tillamook Co SWCD	Riparian Restoration	\$11,000
Northwest	BYPP	TEP	Riparian Restoration	\$11,000
Northwest	Nestucca, Neskowin, Sand Lk WS Rip Improvement Project	NNSLWC	Riparian Restoration	\$11,000
Northwest	City of Scapoose Stormwater Plan	City of Scapoose	Erosion control, stormwater mgmt.	\$12,000
Northwest	Upper Nehalem Riparian Restoration	Upper Nehalem WSC	Riparian restoration/assessment	\$5,000
Northwest	Sauvie Island Canal Bank Erosion Control Project	Scapoose WSC	Erosion control, stormwater mgmt.	\$9,000
Northwest	Cully Rain Gardens	Columbia slough WC	Erosion control, stormwater mgmt.	\$10,000

<b>DEQ Region</b>	<b>Project Name</b>	<b>Submitted by</b>	<b>Type of work</b>	<b>Budget</b>
Northwest	Michell Creek inline pond removal/stream temperature reduction	Johnson Creek	Watershed Assessment	\$25,000
Statewide	Oregon Coast Community Forest Initiative	Sustainable NW	Groundwater/Drinking water	\$9,000
Statewide	A Tiered Approach for Assessing Pesticide Use and GW Vulnerability for DWP in Oregon WS	OSU	Groundwater/Drinking water	\$10,000
Statewide	PSU TMDL Study	PSU	TMDL implementation assessment	\$8,000
Statewide	NWQI	DEQ	NWQI	\$16,000
Statewide	Statewide surface elevation data collection and processing	DEQ	watershed study/assessment	\$6,000
Western	Yachats Watershed Monitoring and Assessment	Lincoln County SWCD	Watershed Assessment	\$11,906
Western	Siuslaw Riparian Restoration and Continuous WQ Monitoring Phase IV	Siuslaw Watershed Council	Riparian restoration/WQ monitoring	\$27,245
Western	City of Myrtle Point Workplan	City of Myrtle Point	Watershed Assessment	\$9,900
Western	South Fork Coquille River/Dement Creek Technical Assistance Project	Coquille Watershed Association	Riparian Restoration	\$11,067
Western	Pilot Project: Shading Amazon Creek from Private Commercial & Industrial Lands	Long Tom Watershed Council	Watershed Assessment	\$29,923
<b>TOTAL</b>				<b>\$327,041</b>

Although federal 319 funds have decreased since 2014, Oregon continues to fund projects that target nonpoint source pollution (Table 9). DEQ targets nonpoint source grants for the following projects: TMDL implementation plans, surface and ground water quality monitoring, data analysis and modeling, demonstration of innovative best management practices, technical assistance to landowners for conservation planning, public outreach based education, implementation, development of EPA's nine-element watershed plans, and monitoring activities to determine the effectiveness of specific pollution prevention methods. Money from 2017 funded: best management practice implementation, outreach and education, monitoring, riparian restoration, TMDL implementation and pesticide stewardship partnerships.

**Table 9 Oregon Total Section 319 Funding 2014 to 2017.**

Year	DEQ Staff	Projects (Pass Through)	Total
2017	\$1,383,959	\$327,041	\$1,711,000
2016	\$1,384,049	\$333,501	\$1,717,550
2015	\$1,370,949	\$80,851	\$1,451,800
2014	\$1,200,000	\$905,000	\$2,105,000
Totals	\$5,338,957	\$1,646,393	\$6,985,350

### 3.6.3. Prioritizing Projects

Every year, DEQ regional and headquarter staff identify and rank projects to receive pass through 319 grants funds that are intended to address the nonpoint source program priorities.

Funding priorities were identified in the 2017 319 Request for Proposals as regional and statewide project priorities. Those priorities as presented in the RFP can be reviewed in Appendix S.

Funded project types and the amount requested from EPA are presented in Table 10.

**Table 10 Oregon 2017 funding priorities with corresponding amounts as presented to EPA.**

2017 Type of Project	Amount Requested	% of Total Request
Riparian restoration in priority waters	\$101,312	31%
Groundwater/Drinking water	\$19,000	6%
Outreach/stewardship	\$15,206	5%
Erosion control, storm water management	\$31,000	9%
NWQI	\$16,000	5%
Watershed Management	\$144,523	44%
Total Request	\$327,041.00	100%

### 3.6.4. 319 Grant RFP and Administration

DEQ is committed to improve the 319 grant process to ensure timely and efficient issuance of 319 grant RFPs and by training staff to increase efficiency and timeliness. DEQ also committed to providing guidance to DEQ staff and grant recipients for grant administration, planning, contracting, invoicing and reporting.

A 319 process improvement team was formed in order to meet these goals. The 319 process improvement team contains staff from TMDL and nonpoint source programs in the regional and headquarters offices, as well as individuals from DEQ's business office. The team has monthly conference calls to identify and prioritize program areas in need of increased efficiency and streamlining.



Some of the accomplishments of the process improvement team during 2017 include:

- Reviewed and updated the 2018 Request for Proposals
- Assisted with boilerplate edits for drafting 319 grant agreements with stakeholders
- Planned training for 319 staff
- Updated 319 related milestone schedule
- Completed 319 grants project management training, which was a process improvement recommendation for drafting grant agreements and processing invoices.

The 319 grants project management training for DEQ staff took place in May 2017. This two day training was held at DEQ headquarters. The training agenda covered the following topics:

- 319 Grant administration:
  - Procedure for developing and finalizing a 319 grant agreement
  - Procedure for invoicing/match documentation
  - Reconciling project expenditures
- Understanding the federal requirements regarding grant expenditures reimbursement
- Regional Priorities vs State wide priorities
- Load reduction estimates and collecting information for EPA's Grants Reporting and Tracking System (GRTS)

In addition, as a team effort between the Procurement, Budget and Water Quality sections at headquarters and regional staff, a 319 grant administration guidance was released in 2016 and additional revisions in 2017. Revisions will be ongoing to keep the guidance up to date.

### **3.6.5. Reporting to EPA**

All states, including Oregon, are required to report to EPA the details of projects funded under Section 319 of the Clean Water Act and the projects which match federal Section 319 funds, using EPA's Grants Reporting and Tracking System (GRTS).

As an on-going task, DEQ keeps the GRTS database updated with the following information:

- Drafted and approved agreements implementing approved work plans;
- Amendments, completed projects;
- Implementation work-plans and final reports;
- Estimated load reductions.

For the year 2017, load reduction estimates for projects completed during 2017 were entered into GRTS by the EPA deadline of February 17<sup>th</sup>, 2018. The table of the load reductions entered into GRTS can be found in **Section 3.6.6.**

### **3.6.6. Estimates of Load Reductions from 319 Projects**

Section 319 (h) (11) requires states to "report annually on what their nonpoint source programs are accomplishing, including available information on load reductions and actual water quality improvements." Annual load reduction estimates are completed for projects funded through the 319 program (Table 11).

EPA requires that DEQ complete nonpoint source pollutant load reductions using EPA's Section 319 Grants Reporting and Tracking System (GRTS). DEQ used the load reduction model, "Spreadsheet Tool for Estimating Pollutant Load," within the system to estimate reduction in pounds per year of BOD, nitrogen, and phosphorus; and tons per year of sedimentation-siltation for each 319 funded project. Load reduction estimates were included in the EPA system.

Currently EPA provides tools to estimate reduction in BOD, nitrogen, phosphorus and sedimentation loading, but not for other pollutants. The lack of a tool to estimate other pollutants has caused Oregon to chronically underreport water quality improvements as DEQ cannot accurately capture all the work being done to address these other TMDL allocations. DEQ is exploring the use of the status and trend information (see Section 3.10.2 and Neal Creek temperature evaluation in Section 0) as one way to describe the change in pollutants across various waterbodies.

**Table 11 Total 2017 load reduction estimates by pollutant for three 319 funded projects. These were projects where it was appropriate to estimate load reductions.**

Project Number	Project Title	Funding Year	Project Recipient	319 Budget	BOD lbs/Yr	N lbs/Yr	P lbs/Yr	Sed T/Yr
W13708	Backyard Program Planting	2013	Tillamook Estuary Program	\$26,948	3,653	1,186	371	180
W14759	Upper Nehalem Riparian Rest, Project	2014	Upper Nehalem Watershed Council	\$50,000	48.8	20	14.4	7.6
W14758	Milton Creek Riparian Enhancement	2014	Scappoose Watershed Council	\$16,557	3.6	1.8	1	0.6

### 3.6.7. Updating the Nonpoint Source Program Website

DEQ committed to updating the nonpoint source program website at least annually to reflect current information.

The current URL for the nonpoint source program is <http://www.oregon.gov/deq/wq/programs/Pages/Nonpoint.aspx>.

In 2017 the nonpoint source program website was updated with the following information:

- A link to the current 319 grant RFP;
- A downloadable grant application;
- Background information on the 319 grant program;
- Links to multiple water quality status and trend reports used for biennial reviews of the agricultural water quality management area rules and plans (see **Section 3.10.2**).

## 3.7. Watershed Reports

DEQ committed to four watershed report action items (Table 12) in the 2014 nonpoint source management program plan. The following sections describe progress on these action items in 2017.

**Table 12 Description of watershed approach and basin report actions or outputs identified in the 2014 Nonpoint Source Management Program Plan and the current status.**

Goal #	Goal Topic	Action	Time Frame	2017 Status
WBP - 1	Watershed Basin Status and Action Plans	Develop a template for Watershed Basin Status and Action Plans. DEQ provides training to DEQ Nonpoint Source and TMDL staff on its use.	2015	Complete. See Section 3.7.1.
WBP - 2	Watershed Basin Status and Action Plans	Develop Watershed Basin Status and Action Plans within identified priority watersheds that identify priority problems and waters.	Ongoing 2014-2018	Not Complete. See Section 3.7.1.
WBP - 3	EPA's Nine Key Elements	Report on how TMDL Implementation Plans and Watershed Basin Status and Action Plans meet EPA's Nine Key Elements.	Annually 2014-2018	Ongoing. See 2017 accomplishments in Section 3.7.2.
WBP - 4	Volunteer Monitoring	Volunteer Monitoring Watersheds Sample Plans Are Developed.	Ongoing 2014-2018	Ongoing. See 2017 accomplishments in Section 3.7.3.

### 3.7.1. Watershed Basin Status and Action Plan Development

In 2014, DEQ made a goal to develop a template for Watershed Basin Status and Action Plans and provide training to nonpoint source and TMDL staff on its use. DEQ would then begin developing Watershed Basin Status and Action Plans within identified priority watersheds. The plans would in part identify priority problems and waters. DEQ produced six plans for the North Coast, South Coast, Deschutes, Rogue, Powder and Umpqua Basins. The plans can be found at the following URL: <https://www.oregon.gov/deq/wq/Pages/watershed.aspx>.

In 2016 DEQ divested its resources from developing additional watershed basin status and action plans although some of the elements that were to be included in the action plans continue to be developed. For example, water quality status and trends are being developed for all 39 agricultural management areas across the state. In addition, TMDL implementation activities and implementation related project outputs are included in the Basin Reports in **Appendices A - R** of this this annual report.

### 3.7.2. Nine Key Elements of Watershed Based Plans

In 2017 staff evaluated how elements of the North Coast TMDL and Water Quality Management Plan as well as third party implementation plans meet EPA's nine key elements. A matrix was developed to quickly identify the TMDL, Water Quality Management Plan, and implementation plan components that satisfy the various EPA elements and which elements require additional information not directly included

in the TMDL or WQMP. Based on this experience DEQ has begun the process of compiling additional information for other areas to more clearly document how the TMDLs, WQMPs, and implementation plans meet EPA's nine key elements.

### **3.7.3. Volunteer Monitoring Sample Plans**

In 2017 DEQ conducted outreach and education activities and provided technical assistance to support volunteer monitoring in watersheds throughout Oregon. Staff reviewed and assisted in the development or amendment of four sampling plans for organizations and worked with additional organizations to refine monitoring strategies or goals outside of the sampling plan process. Volunteer program staff expanded the impact of the program on the ability of the state to assess NPS pollution.

Volunteer sampling plans reviewed by the program included:

- Luckiamute Watershed Council's Temperature Monitoring Sampling Analysis Plan,
- North Clackamas Urban Watersheds Continuous Temperature Monitoring of Kellogg Boardman, River Forest, and Rinearson Creeks,
- Coos SWCD's Coquille River Off-Channel Refugia Temperature Monitoring Project
- Columbia County SWCD's Water Quality Trend Monitoring Program,
- Klamath SWCD's Lost River Water Quality Initiative, and
- Assistance with the Oregon Department of Agriculture's Long-Term Stream Temperature and Vegetation Monitoring.

DEQ staff provided water quality testing equipment or supplies to 28 different organizations. There are approximately 40 active organizations with equipment around the state working on over 30 separate monitoring projects. Staff provided technical assistance on equipment and protocols to approximately 19 organizations over the phone and conducted training for four different organizations in water quality monitoring techniques.

In 2017, volunteer program also staff began to implement a data management system for water quality data generated by partner organizations. Over 50 datasets were processed using the system that provides assessment and summary of data collected by organizations and stores the data in a format consistent with EPA Store/WQX data requirements. Volunteer staff also began scoping of project to get the volunteer data out of the local database and available on EPA's STORET via DEQ's AWQMS database.

## **3.8. TMDLs and TMDL Implementation**

DEQ identified seven TMDL and TMDL implementation related action items in the 2014 nonpoint source management program plan (Table 13) and five in the 2016-2018 Performance Partnership Agreement (Table 14). The following sections describe progress on these action items in 2017.

**Table 13 Description of TMDL and TMDL implementation program actions or outputs identified in the 2014 Nonpoint Source Management Program Plan and the current status.**

<b>Goal #</b>	<b>Goal Topic</b>	<b>Action</b>	<b>Time Frame</b>	<b>2017 Status</b>
WQP - 1	TMDL Guidance or IMD	Develop TMDL Guidance or IMD on how to produce work plans that identify data needs and how to design a monitoring study.	2015	Complete. See Section 3.8.2.
WQP - 2	Technical Assistance	DEQ headquarters and region staff will provide technical assistance to DMAs, DEQ staff, other local, state, and federal staff on TMDL development and TMDL implementation efforts.	Ongoing 2014-2018	Ongoing. See 2017 accomplishments in Section 3.8.3
WQP - 3	TMDL Implementation Plans	Work with DMAs to develop and implement TMDL Implementation Plans (including annual reports) as described in the TMDL/WQMP.	Ongoing 2014-2018	Ongoing. See 2017 accomplishments in Section 3.8.4.
WQP - 4	TMDL Implementation Plans	DEQ reviews TMDL Implementation Plan annual reports.	Ongoing 2014-2018	Ongoing. See 2017 accomplishments in Section 3.8.4
WQP - 5	TMDL Implementation Plan Guidance	Develop a process for DEQ staff to review TMDLs and TMDL Implementation Plans every 5 Years.	2014	Completed in 2014. DEQ developed a process for the Willamette Basin Five Year Review.
WQP - 6	TMDL & Nonpoint Source Implementation	Develop a spreadsheet and process for DEQ to track and report on landscape condition for achieving TMDL implementation timelines and milestones including water quality status and trends.	Ongoing 2014-2018	Ongoing. See 2017 accomplishments in Sections 3.8.4, 3.10.1 and 3.10.2.
WQP - 7	Reasonable Assurance	Conduct analysis during TMDL/WQMP development to provide reasonable assurance and guide implementation for TMDLs.	Ongoing 2014-2018	Ongoing. See 2017 accomplishments in Section 3.8.5.

**Table 14 Description of Monitoring and Assessment actions or outputs identified in the 2016-2018 Performance Partnership Agreement and the status in 2017.**

<b>PPA</b>			
<b>Element</b>	<b>Action</b>	<b>Time Frame</b>	<b>2017 Status</b>
PPA - 2.1	Develop TMDLs and WQMPs in accordance with 303(d) list schedule.	Ongoing from 2016 – 2018 depending on TMDL	Ongoing. See 2017 accomplishments in Section 3.8.1.
PPA - 2.3	Implement the Willamette River Basin TMDL. Work with watershed councils, local governments, and other DMAs to develop appropriate management practices and plans for controlling pollutants to the Willamette River. Work with USDA agencies to leverage Farm Bill resources to implement priority best management practices in critical areas.	Ongoing	Ongoing. See 2017 accomplishments in Sections 3.8.4, and the Willamette Basin Report in Appendix R.
PPA - 2.4	Include robust Reasonable Assurance documentation in the TMDL and WQMP to implement TMDLs for Nonpoint Sources in subbasins where TMDLs/WQMPs have been completed or are being completed. Work with watershed councils, local governments and other DMAs to develop appropriate management practices and plans for controlling pollutants. Work with USDA agencies to leverage Farm Bill resources to implement priority best management practices in critical areas.	Ongoing	Ongoing. See 2017 accomplishments in Section 3.8.5, Section 3.8.4, and the Basin Reports in Appendices A - R.
PPA - 2.5	Implementation of load allocations or require TMDL implementation plans for all sources assigned load allocations.	Ongoing	Ongoing. See 2017 accomplishments in Section 3.8.5, Section 3.8.4, and the Basin Reports in Appendices A - R.
PPA - 2.6	Develop and implement TMDL/WQMP/IP as one of the approaches to address the deficiencies in the CZARA Coastal Nonpoint Control Plan additional management measures for forestry identified by EPA and NOAA (7/28/2015) as described in the Governor's Natural Resource Office letter (2/10/2016). Incorporate New Development guidelines and Onsite Sewage Disposal Systems (OSDS) actions in TMDL/WQMP as described in CZARA management measures.	At issuance of TMDLs	This will occur as TMDLs are developed. See 2017 accomplishments in Section 3.8.1.

### 3.8.1. TMDL Development

Several TMDLs were under development in 2017:

**Western Hood Subbasin Temperature TMDLs:** A modified Western Hood Subbasins Temperature TMDL is currently under development and was scheduled for issuance in September of 2016. It is now expected to be issued to EPA in early 2018. This modification updated the TMDL to the currently adopted temperature standards and established new waste load allocations for a variety of municipal and industrial wastewater dischargers.

**Coquille River Subbasin TMDLs:** TMDLs for the Coquille River Subbasin are being developed to address dissolved oxygen, bacteria, and chlorophyll a. Modeling of the North, Middle, and South Fork Coquille River has been completed with waste load allocations developed for the Coquille Valley wastewater dischargers. The narrative for the Coquille TMDL draft is currently under development and designated management agency outreach and public comments will be solicited in the fall of 2018. Initially the Coquille River TMDL was scheduled for issuance in December of 2016. The Coquille River Sub basin TMDL is now expected to be submitted to the EPA for approval in the fourth quarter of 2018.

**Upper Klamath and Lost River Subbasins TMDLs:** A modification of TMDLs for the Upper Klamath and Lost Rivers was issued in December 2017 and is currently under review by EPA, who must approve the TMDLs before DEQ can implement waste load allocations in permits. This set of TMDLs addresses dissolved oxygen, pH, ammonia toxicity, and chlorophyll a impairments and was originally issued in December 2010 when it also included temperature TMDLs. DEQ granted petitions for reconsideration of that TMDL and as a result made changes that allowed seasonal waste load allocations rather than a single annual average. During the response to petitions, EPA was sued over elements in Oregon's temperature standard, particularly the Natural Conditions Criterion rules. As a result EPA took no action on the temperature TMDLs and DEQ eventually withdrew it. EPA is under court order to establish new temperature TMDLs by April 2019. DEQ is currently coordinating with EPA on the technical work and approach.

**Willamette Basin Mercury TMDL:** DEQ and EPA are working together to revise the 2006 Willamette Basin Mercury TMDL. EPA is the technical lead and DEQ is the public engagement lead. DEQ is also drafting the TMDL and Water Quality Management Plan. By late-August 2018, EPA's contractor will provide modeling results for the loading capacity and current loads. DEQ held one meeting in December 2017 with the TMDL Advisory Committee and Designated Management Agencies and expects to have at least five more meetings before October 2018 when the start of the public comment period for the TMDL and WQMP will begin. The TMDL work is on schedule to meet the court ordered deadline for submission of an EPA approved TMDL before April 11, 2019. To satisfy elements of the court's ruling, the TMDL is being revised to include recent data, provide Waste Load Allocations for permitted sources, provide daily loading capacity and meet the current water quality standard, which was revised 2011 from 0.3 mg/kg (milligram of methylmercury per kilogram of fish tissue) to a significantly more protective 0.040 mg/kg.

**Mid-Coast watershed TMDLs:** TMDLs for various watersheds in the Mid-Coast are being developed to address impairments for bacteria temperature, biocriteria, and dissolved oxygen. The TMDLs were initially scheduled for issuance in December of 2017. The bacteria TMDLs for the Upper Yaquina and

Big Elk watersheds are now targeted for issuance to EPA in the fourth quarter of 2018; beach impairments on Nye, Agate, and Yaquina Bay State Park Beaches are scheduled for issuance in the second quarter of 2019; and in the third quarter of 2019 in the Salmon River watershed. A temperature TMDL for the Yachats River Watershed is now expected to be issued to EPA by the first quarter of 2019 and the dissolved oxygen TMDLs for the Upper Yaquina in the second quarter of 2019. TMDLs addressing biocriteria impairments in the Indian Creek Watershed are scheduled for issuance to EPA in the third quarter of 2019.

**Powder River Basin TMDLs:** Currently DEQ is working on TMDLs that will address impairments for bacteria, dissolved oxygen, and chlorophyll a in the Powder River, Burnt River and Brownlee Reservoir Subbasins. Progress is being made in the setup of the TMDL model for nutrient-related impairments in the Powder River, and the completion bacteria of load duration curves in all three subbasins in accordance with a work plan completed in 2016. The target date for completion of the TMDLs is the fourth quarter of 2019.

### **3.8.2. TMDL Guidance**

Develop TMDL Guidance or IMD on how to produce work plans that identify data needs and how to design a monitoring study.

In April of 2014 the Watershed Management Coordination Team (WMCT) was formed with the purpose to advance and improve the TMDL and nonpoint source programs, assist with prioritizing program work, develop and establish process, protocols, and guidance.

In April of 2016 the WMCT began working on a project to improve procedures on how to document, review, prioritize, and schedule new data collection efforts, including a monitoring study design and document template. The project deliverables included:

- Documents on recommended elements to include in study design and monitoring proposals;
- Documents on recommended process and steps to develop, review, prioritize, and schedule new data collection projects;
- Example workplan/study design and project proposal documents.

The deliverables and new process were used on a trial basis over two monitoring cycles during 2016 and 2017 with adjustments made as needed. The WMCT project was considered complete in November 2017 and recommend for regular program implementation and improvement as needed. Over the two trial years, the process resulted in much improved documentation of monitoring and technical approach work plans, and increased program review to ensure the technical approach and monitoring plan serve the TMDL and nonpoint source program needs.

### **3.8.3. Technical Assistance**

DEQ headquarters and regional staff provide technical assistance to DMAs, DEQ staff, other local, state, and federal staff on TMDL development and TMDL implementation efforts.

In 2017 technical assistance for TMDL development was focused on

- Coquille Subbasin dissolved oxygen, pH, and bacteria, and temperature TMDLs;
- Mid-Coast Subbasins bacteria, sediment, dissolved oxygen, and temperature TMDLs;



- Powder and Burnt Subbasins bacteria, pH, and dissolved oxygen TMDLs;
- Upper Klamath and Lost River Subbasins dissolved oxygen and temperature TMDLs;
- Western Hood Subbasin temperature TMDLs revision; and
- Willamette Basin Mercury TMDLs

Technical assistance for TMDL implementation efforts was focused on:

- Assistance to Designated Management Agencies on development or revision of TMDL implementation plans, primarily in the Willamette (see Section 3.8.4);
- Review of Designated Management Agencies TMDL implementation annual reports (see Section 3.8.4);
- Implementation of management strategies and BMPs and monitoring assessments in the North Coast, South Coast, Willamette, Rogue, Klamath, John Day, Grande Ronde, Hood, and Malheur Basins;
- Prairie Creek water quality evaluation (see Section 4.1.1);
- Dairy-McKay Watershed water quality evaluation (see Section 4.1.2);
- Neal Creek stream temperature evaluation (see Section 0);
- Production of sixteen water quality status and trend reports for biennial review of agricultural water quality rules and area plans (see Section 3.10.2);
- Review and comment on agricultural water quality rules and area plan (see Section 3.10.2).

#### **3.8.4. DMA Implementation Plans and Annual Report Reviews**

DEQ regularly works with DMAs to develop and implement TMDL Implementation Plans. As in previous years, most DMAs continue to implement their TMDL implementation plans. A sampling of DMA implementation activities reported to DEQ in 2017 are described in the Basin Reports in **Appendices A - R**. DEQ also supports DMAs as they revise their TMDL implementation plans. In 2017, DEQ received revised plans from five municipal DMAs in the Willamette Basin.

DEQ staff also regularly receive and review TMDL implementation plan annual reports. For the 2017 reporting period, DEQ:

- Required approximately 129 TMDL annual reports be submitted;
- Received 108 annual reports (84% of those required); and
- Reviewed or took action on 81 (75%) of the received annual reports.

DEQ is also undertaking an effort to improve the tracking of DMA and TMDL implementation related requirements. DEQ has developed the ACES database to systematically track TMDL enforcement and reporting requirements and their status. The ACES system can track DMA annual report due dates, five-year review due dates, TMDL implementation plans or plan revision due dates, the dates of report acceptance, review, and the approval by DEQ, as well as enforcement actions. To date DEQ's Western Region has entered TMDL reporting requirements for most county, city, special district, and state agency DMAs for the Applegate, Bear Creek, Rogue Basin, and Willamette Basin TMDLs. DEQ's Northwest Region has begun entering data into ACES and anticipates to make steady progress in 2018. DEQ's Eastern Region has not yet started data entry into ACES.

### 3.8.5. Reasonable Assurance

Conduct analysis during TMDL/WQMP development to provide reasonable assurance and guide implementation for TMDLs.

In 2017 DEQ and EPA jointly worked on developing recommendations to increase reasonable assurance for implementation of Total Maximum Daily Loads and Water Quality Management Plans. The recommendations include:

Process to develop implementation actions for sources:

- With the assistance from the TMDL advisory committee, perform analysis to better understand the causes of impairments and identify pollutant sources, including point sources and land use and management sources and linkages to water body impairments;
- Work with the TMDL advisory committee and Designated Management Agencies (DMAs) to identify the management strategies needed to achieve pollutant reductions;
- With the TMDL advisory committee and DMAs, determine the timelines and milestones to meet allocations (including surrogates) and applicable water quality criteria in the watersheds for each DMA;
- Identify specific implementation actions in the WQMP for each sector, source, or category of source.
- Evaluate that the DMA Implementation Plan be at least as effective as the strategy set out in the WQMP; and
- The WQMP will describe the actions necessary to evaluate the effectiveness of the management strategies and steps required for structured decision making and adaptive management.

WQMP development that addresses permitted sources, land use, and land management sources of the pollutant:

- Management strategies designed to meet the waste load allocations and load allocations in the TMDL, including a categorization of sources and a description of the management strategies proposed for each source category;
- Timelines for implementing management strategies including schedules revising permits, achieving appropriate incremental and measurable water quality targets, and completion of other measurable milestones;
- Explanation of how implementing the management strategies will result in attainment of water quality standards or represent control to the maximum extent practicable;
- Identification of sector-specific, source-specific, or category-specific implementation plans at the time the TMDL is issued;
- Identification of persons, including designated management agencies (DMAs), responsible for implementing the WQMP management strategies and for revising sector-specific, source-specific, or category-specific implementation plans as needed for adaptive management; and
- Timeline and milestones for implementing TMDL allocations.

WQMP expectations for DMAs:

- Provide a timeline for implementing management strategies and a schedule for completing verifiable milestones;
- Provide performance monitoring with a plan for periodic review and revision of the implementation plan;
- Schedules for preparation and submission of sector-specific or source-specific implementation plans by a DMA if the DMA wants to use alternatives to the approaches in the WQMP; and
- Explanation of the DMA's determination that there is reasonable assurance that management strategies and sector-specific, source-specific, or category-specific implementation plans will be carried out through regulatory or voluntary actions.

## 3.9. Toxics

In order to make progress on the nonpoint source program goals related to toxic chemicals, DEQ committed to two action items (Table 15) in the 2014 nonpoint source management program plan and another (Table 16) in the 2016-2018 Performance Partnership Agreement. The following sections describe progress on these action items in 2017.

**Table 15 Description of the toxics program actions or outputs identified in the 2014 Nonpoint Source Management Program Plan and the 2017 status.**

Goal #	Goal Topic	Action	Time Frame	2017 Status
TOX - 1	Water Quality Pesticide Management Team and Pesticide Stewardship Partnerships (PSPs)	Continue to work with the Water Quality Pesticide Management Team and implement programs to address water quality pesticide issues including the Pesticide Stewardship Partnerships (PSP) projects.	Ongoing 2014-2018	Ongoing. See 2017 accomplishments in Section 3.9.1.
TOX - 2	Public Water System (PWS)	Continue developing contaminant-specific reduction strategies for public water system use, such as for nitrates and pesticides from urban and rural residential lands.	Ongoing 2014-2018	Ongoing. See 2017 accomplishments in Sections 3.9.2 and 3.9.3.

**Table 16 Description of Toxic Program actions or outputs identified in the 2016-2018 Performance Partnership Agreement and the status in 2017.**

PPA Element	Action	Time Frame	2017 Status
PPA - 8.8	Implement Agency Toxics Reduction Strategy.	Ongoing	Ongoing. See 2017 accomplishments in Section 3.9.3.

### 3.9.1. Water Quality Pesticides Issues

DEQ works with the Water Quality Pesticide Management Team (WQPMT) and implements programs to address water quality pesticide issues. The NPS management program plan identified that within the timeframe from 2014-2018, the nonpoint source program will reduce, where need, instream pesticide concentrations. Each subsection below identifies progress made on this goal.

### **3.9.1.1. Water Quality Pesticide Management Team**

Several state agencies are responsible for the development and enforcement of water quality policies in Oregon. The Water Quality Pesticide Management Team, an interagency team comprised of representatives from the Oregon Department of Agriculture, DEQ, Oregon Health Authority, and Oregon Department of Forestry was formed to address pesticide contamination issues in waters across the state.

The team seeks to reduce concentrations and frequencies of pesticide detections in waters of the state through facilitation and coordination of water quality related activities such as monitoring, data analysis and communication, prioritizing program activities, review and implementation of federal policies.

<http://www.oregon.gov/ODA/programs/Pesticides/Water/Pages/AboutWaterPesticides.aspx>

The Water Quality Pesticide Management Team guided the expansion and enhancement of the Pesticide Stewardship Partnership Program in 2016 and 2017. The WQPMT selected the Middle Rogue Watershed as the newest full scale Pesticide Stewardship Partnership (PSP) project after conducting periodic stream monitoring since 2014. Those initial monitoring results showed a broad range of multi-use herbicides in several streams throughout the watershed. Although the vast majority of detections were below EPA aquatic life benchmarks, the consistent detections of pesticides (mostly herbicides) across different types of land use was a major factor in the selection of the Middle Rogue. The other primary factor was the engaged participation and interest of wide array of local stakeholder groups.

The Water Quality Pesticide Management Team coordinated with those local partners to plan baseline monitoring timing and locations, as well as outreach activities.

In addition, the Water Quality Pesticide Management Team decided to conduct a second phase of targeted pilot monitoring in the Middle Deschutes and South Umpqua in 2017, based on an evaluation of data from 2014 and 2015. The Middle Deschutes monitoring results at two of the four pilot monitoring locations showed detections of several agricultural pesticides, some of which exceeded EPA aquatic life benchmarks. Very few pesticide detections were observed at the other two monitoring sites in the watershed. In the South Umpqua, the initial pilot monitoring data showed detections of several multi-use herbicides at multiple monitoring locations. No benchmark exceedences were observed, but the consistent detection of several herbicides in different parts of the watershed warrant continued monitoring. Several of the detected herbicides are associated with industrial forest land use, however, they can also be used for rights-of-way and other applications. Therefore, the Water Quality Pesticide Management Team recommends monitoring at locations that isolate land uses more than during the first round of monitoring. Monitoring was discontinued in the South Yamhill Watershed after an assessment of the data from 2010-2016. Detections of pesticides in this forested watershed were relatively infrequent, and all but two of the detections were below 10% of the lowest EPA benchmark concentrations. However, without more precise information on pesticide application timing, uncertainty remains about whether the data results represent peak concentrations and detection frequencies. The Water Quality Pesticide Management Team developed a draft report by summarizing the South Yamhill findings, challenges associated with sample timing, and recommendations for similar future projects.

In 2017 the Water Quality Pesticide Management Team coordinated and conducted five agricultural and commercial pesticide waste collection events. These events removed over 40,000 pounds of unusable and

“legacy” pesticides from Oregon watersheds. The WQPMT also reviewed and evaluated technical assistance grant proposals in 2017, and selected five projects to fund for the biennium. These projects includes tools for implementing urban and agricultural Integrated Pest Management and pesticide risk reduction actions, research trials for non-pesticidal materials that could replace highly toxic insecticides in fruit growing, preventing pesticide and sediment run-off from hazelnut orchards, and developing a model integrated watershed pesticide stewardship program plan.

### **3.9.1.2. Pesticide Stewardship Partnerships**

Established in 2000 in the Hood River Watershed, the Pesticide Stewardship Partnership (PSP) Program uses local expertise with water quality sampling results to encourage and focus voluntary changes in pesticide use and practices. Through 2012, the program was supported primarily by nonpoint source grants and in-kind contributions. The 2013 Oregon Legislature provided the Oregon Department of Agriculture and DEQ with stable state funding for the program, and this financial support has continued through the 2017 Legislative Session. The program has expanded to encompass nine long-term watershed projects, and pilot water monitoring projects in two other watersheds. The pilot monitoring projects are designed to be short-term, with the results used to determine whether a long-term project is warranted. In addition, the pesticide collection events and stewardship technical assistance grant program, referenced in **Section 3.9.1.1**, are now largely supported by state funding.

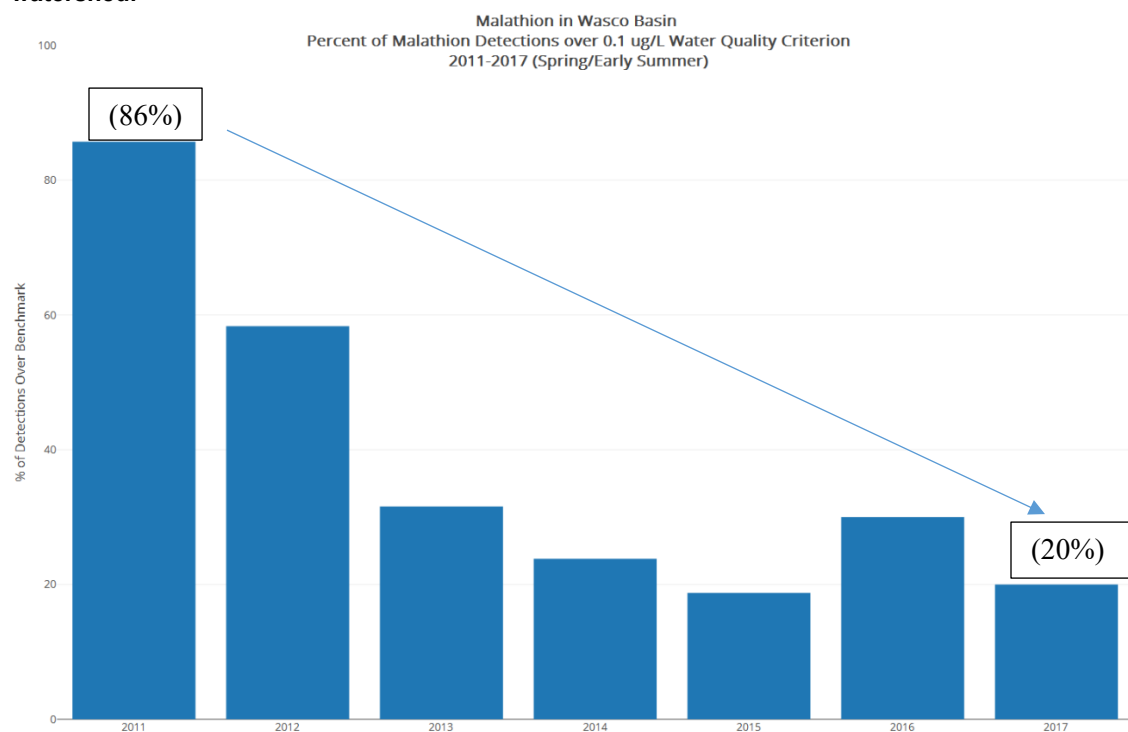
In 2017, the surface water monitoring conducted in four of the PSP watersheds was enhanced to include flow monitoring. The flow data allows DEQ and ODA to calculate pesticide loading changes over time, rather than just focusing on in-water concentrations. Given wide fluctuations in precipitation from year-to-year at some monitoring locations, as well as variations caused by changing water withdrawals and discharges, concentrations may not accurately reflect improvements in best practices that could result in reductions in total pesticide loading to streams. Having both pesticide concentration and mass loading data provides more insights into water quality issues in PSP watersheds, as well as impacts from pesticide stewardship activities. The DEQ Laboratory has also recently expanded its analytical capabilities to include additional pesticides that are widely used in Oregon. In 2017, watershed partners helped DEQ collect 550 grab water samples across all PSP watersheds, which were analyzed for over 130 pesticide ingredients and degradates. DEQ, ODA and our partners communicate the data results to pesticide applicators and community groups prior to spring pesticide applications.

Water quality improvement trends continued through 2017 in individual watersheds for particular high priority pesticides. These clear improvement trends are primarily found in watersheds with one dominant agricultural land use (e.g., fruit orchards). In general, sustained improvement trends have not been realized in watersheds with intensive pesticide use by many agricultural crops, and those with more urbanization. The WQPMT is now working at a smaller geographic scale in those watersheds to ensure the messages about the monitoring data and stewardship opportunities reaches more landowners.

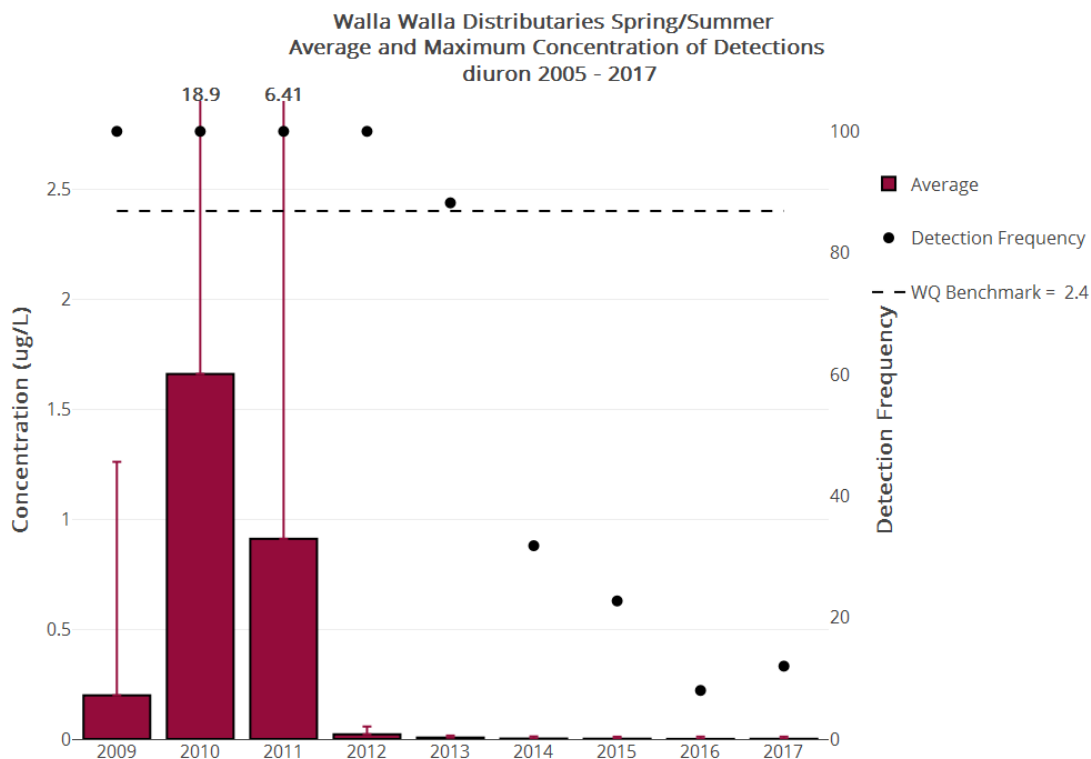
With regard to the successes, most malathion levels continue to remain below the water quality criterion in streams near The Dalles, OR after elevated levels were detected in 2010 and 2011 (Figure 2). Communication of the monitoring data to local cherry growers occurs regularly, and they have responded by implementing multiple best management practices. These practices include relying more on weather station data to ensure pesticide applications occur when meteorological conditions minimize off-target drift, and using ground spraying, rather than aerial, for orchard blocks close to streams. Similarly, the herbicide diuron is now observed infrequently at levels only slightly above detection limits in Walla Walla PSP Watershed streams, after concentrations were detected above aquatic life benchmarks between

2009 and 2011 (Figure 3). In 2012, the irrigation district began using weed burning devices as a mechanical control, and followed up with spot spraying of a much less persistent and toxic herbicide. In addition, the levels and occurrence of the herbicides diuron and simazine have been reduced significantly in Fifteenmile Creek (Wasco County PSP watershed). The use of diuron in rights-of-way applications in this watershed was discontinued or reduced significantly. The specific reasons for the simazine decline aren't known, but some agricultural landowners in the county have transitioned to alternative chemistries for weed and vegetation control.

**Figure 2: Percent of Malathion detections over the 0.1 µg/L water quality criterion in the Wasco PSP watershed.**



**Figure 3: Average and maximum concentration of diuron detections in the Walla Walla PSP watershed.**



In the Yamhill and Clackamas, most of the benchmark exceedences have occurred in small agricultural sub-watersheds where landowners with a diverse array of crop types use pesticides with high toxicity to aquatic life. Most of these exceedences are related to insecticides, such as chlorpyrifos, diazinon, bifenthrin and imidacloprid. In addition, periodic detections of diuron have exceeded benchmarks in these two watersheds. Although used for some agricultural crops, diuron use in rights-of-way and other non-crop applications within these agricultural areas are likely contributors to the total concentrations observed. The streams in the Middle Deschutes with benchmark exceedences are surrounded by less diverse agricultural crop types than those in the North Willamette watersheds, but a wide variety of insecticides, herbicides and fungicides are registered for use on the specialty crops that are grown in that watershed. There is relatively little urban or other non-crop types of uses for the pesticides exceeding benchmarks in the Middle Deschutes.

In addition, very few benchmark or criteria exceedences of any pesticide were observed in the Hood watershed over the past four years, thus achieving the primary goals of that PSP project.

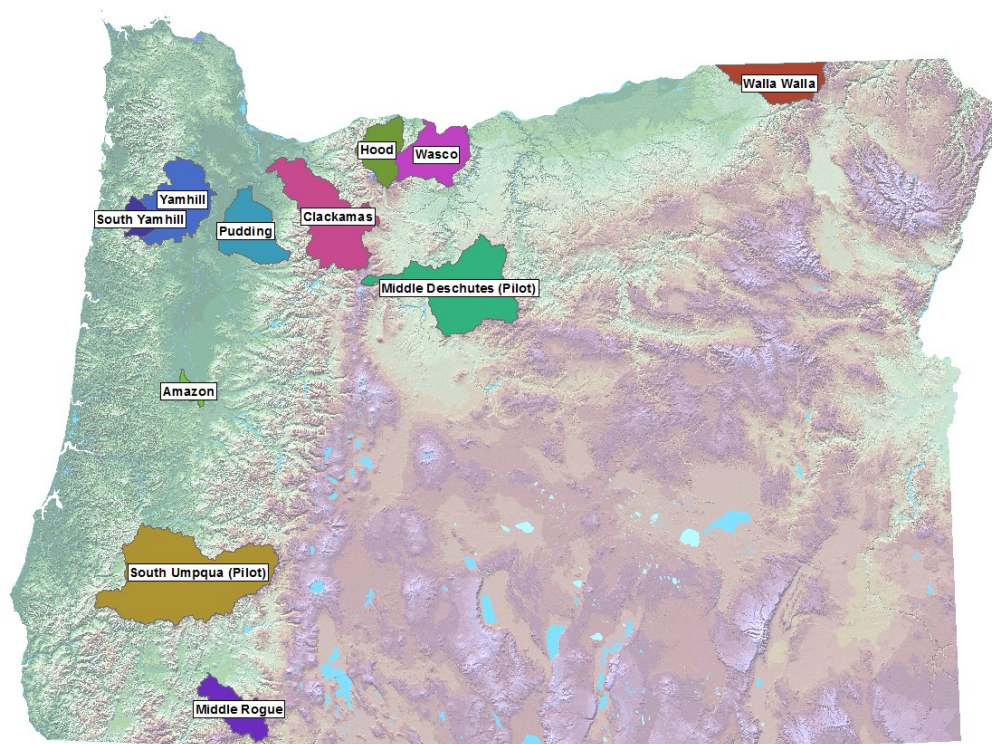


Below is a summary of 2017 data results for each PSP watershed (Figure 4):

- Amazon – 8776 samples\*, 323 detections, one exceedance
- Clackamas – 7381 samples\*, 283 detections, 20 exceedances
- Hood – 5053 samples\*, 119 detections, one exceedance
- Middle Deschutes (Pilot) – 4921 samples\*, 240 detections, 22 exceedances
- Middle Rogue – 9394 samples\*, 98 detections, six exceedances
- Pudding – 3219 samples\*, 281 detections, eight exceedances
- South Umpqua (Pilot) – 6803 samples\*, 63 detections, zero exceedances
- Walla Walla – 6711 samples\*, 28 detections, six exceedances
- Wasco – 8420 samples\*, 64 detections, four exceedances
- Yamhill – 8452 samples\*, 712 detections, 60 exceedances

**\*Note:** samples in this case relate to the number of water samples multiplied by the number of analytes analyzed for in the sample. For example, 10 grab samples analyzed for a suite of 146 compounds results in 1,460 samples.

**Figure 4: 2017 Pesticide Stewardship Partnership watersheds.**



Another significant element of the Pesticide Stewardship Partnership program is the collection of waste pesticides from commercial, agricultural and institutional entities in watersheds throughout the state. The

Oregon Legislature has provided funding for this component of the program since 2013, in addition to supporting the enhancement of the monitoring and stewardship activities. Since 2014, the pesticide collection program has brought in more than 340,000 pounds of waste from 550 growers and other pesticide applicators. Legacy pesticides, such as DDT and chlordane, continue to be collected at these events. This is noteworthy, given how little of these materials can cause impairments to surface and groundwater.

### **3.9.2. Public Water System Reduction Strategies**

The goal of TOX – 2 (Table 15) is to continue developing contaminant-specific reduction strategies for public water system use, such as for nitrates and pesticides from urban and rural residential lands. The program plan identified that the nonpoint source program will reduce or protect public water systems from nonpoint sources of pollution.

In 2017, DEQ completed statewide “Resource Guides” for both groundwater and surface water sources which provide contaminant specific reduction strategies for public water systems to use, such as for reducing nitrates and pesticides from urban and rural residential lands. These strategies are being evaluated and implemented throughout Oregon. For example, a number of water providers that all obtain drinking water from the Rogue River initiated a partnership to identify and address the highest priority risks. City of Glide in partnership with the USFS is decommissioning roads and restoring riparian vegetation to reduce turbidity in their watershed. Glide has also purchased a new turbidimeter for instream monitoring. There are also several water systems addressing septic systems including the Clackamas River Water Providers (a consortium of seven individual water systems), Canby Water Utility (Molalla River) and several groundwater systems.

### **3.9.3. Agency Toxics Reduction Strategy**

DEQ completed a Toxics Reduction Strategy in 2012 to complement and support DEQ’s on-going Water, Air and Land Quality toxics reduction and assessment efforts through improved integration across agency programs, and by filling gaps in existing programs. The strategy identified priority toxic chemicals for reduction in Oregon’s environment, and proposed 25 toxics reduction and assessment actions for implementation. Many of these actions focused on collaborative activities with external partners and other states.

Since 2012, DEQ has focused its implementation efforts primarily on five short-term priority actions:

- Develop and implement low toxicity state purchasing criteria and guidelines
- Work with other states, research organizations and product manufacturers to assess and reduce toxics in consumer products
- Integrate toxics use reduction technical assistance for priority industrial sectors
- Implement commercial pesticide waste collection strategy
- Expand and enhance Pesticide Stewardship Partnership program

In 2017, DEQ continued to work with the Department of Administrative Services on advancing low toxicity government purchasing criteria to increase market supply and demand for low toxicity products and materials. This procurement work is also supported by a Governor’s Executive Order designed to advance green chemistry and safer products in Oregon. DEQ’s Materials Management Program recently hired a staff person dedicated to working on sustainable government procurement initiatives, which is

accelerating efforts to reduce toxics in government-purchased products such as office furniture and maintenance, repair and operations supplies.

In 2017, DEQ continued active participation in regional and interstate activities to advance green chemistry and safer chemical alternatives assessment. These activities include the Interstate Chemicals Clearinghouse (IC2), Northwest Green Chemistry, and a West Coast States' collaboration. DEQ coordinated with the Washington Department of Ecology and other entities to offer multiple chemical hazard and alternatives assessment trainings for businesses and governments. An EPA Pollution Prevention grant obtained by DEQ has supported these trainings. This grant is also supporting work with Northwest Green Chemistry to research and evaluate safer alternatives for bridge coatings and per and poly-fluorinated (PFAS) chemicals in food packaging. PFAS are a growing concern for water quality programs due to their toxicity, persistence and presence in a range of consumer and business products. The Interstate Chemicals Clearinghouse is working to develop an interstate data system for priority toxics in children's products, with support from an EPA grant obtained by the Oregon Health Authority. The IC2 also convened states together to share information on emerging priority toxic chemicals (e.g., flame retardants, PFAS), including frameworks for assessing less toxic alternatives.

DEQ has also been working on an update to the agency's Toxics Reduction Strategy over the past year. A draft of the strategy was recently developed, and is currently being reviewed by agency management. It proposes 15 reduction and assessment actions, several of which build on the actions implemented since 2012. The updated strategy will be presented to the Oregon Environmental Quality Commission in the spring of 2018.

### 3.10. Agriculture

In order to further the goal that agricultural lands attain TMDL load allocations and water quality standards, DEQ committed to six action items (Table 17) in the 2014 nonpoint source management program plan. The following sections describe progress on these action items in 2017.

**Table 17 Description of agriculture related DEQ actions or outputs identified in the 2014 Nonpoint Source Management Program Plan, 2016-2018 Performance Partnership Agreement, and the 2017 status.**

Goal #	Goal Topic	Action	Time Frame	2017 Status
AG - 1	Landscape Condition for TMDLs and WQS	Document definition of system potential and site capable vegetation.	2014	Complete. See Section 3.10.1.
AG - 2	Landscape Condition for TMDLs and WQS	Conduct effective shade assessments for evaluating implementation to achieve TMDL/WQS goals under area rules and plan.	2014.	Complete. See Section 3.10.1.
AG - 3 and PPA - 8.10	Biennial Review of Area Rule and Plan	Participate in ODA's biennial review process by providing water quality status and trends and landscape condition in priority areas.  Ag Area Plan & Rule biennial reviews and ODA/DEQ MOA implementation	Ongoing 2014-2018	Ongoing. See 2017 accomplishments in Section 3.10.2.

Goal #	Goal Topic	Action	Time Frame	2017 Status
AG - 4	Update DEQ Guidance for Biennial Reviews	Collaborate with ODA for updating DEQ guidance for providing comment during ODA's Biennial review Process.	2015	Complete. With additional work in starting in 2017. See Section 3.10.3.
AG - 5	Grant Funding	Participate in local grant funding process to direct resources to high priority agricultural issues.	Ongoing 2014-2018	Ongoing. DEQ has ongoing coordination with ODA on grant funding process through CEP, 319, and NWQI.
AG - 6	ODA Area Rule Compliance	Work with ODA to prioritize and help develop assessment methodologies for addressing temperature, sediment and sedimentation, bacteria, nutrients, and pesticides.	Ongoing 2014-2018	Ongoing. DEQ has ongoing coordination with ODA on assessment methodologies through CEP. See 2017 accomplishments in Section 4.1.

### 3.10.1. Landscape Condition Assessments

DEQ and ODA collaborated on a project in 2014 to determine the status of achieving the Willamette Basin TMDL effective shade targets in Noyer Creek in the Clackamas Subbasin. The pilot project was a milestone and provided useful information on how to conduct such assessments. As part of the assessment DEQ and ODA worked on a definition of system potential and site capable vegetation (Goal AG – 1 in Table 17). This work was largely completed in 2014.

Since then DEQ has completed an effective shade assessment in the Southern Willamette Basin in 2016, as well as in the Mid-Coast in 2017. The Mid-Coast assessment will be used in part for TMDL development as well as for future biennial reviews.

Also in 2017, DEQ actively evaluated new methods to conduct future landscape condition assessments. One of the limiting factors in conducting these assessments using current methods is the resources required to acquire the necessary remote sensing data and complete the analysis. Scaling the method up to the entire state is resource intensive. To evaluate alternative approaches DEQ funded a PSU master's student to evaluate empirical methods intended to estimate effective shade using freely available remote sensing data. These methods can potentially be scaled up to large geographic areas in order to deliver assessments on the timelines required for each biennial review. The results of this evaluation will likely be available in 2018.

Also, in partnership with Oregon Department of Administrative Services (DAS) and other partners, new natural color and false color infrared orthorectified digital imagery of the entire state at one foot ("GSD")

resolution is planned to be collected on a recurring biennial basis. There are additional options to add Light Detection and Ranging (LiDAR) data and production of high resolution point clouds from the aerial photos using Dense Image Matching (DIM) techniques. The first statewide acquisition started in 2017 in Eastern Oregon. Acquisition in Western Oregon will begin in 2018 pending available funds. DEQ has been contributing funds to this statewide effort in order to have the high-resolution data needed to characterize vegetation conditions and shade along streams over time.

### **3.10.2. Review of Area Rules and Plans**

DEQ Basin coordinators participate in Oregon Department of Agriculture's biennial review process for agricultural water quality management area rules and plans by providing comment and recommendations on any changes or additions necessary to achieve water quality standards and TMDL agricultural load allocations. As part of this process DEQ develops water quality status and trends reports. DEQ, ODA and the ODA Local Advisory Committees often this information during the biennial reviews.

In 2017, DEQ prepared water quality status and trend reports and provided comments or recommendations to ODA for biennial reviews in the following sixteen agricultural management areas:

- Clackamas
- Goose and Summer Lakes
- Greater Harney
- Inland Rogue
- Klamath Headwaters
- Lost River
- Lower Willamette
- Mid Coast
- Powder-Brownlee
- South Santiam
- Southern Willamette
- Upper Grande Ronde
- Upper Willamette- Siuslaw
- Walla Walla
- Willow Creek
- Yamhill

The water quality status and trend reports can be found at <https://www.oregon.gov/deq/wq/programs/Pages/wqstatustrends.aspx>.

Under goal AG – 3 DEQ committed to provide information about landscape condition in the status and trend reports. DEQ did not include information on landscape condition in the status and trend reports issued in 2017 due to insufficient data and resources to complete the characterizations. However, DEQ has been actively evaluating methods and collecting new remote sensing data to support future characterizations. See **Section 3.10.1** for more information on 2017 activities related to landscape condition assessments.

### **3.10.3. DEQ Biennial Review Guidance**

DEQ committed to collaborate with ODA while updating DEQ's guidance for providing comment during ODA's biennial review process. DEQ updated the biennial review guidance in coordination with ODA in 2015. DEQ has ongoing coordination with ODA on biennial review guidance but did not make any updates in 2017. In December of 2017 ODA and DEQ held a meeting to begin a complete programmatic review of the DEQ-ODA consultation process for biennial reviews. This work will continue into 2018.

## 3.11. Private Forestry

In order to further the goal that private and state forestlands attain TMDL load allocations and water quality standards, DEQ committed to three action items (Table 18) in the 2014 nonpoint source management program plan. The following sections describe progress on these action items in 2017.

**Table 18 Description of the Private Forestry related DEQ actions or outputs identified in the 2014 Nonpoint Source Management Program Plan and the current status.**

Goal #	Goal Topic	Action	Time Frame	2017 Status
FOR - 1	FPA Evaluation	Participate with ODF to jointly develop evaluation methods and study designs (with funding sources) to address unanswered monitoring questions from the Private Forests Monitoring Program Strategic Plan.	2015	Complete. See Section 3.11.1.
FOR - 2	Forest Practices Act Rules	Participate in Forest Practices Act rule analysis and concept development for water quality issues and revisions to management plans for state forests.	2014	Complete. See Section 3.11.2.
FOR - 3	ODF/DEQ MOA	Participate with ODF on revising the current MOA between ODF and DEQ.	2015	Not Complete. See Section 3.11.3.

### 3.11.1. Forest Practices Act Evaluation

DEQ committed to participate with Oregon Department of Forestry (ODF) to jointly develop methods and study designs with funding sources to address unanswered monitoring questions from the Private Forests Monitoring Program Strategic Plan. Proper evaluation of the ability of forest practice rules to meet water quality standards and protect beneficial uses requires monitoring of both compliance with existing rules and the effectiveness of those rules for meeting standards.

DEQ staff serve on the external review committee for ODF's Forest Practices Act (FPA) compliance audit to evaluate landowner/operator compliance with existing forest practice rules. DEQ has served in this capacity since 2012. Current rule sets being evaluated included riparian, harvest, and road rules. Data show that compliance rates are generally high (>90%) with compliance with some riparian rules (e.g. protection of small Type-N streams and small wetlands) being lower and in need of improvement. These data allow ODF to target internal and external education and training. Future rule sets under consideration for compliance monitoring include chemical and other petroleum products and reforestation rules.

In 2016, the Board of Forestry identified a need to evaluate the efficacy of streamside protection rules and policy in ODF's Siskiyou and Eastern Oregon geographic regions. ODF surveyed stakeholders to find out their opinions on the methods (e.g. literature reviews, field studies, GIS analysis) and priorities for developing potential monitoring questions (e.g. stream temperature, fish habitat, large wood recruitment, other water quality parameters, etc). DEQ staff participated in this survey and had related discussions with ODF staff and management. Current actions are compiling current studies that may be relevant and formulating potential monitoring questions to present to the Board in order to bring the scoping phase of this work to completion. Additional field studies may be needed if there is not sufficient information from existing literature and other states' programs. The results of this review can result in a range of outcomes: no change, targeted education and outreach programs, voluntary measures, incentive programs, rule increases, or rule decreases.

### **3.11.2. Forest Practices Act Rules**

DEQ committed to participate in Forest Practices Act rule analysis and concept development for water quality issues and revisions to management plans for state forests.

In 2002, ODF initiated the "RipStream" riparian study to evaluate if the Forest Practices Act rules were effectively meeting water quality standards for temperature. RipStream showed that riparian protections on small and medium fish-bearing streams do not ensure achievement of the protecting cold water criterion of the temperature standard west of the crest of the Cascades and excluding the Siskiyou region.

The resulting rule analysis began in January 2012, and the Oregon Board of Forestry directed ODF to begin rulemaking for new rules to increase protections on salmon, steelhead, and bull trout (SSBT) streams to insure achievement of the protecting cold water criterion of Oregon's temperature standard. DEQ and other agency staff participated in this rulemaking process.

The public comment period on the revised rules ended March 1, 2017. The Board of Forestry adopted final rules on April 26, 2017 and took effect on July 1, 2017. DEQ participated on the Rule Advisory committee, which developed the final language based on Board of Forestry policy direction. The final revised rules have three prescription options for salmon, steelhead and bull trout (SSBT) streams within the Coast Range, South Coast, Interior, and Western Cascades ODF geographic regions including:

1. Retaining all trees within 60 feet and 80 feet of the high water level on small and medium SSBT streams respectively (Prescription 1 Oregon Administrative Rules 629-642-0105(10);
2. Basal area targets and live conifer tree requirements shown in Table 19. (Prescription 2 Oregon Administrative Rules 629-642-0105(10);
3. Retaining all trees within 40 feet of the high water level on the north side of SSBT streams where the stream valley direction is between 60 and 120 degrees east and 240 and 300 degrees west on a compass bearing of 0 and 360 degrees as north (Prescription 3 Oregon Administrative Rules 629-642-0105(12);

ODF developed a model to predict potential temperature change associated with changes to shade due to riparian stand management. A key limitation of this model, amongst others, is that the modeled temperature increases are informed by hard-edged clear cuts, not thins. Predictions for variable retention or thins were provided but were based on an equivalent no-cut buffer width. The model is based on a Bayesian technique that makes predictions about the chance that a true mean temperature change lies above or below a certain value. The analysis of various rule options was summarized in an ODF staff

report to the Board of Forestry for agenda item two at the Board meeting on July 23<sup>rd</sup>, 2015. Rule concepts evaluated in the staff report that DEQ staff believe were likely to achieve the protecting cold water criterion after the first harvest entry almost or more than 50% of the time included:

- 90 foot and 100 foot no-cut buffers,
- variable retention option 170/275 with a 170 foot wide Riparian Management Area (RMA) and 275 square feet of basal area target retained per 1,000 foot of stream, and
- the current State Forest Management Plan (FMP).

Based on ODF modeling, the true mean temperature for these options were at or below the 0.3°C increase allowed under the protecting cold water criterion. The 90 and 100 foot no cut buffers had a true mean predicted temperature increase of 0.29°C (credibility interval of 0.07-0.52°C) and 0.18°C (credibility interval of -0.03-0.41°C) respectively. The variable retention option 170/275 had a true mean predicted temperature increase of 0.33°C (credibility interval of 0.13-0.56°C). The state Forest Management Plan (FMP) had a true mean predicted temperature increase of 0.2°C (credibility interval of 0.13-0.56°C). DEQ staff believe the other rule concepts evaluated in the ODF staff report did not appear likely to meet the protecting cold water criterion after the first harvest entry.

The adopted tree retention and basal area targets in rule prescriptions 1 and 2 (described above) have a smaller width and less total RMA basal area (tree retention) compared to the options DEQ staff identified as likely meeting the protecting cold water criterion. Therefore, the prescriptions adopted by the Board of Forestry likely have a true mean increase that exceeds the protecting cold water criteria.

**Table 19 Oregon Department of Forestry vegetation retention requirements along Salmon Steelhead and Bull Trout (SSBT) streams, Prescription option 2 in Oregon Administrative Rules 629-642-0105(11).**

Basal Area Target		Live Conifer Trees	
Square feet (ft <sup>2</sup> ) of basal area per each 500-foot stream segment, each side of the stream (any combination of conifers and hardwoods 6 inches or greater DBH)		(8 inches or greater DBH) per each 500-foot stream segment, each side of the stream	
Medium Type SSBT RMA = 80 feet	Small Type SSBT RMA = 60 feet	Medium Type SSBT RMA = 80 feet	Small Type SSBT RMA = 60 feet
0 to 20 feet Retain all trees.	0 to 20 feet Retain all trees.	0 to 20 feet Retain all trees.	0 to 20 feet Retain all trees.
20 to 50 feet: minimum 18 ft <sup>2</sup>	20 to 40 feet: minimum 10 ft <sup>2</sup>	20 to 50 feet: minimum 7 trees	20 to 40 feet: minimum 4 trees
50 to 80 feet: minimum 18 ft <sup>2</sup>	40 to 60 feet: minimum 10 ft <sup>2</sup>	50 to 80 feet: minimum 7 trees	40 to 60 feet: minimum 4 trees
RMA Total (20 to 80 feet) = 69 ft <sup>2</sup>	RMA Total (20 to 60 feet) = 37 ft <sup>2</sup>	RMA Total (20 to 80 feet) = 15 trees	RMA Total (20 to 60 feet) = 8 trees

### 3.11.3. ODF/DEQ MOA Revision

DEQ committed to participate with ODF on revising the MOA between ODF and DEQ. The MOA was last revised in 1998. No revisions were made in 2017. The MOA revision is no longer considered a high priority and staff resources have been focused on the Forest Practices Act rulemaking described in Section 3.11.2.



### 3.12. Urban and Rural Residential

In the 2014 Nonpoint Source Program Management Plan DEQ identified that the development of guidance (Table 20) to improve and establish consistent coordination between TMDL and stormwater programs as the highest priority in order to improve program implementation and effectively address nonpoint sources on urban and rural residential lands.

**Table 20 Description of the urban and rural residential related DEQ actions or outputs identified in the 2014 Nonpoint Source Management Program Plan that were scheduled to be ongoing or completed by the end of 2017.**

Goal #	Goal Topic	Action	Time Frame	2017 Status
STW - 1	TMDL and Stormwater	Development of DEQ guidance to improve and establish consistent coordination between TMDL and stormwater programs.	Ongoing 2014 - 2018	Complete. See this section.

The DEQ Stormwater Integration Group (SWIG) was formed in January 2015 and is made up of staff from the TMDL, Municipal Separate Stormwater Sewer System, Clean Water State Revolving Fund, 401 Water Quality Program, Underground Injection Control, and Industrial Construction programs. It was tasked with providing internal coordination and problem-solving for DEQ's program areas that have policy, regulatory, technical and/or outreach components involving stormwater. The SWIG Charter was developed and finalized in May 2015. The charter outlined the mission and desired goals and objectives of the group. The group's mission is to develop a clear, consistent, cross-program vision of DEQ's stormwater policy, procedures and requirements, identify problems and issues and develop solutions. The group works to enhance external and internal communication on stormwater issues and topics of interest. A survey of DEQ staff was completed in 2015 which identified five major stormwater priorities:

- Develop a Statewide Stormwater Manual;
- Identify stormwater subprograms that share parallel requirements and identify topics and tasks where internal coordination will create clear and consistent messages, regulatory requirements and permit conditions;
- Evaluate and identify technical resources and priorities for stormwater data management and analysis, best management practices and engineering concepts review, and subsequent best management practices approval and compliance assurance among subprograms;
- Develop a plan for internal and external communication on stormwater topics and a mechanism to deliver the information to the respective stakeholders; and
- Develop tools and resources aimed at small communities (with populations of 10,000 or fewer residents) for developing and implementing stormwater requirements.

Accomplishments in 2017 include:

- Revising the charter to reevaluate and confirm new team membership as required by the charter annually
- Implemented an iLearn training module in May 2017. The objective of the training module was to collaboratively engage stormwater staff and improve understanding of stormwater programs throughout DEQ and externally. One hundred-thirty-three staff members were required to take

the training module. Overall 75% of those assigned completed or started some of the modules. The module contained six lessons:

- Introduction to Oregon's Clean Water State Revolving Fund;
- Total Maximum Daily Load Program;
- 401 Water Quality Certification for Dredge and Fill Permits;
- Municipal Stormwater Permitting Program;
- Construction and Industrial Stormwater Permitting; and
- Introduction to Underground Injection Control Program
- In April 2017 SWIG developed and implemented an interim tool for the Statewide Stormwater Manual (*Post-Construction Stormwater Management Requirements Decision Flow Diagram for New Impervious Surface*).
- Developed and presented to the DEQ Manager forum in Oct 2017 a proposal and plan to develop the statewide stormwater manual. The forum agreed on the need to develop the manual but current funding to complete the project is not available. An estimated \$243,000 to \$487,000 is needed to fund 408 hours of DEQ staff and consultant time to complete the manual.

### 3.13. Federal Lands

In order to further the goal that federal lands attain TMDL load allocations and water quality standards, DEQ committed to three action items (Table 21) in the 2014 nonpoint source management program plan. The following sections describe progress on these action items in 2017.

**Table 21 Description of the federal lands related DEQ actions or outputs identified in the 2014 Nonpoint Source Management Program Plan that were scheduled to be ongoing or completed by the end of 2017.**

Goal #	Goal Topic	Action	Time Frame	2017 Status
FED - 1	USFS Annual Status Report	The USFS will submit to DEQ a Statewide Annual Status Report to meet the MOU and any DEQ TMDL reporting requirements.	Annually 2014 - 2018	Received. See Section 3.13.1.
FED - 2	USFS/DEQ 5-Year Progress Report	The 2013 USFS/DEQ MOU requires the preparation of a USFS/ DEQ 5-Year MOU Progress Report.	2018	Scheduled for 2018. See Section 3.13.2.
FED - 3	BLM Annual Status Report	The BLM will submit to DEQ a Statewide Annual Status Report to meet the MOU and any DEQ TMDL reporting requirements.	Annually 2014 – 2018. Revised to every 2.5 years.	Scheduled for 2018. See Section 3.13.3.
FED - 4	BLM 5-Year Progress Report	The 2011 BLM/DEQ MOU requires the preparation of a BLM/ DEQ 5-Year MOU Progress Report.	2016	Not Received. See Section 3.13.4.

Goal #	Goal Topic	Action	Time Frame	2017 Status
FED - 5	Coordination of USFS and BLM with DEQ	The USFS and BLM will coordinate with DEQ for establishing priorities, strategies, and funding using a watershed approach to protect and restore water quality on BLM and USFS administered lands, this will include WQRPs.	Annually 2014 - 2018	Ongoing. See 2017 accomplishments in Section 3.13.5.
FED - 6	USFS BMPs	As needed, USFS will develop Oregon specific land use activities BMPs and monitor implementation and effectiveness of BMPs following the USDA National Best Management Practices for Water Quality national protocols.	Annually 2014 - 2018	Ongoing. See 2017 accomplishments in Section 3.13.6.
FED - 7	BLM BMPs	BLM develops Oregon specific land use activities BMPs, monitor implementation and effectiveness of BMPs, and submits to DEQ for review and comment.	Annually 2014 - 2018	Ongoing. See 2017 accomplishments in Section 3.13.6.
FED - 8	Pre-TMDLs and Post-TMDL	The USFS and BLM will use the Forest Service and Bureau of Land Management Protocol for Addressing Clean Water Act Section 303(d) Listed Waters, May 1999, Version 2.0.	Annually 2014 - 2018	Ongoing. See 2017 accomplishments in Section 3.13.7.
FED - 9	Agricultural Activities	The USFS and BLM will develop and implement a programmatic strategy to address agricultural activities on federal lands, such as grazing.	Annually 2014 - 2018	Not Complete. See Section 3.13.8.

### 3.13.1. USFS Annual Status Report

The USFS submitted a statewide annual status report to DEQ in August of 2017. The submittal satisfies the reporting requirement in the MOU between DEQ and USFS.

### 3.13.2. USFS Five-year Progress Report

The next five-year progress report for USFS is scheduled to be completed in 2018.

### 3.13.3. BLM Annual Status Report

The MOU between DEQ and BLM was revised in 2016 and took effect after signing in March of 2017. The primary revision was to change BLM's reporting requirement from annual status reporting to a single mid-term (2.5 year) status report and final (5 year) progress report. The next mid-term report is scheduled to be completed in 2019-2020.

#### **3.13.4. BLM Five-year Progress Report**

BLM committed to submitting a progress report to DEQ every five years. The last five year progress report, due in 2015, has not been submitted to DEQ.

The MOU between DEQ and BLM was revised in 2016 and took effect after signing in March of 2017. The next five-year progress report will not be due until 2022.

#### **3.13.5. Coordination with USFS and BLM**

The annual meeting between BLM and DEQ was held in January of 2017. The primary focus of that meeting was completing the revision to the DEQ-BLM MOU, which was signed and became effective in March of 2017. Progress towards restoration activities and land management changes to improve watershed health is ongoing.

The annual meeting between USFS and DEQ was held in December of 2017. At the meeting DEQ and USFS discussed some minor edits to the MOU to make the MOU easier to implement.

The Drinking Water Provider program is coordinating with USFS and BLM on the Drinking Water Providers Partnership to allocate up to \$625,000 in grant funds in Oregon and Washington. In 2017, a total of \$385,000 was awarded in Oregon. Specific project details are discussed in the Basin Reports in **Appendices A - R** - most of these projects reduce the risk from nonpoint source activities in municipal watersheds.

#### **3.13.6. USFS and BLM Best Management Practices**

As needed, USFS and BLM will develop Oregon specific land use activity BMPs and monitor implementation and effectiveness of BMPs following the USDA National BMPs for water quality national protocols. In 2016, the USFS completed their first multi-year regional scale analysis of the implementation and effectiveness of water quality BMPs. Based on the 2017 annual report to DEQ USFS completed 241 BMP evaluations in Oregon from 2014 to 2016. Results indicate that on average over the three years, BMPs were fully or mostly implemented on 63% of the project sites monitored, had marginal implementation (some BMPs were implemented) on 26% of sites, and BMPs were not implemented on 11% of the sites.

USFS also determined if the “site-specific BMP prescriptions as designed and implanted work to protect water quality?” The USFS developed a rating system where a rating of “not effective” indicated there is potential risk for impacts to water quality or to the waterbody but do not necessarily indicate water quality criteria exceedance or impairment of designated uses. Over the 3 years, 74% of evaluations met the criteria for “effective” or “mostly effective”, and 26% were found “marginally effective”, or “not effective”.

#### **3.13.7. Addressing Impaired Waters**

The USFS and BLM address Clean Water Act Section 303(d) listed water through water quality assessments, providing data, validating listings, and by working with DEQ and other state and local tribes to implement watershed improvement work. USFS and BLM develop Water Quality Restoration Plan (WQRPs). WQRPs describe what the USFS and BLM plans to do to meet water quality standards and TMDLs. USFS is currently developing or has drafts of six WQRPs including:

- Upper Deschutes Subbasin WQRP
- Little Deschutes Subbasin WQRP
- Crooked River, Mill Creek WQRP
- Malheur River WQRP
- Miles Creek WQRP (Middle-Columbia Hood Subbasin)
- Walla Walla Subbasin WQRP

### **3.13.8. USFS/BLM Agricultural Programmatic Strategy**

The USFS and BLM develop and implement a programmatic strategy to address agricultural activities on federal lands, such as grazing. The USFS and BLM address agricultural activities through district management plans and revisions to their grazing and riparian rules. In 2017 DEQ, USFS, and BLM did not discuss agriculture activities on USFS or BLM managed land.

## **4. Nonpoint Source Studies and Multi-Agency Partnerships**

Building partnerships with multiple agencies and communicating regularly is necessary to implement actions to meet the goals and objectives identified in the 2014 Nonpoint Source Management Plan. DEQ engages in a number of collaborative efforts to improve efficiencies around water quality monitoring and evaluation of the effects of conservation and restoration investments.

### **4.1. Conservation Effectiveness Partnership**

The Conservation Effectiveness Partnership (CEP) is a collaborative effort between the Natural Resources Conservation Service, the Oregon Watershed Enhancement Board, Oregon Department of Agriculture, and DEQ with a mission to: describe the effectiveness of cumulative conservation and restoration actions in achieving natural resource outcomes through collaborative monitoring, evaluation and reporting. The goals of the partnership are:

- Build an understanding of the extent of the investment in watershed improvement and the watershed response through the agencies' collective grant programs
- Develop a clearer understanding of how local organizations are utilizing the agencies respective grant programs, in concert
- Evaluate the effects of conservation and restoration investments on water quality and watershed condition
- Design tools and methods for reporting results of investments

#### **4.1.1. Prairie Creek**

In 2017, the CEP wrapped up a project on Prairie Creek (Wallowa Subbasin) in Northeast Oregon where water quality was compared before and after installation of irrigation efficiency, piping, and other ditch elimination projects.

Prairie Creek watershed was an alkali flat that has been converted to agricultural land through the construction of Wallowa Dam around 1917. The dam added irrigation ditches for crops and livestock, turning a once dry valley into agricultural land. Spur ditches off main canals provide water to irrigation pumps, yet also flow through numerous properties and pumps, collecting sediment and animal waste along the way.

Prairie Creek was identified as impaired for bacteria (*E. Coli*) on Oregon's 2004/2006 303(d) list. The Lower Grande Ronde Bacteria TMDL was developed to address these impairments. The TMDL requires a concentration based reduction of 49% percent on Prairie Creek in order to achieve the 406 *E.coli* per 100 ml criterion.

In an effort to reduce contamination from bacteria and other pollutants of concern, many of the spur ditches are being removed and replaced with pipes.

The Wallowa SWCD and other partners collected orthophosphate, inorganic nitrogen, bacteria, total phosphorous, and turbidity from six sites along Prairie Creek from 1991-1993 and again from 2012-2015.

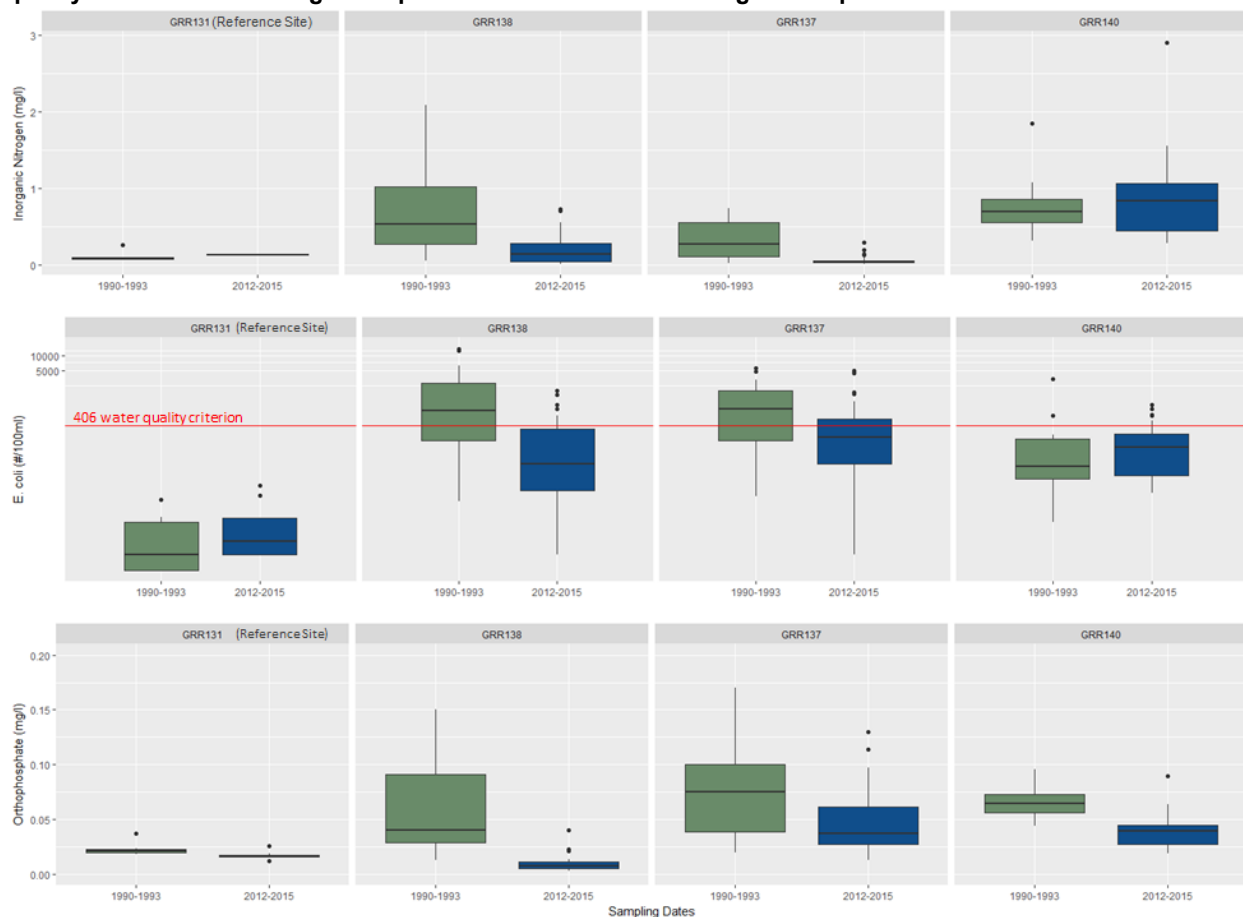
Results of the data analysis show improvements to nutrient and bacteria concentrations where conservation practices have been implemented as well as reduced variability in concentration in the more recent year sampled (2012-2015). Figure 5 shows boxplot summaries of the distribution of water quality concentration during each sample period at various sites.

Results for specific sites include:

- Mainstem Upper Prairie Creek (GRR138) downstream of highest concentration of restoration projects shows statistically significant reductions in the mean total phosphorus, orthophosphate, inorganic nitrogen and bacteria concentrations. There were also significant decreases in variability in the more recent years sampled (2012-2015) for turbidity, total phosphorus, inorganic nitrogen, and orthophosphate.
- North Fork Prairie Creek (GRR137) shows improvements in orthophosphate, inorganic nitrogen, and bacteria, although since the SWCD report indicates that ditching improvements were concurrent with sampling, it is not possible to draw concrete conclusions. There were significant decreases in variability in the more recent years sampled (2012-2015) for inorganic nitrogen, bacteria, and orthophosphate.
- Mainstem Prairie Creek downstream of confluence with North Fork Prairie Creek and other spur ditches (GRR140) does not show significant changes in mean concentrations between 1991-1993 and 2012-2015. This may be due to flow contributions from areas with higher pollutant concentrations that have not yet had piping and other conservation projects implemented. Definitive conclusions cannot be made due to lack of flow and water quality data from these areas. Though GRR140 did not display significant decreases, there was a significant decrease in variability between 1991-1993 and 2012-15 data for bacteria, orthophosphate, and turbidity. It is difficult to draw firm conclusions on reasons for decreased variability, but a less flashy system or cumulative effects of upstream restoration are potential factors.
- There is still room for improvement when comparing bacteria results to the 406 water quality criterion and the other parameters results with water quality at the reference condition site (GRR131) located upstream of agricultural areas in forestlands.

The Wallowa SWCD hopes to repeat monitoring at the same sites in the future to continue evaluating water quality improvements.

**Figure 5: Boxplots of inorganic nitrogen, E.Coli, and orthophosphate concentrations for the 1991-1993 and 2012-2015 sample periods at four sites on Prairie Creek. The red line in the second row is DEQ’s water quality criterion for the single sample maximum of 406 E. coli organisms per 100ml.**



#### 4.1.2. Dairy-Mckay Watershed

The CEP group also began working on its first ‘prospective’ study in the Dairy-Mckay Watershed (Tualatin Subbasin) where the goal is to quantify changes in stream temperature, bacteria, and nutrients after implementation of management strategies. In 2017 CEP worked with local partners including Clean Water Services, Tualatin River SWCD, and Tualatin River Watershed Council to develop the work plan including the technical approach and monitoring design.

## 4.2. Neal Creek Stream Temperature Evaluation

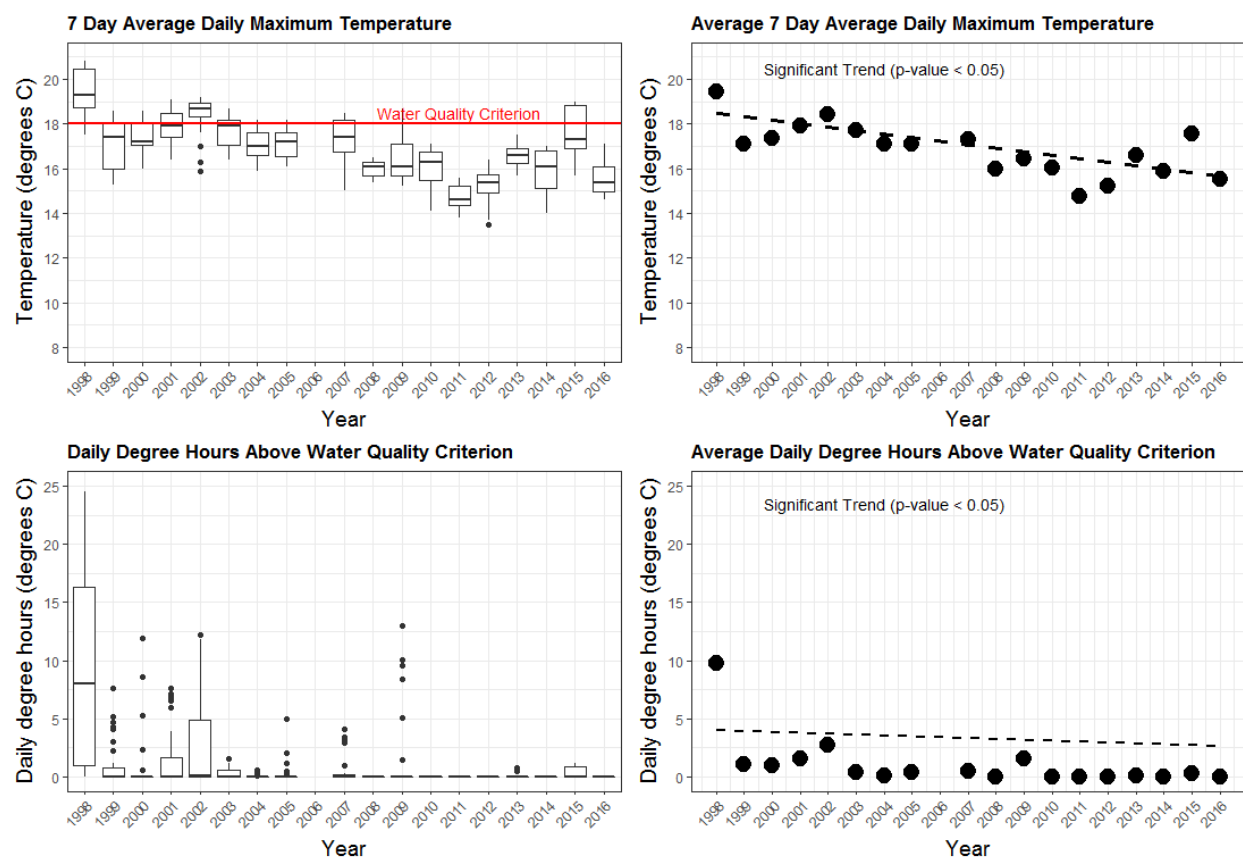
As part of the revision to the 2001 Western Hood Subbasin Temperature TMDL, Oregon DEQ evaluated temperature data collected by local partners in the Neal Creek watershed between 1998 and 2016. The purpose of the analysis was to evaluate the current status in achieving the applicable temperature criteria as well as the temperature trends since 1998 in order to understand if stream temperatures are reducing in response to the vegetation restoration and other implementation efforts. This watershed has been a priority for implementation efforts by the Hood River Watershed Group, Hood River Soil and Water Conservation District, ODA, and the Local Advisory Committee.

Using a Seasonal Kendall test DEQ evaluated the trend in seven-day average daily maximum temperatures and the daily degree hours above the applicable temperature criterion at a number of sites on Neal Creek and West Fork Neal Creek. A daily degree hour is the product of the number of hours and degrees Celsius in a day a site exceeds the applicable temperature criteria. The metric is used as an indicator of the magnitude and frequency of exceedance. A seasonal Kendall test removes the influence of season-to-season fluctuations by calculating the Mann Kendall test on each season separately and then comparing the slopes. A significant positive or negative trend was determined across all seasons and years when the significance of the seasonal slopes had a two-tailed  $p < 0.10$ . Prior to applying the seasonal Kendall test, data was grouped into monthly “seasons” (July-September). Observations within each month were collapsed into a single value using the median.

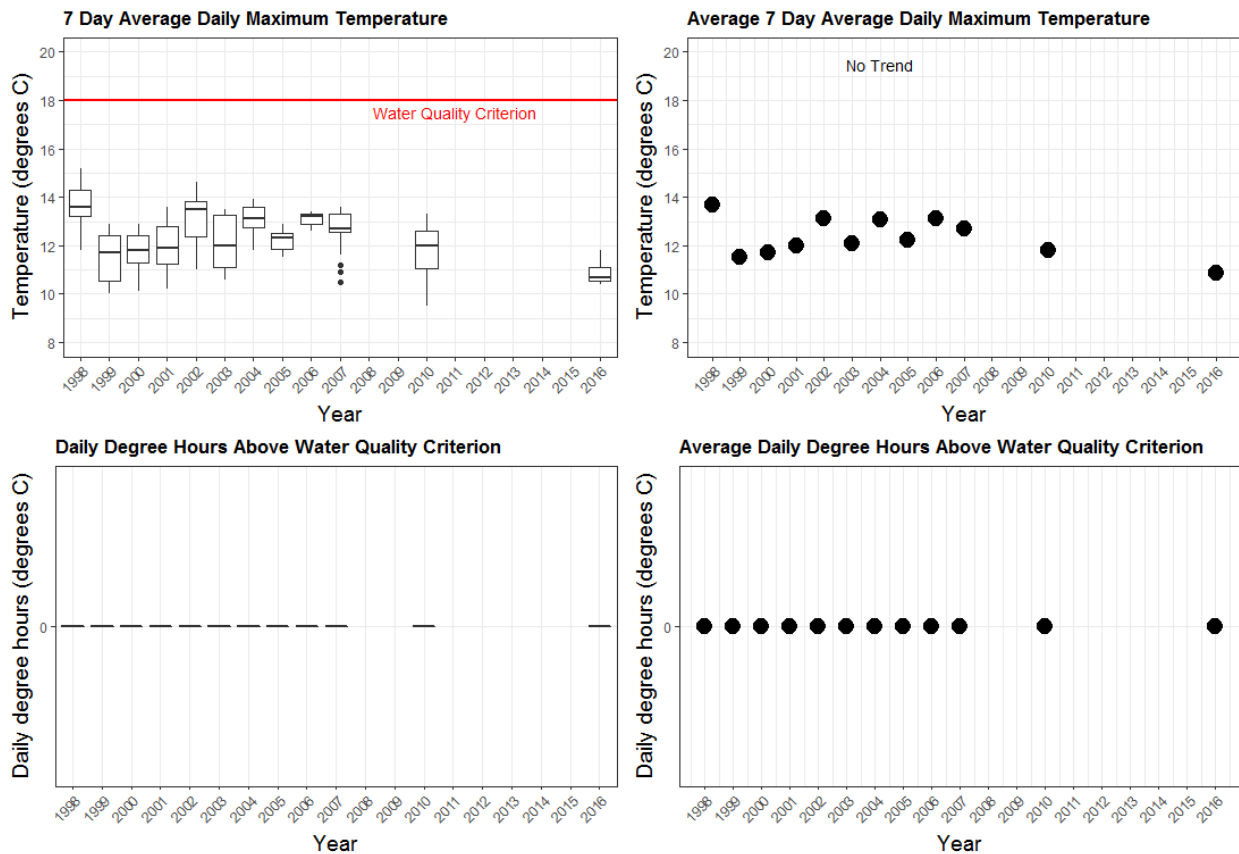
Figure 6 shows the results at the mouth of Neal Creek in the month of July. The results show at the mouth of Neal Creek there has been a significant ( $p < 0.05$ ) improvement in 7-day average daily maximum stream temperatures since 1998. While there are still occasional exceedances of the biologically based numeric criterion during the summer months, the magnitude and frequency of the exceedances has been significantly reduced illustrated by the decreasing trend in the number of daily degree hours above the applicable temperature criterion. This same pattern is seen at this site in August and September (not shown), as well as at the monitoring site on Fir Mt. Road (approximately river mile 2.3). Both of these sites on Neal Creek are downstream of areas where restoration and implementation activities have occurred. In contrast, no significant trends in stream temperature were observed at the site on West Fork Neal Creek near the USFS boundary (Figure 7). This site is upstream of the restoration and implementation activities. Stream temperatures at the USFS boundary were well below the numeric criterion back in 1998 and have continued to stay below the criterion.



**Figure 6. Status and trends in stream temperature at the mouth of Neal Creek in July.**



**Figure 7. Status and trends in stream temperature on West Fork Neal Creek at the USFS boundary in July.**



### 4.3. National Water Quality Initiative (NWQI)

The 2013 Nonpoint Source Program and Grants Guidelines for States and Territories directs DEQ to devote sufficient Section 319 resources to coordinate with the Natural Resources Conservation Service. In Oregon, Natural Resources Conservation Service has partnered with DEQ, Oregon Department of Agriculture, U.S. Fish and Wildlife Service and others to identify National Water Quality Initiative watersheds and monitoring projects with clear goals and objectives, approved methods, strong local partnerships and the availability of prior monitoring data. In addition to on-the-ground implementation of conservation practices, 319 funds are also being used to conduct effectiveness monitoring in National Water Quality Initiative watersheds. Effectiveness monitoring plans have been developed for Fifteenmile Creek and Willow Creek and implementation has been ongoing since 2014 and expected to continue until at least 2019. In 2014, DEQ allocated \$25,000 of Section 319 funds to support monitoring and other NWQI activities in both watersheds. In 2017, DEQ allocated an additional \$16,000 of Section 319 funds to support NWQI activities.

#### 4.3.1. Fifteenmile Creek Watershed NWQI

Under NWQI, DEQ collected both Wolman Pebble Counts and Relative Bed Stability data in 2015 and 2016 to compare with previously collected data (Wolman Pebble 1994 and 2000, and RBS 2005-2006). Macroinvertebrate data were also collected to determine whether sediment is a biological stressor. Details of the NWQI monitoring efforts in Fifteenmile can be found in updated 2014 Work Plan.

In 2016, EPA funded TetraTech to provide a report detailing the analysis and interpretation of stream sediment data in the greater Fifteenmile Creek watershed in the Middle Columbia Basin. No meaningful change in substrate conditions was observed in the watershed between 2005 and 2006 and 2015 and 2016. Improvements were observed in the western portion of the Fifteenmile Creek watershed when data from 1994 was compared with recent data, but this portion of the watershed was affected more by road improvements rather than agricultural best management practices.

In 2017, 319 grant funding was allocated for contractor support to update the 2016 report by incorporating macroinvertebrate and other information that have since become available. Analysis of data and reporting of results is not expected until 2018.

#### 4.3.2. Willow Creek NWQI

In 2017 work focused on securing the Willow Creek real-time flow gage and planning for installation. Project partners are anticipating the gage will be installed early spring of 2018 (weather dependent).

### 4.4. EPA Success Stories, WQ-10, SP-12

In the 2016-2018 Performance Partnership Agreement DEQ identified it would determine with EPA available success stories (Table 22).

**Table 22 Description of nonpoint source success stories action identified in 2016-2018 Performance Partnership Agreement and the 2017 status.**

PPA Element	Action	Time Frame	2017 Status
PPA - 8.5	Determine with EPA available NPS Success Stories documenting either water quality progress or full restoration under PAM.	September 2016 and September 2017	Not Complete. See Section 4.4.

The Section 319 Nonpoint Source success stories website features stories about primarily nonpoint source-impaired waterbodies where restoration efforts have led to water quality improvements. Waterbodies are separated into three categories, depending on the type of water quality improvement achieved:

- Partially or fully restored waterbodies
- Progress toward achieving water quality goals
- Ecological restoration

The Nonpoint Source Success Stories serve two main purposes. First, they offer an opportunity for states to highlight where their restoration efforts have resulted in water quality improvements in nonpoint

source-impaired waterbodies. Second, they allow EPA to track the number of nonpoint source-impaired waterbodies that are partially or fully restored—which is a key measure in the effort to document how nonpoint source restoration efforts are improving water quality across the nation. These measures show Congress why 319 funds are needed and document the success of these funds towards improving water quality.

All previous Oregon's Watershed Measures and Waterbody Restoration Stories (i.e. “Success Stories”) were developed by DEQ staff with assistance from EPA’s contractor Tetra Tech. Previous success stories can be found at: <https://www.epa.gov/nps/nonpoint-source-success-stories>

Due to lack of resources, nonpoint source success stories for 2017 have not been developed, however several sampling sites in watersheds across Oregon are demonstrating measurable improvements in water quality (See **Section 4.1**, **Section 3.9.1.2**, and the referenced Status and Trend Reports described in Section 3.10.2).

## **5. Nonpoint Source Basin Level Achievements in 2017**

Implementation of the Nonpoint Source Program has been summarized for each Oregon administrative basin excluding the Columbia and Snake Rivers in Appendices A - R. The basin reports provide summaries of basin characteristics, impairments, TMDLs, and nonpoint source related implementation efforts reported to DEQ.