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CLACKAMAS

**WATER
ENVIRONMENT
SERVICES**

GREGORY L. GEIST | DIRECTOR

Water Quality Protection
Surface Water Management
Wastewater Collection & Treatment

October 15, 2026

Sarah Mattechuck
DEQ's Sandy, Clackamas, and Molalla Basin Coordinator
700 NE Multnomah St.
Portland, OR 97232
Sarah.Mattechuck@deq.oregon.gov

RE: 2025-2026 Annual Report for 2023 Nonpoint Source Total Maximum Daily Load
Implementation Plan for the Molalla-Pudding, Sandy, Tualatin, and Willamette River Watersheds

Dear Sarah Mattechuck:

Attached please find the 2025-2026 Annual Report for the DEQ-approved 2023 Nonpoint Source TMDL Implementation Plan (NPS TMDL IP). The plan is collaboratively implemented by Clackamas County, Clackamas Water Environment Services, and the Cities of Happy Valley and Rivergrove.

The NPS TMDL IP is periodically revised to incorporate an enhanced understanding of program effectiveness, available resources, and current watershed conditions and to comply with the Order that accompanies a revised TMDL. The 2023 NPS TMDL IP was in effect for the entire annual report period which ended on June 30, 2026.

Please, let me know if you have any questions.

Best regards,

Ron Wierenga
Deputy Director
Clackamas Water Environment Services

Cc: Greg Geist, Director, Clackamas Water Environment Services
Andrew Swanson, Clackamas Water Environment Services
Dan Johnson, Director, Clackamas County Dept. of Transportation and Development
Jason Tuck, City Manager, City of Happy Valley
Analeis Weidlich, City Manager, City of Rivergrove



NON-POINT SOURCE TOTAL MAXIMUM DAILY LOAD
IMPLEMENTATION PLAN FOR THE TUALATIN, WILLAMETTE, MOLALLA-PUDDING, AND
SANDY RIVER WATERSHEDS

2025-2026 ANNUAL REPORT

Clackamas County, Clackamas Water Environment Services,
and the Cities of Happy Valley and Rivergrove

October 15, 2026

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1. Introduction

The federal Clean Water Act, section 303, requires states to develop water quality standards to support beneficial uses of public water bodies. A water body, or portion of that water body that does not meet water quality standards is listed as impaired for that parameter on the 303(d) list of water quality limited water bodies. The State of Oregon, through the Oregon Department of Environmental Quality (DEQ), is required to develop total maximum daily loads (TMDLs) to determine how to meet water quality standards for that parameter. Each TMDL identifies the maximum amount of a specific pollutant that can enter a water body so that it can meet water quality standards. After extensive water quality monitoring and modeling efforts, TMDLs establish the difference between the loading capacity and the current pollutant load. TMDLs are expressed as numeric standards or percent pollutant reductions that need to be met to bring water bodies into compliance with water quality standards. The difference between the current load and the loading capacity is known as excess load (DEQ, 2006). The excess load is divided between the different sources of pollution according to their contribution to the overall pollution load. Any difference between the waterway's loading capacity and the current pollutant load must be mitigated by pollution reduction activities. The DEQ develops wasteload allocations for permitted point sources, such as wastewater treatment plants, stormwater runoff from larger urbanized areas, and industrial discharges, and load allocations (LA) for non-point source (NPS) pollution from agricultural, rural residential, and forestry lands; the smaller non-permitted urbanized areas are also regulated as an NPS.

The Oregon Administrative Rule (OAR) 340-042 regulates TMDL creation and implementation and requires local governments and other agencies to develop and implement TMDL Implementation Plans for non-point sources. Please see Chapter 13 in this Implementation Plan for the full set of the OARs that pertain to "Implementing a TMDL," found in 340-042-0080. Point sources are covered by a TMDL through requirements in their National Pollutant Discharge Elimination System (NPDES) permits. This Non-Point Source TMDL Implementation Plan (IP) has been developed to identify management strategies and activities that will be implemented to protect and improve surface water quality in the Sandy, Tualatin, Molalla-Pudding, and Willamette River watersheds. Responsible parties, such as state agencies, counties, cities, and other organizations that implement pollution reduction strategies, are classified as Designated Management Agencies (DMAs).

According to OAR 340-042-0080, TMDL IPs must include the following five elements:

- Management strategies that will be used to reduce pollutant loading and eventually achieve load allocations
- A timeline for implementing management strategies and a schedule for completing measurable milestones
- Performance monitoring with a plan for periodic review and revision of the implementation plan
- Evidence of compliance with applicable statewide land use requirements
- Any other analyses or information as specified in the TMDL's Water Quality Management Plan (WQMP)

1.1 Co-Owners of the Oct. 2023 Implementation Plan

The October 2023 Non-Point Source (NPS) TMDL IP for the Sandy, Tualatin, Molalla-Pudding, and Willamette River watersheds is co-owned by the following four DMAs:

- The Water Environment Services Partnership (WES), which is an intergovernmental entity organized under Oregon Revised Statutes (ORS) 190. Clackamas Water Environment Services, a Dept. of Clackamas County, administers the WES Partnership. The WES Partnership includes two separate Clackamas County Service Districts: the Surface Water Management Agency of Clackamas County (SWMACC) and Clackamas County Service District #1 (CCSD #1), which together comprise the WES Surface Water Management (SWM) Service Area. Because Clackamas Water Environment Services administers the WES Partnership, the name Clackamas WES will often be used in this document when references are made to this area and to this intergovernmental entity.
- Clackamas County, including but not limited to the Facilities Management Department and the Department of Transportation and Development (DTD).
- City of Happy Valley
- City of Rivergrove

Note: The DEQ-approved October 2023 NPS TMDL IP replaced the September 2022 DEQ-approved IP, which was submitted to DEQ on Sept. 2, 2022. This October 2023 version of the IP fully complies with the DEQ's requirement for DMAs to assess and revise their IP as a product of the DMA's five-year review.

This 2025-2026 annual report is a status report on the implementation during 2025-2026 of the DEQ-approved October 2023 NPS TMDL IP.

In the October 2023 IP, these units of local government are collectively referred to as the Co-Owners of the IP. In previous years, going back to 2003 in the case of the Tualatin River TMDL IP, the Co-Owners of this IP have maintained four separate IPs, each of which only applied to one watershed. In this IP, the Co-Owners of the IP chose to address their non-point source TMDL obligations for all four TMDL watersheds in one shared IP.

For the previous and current IPs, the jurisdiction associated with each IP, in addition to the specific TMDLs, is summarized in Table 1.

Table 1. TMDL IP Jurisdiction and Important Dates				
	Tualatin River Watershed TMDL IP	Willamette River Watershed TMDL IP	Molalla-Pudding River Watershed TMDL	Sandy River Watershed TMDL IP
TMDL IP Original Submission and Revision Dates	<ul style="list-style-type: none"> • August 7, 2003 • Revised March 31, 2008 • Revised January 6, 2011 • Revised February 2014 • Revised September 2022 • Revised 2023 	<ul style="list-style-type: none"> • June 8, 2009 • Revised January 7, 2011 • Revised September 2022 • Revised 2023 	<ul style="list-style-type: none"> • February 2012 • Revised September 2022 • Revised 2023 	<ul style="list-style-type: none"> • March 25, 2008 • Revised September 2022 • Revised 2023
Designated Management Agencies for each watershed	<ul style="list-style-type: none"> • SWMACC (WES) • Clackamas County • City of Rivergrove 	<ul style="list-style-type: none"> • Clackamas County • Clackamas WES • City of Happy Valley 	<ul style="list-style-type: none"> • Clackamas County 	<ul style="list-style-type: none"> • Clackamas County

2. Management Strategies

The October 2023 NPS TMDL IP's management strategies, which are contained within the IP's Chapter 7, are expected to reduce TMDL pollutants from non-point sources to address LAs.

Efforts to reduce TMDL pollutants from point sources, such as a wastewater treatment plant effluent or NPDES-permitted municipal separate storm sewer systems (MS4), to achieve wasteload allocations are addressed separately in NPDES permits issued by the DEQ to one or more of the Co-Owners of this IP.

To comply with DEQ requirements for TMDL IPs (provided in OAR 340-042-0080(4)), the management strategies and other information provided herein address each parameter within the following TMDLs over which Clackamas County, Clackamas WES SWM service area, and the Cities of Happy Valley and/or Rivergrove have jurisdiction:

- **Tualatin River TMDL:** water temperature, *E. coli* (bacteria), total phosphorus, dissolved oxygen (DO), and mercury.
- **Willamette River TMDL:** water temperature, *E. coli* (bacteria), mercury, and DDT/Dieldrin (only in the Johnson Creek watershed).
- **Molalla-Pudding River TMDL:** water temperature, *E. coli* (bacteria), mercury, and DDT/Dieldrin and iron (only in the Pudding River).
- **Sandy River TMDL:** water temperature. An *E. coli* TMDL also applies in the Cedar Creek watershed, which is a tributary to the Sandy River.

2.1 Revised Willamette River Mercury TMDL

The February 2021 revised mercury TMDL replaced the original 2006 mercury TMDL for the Willamette River. The 2021 revised mercury TMDL fully applies throughout the Willamette River Basin, including in the Tualatin River and Molalla-Pudding sub-basins. The adoption of this revised TMDL by the United States Environmental Protection Agency (USEPA) initiated a requirement for DMAs in the watershed, including this IP's Co-Owners, to update their IP to address the new requirements within the 2021 revised mercury TMDL. See Tables 5 and 6 for a summary of mercury management strategies to address the revised Willamette River Mercury TMDL requirements.

3. TMDL Watersheds

This section includes a summary of the TMDL watersheds addressed by the October 2023 NPS TMDL IP. This IP incorporates efforts to improve water quality for the Sandy River and the Willamette River and their tributaries in Clackamas County.

The major watersheds of Clackamas County are shown in Figure 1 and summarized in Table 2. A large portion of Clackamas County is drained by the Willamette River and its tributaries, including the Clackamas, Molalla, Pudding, and Tualatin River and Johnson Creek (Table 2).

The remaining lands are drained by the Sandy River, which enters the Columbia River in the City of Troutdale, and a small portion of Clackamas County appears to be located in a section of the Santiam River's watershed; however, these lands are owned by the United States Forest Service, so Clackamas County is not required to address them in any TMDL IP.

Tualatin River Watershed

Stormwater enters the Tualatin River and tributaries in the Tualatin TMDL's geographic area from areas regulated by the NPDES MS4 Permit program as well as from areas that are not regulated under the NPDES MS4 program. Figure 2 illustrates the NPDES MS4 permit area in Clackamas County (i.e., incorporated cities or service areas of WES within the UGB). The DEQ considers these MS4-permitted storm sewer outfalls as point sources, and as a result, they are not addressed in this IP for NPSs. WES is aware of five outfalls that are regulated by the Clackamas County MS4 Permit that are located in the

SWMACC's/Rivergrove's MS4 permitted area. SWMACC's boundaries are shown in Figure 3. It is our understanding that a few pockets of rural unincorporated land in the SWMACC area, which are within the Portland metro area's UGB, are also regulated by the Clackamas County MS4 Permit. SWMACC's land uses in the Tualatin River Watershed are shown in Figure 4.

Willamette Watershed

Stormwater enters the Willamette River and tributaries (in the TMDL geographic area) from areas both regulated and not regulated by the MS4 program, as shown in Figures 1 and 2. Land uses within the Willamette River watershed are shown in Figure 5.

Molalla-Pudding River Watershed

There are no Clackamas County owned NPDES MS4 permitted stormwater outfalls within the Molalla-Pudding sub-basin. Land uses within the Molalla-Pudding Watershed are shown in Figure 6.

Sandy River Watershed

The Sandy River watershed is not included in the Clackamas County NPDES MS4 permit area. Land uses within the Sandy River Watershed are shown in Figure 7.

Clackamas River Watershed

Stormwater enters the Clackamas River and tributaries from areas both regulated and not regulated by the MS4 program, as shown in Figures 1 and 2. Land uses within the Clackamas River watershed are shown in Figure 8.

Table 2. Clackamas County Watersheds

Clackamas County Watersheds	Total acres in Watershed	Watershed in Clackamas County, acres	Percent of Watershed in Clackamas County
Clackamas	602,634	542,940	90
Molalla-Pudding	560,301	305,056	54
Tualatin	453,675	12,335	3
Lower Columbia-Sandy	559,568	235,524	42
Middle Willamette	455,040	74,276	16
Lower Willamette	412,165	33,576	8
Total	3,044,113	1,203,707	40
Sub-watershed of Lower Willamette			
Johnson Creek	60,159	33,305	55

4. Implementation Responsibility

Clackamas WES plays a leading role in implementing portions of the October 2023 NPS TMDL IP as the administrator of the WES SWM service area; however, others also play a role in implementation. General responsibilities of WES, each county department, and the Cities of Happy Valley and Rivergrove related to this TMDL are outlined in Table 3.

Other than the Cities of Happy Valley and Rivergrove, the 2023 NPS TMDL IP does not address or

include lands that are located in cities. Those cities address their own NPS TMDL requirements.

Table 3. WES, County, and City Responsibilities		
Jurisdiction	Jurisdictional Area	TMDL Implementation Plan Responsibility
Clackamas WES	Limited to WES' SWM service area	Administers SWMACC and CCSD #1, both of which are all-purpose stormwater management entities. ^a
Clackamas County DTD	County-wide	Includes planning, County parks, and road maintenance & engineering and many other services. Examples include riparian area land use and other private property land uses, county-maintained road maintenance, and illegal dumping of solid waste on private property.
Clackamas County's Facilities Management Dept.	County-wide	Maintains many county-owned buildings and some county-owned lands.
City of Rivergrove	Within city limits only	Limited to land use authority. Most other stormwater management functions are provided by WES/SWMACC on behalf of the City. ^a
City of Happy Valley	Within city limits only	Roads, erosion control permitting, tree ordinance, and land use. Most other stormwater management functions are provided by WES on behalf of the city.

^a Clackamas WES does not provide SWM services in the portion of the City of Rivergrove that lies within Washington County or in the Boring, Fisher's Forest Park, and Hoodland subunits of CCSD #1.

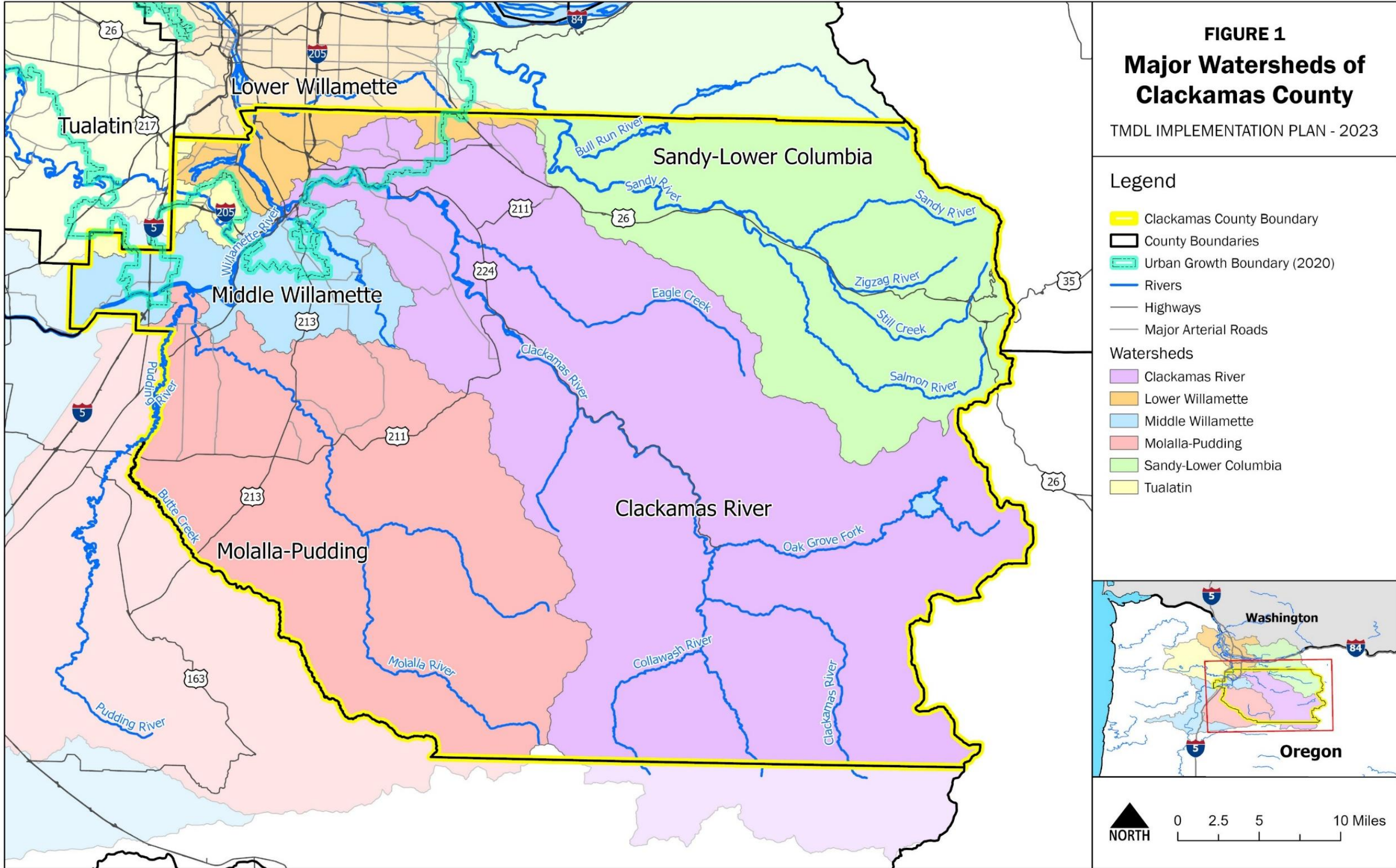


Figure 1. Major Watersheds of Clackamas County

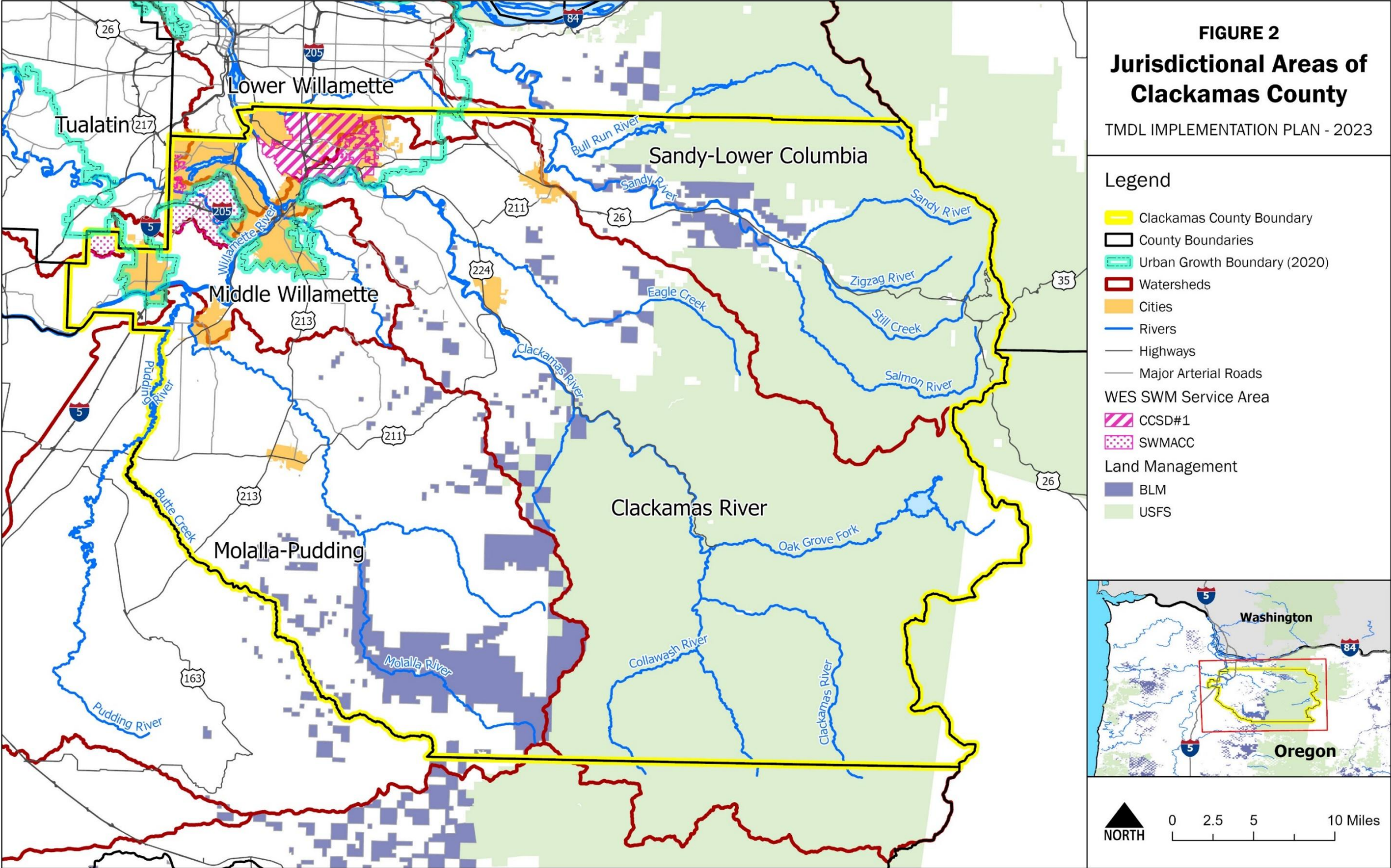


Figure 2. Jurisdictional Areas of Clackamas County

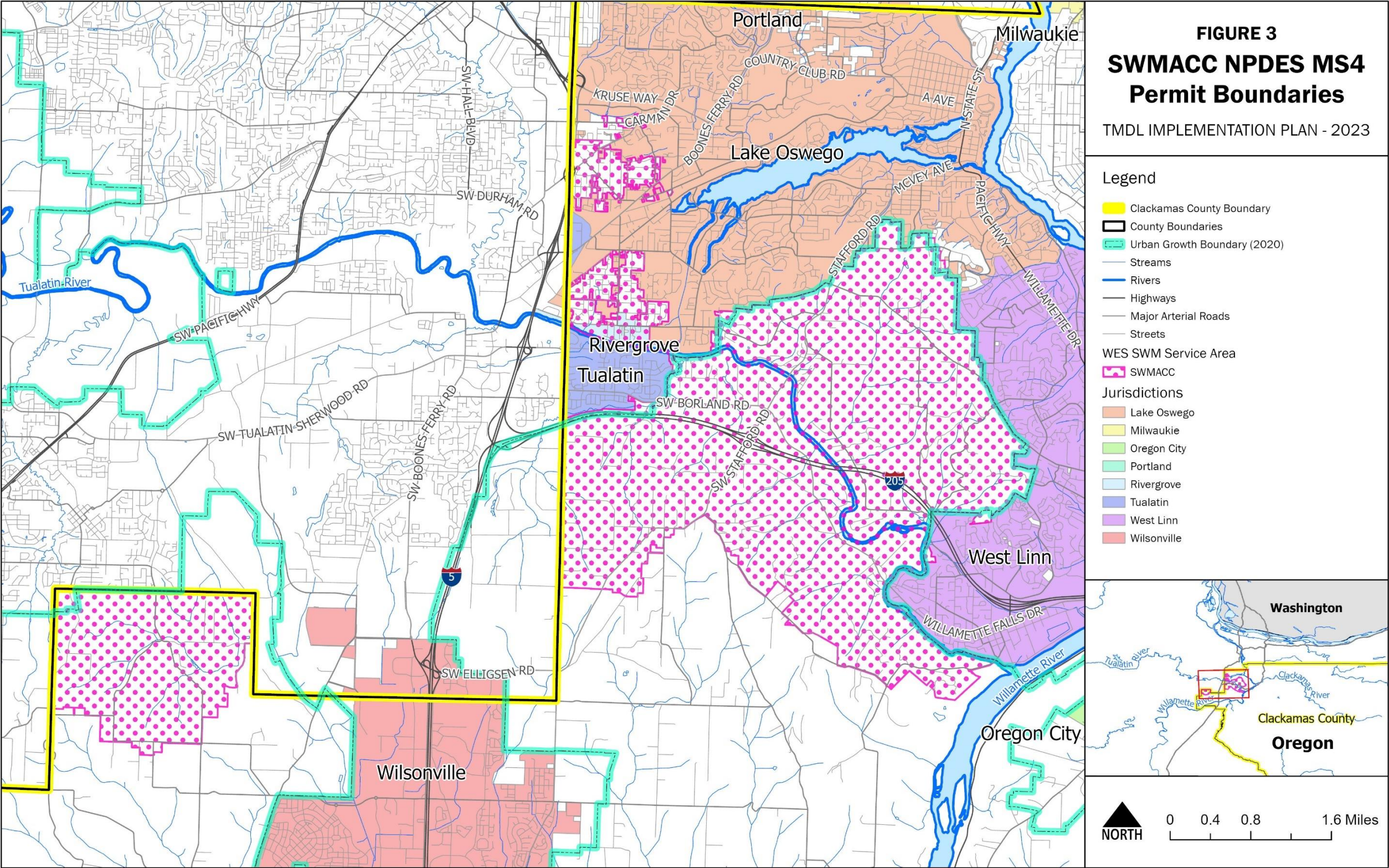


Figure 3. SWMACC NPDES MS4 Permit Bounadaries

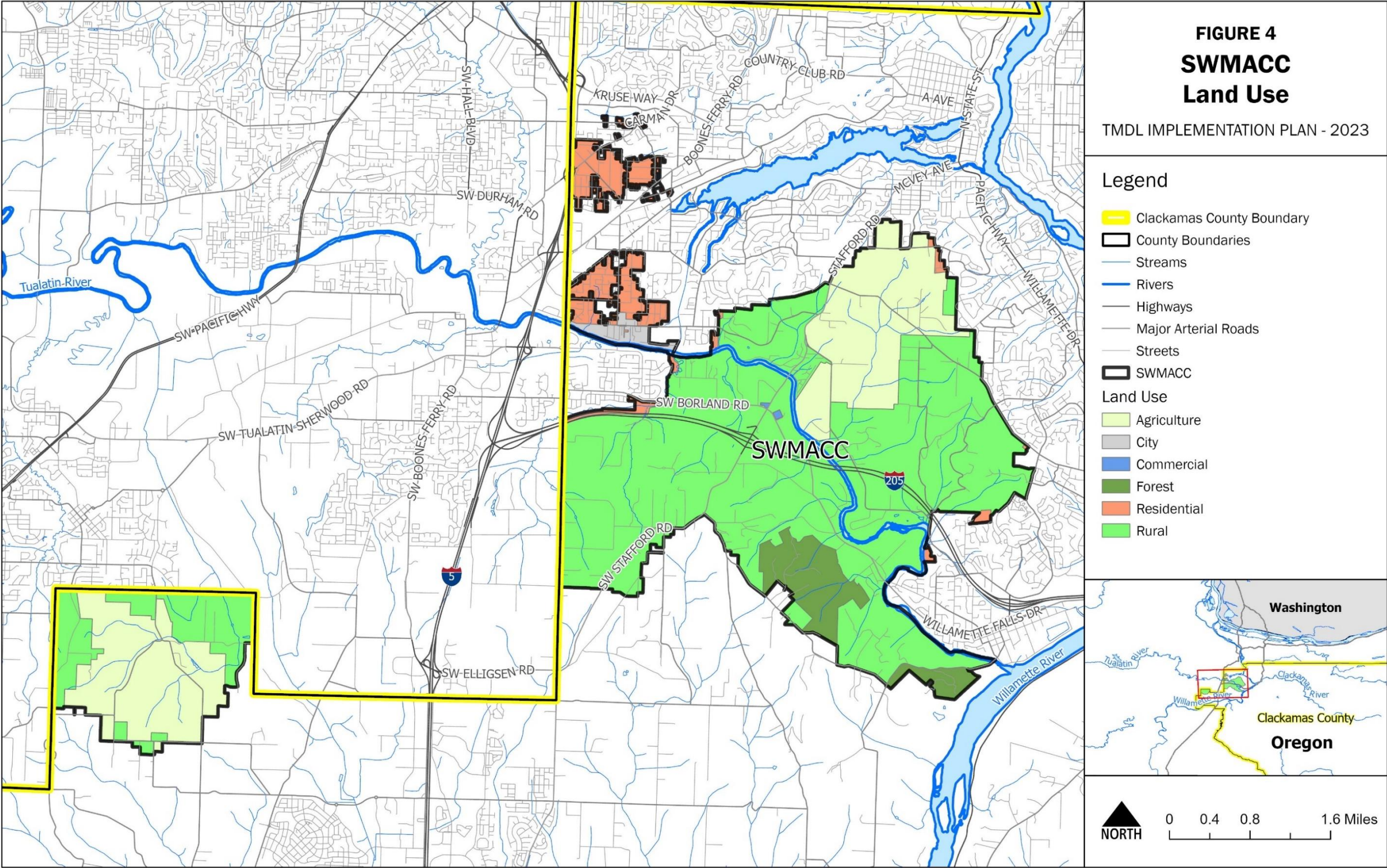


Figure 4. SWMACC Land Use

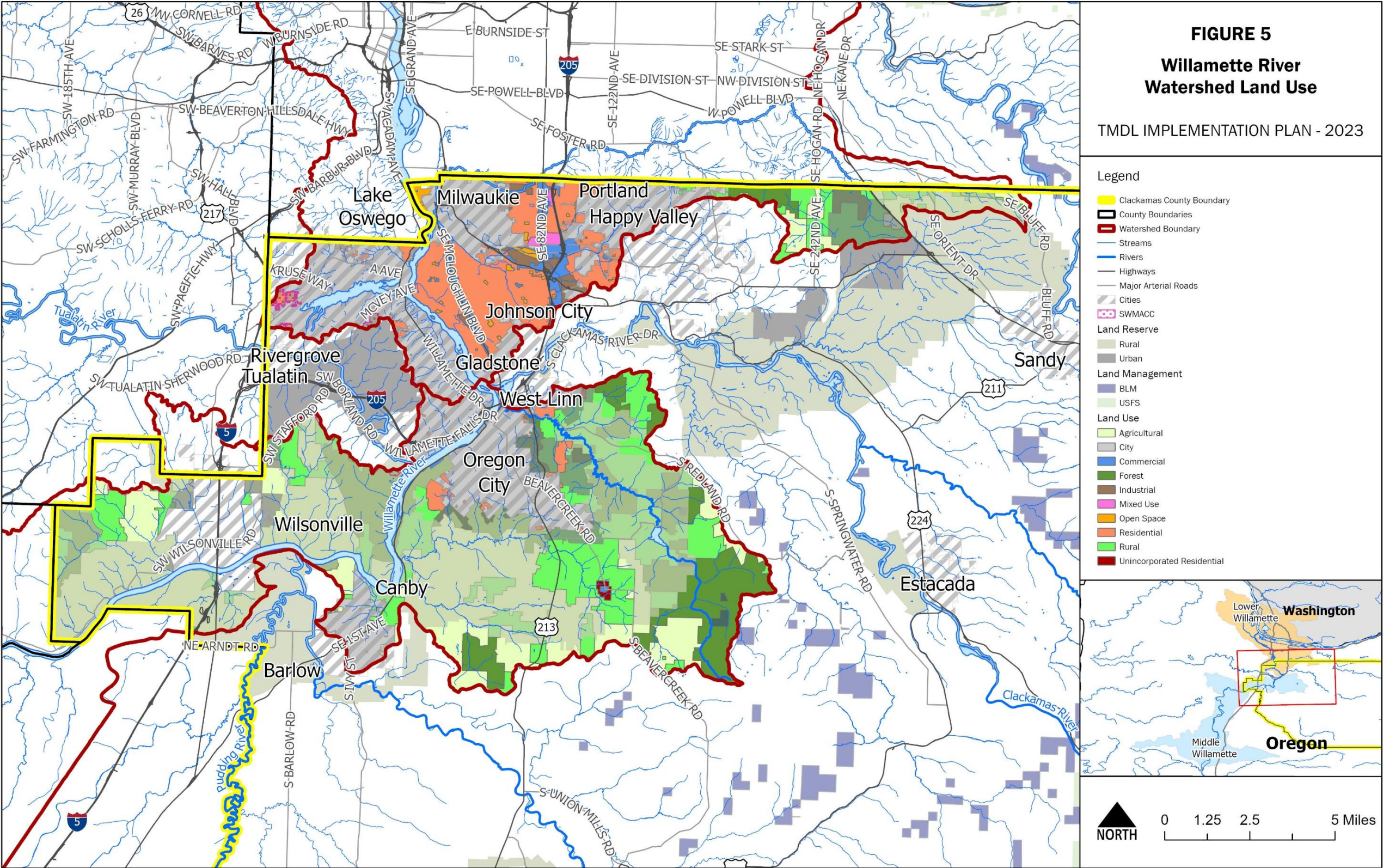


Figure 5. Willamette River Watershed Land Use

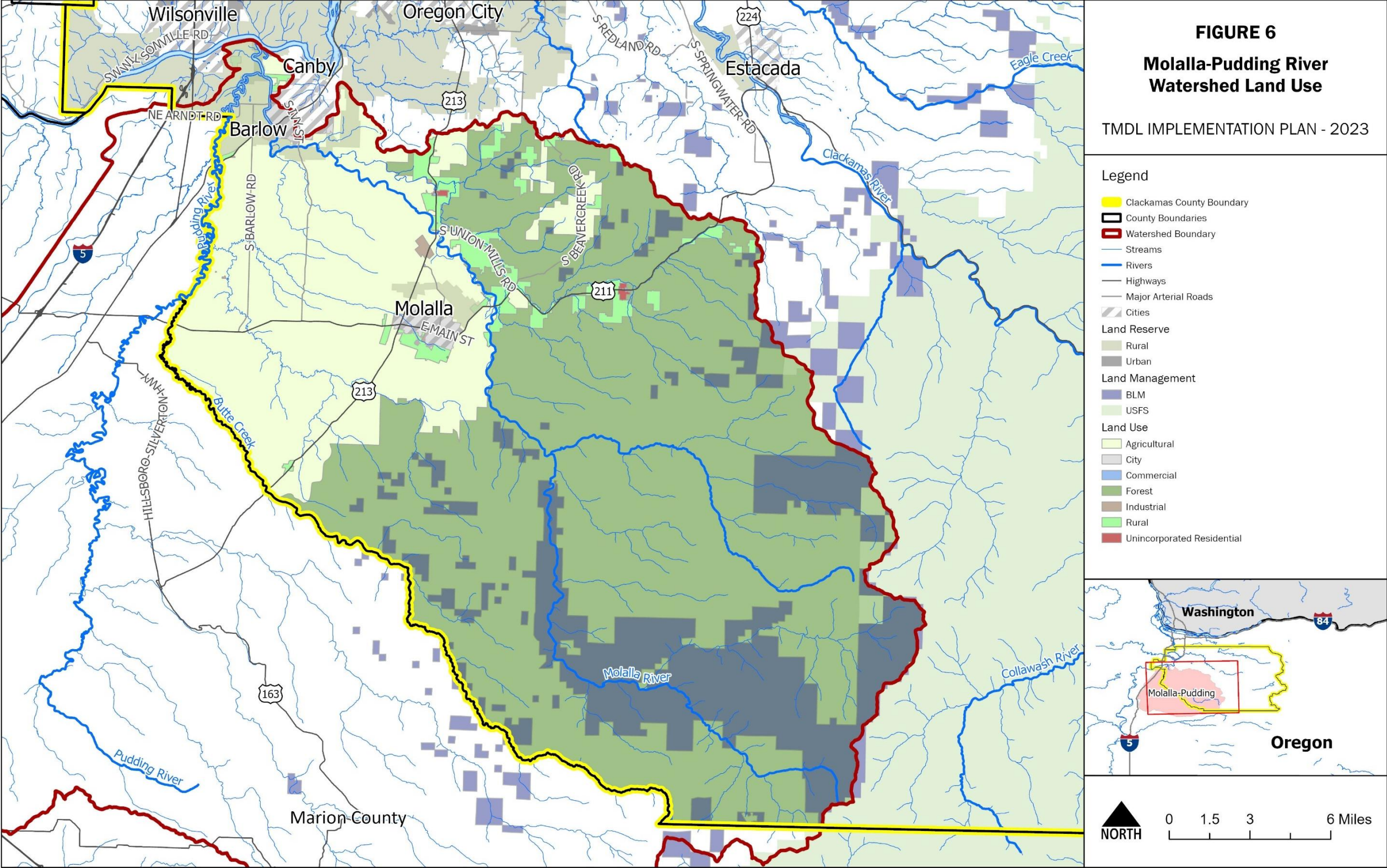


Figure 6. Molalla-Pudding River Watershed Land Use

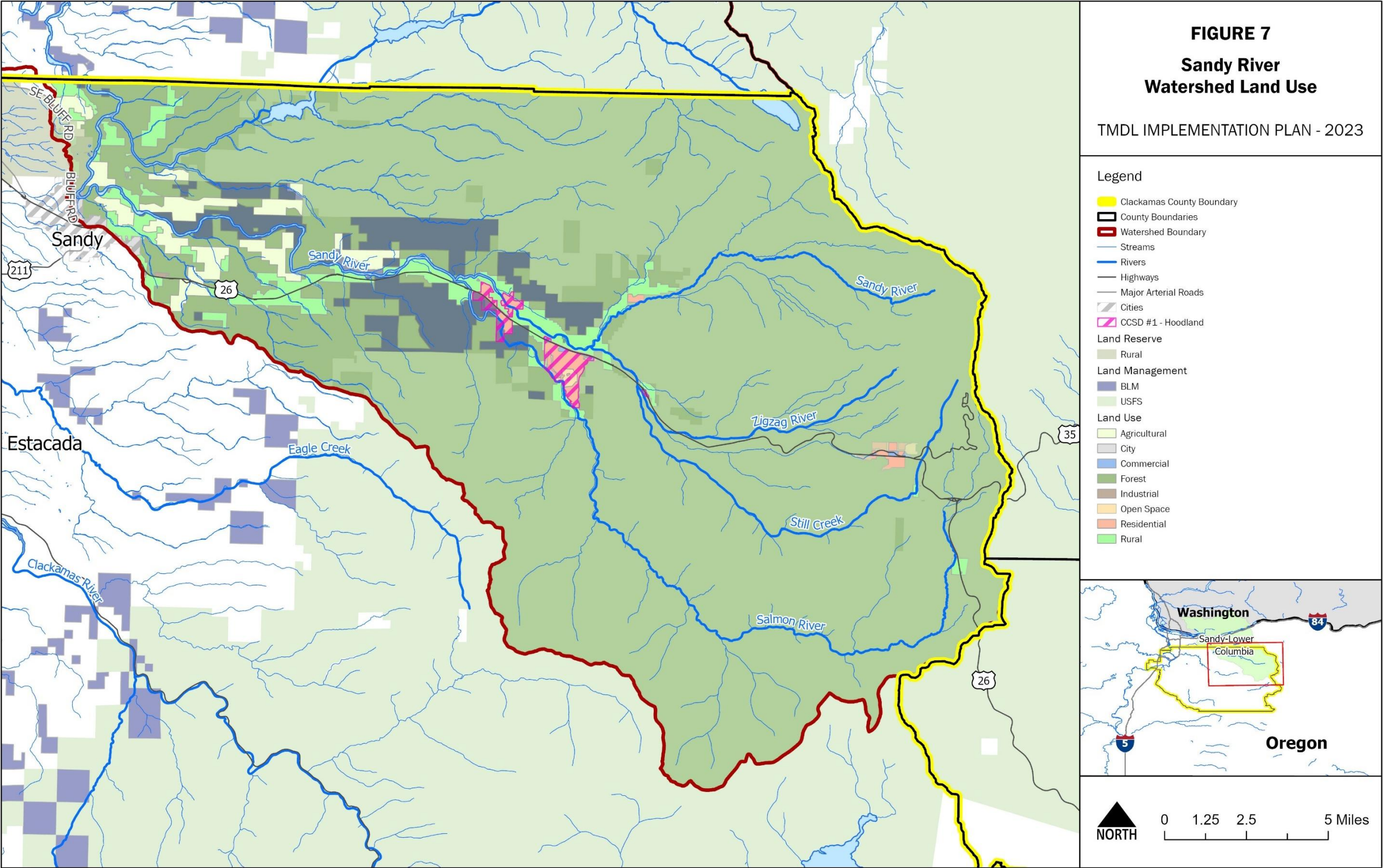


Figure 7. Sandy River Watershed Land Use

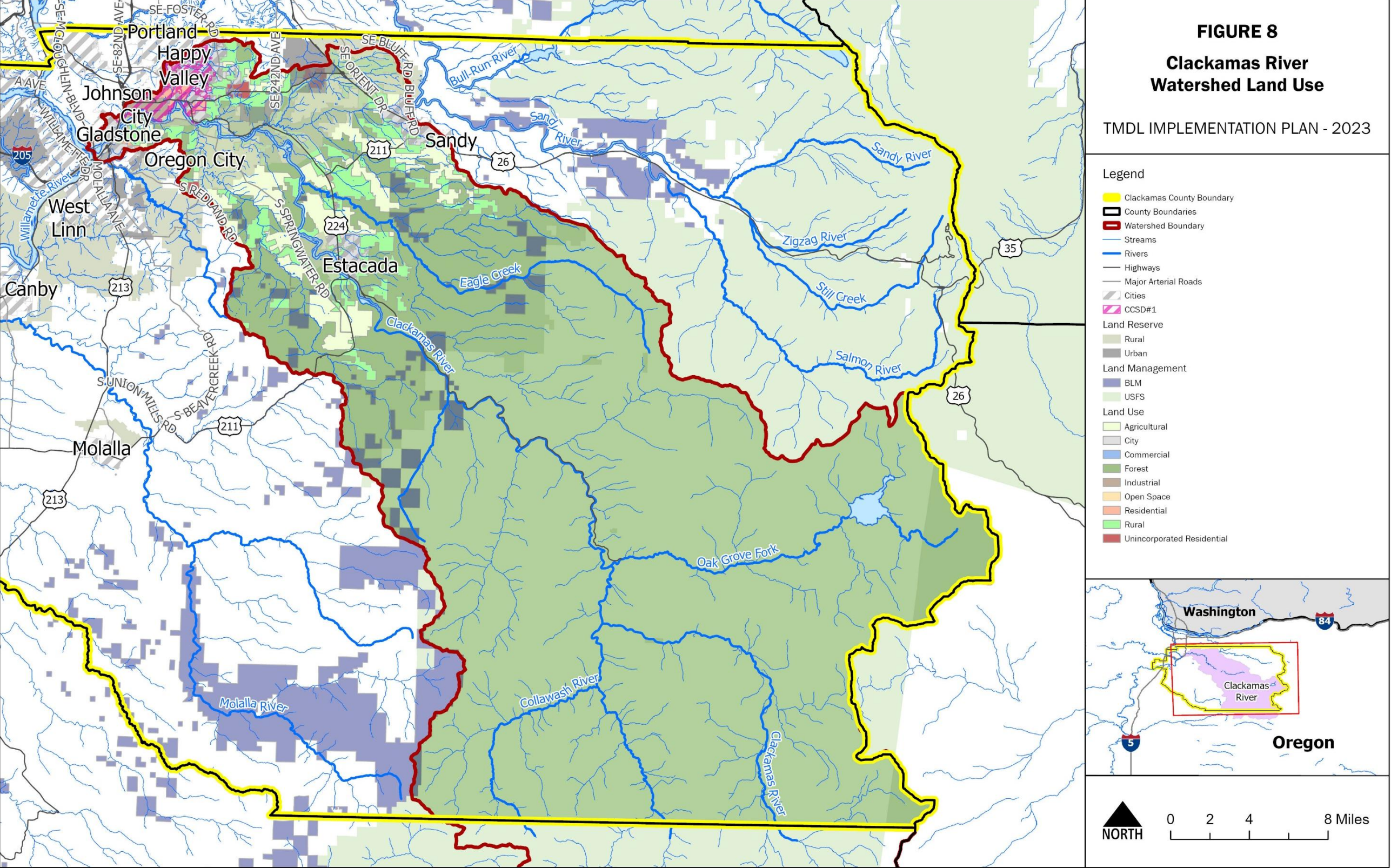


Figure 8. Clackamas River Watershed Land Use

5. TMDL Pollutants and Allocations

Water quality impairments have been identified in the Willamette, Tualatin, Molalla-Pudding, and Sandy River Watersheds, which prompted the development of TMDLs addressed in this IP for each of the watersheds as summarized in Table 4.

Table 4. TMDL Summaries for the Four Watersheds				
	Tualatin River Watershed TMDL	Willamette River Watershed TMDL	Molalla-Pudding River Watershed TMDL	Sandy River Watershed TMDL
TMDL Parameters	<ul style="list-style-type: none"> • Temperature • <i>E. coli</i> (bacteria) • Mercury • pH and chlorophyll A (total phosphorus) • DO 	<ul style="list-style-type: none"> • Temperature • <i>E. coli</i> (bacteria) • Mercury • DDT and dieldrin in the Johnson Creek watershed • Cold water refugia in the Willamette River 	<ul style="list-style-type: none"> • Temperature • <i>E. coli</i> (bacteria) • Mercury • DDT and dieldrin • Nitrates ^a • Iron 	<ul style="list-style-type: none"> • Temperature • <i>E. coli</i> (bacteria) only in the Cedar Creek sub-watershed

^a The nitrate TMDL applies only to Zollner Creek. None of Zollner Creek, nor any portion of the contributing area, is within the Clackamas County boundary. Therefore, nitrate will not be addressed as part of this TMDL implementation plan.

6. Goal and Objective of the Plan

The goal of the October 2023 NPS TMDL IP is to identify the ongoing and planned management strategies to improve watershed health and address requirements of the applicable TMDLs related to the NPSs of TMDL pollutants. The objective of this IP is to apply the plan's management strategies for water pollution reduction and prevention (e.g., erosion control program for construction sites).

To achieve this goal and objective, this IP's Co-Owners (Clackamas County, Clackamas WES, and the Cities of Happy Valley and Rivergrove) implemented the portions of this plan that they are responsible for in 2025-2026.

6.1 Implementation Plan Exclusions

This October 2023 NPS TMDL IP only addresses NPSs of water pollution.

Discharges from and into surface-discharging storm sewer systems that are regulated by the MS4 Permit are not addressed by this IP.

Stormwater runoff directed to 1) subsurface discharge through shallow injection systems, such as drywells, and 2) infiltration systems are not addressed by this IP.

Lands subject to Oregon Department of Forestry (ODF) and Oregon Department of Agriculture's (ODA) jurisdiction are not addressed by this IP.

This IP does not address runoff from lands owned by the State of Oregon (including state highways and their storm sewer systems) or the federal government.

6.2 Areas where this Implementation Plan Applies

The October 2023 NPS TMDL IP addresses stormwater runoff-related TMDL pollutants that are discharged by these three types of stormwater drainage systems:

- Clackamas County, Happy Valley, Rivergrove, and Clackamas WES-owned/maintained surface-discharging storm sewer systems that are not subject to the MS4 Permit requirements. (See the areas

outside the MS4 Permit boundaries in Figures 2 and 3). These storm sewer systems, which are defined as NPSs of pollution, are typically ditches that serve Clackamas County-maintained/owned roads in rural areas. Note that Clackamas County's, Clackamas WES', and the City of Happy Valley and Rivergrove's authority to control sources of pollution from storm sewer systems that they own is limited, especially when these systems are in rural areas, but reasonable efforts will continue to be made to control and reduce their discharge of TMDL pollutants.

- Privately-owned storm sewer system outfalls if they do not drain agricultural (ODA) and timber management (ODF) areas. These outfalls, unless they are permitted by an NPDES permit such as a 1200Z, are NPSs of pollution. Note that Clackamas County, Clackamas WES, and the Cities of Happy Valley and Rivergrove often have no authority whatsoever to control sources of pollution from storm sewer systems that they do not own if these systems discharge directly to waters of the State of Oregon, but reasonable efforts will continue to be made to control and reduce their discharge of TMDL pollutants.
- Overland sheet flow of stormwater that does not flow through any type of storm sewer system. These are also defined as NPSs of pollution and are found on lands with every type of land use. These flows, which are not found in agricultural and timber management areas, are addressed in this IP. Note that Clackamas County, Clackamas WES, and the Cities of Happy Valley and Rivergrove often have no authority to control pollution in these types of flows on private property, but reasonable efforts will continue to be made to control and reduce their discharge of TMDL pollutants.

If Clackamas County, Clackamas WES, and/or the Cities of Happy Valley or Rivergrove are aware of a discharge that does not flow through a storm sewer system that they own, which is a significant known or suspected source of TMDL pollution, the matter will be referred to the DEQ if public education and/or technical assistance and/or enforcement fail to yield the necessary water quality improvement.

Clackamas County, Clackamas WES, and the Cities of Happy Valley and Rivergrove cannot and do not accept sole responsibility for reducing TMDL pollutant loads in any river or tributary in order to attain any TMDL LA. All of the sources of a TMDL pollutant need to do their part to solve the problem if the LA will ever be attained.

Clackamas County, Clackamas WES, and the Cities of Happy Valley and Rivergrove do accept some of the responsibility for reducing the following fractions of the TMDL pollutant loading:

- The amount that originates on those private lands that they have the authority to regulate
- The amount that is generated by the specific land uses or activities that they have the authority to regulate
- The amount that originates on land they own

The October 2023 NPS TMDL IP also addresses riparian areas on lands owned by Clackamas County, Clackamas WES, and the Cities of Happy Valley and Rivergrove. One exception is the acres of timberland that Clackamas County owns; NPS water pollution on these lands is regulated by ODF and is not addressed in this IP. Finally, this IP addresses riparian areas on privately owned land that are not in an agricultural or timber management area, and reasonable effort will be made by the public education program to try to persuade these private property owners to protect and enhance their riparian areas. Refer to Management Strategies 7.4 and 7.11 for more information about this IP's role in managing riparian areas on privately owned lands.

7. Management Strategies

A variety of management strategies are employed by Clackamas County, Clackamas WES, and the Cities of Happy Valley and Rivergrove to improve and protect water quality and overall watershed health. This portion of the IP complies with OAR 340-042-0080(4)(a)(A) and (B), which state, *"The implementation plan must...Identify the management strategies the DMA or other responsible person will use to achieve load allocations and reduce pollutant loading"* and *"(B) Provide a timeline for*

implementing management strategies and a schedule for completing measurable milestones.”

The management strategies that are implemented or planned for implementation to address NPSs of TMDL parameters in the area covered by this plan are listed below:

- 7.1 Stormwater Regulations for New/Redevelopment and for Capital Improvement Projects (CIPs)
- 7.2 Operation and Maintenance for Publicly Owned Storm Sewer Systems
- 7.3 Regulated Private Storm Sewer System Inspection and Maintenance Program
- 7.4 Riparian Area Shade: Other Development-Related Regulations
- 7.5 Erosion Prevention and Sediment Control
- 7.6 Public Education
- 7.7 Septic System Management
- 7.8 Illegal Dumping Management
- 7.9 Respond to Reports of Impaired Stormwater Quality
- 7.10 Illicit Discharge, Detection, and Elimination Program, which includes Spill Response
- 7.11 Riparian Area Assessment and Management
- 7.12 Cold Water Refugia Assessment and Management

These Management Strategies are described in detail in the sections below.

The status of implementing these Management Strategies during the 2025-2026 year is found in the Measurable Milestones section of each Management Strategy.

7.1 Stormwater Regulations for New/Redevelopment and for Capital Improvement Projects

Stormwater policies, regulations, and administrative procedures are essential for implementing the TMDL. This portion of the IP describes the planning procedures for developing, implementing, and enforcing controls to reduce the discharge of TMDL parameters from storm sewers that collect stormwater runoff from lands that have been significantly developed or redeveloped.

TMDL parameters addressed:

- ✓ *E. coli*
- ✓ Total phosphorus and DO in the Tualatin River watershed
- ✓ Mercury
- ✓ DDT and dieldrin in the Johnson Creek watershed
- ✓ Dieldrin and iron in the Pudding River watershed

Description of the potential sources: After construction has been completed on a property, the storm sewer system and landscaping-related planning procedures and regulations that are followed during site design and construction can influence the amount of non-point sediment-bound and other pollutants that are washed from the property into the nearest surface water body over the lifetime of the property's improvements.

Description of the management strategy: This management strategy refers to the planning procedures for developing, implementing, and enforcing controls to reduce the discharge of TMDL parameters from storm sewers that collect runoff from areas that experience land development or

redevelopment. Specific strategies are described below. These post-construction controls are applied to the following:

- Development on private property
 - CIPs, including road and building construction projects, that are funded by the Co-Owners of this IP
- Erosion control permitting for construction site runoff is addressed in Section 7.5.

Geographic area where this management strategy is implemented:

Properties within the 1) WES SWM Service Area, 2) Rural Portion of the City of Happy Valley, and 3) CCSD #1's Boring, Hoodland, and Fischer's Forest Park Subunits:

Within the WES SWM service area and these three CCSD #1 subunits, new/redevelopment construction projects are expected to infiltrate (if possible), treat, and detain stormwater runoff generated. WES' Rules & Regulations and Stormwater Standards, together with the procedures and tools used to enforce them, provide significant retention and pollutant removal that reduce pollutant loads. Buffer Standards and Stormwater Standards require a green infrastructure approach, pollutant reduction, control of hydro-modification impacts, and minimum stormwater management. WES' standards require stormwater management for all new development and redevelopment projects that add or replace 5,000 square feet or more of impervious area. Infiltration is the preferred strategy to achieve flow control and water quality treatment, thereby reducing pollutant loads to the maximum extent practicable. Fully infiltrating the 10-year, 24-hour storm is assumed to meet the flow duration standards. If not using infiltration, release rates from stormwater management facilities must meet the flow control standard, while fully infiltrating the water quality design storm in a vegetated facility is assumed to meet the water quality standard. Combined, the Rules & Regulations and Stormwater Standards prioritize infiltration, require treatment of 80% of the average annual runoff for a site, require flow control that targets pre-development hydrology, and enforce a green infrastructure approach where feasible.

Properties in the rural portion of the City of Happy Valley that receive rural-style development (these properties do not have public sanitary sewer service) are authorized by the City of Happy Valley. The City of Happy Valley has adopted WES' Stormwater Standards for use in the rural area outside the WES service district. Where soils in Happy Valley have low or no infiltration, rain gardens and bioswales, which provide filtration that reduces pollutants, are typically used.

Much of the WES SWM service area, plus the rural portion of Happy Valley, fall within the MS4 Permit's geographic coverage area. Happy Valley and Clackamas WES apply their stormwater management controls on all real estate development sites in their service areas whether or not they discharge to their MS4. For detailed information about management strategy 7.1, please see the MS4 Permit Stormwater Management Program Document for more information about these controls. Finally, for the three CCSD#1 subunits, although they are not in the WES SWM service area, WES also implements management strategy 7.1 in these areas.

Other properties NOT within these areas:

The Oak Lodge Water Services District. For NPS stormwater runoff generated by real estate development in the Oak Lodge Water Services District see the Oak Lodge Water Services District's TMDL IP.

Real Estate Development in Unincorporated Rural Areas. For development in unincorporated rural areas, Clackamas County prescribes the stormwater management requirements. In June of 2020, Clackamas County made improvements related to low impact development and onsite stormwater management requirements for areas outside of the MS4 Permit geographic area.

Per Clackamas County Roadway Standards section 420.1 (Best Management Practices and Low Impact Development Approaches), Clackamas County engineering acknowledges the need for best manage-

ment practices and/or low impact development approaches (LIDAs) for land development and encourages engineers to submit LIDA designs for review to meet the water quality and infiltration requirements outlined in Clackamas WES' stormwater standards. Calculations are required to illustrate how a given LIDA provides water quality benefits. Private improvements in rural areas may work with DTD to provide a simplified approach to stormwater management that uses vegetation and infiltration if the site conditions warrant it. The City of Portland's simplified approach for infiltration testing and typical details for stormwater management may be used in the rural area.

Additionally, Clackamas County Roadway Standards section 420.2 allows for the use of acreage as a best management practice. Development outside of the MS4 permitted area is predominated by larger lot sizes. The applicant must demonstrate that water quality, detention, and/or infiltration requirements are met using the acreage best management practice if this approach is proposed. Clackamas County Roadway Standards section 420.3 (Surface Water Management Applicability) requires surface water management plans for any of the following instances:

- When 5,000 square feet or more of new or reconstructed impervious surface is proposed within the Portland metro area's UGB.
- When 10,000 square feet or more of new or reconstructed impervious surface is proposed outside the Portland metro area's UGB.
- When grading or any new or reconstructed impervious surface is proposed or replaced within 50 feet of a perennial stream, creek, wetland, or lake, or within 10 feet of a property line.

Capital Improvement Projects funded by the Co-Owners of this IP. When a CIP, including road and building construction projects, funded by one or more of the Co-Owners of this IP, is designed, it must comply with the stormwater management requirements—infiltration (if possible), water quality treatment, and detention—of the community in which the CIP is proposed. For example, when a CIP is proposed to be constructed in the WES SWM service area, it is expected to comply with the same stormwater management requirements and riparian area setback/buffer requirements that would be applied to development on any nearby piece of private property.

Measurable milestones (if any): None.

Fiscal analysis: This management strategy is currently funded.

Timeline for implementation: This management strategy is currently being implemented and is an ongoing activity.

7.2 Operation and Maintenance for Publicly Owned Storm Sewer Systems

A key strategy for protecting receiving water quality from NPS pollution is thorough adequate operation and maintenance (O&M) of publicly owned stormwater infrastructure to confirm that systems are functioning properly and issues are addressed before they become problematic.

TMDL parameters addressed:

- ✓ Mercury
- ✓ Total phosphorus
- ✓ DO (i.e., SVS) in the Tualatin River watershed
- ✓ DDT and dieldrin in Johnson Creek
- ✓ Dieldrin/DDT and iron in the Pudding River Watershed

Description of the management strategy: The O&M of publicly owned storm sewer systems in this TMDL IP's geographic area reduces the amount of NPS pollution that is discharged to creeks, wetlands, and rivers from these systems. Typically, these storm sewer systems are roadside ditches along the edges of Clackamas County-maintained/owned roads in rural areas. Potential sources of pollution could

be the road itself (e.g., automotive fluids dripped onto the road as the vehicle drives by), but most of the pollution is believed to be from adjacent and nearby properties, which are typically privately owned. This management strategy encourages the optimization of the water pollution removal and stormwater infiltration functions of these storm sewer systems (i.e., ditches). Examples of this strategy may include the following activities:

- Retrofitting one or more ditches through the addition of one or more rock “check dams” to trap some sediment that can be removed later and properly disposed of.
- Cleaning the few catch basins and other types of storm sewer system structures in the geographic area covered by this IP on an as-needed basis.
- Installing erosion control measures (such as a hydroseed mulch), where appropriate, after the ditch has been cleaned with a Gradall machine.

The Clackamas County DTD Transportation Maintenance Division occasionally disturbs soil in their road rights-of-way while performing routine road maintenance and repair work. The DTD adheres to the Oregon Department of Transportation’s (ODOT) Routine Road Maintenance, Water Quality, and Habitat Guide, Best Management Practices, Revised June of 2020 (ODOT Guide). Proper erosion prevention and sediment control methods are addressed under several activities within the ODOT Guide, including, but not limited to, Activity #120 (Ditch Shaping and Cleaning), Activity #112 (Shoulder Rebuilding/Blading/Erosion Repair), and Activity #081 (Stockpiling). In addition, DTD has been issued a 1200-CA permit (a version of the 1200-C permit that is solely for local agencies). Where applicable, CIPs are performed by DTD in accordance with the requirements of the 1200-CA.

Geographic area where this management strategy is implemented: The City of Happy Valley-owned surface-discharging storm sewer systems are regulated by the MS4 Permit. Therefore, this management strategy only applies to those Clackamas County-maintained/owned surface-discharging storm sewer systems that are not regulated by the MS4 Permit. Note: If Clackamas WES owns or operates any surface-discharging storm sewer systems in the rural portion of the SWMACC subsection of the WES SWM service area, this management strategy will also apply to these systems because they are also not regulated by the MS4 Permit.

Measurable milestones:

- Consider installing one or more new rock check dams in one or more ditches. If any are installed, provide in that year’s TMDL IP annual report the road mile(s) or mile point(s), as well as the road’s name(s), where one or more new rock check dams were installed. An example could be, *“Clackamas County installed check dams on XX miles of road in 2023–24. They were installed in ditches along sections of ACME Street, Anvil Court, and Roadrunner Blvd.”* **2025-2026 Response: Clackamas County installed 20 check dams along 26 miles of road in 2025–26. They were installed in ditches along sections of SE Coupland Rd, S Lower Highland Rd, S Upper Highland Rd, S South End Rd and SE Tumala Mountain Rd.”**
- Clackamas County’s Transportation Maintenance Division can perform “skip-ditching,” which is when solids and vegetation are only removed from a section of ditch, while the adjacent sections of ditch are left untouched. In the untouched sections, the vegetation and soil are left undisturbed, which provides potentially significant treatment for stormwater runoff and potentially better infiltration and/or evapotranspiration of stormwater runoff. This measurable milestone is the annual number of miles of ditches that were skip-ditched during the July 1 to June 30 TMDL IP year. **2025-2026 Response: 30.2 miles**
- If any section of ditch is discovered to provide a reasonably good stormwater infiltration rate, provide this information in that year’s TMDL IP annual report. **2025-2026 Response: None were identified.**

Fiscal analysis: This management strategy is currently funded.

Timeline for implementation: This management strategy is currently being implemented and is an ongoing activity.

7.3 Regulated Private Storm Sewer System Inspection and Maintenance Program

Inspection of privately owned storm sewer systems helps improve receiving water quality by ensuring that detention, infiltration, and water quality treatment facilities are being maintained and are functioning properly.

Geographic area where this management strategy is implemented: This management strategy, which is only provided within the WES SWM service area, is expected to reduce stormwater runoff rates, volume, and pollution by verifying that regulated privately-owned storm sewer systems are operated to maintain their pollutant removal, stormwater infiltration/retention, and flow control functions. This strategy applies to privately owned storm sewer systems with a signed WES Maintenance Agreement, which typically include those that serve multi-family residential properties, commercial and industrial properties, or institutions (religious, civic, etc.). This management strategy has been included in this TMDL IP because some of these privately owned storm sewer systems discharge directly to waters of the state, and as a result, are NPSs of pollutants.

TMDL parameters addressed:

- ✓ *E. coli*
- ✓ Mercury
- ✓ Total phosphorus and DO in the Tualatin River watershed
- ✓ DDT/dieldrin in the Johnson Creek Watershed

Description of the management strategy: The maintenance agreements require operators/owners to inspect and maintain the property's stormwater facilities and to report their activities annually to Clackamas WES. Stormwater from commercial, industrial, residential, or institutional land uses can be NPSs of TMDL pollutants such as *E. coli*, phosphorus, or mercury. Potential sources of contamination at these sites include land deposition of air pollutants, spills, fertilizer applied to landscaped areas, poor housekeeping practices, and leachate that leaks from solid waste dumpsters. The most common sources of *E. coli* at these sites may be feces deposited on impervious and landscaped surfaces from wild birds and mammals.

Storm Drain Cleaning Assistance Program

WES participates in the voluntary regional Storm Drain Cleaning Assistance Program (SCAP) with its partners in the Portland metro area. This program uses voluntary measures paired with an inspection and enforcement program to verify and track maintenance of regulated private stormwater systems. This management strategy contains two elements, SCAP and inspection/enforcement, that WES may use interchangeably or in combination at its discretion.

WES will continue to cooperate with partners to implement the SCAP to help regulated private system operators maintain their storm sewer system catch basins. SCAP implementation will include notification, cleaning assistance, and report tracking. SCAP partner agencies will negotiate with vendors, the companies that would actually clean the catch basins, and obtain the lowest qualifying price quote for inspection and cleaning of catch basins. WES will send an annual maintenance reminder and SCAP invitation to its private facility maintenance agreement holders and other commercial and industrial facilities that operate regulated storm sewer systems. This reminder/invitation may or may not include the name of the selected vendor and its quoted price per catch basin cleaned. The reminder/invitation may list the types of storm sewer system structures on the property that are not included in the SCAP offer, such as ponds, swales, and low impact development features, such as a vegetated stormwater infiltration

box, that must also be maintained.

Property owners who respond to WES' reminder/invitation will be referred to the vendor. The vendor will inspect and clean structures and report the number of facilities visited, number, and type of structures maintained, and the volume of material removed.

Inspection and Enforcement

WES implements an inspection and enforcement program to verify O&M of regulated privately owned storm sewer systems. WES' Watershed Protection group inspects regulated private storm sewer systems at selected sites. Inspectors evaluate the maintenance condition of each site's storm sewer system. If a regulated private storm sewer system fails an inspection, WES follows an escalating enforcement strategy that begins with education and technical assistance.

Measurable milestone: Implement the SCAP program each year and provide the following information in annual TMDL IP reports to the DEQ: 1) The number of SCAP participants and 2) the total number of catch basins/drains that were cleaned. This data to be reported to the DEQ will include all program participants in the entire WES SWM service area, and all catch basins/drains that were cleaned, including those basins/drains that are NPSs of pollutants.

2025-2026 Response:

In 2025, WES collaborated with the cities of Milwaukie, Gresham, Fairview, Oregon City, and Wood Village and the Oak Lodge Water Services District on a Storm Drain Cleaning Assistance Program (SCAP) for privately owned and maintained stormwater facilities. The program consisted of a Spring and Fall campaign advertised by U.S. mail. SCAP and other commercial-industrial-institutional storm drain cleaning for these privately owned structures is tracked on a calendar year reporting basis rather than by July 1st to June 30th NPS TMDL year. The information cited below is for the 2025 calendar year:

- **Total number of SCAP participants: Seventy-two (72) businesses in the WES SWM service area were enrolled in the program.**
- **The total number of catch basins/drains that were cleaned by the SCAP vendor: 399**

Separate from the SCAP data above, a total of 134 businesses submitted an annual report to WES which documents the inspection and maintenance of their facility's privately owned and maintained storm sewer system during the 2025 calendar year. Some of these 134 businesses used the SCAP vendor to clean their system, but many of them did not. The storm sewer system structures that were maintained/cleaned at these 134 businesses include:

- **864 catch basins (some of these 864 catch basins are included in the 399 catch basins mentioned above which were cleaned by the SCAP vendor)**
- **37 water quality manholes**
- **9 hydrodynamic separators**
- **15 oil water separators**
- **15 cartridge filters**
- **41 vegetated stormwater quality facilities**
- **8 other structures**

Fiscal analysis: WES has budgeted the funds necessary to implement this program in the WES SWM service area.

Timeline for implementation: This management strategy is currently being implemented and is an ongoing activity.

7.4 Riparian Area Shade: Other Development-Related Regulations

Riparian vegetation provides shading and can reduce river/stream warming from direct sunlight, in

addition to providing a myriad of water quality improvement and bank stabilization benefits. Protection and restoration of riparian areas can be encouraged and enforced through real estate development-related regulations. Reduction of the riparian canopy can also change the microclimate near streams, increasing air flow and heat exchange with the stream and thereby further elevating water temperatures.

TMDL parameters addressed:

- ✓ Temperature
- ✓ Mercury (because stream bank stabilization provided by this management strategy reduces stream channel erosion)
- ✓ DO in the Tualatin River watershed (because cooler stream water can hold more DO)

Description of the management strategy: Protection and restoration of system potential vegetation and effective shade in riparian areas is one of the primary mechanisms for achieving LAs for temperature. These watershed protection regulations that protect streamside vegetation are implemented by Clackamas County, Clackamas WES, and the Cities of Happy Valley and Rivergrove.

Many lands that include at least some riparian areas are subject to the following “riparian area buffer regulations” when these lands are developed or redeveloped in a significant manner under Clackamas County’s, Clackamas WES’, and the City of Happy Valley’s and Rivergrove’s building permitting process:

- **Metro Title 3, Clackamas County.** Clackamas County’s Planning Department administers WES’ equivalent of Metro Title 3 regulations in the WES SWM service area through an agreement with WES. Clackamas County’s Planning Department administers these regulations in the other unincorporated areas within the Portland metro area’s UGB and metro service district boundary in Clackamas County, such as the Oak Lodge Water Services District. New and redevelopment that is regulated by Clackamas County near wetlands, springs, natural ponds, creeks, and rivers generally provides a largely undisturbed buffer area varying in width from 25 feet up to as much as 200 feet in certain cases. Buffer areas apply on each side of the creek or river. Wetland setback areas are fixed at 50 feet from the delineated wetland boundary. Creek buffer area width depends on several factors, including topography, whether the stream is perennial or intermittent, and how much contributing drainage acreage in the watershed is upstream of the proposed development.
- **Happy Valley and Rivergrove.** The cities of Happy Valley and Rivergrove have their own equivalent of Metro Title 3 regulations that they apply within the city limits.
- **Zoning and Development Ordinance 709, Clackamas County.** Clackamas County’s Zoning and Development Ordinance (ZDO) 709 applies in unincorporated, urban areas. The provisions regulate disturbances and specify setback distances for wetlands and riparian areas (also known as Water Quality Resource Areas). Disturbances and setbacks to these areas are reviewed in accordance with applicable provisions of the ZDO and are dependent upon several factors that are determined on a case-by-case basis. ZDO 709 is administered by Clackamas County’s DTD. Wetlands are included in this IP because many wetlands discharge their waters directly to creeks and rivers.
- **Metro Title 13 (Goal 5), Clackamas County.** Clackamas County’s ZDO 706 is the county’s version of the Metro Title 13 (Goal 5) model ordinance and associated maps and plans. It was adopted in January 2009. The purpose of Title 13 is to (1) conserve, protect, and restore a continuous ecologically viable streamside corridor system, from the streams’ headwaters to their confluence with other streams and rivers and with their floodplains in a manner that is integrated with upland wildlife habitat and with the surrounding urban landscape and (2) to control and prevent water pollution for the protection of the public health and safety and to maintain and improve water quality throughout the region.

Metro has mapped the areas deemed to be regionally significant and has further designated as Habitat Conservation Areas (HCAs) those areas requiring protection. HCAs shall be protected, maintained, enhanced, and restored as specified in the Metro Code Section 3.07.1340, and city and

county development codes shall include provisions for enforcement of these performance standards and best management practices. Discretionary development approval standards are designed to first avoid HCAs, next to minimize impacts on HCAs and water quality, and finally to mitigate the impacts to these areas.

- **Willamette River Greenway, ZDO 705, Clackamas County.** The Willamette River Design Plan, described in the Clackamas County Comprehensive Plan, provides policy for reducing pollutants and protecting water quality outside of the WES SWM service area. Those policies are codified through Section 705 of the ZDO. The purpose statement of Section 705 (Willamette River Greenway) includes, in part, “to maintain the integrity of the Willamette River by minimizing erosion, promoting bank stability and maintaining and enhancing the water quality and fish and wildlife habitats.” All intensification or change in use, or “development” requires a Greenway Conditional Use permit. Conditions of such a permit include minimum setbacks of 100–150 feet (depending on slope, soils, density of existing vegetation, etc.), along with provision for/enhancement of a vegetative buffer of the same width. In addition, private noncommercial docks and moorages in the limited use rural portions of the Willamette River Greenway are prohibited.
- **River and Stream Conservation Area, ZDO 704, Clackamas County.** This ordinance applies to all unincorporated private lands in Clackamas County that are outside the Portland metro area UGB, outside the Metro Service District boundary, and outside the Willamette River Greenway. It is administered by DTD pursuant to the applicable provisions of the ZDO. New and redevelopment that is regulated by Clackamas County that occurs on land lots that are on or near rivers and qualifying creeks must provide a largely undisturbed setback area varying in width from 50 feet to 100 feet (ZDO 704.07 requires that no less than 75 percent of the setback’s area be preserved with native vegetation). For a river’s riparian area, a setback area wider than 100 feet can be required in certain circumstances. The setback distance for creeks is based on whether a creek has been determined to be small (50 feet), medium (70 feet), or large (100 feet). Smaller (non-fish-bearing) streams and all wetlands are unprotected by ZDO 704’s provisions. All riparian areas around creeks and rivers that are eligible for protection under ZDO 704 are on Water Protection Rule Classification maps that were compiled pursuant to OAR 629-635-000.
- **Floodplain Management District, ZDO 703, Clackamas County.** This ordinance, administered by Clackamas County DTD, applies on all lands within the Special Flood Hazard Area. This ZDO section may in some instances limit the scope of development within the floodplain. This ZDO section tends to direct development away from areas that are directly adjacent to a creek or river’s low and high flow channels, making it more likely that native vegetation will be allowed to provide shade to the water body.
- **River and Stream Corridors, ZDO Subsection 1002.05, Clackamas County.** This ordinance applies within rural Clackamas County but only where River and Stream Conservation Areas subject to 704 do not apply, and only for certain developments such as subdivisions, partitions, etc.
- **Significant Natural Areas, ZDO Subsection 1002.8, Clackamas County.** This regulation protects only four key water resources (Williams Lake Bog, the Land at Marmot, Multorpor Bog, and Wilhoit Springs) that are designated as Scenic and Distinctive Resources.
- **Standards for Flood Hazard Areas, ZDO Subsection 1003.03.** This regulation augments ZDO Section 703 during the development process by limiting clearing, vegetation removal, construction of roads and structures, etc. within all areas of the floodplain to be sited in a manner that minimizes alteration of terrain and other natural features.
- **Riparian Area Protection Regulation Administered by the City of Happy Valley.**
 - **Natural Resources Overlay Zone.** This zone implements natural resource, open space, and environmental goals/policies within the Happy Valley Comprehensive Plan and provides compliance with portions of Statewide Planning Goals 5 and 6 as well as Titles 3 and 13 of Metro’s Urban Growth Management Functional Plan. The Natural Resources Overlay Zone protects and improves the natural resource functions and values by discouraging most development near

intermittent/perennial creeks, rivers, streams, wetlands, natural lakes, springs, or other significant features. Applicants identify the location of protected features, vegetated corridors surrounding the features, and HCAs before applying environmental protections, including mitigation, when most development occurs. Unless exempt, applications are subject to a public land use review process to assure compliance as well as provide awareness.

– **Riparian Area Protection Regulations Administered by the City of Rivergrove.** The Tualatin River borders the City of Rivergrove to the south. Some lands in the City of Rivergrove contain wetland areas or are within the floodway or floodplain. All of these lands are managed by Flood Ordinance #70-2001 (www.cityofrivergrove.org under the heading ORDINANCES/ Flood Ordinance). Ordinance 70-2001 is in conformance with Metro Title 3; it applies a protected water quality resource area overlay zone along protected water features, as defined in the ordinance, including wetlands, streams, springs, and the river. In the instance when a property is being divided and contains a water quality resource area, the code stipulates that this property should be in a separate tract.

Measurable milestone: Continue to implement the applicable riparian area protection regulations (see above) when properties are permitted to develop by Clackamas County, Clackamas WES, and the Cities of Happy Valley and Rivergrove. Were these applicable regulations implemented? In each TMDL IP annual report, a simple “Yes” or “No” answer will be provided for each of the Co-Owners of this IP.

Response for 2025-2026: The answer is Yes for all of the Co-owners of the Oct. 2023 IP.

Fiscal analysis: This management strategy is currently funded.

Timeline for implementation: This management strategy is currently being implemented and is an ongoing activity.

7.5 Erosion Prevention and Sediment Control

Temporary and permanent erosion and sediment control at construction sites can help reduce pollutant-laden stormwater from entering receiving waters.

TMDL parameters addressed:

- ✓ Total phosphorus
- ✓ DO (i.e., SVS) in the Tualatin River watershed
- ✓ Mercury
- ✓ DDT/dieldrin in Johnson Creek
- ✓ Dieldrin/DDT and iron in the Pudding River watershed

Description of the management strategy: Erosion control is addressed through the issuance of erosion control permits for construction sites undergoing significant development or redevelopment. These permits require measures, such as catch basin silt sacks, to reduce the amount of soil leaving the site and subsequent mercury, TSS, and/or SVS, DDT, etc. in stormwater washing from the property. By reducing TSS in stormwater, it is presumed that the concentration in stormwater of TMDL parameters adhered to soil (such as DDT and mercury) or mixed with soil (such as organic matter with high SVS level), if present, is also reduced.

Geographic areas where this management strategy is implemented:

- **Sites within the 1) rural portion of the City of Happy Valley; 2) WES' SWM service area, including SWMACC; and 3) CCSD #1's Boring, Hoodland, and Fischer's Forest Park subunits:**

Because many of these areas are within the MS4 Permit's geographic coverage area, Happy Valley and Clackamas WES issue and administer erosion prevention and sediment control (EPSC) Permits for real estate development to all qualifying construction sites whether or not they discharge to their MS4. To avoid duplication, please see the MS4 Permit Stormwater Management Program document (published in November 2022 and approved by the DEQ on February 6, 2023). For the CCSD #1 subunits, WES provides the same EPSC Permit program that WES provides in the MS4 Permit area.

- **Sites not within the rural portion of the City of Happy Valley; the WES SWM service area; and CCSD #1's Boring, Hoodland, and Fischer's Forest Park subunits:** For the construction sites in this geographic area, a comprehensive and Clackamas County-wide erosion control permitting, inspection, and enforcement program was approved by the Board of County Commissioners on October 30, 2025. Ordinance 03-2025 was codified under Clackamas County Code Chapter 9.04, Erosion Prevention and Sediment Control. This program was created with the intent of complying with new Willamette River mercury TMDL requirements, as well as with the intent of facilitating improved tracking and documentation.

Erosion Control Requirements

To comply with the requirements imposed by DEQ, County Code Chapter 9.04 requires the Building Codes Program to regulate erosion control within the unincorporated County outside cities and districts, for work that falls within the following thresholds:

- Construction activities including clearing, grading & excavation that will disturb $\frac{1}{2}$ acre (21,780sq. ft.) or more.
- Construction activities including clearing, grading & excavation that will disturb less than $\frac{1}{2}$ acre but are part of a common plan of development or sale that will ultimately disturb $\frac{1}{2}$ acre or more.
- Construction activities including clearing, grading & excavation that will disturb 500 square feet or more within 50 feet of surface waters of the state.
- All development activity within Clackamas County which disturbs 1 acre or greater is currently required to obtain a DEQ 1200-C Construction Stormwater (Erosion Control) Permit, so these sites will not require an erosion control permit from DTD.

County Code 9.04 gives Clackamas County Building Codes the authority to perform permitting, review, inspections and enforcement of erosion prevention and sediment control. The Code intentionally aligns with WES' EPSC standards to ensure that the County applies a comprehensive approach towards controlling erosion on construction sites.

Measurable milestones: In the City of Happy Valley and in WES' SWM service area plus the CCSD#1 subunits (these are combined totals for the MS4 Permit area and for the NPS TMDL areas):

MM1#: The number of active EPSC Permits in each jurisdiction during the TMDL's July 1 to June 30 year: Happy Valley and WES (the CCSD #1 subunits are included in WES' number). **2025-2026**

Response:

- **City of Happy Valley: 201 permits**
- **Clackamas WES (doesn't include Happy Valley): 180 permits**

MM#2: The number of inspections performed during each TMDL IP year in each jurisdiction: Happy Valley and WES (the CCSD #1 subunits are included in WES' number). **2025-2026 Response:**

- **City of Happy Valley: 1,386 inspections**
- **Clackamas WES (doesn't include Happy Valley): 874 inspections**

MM#3: The number of enforcement actions taken, if any, in each TMDL IP year in each jurisdiction: Happy Valley and WES (the CCSD #1 subunits are included in WES' number). **2025-2026 Response:**

- **City of Happy Valley: 5 enforcement actions**
- **Clackamas WES (doesn't include Happy Valley): 3 enforcement actions**

Fiscal analysis: This management strategy is currently funded.

Timeline for implementation: In all of the geographic areas, this management strategy is currently being fully implemented and is an ongoing activity.

7.6 Public Education

Public education is a key component of reducing the community's NPS pollution. This section addresses efforts that are believed to be effective in informing the public and encouraging behavioral change to reduce pollutant loading. WES regularly provides, and expects to continue to provide in the future, riparian area enhancement and protection messaging and stormwater management messaging to the public through its extensive public involvement and education program. Educating the public about the way its practices can negatively or positively impact the health of the watershed is an important component in managing NPS water pollution.

TMDL parameters addressed:

- ✓ *E. coli*
- ✓ Mercury
- ✓ Temperature
- ✓ Total phosphorus and DO in the Tualatin River watershed
- ✓ DDT and dieldrin in the Johnson Creek watershed
- ✓ DDT, dieldrin, and iron in the Pudding River watershed

Selected messages, such as those for erosion control/prevention, are also expected to be provided by Clackamas County from time to time for DDT/dieldrin in the rural portion of Johnson Creek's watershed and DDT, dieldrin, and iron in the Pudding River.

Description of the management strategy: Clackamas County DTD, Clackamas WES, and the Cities of Happy Valley and Rivergrove and provide public involvement and education to encourage citizens to work and live in ways that protect or improve water quality. Public involvement and education are relevant to many of this IP's management strategies, including, but not limited to, public education about proper care for septic systems, responding to and preventing illegal solid waste dumping, and public education about the importance of notifying the appropriate government agency when a spill occurs.

To avoid duplication, specific public education activities that are employed to reduce potential sources of TMDL pollutants are described in the MS4 Permit Stormwater Management Program document. These MS4 Permit educational messages are typically equally relevant to residents and businesses whether or not their homes and businesses discharge to the MS4 (e.g., "Please pick up your dog's poop" is relevant everywhere people reside).

Other messages that are tailored specifically for rural residents and/or businesses, such as tips for the management of horse manure, are already provided by partners such as the Clackamas County Soil and Water Conservation District, but Clackamas County may choose to also share messages that are tailored for rural residents and/or businesses. For more information about NPS water pollution messaging provided by Clackamas County in the rural area, please contact Clackamas County's Devin Patterson at DevinPat@clackamas.us.

Measurable milestones: During the TMDL IP year, was the public education program, which is required by the MS4 Permit, implemented? A yes/no answer shall be provided in each TMDL IP annual report.

2025-2026 Response: Yes.

Fiscal analysis: This management strategy is currently funded.

Timeline for implementation: This management strategy is currently being implemented and is an ongoing activity.

7.7 Septic System Management

A potential source of bacteria, mercury, SVS, and total phosphorus to surface waters is failing and failed septic systems and cesspools. A septic system or cesspool that is failing or has failed can discharge pollutants in improperly treated or untreated sewage directly into a surface water body, or the wastewater can be pushed into the surface water body by stormwater runoff, or it can pollute shallow groundwater, which can then, in some instances, enter a nearby surface water body through a spring.

TMDL parameters addressed:

- ✓ *E. coli*
- ✓ Mercury
- ✓ Total phosphorus and dissolved oxygen (SVS) in the Tualatin River watershed

Description of the management strategy: Clackamas County's DTD administers the Septic and Onsite Wastewater (Onsite) Program as an agent of the DEQ throughout Clackamas County; this management strategy is administered in the entire geographic area that is addressed by this IP. The Onsite Program is for the most common and smaller types of septic systems and cesspools; the largest septic systems in Clackamas County, such as those that serve restaurants and schools, are directly regulated by the DEQ through its Wastewater Pollution Control Facility Permit Program.

The goals of Clackamas County's program are to have no septic system/cesspool failures and for all septic systems and cesspools to be in a properly functioning condition. To achieve these goals, Clackamas County implements a process to address suspected failed or failing septic systems and cesspools when they have been referred to Clackamas County. When septic systems and cesspools fail in an area where a public sanitary sewer system is not within 300 feet of the property, and if it has been reported to Clackamas County, a site visit is performed to verify that the septic system/cesspool has indeed failed, identify steps for needed correction, and establish a process for implementing corrective actions. Time frames for repair are discussed with the property owners, and the length of time allotted to repair is determined based on the severity of the problem.

If a public sanitary sewer system is within 300 feet of a property with a failed septic system or cesspool, and if this system is both legally and physically available to the property, the failed system cannot be replaced, and the dwelling and/or other structures with plumbing fixtures (such as a kitchen sink) must be connected to the public sanitary sewer system, according to the State of Oregon requirements.

Discharges from failed/failing septic systems and cesspools to the ground's surface and into waterways are not allowed, and these systems are given the shortest time that is feasible for construction of repairs and for the implementation of short-term alternatives. Alternatives vary from limiting the use of the septic system (e.g., timing of laundry) to vacating the premises until the problem is resolved.

Code Violations

Clackamas County DTD's Code Enforcement group brings violators into compliance if initial efforts to do so are unsuccessful. Initial efforts that are made encourage voluntary compliance. All failing septic

systems and cesspools are an enforcement priority. Clackamas County has the ability to levy both fines and fees for code violations.

Measurable milestones:

- The number of reports of failing/failed septic systems and cesspools received by Clackamas County during the TMDL IP year. **2025-2026 Response: 132**
- The number of confirmed septic systems and cesspools that failed during the TMDL IP year. **2025-2026 Response: 119**
- The number of repair permits issued for septic systems and cesspools during the TMDL IP year. **2025-2026 Response: 303**

Fiscal analysis: This management strategy is currently funded.

Timeline for implementation: This management strategy is currently being implemented and is an ongoing activity.

7.8 Illegal Dumping Management

Solid waste can be illegally dumped on public and privately owned lands, which can contribute TMDL pollutants to surface waters if not cleaned up properly in a timely manner.

TMDL parameters addressed:

- ✓ *E. coli*
- ✓ Mercury
- ✓ Total phosphorus and DO in the Tualatin River watershed

Description of the management strategy: Illegal dumping of selected types of solid waste can cause TMDL pollutants to be transported via stormwater runoff into surface waters. Examples are listed below:

- *E. coli* from soiled disposable diapers
- Mercury from some fluorescent light bulbs, batteries, thermometers, and electronics
- SVS, which can cause instream DO levels to be depleted, from items such as discarded food and yard debris
- Total phosphorus in items such as discarded food, soiled diapers, and yard debris

Illegal dumping of solid waste is addressed by different programs and regulations depending on the place where the solid waste was dumped in Clackamas County.

Metro's Regional Illegal Dumping program

Illegal solid waste dump sites can be cleaned up by the regional illegal dumping program if it is dumped on public land and within the Portland metro area's UGB. The Co-Owners of this IP will continue to refer these sites to the regional illegal dumping program when they're reported or discovered, unless the public landowner chooses to clean it up without assistance.

Public Roads that Receive full Clackamas County Maintenance

Solid waste that is illegally dumped on roads that receive full Clackamas County maintenance can be reported to Clackamas County's Transportation Maintenance Division.

Dump Stoppers Program

This program is provided in forested areas in the easternmost portion of Clackamas County in the

following TMDL watersheds: Molalla-Pudding, Willamette, and Sandy River. It is not available in the Tualatin River watershed. The portion of this program that is administered by Clackamas County is housed within the Business and Community Services Department's County Parks Program. Dump Stoppers can be contacted to clean up the refuse on federal, county, or industrial timber company-owned lands at 503-650-3333.

Illegal Solid Waste Dump Sites on other Private Properties

If the dumped solid waste is private land, cleanup is the responsibility of the landowner, although law enforcement can play a role if the person(s)/business who dumped the material can be identified. For illegal solid waste dump sites within the urban area, Clackamas County Code Enforcement Division can be contacted. That division can administer a solid waste nuisance ordinance, which pertains to illegal dumping on public and private property. This ordinance is administered on a priority-rated basis, and illegal dumping that involves household garbage is a high priority for enforcement and resolution. Mediation is an additional tool that Clackamas County Code Enforcement Division uses to resolve certain types of solid waste issues that cause a condition of unsightliness on private property.

Measurable milestones:

MM#1: The number of reports of illegal solid waste dumping received by Clackamas County Code Enforcement during the TMDL IP year. **2025-2026 Response: 123**

MM#2: The number of solid waste-related enforcement actions conducted by Clackamas County Code Enforcement during the TMDL IP year. **2025-2026 Response: Clackamas County Code Enforcement received 163 reports alleging solid waste violations. The actual number of enforcement actions which resulted from these reports is not tracked.**

MM#3: Estimated number of pounds of illegally dumped solid waste that was removed by the Dump Stoppers program during the TMDL IP year. If available, the number of dumping sites cleaned up will also be provided. **2025-2026 Response: The Dump Stoppers program officially ended on June 30, 2023 and this MM has been removed from the new NPS TMDL IP which will be submitted to DEQ later in 2026. Other solid waste was removed during 2025-2026, which includes the following:**

- **A total of 5,080 lbs of trash was removed from Clackamas County-owned forest land. 2,820 lbs of this trash was removed from illegal shooting spots in the Wildcat Mountain area during the Bad Choices Cleanup event sponsored by Trash No Land. In a partnership with Molalla River Watch, 120 lbs of trash were collected during their fall bi-annual cleanup. Clackamas County Forestry staff collected an additional 2,140 lbs of waste throughout the year.**
- **More than 100 reports were received about illegal solid waste dumping on County maintained roads. When all of these solid waste reports were investigated, some were found to be unsupported by the evidence (no visible solid waste was present). When they were validated as correct, the solid waste was removed and properly disposed of. Note that two of these reports included hazardous and/or construction waste which Clackamas County Transportation Maintenance paid a contractor, Republic Services, to remove 11,450 pounds of waste because they specialize in this type of work. In addition to the 11,450 pounds of waste removed by Republic Services, 11,175 more pounds of waste were removed by Clackamas County Transportation Maintenance.**
- **Clackamas County Transportation Maintenance also responded to and cleaned up/removed 8 houseless encampments, a source of illegal solid waste dumping.**
- **16 illegal solid waste dump sites were forwarded to Metro (RID) by Clackamas County Transportation Maintenance**
- **98 Adopt-A-Road participants picked up 13,053 pounds of trash along County-maintained roadways.**

Fiscal analysis: This management strategy is currently funded.

Timeline for implementation: This management strategy is currently being implemented and is an ongoing activity.

7.9 Respond to Reports of Impaired Stormwater Quality

This management strategy applies to all properties throughout this TMDL IP's geographic area.

TMDL parameters addressed:

- ✓ *E. coli*
- ✓ Mercury
- ✓ DO and total phosphorus in the Tualatin River watershed
- ✓ DDT and dieldrin in Johnson Creek's watershed
- ✓ Dieldrin, DDT, and iron in the Pudding River watershed

Description of the management strategy: All facilities and properties that are the subject of a stormwater quality complaint or request for service will be contacted, if possible, in a timely manner by staff from Clackamas County, Clackamas WES, or Happy Valley. The decision about whether or not to conduct a site visit will be made by staff at his/her/their discretion. Note that staff may choose to refer the complaint or request for service to a partner organization, such as the Clackamas Soil and Water Conservation District, or DEQ, for follow-up and resolution. Staff will refer the complaint or request for service to ODA if it pertains to agricultural stormwater or to Oregon's Department of Forestry if it pertains to stormwater runoff from forested privately owned lands.

For those complaints or requests for service that pertain to construction site runoff, an erosion control inspector is likely to be the person who responds (see Management Strategy 7.5).

For properties and facilities that are in the WES SWM service area, the implementation of control measures for NPS stormwater discharges from these facilities will be deemed necessary by WES if the presence of excess levels of a TMDL pollutant can be confirmed to be present in a facility's discharge. In these instances, and when a discharger's initial attempts to improve its NPS stormwater quality do not produce the required improvement, WES personnel will continue to provide guidance and technical assistance until the facility's stormwater quality improves. If efforts by WES staff fail to achieve these goals, WES staff will contact the DEQ and request its support. The DEQ has the authority to compel most NPS stormwater dischargers to halt or modify their discharge if it contains a significant concentration of TMDL parameters and flows, or is likely to flow, directly to waters of the state.

Measurable milestone: Did the Co-Owners of this IP respond to all complaints and requests for service that pertain to allegedly impaired non-erosion control program stormwater quality? In each TMDL IP annual report, a yes/no answer shall be provided by Clackamas County DTD, Clackamas WES, and the City of Happy Valley. For this measurable milestone, a field visit or site inspection is not required to "respond" in a satisfactory manner.

2025-2026 Response: Did Clackamas County DTD, Clackamas WES, and the City of Happy Valley all respond to all complaints and requests for service that pertain to allegedly impaired non-erosion control program stormwater quality? Yes.

Fiscal analysis: This management strategy is currently funded.

Timeline for implementation: This management strategy is currently being implemented and is an ongoing activity.

7.10 Illicit Discharge Detection and Elimination Program (i.e., spills)

Illicit discharges can contain one or more of several different NPS TMDL pollutants. Stopping and preventing illicit discharges is an effective strategy for protecting receiving water quality.

TMDL parameters addressed:

- ✓ *E. coli*
- ✓ Mercury
- ✓ Total phosphorus and DO in the Tualatin River watershed

Description of the management strategy: The illicit discharge of certain liquid substances, such as wastewater, containing NPS TMDL pollutants such as *E. coli* or mercury can cause watershed health impairment. Potential sources of this NPS contamination are listed below:

- *E. coli* in sewage spilled from privately owned sanitary sewer lines due to pipe failure, etc.
- Mercury can be spilled from a broken older thermometer that contained mercury.
- Total phosphorus from illicitly discharged sewage, such as from a recreational vehicle.
- SVS from illicitly discharged sewage, such as from a recreational vehicle.

Stopping the discharge and overseeing the cleanup by the responsible party, if cleanup is feasible and appropriate, and if the responsible party is known, is one of the primary functions of this program. A Co-Owner of this IP can choose to clean it up at its expense, if this is deemed appropriate, and if the responsible party is unknown. A second primary function of the program is to try to prevent illicit discharges from occurring in the future. The Illicit Discharge Detection and Elimination (IDDE) program work described here is limited to the following types of illicit discharges:

- Discharges that flow into, pass through, or move towards privately owned storm sewer outfalls
- Discharges that move by overland sheet flow on private property
- Discharges that flow into, pass through, or move towards Clackamas County-owned/maintained storm sewer systems that are not regulated by the MS4 Permit or the Water Pollution Control Facility Permit. Nearly all of the publicly owned, surface-discharging NPS storm sewer systems that are addressed by this NPS TMDL IP are those that serve Clackamas County-maintained roads in rural areas.

Geographic area where this management strategy is implemented:

Portions of this IDDE management strategy are implemented by Happy Valley, Clackamas County DTD, and WES for the following service areas:

- **Areas not within the WES SWM service area and not within the rural portion of the City of Happy Valley.** This portion of the management strategy is administered by Clackamas County DTD Transportation Maintenance Division. If materials that potentially contain harmful pollutants (such as *E. coli* or mercury) are spilled or illicitly discharged onto a transportation maintenance-maintained road right-of-way (i.e., the impacted road segment is eligible for “full county maintenance”), personnel will respond if they are notified about the incident and it is determined that a response is appropriate. They’ll ensure that the release of the material is halted, if still ongoing, and the material is subsequently cleaned up in a manner that prevents harmful substances from entering waters, if possible, or minimizes the amount of pollution that enters the nearest waterways if that is not possible. If a response by a government agency is required for a spill involving agricultural materials that contain TMDL parameters (e.g., *E. coli* from animal manure), Oregon’s Department of Agriculture may be asked to assume the lead role in responding to the report and resolving the matter. The Clackamas County Transportation Maintenance Division adheres to the ODOT Guide. Roadway spill response work is addressed in these two sections of

this document: “Accident Cleanup” (Activity 149) on page 32 and “Spill Prevention and Cleanup” on page 15 of the ODOT Guide.

- **The WES SWM service area and the rural portion of the City of Happy Valley.** Most commonly, IDDE program services in this NPS geographic area are provided by Clackamas WES, but Happy Valley provides some services in some instances, such as in the rural portion of the city. Staff will make reasonable efforts during regular business hours to try to halt the release of spilled and illicitly discharged material in NPS areas and to persuade/motivate the responsible party to clean up the material. The goal is to prevent or to minimize the release of TMDL pollutants and other pollutants into waterways or into groundwater. If efforts by staff fail to halt the release of the material and the material contains TMDL pollutants that are likely to enter surface waters and/or storm sewers, staff will contact the DEQ and request its support. The DEQ has the authority to compel most dischargers to halt or modify their illicitly discharged material if it contains a significant amount of pollution and is flowing, or is likely to flow, into waters of the state.

Measurable milestone: The number of illicit discharges that were verified to have occurred during the TMDL IP year in the NPS water pollution locations in the WES SWM service area. Also, for these incidents, provide 1) the type of material spilled (e.g., sewage), 2) whether any of the material entered a creek, wetland, or river, 3) an estimated total volume spilled and the volume that entered the water body, if this occurred, 4) the name of the responsible party, if known, and 5) the location where the material was spilled. **2025-2026 Response: Four (4) illicit discharges occurred. Details about these discharges are below:**

- **On August 5, 2025, WES Field Operations staff reported a potential illicit discharge at an outfall to Cow Creek located on Wild Mike’s Pizza property on SE Piazza Avenue in Clackamas. Staff observed wet soil and vegetation around the outfall, despite no recent rainfall. The material appeared oily but had no noticeable odor or sheen. WES staff collected samples for further analysis and initiated an investigation. The substance is suspected to be vegetable-based, such as olive oil, but the estimated quantity which was discharged is unknown. The WES Inspector made contact with an on-site representative at Wild Mike’s Pizza to notify them of the observation.**
- **On August 20, 2025, WES staff responded to reports of elevated flow and turbidity in Johnson Creek. Investigation confirmed that the source was the City of Portland BES West Lents Floodplain Restoration project (near River Mile 6) in outer Southeast Portland, where water from Johnson Creek had entered the newly constructed 2,200 LF channel for the first time earlier in the day on August 20th. The USGS continuous creek monitoring station in the City of Milwaukie recorded flow increasing from ~20 CFS to over 30 CFS and turbidity rising from ~10 FNU to over 100 FNU during those hours on this dry summer day. BES had implemented mitigation measures, including sediment curtains, straw wattles, and partial pre-flow introduction, and the turbidity spike was consistent with expected sediment transport from channel-floodplain restoration permitted under their project. WES had initiated this investigation in the first place because BES failed to notify WES, the City of Milwaukie and all others who are downstream of this discharge.**
- **On December 16, 2025 WES staff responded to a report of a property owner, located at 6450 SE Aldercrest Court (97267), pressure washing the engine of a backhoe in their driveway, directly adjacent to and above Kellogg Creek. The property owner, Majo Ahrens Construction, admitted upon questioning that he had one of his employees pressure wash the engine in their driveway which ran down toward Kellogg Creek. The wash water hit the ground, partially on a graveled portion and partially on the asphalted portion of the driveway, which then flowed to the creek. An unknown amount of wastewater was discharged into the creek.**
- **On March 25, 2026 during a scheduled stormwater inspection, evidence of two illicit discharges were observed on the NE side of the property located at 6433 SE Lake Rd. The illicit discharges were observed in areas that drain directly to surface waters via the private stormwater system. One discharge consisted of a white substance located near loading**

dock 232, with evidence indicating it had entered a nearby catch basin; the quantify of material which was discharged is unknown. A second discharge was observed originating from the dumpster area, where waste materials and liquids were flowing toward and into the stormwater system; the quantify of material which was discharged is unknown. The responsible party, CIRE Equity cleaned up the spills, and it was confirmed clean on March 31, 2026.

Fiscal analysis: This management strategy is currently funded.

Timeline for implementation: This management strategy is currently being implemented and is an ongoing activity.

7.11 Riparian Area Assessment and Management

Riparian area assessment and management can provide shading and can reduce river/stream warming from direct sunlight, in addition to providing a myriad of water quality improvement and bank stabilization benefits. Reduction of the riparian canopy can also change the microclimate near streams, increasing air flow and heat exchange with the stream and thereby further elevating water temperatures.

TMDL parameters addressed:

- ✓ Temperature
- ✓ Mercury (because stream bank stabilization reduces stream channel erosion)
- ✓ DO in the Tualatin River watershed (because cooler stream water can hold more DO)

Description of the management strategy: Protection and restoration of riparian areas along the rivers and their tributaries in the TMDL IP's geographic area is conducted to eventually attain the load allocations for temperature. Management Strategy 7.4 (named "Riparian Area Shade: Other Development-Related Regulations) also addresses riparian area shade, but it only applies to properties that are being developed/redeveloped under a permit issued by Clackamas County or the Cities of Happy Valley and Rivergrove. This management strategy applies to all of the other privately owned and publicly owned properties with riparian areas.

Geographic area where this management strategy is implemented

- **Tualatin River Watershed: WES SWM service area.** From February 2018 to June 2023, WES maintained written contracts with the Tualatin River Watershed Council, which included a task with at least \$5,000 available per year to pay for work to plant trees and other native vegetation in privately owned riparian areas in the SWMACC portion of the WES SWM service area. During this time, riparian area planting occurred on private property along Rock Creek-South in the SW Morgan Road area (Sherwood/97140) and along Fields Creek near SW Bosky Dell Lane (West Linn/97068). In fiscal year 2022–23, Tualatin River Watershed Council has obtained a RiverHealth Stewardship Program grant for \$29,950 to continue to install native plants in riparian areas on private land. Additional riparian area planting work is expected to occur on private lands in the future.

The City of Rivergrove also owns some properties with riparian areas, and riparian area planting has occurred on some of these properties as well over the years (Tualatin River riparian area at SW 65th Avenue near Childs Road, for example). More of this work is expected to occur in the future.

- **Other Watersheds in WES' SWM service area.** Other watersheds in the WES SWM area include Kellogg-Mt. Scott Creek, Johnson Creek, and the Clackamas River. Beginning in 1993, many trees and other native plants have been planted, supported by funds from WES, in many privately owned and publicly owned riparian areas in the WES SWM service area.

Funding from WES has supported tree planting on many pieces of publicly owned land, including

some lands owned by Clackamas WES, Clackamas County, and the City of Happy Valley. WES owns and maintains about a dozen natural areas, and riparian area vegetation is maintained and enhanced, which includes weed control, on those sites. WES often accomplishes this maintenance through an intergovernmental agreement with North Clackamas Parks & Recreation District. The City of Happy Valley also owns many properties with riparian areas, and riparian area planting and weed control work has occurred on most of them as well over the years (e.g., Mt. Scott Creek riparian area in Happy Valley Park). More of this work on public lands is expected to occur in the future.

For private lands, the sum total of this work is too extensive to summarize here, but many thousands of trees have been planted at dozens of riparian area sites over the years with funding or other support from Clackamas WES. A summary of the RiverHealth Stewardship Grant program results from 2013 (program inception) to 2022 is below. Nearly all of these properties are privately owned:

Other grant deliverables through this RiverHealth Stewardship Grant include several workshops (in-person and online), presentations, plant sales, site visits, handouts, and videos. Additional riparian area planting work is expected to occur on private lands in the future.

Enforcement of Riparian Area Protection Regulations in the WES SWM Service Area, including Rural Happy Valley

When a privately owned property has a riparian area that is already permanently protected, either with a conservation easement; being in a separate tract of land or Restricted Development Area, which is dedicated to riparian area and water resource protection; or by a rule or other requirement, if WES is notified when inappropriate tree removal, land clearing, etc. has occurred or is occurring on the land, WES and/or Clackamas County will strive to promptly resolve the matter and attempt to persuade/motivate the responsible party to mitigate the damage and re-plant in the places where removal occurred. For enforcement of alleged violations of riparian area protection regulations in the City of Happy Valley, it will respond to the allegation; WES will coordinate with and provide support to the city upon request.

In many instances, signage such as the figure below has been installed along the edges of these riparian areas, which notifies the reader that the riparian area behind the sign is protected; this signage is believed to prevent most instances of inappropriate tree removal, land clearing, etc. from ever occurring on these lands.

Protect our Watershed

This area is being preserved to protect water quality and public health. Please do not disturb soil or vegetation. Building, development and vegetation management are restricted in this area.

To report a problem please call **503-742-4567**

On weekends and after hours, call the Clackamas County Dispatch Center's non-emergency number at **503-655-8211**



Figure 9. WES Protect Your Watershed Public Signage

Enforcement of Riparian Area Protection Regulations in Areas that are not within the WES SWM Service Area and aren't in the Rural Portion of Happy Valley

In these places, when alleged violations of riparian area protection regulations are reported to Clackamas County's Code Enforcement Division, it will respond to the allegation.

Other Lands in Clackamas County:

Clackamas County's Parks Department and the NCPRD both strive to protect and enhance the riparian areas on the lands they own and operate. And from time to time, Clackamas County provides public education about the importance of protecting and enhancing the riparian areas that are on private property.

Measurable milestones:

- During the TMDL IP plan year, the number of project sites where WES provided funding when native vegetation was planted in riparian areas in the WES SWM service area. **Response for 2025-2026: 52 sites.**
- The number of native plants that were planted. **Response for 2025-2026: Total of 2,318 trees, 11,766 shrubs and 3,525 herbaceous plants were installed.**

Supplementary response for 2025-2026 from the City of Happy Valley: 3.72 acres of riparian area mitigation was performed by property developers and 2,550 native plants were planted there.

Fiscal analysis: This management strategy is currently funded.

Timeline for implementation: This management strategy is currently being implemented and is an ongoing activity.

7.12 Cold Water Refugia Assessment and Management

CWR are areas within rivers that maintain cooler temperatures in late spring, summer, and early fall when water temperature elsewhere in the river is significantly warmer. For example, a CWR can be a place where a colder tributary stream enters a river. CWR offer migrating salmonids, and other native fish and aquatic species, relief from the warmer water in the other parts of the river.

TMDL parameters addressed:

✓ Water temperature/CWR

Description of the potential sources: The 2006 temperature TMDL includes requirements to assess and protect CWR in the Willamette River in Clackamas County. Alteration to river channel structure including removal or lack of large woody debris and modifications to deep pools and overhanging bank areas can reduce the presence of CWR or potentially eliminate it. Reductions in infiltration of stormwater from development, farming, etc. in upland areas, the resulting reduction in groundwater replenishment, and the corresponding reduction or elimination of flow from springs, are expected to increase temperatures of tributary streams, which can also reduce the quality and size of a CWR.

Description of the management strategy: Clackamas County does not own, control, or regulate the CWR in the Willamette River. And the other Co-Owners of this IP (Clackamas WES' SWM service area and the Cities of Happy Valley and Rivergrove) do not own or regulate any lands near CWR. However, this management strategy does describe work that the Co-Owners of this IP expect to have a positive influence on the enhancement and protection of these CWR.

The Willamette River from its confluence with the Columbia River upstream approximately to the City of Newberg (river mile 0 to river mile 50) has been designated as a salmon and steelhead migration

corridor. The biologically based numeric temperature criteria here is 20 degrees Celsius (68 degrees Fahrenheit) and applies throughout the year. The following narrative temperature criteria for salmon/steelhead migration use also apply to this section of the Willamette River: CWR shall be *“sufficiently distributed to allow salmon and steelhead migration without significant adverse effects from higher water temperatures elsewhere in the water body.”*

According to OAR 340-041-0002, CWR are defined as those portions of the water body where, or at times during the diel temperature cycle when, the water temperature is at least 2 degrees Celsius colder than the daily maximum temperature of the adjacent well mixed flow of the water body. These refugia include habitats and locations where temperature-sensitive cold-water species may find refuge when ambient stream temperatures are stressful. The DEQ’s 2006 Willamette Temperature TMDL includes a CWR section that states the following information:

- DMAs could or should play a role in 1) locating and protecting existing CWR and 2) improving/enhancing the function of existing CWR. In this instance, the DEQ’s precise expectation for Clackamas County (a DMA) is unclear.
- CWR in the Willamette River can be created by colder water from perennial creeks that join the Willamette River. Tryon Creek is an example. Protection and enhancement of riparian areas and floodplains along these tributaries is important for maintaining and restoring CWR in the Willamette River.
- Cold water refuges in the Willamette River can also be created by hyporheic flow and groundwater inflows (aka springs) into the main channel and side channels.

The 2015 National Marine Fisheries Service Endangered Species Act Biological Opinion: On November 3, 2015, NOAA’s National Marine Fisheries Service issued an Endangered Species Act Biological Opinion (BO) that addressed Oregon’s water quality standards for temperature. The BO concluded that the continued existence of wild chinook salmon and steelhead in the Willamette River and many other water bodies is jeopardized. It also concluded that some of their critical habitat has been destroyed or modified. The BO says the DEQ shall develop and implement a CWR plan for the lower 50 miles of the Willamette River, which the DEQ completed in March 2020 (see below). The purpose of the CWR plan is to adequately interpret the narrative temperature criterion to allow for

implementation of the criterion through the DEQ’s Clean Water Act authorities. More information about the CWR plan is listed below:

- In the CWR Plan, the DEQ characterized 1) the current spatial and temporal distribution of CWR and 2) potential locations for the restoration or enhancement of CWR.
- The DEQ assessed whether the spatial and temporal extent of CWR present meet the CWR narrative criterion (i.e., whether CWR are “sufficiently distributed to allow salmon and steelhead migration without significant adverse effects from higher water temperatures elsewhere in the water body”).

In March 2020, the DEQ published a study that listed and described the known CWR in the lowest 50 miles of the Willamette River. The study identified 20 large CWR suitable for use by migrating adult salmon and steelhead (note that the confluence of the Clackamas and Willamette Rivers is the largest one). In addition, the study identified 27 other small-scale CWR suitable for rearing and migrating juvenile salmon and steelhead but likely too small to accommodate adults.

Action items in this management strategy for the Co-Owners of this IP:

- Continue to try to obtain more infiltration and shallow injection (with drywells, for example) of stormwater in upland areas to replenish the supply of groundwater. This can increase the discharge of cool water from springs, which then flow into creeks and rivers.
- Continue to try to have more trees planted in riparian areas of creeks and rivers in the Tualatin,

Clackamas, Molalla-Pudding, and Willamette River watersheds. And continue to try to protect the existing riparian area trees that are in these places.

- Administrators of the Clackamas County-DTD and/or Happy Valley Floodplain Management Program may choose to assess their options for potential CWR-related changes to the administration of their programs to protect and/or enhance colder water in creeks in rivers, including the enhancement or protection of hyporheic flows.

Measurable milestones: None. See above for action items.

Fiscal analysis: This management strategy is currently funded.

Timeline for implementation: This management strategy is currently being implemented and is an ongoing activity.

8. TMDL Implementation

This section of the 2025-2026 NPS TMDL annual report addresses how management strategies were implemented and includes some potential barriers to implementation as well as timelines for implementation.

8.1 Implementation Monitoring and Evaluation Reports

According to OAR 340-042-0080(4)(a)(C), the October 2023 NPS TMDL IP shall “*Provide for performance monitoring....*” The definition of performance monitoring, as provided in OAR 340-042-0030(7) is “*...monitoring implementation of management strategies, including sector-specific and source-specific implementation plans, and resulting water quality changes.*” During the 2025-2026 year, implementation monitoring was conducted by Clackamas County, Clackamas WES, and/or the Cities of Happy Valley and Rivergrove to confirm that this IP’s management strategies were implemented as described. From time to time, when deemed appropriate, the IP will be revised to reflect enhanced understanding of the program’s effectiveness and to reflect current watershed conditions.

The 2022 NPS TMDL IP was revised in 2023. This 2023 NPS TMDL IP was submitted to DEQ in October 2023. On May 14, 2025, DEQ approved the implementation of the October 2023 NPS TMDL IP. Because the 2024-2025 NPS TMDL reporting year ended on June 30, 2025, the Co-owners continued to implement the 2022 NPS TMDL IP until June 30, 2025. The Oct. 2023 NPS TMDL IP was implemented beginning on July 1, 2025 and it was in effect during the entire 2025-2026 TMDL year.

8.2 Barriers to Implementation

Land ownership categories that are potential NPSs of pollutants that Clackamas County, Clackamas WES, and the Cities of Happy Valley and Rivergrove have very little or no authority to regulate or control include, but are not limited to, the following areas:

- Privately owned timberlands
- Privately owned farm, ranch, and orchard lands
- Lands within the other cities in the TMDL’s geographic area, such as West Linn and Estacada
- Highways, such as I-205, and other state-owned lands

Specific barriers include, but are not limited to, the following issues:

- The bacteria LAs may be exceedingly difficult and prohibitively expensive to attain if much of the instream *E. coli* loading is from the feces of wild birds and mammals.
- The predominant NPSs of nearly all of these TMDL pollutants are privately owned lands, and the Co-

Owners of this IP, as units of local government, typically have little or no authority to compel these thousands of residents and businesses to reduce their contributions of these pollutants by significant amounts. In most instances, their right to use their privately owned property as they wish outweighs and outranks the local government's power to regulate the use of their land.

8.3 Adaptive Management Approach to Attaining Load Allocations

The Co-Owners' goal is to attain the LAs that have been issued to them for each TMDL parameter through an adaptive management process. The Co-Owners are committed to investing in activities and programs that contribute to overall watershed health and are currently implementing and tracking the effectiveness of a variety of management strategies to improve and maintain water quality, as described in Chapter 7. It is unknown at this time whether the current and planned level of management activities will provide enough pollutant load reduction to meet the load allocations given the barriers to implementation described above. As progress is made toward pollutant reduction, the Co-Owners will adaptively manage activities and programs in order to work toward attaining the LAs.

9. Mercury TMDL Implementation Update

In September 2006, the DEQ issued a TMDL for the entire Willamette River Basin to protect and restore the beneficial uses of the Willamette River. Chapter 14 of the 2006 TMDL includes a WQMP, which provides the framework of management strategies to attain and maintain water quality standards. Given data limitations for mercury at that time, Load Allocations (LA) and Wasteload Allocations (WLA) were not provided for mercury. In 2019, the DEQ issued the revised Willamette River Mercury TMDL and associated WQMP. After revising some of the load and waste LAs, USEPA approved the revised Mercury TMDL on February 4, 2021. This Willamette River TMDL pertains to all sub-basins in the 11,500-square mile watershed, including 12 major sub-basins. The DEQ gave DMAs 18 months from TMDL issuance to submit updated NPS TMDL IPs to address mercury requirements in the WQMP. During the time it was in effect, the DEQ-approved 2022 NPS TMDL IP complied with this requirement. The DEQ-approved Oct. 2023 NPS TMDL IP, which was in effect during 2025-2026, also fully complies with the mercury TMDL requirements.

Management Strategies:

In the revised 2021 Willamette River Mercury TMDL WQMP, the DEQ established four minimum measures for counties to control non-point sources of mercury. Table 5 below references those minimum measures and includes the Management Strategies from Sections 7.1 through 7.12 that the Co-Owners of this IP implemented to address the measure during the 2025-2026 year.

Table 5. Minimum Mercury Requirements for Counties

Stormwater Measure	Requirements	Measures Implemented and Described
Pollution Prevention and Good Housekeeping for County Operations	<p>Counties must properly operate and maintain lands, properties, and facilities using prudent pollution prevention and good housekeeping measures and through appropriate staff training reduce the discharge of mercury-related pollutants to waterbodies. Counties must maintain records for meeting these requirements and include a descriptive summary of their activities in the TMDL annual report.</p> <p>2025-2026 annual report's descriptive summary: Clackamas County and Clackamas WES did properly operate and maintain lands, properties, and facilities they own and operate using prudent pollution prevention and good housekeeping measures and through appropriate staff training to reduce the NPS discharge of mercury (and related pollutants, such as TSS) to waterbodies. Records for meeting these requirements are available upon request.</p>	O&M for Publicly Owned Storm Sewer Systems (7.2), and Riparian Area Assessment and Management (7.11) for riparian areas on these lands, properties, and facilities
Public Education and Outreach	<p>Counties must conduct public education and outreach to reduce mercury and mercury-related pollutants, such as sediment, on county lands and properties, as applicable. Such activities should include outreach to property owners adjacent to county roads and ditches. In addition, public outreach must include efforts to encourage and facilitate reporting of sediment related issues or concerns from the public. Public outreach should be tailored to meet the needs and diversity of the county population (e.g., signs, social media, website presence, etc.).</p> <p>Counties must track implementation of the public education and outreach requirements and describe all activities in the TMDL annual report.</p> <p>2025-2026 annual report's descriptive summary: During 2025-2026, the co-owners of the 2023 IP continued to provide outreach about erosion prevention and sediment control in the WES SWM service area to reduce NPS discharges of mercury. Clackamas County and Clackamas WES continued to make plans for the best way to conduct this additional specific required public education and outreach to property owners in rural areas not regulated by ODA or ODF where lands discharge into ditches which serve County-maintained roads. This is being done with the goal of reducing non-point sources of mercury in stormwater, including mercury-related pollutants such as sediment. On March 24, 2026, staff from the County and WES met with the Oregon Association of Counties' Environmental Working Group to learn more about the work other Counties in the Willamette River watershed have been doing and are planning to do to comply with this requirement. Conversations were held about effective educational messages and content that has been used and the best methods for reaching out to the residents and businesses in these rural areas.</p>	Public Education (7.6)

Table 5. Minimum Mercury Requirements for Counties		
Enforcement of Prohibited Pollutants	<p>Counties must reduce conveyance of mercury and mercury-related pollutants to waterbodies from county lands and properties and have the capability of enforcing on other entities that contribute mercury-related pollutants, such as sediment, to county property and assets.</p> <p>The DEQ recognizes that county ordinances already in place or that must be adopted will likely be more comprehensive and prohibit discharges of other pollutants, rather than only those pollutants associated with mercury.</p> <p>The program must also maintain a procedure or system to document all complaints or reports of mercury and mercury-related pollutant discharges to county lands and properties and to water bodies from county lands and properties.</p> <p>In each TMDL annual report, counties must track implementation of their enforcement program and describe all activities</p> <p>2025-2026 annual report's descriptive summary: The implementation of Clackamas County's and Clackamas WES' program for the enforcement of prohibited pollutants was tracked and is addressed by the following 3 Management Strategies in the DEQ-approved 2023 NPS TMDL IP: "Illegal Dumping Management. (7.8)", and "Respond to Reports of Impaired Stormwater Quality (7.9)", and "Illicit Discharge Detection and Elimination Program (7.10)". See those sections of this annual report for a description of activities which were implemented. All complaints and reports of mercury and mercury-related NPS pollutant discharges to County-owned and WES-owned lands/properties – as well as from County and WES-owned lands/properties to water bodies – were responded to, addressed, and documented. Note that because this Prohibited Pollutants requirement in the TMDL also includes mercury-related pollutants, such as TSS (total suspended solids), discharges of stormwater runoff from construction sites probably contained less mercury due to the implementation of Management Strategy 7.5, "Erosion Prevention and Sediment Control"; See a description of the County's program in MS 7.5, titled "Erosion Prevention and Sediment Control."</p>	<p>Illegal Dumping Management. (7.8)</p> <p>Respond to Reports of Impaired Stormwater Quality (7.9)</p> <p>Illicit Discharge Detection and Elimination Program (7.10)</p>
Construction Site Runoff Control	<p>To minimize mercury and control potential sediment runoff from construction sites, counties must incorporate erosion control requirements into county building and grading permit applications. Permit language must require erosion, sediment, and waste material management controls to be used and maintained at construction sites from initial clearing through final stabilization. Counties may prioritize where these building and grading permit requirements are applied, for example where increased development is occurring, according to county zoning regulations, or where large subdivisions or large-scale dense development is allowed.</p> <p>Through an ordinance or other regulatory mechanism, counties must be able to pursue enforcement and technical assistance, as appropriate, at construction sites where pollutants could discharge to waters of the state, either directly to stream or through a conveyance system.</p> <p>In each TMDL annual report, the county must track implementation of its construction site runoff control program and describe all activities.</p> <p>2025-2026 annual report's descriptive summary: The implementation of Clackamas County's and Clackamas WES' ERCO programs was tracked and their implementation is described in the Management Strategy 7.5 "Erosion Prevention and Sediment Control" section of this annual report. In addition, MS 7.11 ("Riparian Area Assessment and Management") was also implemented during 2025-2026; riparian areas can remove some sediments and their associated pollutants, such as mercury, from sheet-flowing stormwater runoff before the cleansed runoff enters its surface water body.</p>	<p>Erosion Prevention and Sediment Control. (7.5)</p> <p>Riparian Area Assessment and Management. (7.11)</p>

Adapted from Final Revised Willamette Basin Mercury TMDL and WQMP.

In addition to the minimum measures addressed in Table 5 above, the following mercury reduction recommendations were implemented in 2025-2026 (adapted from Table 13-13 of the Final Revised

Willamette Basin Mercury TMDL and WQMP, 2019). Table 6 includes a summary of these recommendations and the Management Strategies which are applicable.

Table 6. Sediment-Bound Mercury Reduction Measures	
Requirements	Applicable Management Strategy being Implemented that is Relevant to this Recommendation
Roads	
Identify and prioritize county roads and ditches that contribute sediment and runoff to waterbodies. Best practices could include planting/retaining vegetation in ditches and reducing use of pesticides when appropriate to site conditions. Special attention should be focused on the following situations: unimproved/gravel roads in higher traffic areas, roads where traffic consists of heavy machinery use, near quarries or other activities that can exacerbate dust and track-out concerns.	O&M for Publicly Owned Storm Sewer Systems (7.2)
Develop and implement an O&M program with a schedule of regular and long-term inspection and maintenance ensuring the proper operation and effectiveness of both structural and source controls, e.g., stormwater system maintenance and/or road maintenance actions that prevent erosion of road surfaces	O&M for Publicly Owned Storm Sewer Systems (7.2)
Riparian Buffers	
Retain or plant adequate riparian buffers along waterbodies on county properties, such as a park, to provide natural filtering of sediment. Percent effective shade targets to meet the 2006 Willamette Basin TMDL for temperature are available in the 2006 TMDL document. Meeting shade targets will help provide shade for reducing heat impacts, as well as buffers to filter runoff. Counties that were identified as DMAs in the 2006 TMDL should already be conducting activities in support of this goal.	Riparian Area Assessment and Management (7.11)
Develop an enforceable ordinance that establishes a minimum buffer along streams, wetlands, lakes, and other waterbodies.	Riparian Area Shade: Other Development-Related Regulations (7.4)
Onsite Stormwater Management	
Strive to reduce the percent of new impervious surfaces by prioritizing onsite stormwater infiltration on county-owned properties for existing properties, new development, and redevelopment.	Stormwater Regulations for New/Redevelopment and for CIPs (7.1)
Encourage and incentivize developers to implement low-impact design standards on large development sites.	Stormwater Regulations for New/Redevelopment and for CIPs (7.1)