



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



TUALATIN RIVER WATERSHED
TOTAL MAXIMUM DAILY LOAD
ANNUAL REPORT

Clackamas County, the Surface Water Management Agency of
Clackamas County
and the City of Rivergrove

July 1, 2016 – June 30, 2017

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2016-2017 Tualatin TMDL Annual Report

Pollutant addressed	Strategy <i>What is being done, or what will you do, to reduce and/or control pollution from stormwater runoff/radiant heat?</i>	How and Implementer(s) <i>How will this be done and by which jurisdiction(s)?</i>	Fiscal analysis <i>What is the expected resource need?</i>	Measure <i>How will we demonstrate successful implementation or completion of this strategy?</i>	Timeline <i>When do you expect it to be completed</i>	Milestone <i>What goals do you expect to achieve, and by when, to know progress is being made?</i>	Adaptive Management Applied <i>What modifications has the County made when measures indicate strategy is not effective or milestones are not met?</i>	Progress Update <i>2016-2017 Reporting Period</i>
Bacteria, Phosphorus, Mercury, Dissolved Oxygen	1. Stormwater regulations	Implement design/construction standards for post-construction phase stormwater management of new/redevelopment within SWMACC. (SWMACC, Clackamas County & Rivergrove)	Currently funded	Track permit applications for new/redevelopment and stormwater management measures implemented.	Ongoing; revision to design/construction standards may follow the development of the WAPs.	Evaluate measures annually for effectiveness and level of service; apply adaptive management. WES revised its Stormwater Management Plan. WES will provide appropriate measurements and milestones in a revised Implementation Plan but not in this year's report. IP actions not covered by the MS4 SWMPs will have new measures, milestones, and documented reporting procedures developed.	As a program strategy we apply the following continuous improvement process: 1st. Plan our strategy for pollutant reduction 2nd. Execute our approach 3rd. Check if we have accomplished the milestone we said we would 4th. Act and tweak the program / process to get a better result than before	26 applications issued permits
Bacteria, phosphorus, Dissolved Oxygen	2. Water quality monitoring	Conduct stormwater and in-stream water quality monitoring. (WES)	Existing monitoring levels currently funded;	Review monitoring results annually and evaluate effectiveness of management strategies.	Ongoing.	Evaluate measures annually for effectiveness and level of service; apply adaptive management. WES revised its Stormwater Management Plan. WES will provide appropriate measurements and milestones in a revised Implementation Plan but not in this year's report. IP actions not covered by the MS4 SWMPs will have new measures, milestones, and documented reporting procedures developed.	As a program strategy we apply the following continuous improvement process: 1st. Plan our strategy for pollutant reduction 2nd. Execute our approach 3rd. Check if we have accomplished the milestone we said we would 4th. Act and tweak the program / process to get a better result than before	<ul style="list-style-type: none"> • Monitoring results reported in MS4 Annual Report <ul style="list-style-type: none"> ○ For results, see Appendix B • One creek in SWMACC - Pecan Creek - and one MS4-permitted storm sewer system outfall were monitored. Most of Pecan creek's watershed drains a rural portion of the SWMACC.
Mercury		Mercury monitoring is now required in the Clackamas County MS4 permit, co-permittees, including but not limited to SWMACC, Rivergrove and CC, will monitor for mercury in discharges from the MS4 as a part of the stormwater and in-stream water quality monitoring program. (WES & Clackamas County)	Funds for Mercury Analysis are budgeted.	Review monitoring results and evaluate effectiveness of management strategies. Track # of curb miles swept per year and other relevant data.	Ongoing	Evaluate measures annually for effectiveness and level of service; apply adaptive management. WES revised its Stormwater Management Plan. WES will provide appropriate measurements and milestones in a revised Implementation Plan but not in this year's report. IP actions not covered by the MS4 SWMPs will have new measures, milestones, and documented reporting procedures developed.	As a program strategy we apply the following continuous improvement process: 1st. Plan our strategy for pollutant reduction 2nd. Execute our approach 3rd. Check if we have accomplished the milestone we said we would 4th. Act and tweak the program / process to get a better result than before	<ul style="list-style-type: none"> • Samples of non-point source stormwater runoff from the SWMACC have not been analyzed for mercury, to the best of our knowledge. However, one MS4-permitted storm sewer system outfall in SWMACC was monitored by WES during storms on April 9, 2014, July 23, 2014, and March 20, 2015. This water quality data was submitted to DEQ. • No additional monitoring is planned.

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Dissolved Oxygen		Conduct stormwater and in-stream water quality monitoring. WES provides funds for multi-jurisdictional funding of USGS monitoring of targeted pollutants in SWMACC, including dissolved oxygen at river mile 3.4, and flow in the watershed. <i>(WES)</i>	Existing monitoring levels currently funded	Review monitoring results annually and evaluate effectiveness of management strategies.	Ongoing	Evaluate measures annually for effectiveness and level of service; apply adaptive management. WES revised its Stormwater Management Plan. WES will provide appropriate measurements and milestones in a revised Implementation Plan but not in this year's report. IP actions not covered by the MS4 SWMPs will have new measures, milestones, and documented reporting procedures developed.	As a program strategy we apply the following continuous improvement process: 5th. Plan our strategy for pollutant reduction 6th. Execute our approach 7th. Check if we have accomplished the milestone we said we would 8th. Act and tweak the program / process to get a better result than before	<ul style="list-style-type: none"> Monitoring results from Pecan Creek reported in Appendix B of the MS4 2016-2017 annual report (most of Pecan Creek's watershed is in a rural portion of the SWMACC). <ul style="list-style-type: none"> See Appendix B for results For analysis, see Attachment 2 of Appendix B See the USGS website for continuously collected dissolved oxygen data from the Tualatin River at River Mile 3.4. Funds from the SWMACC were contributed to the USGS in 2016-2017 to support the operation of the continuous monitoring network in the Tualatin River watershed which includes this station.
Bacteria, Phosphorus, Mercury, Dissolved Oxygen and Mercury	3. Industrial/Commercial Stormwater Program	Implement the WES "Non-Single-Family Residential Maintenance Agreement Program" (NSFRMAP) The NSFRMAP agreements obligate property owners to clean and maintain their storm sewer system. <i>(WES)</i>	Currently funded.	Track annual letters sent to property owners in NSFRMAP identifying their requirements; track annual reports received from NSFRMAP property owners.	Ongoing	Receive annual reports from owners. Evaluate measures annually for effectiveness and level of service; apply adaptive management. WES revised its Stormwater Management Plan. WES will provide appropriate measurements and milestones in a revised Implementation Plan but not in this year's report. IP actions not covered by the MS4 SWMPs will have new measures, milestones, and documented reporting procedures developed.	As a program strategy we apply the following continuous improvement process: 1st. Plan our strategy for pollutant reduction 2nd. Execute our approach 3rd. Check if we have accomplished the milestone we said we would 4th. Act and tweak the program / process to get a better result than before	<ul style="list-style-type: none"> 3 postcard mailings were sent to each commercial/industrial account in the MS4 (some properties have multiple accounts and share the storm system) during the fall and spring of the reporting period. This amounted to over 3000 pieces for both districts. However, as these mailings did not result in sufficient response, follow up letters were sent in May to each account that had not responded. These efforts significantly enhanced compliance: Tripled the number of businesses reporting and doubled the number of devices maintained and the number of gallons removed from the system. 7 Reports received for the 18 commercial/industrial properties in the SWMACC MS4.
Temperature	4 Other Development related and watershed protection regulations	i. Metro Title 3 - Within SWMACC (but outside of City of Rivergrove). The equivalent of Title 3 is part of the SWM Rules and REGS for SWMACC. WES has contracted with Clackamas County Planning to administer these requirements within SWMACC's unincorporated areas. <i>(WES, Clackamas County)</i>	Currently funded. Additional resources may be needed	Analyze aerial photos for changes in tree canopy.	Ongoing	Evaluate measures annually for effectiveness and level of service; apply adaptive management. WES revised its Stormwater Management Plan. WES will provide appropriate measurements and milestones in a revised Implementation Plan but not in this year's report. IP actions not covered by the MS4 SWMPs will have new measures, milestones, and documented reporting procedures developed.	As a program strategy we apply the following continuous improvement process: 1st. Plan our strategy for pollutant reduction 2nd. Execute our approach 3rd. Check if we have accomplished the milestone we said we would 4th. Act and tweak the program / process to get a better result than before	Clackamas County has reviewed and analyzed the most recent aerial photos of the Tualatin Watershed within Clackamas County. At this time, we are not able to detect any discernible change in tree canopy. It appears that there have been no major impacts to tree canopy whether positive or negative. Looking forward, Clackamas County will be editing and submitting an updated Implementation Plan to the DEQ. At that time, we will be discussing ways to improve upon the way we report with regard to temperature within the Tualatin Watershed
Temperature		ii. Metro Title 13 (Goal 5)—Clackamas County/WES jurisdictional areas. This will be adopted by ordinance and HCA maps by DTD Planning. <i>(Clackamas County)</i>	Additional resources needed: (Minimum \$100,000).	Analyze aerial photos for changes in tree canopy.	Ordinance and Map of Habitat Conservation Areas adopted by December 2008	Protection of Class I and II HCA's. Report to Metro REIN Program and annually. WES revised its Stormwater Management Plan. WES will provide appropriate measure-	As a program strategy we apply the following continuous improvement process: 1st. Plan our strategy for pollutant reduction 2nd. Execute our approach	Clackamas County has reviewed and analyzed the most recent aerial photos of the Tualatin Watershed within Clackamas County. At this time, we are not able to detect any discernible change in tree canopy. It appears that there have been no major impacts to tree canopy whether positive or negative. Looking forward, Clackamas County will be editing and submitting an updated Implementation Plan to the DEQ. At that time, we will be discussing

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						ments and milestones in a revised Implementation Plan but not in this year's report. IP actions not covered by the MS4 SWMPs will have new measures, milestones, and documented reporting procedures developed.	<p>3rd. Check if we have accomplished the milestone we said we would</p> <p>4th. Act and tweak the program / process to get a better result than before</p>	ways to improve upon the way we report with regard to temperature within the Tualatin Water-shed.
Temperature	iii. River and Stream Conservation Area (ZDO 704). This is administered by Clackamas County. <i>(Clackamas County)</i>	Currently funded	Analyze aerial photos for changes in tree canopy.	Ongoing	Evaluate measures annually for effectiveness and level of service; apply adaptive management. WES revised its Stormwater Management Plan. WES will provide appropriate measurements and milestones in a revised Implementation Plan but not in this year's report. IP actions not covered by the MS4 SWMPs will have new measures, milestones, and documented reporting procedures developed.	<p>As a program strategy we apply the following continuous improvement process:</p> <p>1st. Plan our strategy for pollutant reduction</p> <p>2nd. Execute our approach</p> <p>3rd. Check if we have accomplished the milestone we said we would</p> <p>4th. Act and tweak the program / process to get a better result than before</p>	<ul style="list-style-type: none"> Clackamas County has reviewed and analyzed the most recent aerial photos of the Tualatin Watershed within Clackamas County. At this time, we are not able to detect any discernible change in tree canopy. It appears that there have been no major impacts to tree canopy whether positive or negative. Looking forward, Clackamas County will be editing and submitting an updated Implementation Plan to the DEQ. At that time, we will be discussing ways to improve upon the way we report with regard to temperature within the Tualatin Watershed. SWMACC Rules and Regulations supersede the River and Stream Conservation Area (ZDO 704) and, therefore, ZDO 704 does not apply in SWMACC 	
	iv.. Floodplain Management District (ZDO 703). This is administered by Clackamas County. <i>(Clackamas County)</i>	Currently funded	Analyze aerial photos for changes in tree canopy.	Ongoing	Evaluate measures annually for effectiveness and level of service; apply adaptive management. WES revised its Stormwater Management Plan. WES will provide appropriate measurements and milestones in a revised Implementation Plan but not in this year's report. IP actions not covered by the MS4 SWMPs will have new measures, milestones, and documented reporting procedures developed.	<p>As a program strategy we apply the following continuous improvement process:</p> <p>1st. Plan our strategy for pollutant reduction</p> <p>2nd. Execute our approach</p> <p>3rd. Check if we have accomplished the milestone we said we would</p> <p>4th. Act and tweak the program / process to get a better result than before</p>	Clackamas County has reviewed and analyzed the most recent aerial photos of the Tualatin Watershed within Clackamas County. At this time, we are not able to detect any discernible change in tree canopy. It appears that there have been no major impacts to tree canopy whether positive or negative. Looking forward, Clackamas County will be editing and submitting an updated Implementation Plan to the DEQ. At that time, we will be discussing ways to improve upon the way we report with regard to temperature within the Tualatin Watershed.	
Temperature	v. Wetland Provisions of ZDO 1002 and 709. These ZDOs, which only apply to wetlands, are administered by Clackamas County. <i>(Clackamas County)</i>	Currently funded		Ongoing	Evaluate measures annually for effectiveness and level of service; apply adaptive management. WES revised its Stormwater Management Plan. WES will provide appropriate measurements and milestones in a revised Implementation Plan but not in this year's report. IP actions not covered by the MS4 SWMPs will have new measures,	<p>As a program strategy we apply the following continuous improvement process:</p> <p>1st. Plan our strategy for pollutant reduction</p> <p>2nd. Execute our approach</p> <p>3rd. Check if we have accomplished the milestone we said we would</p> <p>4th. Act and tweak the program / process to get a better result than before</p>	No permits issued	

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Dissolved Oxygen and Mercury	5 Erosion Prevention and Sediment Control	Implement erosion control programs in SWMACC, Rivergrove, and Clackamas County DTD service areas. Require erosion control permits as applicable; provide technical assistance, education, and outreach as applicable. Implement road maintenance practices on Clackamas County full maintenance roads according to ODOT BMP manual for water quality and habitat. <i>(WES, Clackamas County & Rivergrove)</i>	Currently funded for SMWACC; however additional resources may be needed in the future.	Track erosion control permits issued; inspections performed; enforcement actions taken; and education and outreach activities implemented.	Ongoing	Evaluate measures annually for effectiveness and level of service; apply adaptive management. This TMDL Implementation Plan uses the term Measurable Milestones, not measurable goals. The measurable milestones in the TMDL Implementation Plan are: a) Evaluate measures annually for effectiveness and level of service and b) Apply Adaptive Management. In a previous evaluation found a rise in the use of an incorrect type of sediment fencing (non-pocketed) and incorrect installation. While this did not rise to the level of an enforcement issue, it presented an educational opportunity. Therefore, staff developed and mailed to each new erosion permit applicant a flyer identifying the approved type of sediment fencing as well as reminders regarding proper installation. This flyer continues to be used.	As a program strategy we apply the following continuous improvement process: 1st. Plan our strategy for pollutant reduction 2nd. Execute our approach 3rd. Check if we have accomplished the milestone we said we would 4th. Act and tweak the program / process to get a better result than before	<ul style="list-style-type: none"> • 25 permitted sites • 215 inspections • WES provides erosion-related outreach and education through: <ul style="list-style-type: none"> ○ The educational flyer on the proper type and installation of sediment fencing continued to be distributed with erosion prevention and sediment control applications. ○ Our Erosion Prevention and Sediment Control Planning and Design Manual is available for free download at our website. ○ Notification of upcoming erosion control trainings on the WES website. ○ Multiple educational brochures, including “Soil Savvy: A Guide to Erosion and Sedimentation Control”. • In 2016-2017, WES began discussions with DEQ staff regarding WES continuing to serve as an Agent of the DEQ for 1200-C permits in unincorporated Clackamas County. Ultimately, it was agreed to terminate the Agent status effective July 1, 2017. WES will continue to be a 1200-CN participating jurisdiction for within our service districts (excluding Happy Valley) and also within the City of Gladstone. Erosion Prevention and Sediment Control requirements apply to all sites greater than 800 feet of disturbance within the WES service districts.
Bacteria	6 Public involvement and education	i. Provide information in brochures, on WES’ website, and upon request about septic system maintenance and how to detect failures. <i>(WES & Clackamas County)</i>	Currently funded	Track the number of website “hits” and the number of brochures printed or distributed/year	Ongoing	Evaluate measures annually for effectiveness and level of service; apply adaptive management. WES revised its Stormwater Management Plan. WES will provide appropriate measurements and milestones in a revised Implementation Plan but not in this year’s report. IP actions not covered by the MS4 SWMPs will have new measures, milestones, and documented reporting procedures developed.	As a program strategy we apply the following continuous improvement process: 1st. Plan our strategy for pollutant reduction 2nd. Execute our approach 3rd. Check if we have accomplished the milestone we said we would 4th. Act and tweak the program / process to get a better result than before	<ul style="list-style-type: none"> • In partnership with Clackamas County Soil and Water Conservation District, the DTD Soils Division distributed the following brochures: <ul style="list-style-type: none"> ○ <i>Stream-Friendly Home and Yard Care</i> ○ <i>Protecting Your Watershed</i> ○ <i>What Have You Done for Your Watersheds Lately?</i> ○ <i>5 Things You Should Ask Before Buying a Home With a Septic System</i> ○ <i>Septic System Maintenance: A Clackamas County guide to the proper care and maintenance of your onsite wastewater treatment system</i> ○ <i>Do your Part – Be Septic Smart: A Clackamas County Homeowner’s Guide to Septic Systems</i> (no new print run)

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								<ul style="list-style-type: none"> ○ <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 (no new print run)</i> ○ <i>Septic System Repair and Replacement loan Program: Provides details on this pilot program offered by Clackamas County, Clackamas Soil and Water Conservation District, DEQ, and Clackamas River Water Providers.</i> ● Other media, such as bill inserts, newsletters, and radio, was used to educate the public. Information on other media found in the MS4 annual report, BMP #10. ● There were 9, 967 hits on the Soils webpage
Temperature	6 Public involvement and education	<p>ii. Encourage landowners to voluntarily protect/enhance their riparian areas through public education and involvement (e.g. Earth Day event providing educational lecture, informational pamphlets, and field demonstration).</p> <p><i>(WES & Clackamas County)</i></p>		Qualitative assessment through interviews with staff.	Ongoing	<p>Evaluate measures annually for effectiveness and level of service; apply adaptive management.</p> <p>WES revised its Stormwater Management Plan. WES will provide appropriate measurements and milestones in a revised Implementation Plan but not in this year's report. IP actions not covered by the MS4 SWMPs will have new measures, milestones, and documented reporting procedures developed.</p>	<p>As a program strategy we apply the following continuous improvement process:</p> <ol style="list-style-type: none"> 1st. Plan our strategy for pollutant reduction 2nd. Execute our approach 3rd. Check if we have accomplished the milestone we said we would 4th. Act and tweak the program / process to get a better result than before 	<ul style="list-style-type: none"> ● Public Involvement and Education efforts which are intended to improve and protect riparian areas within the SWMACC include: I) articles within County-wide publications, II) information on our website, and III) community engagement events and activities. Specific activities within the SWMACC include <ul style="list-style-type: none"> ○ Watershed health public awareness and educational activities provided via the Tualatin Basin Public Awareness Committee (TBPAC). WES is a member of TBPAC, a group dedicated to protecting the Tualatin River Watershed through innovative public awareness and education activities. The TBPAC "Partners for Clean Water" have met since 1993 to leverage resources to deliver healthy watershed outreach programs at little or no cost to Tualatin Basin residents. ○ For the past several years, the SWMACC has provided a shuttle van and driver to move citizens to and from parking areas and put-in and take-out areas during the annual Tualatin River Discovery Day paddle events in June. "Cash Cab"-style education is provided by the shuttle van driver during shuttle trips. The SWMACC expects to continue to support the Tualatin River Discovery Day paddle event in June 2018 and in future years. ○ An article will be published in the Winter 2016 issue of Citizen News (which is Clackamas County's newspaper; It is U.S. mailed to all County residents, including those in the SWMACC) with recommended voluntary property owner actions which can be implemented to protect riparian areas and surface water quality.
Temperature		<p>iii. Provide education opportunities for Environmental Youth Corps members, school groups, private company and non-profit groups, and individual volunteers to help restore riparian habitats through restoration work</p>	Currently funded	Track the number of volunteer Events and their associated activities (i.e. amount of trash removed, Number of plantings, etc)		<p>WES revised its Stormwater Management Plan. WES will provide appropriate measurements and milestones in a revised Implementation Plan but</p>	<p>As a program strategy we apply the following continuous improvement process:</p> <ol style="list-style-type: none"> 1st. Plan our strategy for pollutant reduction 2nd. Execute our approach 	<ul style="list-style-type: none"> ● Two times the amount of participants from last year, then 100 and now 200, took part in the hands-on, flag-ship event that makes up SWMACC's public education, <i>Tualatin River Discover Day</i>, where they were shuttled by staff, who served as instructor and evaluator, to critical locations of vegetation, aquatic life and streams that make up the Tualatin watershed

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		events. These events highlight specific topics such as canopy cover, non-native plant invasion, soil erosion and health. <i>(Clackamas County)</i>				not in this year's report. IP actions not covered by the MS4 SWMPs will have new measures, milestones, and documented reporting procedures developed.	3rd. Check if we have accomplished the milestone we said we would 4th. Act and tweak the program / process to get a better result than before	<ul style="list-style-type: none"> Lessons about the steps necessary to protect and improve water quality were emphasized Effectiveness evaluated every year to improve upon the lessons provided Noteworthy MS4 Activity: WES evaluated the effectiveness of its SWMACC public education, an MS4 task due in July 2016 and submitted on June 2016.
Bacteria, phosphorus, Dissolved Oxygen	7. Pet waste management and Public involvement and education	Public education to pet owners through a variety of sources. <i>(WES and Clackamas County)</i>	Currently funded	Track number of bags taken from dispensers each year, if possible. Track the number of website "hits" and the number of brochures printed/year	Ongoing	Evaluate measures annually for effectiveness and level of service; apply adaptive management WES revised its Stormwater Management Plan. WES will provide appropriate measurements and milestones in a revised Implementation Plan but not in this year's report. IP actions not covered by the MS4 SWMPs will have new measures, milestones, and documented reporting procedures developed.	As a program strategy we apply the following continuous improvement process: 1st. Plan our strategy for pollutant reduction 2nd. Execute our approach 3rd. Check if we have accomplished the milestone we said we would 4th. Act and tweak the program / process to get a better result than before	<ul style="list-style-type: none"> SWMACC-specific <ul style="list-style-type: none"> Addressed during the hands-on, flag-ship <i>Tualatin River Discovery Day</i> event SWMACC and CCSD#1 together <ul style="list-style-type: none"> Distributed over 1,000 of pet waste collection bags at multiple public events to educate pet owners Public education on pet waste management appeared via multiple online sources, including website, eNewsletter and paid digital advertising (over 2,000,000 impressions) along with published newsletters, advertisements, and brochures (none printed this year)
Bacteria, Dissolved Oxygen and Phosphorus,	8 Septic system management	Respond to reports of failing systems; work with homeowner to set a timeline for repair. County-funded Safety Net Program provides low interest loans for low income property owners to repair failing septic systems. <i>(WES & Clackamas County)</i>	Currently funded	Track number of Failures that need repair permits, number of Failures that need maintenance, number of enforcement actions, and # of Safety Net loans provided.	Ongoing	Evaluate measures annually for effectiveness and level of service; apply adaptive management. WES revised its Stormwater Management Plan. WES will provide appropriate measurements and milestones in a revised Implementation Plan but not in this year's report. IP actions not covered by the MS4 SWMPs will have new measures, milestones, and documented reporting procedures developed.	As a program strategy we apply the following continuous improvement process: 1st. Plan our strategy for pollutant reduction 2nd. Execute our approach 3rd. Check if we have accomplished the milestone we said we would 4th. Act and tweak the program / process to get a better result than before	<ul style="list-style-type: none"> 8 permits issued 36 inspections performed 1 enforcement actions 2 septic system repairs
Bacteria, Dissolved Oxygen, Phosphorus and Mercury	9 Illegal dumping management and public education and involvement	Administer Clackamas County's Dump Stoppers Program in rural areas, and administer solid waste nuisance ordinance in urban areas. Provide public education related to illegal dumping, including publicizing Metro hazardous waste facilities. <i>(Clackamas County)</i>	Currently funded	Track waste removed through Dump Stoppers Program. Track number of persons/year who complete mediation process for solid waste dumping. Track the number of enforcement actions taken per year for solid waste dumping.	Ongoing	Evaluate measures annually for effectiveness and level of service; apply adaptive management WES revised its Stormwater Management Plan. WES will provide appropriate measurements and milestones in a revised Implementation Plan but not in this year's report. IP actions not covered by the MS4 SWMPs will have new measures, milestones, and documented reporting procedures developed.	As a program strategy we apply the following continuous improvement process: 1st. Plan our strategy for pollutant reduction 2nd. Execute our approach 3rd. Check if we have accomplished the milestone we said we would 4th. Act and tweak the program / process to get a better result than before	<ul style="list-style-type: none"> County Parks <ul style="list-style-type: none"> No statistics are available for the Tualatin watershed. Dump Stoppers does not operate within the Tualatin watershed. It is primarily service provided to forested areas in the east county area - Molalla and Clackamas watersheds. DTD <ul style="list-style-type: none"> If an illegal dump is in the right of way – Metro is contacted For illegal dumps within the urban area, Code Enforcement is contacted The number of illegal dumps in this watershed continues to decrease, since moving towards an enforcement-based program

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Bacteria, Dissolved Oxygen, Phosphorus and Mercury	10. Spill response and IDDE	Implement spill response and IDDE program on Clackamas County full service roads and within SWMACC. Refer other cases to DEQ. <i>(WES & Clackamas County)</i>	Currently funded	Track the number of discharges/spills per year.	Ongoing	Evaluate measures annually for effectiveness and level of service; apply adaptive management WES revised its Stormwater Management Plan. WES will provide appropriate measurements and milestones in a revised Implementation Plan but not in this year's report. IP actions not covered by the MS4 SWMPs will have new measures, milestones, and documented reporting procedures developed.	As a program strategy we apply the following continuous improvement process: 1st. Plan our strategy for pollutant reduction 2nd. Execute our approach 3rd. Check if we have accomplished the milestone we said we would 4th. Act and tweak the program / process to get a better result than before	<ul style="list-style-type: none"> • WES <ul style="list-style-type: none"> ○ No spills reported • DTD <ul style="list-style-type: none"> ○ DTD was not notified by OERS or by any other means of any spills or discharges within the Tualatin Watershed.
Temperature	11 Riparian assessment and Management	<p>i. Update biological surveys to include benthic macroinvertebrate surveys and habitat/riparian Inventories. Through IGA with ODFW, perform updated biological surveys for up to 18 river miles within CCSD #1 and up to 9 river miles within SWMACC (based in part on priority reaches and landowner access). Biological surveys to include:</p> <ul style="list-style-type: none"> a) fish abundance and distribution; b) habitat and riparian shade assessments; c) canopy density measurements; and d) continuous summer temperature monitoring during June thru Sept. <p><i>(WES)</i></p>	\$100,000 budgeted in FY 2010.	Final reports to include specific reaches with recommended list of actions for restoration and protection.	2010-2015	Identify and prioritize riparian areas. WES revised its Stormwater Management Plan. WES will provide appropriate measurements and milestones in a revised Implementation Plan but not in this year's report. IP actions not covered by the MS4 SWMPs will have new measures, milestones, and documented reporting procedures developed.	The macroinvertebrate and geomorphology surveys are being conducted in fall 2017, with reports being completed in 2018.	<ul style="list-style-type: none"> • Reports showing SWMACC results are online at http://www.clackamas.us/wes/watershedhealth.html • No surveys conducted since FY14-15. Biological surveys conducted in FY14-15 included benthic macroinvertebrate and geomorphic inventories at 10 sites on 9 streams within SWMACC. Biological surveys included: <ul style="list-style-type: none"> ○ Benthic macroinvertebrate sampling ○ Geomorphic sampling including riparian habitat assessments ○ Water chemistry (one time during sampling, at sampling sites) <p>Macroinvertebrate sampling contained the following elements:</p> <ul style="list-style-type: none"> ○ Instream physical habitat and riparian assessment <ul style="list-style-type: none"> ▪ Habitat surveys ▪ Cross Section Surveys ▪ Riparian surveys ○ Water Chemistry Sampling ○ Macroinvertebrate community assessment <ul style="list-style-type: none"> ▪ Field sampling <p>The geomorphic assessment at each of the sites included the following five elements:</p> <ul style="list-style-type: none"> ○ Longitudinal and cross section profile surveys ○ Measurement of surficial substrate conditions ○ Collection of a bulk sample of bed conditions ○ Measurement of pool characteristics ○ Assessment of bank conditions at various sites throughout the SWMACC service area

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Temperature		<p>ii. For roads with Full County Maintenance, apply ODOT Guide. As roads are maintained, repaired, and rebuilt, the ODOT Guide's BMPs will be used to address river/stream surface shade where appropriate over time. <i>(Clackamas County)</i></p>	Currently funded. Additional resources needed	Qualitative assessment through interviews with staff.	Ongoing	<p>Evaluate measures annually for effectiveness and level of service; apply adaptive management.</p> <p>WES revised its Stormwater Management Plan. WES will provide appropriate measurements and milestones in a revised Implementation Plan but not in this year's report. IP actions not covered by the MS4 SWMPs will have new measures, milestones, and documented reporting procedures developed.</p>	<p>As a program strategy we apply the following continuous improvement process:</p> <ol style="list-style-type: none"> 1st. Plan our strategy for pollutant reduction 2nd. Execute our approach 3rd. Check if we have accomplished the milestone we said we would 4th. Act and tweak the program / process to get a better result than before 	Maintenance and capital projects are performed in compliance with the BMP's and other environmental regulations
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