City of West Linn, Oregon

National Pollutant Discharge Elimination System Municipal Separate Storm Sewer System Discharge Permit and TMDL Implementation Plan

2013–2014 Annual Report

Prepared for the

Oregon Department of Environmental Quality

October 29, 2014

October 29, 2014

Municipal (MS4) Stormwater Coordinator
Oregon Department of Environmental Quality
811 SW Fourth Ave.
Portland, OR 97204

Dear Lisa Cox,

On behalf of the City of West Linn, I am pleased to submit the enclosed 2013-2014 NPDES and the Willamette and Tualatin River TMDL Implementation Plans Annual Report. This report fulfills annual reporting requirements for the Clackamas County (and co-permittees) renewed NPDES MS4 Discharge Permit, issued March 16, 2012, and the City's Willamette River and Tualatin River TMDL Implementation Plans.

This annual report demonstrates progress implementing permit requirements, and meeting Stormwater Management Plan (SWMP) commitments and goals. Appendix A documents implementation activities applicable to the current 2012 SWMP.

Please call me at 503-722-5500 if you have any questions regarding the report.

Sincerely,

_____

Lance Calvert
Public Works Director/ City Engineer
City of West Linn

cc: Mike Cardwell, City of West Linn

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1.0 Introduction

1.1 MS4 NPDES Permit Background

The Oregon Department of Environmental Quality (DEQ) regulates stormwater runoff from the City of West Linn through the Municipal Separate Storm Sewer System (MS4) National Pollutant Discharge Elimination System (NPDES) Permit No. 101348[1], issued to Clackamas County and its co-permittees. Clackamas County co-permittees include the City of West Linn along with the cities of Lake Oswego, Gladstone, Milwaukie, Oregon City, Wilsonville, Happy Valley, Johnson City, and Rivergrove, the Oak Lodge Sanitary District, and Clackamas County. Each co-permittee is a relatively small community, most having populations between 15,000 and 25,000 with some (Johnson City, Rivergrove) having significantly smaller populations.

The City's MS4 NPDES permit was reissued March 16, 2012, after a multi-year negotiation process with DEQ and an additional year-long delay related to an appeal. The 2012 reissued permit was not appealed, and thus maintains an effective date of March 16, 2012. In conjunction with the reissuance of the City's permit, Stormwater Management Plan (SWMP) updates to address requirements of the reissued permit were submitted and approved by DEQ on May 16, 2012.

Each co-permittee is required to submit an annual report, summarizing accomplishments and implementation of their individual SWMPs. This annual report documents stormwater management activity from July 1, 2013 to June 30, 2014 in conjunction with the City's reissued MS4 NPDES permit.

1.2 Document Organization

The following table (Table 1) outlines the organization of this annual report document, with respect to the annual reporting requirements per Schedule B(5) of the City's MS4 NPDES permit.

Table 1: Summary of the MS4 NPDES Annual Report Requirements

	Annual reporting requirement	Section location in this NPDES Annual Report
a)	Status of implementing SWMP elements, including progress in meeting measurable goals.	Appendix A
b)	Status of any public education effectiveness evaluation conducted during the reporting year, and a summary of how results were used in adaptive management.	Appendix A
c)	Summary of the adaptive management process implementation during the reporting year including new BMPs.	2.0
d)	Proposed changes to SWMP program elements to reduce TMDL pollutants to the MEP.	2.0
e)	A summary of total stormwater program expenditures and funding sources over the reporting fiscal year, and those anticipated in the next fiscal year.	3.0
f)	A summary of monitoring program results, including monitoring data that is accumulated throughout the reporting year.	4.0 and Appendix B
g)	Any proposed modifications to the monitoring plan necessary to ensure that adequate data and information are collected to conduct stormwater program assessments.	4.0
h)	A summary describing the number and nature of enforcement actions, inspections, and public education programs [a]	6.0 and Appendix A

[1] The City's MS4 NPDES permit can be found at: http://www.deq.state.or.us/wq/wqpermit/docs/individual/npdes/ph1ms4/clackamas/ClackCoMS4Permit.pdf

i)	An overview, as related to MS4 discharges, describing land use changes, UGB expansions, land annexations, and new development activities. The number of new post-construction permits issued and estimate of new and replaced impervious surface must also be included.	5.0
j)	A summary related to MS4 discharges describing concept planning or other activities in preparation of UGB expansions or land annexations.	5.0
NA)	Additional efforts conducted by the City.	6.0

[a] Enforcement actions, inspections, and public education programs are included in the City's SWMP as BMPs, and are reported along with the status of implementing all components of the SWMP in Appendix A.

Each section of this report corresponds to the specific requirements for annual report submittals found in Schedule B (5) of the NPDES MS4 permit. This report emphasizes efforts and activities associated with individual Best Management Practices (BMPs) from the City's effective 2012 SWMP, as summarized in Appendix A.

In addition to annual report information required under the City's NPDES MS4 permit, Appendix C of this report includes the TMDL Implementation Plan annual reports for the Tualatin River and Willamette River TMDLs. The City submitted an updated Willamette River TMDL Implementation Plan to DEQ on April 30, 2014 and an updated Tualatin River TMDL Implementation Plan to DEQ on June 11, 2014. The TMDL Implementation Plans include strategies to address temperature as a parameter not otherwise addressed through implementation of the City's NPDES MS4 permit and SWMP.

2.0 Adaptive Management Process Implementation

2.1 Adaptive Management Program

In accordance with the issuance of the City's renewed MS4 NPDES permit (in 2012), the City was required to document their adaptive management approach to assess annually and modify, as necessary, existing and new SWMP components. The City submitted their adaptive management approach to DEQ on November 1, 2012, as required in the reissued NPDES MS4 permit.

Historically, the City has implemented adaptive management principals to annually refine implementation methods and data collection activities in conjunction with their effective SWMP and BMPs. More significant modifications to SWMP activities occur every five years, in conjunction with their permit renewal application and updated permit requirements. Documentation of the adaptive management approach was not explicitly required until issuance of this permit (2012). The City's adaptive management approach maintains consistency with the City's historical approach for implementing adaptive management principals.

Annually, as the City completes their NPDES MS4 annual report, the City reviews SWMP implementation through BMP-specific measureable goals and tracking measures. The City collects data and feedback from staff responsible for implementing and reporting on each BMP to gage whether implementation was deemed to be effective or whether there are suggested improvements to be made. Suggested adjustments to BMP implementation will include consideration of resource availability, budget/funding, and overall need.

Every 5 years, during the permit renewal process and SWMP update effort, additional factors are considered as part of the City's overall adaptive management process. These factors include more detailed information related to BMP implementation, such as:

1. Whether technology or information is available that would help improve or refine BMPs.
2. How representative are the measurable goals and tracking measures to the BMP objective?

3. Are resources available to make changes to the measureable goals and BMP objectives?

Additionally, at the end of the permit term, technical investigations and studies are required in conjunction with compliance dates outlined in the permit. Such studies include (but are not limited to) a water quality trends analysis, pollutant load reduction evaluation, hydro modification assessment and a retrofit assessment. All studies will help target and identify specific issues that need to be addressed to maintain waterbody health and help formulate BMP activities (measureable goals and tracking measures) that can be used to support improvements.

2.2 SWMP Updates for the 2013-2014 Reporting Year

The 2013-2014 reporting year is the second permit year in which the City's effective SWMP (dated 2012) has been implemented.

For the 2013-2014 permit year, no updates were made to the 2012 SWMP or BMP measureable goals and tracking measures beyond those submitted to DEQ in May 2012. Review of BMP implementation during the preparation of this annual report did not reveal the need for adaptive management changes.

3.0 Summary of Program Expenditures

A summary of the City of West Linn's expenditures for the 2013–2014 fiscal year and a projection of the City's expenditures for the 2014–2015 fiscal year are provided in Tables 2 and 3 respectively. New requirements in the reissued permit significantly impacted program expenditures. Projection of expenditures is considered draft at this time. Funding sources for the City include stormwater utility fees and stormwater development charges (SDCs).

Table 2: 2013–2014 Expenditures

Expenditures	Amount
Personal services	$259,271
Materials and services	$117,389
Capital outlay	$314,028
Transfers	$321,000
Total	**$1,011,688**

Table 3: 2014–2015 Projected Expenditures

Expenditures	Amount
Personal services	$284,000
Materials and services	$176,000
Capital outlay	$250,000
Transfers	$328,000
Total	**$1,038,000**

4.0 Monitoring Data

4.1 Summary of the Comprehensive Clackamas County Stormwater Monitoring Plan (CCCSMP)

Per the 2004 MS4 NPDES permit requirements (Schedule B), the City of West Linn, along with Clackamas County and other co-permittees was required to develop and implement a stormwater monitoring program. Given the effort associated with implementing an effective environmental monitoring program that adequately met all permit requirements and objectives, Clackamas County (i.e., CCSD#1 and SWMACC) and six other co-permittees including the City of West Linn agreed to consolidate efforts and prepare one comprehensive stormwater monitoring plan. This plan, called the Comprehensive Clackamas County Stormwater Monitoring Plan (CCCSMP), was prepared for submittal with the 2006 NPDES Permit Annual Compliance Reports. The plan was implemented beginning July 1, 2007 and minor editorial changes were made in 2008.

In conjunction with requirements of the 2012 reissued NPDES MS4 permit, the 2007/2008 CCCSMP was reviewed for consistency with revised monitoring objectives. Monitoring locations and frequencies were adjusted to reflect requirements of the 2012 Permit. Additional efforts related to mercury monitoring, pesticide monitoring, macro invertebrate (biologic) monitoring and geomorphic monitoring were added to the CCCSMP. Detail related to use of a time composite sampling methodology was added. Additional information such as quality assurance procedures were also added in conjunction with Schedule B.2 of the 2012 Permit.

The updated (2012) CCCSMP was submitted to DEQ in September 2012. Comments from DEQ were received in October 2012 and final revisions to the 2012 CCCSMP were submitted to DEQ June 30, 2013. For this reporting year (2013–2014), the 2013 CCCSMP is the effective, implemented monitoring plan for the City of West Linn. The 2012 CCCSMP was implemented starting October 2012.

As described in the CCCSMP, the MS4 NPDES stormwater monitoring program requires two components. The first component is program monitoring, which involves the tracking and assessment of programmatic activities, as described in the individual permittees SWMP, through the use of performance indicators or metrics. Results of the program monitoring are reported in Appendix A as the annual tracking measures. The second component is environmental monitoring, which includes visual monitoring and the actual collection and analysis of samples. Visual monitoring efforts include dry weather field screening as described in the City's SWMP under the following BMP: "Implement the Illicit Discharge Elimination Program." Results of the visual monitoring efforts are reported in Appendix A and Section 6.0 under the applicable BMP. Environmental monitoring also consists of instream sample collection and outfall sample collection, and the City's sampling efforts are outlined in more detail in Section 4.2 and 4.3 and in the CCCSMP. Results of the instream and outfall sample collection efforts are provided in Appendix B.

4.2 CCCSMP Updates and Modifications for the 2013–2014 Reporting Year

There were no updates or modifications to the CCCSMP this reporting year.

4.3 Summary of Monitoring Data

The City's reissued MS4 NPDES permit (effective date: March 16, 2012) prescribed new monitoring requirements that were to take effect October 1, 2012. Monitoring requirements included instream and stormwater outfall monitoring, mercury monitoring, pesticide monitoring and biological monitoring.

In accordance with the 2012 CCCSMP, West Linn conducts instream and outfall monitoring. The City conducted instream monitoring at three locations:

1. Location #1: Trillium Creek at Caloroga Road, a tributary to the Willamette River
2. Location #2: Tanner Creek at Imperial Drive, a tributary to the Willamette River, and
3. Location #3: Unnamed Creek at Ryan Court & Johnson Road, a tributary to the Tualatin River

Outfall monitoring was conducted at an outfall to Barlow Creek, a tributary to the Willamette River (Location #4). Locations are mapped on Figure 1. In accordance with the frequencies outlined in the 2013 CCCSMP, time composite grab samples are taken at the instream monitoring locations a minimum of three times a year (during storm events). Single grab samples are taken during two additional monitoring events (not during storms) at the instream monitoring locations. For instream monitoring, 50% of the samples need to be collected during the wet weather season (October 1st – April 30th). Time composite grab samples are taken at the outfall monitoring location three times a year.

The City of West Linn did not conduct any Mercury Monitoring during the 2013-2014 reporting year.

Since 2012, the City of West Linn has been participating in a coordinated pesticide monitoring effort with other Clackamas County co-permittees and USGS. Sediment and instream water samples were collected in the summer 2013. Preliminary results were provided by USGS to the participating jurisdictions in April 2014, and completion of the data analysis and final report is expected December 31, 2014.

Finally, during the 2013-2014 reporting year, West Linn completed their biological monitoring requirement by participating in a coordinated instream biological monitoring project. The City partnered with five other co-permittees (the cities of Gladstone, Lake Oswego, Milwaukie, Oregon City and Wilsonville) to fund the 2013 Coordinated Macroinvertebrate Assessment Study. The study was conducted by Cole Ecological, Inc. and a final report was given to all the co-permittee's February 2014. Cole Ecological, Inc. sampled Macroinvertebrate communities, stream physical habitat, and water chemistry from 17 stream reaches across these six jurisdictions in September 2013. The objectives of the study were to assess the current status of chemical, physical and biological conditions in these waters, and as applicable, determine whether noticeable trends in improvement or decline in biological conditions are occurring.

Complete instream and stormwater outfall sampling results are summarized and included in Appendix B. The sampling results presented have been formatted to simplify the data review process.

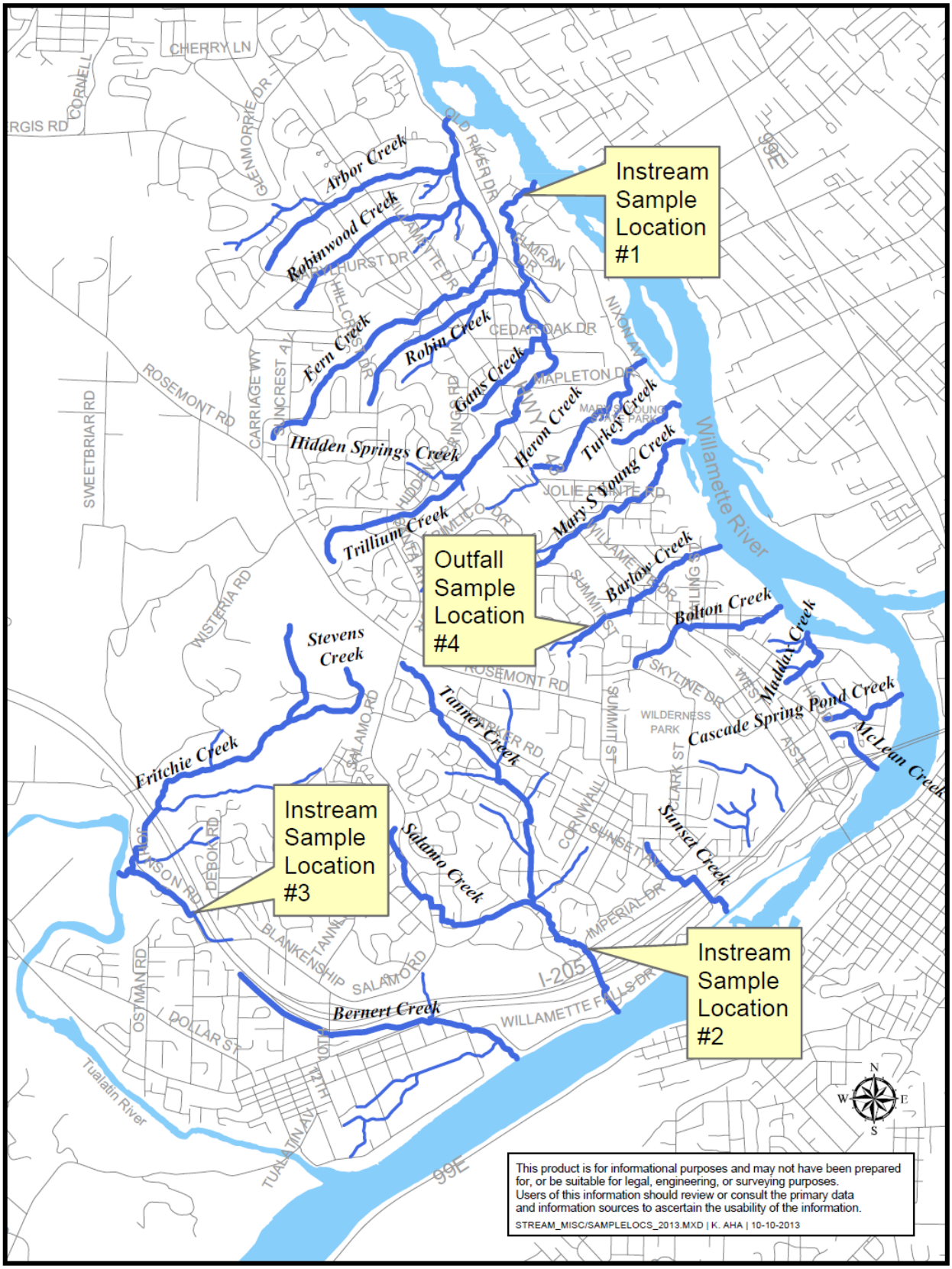

Figure 1. Monitoring Locations

5.0 Overview of Planning and Land Use Changes, UGB Expansions and New Development Activities

5.1 Stormwater Planning, Land Use Changes, and UGB Expansions

No land use or zoning changes occurred during the period from 7/1/2013 to 6/30/2014.

The City of West Linn is located entirely within the urban growth boundary (UGB). There were several annexations that were approved by the City Council during the reporting period 7/1/2013 to 6/30/2014 and will be voted on by the citizens in November 2014:

- 2.95 ACRES AT 1430 ROSEMONT RD,
- 4.90 ACRES AT 22850 & 22848 WEATHERHILL RD,
- 2.126 ACRES AT 23128 S BLAND CIR

There were no UGB expansions during the reporting period.

5.2 Summary of Development Activities within the UGB

Approximately 70% of West Linn's land use type is zoned residential while 7% is commercial/ industrial. One percent of land use is unincorporated county land, while 4% is Interstate 205 right-of-way, 6% is river and 12% is park and open space. No land use or zoning changes during the period 7/1/2013 to 6/30/2014 occurred.

Several revisions were made to the Community Development Code during the reporting period. Chapters 31 (Erosion Control) and Chapter 33 (Stormwater Management) were both repealed. These topics are now addressed in the Public Works Standards. Chapter 32 (Water Resource Area) was completely reworked to better align with Metro's standards and language. A new Water Resource Area map was approved.

Current development activities include residential infill, subdivisions and commercial projects including Lake Oswego's Water Treatment Plant Expansion. The City of West Linn requires stormwater management and erosion control for new and redevelopment activities exceeding 500 square feet of impervious surface in accordance with the City of Portland's Stormwater Management Manual. Stormwater quality facilities installed in the City include bio swales, rain gardens, ponds, and pervious pavement.

During fiscal year 2013-2014, 10 land use development applications were reviewed for compliance with stormwater treatment requirements. A breakdown of total and new/redeveloped impervious area for each development application is provided in Table 4. Stormwater treatment was addressed at each development site. Private development activities included the construction of 4 subdivisions, which included a total of 12 rain gardens (with 12 recorded maintenance agreements) and 2 (common access) pervious pavement/concrete projects. On the public side, the West Linn Police Station was built with infiltration-type stormwater management facilities. One water quality facility was built at Falcon Place subdivision and will be owned and maintained by the City.

Table 4: Public and Private BMPs

Name	Total drainage area, in sf	Impervious area (new or redeveloped), in sf
Private Rain Gardens (12)	176,634	30,224
Pervious Concrete (2) (Common driveways)	9,268	9,268
West Linn Police Station	114,998	48,518
Falcon Place Public Water Quality Facility	7,137	4,959
Total (ac)	7.01	2.1

6.0 Additional Activities

The following stormwater-related activities occurred within the City and are not currently documented in Appendix A. A description of activities is provided by applicable BMP.

BMP: Conduct Annual Dry Weather Field Screening

Dry weather field screening was conducted at 6 locations on 8/23/13 and 9/11/13 (see Table 5). There was no precipitation for more than 72 hours prior to the inspections. Flow was observed at most of the locations. None of the flow was considered as an illicit discharge. A small amount of foam was observed at 2 locations: 13th St @ I-205 and the Hollowell outfall. Wood debris was found at the Imperial Drive site and the Hollowell outfall. Garbage was found extensively at the Old River Drive outfall and was removed.

Table 5: Annual Dry Weather Field Screening

Site Number HP=High Priority	Site	Creek Name	Flow Quantity	Clarity	Odor	Color	Foam/ sheen	Wood debris	Fish?	Garbage
HP 1	Brandon Place	Tualatin	Trickle	Clear	None	Clear	None	None	No	None
HP 2	13th St @ I-205	Bernert	Moderate	Clear	None	Clear	Foam	None	No	None
HP 3	Imperial DR	Tanner	Moderate	Clear	None	Clear	None	Yes	No	None
HP 4	Hollowell	Cascade Springs	Low	Clear	None	Clear	Foam	Yes	No	None
HP 5	Barclay @ Tompkins	Barlow	Trickle	Clear	None	Clear	None	None	No	None
HP 6	Old River DR	Robin	*None*	--	--	--	--	--	--	Yes

BMP: Promote Staff Education Related to Environmentally Friendly Solutions

Training activities are listed below (Table 6) for reporting year 2013–2014.

Table 6: City Training Activities

Name of Activity	Date Attended	Number of Staff
38th Annual Oregon Environmental School	3/25/2014-3/27/2014	3
ACWA Stormwater Committee Meeting	July 12, 2013	1
ACWA Stormwater Committee Meeting	November 14, 2013	1
ACWA Stormwater Committee Meeting	February 12, 2014	1
ACWA Stormwater Committee Meeting	March 12, 2014	1
ACWA Stormwater Committee Meeting	April 9, 2014	1
Stormwater Summit	May 15, 2014	1
ACWA Stormwater Committee Meeting	June 11, 2014	1
Value of Water Workshop	February 26, 2014	1
Mid-Willamette Erosion Control & Stormwater Management Summit	January 28, 2014	1

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Appendix A

West Linn SWMP Implementation Status

Appendix A. West Linn SWMP Implementation Status

Key to Pollutant Symbols
A full circle (●) indicates the BMP is expected to address the parameter.
An empty circle (○) indicates the BMP may be expected to address the parameter.
A blank cell indicates that the effect of the BMP is unknown at this time.

Best Management Practice or Activity	Addresses Bacteria?	Addresses Mercury and TVS?	Addresses Phosphorus?	Responsible Division/ Department	Measurable Goals (2012 SWMP)	Tracking Measures (2012)	Annual Report Information: Tracking Measure Status, Permit Year 2013-2014	Additional Detail Related to Activities Conducted
Element #1 Illicit Discharge Detection and Elimination								
Implement the Illicit Discharge Elimination Program	○	○	○	City of West Linn Environmental Services Division	• Document and implement the details of the City's IDDE program in a Standard Operating Procedures manual by November 1, 2012. • For identified illicit discharges, conduct appropriate actions to remove the discharge in conjunction with time frames outlined in the City's MS4 NPDES Permit. • Track and record all identified illicit discharges and how such discharges were removed.	(1) Track the status of completing the IDDE SOP manual. (2) Track the number, location, resolution, and enforcement activities related to any illicit discharge investigation conducted.	(1) The City of West Linn developed an IDDE SOP (effective date: November 1, 2012). The SOP includes guidelines for identification and enforcement of illicit discharges. (2) There were no illicit discharges discovered during the reporting year.	
Conduct Annual Dry Weather Field Screening	○	○	○	City of West Linn Environmental Services Division	• Conduct dry weather, illicit discharge inspections annually at all priority outfall locations. • Develop pollutant parameter action levels to assist in the identification of non-permissible discharges by November 1, 2012. • If necessary, update existing mapping related to outfalls and priority outfall locations in accordance with field observations.	(1) Track the number and location of high priority outfalls inspected during dry weather illicit discharge inspection activities. (2) Summarize inspection results and indicate outfalls requiring sampling and/or investigations. (3) Indicate the outcome and resolution of any investigation activities conducted.	(1) 6 outfalls were inspected as part of the annual dry weather field screening activities on 8/23/13 and 9/11/13. Please note that inspections occurred at the high priority outfall locations identified in the IDDE SOP. (2) Inspection results are provided in Section 6.0 of this report. Inspection results were overall good: no issues with clarity, color or odor. Two outfalls (13th Street @ I205 and Hollowell outfall) had some foam detected. The foam was considered incidental so no samples were taken. Wood debris was found at the Imperial Drive and Hollowell outfalls. No fish were spotted in any of the streams and garbage was found at one site (Old River Drive outfall). (3) Inspection results are provided in Section 6.0 of this report. None of the inspection results warranted follow-up investigations. In accordance with the IDDE SOP, priority inspection locations were updated to better reflect outfalls with solely stormwater contribution to receiving waters.	
Implement the Spill Response Program	○	○	○	City of West Linn Operations Division and Tualatin Valley Fire and Rescue (TVFR) (via contract with the City)	• Respond to minor spills. • Call Tualatin Valley Fire and Rescue to respond to other spills.	(1) Indicate the number of spills reported to the City of West Linn Environmental Services. (2) Track the number of spills responded to by the City of West Linn Environmental Services and Tualatin Valley Fire and Rescue. (3) Indicate sources, causes, and types of discharges resulting from identified spill activities.	(1) The City of West Linn Environmental Services Division did not receive any reports of spills during the reporting year, 2013-2014. (2) No spills were responded to by West Linn Environmental Services' personnel during the reporting period. TVF&R responded to 2 spills. (3) Spill 1: (12/20/13) An employee of the Chevron reported an oil spill from a vehicle that caused a sheen on their parking lot. TVR&R cast out absorbent material over the majority of the heavier sheen. Spill 2: (6/6/2014) TVF&R arrived to a 1 foot by 2 foot gasoline spill with the majority of the fuel evaporated by the hot pavement. The crew spoke to the owner of the car and advised him to purchase a new gas cap, as the vent appears not to be working properly.	In March 2014, SLR Global Environmental Solutions prepared for the City of West Linn a Spill Prevention, Control and Countermeasure Plan for the Public Works Yard. The plan brings the City into compliance with the USEPA regulations contained in Title 40 of the Code of Federal Regulations, Part 112. In 2012, a new gas tank was installed at the PW yard.
Element #2 Industrial and Commercial Facilities								
Screen Existing and New Industrial Facilities	○	○	○	City of West Linn Public Works Department	• Notify DEQ of any existing or new industrial facilities within the City of West Linn jurisdiction that may potentially be subject to an industrial stormwater NPDES permit.	(1) Track the number of existing or new facilities subject to a stormwater industrial NPDES permit during the permit term.	(1) The City of West Linn has one active 1200-Z permit holder - West Linn Paper Company. There were no new industrial facilities located in West Linn during the permit year.	Once during the permit term, the City of West Linn will review their existing business license inventory and new industrial development applications to determine whether any existing or new facilities would be subject to an industrial stormwater NPDES permit.
Conduct Priority Facility Inspections	○	○	○	City of West Linn Public Works Department	• Inspect identified priority industrial or commercial facilities once during the permit term.	(1) Track the number and outcome of priority facility inspections conducted over the permit term.	(1) The West Linn Paper Mill, the PGE Sullivan Power Plant and the US Army Engineers Willamette-Locks were all inspected by the City on April 11, 2014.	All the listed priority facilities are in the same geographical area. The Paper Mill employs their own Environmental Engineer and Stormwater Pollution Control Plan and oversees all of the WQ controls for this area.

Best Management Practice or Activity	Addresses Bacteria?	Addresses Mercury and TVS?	Addresses Phosphorus?	Responsible Division/ Department	Measurable Goals (2012 SWMP)	Tracking Measures (2012)	Annual Report Information: Tracking Measure Status, Permit Year 2013-2014	Additional Detail Related to Activities Conducted
Element #3 Construction Site Runoff Control								
Implement the Erosion Control Manual	○	●	●	City of West Linn Public Works and Planning Departments	• Require submission of erosion control plans for development greater than 1000 ft². • Require a copy of all 1200-C permit applications for development greater than five acres. • Assess new and redevelopment applications for erosion control compliance during plan review. Require erosion and sediment control plans not in compliance to be amended prior to approval in conjunction with provisions outlined in the Clackamas County Erosion Prevention and Sediment Control Manual (2008).	(1) Report any updates or modifications to the Clackamas County Erosion Prevention and Sediment Control Planning and Design Manual (2008). (2) Record the number of erosion control permit (City issued and DEQ issued) applications received. (3) Track the number of erosion and sediment control plan reviews completed.	(1) No updates or modifications to the 2008 Clackamas County Erosion Prevention and Sediment Control Planning and Design Manual have occurred. (2) West Linn issued a total of 66 Erosion Prevention Permits, (64 Residential and 2 Commercial). (3) 10 erosion control plan reviews were completed in conjunction with land use development applications.	
Provide Educational Information to Construction Site Operators	○	○	○	City of West Linn Public Works and Planning Departments	Provide educational information to construction site operators and the general public via brochures, flyers, pamphlets, and attachments to building and grading permit applications.	(1) Verify that this BMP was conducted.	(1) The West Linn Building Department gives all builders and home owners who are applying for an erosion control permit a copy of the West Linn Environmental Protection Guide that is included in the "Guide to Permits and Inspections" booklet. The Environmental Protection Guide is also available at City Hall and on the City website.	
Conduct Erosion Control Inspections and Enforcement	○	●	●	City of West Linn Engineering Division	• Conduct an initial and a final site inspection on all sites with an erosion control plan for appropriate erosion control. • As necessary, enforce appropriate erosion and sediment control in conjunction with the three-step progression as outlined on the City's website. • Require all disturbed areas to be permanently stabilized or vegetated prior to final engineering or building inspection. • Ensure a minimum of one additional erosion control inspection is conducted during active construction on all sites with an erosion control plan.	(1) Track the number of erosion control inspections conducted each year. (2) Report the number of notices of non-compliance and stop work orders issued, and describe the measures used to resolve the issue.	(1) The following number of erosion control inspections was conducted during the 2013-2014 reporting year: One additional erosion control inspection was added to the process and is entitled "Mid Inspections." Preliminary Inspections: 27 Approved, 13 Approved w/ conditions, 10 Denied Mid Inspections: 11 Approved, 4 Approved w/ conditions, 1 Denied Final Inspections: 3 Approved, 60 Approved w/ conditions, 12 Denied Total Erosion Control Inspections: 41 Approved, 77 Approved w/ conditions, 23 Denied Total All EC Inspections: 141 (2) No notices of non-compliance or stop work orders were issued during the 2013-2014 reporting year. Procedures are listed under additional activities in the column to the right.	Permit violations are issued in a three step enforcement progression as follows: 1st a written notice of the inspection findings and required corrections (Warning) 2nd Should corrections not be implemented, a notice of non-compliance will be issued with the required corrections. 3rd Should corrections remain unaddressed a stop work order will be issued. Additionally, a stop work order may be issued at any time a permit violation occurs.

Appendix A. West Linn SWMP Implementation Status

Best Management Practice or Activity	Addresses Bacteria?	Addresses Mercury and TVS?	Addresses Phosphorus?	Responsible Division/ Department	Measurable Goals (2012 SWMP)	Tracking Measures (2012)	Annual Report Information: Tracking Measure Status, Permit Year 2013-2014	Additional Detail Related to Activities Conducted
Element #4 Education and Outreach								
Provide Public Education and Outreach Materials Regarding Stormwater Management	○	○	○	City of West Linn Public Works Department	• Utilize newsletters, brochures, bill inserts, City web page, and radio advertisements to promote public awareness of stormwater quality issues and to provide information to encourage public reporting of illicit discharges. • Continue to make annual monetary contributions to TB PAC.	(1) Track the number, types, and topics of public educational materials dispersed to the public annually. (2) Indicate any large-scale public educational campaigns initiated during a given year. (3) Track coordinated public outreach activities with local co-permittees. (4) Record the number of catch basins stenciled in a given year. (5) Track amount donated to TB PAC each year.	(1) Put out 20 copies of "Stream Friendly Home & Yard Care" brochure, developed by TBPAC, at each of the following locations: Library, Senior Center, and Parks Department once per quarter during reporting year: July 2013, Oct. 2013, Jan. 2014, and April 2014 (2) The City continues to participate with TBPAC and the Regional Coalition for Clean Rivers and Streams on Public Education matters. (3) Coordinated efforts included: - Continued to participate in the Regional Coalition of Clean Rivers and Streams - Member Regional Coalition of Clean Rivers & Streams - Member Tualatin Basin Public Awareness Committee (See TBPAC Annual Report). (4) No catch basins were stenciled during the 2013-2014 reporting year. (5) No donation.	The City website is a great source of public education. This reporting year the following documents were uploaded to the Stormwater section of the website: westlinnoregon.gov: Low Impact Development Approaches Handbook, OSU Field Guide for WQ Facilities Program, Yard Care Brochure, Rain Garden Guide, and the Weed Guide. Other items new to the City website are Tualatin River TMDL Implementation Plan and the Willamette River TMDL Implementation Plan, the Macro Invertebrate Report, Private Water Quality Management Program Inspection Guide and permeable paving information. The City and Clackamas County – Office of Sustainability are in talks about how to best operate a storm drain marker program to start in the 2014-2015 reporting year.
Implement a Pet Waste Program	●			City of West Linn Parks and Recreation Department	• If pet waste is observed as a problem upon routine maintenance activities at public property, install educational signs and distribute educational door hangers at homes in the immediate vicinity of the identified problem areas. • Continue to provide pet waste baggies and disposal areas in City parks for disposal of domestic animal waste.	(1) Report on activities conducted annually.	(1) The City of West Linn currently has 50 dog waste dispensers installed throughout the parks and open spaces. During the 2013-2014 reporting year, the City spent $6,240 on bags. City staff monitors water quality facilities for pet waste issues. If a facility is observed to have issues, City staff distributes door hangers in the neighboring area to educate the public about pet waste. During the 2013-2014 reporting year, no facilities had pet waste issues. Also, the City participated in TBPAC's pet waste educational program.	
Participate in a Public Education Effectiveness Evaluation	○	○	○	City of West Linn Public Works Department	Coordinate with other local, Phase 1 jurisdictions in providing/ compiling information regarding a public education effectiveness evaluation over the permit term.	(1) Report on activities conducted annually.	(1) After several ACWA Stormwater Committee meetings and tremendous effort from some of the individuals in the committee, a report (template) was developed for the participating DMA's that included the summary of the public education effectiveness evaluation that DHM Consulting, Inc. conducted.	The ACWA Stormwater Committee initiated a coordinated effort to compile existing educational survey information and develop conclusions to inform how public education efforts result in behavioral change in 2013. DHM Consulting was awarded a contract to compile available survey information and formulate conclusions. ACWA coordinated with DEQ to ensure that the study would meet DEQ's intended requirements. Costs were shared amongst ACWA Phase I and Phase II communities, and West Linn participated in the effort.
Ensure Staff Training for Pest Management	○	○	○	City of West Linn Street Division and Parks and Recreation Department	Provide training to Public Works and Parks department crews once every two years on proper pesticide and fertilizer application rates and techniques in conjunction with guidelines outlined in the IPM Plan.	(1) Report on training conducted every two years.	(1) The Street Division received a total of 104 hours of training in Pest Management. The Parks Department received a total of 59 hours of training.	
Ensure Staff Training in Spill Response	○	○	○	City of West Linn Operations Division through a contract with Tualatin Valley Fire and Rescue	Provide OSHA HAZWOPER training and refresher courses to staff initially responding to spills annually.	(1) Track the number of employees receiving OSHA HAZWOPER training annually.	(1) The City of West Linn Public Works employees receive training in the safe handling and spill prevention and response procedures by the Transportation Supervisor. This training covers site-specific info including discharge prevention and response. The priorities for a spill are: Protect life and care for injuries, protect the environment and protect property. 5 employees received the training.	The City has a number of Emergency Response Contractors that they can call for spill emergencies. NW Hazmat, of Springfield, OR; Clearwater Environmental Services, in Wilsonville; Clean Harbors in Clackamas and NWFF Environmental of Portland.
Promote Staff Education Related to Environmentally Friendly Solutions	○	○	○	City of West Linn Public Works Department	• Conduct municipal training for employees associated with stormwater management in the City. • Continue to participate in, and attend environmental and water quality related professional meetings and conferences. • Continue to maintain a budget for employee attendance of conferences. • Continue to coordinate with other local Phase 1 jurisdictions regarding regional water quality efforts.	(1) Track the number of employees receiving training in stormwater management annually. (2) Track Operations and Engineering staff participation in professional organizations and attendance at relevant conferences.	(1) Four employees attended the 38th Annual Oregon Environmental School 3/25/2014 through 3/27/2014 (2) One employee attended both the Annual Stormwater Summit in Eugene in May 2014 and the Erosion Control Summit in January 2014. The Public Works Director attended the Value of Water Conference in February 2014. See also Table 6 of this annual report.	Staff participates in the following organizations: - Member of Association of Clean Water Agencies (ACWA) and active participant in the ACWA Phase I and Stormwater Subcommittees. - Continued collaboration with other co-permittees on the C C S M Program. - Member of the Regional Coalition for Clean Rivers and Streams. - Tualatin Basic PAC.

Appendix A. West Linn SWMP Implementation Status

Best Management Practice or Activity	Addresses Bacteria?	Addresses Mercury and TVS?	Addresses Phosphorus?	Responsible Division/ Department	Measurable Goals (2012 SWMP)	Tracking Measures (2012)	Annual Report Information: Tracking Measure Status, Permit Year 2013-2014	Additional Detail Related to Activities Conducted
Element #6 Post-Construction Site Runoff								
Implement Community Development Code and Public Works Design Standards for Stormwater Treatment	●	●	●	City of West Linn Public Works and Planning Departments	Per City's Development Code, review all new development and applicable redevelopment for conformance with current City stormwater standards and ordinances.	(1) Track the number of development applications reviewed for compliance with the current stormwater requirements for treatment and detention. (2) Track any modifications to the list of currently approved structural stormwater treatment facilities. (3) Track private BMPs that are implemented and their associated drainage areas.	(1) A total of 10 land use development applications were reviewed for compliance with stormwater treatment and detention standards (9 Residential and 1 Commercial) (2) There were no modifications to the list of currently approved stormwater treatment and detention facilities. (3) A summary of private water quality facilities (in accordance with the development applications) is provided in Section 5.0.	
Review and Update the Applicable Code and Development Standards related to Stormwater Control	●	●	●	City of West Linn Public Works and Planning Departments	• Review the City's current stormwater treatment standards for compliance with new MS4 NPDES permit language. • Review the City's current public works development code provisions to ensure that applicable barriers related to the use of LID or GI techniques are minimized and eliminated where practicable. • Update the City's existing post-construction stormwater design standards and code language by November 1, 2014.	(1) Track progress related to the review of the City's code and development standards per provisions in the MS4 NPDES permit.	(1) The most current version of the City of Portland Stormwater Management Manual has been adopted by the City of West Linn for design of stormwater facilities. West Linn codes have been reviewed and no known barriers exist to inhibit GI or LID use in projects. The City of West Linn Public Works Construction Standards requires all development or redevelopment creating 500 sq. ft. or more of new impervious area to meet its post-construction stormwater management codes. On-site low impact development (LID) and green infrastructure (GI), including rain gardens, detention ponds, and bio-swale water quality facilities are required for most developments reaching this impervious threshold to capture and treat stormwater to the standards specified in the MS4 NPDES permit. West Linn code defines site conditions where LID may be impracticable and provide alternates for stormwater management, including offsite facilities. Stormwater facility maintenance agreements are required to be recorded in the County Deed Records for all new private facilities and enforcement actions are tracked by our Environmental Services Division.	
Element #7 Pollution Prevention for Municipal Operations								
Conduct Street Area Repair	○	●	○	City of West Linn Public Works Department	Ensure all road maintenance and repair activities implement appropriate erosion and sediment control to address potential water quality impacts.		Work started on the 2013 Roads Program project in June of 2013, but was substantially completed in July and August of FY 2014, which included 8150 linear road feet (1.5 mi) of paving and 14,725 linear road feet (2.8 mi) of Slurry Sealed road.	Both City crews and contractors are required to implement erosion control measures at all times.
Maintain Public Streets	○	●	○	City of West Linn Operations Division	Sweep each street between 3 and 6 times per year.	(1) Track the number of sweeps conducted annually. (2) Track the volume of debris removed during sweeping activities. (3) Track the amount (volume) of deicing agent used annually.	(1) Three City-wide sweeps were conducted during the 2013-2014 reporting year, covering 3278 miles of street. (2) Approximately 1221 cubic yards of material were removed. (3) 2000 Gallons of deicing agent was used in the winter of 2013-2014	
Implement an Integrated Pest Management Program	○	○	●	City of West Linn Operations Division and Parks and Recreation Department	• Use the Portland Integrated Pest Management (IPM) Program as a guide for appropriate pesticide and fertilizer application procedures along roadways, within City Parks, and around water quality facilities. • Conduct work within public right-of-way only with certified, licensed applicators.	(1) Track any updates or modifications to the referenced IPM procedures and protocols. (2) Track the amount of money spent on pest management chemicals each year.	The City of West Linn uses the City of Portland IPM Program as an informal guide. (1) No new updates were made to the City of Portland Integrated Pest Management Program Manual. (2) The City spent approximately: $3680.52 on pest management chemicals.	Pest management chemical costs by department: Water Department: $47.52 ESD: $600. Streets: $1500. Parks: $1533.
Implement a Program to Reduce the Impact of Stormwater Runoff from Municipal Facilities	○	○	○	City of West Linn Environmental Services Division	• Inventory municipal facilities subject to this permit requirement by July 1, 2013. • By July 1, 2013, identify and implement strategies to reduce the impact of pollutant discharges from these facilities.	(1) Track strategies used to minimize pollutant discharge.	In August 2013, the Environmental Services Division installed storm pipe and a catch basin in the Public Works yard. This will lessen the impact that the Public Works Yard could potentially have on stormwater because it is directed to the sewer system, not the storm system.	
Control Infiltration and Cross Connections to the Stormwater Conveyance System	●			City of West Linn Environmental Services Division	• Annually investigate for cracking and breakage, and repair as necessary based on the results of the inspection, a minimum of 5,000 linear feet of sanitary lines. • Review new and redevelopment plan submittals for possible cross-connections. • Inspect for potential cross-connections during dry weather field screening activities.	(1) Indicate whether any sanitary sewer cross-connections were identified during sanitary line testing, during the plan review process, or during dry-weather field screening activities on an annual basis. (2) Describe any follow-up activities required for identified cross-connections.	(1) No cross connections were discovered during the reporting period (2) N/A	In Phase 4 of the Sanitary Sewer Rehabilitation Project (PW-13-12) 18,000 Linear Feet of 8 inch Sewer Pipe was lined with Cured in Place Pipe (CIPP).

Best Management Practice or Activity	Addresses Bacteria?	Addresses Mercury and TVS?	Addresses Phosphorus?	Responsible Division/ Department	Measurable Goals (2012 SWMP)	Tracking Measures (2012)	Annual Report Information: Tracking Measure Status, Permit Year 2013-2014	Additional Detail Related to Activities Conducted
Conduct Master Planning for Stormwater Quality Improvement	●	●	●	City of West Linn Public Works Department	Ensure water quality is considered during the development of flood control CIPs.	(1) Track any updates or modifications to the current Stormwater Master Plan approved by the City. (2) Track the number of CIP projects implemented each year and discuss the added benefit (water quality, habitat restoration, etc.) of each. (3) Map the location and drainage area of water quality CIPs as they are constructed.	(1) No updates or modifications were made to the Master Plan in this reporting year. An update to the Surface Water Master Plan is budgeted for the 2015 Fiscal Year. The Master Plan guides development as well as future City project needs by identifying current deficiencies, future anticipated deficiencies, and recommending improvements to correct deficiencies to provide for system needs. (2) The City constructed the following CIPs with stormwater elements: PW-13-13, Median Restoration Project. PW-13-08, Library Parking Expansion Project. PW-13-07, 2013 Road Program which included 827 linear feet of new storm pipe and 2 new catch basins. PW-14-02, 2014 Road Program included 800 linear feet of storm drain improvements. (3) These locations are mapped in the City's GIS. Detailed information for the public for each project can be found at *westlinnoregon.gov/publicworks/public-improvement-projects-0.*	(2) Detail related to the Public Improvement/ Stormwater-related CIPs constructed includes: 1. (PW-13-13) Median Restoration Project-This is an in-house rehabilitation project involving the Street and Parks Departments and includes the removal of all existing non-native vegetation in the medians on Santa Anita Road, Salamo Rd and Hidden Springs. Many- trees and native plants were planted. In this Phase 1 of 4, $48,700 was spent on the trees, plants and labor. 2. (PW-13-08) Library Parking Expansion concluded in this reporting year. This included installing 3,950 sq. ft. of permeable pavers as well as planting 296 native plants surrounding the parking lot. They also built a rain garden and a 3 tier Keystone plant-able retaining walls to add support to the hillside above Maddax Creek which is a significant riparian Goal 5 zone. There were 4 CIP stormwater related projects in total.
Element 8 **Stormwater Management Facilities Operation and Maintenance**								
Conduct Stormwater Conveyance System Cleaning and Maintenance	●	●	○	City of West Linn Environmental Services Division	Perform cleaning and repair promptly based on inspection results.	(1) Track the length of conveyance system inspected. (2) Track the volume of debris removed during cleaning activities.	(1) 312 linear feet of stormwater pipe was inspected. (2) No reportable volume of debris was removed.	Cleaning garbage/litter out of ditches and ponds is a regular part of ESD employee tasks.
Conduct Catch Basin Cleaning and Maintenance	●	●	○	City of West Linn Environmental Services Division	• Inspect all public catch basins once per year, and clean as needed based on inspection results. • Repair or replace catch basins promptly based on inspection results. • Update tracking database during each maintenance cycle.	(1) Track the number of catch basins inspected. (2) Track the volume of debris removed during cleaning activities.	(1) 2761 catch basins were inspected, and 939 catch basins were cleaned during the 2013-2014 reporting year. (2) 60 cubic yards of debris were removed.	
Public Structural Control Facility Cleaning and Maintenance	●	●	●	City of West Linn Environmental Services Division	Inspect public structural water quality facilities annually and maintain based on inspection results.	(1) Track the number and frequency of structural facilities inspected and maintained. (2) Track the volume of debris removed during cleaning activities.	(1) The following water quality facilities were inspected and maintained throughout the 2013-2014 reporting year: Pollution Control Manholes = 92 inspected and 92 were cleaned Detention Tanks = 0 inspected and 0 maintained Bio Swales = 20 inspected and 20 maintained Water quality ponds = 60 inspected and 60 maintained (2) Pollution Control manhole maintenance resulted in 30 cubic yards of debris removal.	Environmental Services Stormwater crews routinely perform the following maintenance on all public Stormwater control facilities: remove, trim & inventory trees, lay mulch, spray for bees & mosquitoes. Remove unwanted and/or overgrown brush, blackberries, and weeds.
Private Water Quality Facility Maintenance Program	●	●	●	City of West Linn Environmental Services Division	• Require new private water quality facilities to submit maintenance agreements to the City. • Require submittal of annual reports related to inspection and maintenance activities for private water quality facilities with existing maintenance agreements. • Continue to work to identify the responsible parties associated with private water quality facilities that do not have an existing maintenance agreement. • Provide formalized structural stormwater facilities inspection and maintenance documentation to private facility owners by July 1, 2013.	(1) Track the number of new maintenance agreements submitted to the City each year. (2) Track number of new and existing annual maintenance reports received each year.	(1) Twelve new maintenance agreements were recorded through the City's Engineering Department and the Clackamas County Recorder's Office during the 2013-2014 reporting year. (2) A total of 39 inspection reports were received during the 2013-2014 reporting year. The inspection reports are due to our office by October 1st of each year for all facilities with recorded maintenance agreements.	The City added a section on the City website entitled Private Stormwater Facility Program and has many supporting documents that homeowners will find useful for maintaining their water quality facilities. Some of the documents are Private Water Quality Management Program Inspections Guide and Permeable Paving Information.

Appendix B

West Linn Monitoring Data

Appendix B

Instream Monitoring - West Linn 2013-2014

Location - Culvert near 3821 Calaroga Dr
Sample Site # WL_01
Stream Name - Trillium Creek

		Results								
		Grab Sample #1	Composite #1	Composite #2	Composite #3	Grab Sample #2	Statistics			Notes
		Dry Weather	Rain Event	Rain Event	Rain Event	Dry Weather				
Analysis	Units	10/11/2013	1/29/2014	3/14/2014	4/17/2014	6/19/2014	Low	High	Mean	
Ammonia Nitrogen Low Seal	mg/L	< 0.15	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.15		
BOD_SW	mg/L	0.12	0.6	0.45	3.7	0.14	0.6	3.7	1.00	
Conductivity Field	uS	153.6	77.1	88.5	124.3	175.9	77.1	175.9	123.9	
Copper	ug/L	0.9	3.1	3.6	6.2	1.2	0.9	6.2	3.0	
Dissolved Copper	ug/L	0.7	1.9	2.3	3.9	0.8	0.7	3.9	1.9	
Dissolved Lead	ug/L	0.02	0.08	0.03	0.08	0.03	0.02	0.08	0.05	
Dissolved Oxygen - Field	mg/L	10.4	12.1	11.4	11.3	10.4	10.4	12.1	11.1	
Dissolved Oxygen - Winkler	mg/L	10.4	10.5	9.7	10.5	9.9	9.7	10.5	10.2	(1)
Dissolved Zinc	ug/L	4	28	8	101	5	4	101	29.2	
E. coli - Colilert	MPN/100mL	75	345	308	387	816	75	816	386.2	(2) (3)
Hardness	mg/L	73	27	45	51	67	27	73	52.6	
Lead	ug/L	0.14	0.78	0.72	1.12	0.14	0.14	1.12	0.6	
Nitrate-Nitrite Seal	mg/L	0.548	0.500	0.768	0.621	0.570	0.500	0.768	0.6	
Ortho Phosphate Seal	mg/L	0.08	< 0.04	0.06	< 0.04	0.05	< 0.04	0.08	0.1	
pH Field	Std Units	7.2	6.6	7.1	7.2	7.1	6.6	7.2	7.0	
Temperature Field	℃	11.8	7.5	10.4	11.4	13.0	7.5	13.0	10.8	
Total Dissolved Solids	mg/L	133	56	64	85	170	56	170	101.6	
Total Phosphate Seal	mg/L	< 0.08	< 0.04	< 0.08	0.1	< 0.04	< 0.04	0.1	0.1	
Total Solids	mg/L	140	82	70	140	190	70	190	124.4	
Total Suspended Solids	mg/L	2	13	14	37.6	13	2	37.6	15.9	
Volatile Solids	mg/L	50	41	26	48	79	26	79	48.8	
Zinc	ug/L	4	33	13	148	8	4	148	41.2	
Rainfall	Inches	N/A	0.25	0.18	0.50	N/A				

Notes:
(1) Dissolved Oxygen (Winker Method) samples are taken once per sampling event as Q/C for eletronic meter
(2) MPN = Most Probable Number
(3) Shading indicates samples that exceed the E. coli standard of 406 MPN/100mL

Appendix B

Instream Monitoring - West Linn 2013-2014

Location - Culvert near 4103 imperial Dr
Sample Site # WL_02
Stream Name - Tanner Creek

		Results								
		Grab Sample #1	Composite #1	Composite #2	Composite #3	Grab Sample #2	Statistics			Notes
		Dry Weather	Rain Event	Rain Event	Rain Event	Dry Weather				
Analysis	Units	10/11/2013	1/29/2014	3/14/2014	4/17/2014	6/19/2014	Low	High	Mean	
Ammonia Nitrogen Low Seal	mg/L	< 0.15	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.15	0.07	
BOD_SW	mg/L	0.16	0.6	0.33	4.4	0.08	0.08	0.33	1.11	
Conductivity Field	uS	111.8	79.0	87.9	83.0	113.8	79.00	113.8	95.10	
Copper	ug/L	0.7	2.1	2.5	12.5	1.2	0.7	12.5	3.80	
Dissolved Copper	ug/L	0.5	1.3	1.4	8.2	0.9	0.5	8.2	2.46	
Dissolved Lead	ug/L	< 0.01	0.05	0.05	0.1	0.02	< 0.01	0.05	0.06	
Dissolved Oxygen - Field	mg/L	11.0	11.8	11.7	10.8	10.6	10.6	11.8	11.18	
Dissolved Zinc	ug/L	5	27	12	27	6	5	27	15.40	
E. coli - Colilert	MPN/100mL	55	166	78	816	276	55	816	278.2	(2) (3)
Hardness	mg/L	41	31	36	40	43	31	43	38.20	
Lead	ug/L	5	0.43	0.49	0.94	0.12	0.12	5	1.40	
Nitrate-Nitrite Seal	mg/L	0.686	0.796	0.991	0.580	0.730	0.580	0.991	0.76	
Ortho Phosphate Seal	mg/L	< 0.04	< 0.04	0.04	< 0.04	< 0.04	< 0.04	< 0.04	0.04	
pH Field	Std Units	7.3	7	6.8	7.1	7.1	6.8	7.3	7.06	
Temperature Field	°C	12.3	9.8	11.7	11.7	13.4	9.8	13.4	11.78	
Total Dissolved Solids	mg/L	2	60	54	40	140	2	140	59.20	
Total Phosphate Seal	mg/L	< 0.08	< 0.04	< 0.08	0.11	< 0.04	< 0.04	0.11	0.11	
Total Solids	mg/L	95	73	64	80	130	64	130	88.4	
Total Suspended Solids	mg/L	2.0	8.2	10	28	1.3	1.3	28	9.9	
Volatile Solids	mg/L	38	42	20	45	65	20	65	42.0	
Zinc	ug/L	5	28	14	48	10	5	48	21.0	
Rainfall	Inches	N/A	0.25	0.18	0.50	N/A				

Notes:
(2) MPN = Most Probable Number
(3) Shading indicates samples that exceed the E. coli standard of 406 MPN/100mL

Appendix B

Instream Monitoring - West Linn 2013-2014

Instream Monitoring - West Linn 2013-2014
Location - Culvert Johnson Rd at Ryan Ct
Sample Site # WL_03
Stream Name - Unnamed Creek

		Results								
		Grab Sample #1	Composite #1	Composite #2	Composite #3	Grab Sample #2	Statistics			Notes
		Dry Weather	Rain Event	Rain Event	Rain Event	Dry Weather				
Analysis	Units	10/11/2013	1/29/2014	3/14/2014	4/17/2014	6/19/2014	Low	High	Mean	
Ammonia Nitrogen Low Seal	mg/L	< 0.15	< 0.05	< 0.05	0.06	< 0.05	< 0.05	0.06	0.07	
BOD_SW	mg/L	0.22	0.40	0.15	19	0.26	0.15	0.4	4.01	
Conductivity Field	uS	149.0	99.7	118.9	75.0	151.4	75	151.4	118.8	
Copper	ug/L	1.1	1.3	1.5	8.4	1	1	8.4	2.66	
Dissolved Copper	ug/L	0.6	0.9	0.9	4.4	0.8	0.6	4.4	1.52	
Dissolved Lead	ug/L	< 0.01	0.03	0.03	0.04	0.03	< 0.01	0.04	0.03	
Dissolved Oxygen - Field	mg/L	10.3	11.1	10.9	10.2	9.7	9.7	11.1	10.4	
Dissolved Zinc	ug/L	93	216	50	56	19	19	216	86.8	
E. coli - Colilert	MPN/100mL	86	488	365	2420	365	86	2420	744.8	(2) (3)
Hardness	mg/L	65	39	50	41	60	39	65	51.0	
Lead	ug/L	0.22	0.36	0.30	1.43	0.11	0.11	1.43	0.48	
Nitrate-Nitrite Seal	mg/L	0.564	0.839	0.868	0.507	0.579	0.507	0.868	0.671	
Ortho Phosphate Seal	mg/L	< 0.04	< 0.04	0.05	< 0.04	< 0.04	< 0.04	0.05	0.05	
pH Field	Std Units	7.1	6.9	6.9	6.9	7	6.9	7.1	7.0	
Temperature Field	°C	12.5	9.6	11	10.4	13.3	9.6	13.3	11.4	
Total Dissolved Solids	mg/L	115	29	71	55	140	29	140	82.0	
Total Phosphate Seal	mg/L	< 0.08	< 0.04	< 0.08	0.18	< 0.04	< 0.04	0.18	0.18	
Total Solids	mg/L	137	93	65	107	150	65	150	110.4	
Total Suspended Solids	mg/L	14.0	5.5	3.8	43.2	2.0	2.0	43.2	13.7	
Volatile Solids	mg/L	51	56	23	53	67	23	67	50.0	
Zinc	ug/L	117	70	58	105	25	25	117	75.0	
Rainfall	Inches	N/A	0.25	0.18	0.50	N/A				

Notes:
(2) MPN = Most Probable Number
(3) Shading indicates samples that exceed the E. coli standard of 406 MPN/100mL

Appendix B

Outfall Monitoring - West Linn 2013-2014

Location - Horton Rd. @ Summit St. Outfall
Sample Site # WL_04_OFM_SC
Stream Name - Barlow Creek
Land Use - Residential

		Results						
		Composite #1	Composite #2	Composite #3	Statistics			Notes
		Rain Event	Rain Event	Rain Event				
Analysis	Units	1/29/2014	3/14/2014	4/17/2014	Low	High	Mean	
Ammonia Nitrogen Low Seal	mg/L	< 0.05	< 0.05	0.08	< 0.05	0.08	0.06	
BOD_SW	mg/L	0.02	0	5.7	0	5.7	1.90	
Conductivity Field	uS	86.0	85.6	122.1	85.6	122.1	97.9	
Copper	ug/L	4.9	6.6	54.2	4.9	54.2	21.9	
Dissolved Copper	ug/L	3.5	4.8	33.4	3.5	33.4	13.9	
Dissolved Lead	ug/L	0.07	0.02	0.22	0.02	0.22	0.1	
Dissolved Oxygen - Field	mg/L	10.7	10.3	10.7	10.3	10.7	10.6	
Dissolved Zinc	ug/L	28	34	38	28	38	33.3	
E. coli - Colilert	MPN/100mL	35	5	816	5	816	285	(2) (3)
Hardness	mg/L	28	37	22	22	37	29.0	
Lead	ug/L	0.37	0.23	1.54	0.23	1.54	0.7	
Nitrate-Nitrite Seal	mg/L	1.56	1.80	0.27	0.27	1.8	1.2	
Ortho Phosphate Seal	mg/L	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	
pH Field	Std Units	6.6	6.5	6.7	6.5	6.7	6.6	
Temperature Field	°C	11.4	11.1	11.7	11.1	11.7	11.4	
Total Dissolved Solids	mg/L	71	44	17	17	71	44.0	
Total Phosphate Seal	mg/L	< 0.04	< 0.08	0.88	0.04	0.88	0.9	
Total Solids	mg/L	81	53	179	53	179	104.3	
Total Suspended Solids	mg/L	< 1.0	1.5	151	< 1.0	151	76.3	
Volatile Solids	mg/L	31	28	160	28	160	73.0	
Zinc	ug/L	26	28	100	26	100	51.3	
Rainfall	Inches	0.25	0.18	0.50				

Notes:
(1) Dissolved Oxygen (Winker Method) samples are taken once per sampling event as Q/C for eletronic meter
(2) MPN = Most Probable Number
(3) Shading indicates samples that exceed the E. coli standard of 406 MPN/100mL

Appendix C

West Linn
TMDL Implementation Plan

Appendix C

Tualatin and Willamette TMDL Implementation Plan Annual Report

This annual report provides a summary of the City's efforts to implement pollutant reduction measures specified in the Total Maximum Daily Load Implementation Plans (TMDL IPs) for the Willamette River and the Tualatin River. Also provided in Appendix D is a copy of Sections 5.4 and 5.5 of the June 2014 Tualatin River TMDL Implementation Plan. These sections were inadvertently omitted in the submission to DEQ, and were requested by DEQ in its August 2014 conditional approval letter.

Willamette River TMDL IP

The City of West Linn originally submitted its Willamette River TMDL IP to the Oregon Department of Environmental Quality (DEQ) on March 31, 2008. The DEQ approved the plan on May 9, 2009. The most recent version of the Willamette River TMDL IP is dated April 30, 2014 and was approved by DEQ with conditions on August 18, 2014. In this 2013-2014 reporting year, the City is reporting on the fifth and final year of the 2009 plan.

The TMDL parameters of concern for the Willamette River are: 1) bacteria 2) mercury and 3) temperature. The management strategies for these pollutant parameters are summarized in the Willamette River TMDL IP.

Tualatin River TMDL IP

The Tualatin River TMDL IP was originally submitted to DEQ in August 2003. It was revised and submitted to DEQ in June 2014 and was approved with conditions on August 18, 2014. There are five TMDL pollutant parameters of concern for the Tualatin River: 1) bacteria, 2) mercury, 3) temperature, 4) pH and chlorophyll a, with total phosphorus as a surrogate parameter, and 5) dissolved oxygen, with settleable volatile solids (SVS) as a surrogate parameter. The management strategies for reducing these pollutants are summarized in the Tualatin River TMDL IP.

As shown in Table C-1, the City's MS4 NPDES permit serves as the Willamette River and Tualatin River TMDL IPs for bacteria, mercury, total phosphorus, and SVS. Progress toward implementing best management practices (BMPs) to address these parameters is summarized in Appendix A of the City's 2013-2014 NPDES MS4 Annual Report, submitted to DEQ on November 1, 2014.

This combined TMDL IP Progress Report summarizes last year's progress implementing temperature management strategies in accordance with the Willamette and the Tualatin River TMDL IPs (see Table C-2).

Table C-1: Applicable TMDL Pollutant Management Documents

Pollutant	NPDES Permit	Willamette TMDL IP	Tualatin TMDL IP	Applicable TMDL
Bacteria	●			Willamette and Tualatin
Mercury	●			Willamette (including the Tualatin River as a tributary)
Temperature		●	●	Willamette and Tualatin
Total Phosphorus	●			Tualatin
SVS = DO	●			Tualatin

Table C-2 shows the City's progress in implementing temperature management strategies for the 2013-2014 reporting year. Since temperature management strategies are consistently referenced in both the Willamette River TMDL IP and the Tualatin River TMDL IP, only one reporting table is used. Table C-2 is formatted to be consistent with the updated TMDL IPs submitted to DEQ in 2014.

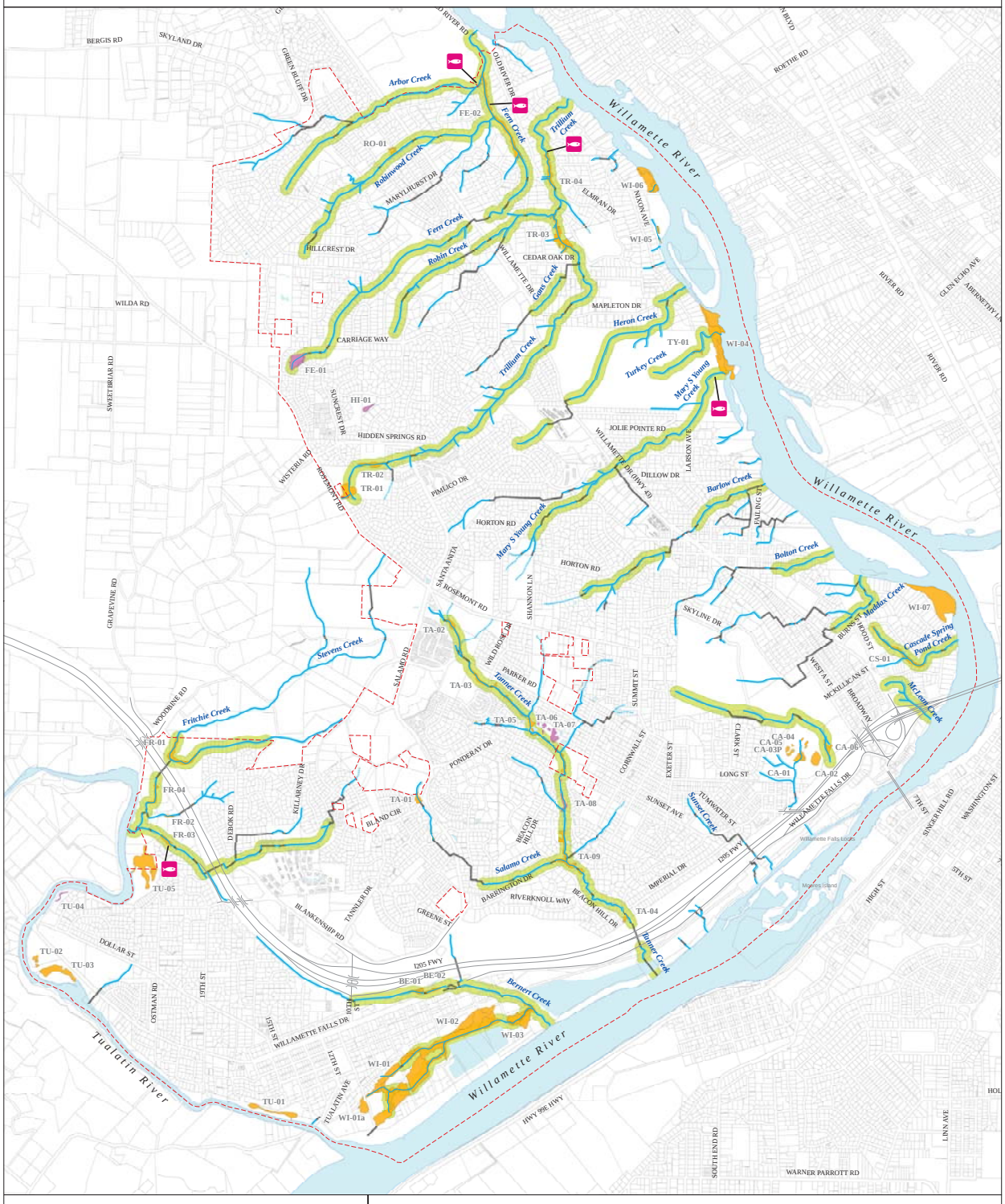
Table C-2: TMDL Implementation Plan Progress Report 2013-2014
(*Summary of Temperature Management Strategies to Address the Willamette River TMDL IP [Year 5 of 5] and the Tualatin River TMDL IP)*

Pollutant	General Strategy *(What we're doing to reduce pollutant)*	Commitment	Implementation Strategies	Tracking/Performance Measure *(Interim milestones)*	2013-2014 Activities and Accomplishments	Timeline/Responsible Party(s)
Temperature	Public Education and Outreach	• Promote riparian enhancement efforts through the distribution of information in a variety of media outlets. • Ensure a minimum of 1 temperature-related piece of educational material during the 5-year implementation period. • Provide funding support for agencies and organizations to aid in temperature management.	• Ensure Library, Senior Center, City Hall, and Parks Department all have an adequate supply of educational materials on hand at beginning of each new quarter. • Provide funding for USGS to continue hydrologic and water quality monitoring on the Tualatin River. • Continue coordination efforts with the Tualatin Basin Public Awareness Committee (TBPAC). • Continue coordination efforts with the Regional Coalition for Clean Rivers and Streams (RCCRS).	• Annually document the date, content, and distribution method of temperature related educational materials. • Annually document financial contributions to USGS. • Annually Document participation and funding contributions to TBPAC and RCCRS.	• Put out 20 each: "Stream Friendly Home & Yard Care" brochures, developed by TBPAC, at Library, Senior Center, and Parks Department each new quarter during reporting year: July 2013, Oct. 2013, Jan. 2014, and April 2014. • A new Citizen Engagement Coordinator was hired in this reporting year to help educate and engage citizens via social media on all topics the City is involved with. • The City donated $1,170 to USGS. • A donation to TBPAC and RCCRS was not made in this fiscal year but has been for many years in the past and will continue to be made in the future.	Each new quarter. • Ongoing for Public Works Department and Administration. • Donation contribution to USGS and TBPAC once a year. • Environmental Tech. is • continually in the loop of emails and events put on by TBPAC.
	Stormwater Design Standards	Implement the City's Surface Water Management Plan (SWMP) and Community Development Codes (CDC), to support use of infiltration-based stormwater treatment systems and tree planting.	• Implement design standards that include LID and additional infiltration-based guidelines for stormwater treatment. • Evaluate the coverage of LID facilities and applications throughout the City.	• In the MS4 annual report, annually track modifications to the City's Development Standards related to the use of LID and BMPs for new and redevelopment. • In the MS4 annual report, annually track LID system installations in order to assess the feasibility and success of applications.	West Linn codes define site conditions where LID may be impracticable and provide alternates for stormwater management, including offsite facilities. Stormwater facility maintenance agreements are required to be recorded in the County Deed Records for all new private facilities and enforcement actions are tracked by our Environmental Services Division.	Ongoing for Planning Department & Public Works Department – Engineering Division for each land use application.
	Preservation of Existing Forest Canopy	• Implement provisions of Chapters 28 and 32 and Ordinance 1542 of the City's Development Code, which defines protection and improvement of the City's waterways and encourages tree planting. • Continue to implement Chapter 32 – Water Resource Area Protection to be in compliance with OR Statewide Planning Goal 5 and Metro's Title 3 which relates to natural resources that address water quality and flood management. • Implement Chapter 28 – Willamette and Tualatin River Protection of the City's Development Code to further address Metro's Title 13 requirements to protect fish and wildlife habitat.	Establish working relationships with neighborhood organizations (e.g., Tualatin Basin Neighborhood Plan), to conduct activities to protect natural areas. The group has several goals and key issues that complement the Tualatin TMDL IP such as, Policy 3.1, Open Space Plan which reads in part: "…Identify and protect significant natural areas and sufficient open space…" And Policy 4.1 under Natural Resources: Protect rare Oregon white oaks and significant, heritage, threatened and endangered species".	• Track any enforcement actions taken to protect existing shade. • Track modifications to the City's development code.	Completed June 19th, 2014, Chapter 32 – Water Resource Area Protection, was completely rewritten to simplify the review process, increase tree mitigation and be consistent with Metro's Habitat Friendly Development Standards where property owners can make simple modifications to their development proposals to improve water quality and habitat protection (e.g. use of water permeable pavers.) In the coming year, the Planning Department will be changing the CDCs to incorporate infiltration based bmp's that are compatible with Green Infrastructure and Low Impact Development such as reducing imperious surfaces to lessen the need to manage runoff. *No Code Enforcement Action took place in this fiscal year.*	Ongoing for Public Works and Planning Departments.
	Planting Activities for Identified Shade Opportunity Areas	• Maintain a priority project list for shading. • Conduct planting, plant maintenance, and supplemental irrigation activities for the identified shade opportunity areas. • Utilize annual committed funds towards shading and planting activities for identified opportunity areas. (Approximately $5,000 covers both subbasins). • Promote protection of natural and riparian areas through coordination and participation in citizen groups and organizations.	• Inventory land features and conditions; prioritize riparian and wetland areas; select sites for planting. (Ground-truthing). • Review and update/revise the existing inventory identifying potential sites. • Continue to explore available options for partnering on shading projects via the City of West Linn Parks Department. • Identify watershed partners and projects that support implementation efforts and participate/support of riparian restoration and LID projects. • Enforce all riparian violations.	• Annually document coordination efforts (meeting attendance, outreach activities) with the Tualatin Basin Neighborhood Plan with regards to protection of natural areas. • Track ground-truthing activities • Track planting activities for publically owned, high priority areas. • Track planting activities for other identified shade opportunity areas. • Track any re-vegetation and maintenance activities required. • Maintain a current list of watershed partners and projects.	• There were several volunteer planting events at Mary S. Young Park in the FY 13-14. M.S. Young Park is one of our High Priority areas for shading and has 3 significant riparian areas: Heron Creek, Turkey Creek and M.S. Young Creek. (see Figures 4, 5, and 6) • The 3rd Saturday of each month, volunteers remove invasive plants restore and enhance stream banks, plant trees and spread mulch at Maddax Woods Park and Burnside Park. Each park has 1 significant riparian area. Bolton Creek runs through Burnside Park and Maddax Creek is in Maddax Woods. (see Figures 4, 5, and 6) • In April 2014, 120 students from West Linn High School planted shrubs and trees at Robinwood Park. The park has a significant riparian area with Robinwood Creek flowing through it. • West Linn organizes a "Take Care of West Linn Day." 20 projects located at over 15 sites has been renovated and restored. $18,000 was spent on trees and shrubs this year on various projects throughout the city.	• By March 2015, establish a seasonal staff person to help with ground truthing activities. • 3rd Saturday of each month for Maddax Woods. • Ongoing throughout the cycle. • Parks Dept. & Public Works.

Figure 2

MAY 2014

Water Resource Area (WRA) Map



Map Developed by West Linn Planning Department and GIS

MAP OVERLAYS:
*Streams, Pipe Segments, Other Open Ditches, and Significant Riparian Corridors
Map Source: "Significant Riparian Corridors West Linn Goal 5 Inventory, January 2007"
Map publication date: 1/2/2007.
Modified Streams and added Ephemeral Streams, April 2013, July 2013, September 2013

**Locally Significant Wetlands and Other Wetlands
Map Source: "Local Wetland Inventory, West Linn Goal 5 Inventory, January 2005"
Map publication date: 6/5/2006.

***Taxlot Base Map provided by Clackamas County GIS, 2013

WETLANDS/GOAL 5 DISCLAIMER (DSL STANDARD):
Information shown on this map is for planning purposes only and wetland information is subject to change. There may be unmapped wetlands subject to regulation and all wetland boundary mapping is approximate. In all cases, actual field conditions determine wetland boundaries. You are advised to contact the Oregon Division of State Lands and the U.S. Army Corps of Engineers with any regulatory questions.

This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

Goal 5 Significant Riparian Corridors*

- Significant Riparian Corridors
- Streams
- Ephemeral Stream
- Piped Segments
- Upper Stream Reach of Fish Inventory 2003/2004 Survey

Goal 5 Wetland Inventory**

- Locally Significant Wetlands, DSL 2005
- Other Wetlands, DSL 2005
- TA-05 Specific Wetland Identifier
- Rivers & Ponds
- West Linn City Limits
- Taxlot Base Map***

0 0.25 0.5 1 Miles

Map Created: 6/6/2014

LOC: G:\PROJECTS\GIS\GOAL5_2006\SIGRIPARIAN\SIGRIPARIAN_WETLANDS_201406V6_FINAL.MXD | KAHA
VERSION 5 TO VERSION 6: REMOVED "PROPOSED" FROM MAP TITLE

West Linn GIS GEOGRAPHIC INFORMATION SYSTEMS

Figure 3

Tualatin & Willamette River Watershed Boundaries

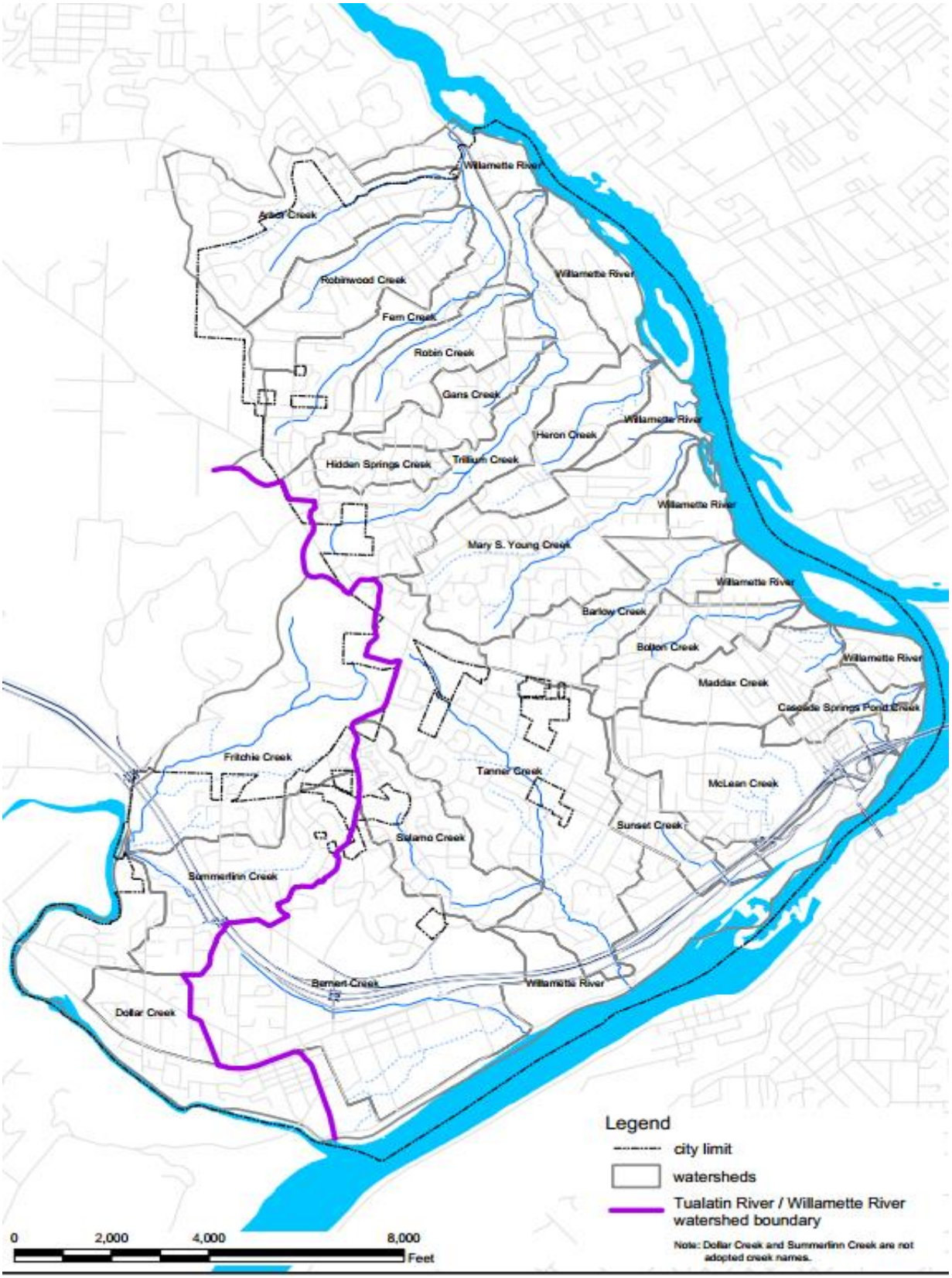


Figure 4

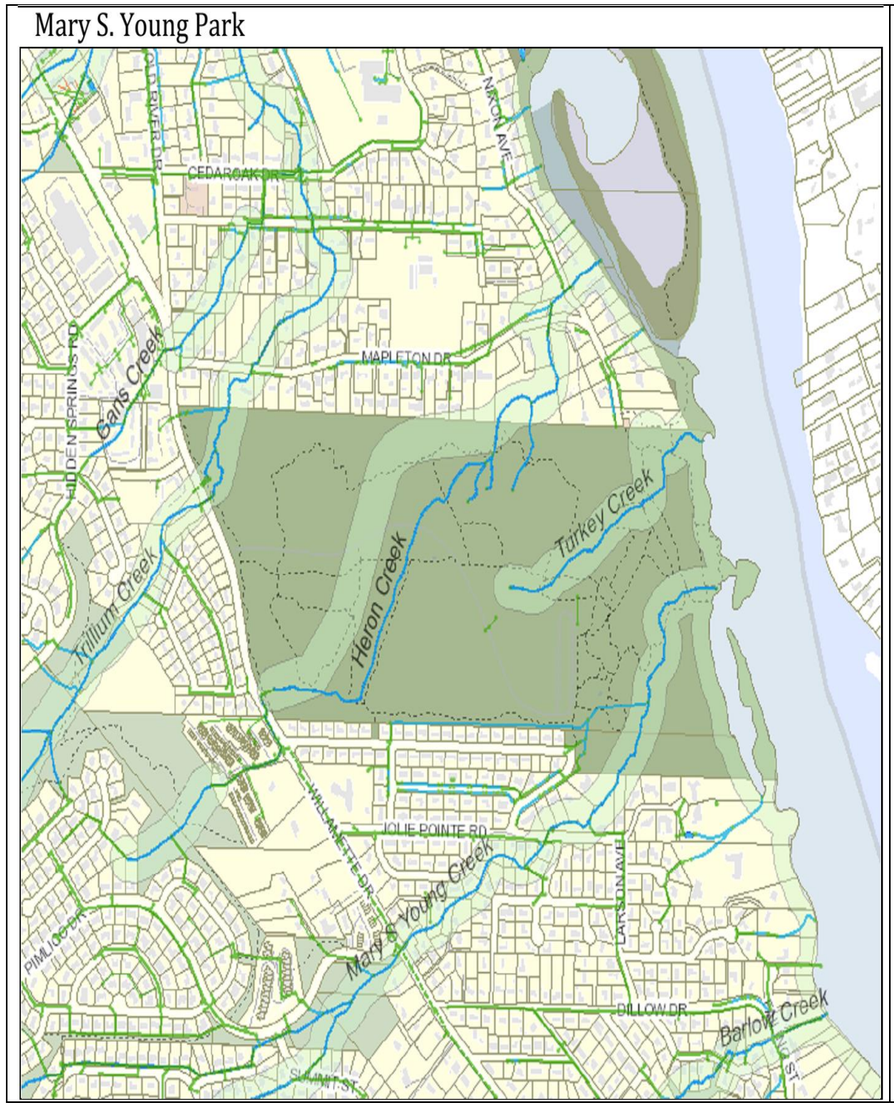


Figure 5

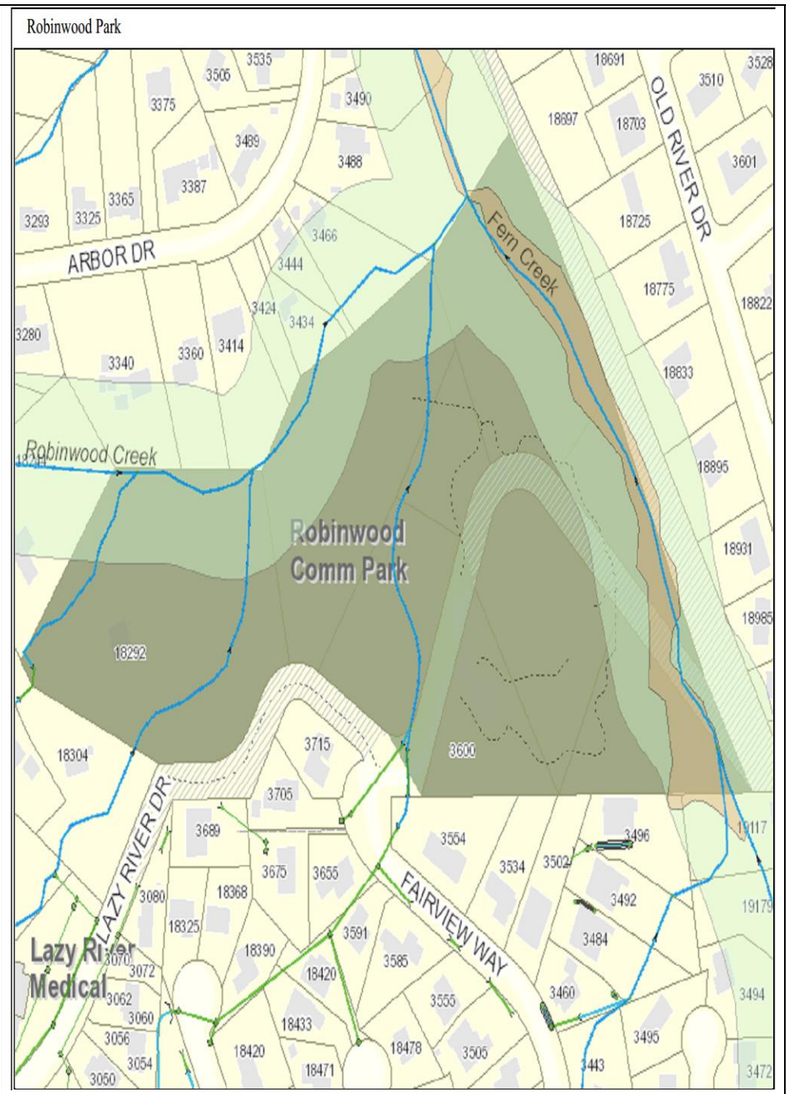
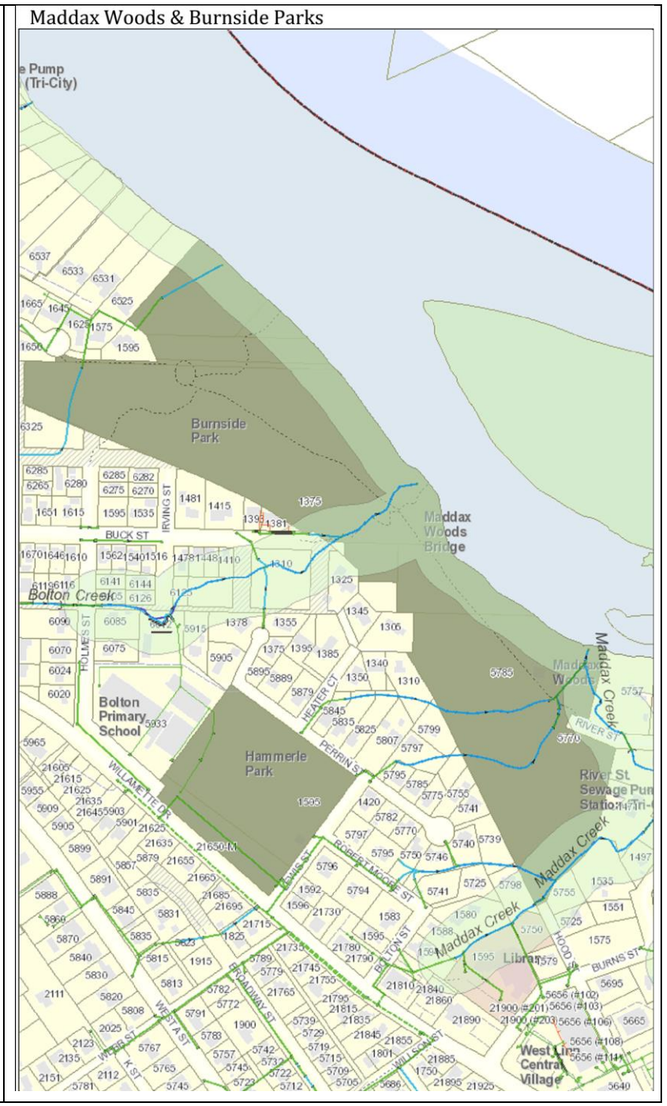


Figure 6



APPENDIX D

Submission of Sections 5.4 and 5.5 of the Tualatin River Implementation Plan

The following sections are excerpts from West Linn's Tualatin River TMDL Implementation Plan. They are provided to address DEQ's request in their August 18th letter to the City regarding Tualatin and Willamette Basin TMDL Implementation Plan update approvals. Specifically, DEQ requested that these sections be submitted in the City's 2014 annual report as they were missing in the City's June, 2014 submittal of the Tualatin River TMDL Implementation Plan.

Section 5.4 Timeline and Schedule for Implementation

Temperature management strategies are detailed according to the following general strategies: public education and outreach, implementation of stormwater design standards, protection of existing forest canopy, and planting activities for identified shade opportunity areas. For each general strategy, overarching commitments are defined that summarize the goal for the 5-year implementation period. Targeted implementation strategies are defined to identify the scope of activities proposed to meet the specific commitments. Each commitment or implementation strategy includes tracking measures or performance measures that identify the interim milestones towards achieving each implementation strategy. Tracking measures will be reported on in conjunction with the TMDL IP annual progress reports.

Tracking measures are used to measure progress towards achieving the implementation strategies and overall commitments. For example, for the general strategy to conduct new planting efforts, the tracking measures include documentation of City funds dedicated to the planting efforts, documentation of locations and acreages planted, and documentation of volunteer-based planting efforts. Collectively, these tracking measures help inform whether changes or adjustments are needed over the implementation term. If changes are needed, they will be documented in the subsequent annual report.

Section 5.5 Program Evaluation and Reporting

The City of West Linn is required to submit two types of reports to DEQ on a regular basis related to the TMDL Implementation Plan: 1) annual progress reports and 2) an implementation plan review report. The annual progress reports provide results of the ongoing implementation of temperature management strategies. They include detailed documentation in accordance with defined tracking measures and summarize status towards meeting implementation strategies and overall commitments. If changes are needed to the implementation strategies or tracking measures, they are proposed and described. The annual progress reports are submitted to DEQ in conjunction with the City's NPDES MS4 permit annual reporting cycles, by November 1 of each year.

At the end of the 5-year TMDL implementation period, the City will revisit the overall TMDL IP, using annual report results and other information (i.e., environmental monitoring data, planting coverage area, etc.) to evaluate the TMDL IP effectiveness relative to pollutant reduction goals. If evidence indicates that the Plan and associated implementation strategies are not making progress towards improved instream temperature, then modifications may be considered. The implementation plan review report would be submitted to DEQ once every five years or as determined by DEQ.