City of Oregon City, Oregon

National Pollutant Discharge Elimination System Municipal Separate Storm Sewer System Discharge Permit and Willamette River TMDL

2014–2015 Annual Report

Prepared for the
Oregon Department of Environmental Quality

November 1, 2015

Assisted By:

CITY OF OREGON CITY

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

MUNICIPAL STORMWATER SYSTEM ANNUAL REPORT

JULY 1, 2014 - JUNE 30, 2015

We, the undersigned, hereby submit this National Pollutant Discharge Elimination System (NPDES) Municipal Stormwater Annual Report in accordance with NPDES Permit No. 101348. We certify under penalty of law that this document and all attachments were prepared under our direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on our inquiry of the person, or persons, who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of our knowledge and belief, true, accurate and complete. We are aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

10/26/15

Martin Montalvo — Date
Public Works Operations Manager

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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 Oregon City through the Municipal Separate Storm Sewer System (MS4) National Pollutant Discharge Elimination System (NPDES) Permit No. 101348, issued to Clackamas County and its co-permittees. Clackamas County co-permittees include the City of Oregon City along with the cities of Lake Oswego, Gladstone, West Linn, Milwaukie, 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 under 30,000 with some (Johnson City, Rivergrove) having populations significantly smaller.

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.

Each co-permittee is required to submit an annual report, summarizing accomplishments and implementation of their individual Stormwater Management Plans (SWMPs). In conjunction with the reissuance of the City's permit, SWMP updates to address requirements of the reissued permit were submitted and approved by DEQ. This annual report documents stormwater management activities from July 1, 2014 to June 30, 2015 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	Location in document
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.	Section 2.0
d)	Proposed changes to SWMP program elements to reduce TMDL pollutants to the MEP.	Section 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.	Section 3.0
f)	A summary of monitoring program results, including monitoring data that is accumulated throughout the reporting year.	Section 4.0 & 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.	Section 4.0

	Annual reporting requirement	Location in document
h)	A summary describing the number and nature of enforcement actions, inspections, and public education programs.[a]	Section 6.0 and Appendix A
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.	Section 5.0
j)	A summary related to MS4 discharges describing concept planning or other activities in preparation of UGB expansions or land annexations.	Section 5.0 and Appendix A
k)	For 2015 annual report only: TMDL Pollutant Load Reduction Evaluation, Wasteload Allocation Attainment Assessment, and 303(d) evaluation.	Section 6.0
NA)	Additional Efforts Conducted by the City.	Section 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 permit requirements in Schedule B.5. This report emphasizes efforts and activities associated with individual Best Management Practices (BMPs) from the City's 2012 SWMP, as summarized in Appendix A.

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 approach to DEQ on November 1, 2012.

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. The City's adaptive management approach (submitted November 1, 2012) 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 measureable goals and tracking measures to the BMP objective, and

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, hydromodification 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 2014–2015 Reporting Year

The 2014-2015 reporting year is the third full permit year in which the City's effective SWMP (dated 2012) has been implemented. For the 2014-2015 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 Oregon City's revenue and expenditures for the 2014–2015 fiscal year and a projection of the City's revenue and expenditures for the 2015–2016 fiscal year are provided in Table 2. Projection of expenditures is considered draft at this time.

Table 2

521 Storm Drain (Stormwater) Division

City of Oregon City

	Fiscal Year			
	2013/14 Actual	**2014/15 Actual**	**2015/16 Budget**	**2016/17 Budget**
Beginning Fund Balance	$ 591,053	$ 836,813	$ 994,889	$ 800,847
	Rate = $8.55 / $8.80 3% rate increase	Rate = $8.80 / $9.05 3% rate increase	Rate = $9.05 / $9.35 3% rate increase	Rate = $9.35 / $9.65 3% rate increase
Revenues				
Charges for Service	$ 2,321,609	$ 2,392,996	$ 2,433,719	$ 2,506,731
Interest Income	$ 3,351	$ 2,882	$ 1,236	$ 1,273
Miscellaneous Income	$ 18,837	$ 15,116	$ 1,030	$ 1,061
Erosion Control Permits	$ 28,671	$ 35,596	$ 50,000	$ 51,500
Project Management	$ 17,799	$ 21,753	$ 25,640	$ 26,409
TOTAL Revenues	$ 2,390,267	$ 2,468,343	$ 2,511,625	$ 2,586,974
Expenditures				
Personnel Services	$ 970,208	$ 995,007	$ 1,177,670	$ 1,211,458
Materials & Services	$ 589,833	$ 526,689	$ 562,291	$ 648,685
Capital Outlay Totals	$ 96,537	$ 207,969	$ 383,800	$ 321,000
Total Transfers	$ 487,929	$ 410,559	$ 581,906	$ 585,011
TOTAL Expenditures	$ 2,144,507	$ 2,140,224	$ 2,705,667	$ 2,766,154
Change in Fund Balance	$ 245,760	$ 328,119	$ (194,042)	$ (179,180)
Ending Fund Balance	$ 836,813	$ 1,164,932	$ 800,847	$ 621,667
Capital Outlay - Details				
Operations New Equip. >$5000	$ -	$ 12,500	$ -	$ 15,000
Capital Construction	$ 96,537	$ 195,469	$ 383,800	$ 306,000
Land	$ -	$ -	$ -	$ -
	$ 96,537	$ 207,969	$ 383,800	$ 321,000
Transfers - Details				
Transfer to Building Reserve	$ 250,000	$ 187,500	$ 300,000	$ 300,000
Outside ADM Services	$ 106,083	$ 101,697	$ 118,831	$ 121,346
Interdept. Transfers	$ 56,846	$ 57,612	$ 58,075	$ 58,665
Fleet Reserve Transfer	$ 75,000	$ 63,750	$ 105,000	$ 105,000
	$ 487,929	$ 410,559	$ 581,906	$ 585,011

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 Oregon City, 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 Oregon City 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, macroinvertebrate (biologic) monitoring, and geomorphic monitoring were added to the CCCSMP. A description of the proposed time-composite sampling methodology was included as an appendix to the CCCSMP. 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 (2014–2015), the 2012 CCCSMP was the effective, implemented monitoring plan for the City of Oregon City.

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 for the 2014–2015 reporting year included dry weather field screening, as described in the City's SWMP under the BMP: "Conduct Annual Dry Weather Field Screening." Results of the visual monitoring efforts are reported in Appendix A under the applicable BMP. Environmental monitoring also consists of in-stream sample collection and outfall sample collection, and the City's sampling efforts are outlined in more detail in Sections 4.2 and 4.3 and in the CCCSMP. Results of the in-stream and outfall sample collection efforts are provided in Appendix B.

4.2 CCCSMP Updates and Modifications for the 2014–2015 Reporting Year

New requirements related to stormwater monitoring were outlined in the City's reissued MS4 NPDES permit (dated March 16, 2012). As mentioned in Section 4.1, new requirements included the documentation of a rationale related to the time-composite sampling methodology, documentation of laboratory quality assurance and control procedures, and inclusion of mercury, pesticide, and macroinvertebrate monitoring. Monitoring frequencies and parameters were also

revised based on requirements in the 2012 Permit and experience implementing the CCCSMP since 2006. No modifications to the monitoring plan were made for the 2014-2015 reporting year.

4.3 Summary of Monitoring Data

In accordance with the 2012 CCCSMP, Oregon City is required to conduct in-stream and outfall monitoring. In-stream monitoring is required at six locations reflecting four tributaries to the Willamette River. Outfall monitoring is required at two outfall locations that discharge to the Clackamas River. Time-weighted composite (during storm events) and single grab samples are taken in accordance with the frequencies outlined in Table 3 below.

During the 2014–2015 monitoring year, the City of Oregon City collected all required instream samples (four monitoring events at six sites). However, only two of three required outfall samples (at two sites) were collected due to lack of late winter/early spring rainfall (no flow at outfalls). The City is committed to collecting the additional outfall samples during the 2015 – 2016 monitoring year in order to make up for the reduced number of samples collected.

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

Table 3: 2014–2015 Oregon City Monitoring Locations and Required Frequencies

Site #	Location	Sample Type	Required Frequency	Weather
In-Stream Monitoring				
OC010is	Abernethy Creek At 17082 Holly Ln, (Holly Ln Bridge)	Grab & Composite	4/year	Dry Weather (2/year) and Storm Event (2/year)
OC011is	Abernethy Creek At 316 17th St (17th at railroad trestle)	Grab & Composite	4/year	Dry Weather (2/year) and Storm Event (2/year)
OC012is	Coffee Creek Behind 415 McLoughlin (outfall at Willamette)	Grab & Composite	4/year	Dry Weather (2/year) and Storm Event (2/year)
OC013is	Park Place Creek Behind 13530 Redland Rd	Grab & Composite	4/year	Dry Weather (2/year) and Storm Event (2/year)
OC014is	Singer Creek at the north end of Singer Creek Park (Linn Ave)	Grab & Composite	4/year	Dry Weather (2/year) and Storm Event (2/year)
OC015is	Singer Creek 507 7th St (MH - SD0726 located on Center)	Grab & Composite	4/year	Dry Weather (2/year) and Storm Event (2/year)
Outfall Monitoring				
OC006ofm	Clackamas River at O.C. Shopping Center	Composite	3/year	Storm Event
OC007ofm	Clackamas River at Clackamette Cove	Composite	3/year	Storm Event

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

5.1 Summary of Land-Use Changes and UGB Expansions

The following land use/ zoning changes were approved between July 1, 2014 and June 30, 2015:

- Sunnybrook II Subdivision rezoned from R-10 to R-8 (ZC 14-01)
- Meyers Rd Small Slopes Subdivision rezoning from R-8 to R-6 (ZC 14-02)
- One 5.50-acre annexation was approved during the reporting period (AN 14-01), but no new development has occurred within the proposed UGB expansion area.

5.2 Summary of Development Activities within the UGB

During the reporting year 2014-2015, there were 17 development applications reviewed and approved for compliance with water quality/water quantity standards. These included site plan and design review (9), and subdivisions (8). Estimated total new and replaced impervious surface area related to development projects that commenced during the reporting year equals 771,000 square feet.

There were three public improvement projects (CIPs), including water quality and/or flow control projects, for this reporting period. Two were contracted out and one was done in-house. Details of these projects can be found in Appendix A.

6.0 Additional Activities

The following stormwater-related activities occurred within the City and are not currently documented in Appendix A.

Schedule A.4.e – Public Involvement and Participation

The final draft of Oregon City's 2014 – 2015 Annual Report was posted on the city website for public review from October 14 – 23, 2015. No comments were received.

Schedule A.5 – Hydromodification Assessment

Oregon City submitted a Hydromodification Assessment to DEQ on June 29, 2015.

Schedule A.6 – Stormwater Retrofit Strategy Development

Oregon City submitted a Stormwater Retrofit Plan to DEQ on June 29, 2015.

Schedule B.5.K

Oregon City is submitting the following under separate cover:
- The 303(d) Evaluation as described in Schedule D.2
- The Wasteload Allocation Attainment Assessment as described in Schedule D.3.b
- The TMDL Pollutant Load Reduction Evaluation as described in Schedule D.3.c.

BMP 4-5: Ensure Municipal Staff Training in Stormwater Pollution Prevention

There were 16 stormwater staff meetings conducted during the 2014 – 2015 reporting period. Dates, topics, and attendees are summarized below in Table 4:

BMP 4-5 – Staff Meetings with BMP Responsible Parties

Date/Time	Attendees	BMP's /Topics	Items Discussed	Next Steps/Program Adjustments
7/17/14 2:30-4:00	Martin Montalvo, Gail Johnson, Krista Reininga, Alissa Maxwell (consultants)	Hydromod/Retrofit	Scope of work for Task 3 of our psa – hydromodification and retrofit assessments; how these will inform master planning efforts.	B&C to move forward with scope for task. We will assist as needed with data collection, etc.
8/19/14 3:30-4:00	Eric Hand, Aleta Froman-Goodrich, Todd Martinez, Gail Johnson, Lisa Oreskovich	BMP 6-2 Design Standards Update	Reviewed draft of Chapter 1	Lisa to word process minor changes, need clarification on 1.2.2 (H).
8/21/14 3:30-5:00	Eric Hand, Aleta Froman-Goodrich, Todd Martinez, John Lewis, Lisa Oreskovich	BMP 6-2 Design Standards Update	Reviewed draft of Chapter 2	Lisa to word process changes.
8/26/14 3:30-4:00	Eric Hand, Todd Martinez, Gail Johnson, Martin Montalvo (phone), Lisa Oreskovich	BMP 6-2 Design Standards Update	Reviewed draft of Chapter 3	Lisa to word process changes.
8/28/14 3:30-4:40	Todd Martinez, Aleta Froman-Goodrich, Gail Johnson, Martin Montalvo (phone)	BMP 6-2 Design Standards Update	Reviewed draft of Chapter 4	Lisa to word process changes.
9/2/14 2:00-4:30	Martin Montalvo, Aleta Froman-Goodrich, Todd Martinez	BMP 6-2 Design Standards Update	Reviewed draft of Chapter 5	Lisa to word process changes.
9/9/14 3:00-6:00	Martin Montalvo, Todd Martinez	BMP 6-2 Design Standards Update	Reviewed draft of Chapter 6	Lisa to word process changes.
9/25/14 10:00-12:00	Martin Montalvo, Gail Johnson, Aleta Froman-Goodrich, Eric Hand	BMP 6-2 Design Standards Update	Reviewed draft of Chapter 8	Lisa to word process changes.
9/30/14 2:30-5:00	Martin Montalvo, Gail Johnson, Aleta Froman-Goodrich, Eric Hand, Todd Martinez	BMP 6-2 Design Standards Update	Reviewed draft of Chapter 9	Lisa to word process changes.
10/7/14 2:00-3:00	Martin Montalvo, Gail Johnson, Aleta Froman-	BMP 6-2 Design Standards Update	Assignment of Appendices review	Individual review of assigned appendices; meet with B&C prior to end of month for finalization.

BMP 4-5 – Staff Meetings with BMP Responsible Parties

	Goodrich, Eric Hand, Todd Martinez			
10/9/14 10:30-11:00	Martin Montalvo, Gail Johnson	BMP 6-2 Design Standards Update	Finalize changes to Maintenance Covenant for PWQF	Forward to B&C
10/23/14 12:00-3:00	Martin Montalvo, Gail Johnson, Aleta Froman-Goodrich, Todd Martinez, Tony Konkol, Alissa Maxwell, Krista Reininga	BMP 6-2 Design Standards Update	Final review of all chapters; decisions on outstanding items.	Assignments for final review of appendices, TOC, and drawings.
12/11/14 1:30-3:00	Martin Montalvo, Gail Johnson, Alissa Maxwell, Krista Reininga (conference call)	BMP 6-2 Design Standards Update; Scope for next PSA	Current status of design standards project. Plan is to have complete by 2/1/15 – finalized by late spring. Upcoming permit requirements: schedule and scope for upcoming fiscal years.	Final, final review by city due to B&C by 1/15/15. B&C to provide tentative scope for upcoming psa for budgeting purposes.
1/5/15 1:00-1:45	Martin Montalvo, Gail Johnson, Tony Konkol, Alissa Maxwell (conference call)	BMP 6-2 Design Standards Update	Final review of changes to OCMU Chapter 13. Discuss schedule for presentation to various city committees.	Clarify two items. Prepare for presentation to NRC, Planning Commission, then to City Commission for adoption.
2/19/15 1:00-3:30	Representatives from engineering firms and various agencies associated with stormwater design. Total number of attendees = 19	OC Stormwater and Grading Design Engineering Workshop	Overview of updated design standards; highlighted significant changes, introduced LID options and the new sizing tool.	Respond to questions that arose during workshop.
3/25/15 9:30-11:30	Chris Dunlop, Gail Johnson, Jonathan Archibald, Alissa Maxwell, Angela Wieland	GIS needs for Hydromodification, Retrofit, and TMDL Pollutant Load Reduction Evaluation	Discussed updated GIS work for upcoming tasks, building on 2008 maps and modeling needs	Initiate GIS work; prepare for field investigations.

Appendix A

Oregon City 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.

Appendix A. Status of Implementing Components of Oregon City's 2012 Stormwater Management Plan (SWMP)							
BMP or activity	Addresses bacteria?	Addresses mercury?	Responsible department	Measurable goals (2012 SWMP)	Tracking measures (2012 SWMP)	Annual report information: tracking measure status, Permit year 2014 – 2015	Additional detail related to activities conducted
Element 1. Illicit Discharge Detection and Elimination							
BMP 1-1: Implement the Illicit Discharge Elimination Program	●	●	Oregon City Public Works Department (OCPW)	• Document and implement updated Standard Operating Procedures (SOPs) for the Illicit Discharge Detection and Elimination (IDDE) Program by November 1, 2012. • Conduct actions to remove identified illicit discharges in conjunction with timeframes outlined in OC's MS4 NPDES Permit. • Track and record all identified illicit discharges and how such discharges were removed.	1) Track status of documenting and updating the IDDE SOP. 2) Track the number, location, type of discharge, resolution, and enforcement action for any illicit discharge investigation conducted.	1) No changes were made to the IDDE SOP during this reporting period. 2) No illicit discharge investigations were deemed necessary as a result of annual dry weather field screening conducted during this reporting period.	1) OC developed an IDDE SOP (effective date: November 1, 2012), in conjunction with other Clackamas County co-permittees. The SOP includes guidelines for identification and enforcement of illicit discharges.
BMP 1-2: Conduct Annual Dry Weather Field Screening	○	○	OCPW	• Conduct dry-weather field screening once per year, at a minimum, at major outfalls. • Characterize dry weather flows as permissible, non-permissible, or unknown. • Conduct sampling, analysis, and investigations for non-permissible and unknown dry weather discharges. • Maintain maps of major outfalls and dry weather field screening locations. • Notify the OCPW Operations Manager of all identified illicit discharges and take necessary steps to eliminate them. • Update procedures for dry weather field screening by November 1, 2012.	1) Track the number and location of outfalls inspected annually. 2) Summarize inspection results and track the number and location of outfalls requiring monitoring and/or investigations. 3) Report the outcome and resolution of any investigation activities. 4) Report the outcome and resolution of any code enforcement actions. 5) Track the status of updating standard procedures.	1) Eight outfalls were inspected as part of annual dry weather field screening activities. 2) Outfalls were inspected on 8/27 & 28/14. Flow was observed at five of the outfalls; discharge was characterized as permissible at all five outfalls. 3) N/A 4) N/A 5) OC developed an IDDE SOP (effective date: November 1, 2012). The SOP includes procedures for conducting dry weather field screening.	1) Dry weather screening was conducted at the following outfalls: 1. 99E and 5th Street: 8-inch 2. 99E and 5th Street : 15-inch 3. Abernethy Road at Tri-Lett : 15-inch 4. Clackamas River Drive: 48-inch 5. Metro Wetlands Pond: 48-inch 6. Falcon Drive: 30-inch 7. Berry Hill: 24-inch 8. Beavercreek at Hwy 213: 24-inch
BMP 1-3: Implement the Spill Response Program	○	○	Clackamas Fire District #1 (Hazardous Materials Team) and OCPW	• Respond to reports of hazardous and non-hazardous spills and follow the OC *Spill Response Plan*. • Report all hazardous and non-hazardous spills to DEQ as necessary.	1) Indicate the number of spills reported to OCPW and DEQ. 2) Track responses to reported spills. 3) Indicate sources, causes, and types of discharges resulting from spill activities. 4) Track any changes to the OC *Spill Response Plan*.	1) Six spills were reported to OCPW during the 2014-2015 reporting period. 2) Responses were appropriate for each spill. See list below. 3) Three spills required DEQ reporting. Three additional spills were of various types. Minor (non-reported) spills resulted primarily from vehicle accidents or mechanical failure and had no discharges. • Two reported spills resulted from operational failures at existing Sanitary Lift Stations. • One vehicle accident (minor) - cleaning with absorbent pads, sweeping, and proper disposal. • Two spills of oil and grease - cleaning with absorbent pads, sweeping, and proper disposal. One was minor and one was reported to DEQ and the Oregon Emergency Response System (OERS). • One construction project concrete saw slurry (minor) – responsible party was required to clean out catch basin. 4) There were no changes to the OC *Spill Response Plan* during this reporting period.	
Element 2. Industrial and Commercial Facilities							
BMP 2-1: Screen Existing and New Industrial Facilities	○	○	OCPW	• Review the business license inventory for 1200Z industries once over the permit term. • Notify DEQ of any existing or new industrial facilities within OC that may 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 Water Quality Coordinator continued to review all new business license applications for potential water quality-related issues. 178 business license applications were reviewed during the 2014-2015 reporting period. The screening did not identify any additional facilities potentially subject to an industrial stormwater permit.	DEQ provided additional guidance on industrial facility screening in June 2013. OC's consultant has coordinated with DEQ related to the methodology and process for identifying "potential" 1200-Z permittees.
BMP 2-2: Implement an Industrial/Commercial Inspection Program for High Priority Facilities	○	○	OCPW	• Pursue approval to hire staff to implement a business inspection program. • Develop a priority list of industrial/commercial facilities for inspection. • Investigate 25% of OC's manufacturing businesses once during the permit term. • Develop an industrial/commercial inspection procedure by July 1, 2013.	1) Track the number of inspections conducted. 2) Report on inspection results and follow up actions. 3) Report on status of documenting and updating procedures.	1) One inspection was conducted during the 2014-2015 reporting period. 2) Inspection of Tri-Lett Industries at 13530 Redland Rd on 8/11/14 found 2 floor drains that discharged directly to Abernethy Creek when catch basins reached overflow. Follow-up on 11/21/14 confirmed these drains had been capped. 3) No changes were made to the Industrial/Commercial Facility Inspection Program SOP during this reporting period.	• OC has not hired additional staff to implement the business inspection program. • OC developed an Industrial/Commercial Facility Inspection Program SOP July 1, 2013. The SOP includes procedures and guidelines related to facility screening, DEQ notification of potential industrial stormwater permit needs, and high pollutant source facility inspections. The SOP identifies a total of 31 manufacturing businesses potentially subject to inspection.

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Appendix A. Status of Implementing Components of Oregon City's 2012 Stormwater Management Plan (SWMP)							
BMP or activity	Addresses bacteria?	Addresses mercury?	Responsible department	Measurable goals (2012 SWMP)	Tracking measures (2012 SWMP)	Annual report information: tracking measure status, Permit year 2014 – 2015	Additional detail related to activities conducted
Element 3. Construction Site Runoff Control							
BMP 3-1: Implement the Erosion Control Ordinances	●	○	OCPW	• Review erosion control plans for all developments greater than 1,000 square feet. • Require erosion and sediment control plans not in compliance with standards to be amended and approved prior to construction. • By November 1, 2014, adopt the Clackamas County *Erosion Control Manual* or revise OC's manual in accordance with the MS4 NPDES permit requirements.	1) Record the number of erosion control plan reviews completed and approved. 2) Track the number of erosion control permits issued annually. 3) Report on the status of adopting the Clackamas manual or updating OC's manual.	1) 136 erosion control plans were reviewed and approved. 2) 136 erosion control permits were issued. 3) OC has adopted the Clackamas County *Erosion Control Manual*, in conjunction with its update of the City's *Stormwater and Grading Design Standards* manual.	
BMP 3-2: Provide Educational Information to Construction Site Operators	○	○	OCPW	• Continue to provide OC's most current erosion control manual on OC website. • Continue to offer discounts on erosion control permits to contractors completing the Erosion Control Certification Program.	1) Track the number of contractors receiving a discount on erosion control permit fees.	1) No contractors received a discount on permit fees.	
BMP 3-3: Conduct Erosion Control Inspections	●	○	OCPW	• Conduct a minimum of three erosion control inspections at each permitted site. • Conduct appropriate enforcement activities for erosion control violations.	1) Record the number of erosion control inspections conducted annually. 2) Report the number of notices of non-compliance issued during inspections.	1) A total of 315 erosion control inspections were conducted this permit year. Due to the time frames with which construction occurs, some sites had all three required inspections, and some sites have only had one or two inspections at this time (construction is still ongoing). 2) Eight notices of non-compliance were issued. Two stop work orders were issued.	1) The total number of inspections are comprised of: • 136 initial site visits, Inspection 1 • 98 random inspections, Inspection 2 • 81 final inspections, Inspection 3
Element 4. Education and Outreach							
BMP 4-1: Provide Public Education and Outreach Materials Regarding Stormwater Management	○	○	OCPW	• Include a water quality related article in each City newsletter, distributed to citizens three times per year. • Participate in the Regional Coalition (Coalition) for Clean Rivers and Streams. • Seek out opportunities to partner with other agencies/jurisdictions/organizations to educate and promote watershed health and low impact development. • Periodically install signs near water quality structures and around OC promoting water quality. • Sponsor the volunteer catch basin stenciling program. • Distribute an annual water quality report to OC residents.	1) Track the number, types, and topics of public educational materials distributed to the public. 2) Report any large scale public educational campaigns initiated during a given year. 3) Track coordinated public outreach activities with other permittees.	1) The following educational activities were conducted (see Appendix C for details): • A total of five water quality-related articles were included in Trail News. • OC promoted and/or participated in a total of four special events. • The March 2015 utility bill included a message promoting chemical-free lawns and gardens. • Mailed 14,782 postcards announcing availability of the Annual Water Quality Report on OC's website. • Stormwater banner displayed at the Pioneer Center (2/2/15 – 2/17/15). • Promoted two stormwater-related publications/presentations on OC's website. 2) Conducted an Engineering and Developers forum to discuss the new NPDES and stormwater requirements as a result of the newly adopted stormwater design standards. 3) Coordinated efforts included: • Continued to sponsor the "Water…Do Your Part" campaign via KOIN media outlets. • Continued participation in the Coalition. • Continued participation with other agencies to promote water quality education through Clackamas River Water Providers.	• Specific details on the public education and awareness activities conducted by OC are available in Appendix C. • During this reporting year, the Coalition introduced a new campaign – The River Starts Here – via online media, website, and social media profiles. The Coalition's annual report summarizes these efforts. • OC continues to conduct catch basin marking and stenciling to increase public awareness. During this reporting period 498 catch basins were either stenciled with the message "Dump No Waste – Drains to Stream" or had "No Dumping, Drains to Waterway" markers installed.
BMP 4-2: Participate in a Public Education Effectiveness Evaluation	○	○	OCPW	• Coordinate with other local, Phase I jurisdictions in providing/compiling information regarding a public education effectiveness evaluation by July 1, 2015.	1) Report on activities conducted annually.	1) OC submitted a Public Education Effectiveness Evaluation Summary to DEQ on June 29, 2015.	The Association of Clean Water Agencies (ACWA) Stormwater Committee completed a coordinated effort to compile existing educational survey information and develop conclusions to inform how public education efforts result in behavioral change. The study was conducted by DHM Consulting with cost shared among interested Phase I and Phase II communities, including OC.
BMP 4-3: Conduct Staff Training for Pest Management	○	○	OCPW and Parks	• Ensure OCPW and Parks Dept. staff conducting pest management activities are certified for spraying activities according to OSHA requirements. • Ensure licensed staff attends annual refresher courses.	1) Track the number of employees licensed for spraying activities. 2) Report number of employees that attended initial or refresher training.	1) Staff licensed for spraying activities: OCPW = 6; Parks Dept. = 4 2) Six OCPW staff and four Parks Dept. staff attended refresher training classes during the reporting period.	
BMP 4-4:	○	○	OCPW	• Provide non-hazardous spill response training annually through monthly safety meetings.	1) Track spill-related training and education.	1) 21 OCPW staff members were provided spill response training on 6/9/15.	

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.

Appendix A. Status of Implementing Components of Oregon City's 2012 Stormwater Management Plan (SWMP)							
BMP or activity	Addresses bacteria?	Addresses mercury?	Responsible department	Measurable goals (2012 SWMP)	Tracking measures (2012 SWMP)	Annual report information: tracking measure status, Permit year 2014 – 2015	Additional detail related to activities conducted
Conduct Staff Training in Spill Response				• Coordinate annual training and refresher courses for staff initially responding to spills using OSHA hazardous materials educational resources.			
BMP 4-5: Ensure Municipal Staff Training in Stormwater Pollution Prevention	○	○	OCPW	• Conduct municipal training for employees associated with stormwater management in OC. • Coordinate with other Clackamas County co-permittees regarding regional water quality efforts. • Participate in training and advisory committee opportunities available through state and local agencies and groups. • Conduct regular stormwater staff meetings once or twice a year.	1) Track the number of employees receiving training in stormwater management annually. 2) Track OC staff participation in groups, committees, and organizations relevant to stormwater quality management. 3) Track regular stormwater staff meetings and staff attendance at those meetings.	1) Employees receiving training in stormwater management: • PW Director and Operations Manager attended APWA Fall Conference, 10/14-17/14 • Street Supervisor attended ODOT Environmental & Erosion Control Inspector training, 1/28-30/15 • OC Erosion Control Officer attended an Erosion Control Conference, 2/18-19/15 • Four OCPW employees attended 39th Annual Water Environment School, 3/24-26/15 • Three OCPW employees attended ACWA Stormwater Summit, 5/13/15 2) OC staff participates in the following groups and organizations: • ACWA and active participant in the ACWA Phase I Stormwater subcommittee • Continued collaboration with other co-permittees on Comprehensive Clackamas Stormwater Monitoring Program • Greater OC Watershed Council • Clackamas County Water Education Team • Regional Coalition for Clean Rivers and Streams 3) There were 16 stormwater staff meetings conducted during the 2014-2015 reporting period.	3) Dates, topics, and attendees are summarized in Table 4 in Section 6.0 of the annual report.
Element 6. Post-Construction Site Runoff							
BMP 6-1: Implement Municipal Construction Standards	●	●	OC Community Development	Per OC'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 and approved for compliance with stormwater regulations. 2) Track the number, type, and drainage area of treatment facilities constructed annually.	1) 17 development applications were reviewed and approved for compliance with water quality/water quantity standards. For applications that proceed to the construction phase all constructed treatment facilities will be noted in the appropriate reporting period. 2) Two treatment/detention facilities were constructed and one expansion of an existing treatment/detention facility was constructed during the reporting period of 7/1/2014 through 6/30/2015: • Total drainage area = 15.7 acres	2) Details of treatment facility construction: • Kinslie Heights 10-Lot Subdivision - 4 sumped catch basins, used surplus capacity of existing underground detention tank; • Aspen Ridge 8-Lot Subdivision – 3 sumped catch basins, expansion of existing treatment/detention pond; • Central Pt Crossing 27-Lot Subdivison - 12 sumped catch basins, one treatment/detention pond, one flow control valve; • Lindsay Anne Estates 35-Lot Subdivison - 15 sumped catch basins, one treatment/detention pond, one flow control valve; • Total contributing drainage area = 17.7 acres
BMP 6-2: Review and Update Code and Development Standards related to Stormwater Quality Control	●	●	OC Community Development	• Review OC's current/planned stormwater treatment and detention standards for compliance with new MS4 NPDES permit language. • Review OC's current public works development code provisions to ensure that applicable barriers to LID or green infrastructure (GI) are minimized and eliminated where practicable. • If necessary, update OC's post-construction stormwater design standards and code language by November 1, 2014.	1) Track progress related to review of OC's code and development standards per provisions in the MS4 NPDES permit. 2) Track any code/standards modifications made by ordinance.	1) The update has been completed to OC's *Stormwater and Grading Design Standards* to meet the current MS4 NPDES permit language. The update prioritizes the use of LID and GI to the maximum extent practicable. 2) OC reviewed and updated the Oregon City Municipal Code Chapter 13.12 Stormwater Management, the *Stormwater and Grading Design Standards* manual, and the *Erosion and Sediment Control Standards* manual. The updated manuals were adopted through Resolution 15-14 and the associated municipal code update was adopted by Ordinance 15-1006 on May 20, 2015.	
Element 7. Pollution Prevention for Municipal Operations							
BMP 7-1: Conduct Street Sweeping and Roadway Repair Activities	●	●	OCPW	• Sweep city streets every 3-4 months on average, more frequently in high traffic areas and during leaf pick up and following deicing activities.	1) Track the average number of citywide sweeps per year. 2) Estimate the miles of streets swept per year. 3) Track volume of debris removed.	1) 6.04 city-wide sweeps for this reporting period. 2) During the 2014-2015 reporting period, 4,444 miles of roadway were swept. 3) 1,564.50 cubic yards of debris were removed as a result of sweeping and leaf pickup activity.	

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Appendix A. Status of Implementing Components of Oregon City's 2012 Stormwater Management Plan (SWMP)

BMP or activity	Addresses bacteria?	Addresses mercury?	Responsible department	Measurable goals (2012 SWMP)	Tracking measures (2012 SWMP)	Annual report information: tracking measure status, Permit year 2014 – 2015	Additional detail related to activities conducted
BMP 7-2: Minimize Pollutant Discharges Associated with Landscape Management Practices	○	○	OCPW and Parks	• All chemical applicators, both contractor and city, must follow state laws related to the use of pesticides. • Applicators will complete spray reports for the application of chemicals.	1) Track any program changes regarding chemical application practices used by OC.	1) Both city and contracted chemical applicators comply with 2300-A, pesticide general permit requirements. Pesticide applications are kept at least three feet away from any water's edge. There were no program changes regarding chemical application practices used by OC.	
BMP 7-3: Implement a Program to Reduce the Impact of Stormwater Runoff from Municipal Facilities	○	○	OCPW	• By July 1, 2013, inventory municipal facilities subject to this permit requirement. • By July 1, 2013, identify whether there is a need for additional strategies to minimize discharge from these facilities.	1) Track updates to strategies used to minimize pollutant discharge from municipal waste storage facilities	1) OC developed a Stormwater Pollution Prevention Strategy document for municipal operations (SWPPS) July 1, 2013. The SWPPS includes a description of each of OC's six facilities that treat, store, or transport municipal waste. Additionally, it identifies potential pollutant sources as well as short and long term pollution reduction strategies. No updates to the SWPPS were identified during the reporting period.	
BMP 7-4: Control Infiltration and Cross Connections to the City's Stormwater Conveyance System	●		OCPW	• Review new and redevelopment for possible cross-connections. • Eliminate cross connections upon identification.	1) Report whether any cross connections were discovered and describe follow up activities.	1) Two cross connections were discovered and corrected during this reporting period. Locations and corrective actions were: • 1002 Monroe Street – home was not connected correctly during combined sewer separation project. Plumbing corrected. • 18599 Aladdin Way – sanitary mistakenly connected to storm by plumber. Plumbing corrected.	• Dye tests are performed by OCPW upon request from plumbing inspector if there are questions regarding sewer connections. • New construction storm and sanitary stub out standards have been revised – sanitary remains 4-inch-diameter pipe, storm was increased to 6-inch-diameter pipe to avoid confusion in future.
BMP 7-5: Coordinate with Local Fire Department related to Pollutant Discharge from Fire Fighting Training Activities			OCPW	• By November 1, 2012, contact Clackamas Fire District #1 to determine what activities are conducted to minimize pollutant discharges associated with firefighting training activities. • As applicable, provide educational information to Clackamas Fire District #1 by November 1, 2012.	1) Track contacts made with Clackamas Fire District #1.	1) No contacts were made during this reporting period.	On 9/12/12 OC's Water Quality Coordinator contacted Clackamas Fire District #1 to discuss firefighting training activities conducted in OC. Per an email dated 9/13/12 the Battalion Chief for Training & Safety confirmed that all foam drills were conducted at their primary training facility in Clackamas. Any training activities at the four OC stations use water only.
BMP 7-6: Conduct Master Planning and Implement Capital Projects for Stormwater Quality Enhancement	●	●	OCPW	• The *Citywide Master Plan* will be updated by the end of the permit term. • Prioritize CIPs by funding availability and water quality/flood control benefit. • Update maps to include location and drainage area of any new stormwater quality CIPs.	1) Track master planning activities. 2) Track number and cost of major (water quality) CIP projects and discuss added benefit. 3) Map the location and drainage area of water quality related CIPs.	1) OC has budgeted for an update to its existing *City-wide Drainage Master Plan*. Funding is allocated for fiscal years 2015-2016 and 2016-2017. 2) A total of three water quality-related CIP projects were constructed during this reporting period. • Two projects were contracted out, for a total cost of $510,000. • One project was completed in-house, for a total cost of $13,300. 3) Mapping: • The two contracted CIP projects are pending. • The in-house CIP project has been mapped. • City-wide BMP drainage areas were reviewed and updated in 2015 as part of the pollutant load reduction evaluation required by Schedule D.3.c.	2) Following are details of the contracted CIP projects completed during this reporting period: • 2014 Pavement Improvements Project CI 14-01 – four sumped catch basins and 550 feet of pipe ($110,000) • OR99E – Dunes Dr Stormwater Retrofit Project combined with McLoughlin Phase 2 Project (CI 10-002) with MTIP and ODOT Stormwater Grant: raingarden, water quality manhole, 2,550 feet of pipe, 33 sumped catch basins ($400,000) • Following are details of the in-house CIP project completed during this reporting period: • Installed 140 foot bioswale, 2 catch basins and 25 feet of pipe; 44 native plants and shrubs planted

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Appendix A. Status of Implementing Components of Oregon City's 2012 Stormwater Management Plan (SWMP)							
BMP or activity	Addresses bacteria?	Addresses mercury?	Responsible department	Measurable goals (2012 SWMP)	Tracking measures (2012 SWMP)	Annual report information: tracking measure status, Permit year 2014 – 2015	Additional detail related to activities conducted
Element 8. Stormwater Management Facilities Operation and Maintenance							
BMP 8-1: Conduct Stormwater Conveyance System Cleaning and Maintenance	●	●	OCPW	• Maintain, repair, and/or replace conveyance system components when needed, based on ongoing inspections. • Update the stormwater system map when discrepancies are found.	1) Estimation of the volume of debris removed per year during public conveyance system cleaning activities (in conjunction with BMP 8-2).	See BMP 8-2.	
BMP 8-2: Conduct Catch Basin Cleaning and Maintenance	●	●	OCPW	• Inspect at least 33% of the public catch basins annually. • Schedule the repair, and replacement of catch basins as needed, based on inspections. • Update the stormwater system map when discrepancies are found.	1) Track the percentage of total public catch basins inspected and/or maintained annually. 2) Track the volume of sediment removed during cleaning activities conducted annually (also includes volume from BMP 8-1). 3) Track the number of catch basin replacements annually. 4) Track the number of public catch basins added to OC's catch basin inventory annually.	1) 52% of public catch basins were maintained during this reporting period. 2) 66 cubic yards of sediment were removed (includes sediment from pipes, culverts, manholes, open channels, and catch basins). 3) Two catch basins were replaced. Two catch basins repaired. 4) Four catch basins were added to, and zero catch basins were removed from, OC's inventory.	52% = 2,201 public catch basins
BMP 8-3: Public Structural Control Facility Cleaning and Maintenance	●	●	OCPW	• Inspect and maintain public structural control facilities in accordance with documented frequencies and procedures. • Update the public structural control facility inventory as needed. • Update the stormwater system map in accordance with new public facility installations and when discrepancies are found.	1) Track the number of public structural facilities inspected and maintained. 2) Track the volume of sediment removed during cleaning. 3) Track changes to the public structural control facility inventory as needed.	1) 142 public structural facilities and 3,843 feet of bioswale were inspected during the reporting period. See the next column for maintenance details. 2) 14.5 cubic yards of sediment were removed during maintenance/cleaning. 3) One new stormwater quality facility and 1,328 feet of bioswale were added to the inventory: • Jughandle – stormwater quality facility • Jughandle – 1,188 ft bioswale • 122 S Center Street – 140 ft bioswale	1) The following public structural facilities were inspected and maintained during the reporting period: • ponds = 77 inspected; 77 maintained • bioswales = 3,843 feet maintained • rain gardens = 3 inspected; 3 maintained • detention pipes = 26 inspected; 5 cleaned • water quality vaults = 4 inspected; no maintenance required • pollution control manholes = 79 inspected; 18 cleaned
BMP 8-4: Private Structural Control Facility Cleaning and Maintenance	●	●	OCPW	• Require new private water quality facilities to submit maintenance agreements to OC. • Compile an inventory of existing private structural water quality facilities and work to collect maintenance agreements for these by July 1, 2013. • Implement an inspection strategy for private water quality facilities by July 1, 2013.	1) Track the number of maintenance agreements submitted to OC each year. 2) Track progress related to the inventory and mapping of existing private structural facilities. 3) Track the status of updating the inventory and map of private water quality facilities. 4) Track the status of developing procedures in accordance with permit requirements.	1) OC continues to require maintenance agreements for private water quality facilities. No maintenance agreements were recorded during this reporting period. 2) Files have been reviewed for existing private structural facilities. An inventory list has been created. 3) Initial mapping is complete; refinements ongoing. City-wide BMP drainage areas were reviewed and updated in 2015 as part of the pollutant load reduction evaluation required by Schedule D.3.c. 4) OC developed SOPs for public water quality facilities and private water quality facilities July 1, 2013. The SOPs outline procedures for ongoing mapping and inventory activities, as well as facility inspections. For private facilities, OC requires a maintenance agreement and submission of annual inspection records.	

Appendix B

Oregon City Monitoring Data

Outfall Monitoring - Oregon City 2014-15
Location - Oregon City Shopping Center at Clackamette Cove
Sample Site # OC006
Stream Name - Clackamas River
Land Use - Commercial

		Results					
		Composite Rain Event	Composite Rain Event	Statistics			
Analysis	Units	12/4/2014	3/23/2015	High	Low	Mean	Notes
Total Phosphate Seal	mg/L	<0.04	<0.04	**ND**	**ND**	**N/A**	(2)
Dissolved Oxygen - Winkler	mg/L	NM	NM	**NM**	**NM**	**N/A**	(1) (2)
Dissolved Oxygen - Field	mg/L	10.08	10.89	**10.89**	**10.08**	**10.49**	
Dissolved Oxygen - Field	% Saturation	85.6	96.1	**96.1**	**85.6**	**90.85**	
Conductivity - Field	uS	62.7	15.50	**62.7**	**15.50**	**39.10**	
Temperature - Field	°C	7.9	9.7	**9.7**	**7.9**	**8.8**	
pH - Field	Std Units	7.06	6.60	**7.06**	**6.60**	**6.83**	
Dissolved Copper	ug/L	5.0	2.7	**5**	**2.7**	**3.85**	
Copper	ug/L	6.4	4.7	**6.4**	**4.7**	**5.55**	
Dissolved Lead	ug/L	0.20	0.11	**0.20**	**0.11**	**0.155**	
Lead	ug/L	1.10	1.77	**1.77**	**1.10**	**1.435**	
Dissolved Zinc	ug/L	44	35	**44**	**35**	**39.50**	
Zinc	ug/L	58	45	**58**	**45**	**51.5**	
E. coli - Colilert	MPN/100mL	84	345	**345**	**84**	**214.5**	(3)
Ammonia Nitrogen Low Seal	mg/L	<0.05	<0.05	**ND**	**ND**	**N/A**	(2)
Nitrate-Nitrite	mg/L	0.319	<0.11	**0.319**	**ND**	**N/A**	(2)
Ortho Phosphate Seal	mg/L	<0.04	<0.04	**ND**	**ND**	**N/A**	(2)
Total Dissolved Solids	mg/L	95	57	**95**	**57**	**76**	
Total Solids	mg/L	63	18	**63**	**18**	**40.5**	
Total Suspended Solids	mg/L	2.0	6.4	**6.4**	**2.0**	**4.2**	
Volatile Solids	mg/L	29	18	**29**	**18**	**23.5**	
Hardness	mg/L	27	12	**27**	**12**	**19.5**	
BOD	mg/L	0.7	<4.0	**0.7**	**ND**	**N/A**	(2)
Storm Event Rainfall	Inches	0.51"	0.71"	**N/A**	**N/A**	**N/A**	(2) (5)

Notes:

(1) Dissolved Oxygen (Winker Method) samples are taken once per sampling event as Q/C for eletronic meter

(2) Per DEQ request, an "ND" designation is understood to be "less than the lower reporting limit ". N/A is Not Applicable. NM is Not Measured

(3) MPN = Most Probable Number

(4) Shading indicates samples that exceed the E. coli standard of 406 MPN/100mL

(5) Rainfall totals from the start of the event through sample collection.

Outfall Monitoring - Oregon City 2014-15 Location - Clackamette Cove Sample Site # OC007 Stream Name - Clackamas River Land Use - Industrial							
		Results					
		Composite Rain Event	Composite Rain Event	Statistics			
Analysis	Units	12/4/2014	3/23/2015	High	Low	Mean	Notes
Total Phosphate Seal	mg/L	<0.04	<0.04	**ND**	**ND**	**N/A**	(2)
Dissolved Oxygen - Winkler	mg/L	9.2	9.6	**9.6**	**9.2**	**9.4**	(1)
Dissolved Oxygen - Field	mg/L	12.06	10.30	**12.06**	**10.30**	**11.18**	
Dissolved Oxygen - Field	% Saturation	98.0	91.3	**98.0**	**91.3**	**94.65**	
Conductivity - Field	uS	395	125.9	**395**	**125.9**	**260.5**	
Temperature - Field	°C	6.2	9.9	**9.9**	**6.2**	**8.05**	
pH - Field	Std Units	7.32	7.17	**7.32**	**7.17**	**7.245**	
Dissolved Copper	ug/L	2.3	2.2	**2.3**	**2.2**	**2.25**	
Copper	ug/L	3.3	3.6	**3.6**	**3.3**	**3.45**	
Dissolved Lead	ug/L	0.16	0.05	**0.16**	**0.05**	**0.105**	
Lead	ug/L	0.76	0.91	**0.91**	**0.76**	**0.835**	
Dissolved Zinc	ug/L	29	22	**29**	**22**	**25.5**	
Zinc	ug/L	35	37	**37**	**35**	**36**	
E. coli - Colilert	MPN/100mL	2420	272	**2420**	**272**	**1346**	(3) (4)
Ammonia Nitrogen Low Seal	mg/L	0.0618	0.05	**0.0618**	**0.05**	**0.0559**	
Nitrate-Nitrite	mg/L	<0.18	<0.11	**ND**	**ND**	**N/A**	(2)
Ortho Phosphate Seal	mg/L	0.04	<0.04	**0.04**	**ND**	**N/A**	(2)
Total Dissolved Solids	mg/L	280	120	**280**	**120**	**200**	
Total Solids	mg/L	260	110	**260**	**110**	**185**	
Total Suspended Solids	mg/L	8.0	9.5	**9.5**	**8.0**	**8.75**	
Volatile Solids	mg/L	67	43	**67**	**43**	**55**	
Hardness	mg/L	65	71	**71**	**65**	**68**	
BOD	mg/L	3.2	<4.0	**3.2**	**ND**	**N/A**	(2)
Storm Event Rainfall	Inches	0.51"	0.71"	**N/A**	**N/A**	**N/A**	(2) (5)

Notes:

(1) Dissolved Oxygen (Winker Method) samples are taken once per sampling event as Q/C for eletronic meter

(2) Per DEQ request, an "ND" designation is understood to be "less than the lower reporting limit ". N/A is Not Applicable. NM is Not Measured

(3) MPN = Most Probable Number

(4) Shading indicates samples that exceed the E. coli standard of 406 MPN/100mL

(5) Rainfall totals from the start of the event through sample collection.

Instream Monitoring - Oregon City 2014-15
Location - 17082 Holly Ln (Holly Ln Bridge)
Sample Site # OC010
Stream Name - Abernethy Creek (Upstream)

		Results							
		Grab Sample Dry Weather	Composite Rain Event	Composite Rain Event	Grab Sample Dry Weather	Statistics			
Analysis	Units	8/20/2014	2/27/2015	4/14/2015	5/28/2015	High	Low	Mean	Notes
Total Phosphate Seal	mg/L	<0.04	0.07	<0.04	<0.04	**0.07**	**ND**	**N/A**	(2)
Dissolved Oxygen - Winkler	mg/L	NM	NM	10.25	NM	**N/A**	**N/A**	**N/A**	(1) (2)
Dissolved Oxygen - Field	mg/L	7.55	10.87	11.13	9.31	**11.13**	**7.55**	**9.715**	
Dissolved Oxygen - Field	% Saturation	83.3	97.7	98.6	95.7	**98.6**	**83.3**	**93.83**	
Conductivity - Field	uS	116.0	70.4	59.1	86.0	**116.0**	**59.1**	**82.88**	
Temperature - Field	°C	19.9	10.1	10.3	16.6	**19.9**	**10.1**	**14.23**	
pH - Field	Std Units	7.37	7.39	7.03	7.12	**7.39**	**7.03**	**7.228**	
Dissolved Copper	ug/L	0.8	0.4	0.8	0.5	**0.80**	**0.40**	**0.625**	
Copper	ug/L	1.2	1.0	2.0	1.1	**2.0**	**1.00**	**1.325**	
Dissolved Lead	ug/L	0.04	0.05	0.07	0.03	**0.07**	**0.03**	**0.048**	
Lead	ug/L	0.19	0.25	0.62	0.33	**0.62**	**0.19**	**0.348**	
Dissolved Zinc	ug/L	1	4	5	<1	**5**	**ND**	**N/A**	(2)
Zinc	ug/L	3	5	9	10	**10**	**3**	**6.8**	
E. coli - Colilert	MPN/100mL	125	15	548	130	**548**	**15**	**205**	(3) (4)
Ammonia Nitrogen Low Seal	mg/L	<0.05	<0.05	<0.05	<0.05	**ND**	**ND**	**N/A**	(2)
Nitrate-Nitrite	mg/L	0.287	1.08	0.81	0.54	**1.08**	**0.287**	**0.679**	
Ortho Phosphate Seal	mg/L	0.05	<0.04	<0.04	0.04	**0.05**	**ND**	**N/A**	(2)
Total Dissolved Solids	mg/L	110	65	94	80	**110**	**65**	**87.3**	
Total Solids	mg/L	120	110	95	122	**122**	**95**	**111.8**	
Total Suspended Solids	mg/L	4.0	10	19	4.4	**19**	**4.0**	**9.35**	
Volatile Solids	mg/L	51	56	53	60.0	**60.0**	**51**	**55.0**	
Hardness	mg/L	49	25	24	36	**49**	**24**	**33.5**	
BOD	mg/L	0.95	0.4	0.75	0.28	**1.0**	**0.28**	**0.595**	
Storm Event Rainfall	Inches	N/A	0.25"	0.67"	N/A	**N/A**	**N/A**	**N/A**	(2) (5)

Notes:

(1) Dissolved Oxygen (Winker Method) samples are taken once per sampling event as Q/C for eletronic meter

(2) Per DEQ request, an "ND" designation is understood to be "less than the lower reporting limit ". N/A is Not Applicable. NM is Not Measured

(3) MPN = Most Probable Number

(4) Shading indicates samples that exceed the E. coli standard of 406 MPN/100mL

(5) Rainfall totals from the start of the event through sample collection.

Instream Monitoring - Oregon City 2014-15
Location - 316 17th St at Railroad Tressel
Sample Site # OC011
Stream Name - Abernethy Creek (Downstream)

		Results							
		Grab Sample Dry Weather	Composite Rain Event	Composite Rain Event	Grab Sample Dry Weather	Statistics			
Analysis	**Units**	**8/20/2014**	**2/27/2015**	**4/14/2015**	**5/28/2015**	**High**	**Low**	**Mean**	**Notes**
Total Phosphate Seal	mg/L	<0.04	0.09	<0.04	<0.04	**0.09**	**ND**	**N/A**	(2)
Dissolved Oxygen - Winkler	mg/L	6.45	NM	NM	NM	**N/A**	**N/A**	**N/A**	(1) (2)
Dissolved Oxygen - Field	mg/L	6.18	10.62	11.05	8.63	**11.05**	**6.18**	**9.12**	
Dissolved Oxygen - Field	% Saturation	76.0	95.6	96.6	90.7	**96.6**	**76.0**	**89.73**	
Conductivity - Field	uS	193.4	83.8	70.2	99.7	**193.4**	**70.2**	**111.78**	
Temperature - Field	°C	20.5	10.2	9.8	17.7	**20.5**	**9.8**	**14.55**	
pH - Field	Std Units	7.41	7.23	6.96	7.22	**7.41**	**6.96**	**7.205**	
Dissolved Copper	ug/L	0.8	0.6	0.8	0.6	**0.8**	**0.6**	**0.7**	
Copper	ug/L	1.3	1.8	2.2	1.2	**2.2**	**1.2**	**1.63**	
Dissolved Lead	ug/L	0.04	0.05	0.10	0.05	**0.10**	**0.04**	**0.06**	
Lead	ug/L	0.24	0.63	0.59	0.36	**0.63**	**0.24**	**0.455**	
Dissolved Zinc	ug/L	3	2	3	<1	**3**	**ND**	**N/A**	(2)
Zinc	ug/L	3	8	8	7	**8**	**3**	**6.5**	
E. coli - Colilert	MPN/100mL	248	38	649	727	**727**	**38**	**416**	(3) (4)
Ammonia Nitrogen Low Seal	mg/L	<0.05	<0.05	<0.05	<0.05	**ND**	**ND**	**N/A**	(2)
Nitrate-Nitrite	mg/L	0.260	1.11	0.83	0.58	**1.11**	**0.260**	**0.695**	
Ortho Phosphate Seal	mg/L	0.05	<0.04	<0.04	0.04	**0.05**	**ND**	**N/A**	(2)
Total Dissolved Solids	mg/L	170	98	90	90	**170**	**90**	**112**	
Total Solids	mg/L	180	170	110	129	**180**	**110**	**147.3**	
Total Suspended Solids	mg/L	5.0	21	17	8.0	**21**	**5.0**	**12.75**	
Volatile Solids	mg/L	77	95	60	65.0	**95**	**60**	**74.25**	
Hardness	mg/L	68	33	28	40	**68**	**28**	**42.25**	
BOD	mg/L	0.74	0.6	0.66	0.42	**0.7**	**0.4**	**0.605**	
Storm Event Rainfall	Inches	N/A	0.25"	0.67"	N/A	**N/A**	**N/A**	**N/A**	(2) (5)

Notes:

(1) Dissolved Oxygen (Winker Method) samples are taken once per sampling event as Q/C for eletronic meter

(2) Per DEQ request, an "ND" designation is understood to be "less than the lower reporting limit ". N/A is Not Applicable. NM is Not Measured

(3) MPN = Most Probable Number

(4) Shading indicates samples that exceed the E. coli standard of 406 MPN/100mL

(5) Rainfall totals from the start of the event through sample collection.

Instream Monitoring - Oregon City 2014-15
Location - Behind 415 S McLoughlin Blvd
Sample Site # OC012
Stream Name - Coffee Creek

		Results							
		Grab Sample Dry Weather	Composite Rain Event	Composite Rain Event	Grab Sample Dry Weather	Statistics			
Analysis	**Units**	**8/20/2014**	**2/27/2015**	**4/14/2015**	**5/28/2015**	**High**	**Low**	**Mean**	**Notes**
Total Phosphate Seal	mg/L	<0.04	0.04	<0.04	<0.04	**0.04**	**ND**	**N/A**	(2)
Dissolved Oxygen - Winkler	mg/L	NM	NM	NM	NM	**NM**	**NM**	**N/A**	(1) (2)
Dissolved Oxygen - Field	mg/L	9.35	11.04	11.41	10.31	**11.41**	**9.35**	**10.53**	
Dissolved Oxygen - Field	% Saturation	97.1	100.4	100.3	100.4	**100.4**	**97.1**	**99.55**	
Conductivity - Field	uS	78.6	79.2	72.8	78.7	**79.2**	**72.8**	**77.33**	
Temperature - Field	°C	16.9	10.6	10.0	14.0	**16.9**	**10.0**	**12.88**	
pH - Field	Std Units	7.39	7.04	7.08	7.06	**7.39**	**7.04**	**7.143**	
Dissolved Copper	ug/L	0.6	0.5	0.5	0.5	**0.6**	**0.5**	**0.525**	
Copper	ug/L	0.9	1.0	1.2	1.0	**1.2**	**0.9**	**1.03**	
Dissolved Lead	ug/L	0.04	0.07	0.05	0.04	**0.07**	**0.04**	**0.05**	
Lead	ug/L	0.28	0.34	0.35	0.38	**0.38**	**0.28**	**0.338**	
Dissolved Zinc	ug/L	5	18	12	6	**18**	**5**	**10.25**	
Zinc	ug/L	8	21	17	11	**21**	**8**	**14.25**	
E. coli - Colilert	MPN/100mL	NM	54	19	114	**114**	**19**	**62**	(2) (3)
Ammonia Nitrogen Low Seal	mg/L	<0.05	<0.05	<0.05	<0.05	**ND**	**ND**	**N/A**	(2)
Nitrate-Nitrite	mg/L	2.17	2.90	2.7	2.6	**2.90**	**2.17**	**2.593**	
Ortho Phosphate Seal	mg/L	0.04	<0.04	<0.04	0.04	**0.04**	**ND**	**N/A**	(2)
Total Dissolved Solids	mg/L	90	87	75	75	**90**	**75**	**81.8**	
Total Solids	mg/L	110	78	74	98.0	**110**	**74**	**90**	
Total Suspended Solids	mg/L	3.6	3.6	4.0	2.0	**4.0**	**2.0**	**3.3**	
Volatile Solids	mg/L	58	33	40	46.0	**58**	**33**	**44.3**	
Hardness	mg/L	29	30	31	29	**31**	**29**	**29.8**	
BOD	mg/L	0.27	<0.1	0.18	0.11	**0.27**	**ND**	**N/A**	(2)
Storm Event Rainfall	Inches	N/A	0.25"	0.67"	N/A	**N/A**	**N/A**	**N/A**	(2) (5)

Notes:

(1) Dissolved Oxygen (Winker Method) samples are taken once per sampling event as Q/C for eletronic meter

(2) Per DEQ request, an "ND" designation is understood to be "less than the lower reporting limit ". N/A is Not Applicable. NM is Not Measured

(3) MPN = Most Probable Number

(4) Shading indicates samples that exceed the E. coli standard of 406 MPN/100mL

(5) Rainfall totals from the start of the event through sample collection.

Instream Monitoring - Oregon City 2014-15
Location - Behind 13530 Redland Rd
Sample Site # OC013
Stream Name - Park Place Creek

		Results							
		Grab Sample Dry Weather	Composite Rain Event	Composite Rain Event	Grab Sample Dry Weather	Statistics			
Analysis	Units	8/20/2014	2/27/2015	4/14/2015	5/28/2015	High	Low	Mean	Notes
Total Phosphate Seal	mg/L	<0.04	<0.04	<0.04	<0.04	**ND**	**ND**	**N/A**	(2)
Dissolved Oxygen - Winkler	mg/L	NM	NM	NM	NM	**NM**	**NM**	**NM**	(1) (2)
Dissolved Oxygen - Field	mg/L	4.10	6.86	8.22	5.73	**8.22**	**4.10**	**6.228**	
Dissolved Oxygen - Field	% Saturation	43.4	62.6	72.1	57.9	**72.1**	**43.4**	**59.0**	
Conductivity - Field	uS	285.0	305.0	177.6	5.92	**305.0**	**5.92**	**193.38**	
Temperature - Field	°C	17.8	10.7	9.9	15.7	**17.8**	**9.9**	**13.53**	
pH - Field	Std Units	6.47	6.83	6.91	6.96	**6.96**	**6.47**	**6.793**	
Dissolved Copper	ug/L	0.4	0.7	1.3	0.5	**1.3**	**0.4**	**0.73**	
Copper	ug/L	0.9	1.1	2.6	0.8	**2.6**	**0.8**	**1.35**	
Dissolved Lead	ug/L	<0.01	0.03	0.04	0.01	**0.04**	**ND**	**N/A**	(2)
Lead	ug/L	0.19	0.17	0.67	0.16	**0.67**	**0.16**	**0.30**	
Dissolved Zinc	ug/L	2	7	8	5	**8**	**2**	**5.5**	
Zinc	ug/L	6	12	14	11	**14**	**6**	**10.8**	
E. coli - Colilert	MPN/100mL	160	16	2420	38	**2420**	**16**	**659**	(3) (4)
Ammonia Nitrogen Low Seal	mg/L	0.463	<0.05	0.34	0.34	**0.463**	**ND**	**N/A**	(2)
Nitrate-Nitrite	mg/L	<0.18	2.17	0.88	1.2	**2.17**	**ND**	**N/A**	(2)
Ortho Phosphate Seal	mg/L	<0.04	<0.04	<0.04	0.03	**N/A**	**ND**	**N/A**	(2)
Total Dissolved Solids	mg/L	240	230	140	216	**240**	**140**	**206.5**	
Total Solids	mg/L	250	270	150	316	**316**	**150**	**246.5**	
Total Suspended Solids	mg/L	14	9.0	12	7.0	**14**	**7.0**	**10.5**	
Volatile Solids	mg/L	86	120	69	154	**154**	**69**	**107.3**	
Hardness	mg/L	125	135	78	128	**135**	**78**	**116.5**	
BOD	mg/L	2.4	1.7	2.0	1.0	**2.4**	**1.0**	**1.78**	
Storm Event Rainfall	Inches	N/A	0.25"	0.67"	N/A	**N/A**	**N/A**	**N/A**	(2) (5)

Notes:

(1) Dissolved Oxygen (Winker Method) samples are taken once per sampling event as Q/C for eletronic meter

(2) Per DEQ request, an "ND" designation is understood to be "less than the lower reporting limit ". N/A is Not Applicable. NM is Not Measured

(3) MPN = Most Probable Number

(4) Shading indicates samples that exceed the E. coli standard of 406 MPN/100mL

(5) Rainfall totals from the start of the event through sample collection.

Instream Monitoring - Oregon City 2014-15
Location - Singer Creek Park
Sample Site # OC014
Stream Name - Singer Creek (Upstream)

Analysis	Units	Results: Grab Sample Dry Weather 8/20/2014	Composite Rain Event 2/27/2015	Composite Rain Event 4/14/2015	Grab Sample Dry Weather 5/28/2015	Statistics: High	Low	Mean	Notes
Total Phosphate Seal	mg/L	<0.04	<0.04	<0.04	<0.04	**ND**	**ND**	**N/A**	(2)
Dissolved Oxygen - Winkler	mg/L	NM	9.5	NM	10.0	**N/A**	**N/A**	**N/A**	(2)
Dissolved Oxygen - Field	mg/L	9.39	10.91	11.38	10.23	**11.38**	**9.39**	**10.478**	
Dissolved Oxygen - Field	% Saturation	96.3	99.4	100.0	99.5	**100.0**	**96.3**	**98.8**	
Conductivity - Field	uS	72.4	77.0	65.7	73.1	**77.0**	**65.7**	**72.05**	
Temperature - Field	°C	15.9	10.2	9.5	13.3	**15.9**	**9.5**	**12.23**	
pH - Field	Std Units	7.41	7.40	6.94	7.57	**7.57**	**6.94**	**7.33**	
Dissolved Copper	ug/L	0.5	0.3	0.3	0.4	**0.5**	**0.3**	**0.38**	
Copper	ug/L	1.6	1.3	1.0	1.4	**1.6**	**1.0**	**1.33**	
Dissolved Lead	ug/L	0.04	0.07	0.07	0.05	**0.07**	**0.04**	**0.058**	
Lead	ug/L	1.00	0.82	0.64	0.86	**1.00**	**0.64**	**0.83**	
Dissolved Zinc	ug/L	<1	5	5	1	**5**	**ND**	**N/A**	(2)
Zinc	ug/L	5	7	8	13	**13**	**5**	**8.25**	
E. coli - Colilert	MPN/100mL	387	111	1	50	**387**	**1**	**137.25**	(3)
Ammonia Nitrogen Low Seal	mg/L	<0.05	<0.05	<0.05	<0.05	**ND**	**ND**	**N/A**	(2)
Nitrate-Nitrite	mg/L	1.67	2.99	2.9	2.5	**2.99**	**1.67**	**2.515**	
Ortho Phosphate Seal	mg/L	<0.04	<0.04	<0.04	0.03	**0.03**	**ND**	**N/A**	(2)
Total Dissolved Solids	mg/L	87	<1.0	80	71	**87**	**71**	**79.3**	
Total Solids	mg/L	120	130	49	111	**130**	**49**	**102.5**	
Total Suspended Solids	mg/L	28	21	10	16.0	**28**	**10**	**18.75**	
Volatile Solids	mg/L	59	84	30	52.0	**84**	**30**	**56.25**	
Hardness	mg/L	26	25	23	27	**27**	**23**	**25.25**	
BOD	mg/L	0.46	<0.1	0.35	0.19	**0.46**	**ND**	**N/A**	(2)
Storm Event Rainfall	Inches	N/A	0.25"	0.67"	N/A	**N/A**	**N/A**	**N/A**	(2)

Notes:

(1) Dissolved Oxygen (Winker Method) samples are taken once per sampling event as Q/C for eletronic meter

(2) Per DEQ request, an "ND" designation is understood to be "less than the lower reporting limit ". N/A is Not Applicable. NM is Not Measured

(3) MPN = Most Probable Number

(4) Shading indicates samples that exceed the E. coli standard of 406 MPN/100mL

(5) Rainfall totals from the start of the event through sample collection.

Instream Monitoring - Oregon City 2014-15
Location - 507 7th St, Manhole # SD0726
Sample Site # OC015
Stream Name - Singer Creek (Downstream)

		Results							
		Grab Sample Dry Weather	Composite Rain Event	Composite Rain Event	Grab Sample Dry Weather	Statistics			
Analysis	**Units**	**8/20/2014**	**2/27/2015**	**4/14/2015**	**5/28/2015**	**High**	**Low**	**Mean**	**Notes**
Total Phosphate Seal	mg/L	<0.04	<0.04	<0.04	<0.04	**ND**	**ND**	**N/A**	(2)
Dissolved Oxygen - Winkler	mg/L	NM	NM	NM	NM	**NM**	**NM**	**NM**	(1) (2)
Dissolved Oxygen - Field	mg/L	9.16	11.11	11.56	10.14	**11.56**	**9.16**	**10.49**	
Dissolved Oxygen - Field	% Saturation	98.1	100.2	100.6	99.5	**100.6**	**98.1**	**99.6**	
Conductivity - Field	uS	84.3	84.4	79.0	89.1	**89.1**	**79.0**	**84.2**	
Temperature - Field	°C	18.6	10.0	9.4	14.1	**18.6**	**9.4**	**13.0**	
pH - Field	Std Units	7.52	7.17	7.19	7.55	**7.55**	**7.17**	**7.36**	
Dissolved Copper	ug/L	0.9	0.6	0.7	1.3	**1.3**	**0.6**	**0.88**	
Copper	ug/L	2.0	1.4	1.8	2.4	**2.4**	**1.4**	**1.90**	
Dissolved Lead	ug/L	0.16	0.13	0.19	0.15	**0.19**	**0.13**	**0.158**	
Lead	ug/L	1.53	0.85	1.07	1.34	**1.53**	**0.85**	**1.20**	
Dissolved Zinc	ug/L	3	7	10	6	**10**	**3**	**6.5**	
Zinc	ug/L	9	10	18	14	**18**	**9**	**12.75**	
E. coli - Colilert	MPN/100mL	1986	>2420	308	>2420	**>2420**	**308**	**N/A**	(2)(3)(4)
Ammonia Nitrogen Low Seal	mg/L	<0.05	<0.05	<0.05	0.13	**0.13**	**ND**	**N/A**	(2)
Nitrate-Nitrite	mg/L	1.02	2.34	2.2	2.0	**2.34**	**1.02**	**1.89**	
Ortho Phosphate Seal	mg/L	<0.04	<0.04	<0.04	0.04	**0.04**	**ND**	**N/A**	(2)
Total Dissolved Solids	mg/L	92	95	91	82	**95**	**82**	**90**	
Total Solids	mg/L	120	120	91	111	**120**	**91**	**110.5**	
Total Suspended Solids	mg/L	16	9.0	10	11.0	**16**	**9.0**	**11.5**	
Volatile Solids	mg/L	53	73	41	47.0	**73**	**41**	**53.5**	
Hardness	mg/L	29	29	29	30	**30**	**29**	**29**	
BOD	mg/L	1.2	0.3	0.37	3.5	**3.50**	**0.3**	**1.34**	
Storm Event Rainfall	Inches	N/A	0.25"	0.67"	N/A	**N/A**	**N/A**	**N/A**	(2) (5)

Notes:

(1) Dissolved Oxygen (Winker Method) samples are taken once per sampling event as Q/C for eletronic meter

(2) Per DEQ request, an "ND" designation is understood to be "less than the lower reporting limit ". N/A is Not Applicable. NM is Not Measured

(3) MPN = Most Probable Number

(4) Shading indicates samples that exceed the E. coli standard of 406 MPN/100mL

(5) Rainfall totals from the start of the event through sample collection.

Appendix C

Public Education and Outreach Information

Public Education and Awareness Activities
July 1, 2014 – June 30, 2015

Summary of Activities

Date	Event	Location	Contact Total	Program/Subject
8/18/14	Trail News - Autumn	N/A	All OC residents; available on website	Only Rain Down the Storm Drain/Keep the Storm Drain Clear
8/23/14	Oregon City Farmers Market	Kaen Road at Beavercreek Road, Oregon City	Market customers	CRWP represented Oregon City providing water quality and watershed health information
8/25/14 – 9/7/14	Down the River Clean-up	Clackamas River	All residents and site users	Event added to "Latest News" on OC website
9/7/14	Down the River Clean-up	Clackamas River	N/A	Oregon City was unable to participate in this year's event, but did support it financially
11/17/14	Trail News - Winter	N/A	All OC residents; available on website	Grow Smart, Grow Safe; Grate Time to Rake
2/2/15 – 2/17/15	Stormwater Banner display at the Pioneer Center	615 5th Street Oregon City	Visitors and staff at the Pioneer Center	Display of stormwater public education banner stand
2/19/15	Oregon City Stormwater and Grading Design Engineering Workshop	625 Center Street Oregon City	19	Overview of updated stormwater design standards; representatives from engineering firms and other agencies learned about upcoming changes in OC design standards
3/2/15	Utility Bill	N/A	OC utility customers	Link to Grow Smart, Grow Safe website
3/2/15	Trail News – Spring	N/A	All OC resident; available on website	Discuss TMDL (temperature) and encourage riparian plantings; Stormwater Management Standards
3/17/15	10th Annual Celebrating Water Event	Clackamas Community College	639*	One staff member provided a stormwater awareness display
5/11/15	Trail News – Summer	N/A	All OC residents; available on website	Reducing Bacteria Levels is a Challenge
5/18/15	Annual Water Quality Report	N/A	14,782**, available on website	Water Quality information
2014-2015	KOIN Public Service Announcements	N/A	Metro area	Television and web information about water quality
2014-2015	Regional Coalition for Clean Rivers and Streams	N/A	Metro area	Pollution prevention messages via newspapers, website, and social media
2014-2015	Clackamas River Water Providers	N/A	Residents with the Clackamas River as drinking water source	Various programs to promote source water protection, water conservation, and water quality awareness

*540 students, 9 teachers, and 90 chaperones
** A postcard was mailed to each Oregon City address announcing the on-line availability of the annual water quality report. Those with limited internet access were encouraged to request a printed copy of the report.

Specific Activity Information

Trail News Articles

Autumn 2014

Only Rain Down the Storm Drain – Keep the Storm Drain Clear!

- Sweeping leaves each fall is a big job
- Dispose of leaves properly, not in street
- Clear blocked catch basins if safe to do so
- Call Oregon City Public Works (OCPW) if flooding occurs

Winter 2014-2015

Grow Smart, Grow Safe (www.growsmartgrowsafe.org)

- Multi-agency project to provide resources for choosing safer lawn and garden products
- Find low hazard methods for pest and weed control
- Find "slow-release" fertilizers
- Promotes integrated pest management

Spring 2015

Help Us Improve Water Quality – Temperature

- OCPW looking for opportunities to partner with others to lower water temperatures in local streams
- Problems caused by loss of riparian vegetation
- Planting native riparian vegetation and trees is a relatively simple and cost-effective solution
- Link provided to OC TMDL Implementation Plan

Stormwater Management Standards

- Stormwater management is a key element in maintaining and enhancing livability within Oregon City
- Description of Oregon City's MS4 and NPDES permit
- Existing standards were established in 1999; updated per permit
- Emphasis on LID, source control for higher pollutant-generating activities, and o&m practices
- Goal is to provide local engineers, developers, builders, and City staff with clear guidance

Summer 2015

Reducing Bacteria Levels in our Rivers and Streams is a Challenge

- Certain locations along the Willamette and Clackamas Rivers have too much harmful bacteria
- Ways to help reduce bacteria – pick up after your pets, refrain from feeding wild birds, ensure septic tanks, if used, are properly maintained

Special Events

Oregon City Farms Market – 8/23/14

Staff from Clackamas River Water Providers represented Oregon City, providing hand-outs and a variety of information about water quality and watershed health.

The 12th Annual Down the (Clackamas) River Clean Up – 9/7/14

This event was promoted on the Oregon City website (8/25/14 – 9/7/14). No Oregon City staff participated, but a sponsorship donation of $500 was made to "We Love Clean Rivers".

Oregon City Stormwater and Grading Design Engineering Workshop – 2/19/15 (1:00 – 3:30)

Oregon City hosted a workshop for representatives from engineering firms and various agencies associated with stormwater design. This workshop provided an overview of Oregon City's updated design standards, highlighted significant changes, as well as introduced LID options and the new sizing tool. Total attendance was 19.

10th Annual Celebrating Water Event – 3/17/15

One OCPW staff member participated in this annual educational event, held at Clackamas Community College. 540 4th and 5th grade students, along with 9 teachers and 90 adult chaperones, had the opportunity to learn about water conservation and water quality protection, among other water-related topics. Oregon City's booth featured an interactive display based on the following messages:

"Dirt in the Drain, Turtles Complain" "Clean Water – I Can Help" "Leaves Don't Belong in the Storm Drain"

Magnets, with these messages and a graphic design, were given as hand-outs. Also featured was a stormwater banner display highlighting Oregon City's major drainage basins with ways to protect and improve water quality.

Figure 1: Celebrating Water Event Display 2015

Miscellaneous Items

Stormwater Banner Display at the Pioneer Center – 2/2/15 – 2/17/15

Visitors to the Pioneer Center, as well as city staff, could view our stormwater banner display featuring Oregon City's largest basins and streams. Included are the following suggestions to prevent stormwater runoff pollution and to improve water quality:

- Never dump anything down storm drains or into streams
- Sweep driveways and patios clean instead of hosing them down
- Repair you vehicles if they are leaking oil, antifreeze, or other fluids
- Take your car to a car wash, or wash it on the lawn instead of the driveway
- Minimize your use of fertilizers and pesticides; consider going organic
- Plant native trees and shrubs; if you have a stream flowing through your property streamside plantings will help reduce the temperature of the water
- Pick up after your pet

The banner includes contact information for the Greater Oregon City Watershed Council and how to obtain additional information about Oregon City's Stormwater Management Plan.

Message on Utility Bill (mailed 2/28/15)
Want your home and garden to be chemical-free? Want to kick the "weed and feed" habit? Go to www.growsmartgrowsafe.org for useful information.

Annual Water Quality Report – 5/18/15
The 2015 report included the following topics specific to stormwater:

- Brief history of the Clean Water Act and explanation of the NPDES Stormwater Program
- Oregon City's compliance with the Clean Water Act and the City's Stormwater Management Plan
- Pollution prevention suggestions:
    - Lawn and garden care
    - Vehicle care
    - Roof treatments
    - Pressure washing
    - Pet waste
- For those with a stream flowing through their property, explanation of why a healthy riparian area is beneficial for reducing water temperature
- Photos with the following caption:
    - Street sweeping reduces the amount of pollutants and sediments entering our streams and rivers. You can help by trimming trees to allow at least a ten foot clearance.
    - To report illegal dumping or to participate in our Catch Basin Marking & Stenciling Program call 503.657.8241.

During the fourth week of May a total of 14,782 postcards were mailed to Oregon City residents announcing the on-line availability of the annual water quality report. Those with limited internet access were encouraged to request a printed copy of the report.

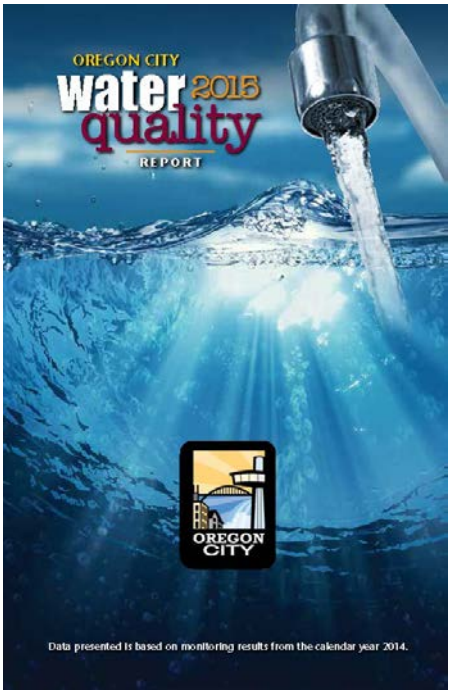

Figure 2: Cover of 2015 Annual Water Quality Report

Clackamas River Water Providers – ongoing throughout the year

Oregon City, through its association with South Fork Water Board, partners with other agencies that use the Clackamas River for potable water, to promote source water protection and water conservation. Programs include water quality monitoring and a pesticide outreach program. For specific information, and to read their annual report, visit the CRWP website at www.clackamasproviders.org.

The Oregon City Website – ongoing throughout the year

A wide variety of information pertaining to stormwater, water quality, and Oregon City's NPDES MS4 permit is available to the public at www.orcity.org.

Collaboration with Other Agencies

"Water…Do Your Part" Campaign on KOIN Channel 6 Television and Website

Oregon City continues to partner with other agencies in the Portland metro area in sponsoring public education messaging via KOIN media outlets. A variety of topics were highlighted including:

- Plant a Tree
- Report Spills
- Natural Gardens
- Pets
- Rain Gardens
- Autos
- Hazardous Waste
- Plant Natives
- Streams
- Stormwater

Regional Coalition of Clean Rivers and Streams

Oregon City is one of the Clean River Partners of Clackamas County. As such, the city continues to support the effort, along with other agencies in the Portland/Vancouver metro area, to educate the public about the impact of stormwater runoff pollution on the health of our rivers and streams. For specific information about the latest campaign – The River Starts Here – visit the Coalition website at http://cleanriversandstreams.org/.

Appendix D

Willamette River
TMDL Implementation Plan
Annual Report

City of Oregon City

Willamette River TMDL Implementation Plan

Annual Progress Report

Year 1

November 1, 2015

Introduction

The City of Oregon City (City) submitted its first Willamette River Total Maximum Daily Load Implementation Plan (TMDL Plan) to the Oregon Department of Environmental Quality (DEQ) on March 31, 2008. Comments from DEQ were received and addressed by the City, and DEQ approved of the City's TMDL Plan in May 2009. On March 10, 2014 DEQ requested an update to the City's TMDL Plan which the City provided on May 30, 2014. The July 1, 2014 – June 30, 2015 reporting year is the first year of implementation for this updated TMDL Plan. This progress report provides a summary of the City's efforts during implementation year one.

Background

The City's TMDL Plan identifies and describes management strategies that the City will implement to address nonpoint sources of pollution generated in the Clackamas and Middle Willamette River subbasins in the Willamette River watershed. The TMDL parameters of concern for these subbasins include temperature, bacteria, and mercury.

Management strategies for bacteria and mercury are summarized in the TMDL Plan, and compliance with the TMDL for these parameters is covered by the City's municipal separate storm sewer system (MS4) National Pollutant Discharge Elimination System (NPDES) stormwater permit. DEQ addresses TMDL requirements within the City's MS4 NPDES permit as they pertain to pollutants associated with point sources of stormwater runoff. The MS4 NPDES permit requires best management practices (BMPs) to be applied to address sources of pollution in stormwater runoff. For TMDL pollutant parameters, the MS4 NPDES permit requires Oregon City to develop pollutant load reduction benchmarks to show progress towards meeting TMDL wasteload allocations. Additionally, the MS4 NPDES permit requires an adaptive management approach that focuses on refining BMPs over time until wasteload allocations are achieved. The City was reissued their MS4 NPDES permit on March 16, 2012. The City's effective (2012) Stormwater Management Plan (SWMP) outlines BMPs to comply with the reissued permit.

Stormwater runoff in the Willamette Valley is not considered a problem with respect to temperature, and therefore, temperature is not addressed under City's MS4 NPDES permit. Management strategies for temperature were developed and identified in the TMDL Plan. Historically, riparian vegetation removal and channel modifications result in reduced baseflow, reduced stream shade, and increased instream temperatures. As part of the TMDL Plan, a Geographic Information System-based evaluation of the City's stream corridors was conducted to evaluate existing shade conditions and identify opportunities for riparian vegetation enhancement. Strategies to address temperature were identified, and a timeline and schedule for implementation were provided in the TMDL Plan.

Implementation Status

The City's MS4 NPDES permit serves as the Willamette River TMDL Plan for bacteria and mercury. Progress towards implementing best management strategies (or BMPs) to address bacteria and mercury are summarized in the City's 2014−2015 MS4 NPDES Annual Report, submitted to DEQ on November 1, 2015.

The City's progress towards implementing strategies to address temperature is summarized in Table 1 of this progress report. Such strategies include public education and outreach activities, implementation of development standards to promote infiltration, and shade preservation and planting activities. As described in the TMDL Plan, the City has committed to contributing $5,000 per year for the second five years of TMDL implementation towards efforts to enhance riparian vegetation. Table 1 lists how this commitment has been met.

Table 1
City of Oregon City TMDL Implementation Plan Progress Report 2014 – 2015
Summary of Strategies to Address Temperature

Best Management Practice or Activity	Responsible Division	Commitment/ Implementation Strategy *What will be done in the next five years*	Measurable Goal *Specific ways to implement strategy (Fiscal analysis as needed)*	Performance Measure *How implementation will be demonstrated*	Timeline *When goal will be achieved*	Milestone *Intermediate indicators of progress*	Status *Progress update for reporting period (Gap analysis discussion as needed)*
Public Education	Oregon City Public Works (OCPW)	Attend regularly scheduled coordination meetings with the Greater Oregon City Watershed Council (GOCWC).	Attend a minimum of one meeting during the implementation period.	Track meetings attended.	Ongoing throughout the cycle.	Receive and review draft meeting agendas.	The OCPW Operations Manager attended one GOCWC meeting during the 2014-2015 reporting period (November 4, 2014).
		Include articles regarding temperature-related issues and shade planting projected in the City newsletter and through direct mailings.	Ensure a minimum of one temperature-related piece of educational material during the implementation period.	Record temperature-related educational materials.	Ongoing throughout the cycle.	Ensure temperature-related article for spring Trail News.	Temperature-related articles were disseminated by OCPW in the following: • Spring 2015 Trail News • 2015 Annual Water Quality Report See Appendix C of the City's 2014-2015 MS4 NPDES Annual Report for specific details.
Implement Stormwater Design Standards	OCPW	Implement provisions of Chapters 13 and 17 of the City's development code, which includes provisions for use of infiltration-based stormwater treatment systems and tree planting.	Update design standards to include LID and additional infiltration-based guidelines for stormwater treatment during the implementation period.	Track modifications to the City's development standards related to use of LID and BMPs for new and redevelopment.	Ongoing throughout the cycle.	N/A	OCPW reviewed and updated the City's Municipal Code Chapter 13.12 Stormwater Management, the *Stormwater and Grading Design Standards* manual, and the *Erosion and Sediment Control Standards* manual. These updated manuals were adopted through Resolution 15-14 and the associated municipal code update was adopted by Ordinance 15-1006 on May 20, 2015.
Preservation of Existing Shade	Planning and OCPW	Continue to enforce regulations pertaining to the protection of riparian vegetation and buffer areas.	Continue to implement Chapter 17.49 of the City's development code to address Title 3 and Title 13.	Track any enforcement actions taken to protect existing shade.	Ongoing throughout the cycle.	N/A	One action during this reporting period. Complaint filed that a "tiny shed" was rebuilt in the Natural Resources Overlay District. Owner applied for permit and permit was approved (NR 14-05).
Planting Activities for Identified Shade Opportunity Areas	OCPW	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. *($5,000 allocated annually for planting activities.)*	Track ground truthing activities to refine priority opportunity areas.	Public priority areas by June 2015.	Recruit intern for ground truthing activities.	An intern was hired (7/7/14 – 9/24/14) for ground truthing activities to determine existing site conditions, amount and health of existing vegetation, presence of invasives, and to update maps. ($4368)
				Track planting activities for public, high priority areas.	Ongoing throughout the cycle.	Review priority list annually by December 1st; select next area for planting.	Based on results from intern project, 3 high priority sites were targeted for late fall/early winter planting: • SEC-1 – 8 maple trees ($750) • CP-5 – 7 Maple trees ($750) • CP-6 – 2 Maple trees ($750) Additionally, as required for mitigation, Clackamas County planted the following in MC-8: 28 trees and 69 shrubs
				Track planting activities for other identified shade opportunity areas.	Ongoing throughout the cycle.	Review as planting opportunities arise.	The following medium priority site was planted: • MC-20 – 2 cedar trees and 2 maple trees ($500)
				Track any re-vegetation and maintenance activities required.	Ongoing throughout the cycle.	Evaluate need for re-planting annually by June 30th.	All 77 stormwater quality facilities were evaluated for re-planting within the designated time frame. Re-vegetation and Maintenance Activities: planted 35 trees, 77 plants and shrubs ($4000)