



Water Quality Protection  
Surface Water Management  
Wastewater Collection & Treatment

Gregory L. Geist  
Director

October 31, 2017

Oregon Dept. of Environmental Quality, NW Region  
700 NE Multnomah Street, Ste. 600  
Portland OR 97232

**RE: Molalla-Pudding, Tualatin and Willamette TMDL Annual Reports**

Enclosed, please find the 2016-2017 Annual Reports for Clackamas County, CCSD #1, SWMACC, City of Happy Valley and City of Rivergrove as required by the Molalla-Pudding, Tualatin and Willamette TMDL implementation plans. A hard copy will follow via USPS.

Please call if you have any questions or need additional information at (503) 742-4581.

Ron Wierenga  
Surface Water Manager  
Water Environment Services

/mcj

Enclosures

Cc: Andrea Matzke  
Wade Peerman  
Karen Williams



## MOLALLA-PUDDING SUBBASIN TOTAL MAXIMUM DAILY LOAD ANNUAL REPORT

---

Prepared for

Clackamas County

July 1, 2016 - June 30, 2017

## TABLE OF CONTENTS

### Contents

LIST OF TABLES.....	II
LIST OF FIGURES.....	II
1. Introduction .....	1
2. Clackamas County Surface Water Overview.....	2
2.1 Watersheds .....	2
2.2 Organizational Summary.....	3
2.3 Surface Water Responsibilities .....	3
3. TMDL Parameters and Allocations.....	8
3.1 Temperature .....	8
3.2 <i>E. coli</i> .....	9
3.3 Pesticides (DDT, Dieldrin, Chlordane).....	9
3.4 Mercury.....	9
3.5 Nitrate .....	10
3.6 Metals (Iron, Manganese, Arsenic).....	10
4. Revision and Review of Plan .....	10
5. Clackamas County Water Quality Programs and Activities .....	10

## LIST OF TABLES

---

Table 1. Clackamas County Watersheds .....	2
Table 2. County Department Responsibilities.....	3
Table 3. TMDL Parameters and Load Allocations .....	7
Table 4. Compliance Point and Percent Reduction Requirements for Clackamas County Streams .....	8
Table 5. Annual Report Matrix.....	13

## LIST OF FIGURES

---

Figure 1. Major Watersheds of Clackamas County .....	5
Figure 2. Molalla-Pudding Subbasin.....	6
Figure 3. County Roads Maintained.....	7

This page intentionally left blank

## 1. Introduction

The federal Clean Water Act, section 303, requires states to develop water quality standards to support beneficial uses of public water bodies. Where water quality standards are not being met, the water body or the appropriate reach is listed on the 303(d) list of water quality limited water bodies for that parameter. 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.

The TMDL process begins when a stream, lake, or river does not meet water quality standards and is classified as water quality-limited on the state's 303(d) list. 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. 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, 2004). The excess load is split up 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 point sources such as wastewater treatment plants and industrial discharges, and load allocations for non-point pollution from agricultural, urban, and forestry lands such as erosion, animal wastes, and stormwater.

The Oregon Administrative Rule (OAR) 340-042-0025 that addresses TMDLs requires local governments and other agencies to develop TMDL Implementation Plans.

Responsible parties that are able to implement pollution reduction strategies are classified as Designated Management Agencies (DMAs). In the Molalla-Pudding Subbasin, 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 others. According to 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. Any other analyses or information as specified in the Water Quality Management Plan

The Molalla-Pudding Subbasin TMDL was issued as an order from DEQ on December 8, 2008, and approved by the U.S. Environmental Protection Agency (EPA) on December 31, 2008. A portion of the Molalla-Pudding Subbasin lies within Clackamas County, so Clackamas County is identified as a DMA in the Molalla-Pudding TMDL. The TMDL obligates certain DMAs to take measures to assess, and (if applicable) reduce their loading of pollutants regulated by the TMDL.

This TMDL Implementation Plan is for Clackamas County and summarizes the management strategies for protecting and improving water quality. The particular focus of this Implementation Plan is on strategies

for reducing TMDL pollutants from non-point sources to achieve load allocations. Strategies for reducing TMDL pollutants from point sources to achieve waste load allocations are addressed comprehensively in point source permits for storm water and wastewater discharges.

To comply with DEQ requirements for TMDL Implementation Plans (provided in OAR 340-042-0080(3)), the management strategies and information provided herein address each parameter within the Molalla-Pudding Subbasin TMDL over which Clackamas County has jurisdiction (in-stream heat, *E. coli*, dichlorodiphenyltrichloroethane [DDT], dieldrin, and iron). In addition, we believe the Implementation Plan demonstrates commitment and reasonable assurance of implementation and maintenance of effort over time.

## 2. Clackamas County Surface Water Overview

### 2.1 Watersheds

The major watersheds of Clackamas County are shown on Figure 1. A large portion of Clackamas County is drained by the Willamette River and its tributaries including the Clackamas, Molalla, Pudding, and Tualatin Rivers (Table 1). The remaining lands are drained by the Sandy River, which enters the Columbia River in the City of Troutdale. Figure 2 illustrates the Molalla-Pudding Subbasin.

Table 1. Clackamas County Watersheds			
Clackamas County watersheds	Total acres in watershed	Watershed in Clackamas County, acres	Percent of watershed in Clackamas County
Clackamas	602,634	540,456	90
Molalla-Pudding	560,037	305,785	55
Tualatin	453,849	12,587	3
Lower Columbia-Sandy	560,566	235,361	42
Middle Willamette	455,502	73,906	16
Lower Willamette	411,905	33,797	8
<i>Total</i>	<i>3,044,494</i>	<i>1,201,890</i>	

Separate TMDL Implementation Plans outline Clackamas County's efforts to comply with the Willamette, Clackamas, Sandy and Tualatin River TMDLs.

## 2.2 Organizational Summary

Clackamas County, including the Departments of Transportation and Development (DTD), Water Environment Services (WES), and Business & Community Services (BCS) are playing a role in implementing portions of this Implementation Plan. No single department within Clackamas County is solely responsible for water quality within the Molalla-Pudding Watershed. Tables 5 through 9 identify the responsible County Department for each identified management strategy. In many cases, partnership opportunities and agreements with non-county agencies will need to be established to accomplish the milestones identified for the Molalla-Pudding watershed. General responsibilities of each County Department are outlined below in Table 2.

Table 2. County Department Responsibilities		
DMA name	Jurisdictional area	TMDL Implementation Plan responsibility
Clackamas County DTD	County-wide	Planning and Zoning Departments are under DTD which oversee riparian area use and other land uses and roads <sup>1</sup> ; illegal dumping and solid waste nuisances on private property; administers grading permit program.
Clackamas County BCS	County-wide	Parks, management of surplus real estate, and Dump Stoppers (an illegal solid waste dumping prevention program)
Clackamas County WES	Limited to CCSD #1 and TCSD (except for septic system and 1200C programs, which are county-wide)	Administers CCSD #1 and TCSD. Also administers septic system and 1200C programs on a county-wide basis

<sup>1</sup>Figure 3 Shows County Maintained Roads

The cities of Barlow, Canby, and Molalla are within Clackamas County and are DMA's for the Molalla-Pudding TMDL. These Cities are responsible for completing their own implementation plan.

**DEQ Request:** In Table 2 indicate where the County Forestry Department fits into TMDL implementation. Does that department have any water resources, riparian protection or land use planning responsibilities? Would they fall under Business and Community Services with Parks?

**Answer:** Clackamas County's Forest Program, which is housed within the County's Business and Community Services Department, is not addressed by Clackamas County's Feb. 2012 TMDL Implementation Plan. For example, Section B (5.1) of this plan states "... the impacts to stream temperatures in the Molalla-Pudding sub-basin from agricultural and forestry lands regulated by ODA and ODF are not addressed in the Implementation Plan." The County Forest Program complies with TMDLs by complying with regulations and permits which are issued and administered by the State of Oregon's Department of Forestry.

## 2.3 Surface Water Responsibilities

As stated above, Clackamas County has responsibility as a DMA and has cooperated in the development of the Implementation Plan. Each County Department has ongoing programs that provide for overall management of surface water, and water quality, that contribute to watershed health in the Molalla-Pudding Subbasin.

**DEQ Request:** About Forest Conversion: Provide a brief explanation of the process a developer or landowner would need to take to receive a land use change approval from the County. At any point in the process, are they informed about applicable water quality protections? **Answer:** Unincorporated lands in the portion of the Molalla-Pudding, watershed which lies within Clackamas County,



is dominated by lands zoned for forest use, agricultural use, and some rural residential zoning. The lands zoned for forest and farm use have an 80-acre minimum lot size. Mike McCallister, Clackamas County's Planning Director, estimates that over 90% of this land is zoned for forest and farm uses. Please note:

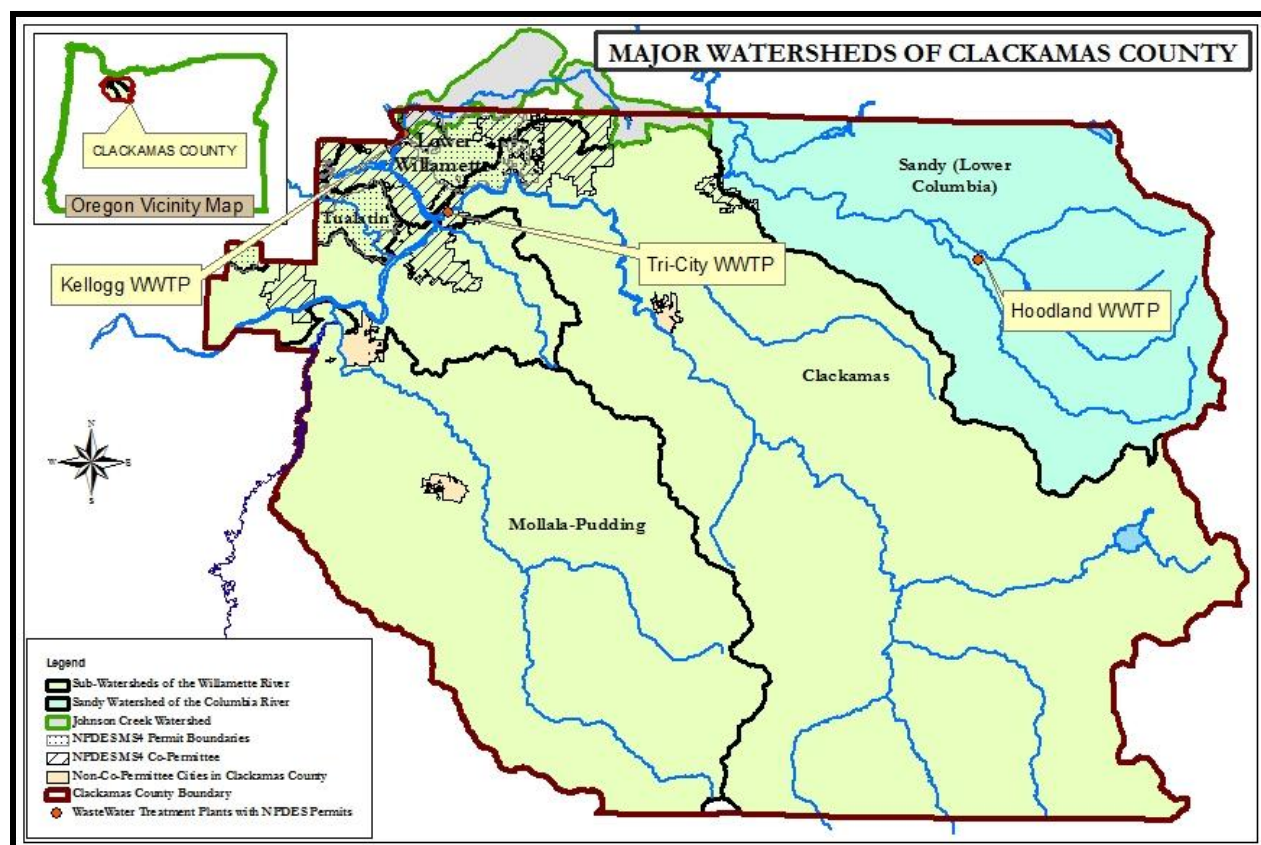
1. Clackamas County does not have the authority to regulate commercial forestry practices. Forest practices are subject to the Oregon Forest Practices Act as administered by the Oregon Department of Forestry.
2. Clackamas County does not have the authority to regulate "farm uses" in farm and forest zoning districts.
3. For the reasons described in items 1 and 2 above, Clackamas County does not necessarily know when conversion happens.
4. Because of the restrictive nature of the forest and farm zones, these areas do not see a lot of development outside of new homes, pole barns, and etcetera.
5. When a permit is issued by Clackamas County to construct a home, pole barn, etc., in an upland area within the unincorporated portion of the watershed, written educational materials about water quality are not provided to the property owner or the property owner's agency by Clackamas County.
6. However, all significant rivers and streams in this area do have minimum setback / buffer requirements ranging from 50 to 150 feet, which are intended to protect the riparian area. This in turn projects / improves water quality and fish & wildlife habitat. These minimum setback / buffer requirements (ZDO 704, for example) are applied by Clackamas County during the land use permitting process.
7. The zoning districts in this watershed do not allow suburban or urban uses. No conversions of that nature occur in this basin.

#### 2.3.1 Wastewater

There are no discharges of treated wastewater effluent within the Molalla-Pudding Subbasin that Clackamas County is responsible for.

#### 2.3.2 Stormwater

There are no Clackamas County owned NPDES Municipal Separate Storm Sewer System (MS4) permitted storm sewer outfalls within the Molalla-Pudding Subbasin.



**Figure 1. Major Watersheds of Clackamas County**

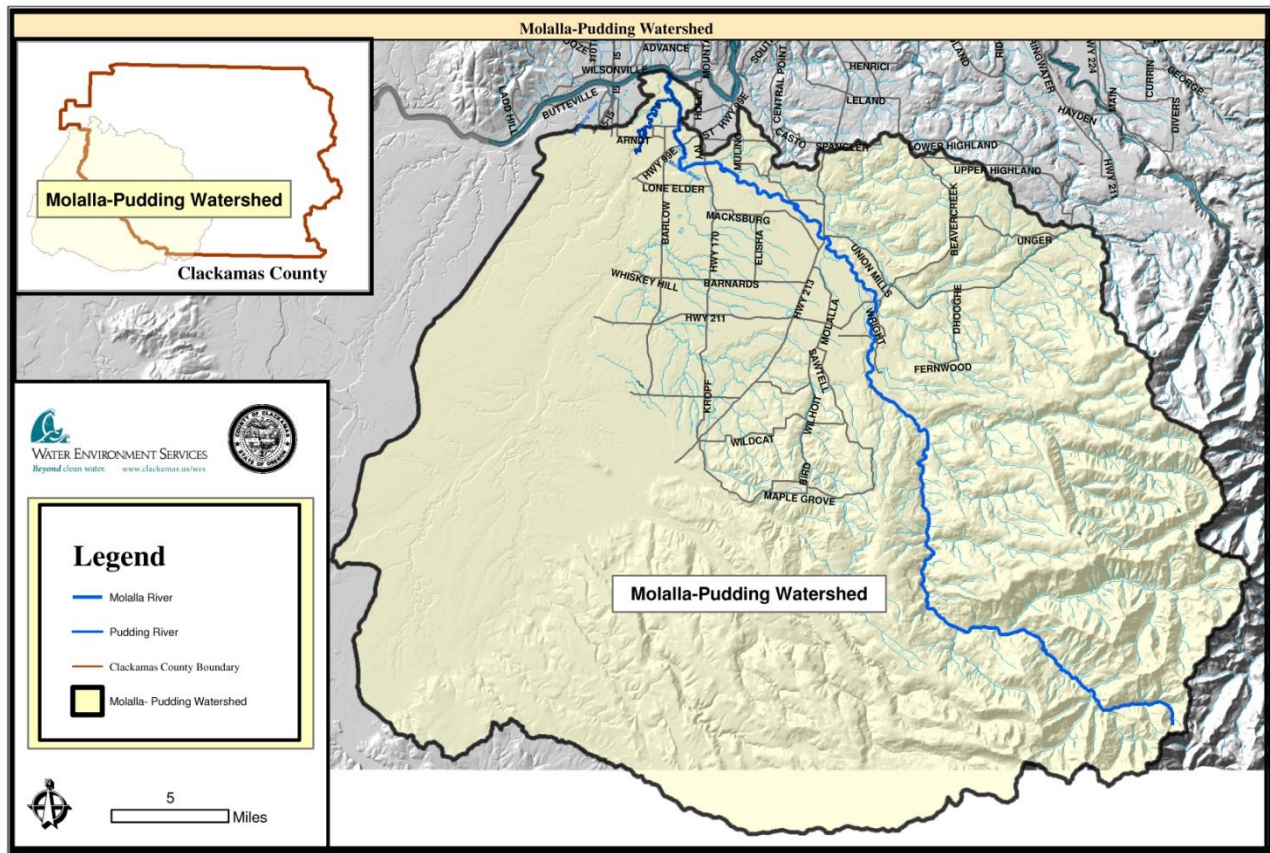


Figure 2. Molalla-Pudding Subbasin



**Figure 3. County Roads Maintained**



### 3. TMDL Parameters and Allocations

TMDLs have been developed in the Molalla-Pudding watershed for temperature, *E. coli*, pesticides (DDT/dieldrin/chlordane), nitrate, and iron. Table 3 summarizes each TMDL parameter, load allocation, measurement, and DMA.

Parameter	Affected waters in CC's part of Molalla-Pudding watershed	Measurement method	Allocation type (and NPDES permit type)	LA	DMA
In-stream temperature	Beaver Creek, Butte Creek, Drift Creek, Molalla River, Pine Creek, Pudding River, Silver Creek, S. Fork Silver Creek, Table Rock Fork Creek, Teasel Creek, Zollner Creek	Surrogate: shade	LA	Attaining "system potential vegetation" conditions	CC
<i>E. coli</i>	Molalla, Pudding, W. Fork Little Pudding River	Direct	LA	Variable <sup>1</sup>	CC
DDT	Little Pudding River, Pudding River, Zollner Creek	Surrogate: TSS	LA	TSS < 15 mg/L (Pudding & Zollner); TSS < 7 mg/L (Little Pudding)	CC
Dieldrin	Pudding River, Zollner Creek,	Surrogate: TSS	LA	TSS < 15 mg/L (Pudding & Zollner)	CC
Chlordane	Little Pudding, Zollner Creek,	Surrogate: TSS	LA	TSS < 15 mg/L (Pudding & Zollner); TSS < 7 mg/L (Little Pudding)	CC
Nitrates	Zollner Creek	Direct	LA	Loading capacity minus 10% for margin of safety	CC
Mercury	Willamette River			27% reduction	CC
Iron	Pudding River, Zollner Creek	Surrogate	LA	79% reduction for Iron (Pudding); 96% reduction for Iron (Zollner)	CC

1 Percent reductions vary for each compliance point and/or land use.

#### 3.1 Temperature

Several stream and river reaches in Clackamas County are part of the Molalla-Pudding Subbasin temperature TMDL including: the Molalla River, Pine Creek, Table Rock Fork Creek, Beaver Creek, Butte Creek, and Teasel Creek. DEQ has established Percent Effective Shade (PES), a measurement of the shade-yielding capacity of a riparian area, as the TMDL's surrogate for in-stream heat load. "System potential vegetation" conditions represent areas with a high PES value. "System potential vegetation" conditions are considered by DEQ to be necessary to achieve "system potential effective shade," which is defined by DEQ as "the potential near-stream vegetation that can grow and reproduce on a site, given the climate, elevation, soil properties, plant biology, and hydrologic processes." The Molalla-Pudding Subbasin TMDL establishes site-specific shade targets for the Molalla and Pudding River, and basin-wide "shade curves" that can be used to establish shade targets for all other streams in the basin.

### 3.2 *E. coli*

Stream specific percent load reductions were determined for each 303 (d) listed stream in the Molalla-Pudding Subbasin, which apply to their tributaries as well. Table 4 summarizes the percent reduction requirements for streams within Clackamas County.

Table 4. Compliance Point and Percent Reduction Requirements for Clackamas County Streams	
Compliance Point	Percent Reduction
Pudding River at Hwy. 211 (river mile 21)	75
Pudding River at 99E (river mile 7.3)	70
Molalla River at Knights Bridge Road (river mile 2.8)	81

### 3.3 Pesticides (DDT, Dieldrin, Chlordane)

The DDT and dieldrin TMDL is specific to the Pudding River and Zollner Creek. The chlordane TMDL applies only to Zollner Creek. Approximately 20 miles of the Pudding River are located within Clackamas County, and approximately 7 miles of the Pudding are located along the County Boundary (Figure 1). None of Zollner Creek, nor any portion of the contributing area to Zollner Creek, is within the Clackamas County boundary. Therefore, chlordane will not be addressed as part of this TMDL implementation plan.

The Molalla-Pudding Subbasin TMDL has assigned a 30 percent reduction in long-term average Total DDT (t-DDT) concentrations for all non-point sources in the Pudding River watershed to meet target. This reduction is based on attaining the fish tissue criteria, but does not meet water column criteria. The reductions of DDT metabolite long term average concentrations are 61% and 97% to meet human health water column criteria.

Dieldrin and DDT, when they are present in stormwater or creek water, may be attached to or associated with small, suspended solid particles. As part of the TMDL development, DEQ has established reduction of total suspended solids (TSS) as a surrogate measurement of overall DDT and dieldrin reduction. The TMDL's TSS target is 15 milligrams per liter (mg/L) for non-point sources. The 15 mg/L TSS target in the Pudding River is sufficient to meet t-DDT water column targets and prevent exceedences of fish tissue action levels in the Pudding River. However, meeting the TSS allocations may not be enough to ensure that the very low human health criteria for 4'-DDT is met. Meeting the TSS allocations also will not be adequate to meet all dieldrin criteria in the Pudding River. Therefore, the TSS allocations will be augmented by further research on potential hot spots and source reductions (ODEQ 2008).

### 3.4 Mercury

The Willamette TMDL has established a 27 percent reduction over time from all sources (point and non-point sources) of mercury compared to current loading levels.

Although the water quality criteria for mercury in the Willamette River's water column is currently being

met at all times or nearly all times, excessive levels of mercury have accumulated in certain species of the watershed's fish.

The stated 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. The multiple fish consumption advisories for mercury in the Willamette Basin and the numerous 303(d) listings indicate that this beneficial use is not currently being met. DEQ acknowledges that it may take many years, perhaps 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.

### 3.5 Nitrate

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 in this report.

### 3.6 Metals (Iron, Manganese, Arsenic)

The iron and manganese TMDL is specific to the Pudding River and Zollner Creek. The arsenic TMDL applies only to Zollner Creek. As previously mentioned, none of Zollner Creek is within the Clackamas County boundary. Therefore, arsenic will not be addressed in this report. As indicated in the Molalla-Pudding TMDL report, based on the manganese analyses, DEQ concluded that a TMDL for manganese is not necessary and recommended delisting. Therefore, manganese will not be addressed in this report.

## 4. Revision and Review of Plan

According to OAR 340-042-0080(3)(a)(C), Clackamas County shall "Provide for... periodic review and revision of the implementation plan." The County will review and revise the Implementation Plan on an as-needed basis. At minimum, we expect to review and, if deemed necessary, revise the Implementation Plan soon after the Molalla-Pudding Subbasin TMDL is revised in the future by the DEQ. We and the DEQ expect that the TMDL revision date will be in, five years from the date of acceptance of Implementation plan. The Implementation Plan may be reviewed and, if deemed necessary, revised at other times if we learn that one or more cost-effective modifications to the Implementation Plan can be made which, if implemented, will result in attainment, or significant progress towards attainment, of one or more load allocations.

## 5. Clackamas County Water Quality Programs and Activities

A variety of management programs, activities, and strategies are employed by Clackamas County, SWMACC, and the City of Rivergrove to improve and protect water quality and overall watershed health. The strategies that have been implemented or planned for implementation to address non-point sources of TMDL parameters in the area include:

1. Development-Related and watershed protection regulations
2. Erosion prevention and sediment control
3. Public involvement and education

4. Pet waste management
5. Septic system management
6. Illegal dumping management
7. Dead animal management
8. Spill response and Illicit Discharge, Detection, and Elimination Program (IDDE)
9. Riparian Assessment and Management

These management strategies are reported in Table 5 as they relate to the specific parameter being addressed.



This page left intentionally blank.

Table 5. Annual Report Matrix									
Pollutant Addressed	Strategy	How	Responsible Agency	Applicable Jurisdictional Area	Fiscal analysis	Measure	Timeline	Milestone	2016-2017 Progress
	<i>What is being done, or what will you do, to reduce and/or control pollution from this source?*</i>	<i>How will this be done?*</i>	<i>County Agency Responsible for Implementation<sup>1</sup></i>	<i>Areas within the Molalla Pudding Watershed where this strategy would apply</i>	<i>What is the expected resource need?*</i>	<i>How will we demonstrate successful implementation or completion of this strategy?*</i>	<i>When do you expect it to be completed?*</i>	<i>What goals do you expect to achieve, and by when, to know progress is being made?*</i>	
Temperature	<p>1. Development-Related and watershed protection project on regulations</p> <p>This Strategy has four parts: three regulations and the project related to the Best Management Practice (BMP) program. The regulations only apply to new and re-development of land, which is why words “Development-related . . . regulations were used: ZDO 704, ZDO 703 and ZDO 1002. The other part of this strategy, which include the adoption of the BMPs, is a watershed protection project. This strategy’s four parts are intended to eventually yield reduced in-stream water temperatures through enhanced shading by vegetation.</p>	Adoption of the CCDDT BMPs for routine road maintenance manual. Establishment of Restricted Activity Zone (RAZ) mapping system that links all proposed work assignments with environmentally sensitive areas. The Routine Road Maintenance BMP Program will be used to manage river/stream surface shade along roadways where appropriate over time.	DTD	Clackamas County	Currently funded	Percent increase of tree canopy along riparian areas	Ongoing	Tree canopy expansion	<p>Clackamas County Transportation Maintenance Division continues to work with National Marine Fisheries Service on the implementation of our BMP program. We are currently in the review process, and we continue to use the 2014 ODOT Routine Road Maintenance BMP manual as we finalize the development of our own manual, which we are hopeful will be approved by NMFS and finalized by Winter/Spring of 2017-18.</p> <p>There is no baseline assessment for riparian canopy in the Clackamas County portion of the Molalla-Pudding watershed. The County re-viewed existing information in 2016, including a cursory review of aerial photographs in the recent past, and considered other studies going on in the area, e.g. Clackamas River riparian assessments. Although a pledge to do this was made in our 2014-2015 TMDL annual report, this was a mistake and we regret this error. The DEQ-approved Feb. 2012 Molalla-Pudding TMDL Implementation Plan, which guides all of the surface water quality protection/improvement work we do in the watershed, does not include a promise to conduct a large-scale riparian area assessment in the watershed.</p>
Temperature		i. River and Stream Conservation Area (ZDO 704). This is administered by Clackamas County.	DTD	Land within unincorporated CC that is located outside of the Portland Metro UGB and / or outside of the Metro Service District Boundary	Currently funded	Track the number of approved building permits per year with riparian area setbacks.	Ongoing	Tree canopy expansion	<ul style="list-style-type: none"> <li>Total Permits: 1</li> <li>Total Acreage Preserved: 1 acre</li> </ul>
Temperature		ii. Floodplain Management District (ZDO 703). This is administered by Clackamas County.	DTD	Unincorporated Lands within Clackamas County	Currently funded	Track the number of approved building permits per year which receive a ZDO 703 review.	Ongoing	Tree canopy expansion	Zero received a ZDO 703 Review
Temperature		iii. Wetland Provisions of ZDO 1002. This ZDO, which only applies to wetlands, is administered by Clackamas County.	DTD	Clackamas County	Currently funded	Track the number of approved building permits per year with wetland riparian area setbacks.	Ongoing	Tree canopy expansion	One project with riparian setback

Table 5. Annual Report Matrix									
Pollutant Addressed	Strategy	How	Responsible Agency	Applicable Jurisdictional Area	Fiscal analysis	Measure	Timeline	Milestone	2016-2017 Progress
Bacteria, DDT, Dieldrin, Iron	2. Implement Erosion control programs and public and education and involvement	i. ZDO Section 1008, Development that disturbs more than 800 sq. ft. and less than 1 acre	DTD	Areas within the UGB (Molalla, Canby, Barlow)	Currently funded.	Track erosion control permits issued; inspections performed; enforcement actions taken; and education and outreach activities implemented.	Ongoing	Annually report permits issued, inspections, enforcement actions, and educational outreach activities.	<ul style="list-style-type: none"> <li>No permits issued</li> <li>No violations reported</li> <li>No permits in process</li> </ul>
Bacteria, DDT, Dieldrin, mercury, iron		ii. 1200-C permit: disturbs more than 1 acre but less than 5 acre. Requires public notice if disturbance is greater than 5 acres.	WES	Clackamas County	Currently funded	Track erosion control permits issued; inspections performed; enforcement actions taken; and education and outreach activities implemented.	Ongoing	Annually report permits issued, inspections, enforcement actions, and educational outreach activities.	<ul style="list-style-type: none"> <li>Zero 1200-C permits issued</li> <li>One existing 1200-C permit which received a total of four inspections was finalized with zero enforcement actions needed.</li> <li>Education and outreach activities: <ul style="list-style-type: none"> <li>The WES Erosion Prevention and Sediment Control Design Manual is available online at <a href="http://www.clackamas.us/wes/designmanual.html">http://www.clackamas.us/wes/designmanual.html</a></li> <li>Due to multiple instances of incorrect sediment fence installation in other WES service areas, staff continued to provide our educational flyer on correct sediment fence types and proper installation. This flyer was mailed to all EPSC applicants</li> </ul> </li> <li>Termination of 1200-C Agent Memorandum of Agreement <ul style="list-style-type: none"> <li>In the winter of 2016/17, WES and DEQ discussed the proposed MOA for Agents and mutually agreed that WES will no longer be an Agent of DEQ for 1200-C permits. This took effect on July 1, 2017 and therefore no 1200-C information and associated educational/outreach activities will be included in future reports.</li> </ul> </li> </ul>
Iron		iii. CCDDT complies with a DEQ NPDES 1200-CA. All DTD Engineering projects have an onsite inspector.	DTD	Clackamas County	Currently funded	Track number of projects requiring compliance with the 1200-CA, size of project disturbance and violations received.	Ongoing	Avoid or minimize the number of DEQ letters of concern or possible violations.	Zero projects required a 1200-CA permit
Temperature	3. Public involvement and education	i. Encourage landowners to voluntarily protect/enhance their riparian areas through public education and involvement through partnership with Molalla River Watch	DTD	Clackamas County	Currently funded	One articles per five year period encouraging riparian enhancement in Citizen news	Ongoing	Number of citizens reached by Citizen News	Articles written in Citizen News <i>Good Stewardship of Our Waterways</i> , Winter 2017 Edition (Vol. 19 #1) covered and encouraged riparian enhancement and protection. Provided information to citizens relating to what they can do and how they can be part of the solution.

Table 5. Annual Report Matrix									
Pollutant Addressed	Strategy	How	Responsible Agency	Applicable Jurisdictional Area	Fiscal analysis	Measure	Timeline	Milestone	2016-2017 Progress
		ii. Provide information and guidance via brochures in the Planning Lobby on re-planting riparian areas along waterways in agriculture areas.	BCS - Parks	County Parks					<p>Clackamas County Parks continues to support the following pollution reduction strategies in the County Park sites located along the Molalla and Pudding Rivers, in an effort to positively impact TMDL standards, especially those pertaining to water temperature and bacteria. Tracking and monitoring efforts related to bacteria and temperature are implemented through River Watch through their partnership with Oregon Watershed Enhancement Board</p> <p><u>Feyrer Park – Molalla River</u></p> <ul style="list-style-type: none"><li>Two public flush restrooms: one in the day-use area along the river frontage (open year-round) and one campground restroom (open during the camping season: May – September)</li><li>Four portable toilets along the river frontage near the main flush restroom and picnic areas during the peak summer season (July/August) and one unit for the remainder of the year. A total of 2,000 gallons pumped from four units for the months of July –September.</li><li>Eight garbage cans with daily pickup placed around the park and the river frontage year-round</li><li>Two doggie bag dispenser (one near beach area in day-use and the other in the campground)</li><li>Litter pickup along the river year-round</li></ul> <p><u>Knights Bride Park – Molalla River</u></p> <ul style="list-style-type: none"><li>Two portable toilets May – September, and one year-round portable toilet. A total of 1,800 gallons pumped from both units for the months of May-September.</li><li>Four garbage cans placed along the beach and parking lot areas year-round</li><li>Litter pickup year-round</li></ul> <p><u>Wagon Wheel Park – Molalla River</u></p> <ul style="list-style-type: none"><li>Two portable toilets near beach access area in May – September, and one year-round portable toilet. A total of 1,500 gallons</li></ul>

Table 5. Annual Report Matrix									
Pollutant Addressed	Strategy	How	Responsible Agency	Applicable Jurisdictional Area	Fiscal analysis	Measure	Timeline	Milestone	2016-2017 Progress
									<p>pumped from both units for the months of May-September.</p> <ul style="list-style-type: none"> <li>• Four garbage cans placed in parking lot and picked up year-round</li> <li>• Litter pickup year-round</li> <li>• Barricaded unapproved boater access to river in winter months to reduce soil erosion and sedimentation.</li> </ul>
Bacteria		iii. Provide information in brochures, on WES' /DTD website, and upon request about septic system maintenance and how to detect failures.	WES/DTD	Clackamas County	Currently funded	Track the number of website "hits" and the number of brochures printed/year	Ongoing	5000 websites hit annually	<ul style="list-style-type: none"> <li>• There were 9, 967 hits on the Soils webpage</li> <li>• In partnership with Clackamas County Soil and Water Conservation District, the DTD Soils Division distributed the following brochures: <ul style="list-style-type: none"> <li>○ <i>5 Things You Should Ask Before Buying a Home With a Septic System</i> (2,000 printed in February 2015)</li> <li>○ <i>Septic System Maintenance: A Clackamas County guide to the proper care and maintenance of your onsite wastewater treatment system</i> (3,000 printed in May 2015)</li> <li>○ <i>Do your Part – Be Septic Smart: A Clackamas County Homeowner's Guide to Septic Systems</i> (no new print run)</li> <li>○ <i>Financial Assistance For Septic System Owners in the Clackamas Watershed: A properly functioning septic system can save you money and help protect our water quality</i> (no new print run)</li> </ul> </li> </ul>

Table 5. Annual Report Matrix

Pollutant Addressed	Strategy	How	Responsible Agency	Applicable Jurisdictional Area	Fiscal analysis	Measure	Timeline	Milestone	2016-2017 Progress
Bacteria, DDT, Dieldrin, mercury,	4. Pet waste management and Public involvement and education	Public education to pet owners through a variety of sources. Maintain educational signs and provide dog waste bag dispensers in parks.	Clackamas County Parks; Dog Services	Clackamas County	Currently funded	Track number of bags taken from dispensers each year. Track the number of website "hits" and the number of brochures printed/year	Ongoing	1500 pet waste bags dispensed	<ul style="list-style-type: none"> <li>• <u>Feyrer Park – Molalla River</u> Doggie bag dispensers placed near beach area in day use and the other near the campground restroom: <ul style="list-style-type: none"> <li>○ 800 doggie bags used in day use area</li> <li>○ 600 doggies bags used in the campground area</li> </ul> </li> <li>• <u>Knights Bridge Property – Molalla River</u> Doggie bag dispenser placed near boat ramp area: <ul style="list-style-type: none"> <li>○ 600 doggie bags used</li> </ul> </li> </ul>
Bacteria, DDT, Dieldrin and Mercury	5. Septic system management	Respond to reports of failing systems; work with homeowner to set a timeline for repair.	WES	Clackamas County	Partially Funded	Track number of reports, outcome of inspection (failing or not), date of follow-up that confirmed repairs were made.	ongoing	Work with Clackamas County Soil & Water Conservation District to establish County-wide septic repair loan program by Jan. 1, 2014.  This milestone has been met.	<ul style="list-style-type: none"> <li>• Total Septic Permits Issued: 50</li> <li>• Inspections performed: 135</li> <li>• Onsite Septic Violations: 0</li> <li>• Enforcement Actions: 0</li> </ul>
Bacteria, DDT, Dieldrin, mercury	6. Illegal dumping management and public education and involvement	Implement Clackamas County's Dump Stoppers Program. Provide public education related to illegal dumping, including publicizing Metro hazardous waste facilities.	BCS	Rural Clackamas County	Currently funded	Track waste removed through Dump Stoppers Program. Track number of persons who complete mediation process for solid waste dumping. Track public education materials distributed.	Ongoing	Annually report number of persons who complete mediation process. Annually report the number of public educational materials distributed.	<ul style="list-style-type: none"> <li>• Ongoing public education contacts between the Dump Stoppers Deputy and forest recreationists to discourage dumping and educate people about potential consequences.</li> <li>• Public outreach <ul style="list-style-type: none"> <li>○ Oregonian - Dump Stoppers see it all in Clackamas County forests - June, 2016</li> <li>○ KOIN 6 - Clackamas Dump Stoppers clean up after adults - July, 2016</li> <li>○ Clackamas Review - Clackamas Dump Stoppers cleans trash from forests - August, 2016</li> </ul> </li> </ul>

Table 5. Annual Report Matrix									
Pollutant Addressed	Strategy	How	Responsible Agency	Applicable Jurisdictional Area	Fiscal analysis	Measure	Timeline	Milestone	2016-2017 Progress
Bacteria, DDT, Dieldrin, mercury						Track number of enforcement actions taken/year for solid waste dumping.	ongoing	Annually report number of enforcement actions.	<p>Illegally dumped waste removed from the Molalla-Pudding sub-basin</p> <ul style="list-style-type: none"><li>• 17, 100 lbs. of trash/solid waste</li><li>• 14 tires</li><li>• 4 vehicles (not counted in solid waste total)<ul style="list-style-type: none"><li>○ This includes materials collected while Dump Stoppers supported two Down by the Riverside cleanup projects sponsored by Molalla Riverwatch, one in October 2016 and one in April 2017. What was collected during those projects is 2,640 pounds of solid waste and 6 tires (which is included in the totals I gave above).</li></ul></li></ul> <p>The U.S. Department of Interior’s Bureau of Land Management (BLM) has camp hosts and other employees that clean up and dispose of waste in the Molalla River Corridor that we have no way of tracking at this time. The BLM has really stepped up their management of recreation use in the Molalla River Corridor. Their volunteer hosts and recreation employees are picking up and disposing of more trash than they used to, so the amount of trash that Dump Stoppers cleans up each year within that watershed is less than it would have been before the change in management. Their focus is primarily the river corridor and Dump Stoppers cleans up the higher elevations of the watershed.</p>
Bacteria	7. Dead animal management	Personnel from Clackamas County Road Dept. collect and properly dispose of large dead animals on full-service roads.	DTD	Clackamas County	Currently funded	Track the number of removals performed annually.	Ongoing	Annually report number of removals. Establish tracking measures and milestones.	57 dead animals removed

Table 5. Annual Report Matrix

Pollutant Addressed	Strategy	How	Responsible Agency	Applicable Jurisdictional Area	Fiscal analysis	Measure	Timeline	Milestone	2016-2017 Progress
Bacteria, DDT, Dieldrin, mercury	8. Spill response and IDDE	Implement spill response and IDDE program on Clackamas County full maintained roads. Refer other cases to DEQ.  This strategy applies to all Roads maintained by Clackamas County. It does not apply to non-maintained local access roads.	DTD	Urban Clackamas County	Currently funded	Track the number of discharges/spills.	Ongoing	Annually report the number of spills	Zero spills reported or responded to in the Molalla/Pudding during the reporting period.
Temperature	9. Riparian Restoration and Tree Plantings	Watershed/riparian restoration projects that include native tree/shrub planting within riparian corridors that are located in Clackamas County Parks  iii. Maintain agreements with local watershed councils to facilitate restoring riparian areas in conjunction with transportation-related improvement projects.	DTD and Parks	Clackamas County Parks		Track number of plantings, number of plants/shrubs planted, volunteer hours, etc.,	ongoing	Tree canopy expansion	<ul style="list-style-type: none"> <li>Clackamas County Transportation Maintenance <ul style="list-style-type: none"> <li>Removed invasive blackberry's &amp; knotweed</li> <li>Hydro-seeded approximately 4,450 sq. ft.</li> <li>Planted: <ul style="list-style-type: none"> <li>90 Red Osier Dogwood shrubs</li> <li>90 Willow stakes</li> <li>16 6' Willow bundles</li> <li>40 Sword Fern</li> <li>14 White Alder</li> <li>2 Big Leaf Maple</li> <li>6 Oregon Ash</li> </ul> </li> </ul> All along tributaries of the Pudding River. </li> <li>Clackamas County Parks implemented a small project within Feyrer Park in which approximately 200 native trees and shrubs were planted within the Molalla River riparian corridor</li> </ul>



Page intentionally left blank