COLUMBIA COUNTY

WILLAMETTE RIVER BASIN

TMDL IMPLEMENTATION PLAN

February 28, 2022

Effective Dates of Plan: September 3, 2022 – April 1, 2028

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OVERVIEW

1. Introduction

The Federal Clean Water Act (CWA), Section 303, requires states to develop water quality standards to support the beneficial use of public water bodies. When the water quality standard for a water quality parameter is not met, the water body or the appropriate reach is listed on the 303(d) list of water quality limited water bodies for that water quality parameter.

The State of Oregon, through the Oregon Department of Environmental Quality (DEQ), is required to develop Total Maximum Daily Loads (TMDLs) for water quality standards that are not being met. The TMDLs identify the maximum amount of a specific pollutant that can be present in a water body without violating water quality standards. This is known as the loading capacity. Through water quality monitoring and modeling, TMDLs establish the difference between the loading capacity and the current pollutant load. This is known as excess load. The CWA requires that excess load be mitigated by pollution reduction activities.

The DEQ develops waste load allocations for point sources such as wastewater treatment plants and industrial discharges. The DEQ also develops load allocations for nonpoint sources including agricultural land; urban and forestry lands that may generate pollution from erosion, animal waste and un-permitted stormwater; and from other natural sources.

Oregon Administrative Rule (OAR) 340-042-0025 requires local governments and other agencies to develop TMDL Implementation Plans that adopt and implement pollution reduction strategies. Responsible parties that can implement pollution reduction strategies are classified as Designated Management Agencies (DMAs). Willamette Basin DMAs include federal agencies such as the Bureau of Land Management, state agencies such as the Oregon Department of Forestry and the Oregon Department of Agriculture, counties, cities, and other districts. Under OAR 340-042-0025, TMDL Implementation Plans must include the following five elements:

1. Management strategies that will be used to achieve load allocations
2. A timeline and schedule to achieve measurable milestones
3. A plan for periodic review and revision of the implementation plan
4. Evidence of compliance with applicable statewide land use requirements
5. Other analyses or information as specified in the Water Quality Management Plan

2. TMDL and Water Quality Management Plans

Oregon is required to establish Total Maximum Daily Loads (TMDLs) for stream segments that do not meet water quality standards. The TMDLs consider pollution from all sources, including discharges from industrial activities and sewage treatment facilities; runoff from farms, forests and urban areas; and natural sources. This information is used to identify and implement actions designed to reduce pollution loads and achieve water quality standards.

Water Quality Management Plans (WQMPs) are also developed based on the TMDLs. The WQMPs document the ways in which local and state government agencies, forest and agricultural land managers, local landowners, and others can implement specific TMDL reduction measures and work to improve water quality.

The DEQ submitted its *Final Revised Willamette Basin Mercury TMDL and WQMP* (DEQ's 2019 TMDL) to the U.S. Environmental Protection Agency, Region 10 (EPA) on November 22, 2019. On November 29, 2019, EPA determined that the load and waste load allocations would not achieve the TMDL target in all affected Willamette River sub-basins, and disapproved DEQ's 2019 TMDL. Once disapproved, Section 303(d)(2) of the Clean Water Act (CWA) required EPA to establish a replacement TMDL. The EPA adopted its replacement TMDL on December 30, 2019. On February 4, 2021, after having reviewed public comments, and incorporating revisions to certain load and waste load allocations, EPA reissued the *Willamette Basin Mercury TMDL*, which also incorporates those sections of the DEQ 2019 TMDL found to be consistent with applicable regulatory requirements.

The TMDL Implementation Plan is presented to the Columbia County Board of Commissioners during a work session, followed by a public hearing where there is opportunity for public comment.

3. TMDL Parameters and Allocations

The TMDLs that have been adopted within the Willamette River Basin (WRB) include E. coli, mercury, and in-stream water temperature. Only the Mercury TMDL is currently adopted and in effect for Columbia County. This Plan addresses only the Mercury TMDL at this time, but reserves space for potential additional TMDL implementations.

3.1 Mercury

The Oregon Department of Environmental Quality (DEQ) 2019 *Willamette Basin Mercury TMDL* (DEQ TMDL) identifies atmospheric deposition of mercury onto land and into water as the dominant mercury source within the Willamette River Basin (WRB). The DEQ TMDL also establishes that airborne mercury originates primarily from national and global sources, rather than from sources in Oregon. All known nonpoint mercury sources within Columbia County watersheds are from air deposition and soil disturbance.

EPA's TMDL established an 88 percent reduction in total mercury from nonpoint sources along the Multnomah Channel over time compared to current loading levels. The timeline for reaching interim milestones for general nonpoint reductions targets a 30 percent in-stream reduction by the year 2028.

The objective of the Mercury TMDL is to reduce average fish tissue mercury concentrations in the Willamette River so that all fish species are safe for human consumption. Multiple fish consumption advisories and 303(d) listings for mercury in the Willamette Basin indicate that this beneficial use is not currently being met. The DEQ acknowledges that it may take years or even decades to ultimately achieve the desired reduction in fish tissue concentrations of mercury. In establishing interim water quality guidance values, DEQ considered the criteria and thresholds utilized when fish consumption advisories are issued.

3.2 *Reserved*

(Reserved for future TMDL implementation requirements)

3.3 In-stream water temperature

(Reserved for future TMDL implementation requirements)

4. TMDL Implementation Plan

The Columbia County TMDL Implementation Plan (TMDL Plan) applies to the portions of Columbia County that contribute to mercury loads within the Willamette River basin. The TMDL Plan is implemented by affected Columbia County departments including Public Works, Land Development Services (LDS), Forests Parks and Recreation. The TMDL Plan summarizes management strategies for protecting and improving water quality as it relates to the Willamette River Basin Mercury TMDL.

Mercury is naturally deposited at low levels by air deposition and trapped in soil layers over time. Mercury can be released from the soil when sediment is re-suspended due to high water flows; or when significant soil erosion occurs. In addition to these nonpoint sources, point sources, such as mills and processing plants, may discharge low levels of mercury in their wastewater effluent.

High mercury levels in the Willamette Basin have resulted in fish consumption advisories. To protect public health, especially that of pregnant women and young children, the Department of Human Services (DHS) has issued advisories recommending that people limit the amount of fish they consume from certain waterways. The DHS specifically advises against consuming large amounts of fish from the Willamette River. The goal of the mercury TMDL is "to reduce mercury levels in the basin to a point where fish are no longer unsafe to eat" (DEQ, 2006).

The specific focus of this TMDL Plan is on strategies for reducing the mercury loadings from nonpoint sources of mercury to achieve designated load allocations. Strategies for reducing mercury loads from point sources are addressed through point source permits for industrial, stormwater and wastewater discharges, and are not addressed within this plan.

To comply with the TMDL Implementation Plan requirements in OAR 340-042-0080(3)), the management strategies presented in the Columbia County TMDL Plan address sources of mercury within the Willamette River Basin (WRB) over which Columbia County exercises jurisdiction. This Plan demonstrates a commitment to and reasonable assurance of implementation over time. Elements of the TMDL Plan are summarized in the *Management Strategies Matrix* in Chapter 8 and may include the following management strategies.

- Stormwater detention and treatment prior to discharge in waterways
- Establishing an erosion prevention and sediment control program
- Regular stormwater system maintenance
- Minimizing land disturbance during construction and other development activities
- Expanding existing programs, such as Household Hazardous Waste collection and public education events

5. Surface Water

The TMDL Plan addresses the Mercury TMDL allocations for surface water that drains to the Willamette Basin. The TMDL Plan does not include Columbia County watersheds that drain to the Columbia River.

5.1 Watersheds

The Scappoose Bay watershed is the primary Columbia County watershed that drains to the Willamette Basin. Its tributaries drain into Scappoose Bay and to the Multnomah Channel of the Willamette River. The Scappoose Bay Watershed contains five sub-basins (**Table 1**).

Table 1
Scappoose Bay Watershed

TMDL Sub-basins	Watershed Acres
Scappoose Bay Watershed	
• Milton Creek	21,561
• North & South Scappoose Creek	40,663
• Scappoose Creek	12,269
• Gilbert River	10,592
TOTAL	85,085

McNulty Creek and Honeyman Creek are smaller drainages that also contribute to Scappoose Bay; and Jackson Creek flows through the Scappoose Bay Bottomlands into the Multnomah Channel above the Bay.

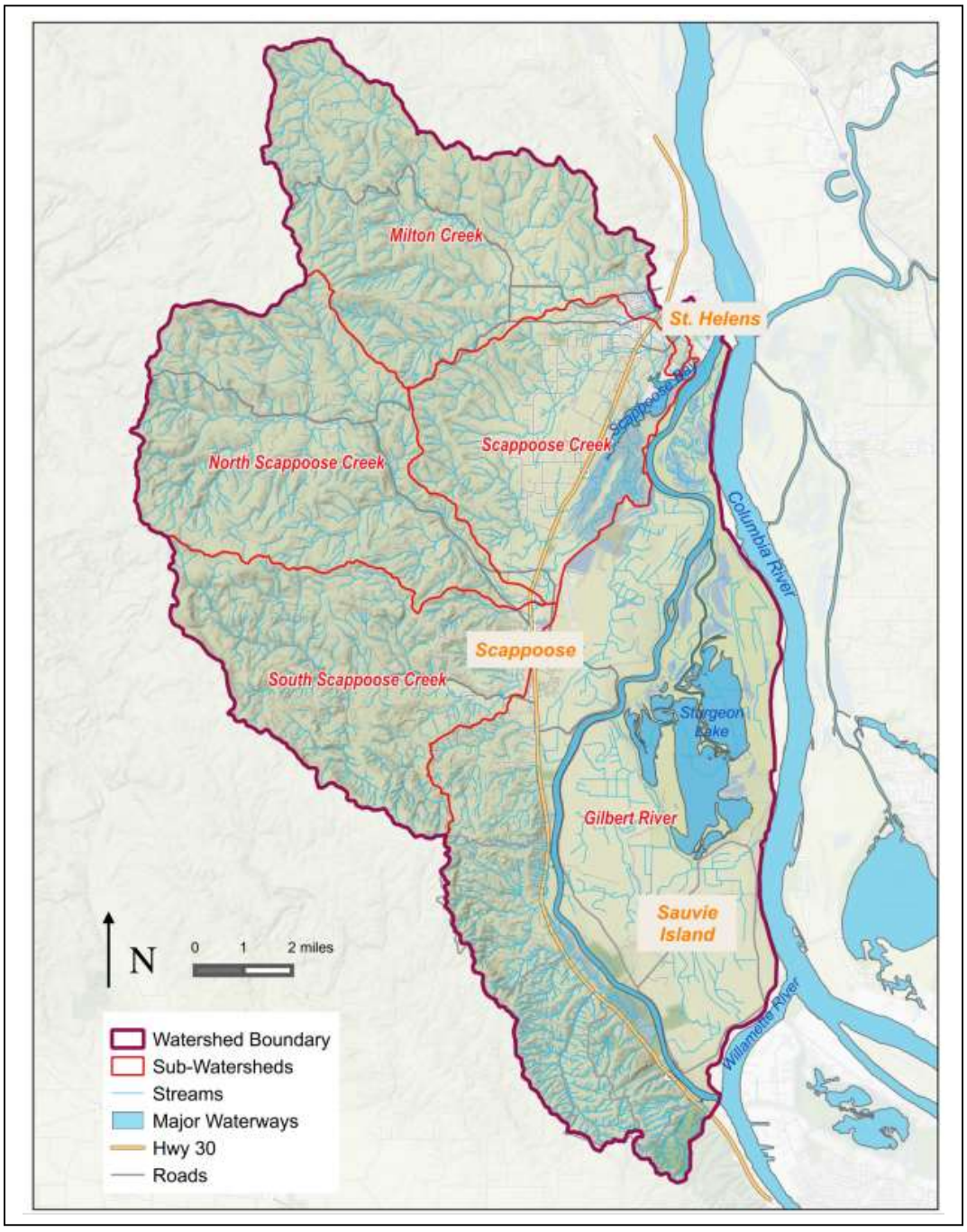


Figure 1. Scappoose Bay Watershed

Source: 2018 Scappoose Bay Watershed Strategic Action Plan

The upper sub-basins are dominated by high gradient, confined, and small streams, and are generally forested. The main-stem reaches of these streams generally flow through low-gradient valleys and are unconfined; except for stretches of larger tributaries confined within ravines, which are typically in the upper reaches. Much of the land adjoining these streams are in agricultural use and have lost much of the important riparian vegetation. The lower portions of the sub-basins are classified as lowland floodplain and historically were heavily influenced by annual flooding along the Columbia River, prior to the creation of diking districts.

5.2 Surface Water Responsibilities

Columbia County is the local Designated Management Agency (DMA) having the responsibility to address the Willamette River Mercury TMDL for areas within the county. County responsibility is limited to the land and regulated land uses that are under the jurisdiction of the county and its agencies. County agencies, such as Public Works, Land Development Services, and Parks, have coordinated in the development of this TMDL Plan, along with input from local drainage districts and watershed councils. These County organizations have ongoing programs that provide for education, best management practices and regulatory requirements designed to minimize the impacts from surface water runoff and storm drainage that contribute to watershed health in the Willamette River Basin.

5.3 Stormwater

Under the Clean Water Act (CWA), a National Pollutant Discharge Elimination System (NPDES) permit is required to discharge pollutants from a point source into a regulated waterbody. An NPDES permit limits what can be discharged, and requires monitoring and reporting to ensure that the discharge is not detrimental to water quality and public health.

An NPDES permit is required when industrial wastewater or municipal stormwater is discharged into a municipal storm sewer system or into waters of the state. An NPDES 1200-C permit may be required for development that disturbs more than one acre. Designated cities, counties, and special districts are required to obtain a Municipal Separate Storm Sewer System (MS4) permit to discharge pollutants from public stormwater systems.

Columbia County stormwater enters the Willamette River and its tributaries from areas that are not regulated under an NPDES MS4 program permit. The TMDL Plan addresses the minimum TMDL management program requirements for counties without an MS4 permit in **Section 6, Table 2**.

6. TMDL Requirements

As designated in the Water Quality Management Plan (WQMP) contained in DEQ's *Final Revised Willamette Basin Mercury Total Maximum Daily Load*, Columbia County is identified as a Designated Management Agency (DMA) for the Willamette River Basin Mercury TMDL.

Columbia County contains a mix of small, densely populated urban areas, and sparsely populated rural areas. The WQMP requirements for counties such as Columbia County are developed to focus on specific strategies and best management practices (BMPs), with the goal of reducing mercury and sediment loading from lands and land uses within the county's jurisdiction. Columbia County will apply the applicable WQMP management and implementation strategies and will apply BMPs to all county-owned lands, properties, facilities, and roads, as applicable.

Many land uses within Columbia County are under the authority of other DMAs, including the county's six cities; the Oregon Department of Transportation (ODOT); the Oregon Department of Agriculture (DOA); and the Oregon Department of Forestry (DOF). Land and land uses within other jurisdictions will be managed according to each DMA's TMDL requirements.

As described in **Section 5.3**, Columbia County does not hold an MS4 permit. *The DEQ Final Revised Willamette Basin Mercury TMDL* and the WQMP identify four minimum management program requirements for counties without an MS4 permit. These program requirements are addressed in **Table 2**. The identified requirements and strategies apply to the areas within the Scappoose Bay Watershed and the Willamette River Basin that are under County jurisdiction.

While the programs in **Table 2** apply to lands within the Willamette Basin watershed, per our county ordinances, we are currently implementing items 1-4 below county wide. (also see Table 4).

Table 2
Management Strategies

Management Program	Program Implementation
1. Pollution Prevention and Good Housekeeping for County Operations	Columbia County implements programs to operate and maintain County lands, properties, and facilities using BMPs and practicable pollution prevention and good housekeeping measures, and through staff training, Public Education and Outreach; Enforcement of Prohibited Pollutants; and Construction Site Runoff Control are ways we can reduce the discharge of mercury-related pollutants to waterbodies. *(Also see Columbia County website, Planning, Comprehensive Plan, pg. 260; Goal 5 Article X Water Resources and Zoning Ordinance Section 1170).* Columbia County will maintain records for meeting these requirements and will include a descriptive summary of these activities in its TMDL annual report.
2. Public Education and Outreach	Columbia County will conduct public education and outreach to promote a reduction in mercury and mercury-related pollutants, such as sediment, on county lands and properties. Activities may include outreach to owners of property adjacent to county roads and ditches.

	The county will consider public outreach programs to encourage and facilitate public reporting of sediment-related issues or concerns. Outreach will be tailored to meet the needs and diversity of the public (e.g. signs, social media, and website). The Columbia County Board of Commissioners hear work sessions and hearings on the TMDL plan and during public hearings where there is an opportunity for public comment. The County will track implementation of public education and outreach programs and activities and will document completed activities in its TMDL annual report.
3. Enforcement of Prohibited Pollutants	Columbia County will institute BMPs to help reduce the conveyance of mercury and mercury-related pollutants to waterbodies from county lands and properties. The County will review opportunities to implement ordinances and programs that require the compliance of other entities that contribute mercury-related pollutants, such as sediment, to county property and assets. County ordinances already in place or that will be adopted will likely be more comprehensive and prohibit discharges of other pollutants, rather than only those pollutants associated with mercury. The County will develop and 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. The County will track implementation of its enforcement programs and will document enforcement activities in its TMDL annual report.
4. Construction Site Runoff Control	To minimize mercury and control potential sediment runoff from construction sites, Columbia County applies erosion control requirements which are contained within County Stormwater and Erosion Control Ordinance No. 2001-10. Erosion, sediment and waste material management controls are used and maintained at construction sites from initial clearing through final stabilization. The County may prioritize where certain building and grading permit requirements are applied according to county zoning and building regulations, or where large subdivisions or large-scale high-density development is allowed. Columbia County has adopted ordinances and other regulatory mechanisms to pursue enforcement and provide technical assistance, as appropriate, at construction sites where pollutants could discharge to waters of the state, either directly to streams or through a conveyance system. The County will track implementation of its construction site runoff control program and document these activities in its TMDL annual report.

Columbia County and its individual departments, including Public Works, Land Development Services, Facilities and Parks, each play a role in implementing portions of this TMDL Plan. General responsibilities of each County Department are outlined in **Table 3**.

Table 3
County Agency Responsibilities

County Department	Jurisdictional Area	TMDL Implementation Plan Responsibility
LDS: Planning	Land use and development within rural Columbia County.	Public Education and Outreach; Compliance and Enforcement of County Stormwater and Erosion Control Ordinance; Flood plain development permits; riparian and wetland protection
LDS: Building	Construction activities within rural Columbia County.	Public Education and Outreach; Plan Review; Permit/Project approval; Compliance and Enforcement of County Stormwater and Erosion Control Ordinance; verify and inspect pre and post construction and Construction Site Runoff Control
Public Works	Road and bridge construction and maintenance of Columbia County's Road System.	Pollution Prevention and Good Housekeeping for County Operations; Public Education and Outreach; and Construction Site Runoff Control
Facilities and Parks	Building construction and maintenance of County facilities.	Pollution Prevention and Good Housekeeping for County Operations and Construction Site Runoff Control; consultation with other agencies as required

If not managed properly, County roads and associated ditches have a high potential to convey sediment and runoff to waterbodies. In addition to the programs identified in **Table 2**, the TMDL Plan identifies specific road-related management strategies and measures that are practiced by the County Public Works Department (Public Works) to reduce erosion and runoff. These road-related issues, strategies, and best management practices (BMPs) include:

- Identify and prioritize county roads and ditches that contribute sediment and runoff to waterbodies. Best practices may include planting and retaining vegetation in ditches and reducing use of pesticides when appropriate to site conditions. Special attention will be focused on the following situations: unimproved and gravel roads in higher traffic areas; roads

where traffic consists of heavy machinery use; roads near quarries; or other activities that can exacerbate dust and track-out concerns.

- Develop a stormwater management plan to ensure that pre-construction and post-construction stormwater runoff from roads, highways and bridges is treated prior to discharge to a waterbody.
- Prioritize and replace undersize or improperly designed culverts that can increase flow velocities and cause erosion of sediment around culverts and ditches.
- Implement appropriate road construction design to reduce erosion at stream crossings and to accommodate flood events.
- Develop and implement an operation and maintenance 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 road maintenance actions that prevent erosion of road surfaces.

7. TMDL Plan Goal and Objectives

The goal of the *Columbia County TMDL Implementation Plan* (TMDL Plan) is to identify ongoing and planned management strategies to improve watershed health and address requirements of the Willamette River TMDL related to reductions in mercury loading. The Plan reserves space for future TMDL implementations. Plan Objectives include applying adequate management strategies for pollution prevention (e.g., erosion control and stormwater management); evaluating strategies annually for effectiveness and level of service; and adapt the county's management strategies as necessary.

To achieve the TMDL Plan Goal and Objectives, affected Columbia County agencies will coordinate to implement the portions of the Plan for which each is responsible. The objectives will be revised and tasks will be added as the county's implementation work progresses.

To aid in developing an integrated and coordinated approach to mercury reduction, a TMDL Implementation Committee (Committee) will be formed. The Committee will consist of personnel from the Public Facilities, Land Development Services, and Facilities and Parks departments, and may include other affected agencies and organizations. The Committee will meet annually to document and evaluate TMDL implementation activities and progress, and will prepare an annual report for submittal to DEQ.

SECTION B

POLLUTANT REDUCTION AND MANAGEMENT STRATEGIES

8. Mercury Sources

Oregon Department of Environmental Quality (DEQ) guidelines state that specific known or suspected mercury sources should be noted in Implementation Plans. The potential mercury sources within Columbia County watersheds are discussed below.

Mercury is a naturally occurring element found in high concentrations in cinnabar deposits. Mercury may be present in other rock types and soil types in Columbia County. Mercury is also naturally present in geothermal areas and in many types of native vegetation. Significant amounts of mercury can be released into the atmosphere during wildfires and forest fires.

Mercury has been used historically in fungicide formulations and can still be found in many commercial products, including fluorescent lights, thermometers, automobile switches and dental amalgam. Illegal dumping of solid waste containing mercury is another potential source of mercury within the watershed.

Mercury is contained in fossil fuels such as coal, natural gas, diesel fuel, and heating oil. The mercury present in these fuel sources is often released into the atmosphere upon combustion. Atmospheric mercury can be transported great distances and is known to be deposited on the landscape via either wet or dry deposition (Sweet et al., 1999, 2003). Research has shown that most of the mercury which enters the Willamette River Basin (WRB) has been deposited in the watershed by the atmosphere.

Most of the mercury found in the physical environment is in the form of inorganic or elemental mercury. These forms of mercury can be converted to organic or methyl mercury by sulfate reducing bacteria. Methyl mercury represents the most bio-accumulative form of mercury in fish tissue and the most toxic form of mercury for human consumers (USEPA, 2001a). The primary route of human exposure to mercury is via the consumption of freshwater fish, saltwater fish, and other seafood containing mercury (USEPA, 2001a).

Mercury can enter surface water bodies in many ways, including stormwater runoff and atmospheric deposition. Stormwater runoff can carry mercury if it erodes mercury-containing soils. Stormwater runoff may also contain mercury that is washed from impervious surfaces after having been deposited on the surface from the atmosphere.

Mercury sources within Columbia County may include:

- Erosion of soils from agricultural, forest, urban, commercial and industrial areas and lands
- Runoff and soil erosion from new development and redevelopment and commercial and industrial areas

- Soil disturbance related to road maintenance
- Illegal dumping of solid waste
- Spills and illicit discharges of certain materials

The Management Strategies Matrix in **Chapter 9** summarizes Columbia County's TMDL Implementation Plan activities for the next five-year planning period. The matrix shows the range of potential actions that Columbia County will pursue to reduce mercury impacts to Willamette Basin waterways. The execution of these actions is dependent on the continuation of existing programs, the development of new programs and policies, and the realization of new funding and resources to accomplish them. The following is an overview of county mercury reduction actions, categorized by focus areas.

8.1 Riparian Protection and Restoration

Riparian protection and restoration can help address soil disturbance and minimize the amount of mercury migration to waterways. Actions protecting riparian areas may have other environmental benefits beyond those related to mercury deposition. The County will track distribution of educational materials describing the importance of riparian protection and methods of riparian protection and enhancement.

Columbia County Land Development Services (LDS) implements riparian protections in the form of structural setback standards, stormwater and erosion control and Grade and Fill permits. Likewise, LDS regulates development within existing floodway and floodplain areas to help maintain critical floodplain, wetland, and riparian functions.

Columbia County will continue to strengthen working relationships with the Columbia Soil and Water Conservation District, Scappoose Bay Watershed Council and other partners including the Scappoose Drainage Improvement Company. Partnership opportunities include participating in education outreach, riparian restoration projects, and other projects that benefit non-point stormwater management within the Willamette Basin.

County staff will attend watershed council meetings, identify mutual priorities, and pursue partnership projects as staffing and budgets allow. County staff will continue to exchange technical assistance with regional watershed councils and restoration practitioners.

County coordination and interaction with watershed councils will be tracked and recorded annually through the number of projects, summary of project details, and the number of County staff hours dedicated in development projects within the County. The county will provide public notice to the watershed council and affected drainage and diking districts for pending development projects that may affect riparian areas.

8.2 Stormwater Planning and Management

Columbia County recognizes that proper stormwater management assists in reducing many stormwater pollutants including mercury. In 2001 Columbia County adopted Ordinance NO. 2001-10; Stormwater & Erosion Control Ordinance.

8.2.1 Development Standards and Requirements

Several Columbia County ordinances contain regulations and standards that facilitate surface water runoff and stormwater management activities associated with land development. The County will review these programs, regulations, and development standards and will update them as needed in consideration of the Willamette Mercury TMDL. In 2001 Columbia County adopted Ordinance NO. 2001-10; Stormwater & Erosion Control Ordinance.

8.2.2 Road Maintenance and Construction Activities

Columbia County has adopted the Oregon Department of Transportation's (ODOT) Routine Road Maintenance Water Quality and Habitat Guide Best Management Practices (Blue Book) to help guide routine road maintenance activities and minimize actions that would impact water quality when performing road maintenance activities. The ODOT recently updated the Blue Book and Columbia County has identified the need to review the update and make necessary adjustments to current practices to stay in conformance with the intent of the guide.

While the Blue Book is intended to address water quality related to fish recovery and health, the guide also addresses activities and practices that have a direct impact on soil disturbance, and therefore, mercury release.

8.2.3 County Facilities and Parks Management Activities

The Columbia County Parks Department notifies the Columbia County Soil and Water Conservation District and other potentially affected agencies, such as Land Development Services (LDS), DEQ, DSL, and the Oregon Department of Fish and Wildlife (ODFW) of any proposed projects prior to commencing work near a riparian area.

8.3 Stormwater and Erosion Control

Erosion-related strategies include referring certain development proposals to DEQ and the county implementation of City of Scappoose and City of St. Helens adopted BMPs within their urban growth boundaries (UGBs) as identified in existing County-City Intergovernmental Agreements (IGAs.)

Columbia County LDS refers development proposals that disturb more than one acre of ground to DEQ for regulation under the state 1200-C permit program and enforces Columbia County Stormwater and Erosion Control Ordinance No. 2001-10 for all other areas.

Under terms of existing IGAs with the partner cities (Scappoose and St. Helens), the County delegates development proposal review authority in the UGB to the respective cities. Existing IGAs also delegate authority to the cities for exercising their erosion control BMPs and regulations within the UGB for all development. Columbia County will track implementation of erosion and sediment control BMPs within the Scappoose and St. Helens UGBs through our permitting process only.

Public construction projects executed under Columbia County and road maintenance efforts will continue to implement erosion and sediment control BMPs. Annual reporting will include the number capital improvement and road maintenance projects inspected and reviewed for erosion and sediment BMPs, and any corrective actions issued.

The County will seek to develop stormwater drainage mapping that identifies outfalls to waterbodies within County jurisdiction. Drainage mapping efforts will provide conveyance information that will enhance existing spill response policies and procedures. This stormwater mapping will be used to identify potential sources of pollutants when illicit discharges are discovered.

Columbia County staff will continue to participate in a variety of trainings on stormwater quality and illicit discharge detection, reporting, investigation, and enforcement. Columbia County's regular road maintenance staff meetings is a forum to discuss and develop strategies for specific illicit discharge instances and educate all maintenance workers on illicit discharge protocols.

8.4 Illicit Discharge and Illegal Dumping

Illicit discharge and illegal dumping can have significant impacts on water quality. Most often, illicit discharge issues become known during routine maintenance or through public complaints.

In an illicit discharge response event, County maintenance employees typically remove the debris or contract out to hazardous waste handlers if the debris is not easily recognizable to be non-hazardous. Additionally, Columbia County Land Development Services employs two Land Use Compliance Specialists who respond to complaints for investigation, potential clean up, and enforcement of Columbia County's Solid Waste Management Ordinance.

Columbia County has a Dump Stoppers program funded through solid waste tipping fees under the Solid Waste program in Public Works. The program is intended to keep County Road right-of-way's clean and clear of garbage and, if necessary, investigate and pursue egregious violations in an effort to discourage roadside dumping. This is accomplished through a coordinating a combination of LDS, Community Corrections, Sheriff's office and Public Works staff.

The Dump Stoppers program has recently expanded to include abandoned vehicles that the Sheriff's Office work to obtain a "police tow" request. Working with the Sheriff's Office to follow correct procedures in taking possession of these vehicles and getting them off the road, often paying for them to be towed for proper disposal.

Columbia County will continue to track and record the number of illicit discharge and illegal dumping incidents and violations annually.

Inside the Scappoose and St. Helens urban growth boundaries (UGBs), the cities are delegated enforcement authority for illicit discharges. For similar issues outside the UGBs, the County enforces its Solid Waste Management ordinance in the public right-of-way.

8.5 Enforcement

The Compliance and Enforcement Program is responsible for protecting health and safety by ensuring compliance with county regulations. Voluntary compliance is the program's core objective. The County relies on Enforcement Ordinance No. 2020-01 for specific authorities related to enforcement activities.

Compliance and Enforcement staff respond to and process complaints involving alleged code violations, and assist technical staff in enforcing solid waste, land use, building and on-site septic ordinances. The enforcement process involves field inspections, investigations, case management, serving citations and court testimony.

Under the Columbia County Enforcement Ordinance, staff investigates the following Complaint Types:

- Solid waste that is a threat to public health or safety;
- Unauthorized land uses or failure to comply with land use conditions of approval;
- Stormwater and Erosion control;
- Standards for subsurface sewage disposal systems;
- Building Inspection staff investigates: building, electrical, plumbing, mechanical, grade and fill, abatement of dangerous buildings and stormwater and erosion control methods.

8.6 Household Hazardous Waste Collection

Columbia County, in cooperation with multiple local agencies and cities, hosts collection events to provide opportunities for residents to safely dispose of household hazardous waste free of charge. The County has been holding household hazardous waste collection events since 2006. These events take place at different locations and times each year throughout Columbia County. This program is run by the Columbia County Public Works Department, Waste Management Program (WMP).

Columbia County publicizes its Household Hazardous Waste Collection Events and other household hazardous waste collection programs. The communication methods include radio advertisements, press releases, printed schedules and brochures, a Recycling Guide, and the Columbia County WMP website. The County will document the number of collection events held annually, and will track the approximate amount of hazardous waste gathered at collection events annually.

In addition to the hazardous waste collection program, the County will continue to operate recycling centers for collecting potentially hazardous material, such as auto batteries, oil and oil filters, at its Solid Waste Transfer Station located in St. Helens. The Transfer Station also has load-check protocols to intercept hazardous waste disposed of in the solid waste stream. The load check program includes an extensive screening and educational effort to inform Transfer Station users of the proper disposal options available.

Columbia County will research opportunities to expand the Household Hazardous Waste Collection Program. Since the opening of the Household-Hazardous Waste collection facility in 2006, the Waste Management Program has expanded hours of operation and plans to offer further expanded hours during peak seasons in the future. The County has also expanded the number of rural collection events over the past several years, currently offering five to six events throughout the year at various locations.

The County is investigating ways to supplement the collection events with a free appointment-only collection of hazardous waste offered weekly at the permanent household hazardous waste collection facility, located at the St. Helens Transfer Station.

Columbia County will continue to offer programs to capture mercury-containing waste such as thermometers and florescent bulbs. The County accepts such products at the County's Transfer Station. The County also has an existing program to work within non-household businesses, such as labs and dental offices, with the intent of collecting mercury-containing wastes. The County will evaluate the existing hazardous waste program to look for opportunities to improve collection of products containing mercury from household and non-household sources. Training provided to the County's contracted hazardous waste handlers will be documented annually.

To conserve resources and prevent waste, the County's Waste Management Program maintains a website that provides information on waste reduction and recycling programs. The website offers a wide range of information to the public, including electronic access to special and hazardous waste programs, educational brochures, and handbook. The website is updated monthly for current information, including schedules and locations for hazardous waste collections, oil, filter and antifreeze recycling centers, battery recycling, paint recycling, fluorescent lamp recycling, and other household hazardous wastes.

The County participates in public events such as the Columbia County Fair and other public events as they arise and distributes educational materials at these events. The County will look for more opportunities to distribute stormwater, hazardous waste, and mercury education materials at these events.

County staff is available to answer questions on recycling and disposal of hazardous wastes Monday through Thursday from 7:30 am to 5:00 pm. During off-hours, an answering machine system provides callers the opportunity to leave messages and receive a return call for information as requested.

9. Implementation Responsibilities

Responsibility for implementing mercury TMDL reduction measures is distributed among a variety of County management agencies. These agencies include:

- Land Development Services: Planning
- Land Development Services: Building
- Public Works, Roads and Engineering
- Columbia County Facilities and Parks

On state and federally owned and managed lands, TMDL reduction measures are implemented by appropriate state and federal agencies. Measures for private lands in timber management areas are implemented through the Oregon Department of Forestry (ODF). Measures for private lands in agricultural areas are implemented through the Oregon Department of Agriculture (ODA).

The *Columbia County Willamette Basin TMDL Implementation Plan* (TMDL Plan) focuses on management strategies that address nonpoint sources of pollution in Columbia County that enter the Lower Willamette Sub-basin. Stormwater runoff directed to subsurface discharge through injection systems and infiltration systems are not addressed by this Plan. Lands subject to ODF and ODA jurisdiction, and lands owned by the state or federal government, are also not addressed in this Plan. The Plan addresses mercury that may be discharged by the following types of nonpoint stormwater drainage systems:

- Privately-owned storm sewer outfalls that do not drain agricultural or timber management areas.
- Overland sheet flow or channelized flows that do not flow through privately owned storm sewer outfalls. The Plan addresses drainage systems that are not in agricultural or timber management areas.

Columbia County's authority to control sources of pollution from privately owned stormwater outfalls, overland sheet flow, and channelized flows is limited. If Columbia County is aware of a privately owned conveyance system that is either a significant or known source of pollution, and public education or mediation fail to yield the necessary water quality improvement, the matter will be referred to DEQ.

Figure 2

Lower Willamette Watershed Jurisdictional Map

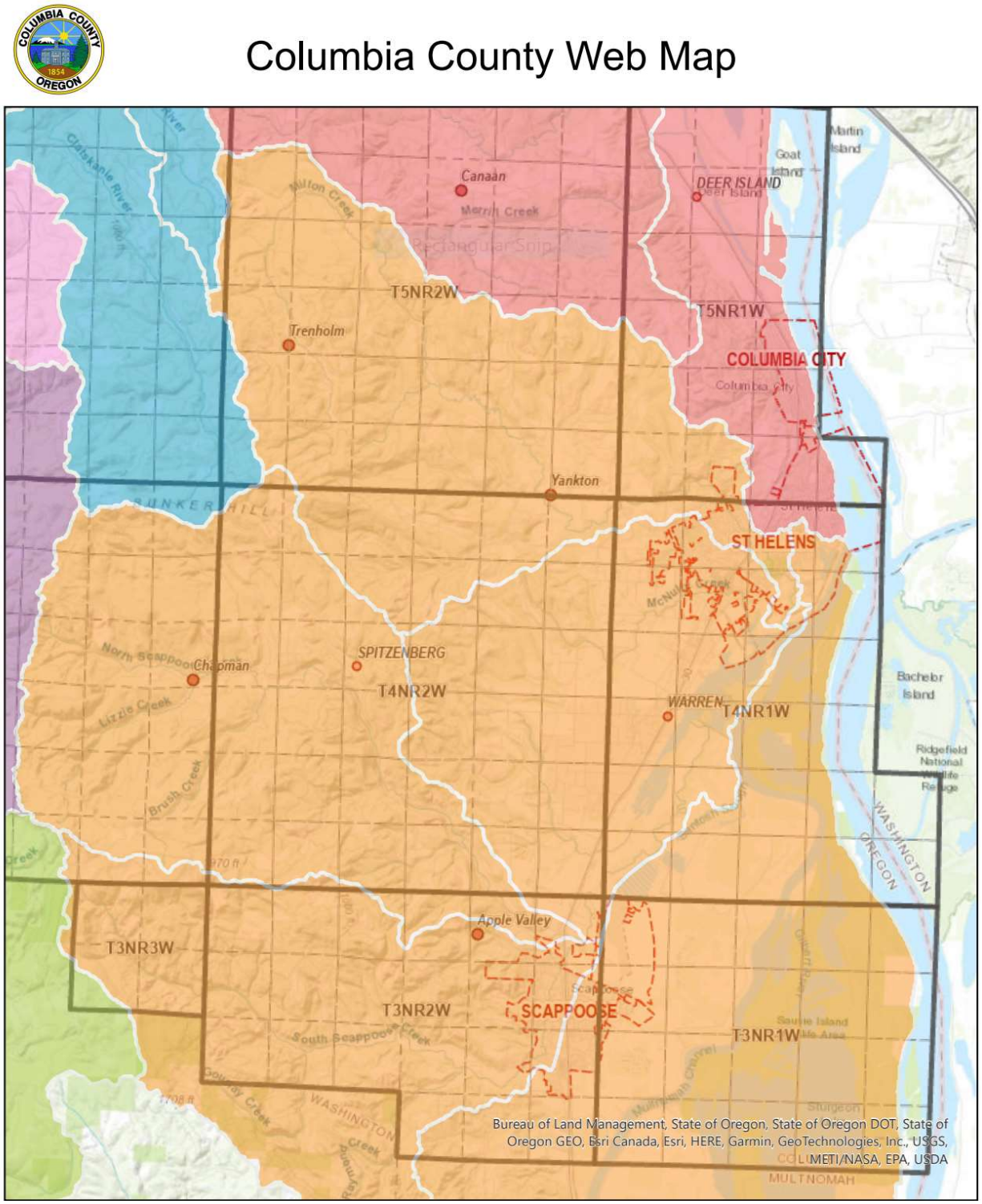
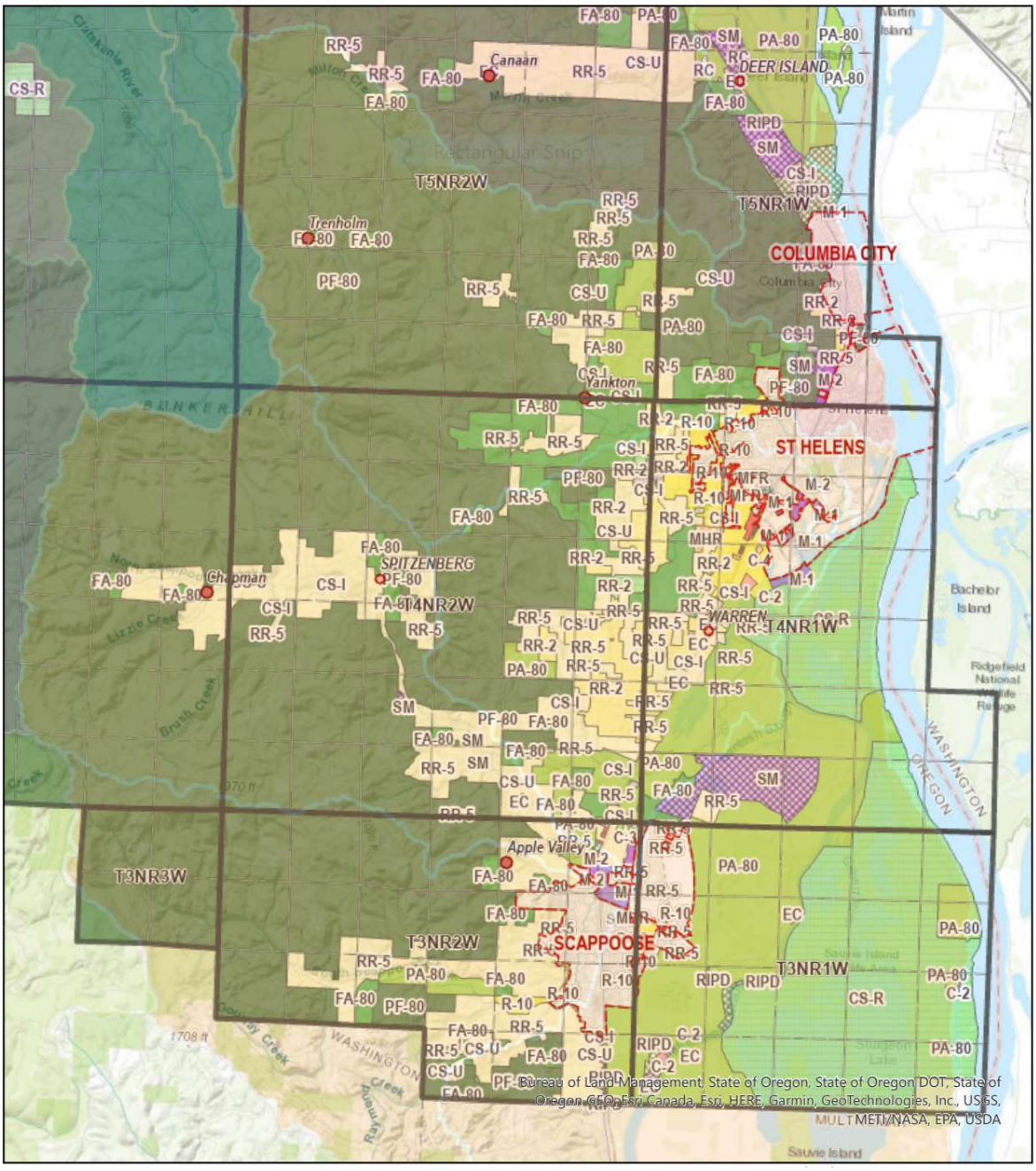


Figure 3

Lower Willamette Watershed Land Use Zoning



(Refer to Columbia County Zoning Ordinance on our website for each zoning designation)

10. Water Quality Programs and Activities

Columbia County employs a variety of management programs, activities, and strategies to improve and protect water quality and overall watershed health. Current and planned implementation strategies to address the TMDL for nonpoint sources of mercury include:

10.1 Watershed Action Plans (WAPs)
10.2 Stormwater policies, Regulations and administrative procedures
10.2.1 Inside / Outside Urban Growth Boundaries
10.3 Water quality monitoring
10.4 Industrial and Commercial stormwater program
10.5 Stormwater & Erosion Control Ordinance prevention and sediment control
10.5 Public involvement and education
10.6 Illegal dumping management
10.7 Spill response and Illicit Discharge Elimination Programs

These management strategies are described in the sections below. Applicable management strategies are also summarized in the matrices in **Section C: Implementation**.

10.1 Watershed Action Plans (WAPs)

***TMDL parameter addressed*:** Mercury

***Potential sources*:** Watersheds are impacted by vegetation removal, development and impervious surfaces that contribute to or cause changes in hydrology, habitat, water quality, and biological communities. Stormwater runoff from precipitation events can pick up and convey mercury as it travels over impervious surfaces and the land surface. Alteration of riparian and upland vegetation can impact runoff rates, erosion, and mercury deposition.

Management Strategy: Improve watershed health using watershed assessments and WAPs. WAPs will primarily focus on the more urbanized portions of unincorporated Columbia County.

Timeline for implementation: Ongoing.

***Measurable milestones*:** The Scappoose Bay Watershed Council has developed a Scappoose Bay Watershed Strategic Action Plan (2018) (WAP). The WAP will serve as a reference to develop prioritized watershed health recommendations; identify potential capital projects and programmatic and policy measures to improve watershed health; and to set management priorities for implementing stormwater management actions and activities.

Fiscal analysis: This strategy will be partially funded under existing programs and partially through watershed grants (when available) and Columbia County will support with in-kind staff time.

10.2 Stormwater Policies, Regulations and Administrative Procedures

***TMDL parameter addressed*:** Mercury

***Potential sources*:** After construction is completed on a property, any stormwater system and landscaping-related procedures and regulations that were applied during site design and construction can influence the amounts of pollutants that are washed from the property into the nearest surface water body over the lifetime of the property's improvements. These sources and systems will occur primarily within urban growth boundaries of incorporated cities within the county.

***Management Strategy*:** Develop, implement and enforce measures to reduce mercury discharges from stormwater runoff in areas that have been developed or redeveloped. Post-construction controls may be applied to a) development on private property; and b) County and other capital improvement projects including road and building construction projects.

10.2.1 Inside and Outside Urban Growth Boundaries

Stormwater services inside urban growth boundaries (UGBs) are provided as below. Regulations are limited to newly developed or redeveloped properties which drain: a) through privately owned storm water outfalls; b) by overland sheet flow on private property; c) through privately owned ditches and dry wells; or d) through city storm water treatment facilities and/or bio-swales. The building inspection program requires that for all residential construction and/or grade and fill permits, water must be diverted away from the home to an approved location using approved pre and post construction stormwater and erosion control methods.

Two primary Management Strategies may be employed:

1. Reducing the volume of stormwater runoff is among the most effective measures to reduce mercury loading from upland areas. All new development and redevelopment within an urban growth boundary is required to follow all best management practices as outlined in County Stormwater and Erosion Control Ordinance 2001-10. This will reduce potential pollutant loads, limit the increase in runoff volume created by development, and provide groundwater recharge.

2. Most stormwater treatment technologies, which generally are designed to reduce total suspended solids (TSS), may also act to reduce mercury loading. For County-funded capital improvement projects, appropriate DEQ permits are required. This TMDL Plan will develop potential stormwater treatment requirements intended to reduce mercury loading within stormwater systems.

Specific tasks that may facilitate these management strategies include:

1. Review County regulatory documents to determine whether existing development regulations support or impede appropriate development practices. The review would include the County's *Comprehensive Plan*, zoning ordinance, other development codes and ordinances, engineering design and construction manuals, and a review of capital improvement programs.

   Deliverable: A report identifying applicable sections of the relevant documents, existing language, a scoring system (promote, partially support, impede, not addressed) and recommendations.

2. Establish a TMDL Implementation Committee. Convene and facilitate a discussion among County departments regarding the limitations and possibilities of implementing appropriate development practices. Internal departments may include land use planning; building plan review and inspection; public works/engineering; parks; and other staff deemed necessary to implement identified development practices.

   Deliverable: A document outlining departmental working relationships, future coordination and opportunities, and proposed implementation plans.

Timeline for implementation: Ongoing.

***Measurable milestones*:** Documentation of all construction pre- and post-erosion control inspections.

Fiscal analysis: Unknown at this time.

10.3 Water Quality Monitoring

***TMDL parameter addressed*:** Mercury

***Potential sources*:** Watersheds can be impacted by vegetation removal, development, and impervious surfaces that contribute to or cause changes in hydrology, habitat, water quality, and biological communities. Stormwater, the runoff occurring from precipitation events, can pick up and convey mercury as it travels over impervious and pervious surfaces. Alteration of riparian and upland vegetation can impact runoff rates, erosion, and mercury deposition.

Monitoring the quality of rivers, creeks, and stormwater that is discharged to them, may provide information to assess current impairment, long-term trends, and the effectiveness of current management strategies. Such monitoring may help determine potential new management strategies to reduce mercury levels within the watershed.

***Management Strategy*:** Columbia County collaborates with several drainage districts and the Columbia Soil and Water Conservation District which currently provides water quality monitoring.

***Timeline for implementation*:** This management strategy is currently being implemented and is an on-going activity.

***Measurable milestones (if any)*:** This management strategy will be evaluated annually for effectiveness and level of service. Adaptive management will be applied as appropriate to meet watershed health limiting factors and needs.

***Fiscal analysis*:** Existing monitoring levels may need additional funds. Additional funds would be required for stormwater analysis of mercury levels.

10.4 Industrial and Commercial Stormwater Program

***TMDL parameters addressed*:** Mercury

***Potential sources*:** Stormwater from commercial and industrial areas can wash TMDL parameters such as mercury into waterways regulated by the Willamette TMDL. Potential sources of contamination at these sites could include land deposition of air pollutants, spills, poor housekeeping practices, and leachate from improperly stored solid waste.

***Management Strategy*:** Outside the UGB all industrial and commercial construction in Columbia County requires an engineered stormwater and erosion control plan for approval and inspection. Pre and Post construction stormwater inspections will be conducted on site by the building inspection team.

Inside the UGB all construction stormwater and erosion control ordinances are implemented in accordance to both County ordinance and City ordinance; this is a collaborative effort.

10.4.1 Industrial and Commercial Strategies: Inside Urban Growth Boundary

For industrial and commercial facilities inside an urban growth boundary, if the County becomes aware that facility may be required to apply for and obtain a DEQ 1200Z NPDES permit, the County notifies the business owner that they should contact the DEQ for a determination on permit eligibility.

DEQ 1200Z permit holders are generally not required to monitor for the presence of mercury in their stormwater. However, permit holders are required to regularly collect and analyze stormwater samples to ensure that stormwater leaving the facility complies with the permit's water quality benchmarks for other pollutants such as total suspended solids and lead. Facility improvements at 1200Z-permitted sites are often made to improve the quality of stormwater leaving the site so that levels of other pollutants are no longer elevated. These improvements may also act to reduce or prevent mercury contamination of stormwater.

Industrial and Commercial facilities that discharge stormwater runoff are primarily inspected at the time of construction with a permit by both DEQ and the building inspection team. Engineered stormwater and erosion control plans are required at permit submittal.

Any complaint will be inspected for compliance. All facilities that are the subject of a complaint will be contacted, and potentially inspected, in a timely manner. The DEQ has the authority to compel most dischargers to halt or modify their discharge if the material contains a significant concentration of TMDL parameters and is likely to flow directly to Waters of the State.

Timeline for implementation: Ongoing.

***Measurable milestones (if any)*:** This management strategy will be evaluated annually for effectiveness and level of service. Adaptive management will be applied as appropriate to meet limiting factors for watershed health. Additional staff training on stormwater and erosion control will be conducted.

Fiscal analysis: Unknown at this time.

10.4.2 Industrial and Commercial Strategies: Outside Urban Growth Boundary

New commercial and industrial construction requires an engineered stormwater and erosion control plan at initial application submittal and documentation of any DEQ regulated permits.

For industrial and commercial facilities that are not within an urban growth boundary, Columbia County staff will contact DEQ and request DEQ support and assistance when a complaint is received regarding impaired stormwater quality, or if in some other manner the County becomes aware of impaired stormwater flowing from one of these facilities.

Timeline for implementation:

***Measurable milestones (if any)*:** This management strategy will be evaluated annually for effectiveness and level of service. Adaptive management will be applied as appropriate to meet limiting factors for watershed health. Additional staff training on stormwater and erosion control will be conducted.

Fiscal analysis: Unknown at this time.

10.5 Erosion Prevention and Sediment Control

TMDL parameter addressed: Mercury

Potential sources: Erosion of disturbed soil at construction sites can result in stormwater being contaminated with sediment and other pollutants, which can then be transmitted to waterways. Mercury is naturally present in some soils and is ac cumulated within soil through air deposition.

Management Strategy: Erosion control is addressed through the issuance of grade and fill permits or construction permits for sites undergoing certain development or redevelopment. The permitting requirements reduce the amount of soil leaving the site and subsequently the amount of Total Suspended Solids (TSS) in stormwater washing from the property. By reducing TSS in stormwater, it is expected that the concentration of TMDL parameters such as mercury that may be present in the soil is also reduced.

The implementation of the stormwater and erosion control program varies depending on the location of the property being developed. Inside the UGB, Columbia County works in conjunction with the City and follows all DEQ requirements, the Columbia County Stormwater and Erosion Control Ordinance, No. 2001-10; and the City Public Works requirements. Outside the UGB, Columbia County follows all DEQ requirements and the Columbia County Stormwater and Erosion Control Ordinance; No. 2001-10. The stormwater and erosion control methods employed at these permitted sites include installation of sediment fencing, catch basin silt sacks, straw, containment of stockpiled material, planting grass to re-stabilize disturbed areas, and other similar techniques.

NPDES 1200-C sites are required to follow DEQ regulations and County Stormwater and Erosion Control Ordinance No. 2001-10. Non-NPDES 1200-C Sites are required to follow County Stormwater and Erosion Control Ordinance No. 2001-10 and the requirements of other affected agencies such DEQ and DSL. Capital Improvement and maintenance projects for governmental agencies are performed in accordance with the requirements of DEQ authorized 1200-CA permits.

Within unincorporated areas of Columbia County that are outside of urban growth boundaries, the only stormwater and erosion control permit required is the NPDES 1200-C, which is administered through DEQ. All construction must follow the requirements of the County Stormwater and Erosion Control Ordinance; No. 2001-10 for every permit issued.

The Columbia County Public Works Department occasionally disturbs soil within road rights-of-way while performing routine road maintenance and repair work. At such times Public Works follows the requirements of the County Stormwater and Erosion Control Ordinance; No. 2001-10.

Erosion prevention and sediment control methods are addressed under several activities within the Oregon Department of Transportation *Routine Road Maintenance, Water Quality and Habitat Guide, Best Management Practices, Revised 2020*, including but not limited to Activity 120 (Ditch Shaping and Cleaning), Activity 112 (Shoulder Rebuilding), and Activity 081 (Stockpiling).

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

Measurable milestones (if any): This management strategy will be evaluated annually for effectiveness and level of service. Adaptive management will be applied as appropriate to address limiting factors for watershed health. Assessment of this strategy will include tracking erosion control permits issued, inspections performed, enforcement actions taken, and education and outreach activities implemented.

Fiscal analysis: This management strategy is currently implemented, however additional resources may be needed in the future.

10.6 Public Involvement and Education

TMDL parameter addressed: Mercury

Potential sources: Land management decisions on private lands and activities conducted by the public throughout the watershed affect overall watershed health and may contribute to the release of TMDL parameters, including mercury, into waterways. Educating the public about ways in which their practices can negatively or positively impact the health of the watershed is an important component in managing these potential sources.

Management Strategy: Columbia County prioritizes public involvement and education to encourage citizens to work and live in ways that protect or improve water quality. Public involvement and education are important elements of water quality management strategies including responding to and preventing illegal solid waste dumping, industrial and commercial stormwater maintenance, erosion prevention and sediment control, and design and construction standards for new development and redevelopment. Ongoing public involvement and educational activities intended to reduce mercury concentrations and pollutant loadings to waterways include the following:

- Post fact sheets on County Websites and distribute at LDS and Public Works permit offices
- Develop a guidance manual for post construction stormwater management best management practices; provide manual to permit holders at job sites and permitting offices
- Distribute informational literal at County Fairs explaining the benefits of, and recommended practices and activities to, prevent and minimize soil erosion
- Conduct Household Hazardous Waste collection events
- Continue existing community outreach and programs to encourage proper waste disposal reduce illegal disposal of solid waste
- Engage and collaborate with Watershed Councils to reduce nonpoint sources of water pollution in the watershed

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

Measurable milestones (if any): This management strategy will be evaluated annually for effectiveness and appropriate level of service. Adaptive management will be applied as appropriate. Assessment of this strategy will include qualitative assessments through interviews with staff and our customers and tracking public education and outreach metrics such as:

- The number of website hits per year.

- The number of brochures printed and distributed per year.
- The number of attendees at various public outreach events.
- Erosion control education and outreach activities implemented each year.

Fiscal analysis: This management strategy is currently funded, although additional resources may be needed in the future.

10.7 Illegal Dumping Management

TMDL parameter addressed: Mercury

Potential sources: Illegal dumping of solid waste can allow stormwater to move pollutants from the waste into waterways regulated by the Willamette Basin TMDL. Solid waste that may contain mercury includes but is not limited to fluorescent light bulbs, batteries, thermometers, electronics, construction debris and furniture.

Management Strategy: Illegal dumping of solid waste is addressed by: the Columbia County Sheriff's office; the Solid Waste Program, managed by the County Public Works Department; Land Development Services; and DEQ. Each program is described separately below:

- Columbia County Public Works Director manages the Solid Waste Management Ordinance No. 89-8 and 92-5;
  - Land Use Compliance Specialist investigates a violation and notifies Dump Stoppers;
  - Dump Stoppers manages illegal dumping in the Public right of way
  - Columbia County Community Justice - Adult Division manages Court Ordered Community Service Crew Clean-up and coordinates removal
- Columbia County Zoning Ordinance
  - Land Use Compliance Specialist investigates violations and works toward compliance;
- Columbia County Building Codes
  - Enforces all building violations
- Public Health
  - Enforces all septic violations and illicit discharge
  - Enforces all public health violations

Timeline for implementation: This management strategy is currently being implemented and is an on-going activity.

Measurable milestones (if any): This management strategy will be evaluated annually for effectiveness and appropriate level of service. Assessment of this strategy will include tracking the number of

complaints and investigations annually while also tracking the number of enforcement actions or citations issued per year for illegal dumping per the Columbia County Solid Waste Ordinance and inclusion of the Oregon Litter laws (ORS 164.775, ORS 164.785, and ORS 164.805).

Fiscal analysis: This management strategy is currently funded.

10.8 Spill Response and Illicit Discharge Elimination Programs

TMDL parameter addressed: Mercury

Potential sources: The spill or illicit discharge of certain substances containing TMDL parameters such as mercury can cause watershed health impairment. If liquid or sludge-like materials that contain mercury are spilled or illicitly discharged, mercury could flow directly, or indirectly via stormwater, into a drainage that discharges to or is a tributary of the Willamette River.

Management Strategy: Spill response and illicit discharge detection and elimination (IDDE) programs are addressed by several management strategies depending on location.

10.8.1 County Roads

The Columbia County Public Works Department Management Strategies for spill response and IDDE are:

- Upon the discovery or notification that materials which may contain harmful substances such as mercury are spilled or illicitly discharged onto a County maintained road right-of-way, the Columbia County Public Works Department (Public Works) personnel will investigate the incident and determine the appropriate response.
- Road maintenance crews will work to halt the release of the material and to ensure the material is cleaned up in a manner that prevents harmful substances from entering waterways, if possible; or in a manner that minimizes the amounts of harmful substances that enters waterways.
- Public Works adheres to the Oregon Department of Transportation *Routine Road Maintenance, Water Quality and Habitat Guide, Best Management Practices, Revised, 2020* (ODOT Guide). Roadway spill response will comply with the ODOT Guide sections which address Accident Cleanup, and Spill Prevention and Cleanup.

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

Measurable milestones (if any): This management strategy will be evaluated annually for effectiveness and appropriate level of service. Adaptive management will be applied as appropriate to address limiting factors for watershed health. Assessment of this strategy will include tracking the number of illicit discharges and spills per year.

Fiscal analysis: This management strategy is currently funded.

10.8.2 Private Land

The DEQ has authority to conduct source control investigations on private lands. If needed DEQ can compel most responsible parties to halt or modify the discharge if spilled or illicitly discharged material that contains a significant concentration of TMDL parameters such as mercury, and that is likely to flow into Waters of the State.

Columbia County, through its enforcement ordinance attempts to work with individual property owners with a signed Compliance Action Plan for violations, staff makes site visits accordingly.

SECTION C

IMPLEMENTATION

11 Mercury

11.1 Management Strategies Matrix

Table 4, Management Strategies Matrix, beginning on page 32, identifies County strategies for mercury management and reduction.

11.2 Barriers to Implementation

The primary source of mercury in Columbia County watersheds is mercury that has been deposited in the watershed from the atmosphere. Columbia County is not responsible for preventing or controlling atmospheric mercury deposited within the county.

The county will reduce mercury contributions to waterways to the extent possible where the county has the authority to regulate surface water runoff and stormwater discharges from locations where mercury may be present. The county will make good faith efforts to reduce the portion of the mercury load that is attributable to atmospheric sources.

The stated objective of the DEQ Mercury TMDL is to reduce average fish tissue mercury concentrations in the Willamette River so that all fish species are safe for human consumption. The fish consumption advisories for mercury in the Willamette Basin and multiple 303(d) listings indicate that this beneficial use is not currently being met. The DEQ acknowledges that it may take many years, perhaps decades, to achieve the desired reduction in fish tissue concentrations of mercury.

The portion of the Willamette River Basin (WRB) that is within Columbia County contains many types of land uses in both rural and urban areas. Multiple agencies share jurisdiction over some of the activities which may cause in-stream mercury contamination.

Many other activities, such as atmospheric deposition of mercury, and private property activities that may cause mercury-containing soil to be disturbed and eroded, are not regulated. The DEQ TMDL confirms that only a small amount of annual mercury loading within the WRB is discharged by publicly owned facilities or by private industries. Unregulated, minimally regulated, and uncontrollable sources of mercury are shown to account for most of the annual mercury loading within the WRB.

Land ownership categories that are potential sources of in-stream mercury loading via nonpoint source stormwater runoff which the County has very little or no authority to regulate or control include, but are not limited to:

- Privately owned timberlands
- Privately owned farm, ranch, nursery, and orchard lands
- U.S. government-owned lands
- Highways and other State-owned lands
- Land within cities

For these reasons Columbia County cannot and does not accept sole responsibility for reducing in-stream mercury loads from nonpoint sources within the county. Columbia County does accept some of the responsibility for reducing the fraction of the mercury loading that originates on lands which Columbia County has the authority to regulate; and which is generated by the specific land uses for which Columbia County has regulatory authority.

11.3 TMDL Monitoring, Status and Evaluation Reports

The Columbia County TMDL Implementation Committee (Committee) will conduct implementation monitoring to confirm that specific management strategies outlined in this TMDL Plan are implemented. A summary of activities conducted to implement the management strategies will be submitted to DEQ as an Annual Report on April 1. An Evaluation Report that will assess the effectiveness of identified TMDL Plan management strategies will be prepared and submitted every five years. Annual Reports and Plans will be posted to the Columbia County Land Development Services website.

11.4 Effectiveness Monitoring

Due to the high cost of establishing a pollutant monitoring program and the prohibitive cost of conducting mercury analysis, Columbia County is not able to monitor or measure mercury entering the watershed.

11.5 Timeline

The goal of the Columbia County TMDL Implementation Plan (TMDL Plan) is to attain the TMDL load allocations for mercury through an adaptive management process. Columbia County is committed to investing in activities and programs that contribute to overall watershed health.

Columbia County is currently implementing a variety of management strategies to improve and maintain water quality, as described in **Chapter 10**. Measures to monitor and track the effectiveness of these activities is described in **Chapter 11**.

It is not known whether the current and planned management activities will provide sufficient mercury load reduction to meet the load allocation given the barriers to implementation described in **Chapter 11.2**. As state monitoring demonstrates progress toward pollutant reduction, the County will adaptively manage its activities and programs in order to work toward attaining DEQ TMDL load allocations.

The DEQ TMDL does not quantify the amount of mercury that is carried by stormwater runoff and other nonpoint sources. According to existing analysis, only a small amount mercury loading is known to originate from local industrial or wastewater discharges. Due to the multiple potential sources of mercury and the barriers to implementation discussed above, it will be difficult to quantify the TMDL Plan's effectiveness in progressing toward meeting the Willamette River Watershed TMDL for mercury.

Attaining the target nonpoint source mercury allocation load will rely on loose or structured partnerships with cities and industrial and private landowners, in combination with the following agencies which provide additional regulatory authority or educational and technical assistance:

- Columbia County Soil and Water Conservation District (SWCD)
- Oregon Department of Environmental Quality (DEQ)
- Oregon Department of Agricultural (ODA)
- Oregon Department of Forestry (ODF)
- Oregon Department of State Lands (DSL)

Table 4 Management Strategies Matrix						
TMDL Source	**Management Strategy**	**Implementation Measures**	**Implementation Resources**	**Progress Measures**	**Timeline**	**Milestone**
Mercury Sources Under County Jurisdiction	*What is being Done or will be Done to Reduce or Control Pollution from this Source**	*How this Strategy Will be Implemented and by Which DMA**	*Expected Resource Needs**	*How DMA Will Demonstrate Successful Implementation or Completion of this Strategy**	*Expected Timeline or Completion Date**	*Goals to be Achieved to Demonstrate Progress**
1. Pollution Prevention and Good Housekeeping for County Operations	Institute BMPs to reduce the conveyance of mercury related pollutants to waterbodies from county lands, properties and facilities.	Staff discussions and training on stormwater, erosion control and pollution prevention. Consult with other County agencies as required.	Est. $ 0	Maintain records refer to ordinances	Annual Reporting. Due: September 3, 2022 Currently Implementing Update website Goal: September 2024	Annual discussions with County departments.
1.1	Water Quality Complaints	Add WQ complaint submittal form on website	Est. $ 0	Track complaints in permitting and compliance database	Annual Reporting. Due April 1, 2024	Website updated
2. Public Education and Outreach	Educate the public on mercury and related pollutants such as sediment	Currently office interaction with public. Place fact sheets on website and social media.	Est. $ 0	Visiting County website and Facebook page.	Annual Reporting. Due: September 3, 2022 Implementing with exception of website: Goal: September 2024	Update website with flyers and links on the Land Use Planning webpage.

Table 4 - *continued*						
TMDL Source	**Management Strategy**	**Implementation Measures**	**Implementation Resources**	**Progress Measures**	**Timeline**	**Milestone**
2.1	Dump stoppers Program	Placards placed at illegal dump sites.	Est. $ 1000.00 a year	Track work with Sheriff's office for community corrections to collect debris in permitting database	Annual Reporting. Due: September 3, 2022 Currently Implementing	Code statistics reporting.
2.2	Public education and involvement	Provide public education related to hazardous waste and illegal dumping; publicize hazardous waste dump sites and programs. Solid Waste ordinance.	Est. $ 15,000.00	Document public awareness activities and the development and dissemination of informational materials and publications.	Annual Reporting. Currently Implementing	Develop and provide educational materials in print and website. Evaluate measures annually for effectiveness and level of service.
2.3	Erosion control program and public education	Provide technical assistance, education, and outreach as practical.	Est. $2500.00 per year	Education and outreach activities implemented and monitored.	Annual Reporting.	Evaluate measures annually for effectiveness and level of service.
3. Enforcement of Prohibited Pollutants	Use current County ordinances for enforcement.	Nuisance declaration, liens on properties, abatement process, Stormwater & Erosion Control implementation, and update policies and procedures.	Est. $ 50,000. 00 a year in staff time	Frequent updates in permit tracking software.	Annual Reporting. Due: March 3, 2024 Currently Implementing	Permit tracking for reporting and enforcement; view reports annually.

Table 4 - *continued*						
TMDL Source	**Management Strategy**	**Implementation Measures**	**Implementation Resources**	**Progress Measures**	**Timeline**	**Milestone**
3.1	Staff training	Train inspection staff regarding rain-drains, Oregon drainage law, and unlawful discharge to road ditches.	Est. $1000.00	Keep records of training and documentation.	Annual Reporting. Goal: September 2024 Currently Implementing	Site specific results and inspection procedures with supervisor.
3.2	Update ordinances	Department Heads to manage this heavy lift together.	Est. $75,000.00 per year to update current ordinances for staff time	Document progress	Annual Reporting. Goal: March 2028	Final adopted ordinances. This process is in public meetings/hearings.
3.3	Illegal dumping management	Dump Stoppers Program	Est. $50,000.00	Track # of enforcement actions taken/year for solid waste dumping.	Annual Reporting. Currently Implementing	Evaluate measures annually for effectiveness and level of service.
3.4	Public Works Spill response and IDDE. Public education and involvement	Implement spill response and IDDE program on County Roads, refer other cases to DEQ. Provide public education related to hazardous waste and illegal dumping; publicize hazardous waste dump sites and programs.	Est. $20,000.00	Track the number of discharges/spills per year. Document public awareness activities and the development and dissemination of informational materials and publications.	Annual Reporting. Currently Implementing	Evaluate measures annually for effectiveness and level of service; apply adaptive management. Develop and provide educational materials in print and on-line.

Table 4 - *continued*						
TMDL Source	**Management Strategy**	**Implementation Measures**	**Implementation Resources**	**Progress Measures**	**Timeline**	**Milestone**
4. Construction Site Runoff Control	Stormwater and Erosion Control Ordinance 2001-10; Implementation	Create new fee structure for site development and erosion control fees; these fees will support another position in the onsite septic program and assist in implementation.	Est. $125,000.00	New Fee Structure New staff position CESCL Certification	Annual Reporting. Due: September 3, 2025 Currently Implementing ahead of schedule: • new fees • staffing • one staff with CESCL cert.	Goal: Sept. 2024 All field inspectors have CESCL Certification.
4.1	Develop Watershed Action Plans (WAPs) with Other outside agencies	SBWC (DMA) WAP's recommended: updates and revisions to existing stormwater design standards and emphasize low impact development techniques.	Est. $10,000.00 in staff time	Number of developments utilizing low impact development standards and associated BMP contributing areas.	Annual Reporting Goal: March 2028	Evaluate measures annually and get Board approval in public meeting for all updates to Stormwater & Erosion Control Ordinance.
4.2	Stormwater regulations	Continue to implement existing stormwater and erosion control development regulations contained in Ordinance 2001-10.	Est. $ 0	New development and redevelopment to ensure stormwater management measures implemented.	Annual Reporting. Currently Implementing	Evaluate measures annually for effectiveness and level of service.

Table 4 - *continued*

TMDL Source	Management Strategy	Implementation Measures	Implementation Resources	Progress Measures	Timeline	Milestone
4.3	Industrial and Commercial Stormwater Program	Continue to implement existing stormwater and erosion control development regulations contained in Ordinance 2001-10.	Est. $ 20,000.00 Staff time	Requires permit application for site development to include engineered stormwater management plans. Redevelopment and stormwater mgmt. measures in effect.	Annual Reporting. Currently Implementing	Evaluate measures annually for effectiveness and level of service.
4.4	Runoff and soil erosion on County Roads.	Implement current stormwater and erosion control (EC) ordinance 2001-10. Require EC measures. Implement road maintenance practices on County roads according to ODOT BMP manual for water quality and habitat. Implement spill response and IDDE program on County Roads	Est. $ 60,000.00 Materials and staff time.	Track permits issued; inspections performed; enforcement actions taken. Review ODOT BMP manual with County Ordinance.	Annual Reporting Goal: September 2024	Goal: September 2024
4.5	*WQ monitoring*	*Not implemented in this TMDL*				

* Note: Management strategy details are provided in Chapter 10.

12. TMDL Implementation Plan Review and Revision

Pursuant to *OAR 340-042-0080(3)(a)(C)*, Columbia County will provide for the periodic review and revision of the Columbia County TMDL Implementation Plan. The County will do so by preparing and submitting to DEQ an annual report and a five-year Plan revision. These reviews and reports will be prepared by the TMDL Implementation Committee (Committee). The County may review and revise the TMDL Plan on an as-needed basis; or execute revisions at other times if it is determined doing so may result in attainment or significant progress toward meeting the mercury TMDL.

13. Statewide Land Use Requirements

Oregon Administrative Rule 340-042-0080(3)(a)(D) states that, to the extent required by *ORS 197.180* and OAR chapter 340, Division 18, the County must provide evidence of TMDL Plan compliance with applicable land use requirements. The *Columbia County Comprehensive Plan* (Plan) is acknowledged by the Oregon Land Conservation and Development Commission (LCDC) as complying with the Statewide Planning Goals. This TMDL Plan is consistent with the Plan and applicable land use regulations to the extent required by law. Columbia County agencies and programs comply with all land use requirements that pertain to this TMDL Plan.

Although the Comprehensive Plan does not specifically address TMDLs, the Plan does address overarching goals that are present in the TMDL, including the need to adopt measures for the protection of riparian areas and wildlife. The County concludes that the Plan includes provisions that are relevant to this TMDL Plan; and that this TMDL Plan is compatible with those provisions.

14. Citation of Legal Authority

14.1 Comprehensive Plan

The *Columbia County Comprehensive Plan* (Plan) provides authority to adopt measures that protect surface water and stormwater quality. The Plan was most recently updated on October 10, 2017. The Plan includes land use goals and policies that enable the development, implementation, and enforcement of stormwater and erosion controls for new development or redevelopment. Relevant goals and policies are contained in Plan elements that address land use; transportation; public facilities and services; air, land and water quality; natural resources; the Willamette River Greenway; natural hazards; and parks and open spaces.

14.2 Zoning Ordinance

The Columbia County Zoning Ordinance (CCZO) provides the land development rules, regulations, and standards that implement the Plan Goals and Policies. The CCZO provisions that serve to protect surface water and stormwater quality include:

- Building Permits in Hazard Areas (Section 206)
- Utilities and Solid Waste Disposal Facilities (Section 305)
- Mineral and Aggregate Operations (Section 306)
- Development Standards (Section 308)
- Surface Mining Zoning District (Section 1040)
- Flood Hazard Overlay (Section 1100)
- Willamette River Greenway Overlay (Section 1140)
- Riparian Corridors, Wetlands, Water Quality, and Fish and Wildlife Habitat Protection Overlay (Section 1170)
- Wetland Area Overlay (Section 1180)
- Planned Development Overlay (Section 1200)
- Land Development Site Design Review (Section 1550)

14.3 Building Codes

Pursuant to OAR 918-020-0080 Delegation of Building Inspection Programs, the Land Development Services (LDS) Building Division administers the Oregon State Building and Specialty Codes Program, along with county amendments to protect the safety of buildings and occupants within the unincorporated portions of the county and the contract cities.

Building Staff conduct plans examinations, field inspections, and code enforcement, and provide code education. Staff ensures best management practices of stormwater and erosion control are followed for all construction and grade and fill permits in accordance with the Columbia County Stormwater and Erosion Control Ordinance 2001-10 and State Building Codes.

Inspectors verify preliminary and final stormwater and erosion control methods on residential development permits, grade and fill permits, all commercial and industrial development following the methods outlined above. This includes verification of final stormwater inspection and documentation from the Engineer of record on all commercial and industrial sites.

The provisions of development are provided during the building plan review and/or grading construction plan review process during initial application. All revisions are documented and inspected accordingly.

14.4 Public Works and Road Maintenance Regulations

The Road Maintenance and Engineering divisions are responsible for providing a safe, secure and convenient multi-modal system of roads and bridges with consideration for economic and community development, environmental conservation, and emergency preparation through efficient and effective administrative and maintenance programs. The division maintains the county's 550 miles of paved and gravel roads as well as 93 bridges. Its territory ranges from nearly sea level to 2,000 feet. In addition to road maintenance, the division's staff also oversees road signs, road striping, roadside vegetation, pothole repair, vehicle and equipment repair, and regulation and permitting. The division operates out of its office in St. Helens as well as from district shops in Clatskanie, Vernonia, and Rainier.

Overseeing the capital improvements and engineering for the County road system, the Public Works Department is responsible for transportation capital improvement projects. Funded mostly through grant funding and System Development Charges, engineering and planning activities coordinate utilizing Columbia County's Transportation System Plan (TSP). This plan helps guide transportation improvement projects to meet the County's future system needs. The plan works to complement each individual city TSP to plan for growth and construct timely improvements within Columbia County communities.

The Solid Waste Division plans, organizes, and directs the county's recycling, waste reduction, reuse, and household hazardous waste program. The Division also maintains, updates, and administers the county's 20-year Solid Waste Management Plan and its Solid Waste Ordinance. Solid waste collection franchises within the unincorporated area of the County are also overseen by the Division, which also operates the Columbia County Transfer Station for collection and transport of garbage to area landfills.

14.5 Other Ordinances, Regulations and Authorities

Additional rules, regulations, and standards that serve to protect surface water and stormwater quality include those contained in:

- Stormwater and Erosion Control Ordinance NO. 2001-10
- County / State Building Codes
- Road Development Ordinance
- *The Roadway Standards Manual, 1996* Edition, includes roadway and drainage standards, submittal requirements, and sections on hydrology, hydraulics, and water quality.
- Solid Waste Ordinance
- Enforcement Ordinance
- Columbia County Building Department and Columbia County Public Health has authority to investigate and enforce regulations which prevent and control illicit connections.

The Comprehensive Plan and applicable ordinances identified in this TMDL Plan apply during both new development and redevelopment. Various identified ordinances and regulations also apply in certain instances when development is not proposed or occurring. If a property is not being developed or redeveloped, the Columbia County Land Development Services (LDS), Public Works (PW), and other departments administer the applicable regulations. When a property is proposed to be developed or redeveloped, all development plans are checked for conformance with the following:

- Permit conditions set forth in the land use authorization and permit application
- Requirements set forth in the CCZO and other applicable development ordinances
- Applicable engineering design standards
- Stormwater and Erosion Control Ordinance No. 2021-10.
- Road Development Standards; *1996 Edition*
- The *Roadway Standards Manual 1996 Edition*, which provides requirements for drainage standards, roadway standards, submittal requirements, including a section on hydrology, hydraulics, and water quality.
- Floodplain Management Ordinance

15. References

Final Revised Willamette Basin Mercury Total Maximum Daily Load. November 22, 2019. State of Oregon Department of Environmental Quality (DEQ).

Total Maximum Daily Load (TMDL) for Mercury in the Willamette Basin, Oregon. December 30, 2019. United States Environmental Protection Agency (EPA), Region 10.

TMDL Implementation Plan Guidance for State and Local Government Designated Management Agencies. May 2007. State of Oregon Department of Environmental Quality (DEQ).

Brooks, 1971. Quicksilver Deposits in Oregon. Department of Geology and Mineral Industries, Portland, R. Miscellaneous Paper #15.

Park, J.G. and Curtis, L.R., 1997. Mercury Distribution in Sediments and Bioaccumulation by Fish in Two Oregon Reservoirs: Point Source and Non-Point-Source Impacted Systems. Arch. Environ. Contam. Toxicol. 33, 423-429.

Sweet C.W. and Prestbo E., 1999. Wet Deposition of Mercury in the U.S. and Canada. Presented at the Air and Waste Management Association – Mercury in the Environment Specialty Conference‖, September 15-17, 1999, Minneapolis, MN.

Sweet C.W., Prestbo E., and Brunette, R., 2003. Wet Deposition of Mercury in the U.S. and Canada, 1996-2000: Results from the NADP Mercury Deposition Network (MDN). Unpublished Draft Document.

Ullrich, S.M., Tanton, T.W. and Abdrashitova, S.A., 2001. Mercury in the Aquatic Environment: A Review of Factors Affecting Methylation. Critical Reviews in Environmental Science and Technology, 31(3): 241-293.

USEPA, 2001a. Methyl mercury Fact Sheet. EPA-823-F-01-001

USEPA, 2001b. Water Quality Criterion for the Protection of Human Health: Methyl mercury. EPA-823-R-01-001