City of Oregon City, Oregon

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

2012–2013 Annual Report

Prepared for the

Oregon Department of Environmental Quality

November 1, 2013

Assisted By:

Brown AND Caldwell

CITY OF OREGON CITY

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

MUNICIPAL STORMWATER SYSTEM ANNUAL REPORT

JULY 1, 2012 – JUNE 30, 2013

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.

Martin Montalvo October 15, 2013

Martin Montalvo Date
Public Works Operations Manager

Table of Contents

Section **Page No.**

List of Tables

List of Appendices

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 between 15,000 and 25,000 with some (Johnson City, Rivergrove) having populations significantly smaller.

The City's MS4 NPDES permit was reissued March 16, 2012, after a mulit-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, 2012 to June 30, 2013 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 SMWP 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
h)	A summary describing the number and nature of enforcement actions, inspections, and public education programs.[a]	Section 6 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
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 2012–2013 Reporting Year

The 2012-2013 reporting year is the first full permit year in which the City's effective SWMP (dated 2012) has been implemented. The City's 2012 SWMP reflects the addition of multiple BMPs that were not included in the previous permit's SWMP including:

- BMP 2-1: Screen Existing and New Industrial Facilities
- BMP 4-2: Participate in a Public Education Effectiveness Evaluation
- BMP 6-2: Review and Update Code and Development Standards Related to Stormwater Quality Control
- BMP 7-3: Implement a Program to Reduce the Impact of Stormwater Runoff from Municipal Facilities
- BMP 8-4: Private Structural Facility Cleaning and Maintenance

Additionally, significant modifications and changes to implementation activities were made to the following BMPs:

- BMP 1-1: Implement the Illicit Discharges Program
- BMP 2-2: Implement an Industrial/ Commercial Inspection Program for high Priority Facilities

For the 2012-2013 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 2012–2013 fiscal year and a projection of the City's revenue and expenditures for the 2013–2014 fiscal year are provided in Table 2. New requirements in the reissued permit significantly impacted program expenditures. Projection of expenditures is considered draft at this time.

Table 2. Summary of Program Expenditures

521 Storm Drain (Stormwater) Division 5-Year Budget Projections

11-Oct-13 Prepared by JML

Fiscal Year		**2011/12**	**2012/13**	**2013/14**	**2014/15**	**2015/16**	**2016/17**	**2017/18**	**"Assumed" Multiplier**
		Actual	**Actual**	**Proposed**	**Proposed**	**Assumed**	**Assumed**	**Assumed**	
Beginning Fund Balance		$ 304,441	$ 377,021	$ 620,303	$ 305,825	$ 130,832	$ (76,591)	$ (252,487)	
		Rate = $8.30	Rate = $8.55	Rate = $8.81	Rate = $9.07	Rate = $9.34	Rate = $9.62	Rate = $9.91	
Revenues		12.2% rate increase	3% rate increase	3% rate increase	3% rate increase	3% rate increase	3% rate increase	3% rate increase	
	Oregon City Charges for Service	$ 1,978,193	$ 2,204,120	$ 2,159,988	$ 2,224,787	$ 2,337,361	$ 2,455,632	$ 2,579,887	Inc. 2% population growth
	Interest Income	$ 870	$ 2,050	$ 1,200	$ 1,236	$ 1,273	$ 1,311	$ 1,351	3%
	Miscellaneous Income	$ 77,948	$ 16,337	$ 1,000	$ 1,000	$ 1,030	$ 1,061	$ 1,093	3%
	Erosion Control Permits	$ 57,656	$ 58,048	$ 50,000	$ 51,500	$ 53,045	$ 54,636	$ 56,275	3%
	Project Management	$ 12,922	$ 17,567	$ 12,000	$ 12,000	$ 12,360	$ 12,731	$ 13,113	3%
	Revenues	$ 2,127,590	$ 2,280,555	$ 2,212,188	$ 2,278,523	$ 2,392,709	$ 2,512,640	$ 2,638,605	
Total Resources		$ 2,432,031	$ 2,657,576	$ 2,832,491	$ 2,584,348	$ 2,523,542	$ 2,436,050	$ 2,386,119	
Expenditures									
	Personnel Services	$ 978,424	$ 954,175	$ 1,097,966	$ 1,138,389	$ 1,195,308	$ 1,255,074	$ 1,317,828	5%
	Total Materials & Services	$ 411,271	$ 480,196	$ 555,277	$ 583,041	$ 612,193	$ 642,803	$ 674,943	5%
	Capital Outlay Totals	$ 121,308	$ 85,920	$ 366,250	$ 222,250	$ 275,000	$ 265,000	$ 265,000	
	Total Transfers	$ 544,007	$ 516,982	$ 507,173	$ 509,836	$ 517,631	$ 525,660	$ 533,930	
Total Expenses		$ 2,055,010	$ 2,037,273	$ 2,526,666	$ 2,453,516	$ 2,600,132	$ 2,688,536	$ 2,791,700	
Ending Fund Balance		$ 377,021	$ 620,303	$ 305,825	$ 130,832	$ (76,591)	$ (252,487)	$ (405,581)	See Footnote 1 & 2
Total Expenditures		$ 2,432,031	$ 2,657,576	$ 2,832,491	$ 2,584,348	$ 2,523,542	$ 2,436,050	$ 2,386,119	
Capital Outlay - Details									
	Operations New Equip. >$5000	$ -	$ -	$ -	$ -	$ 25,000	$ 15,000	$ 15,000	
	Capital Construction	$ 121,449	$ 85,920	$ 366,250	$ 222,250	$ 250,000	$ 250,000	$ 250,000	
	Land	$ -		$ -	$ -	$ -	$ -	$ -	
	Total	$ 121,449	$ 85,920	$ 366,250	$ 222,250	$ 275,000	$ 265,000	$ 265,000	
Transfers - Details									
	Transfer to Building Reserve	$ 350,000	$ 300,000	$ 250,000	$ 250,000	$ 250,000	$ 250,000	$ 250,000	
	Utility Billing	$ 93,024	$ 93,024	$ 114,673	$ 115,611	$ 119,079	$ 122,652	$ 126,331	
	Interdept. Transfers	$ 43,983	$ 45,958	$ 57,500	$ 59,225	$ 61,002	$ 62,832	$ 64,717	3%
	Fleet Reserve Transfer	$ 57,000	$ 78,000	$ 85,000	$ 85,000	$ 87,550	$ 90,177	$ 92,882	3%
	Total	$ 544,007	$ 516,982	$ 507,173	$ 509,836	$ 517,631	$ 525,660	$ 533,930	

Footnote:

1) Charges for services in FY 13/14 & 14/15 appear estimated low considering FY 12/13 actual. FY 15/16, 16/17 , & 17/18 ending fund balance deficit is thought to balance, assuming 13/14 & 14/15 service charges increase 3% over FY 12/13.

2) Further review of actual FY 13/14 revenue requires monitoring. Other budget balance options include rate increases exceeding 3% or reduction of expenditures, most likely reductions in capital outlay or transfer to building reserve.

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 (2012–2013), the 2012 CCCSMP was the effective, implemented monitoring plan for the City of Oregon City. 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 for the 2012–2013 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 2012–2013 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.

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.

In addition to the required instream and outfall monitoring, the City was required to conduct mercury monitoring at one location during the 2012-2013 water year (October 1, 2012 to September 30, 2013). Two samples, one during the wet weather season and one during the dry weather season, were required.

The City's reissued MS4 NPDES permit (effective date: March 16, 2012) prescribed new monitoring requirements that were to take effect October 1, 2012. Because the new monitoring requirements took effect part way through the 2012-2013 reporting year and due to the relatively dry weather conditions during the 2012-2013 wet weather season, the City of Oregon City was unable to collect all required instream and outfall samples. During the 2012–2013 monitoring year, two of the three outfall samples were collected. Additionally, two of the required four instream samples were collected. The City is committed to collecting additional instream and outfall samples during the 2013-2014 monitoring year in order to make up for the reduced number of samples collected during 2012-2013.

During the 2012-2013 monitoring year, the City collected their wet weather season mercury sample on March 20, 2013 (see Appendix B). The City collected a dry weather season mercury sample on May 29, 2013; however, the laboratory misinterpreted the chain of custody form and did not filter the sample as required to analyze for both total and dissolved constituents. The City collected another dry weather season mercury sample on September 30, 2013, as required in the 2012 Permit. Results from this sampling effort will be reflected in the 2013-2014 NPDES MS4 annual report.

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: 2012–2013 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 @ railroad trestle)	Grab & Composite	4/year	Dry Weather (2/year) and Storm Event (2/year)
OC012is	Coffee Creek Behind 415 McLoughlin (outfall @ 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)

Site #	Location	Sample Type	Required Frequency	Weather
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 @ O.C. Shopping Center	Composite	3/year	Storm Event
OC007ofm	Clackamas River @ 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

No land use/ zoning changes were approved between July 1, 2012 and June 30, 2013.

Four annexations were approved during the reporting period, but no new development has occurred within the proposed UGB expansion areas.

5.2 Summary of Development Activities within the UGB

During the reporting year 2012-2013, there were 38 development applications reviewed and approved for compliance with water quality/water quantity standards. These included detailed development plans (2), conditional use plan (2), extension of approval (1), modifications (0), minor partitions (1), Natural Resource Overlay District reviews (5), site plan and design review (21), and subdivisions (6). Estimated total new and replaced impervious surface area related to development projects that commenced during the reporting year equals 245,535 square feet.

There were six public improvement projects (CIPs), including water quality and/or flow control projects, for this reporting period. One was contracted out and five were 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.

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

There were 18 stormwater staff meetings conducted during the 2012–2013 reporting period. Dates, topics, and attendees are summarized below in Table 4:

Table 4: City Training Activities

Date/Time	Attendees	BMP's Topic	Comments	Next Steps
9/4/12 11:00-noon	Eric Hand, Gail Johnson, Cedomir Jesic	Collaboration between Oregon City & the Greater Oregon City Watershed Council (GOCWC)	Discussed opportunities for coordination on projects that benefit water quality in Oregon City watersheds.	OC staff member to attend GOCWC meetings when possible.
9/6/12 1:00-1:30	Eric Hand, Gail Johnson, Chris Dunlop	BMP 1-1, 1-2 (IDDE)	Discussed GIS assistance for development of IDDE SOP.	Will request assistance when needed; due date 11/1/12.
10/15/12 2:00-2:30	Eric Hand, Gail Johnson, John Knapp	Reporting impervious area	Discussed tracking methods to facilitate future annual reporting.	Use EDEN (internal tracking software)
11/28/12 1:00-2:00	Eric Hand, Gail Johnson, John Sewall	BMP 8-4 (Private Water Quality Facilities = PWQF)	Update from John Sewall on progress to date.	Code review needed, PWQF on separate layer on OCMap, check with John Knapp on new facility tracking.
12/4/12 11:00-12:00	Gail Johnson, Eric Hand, Bob Cullison, Pete Walter, John Knapp, Adam Crafts	BMP 6-1 (Construction Standards) and TMDL Reporting	Reviewed reporting for 2011-2012. Discussed other city contacts for tree planting data.	Possible improvements to internal tracking measures. Follow-up meeting in 45 days.
12/10/12 2:15-2:45	John Sewall, Chris Dunlop, Gail Johnson	BMP 8-4 (PWQF)	Discussed mapping private storm facilities.	Determine whether a separate layer should be used for private and public facilities.
12/28/12 10:00-10:30	John Knapp, Gail Johnson	BMP 8-4 (PWQF)	Discussed current tracking mechanism for maintenance agreements; current processes.	Code revision may be required to allow City inspection of private facilities.
1/29/13 11:00-12:00	Eric Hand, Gail Johnson, John Knapp	BMP 8-4 (PWQF)	Requested that spreadsheet for maintenance agreements be updated; scan the two agreements & add to folder.	Acknowledged need for better coordination between depts.; for now will use existing spreadsheets. Bring Aleta up to speed with tracking needs.
2/7/13 9:00-9:20	John Sewall, Chris Dunlop, John Max	BMP 8-4 (PWQF)	Update on mapping of private water quality facilities.	Continue current efforts.
2/7/13 11:00-11:35	John Lewis, Eric Hand, Martin Montalvo, Pete Walter, Gail Johnson	Plan for NPDES presentation to OC Natural Resources Committee	With assistance from B&C, City will present at next month's meeting of NRC to overview of MS4 program and requirements.	Use same presentation as for City Commission April work session.
3/8/13 9:30-9:45	Eric Hand, Gail Johnson	BMP 7-4 (Control Infiltration and Cross Connections to Storm System)	Will use same basin designation as currently used for cleaning.	Need SOP for high priority inspection areas for cross connections. Draft due 5/1/13.

Date/Time	Attendees	BMP's Topic	Comments	Next Steps
3/14/13 2:00-2:30	Chris Dunlop, John Max, John Sewall, Gail Johnson	BMP 8-4 (PWQF)	Mapping is complete.	Requested they be made available as a separate layer on OCMap.
4/24/13 3:00-3:45	Martin Montalvo, Gail Johnson	BMP 8-4 (PWQF) TMDL 5 Year Review Hydromod/Retrofit/WLA	Status update on listed topics.	Will schedule meetings with engineering staff during May. Other meetings as needed.
5/20/13 8:00-9:30	Martin Montalvo, Eric Hand, Gail Johnson	BMP 7-3 (Pollution Prevention for Municipal Facilities)	Reviewed Municipal Facility Assessment Questionnaires for sites identified in our Stormwater Pollution Prevention Strategy for Municipal Facilities (SWPPS).	Continue moving forward with strategy development.
5/21/13 10:00-10:30	Gail Johnson, Eli Deberry	BMP 7-3 (Pollution Prevention for Municipal Facilities)	Reviewed SWPPS for Mountainview site.	Continue moving forward with strategy development.
5/28/13 10:00-10:30	Gail Johnson, Larry Potter	BMP 7-3 (Pollution Prevention for Municipal Facilities)	Reviewed SWPPS for Parks Operations site and Mountainview site.	Continue moving forward with strategy development.
6/11/13 2:00-2:45	Martin Montalvo, Gail Johnson	BMP 8-4 (PWQF) BMP 7-3 (Pollution Prevention for Municipal Facilities)	Update on status of standard operating procedures and need for review prior to final document.	Martin to review and provide comments within the next week. Finalize SWPPS.

Appendix A

Oregon City SWMP Implementation Status

Appendix A. Status of Implementing Components of Oregon City's 2012 SWMP

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?	Responsible Department	Measurable Goals (2012 SWMP)	Tracking Measures (2012 SWMP)	Annual Report Information: Tracking Measure Status, Permit Year 2012–2013	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	• Document and implement updated Standard Operating Procedures for the IDDE Program by November 1, 2012. • Conduct actions to remove identified illicit discharges in conjunction with timeframes outlined in the City'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) The City of Oregon City 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. 2) No illicit discharge investigations were deemed necessary as a result of annual Dry Weather Field Screening conducted during this reporting period. See BMP 1-2, below.	
BMP 1-2: Conduct Annual Dry Weather Field Screening	○	○	Oregon City Public Works Department	• 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 Public Works 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) 15 outfalls were inspected as part of the annual dry weather field screening activities. 2) Outfalls were inspected on 8/10/12. Flow was observed at 7 of the outfalls; discharge was characterized as permissible so no monitoring and/or investigations were required. 3) N/A 4) N/A 5) The City of Oregon City developed an IDDE SOP (effective date: November 1, 2012).. The SOP includes procedures for conducting dry weather field screening.	Dry weather screening was conducted at the following outfalls: • South Willamette at 99E & 5th Street (OC001 A & OC001 B) • Abernethy Creek at 14th John Adams (OC002) • Park Place Creek at Abernethy Road at Tri-Let (OC003) • Livesay Creek at Beemer Way (OC004) • Park Place Creek at Clackamas River Drive (OC005) • Clackamas River at Metro Wetlands Pond (OC006) • Coffee Creek at Barker Road (OC007) • Singer Creek at Linn Ave and Charman Street (OC008) • Singer Creek at Holmes Lane (OC009) • Mud Creek at Kaen Road (OC010) • Mud Creek at Meyers Road (OC011) • Caufield Creek at Falcon Drive (OC012) • Newell Creek at Falcon Drive (OC013) • Newell Creek at Beavercreek and Hwy 213 (OC014)
BMP 1-3: Implement the Spill Response Program	○	○	Clackamas Fire District #1 (Hazardous Materials Team) and Oregon City Public Works Department	• Respond to reports of hazardous and non-hazardous spills and follow the Oregon City Spill Response Plan. • Report all hazardous and non-hazardous spills to DEQ as necessary.	1) Indicate the number of spills reported to Public Works 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 Oregon City Spill Response Plan.	1) Three spills were reported to Oregon City Public Works (OCPW) during the 2012-2013 reporting period. None required DEQ reporting. 2) OCPW responded to these spills by cleaning with absorbent pads, sweeping, and proper disposal. 3) These were minor fuel or oil spills resulting from vehicle accidents or mechanical failure. No discharges resulted and no DEQ reports were required. 4) In June 2013 Oregon City Public Works Revised its Spill Response Plan.	In June 2013, Oregon City revised its Spill Response Plan for hazardous & non-hazardous spills to reflect the most current guidelines provided by Oregon DEQ. Training regarding these revisions was conducted with the Oregon City Public Works Operations employees on August 21, 2013.
Element #2 Industrial and Commercial Facilities							
BMP 2-1: Screen Existing and New Industrial Facilities	○	○	Oregon City Public Works Department	• Review the business license inventory for 1200Z industries once over the permit term. • Notify DEQ of any existing or new industrial facilities within the City 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) In development of the City's Industrial/ Commercial Facility Inspection Program Standard Operating Procedures (SOP) (completed July 1, 2013), City staff queried the DEQ database and identified seven current, active industrial stormwater permittees. An initial screening of the City's business license database in June 2013 did not identify additional facilities potentially subject to an industrial stormwater permit. The Water Quality Coordinator continues to review all new business license applications for potential water quality-related issues. 133 business license applications were reviewed during the 2012-2013 reporting period.	DEQ provided additional guidance on industrial facility screening in June 2013. Oregon City'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	○	○	Oregon City Public Works Department	• Pursue approval to hire staff to implement a business inspection program. • Develop a priority list of industrial/commercial facilities for inspection. • Investigate 25% of the City'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) No inspections were conducted during the 2012-2013 reporting period. 2) N/A 3) The City developed an Industrial/ Commercial Facility Inspection Program Standard Operating Procedures (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.	The City has currently not been able to hire staff to implement the business inspection program; the City may utilize seasonal/intern assistance until additional staff can be added.

Best Management Practice or Activity	Addresses Bacteria?	Addresses Mercury?	Responsible Department	Measurable Goals (2012 SWMP)	Tracking Measures (2012 SWMP)	Annual Report Information: Tracking Measure Status, Permit Year 2012–2013	Additional Detail Related to Activities Conducted
Element #3 Construction Site Runoff Control							
BMP 3-1: Implement the Erosion Control Ordinances	●	○	Oregon City Public Works Department	• 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 the City'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 the City's manual.	1) 248 erosion control plans were reviewed and approved. 2) 248 erosion control permits were issued. 3) The City continues to consider adoption of all or part of Clackamas County's Manual and will comply with the November 1, 2014 due date per MS4 NPDES permit requirements.	
BMP 3-2: Provide Educational Information to Construction Site Operators	○	○	Oregon City Public Works Department	• Continue to provide the City's most current erosion control manual on the City 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	●	○	Oregon City Public Works Department	• 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 620 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) 2 notices of non-compliance were issued. 1 stop work order was issued.	The total number of inspections are comprised of: • 278 Initial site visits, Inspection 1 • 254 Random inspections, Inspection 2 • 88 Final inspections, Inspection 3
Element #4 Education and Outreach							
BMP 4-1: Provide Public Education and Outreach Materials Regarding Stormwater Management	○	○	Oregon City Public Works Department	• Include a water quality related article in each City newsletter, distributed to citizens three times per year. • Participate in the Regional Coalition of 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 the City promoting water quality. • Sponsor the volunteer catch basin stenciling program. • Distribute an annual water quality report to Oregon City 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 7 water quality-related articles were included in Trail News. - OC promoted and/or participated in a total of 4 special events. - The September utility bill included a message about car washing – soap up your car, not your river! - Mailed 15,658 copies of the Annual Water Quality Report to OC residents. - Stormwater banner displayed at city hall (5/31/13-6/14/13). 2) No large scale public education campaigns were initiated. 3) Coordinated efforts included: - Continued to sponsor the "Do the Right Thing" campaign via KOIN media outlets. - Continued participation in the Regional Coalition of Clean Rivers and Streams. - 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 the City of Oregon City are available in Appendix C. During this reporting year the Regional Coalition of Clean Rivers and Streams (Coalition) continued to utilize online media, websites, and social media profiles to implement a diverse campaign. The Coalition's annual report summarizes these efforts. Oregon City continues to conduct catch basin marking and stenciling to increase public awareness. During this reporting period 1,318 "No Dumping, Drains to Waterway" markers were installed at catch basins. 436 catch basins were stenciled with the message "Dump No Waste – Drains to Stream".
BMP 4-2: Participate in a Public Education Effectiveness Evaluation	○	○	Oregon City Public Works Department	• 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) 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. A proposal was received from DHM Consulting. ACWA coordinated with DEQ to ensure that the study would meet DEQ's intended requirements. ACWA developed a cost share breakdown among interested Phase I and Phase II communities, and Oregon City has agreed to participate in the effort.	
BMP 4-3: Conduct Staff Training for Pest Management	○	○	Oregon City Public Works Department and Parks Department	• Ensure Public Works and Parks 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) Public Works staff licensed for spraying activities = 5; Parks Dept staff = 5 2) 5 Public Works staff and 5 Parks Dept staff attended refresher training classes during the reporting period.	

Best Management Practice or Activity	Addresses Bacteria?	Addresses Mercury?	Responsible Department	Measurable Goals (2012 SWMP)	Tracking Measures (2012 SWMP)	Annual Report Information: Tracking Measure Status, Permit Year 2012–2013	Additional Detail Related to Activities Conducted
BMP 4-4: Conduct Staff Training in Spill Response	○	○	Oregon City Public Works Department	• Provide non-hazardous spill response training annually through monthly safety meetings. • Coordinate annual training and refresher courses for staff initially responding to spills using OSHA hazardous materials educational resources.	1) Track spill-related training and education.	1) During a safety meeting on March 19, 2013 a representative from SAIF provided OCPW staff information on changes to Hazard Communication and new labeling requirements.	This training provided important information for anyone responding to a spill incident.
BMP 4-5: Ensure Municipal Staff Training in Stormwater Pollution Prevention	○	○	Oregon City Public Works Department	• Conduct municipal training for employees associated with stormwater management in the City. • 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 one to two times per year.	1) Track the number of employees receiving training in stormwater management annually. 2) Track Oregon City 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: - Three OCPW employees attended the Annual ACWA Stormwater Summit 6/4/13. - OCPW Director attended APWA conferences 10/3/12-10/5/12 and 4/2/13-4/5/13. - OCPW Operations Manager attended APWA conference 4/2/13-4/5/13. - Four OCPW employees attended the annual NWPCA Water Environment School 3/26/13-3/28/13. - OC Erosion Control Officer attended IECA conference 2/10/13-2/13/13. 2) OC staff participates in the following groups and organizations: - Association of Clean Water Agencies (ACWA) and active participant in the ACWA Phase I Stormwater subcommittee. - Continued collaboration with other co-permittees on Comprehensive Clackamas Stormwater Monitoring Program (CCCSMP). - Greater Oregon City Watershed Council (GOCWC). - Clackamas Water Education Team. - Regional Coalition for Clean Rivers and Streams. 3) There were18 stormwater staff meetings conducted during the 2012-2013 reporting period. Dates, topics, and attendees are summarized in Table 4 in Section 6.0 of the 2012-2013 NPDES MS4 annual report.	
Element #6 Post-Construction Site Runoff							
BMP 6-1: Implement Municipal Construction Standards	●	●	Oregon City Community Development Department	• 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 and approved for compliance with stormwater regulations. 2) Track the number, type, and drainage area of treatment facilities constructed annually.	1) 38 development applications were reviewed and approved for compliance with water quality/water quantity standards. 2) 4 treatment/ detention facilities were constructed during the reporting period of 7/1/2012 through 6/30/2013: - 3 detention pipes/tanks and 1 swale - Total Drainage area = 110,460 sq ft	Details of treatment facility construction: TRG Logistics Site – 5 sumped catch basins (private) and stormtech detention; Total contributing drainage area = 22,700 sq ft Warner Milne Professional Offices Site - 2 sumped catch basins and a 75'x48" diameter detention pipe; Total contributing drainage area = 8,000 sq ft Crabtree Terrace No.2 Site - 8 sumped catch basin and a bioswale; Total contributing drainage area = 13,760 sq ft Providence Willamette Falls Parking Lot Addition Site – 3 sumped catch basins and a detention tank; Total contributing drainage area = 66,000 sq ft
BMP 6-2: Review and Update Code and Development Standards related to Stormwater Quality Control	●	●	Oregon City Community Development Department	• Review the City's current/ planned stormwater treatment and detention standards for compliance with new MS4 NPDES permit language. • Review the City'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 the City's post-construction stormwater design standards and code language by November 1, 2014.	1) Track progress related to review of the City's code and development standards per provisions in the MS4 NPDES permit. 2) Track any code/ standards modifications made by ordinance.	1) The City's consultant conducted a review of the pending LID Design Manual and Standards per the updated MS4 NPDES permit language. Modifications to the pending standards would be required to address the current MS4 NPDES permit language. 2) The City began their code and development standard update process September 2013.	Completion of design standards and code updates is not required until November 1, 2014.

Best Management Practice or Activity	Addresses Bacteria?	Addresses Mercury?	Responsible Department	Measurable Goals (2012 SWMP)	Tracking Measures (2012 SWMP)	Annual Report Information: Tracking Measure Status, Permit Year 2012–2013	Additional Detail Related to Activities Conducted
Element #7 Pollution Prevention for Municipal Operations							
BMP 7-1: Conduct Street Sweeping and Roadway Repair Activities	●	●	Oregon City Public Works Department	• 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) 4.07 citywide sweeps for this reporting period. 2) During the 2012-2013 reporting period, 2,996 miles of roadway were swept. 3) 574 cubic yards of debris were removed as a result of sweeping and leaf pickup activity.	
BMP 7-2: Minimize Pollutant Discharges Associated with Landscape Management Practices	○	○	Oregon City Public Works Department and Parks Department	• 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 the City.	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.	
BMP 7-3: Implement a Program to Reduce the Impact of Stormwater Runoff from Municipal Facilities	○	○	Oregon City Public Works Department	• 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) The City developed a Stormwater Pollution Prevention Strategy document for municipal operations (SWPPS) July 1, 2013. The SWPPS include a description of each of the City'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.	
BMP 7-4: Control Infiltration and Cross Connections to the City's Stormwater Conveyance System	●		Oregon City Public Works Department	• 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) No cross connections were discovered during this reporting period.	
BMP 7-5: Coordinate with Local Fire Department related to Pollutant Discharge from Fire Fighting Training Activities			Oregon City Public Works Department	• By November 1, 2012, contact Clackamas Fire District #1 to determine what activities are conducted to minimize pollutant discharges associated with fire fighting 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) On 9/12/12 Oregon City's Water Quality Coordinator contacted Clackamas Fire District #1 to discuss fire fighting training activities conducted in Oregon City. 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 Oregon City stations use water only.	
BMP 7-6: Conduct Master Planning and Implement Capital Projects for Stormwater Quality Enhancement	●	●	Oregon City Public Works Department	• 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) The City continues with the planning phase for updating their existing Citywide Drainage Master Plan. 2) A total of six water quality related CIP projects were constructed during this reporting period. - One project was contracted out, for a total cost of $108,000. - Five projects were completed in-house, for a total cost of $63,500. 3) Mapping: - The one contracted CIP is pending. - Three of the five in-house CIP projects have been mapped; two pending.	Following are details of the contracted CIP projects completed during this reporting period: - OR213:I-205 – Redland Rd Improvements Project – Six water quality swales along local roadways and a water quality pond for local roadways and highway drainage. Following are details of the in-house CIP projects completed during this reporting period: - 317 Pearl St – installed one sumped catch basin and 145 ft of pipe - 19438 McCord Rd – installed one sumped catch basin - 1722 Jackson St – installed three sumped catch basins and 225 ft of pipe - 19446 McCord Rd – installed three sumped catch basins and 170 ft of pipe - 1610 10th St – installed 165 ft of pipe to eliminate erosion/sinkhole issue

Best Management Practice or Activity	Addresses Bacteria?	Addresses Mercury?	Responsible Department	Measurable Goals (2012 SWMP)	Tracking Measures (2012 SWMP)	Annual Report Information: Tracking Measure Status, Permit Year 2012–2013	Additional Detail Related to Activities Conducted
Element #8 Stormwater Management Facilities Operation and Maintenance							
BMP 8-1: Conduct Stormwater Conveyance System Cleaning and Maintenance	●	●	Oregon City Public Works Department	• 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	●	●	Oregon City Public Works Department	• 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 the City's catch basin inventory annually.	1) 42% of public catch basins were maintained during this reporting period. 2) 132 cy of sediment were removed (includes sediment from pipes, culverts, manholes, open channels, and catch basins). 3) Two catch basins were replaced. 4) Eight catch basins were added to, and two catch basins were removed from, the City's inventory.	42% = 1,757 public catch basins
BMP 8-3: Public Structural Control Facility Cleaning and Maintenance	●	●	Oregon City Public Works Department	• 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 2,175 feet of bioswale were inspected during the reporting period. See the next column for maintenance details. 2) 32 cy of sediment were removed during maintenance/cleaning. 3) One new water quality facility was added to the inventory: - Sunset Meadows – 180 ft vegetated swale	1) The following public structural facilities were inspected and maintained during the reporting period: - Ponds = 76 inspected; 76 maintained - Swales = 2,175 ft maintained - Raingardens = 3 inspected; 3 maintained - Detention Pipes = 20 inspected; 6 cleaned - WQ Vaults = 1 inspected; no maintenance required - Pollution Control Manholes = 42 inspected; 15 cleaned
BMP 8-4: Private Structural Control Facility Cleaning and Maintenance	●	●	Oregon City Public Works Department	• Require new private water quality facilities to submit maintenance agreements to the City. • 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 the City 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) The City continues to require maintenance agreements for private water quality facilities. No maintenance agreements were received 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. 4) The City developed standard operating procedures (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, the City requires a maintenance agreement and submission of annual inspection records.	

Appendix B

Oregon City Monitoring Data

Outfall Monitoring - Oregon City 2012-13
Location - Oregon City Shopping Center @ Clackamette Cove
Sample Site # OC006
Stream Name - Clackamas River
Land Use - Commercial

		Results					
		Composite Rain Event	Composite Rain Event	Statistics			
Analysis	Units	12/19/12	5/23/13	High	Low	Mean	Notes
Total Phosphate Seal	mg/L	0.05	ND	**0.05**	**ND**	**N/A**	(2)
Dissolved Oxygen - Winkler	mg/L	Not Required	Not Required	**N/A**	**N/A**	**N/A**	(1)
Dissolved Oxygen - Field	mg/L	10.6	9.6	**10.6**	**9.6**	**10.1**	
Conductivity Field	uS	73.2	36.0	**73.2**	**36.0**	**54.6**	
Temperature Field	°C	8.2	13.0	**13.0**	**8.2**	**10.6**	
pH Field	Std Units	7.2	6.8	**7.2**	**6.8**	**7.0**	
Dissolved Copper ICPMS	ug/L	5.3	5.8	**5.8**	**5.3**	**5.5**	
Copper ICPMS	ug/L	11.6	8.2	**11.6**	**8.2**	**9.9**	
Dissolved Lead ICPMS	ug/L	0.1	0.3	**0.3**	**0.1**	**0.2**	
Lead ICPMS	ug/L	2.9	2.6	**2.9**	**2.6**	**2.7**	
Dissolved Zinc ICPMS	ug/L	42.6	48.0	**48.0**	**42.6**	**45.3**	
Zinc ICPMS	ug/L	57.8	50.0	**57.8**	**50.0**	**53.9**	
E. coli - Colilert	MPN/100mL	>2420	1986.0	**>2420**	**1986.0**	**N/A**	(3)(4)
Ammonia Nitrogen Low Seal	mg/L	ND	ND	**N/A**	**ND**	**N/A**	(2)
Nitrate-Nitrite	mg/L	0.4	0.5	**0.5**	**0.4**	**0.5**	
Ortho Phosphate Seal	mg/L	ND	ND	**N/A**	**ND**	**N/A**	(2)
Total Dissolved Solids	mg/L	42.0	50.0	**50.0**	**42.0**	**46.0**	
Total Solids	mg/L	98.0	60.0	**98.0**	**60.0**	**79.0**	
Total Suspended Solids	mg/L	12.0	7.0	**12.0**	**7.0**	**9.5**	
Volatile Solids	mg/L	30.0	1.0	**30.0**	**1.0**	**15.5**	
Hardness	mg/L	26.0	28.0	**28.0**	**26.0**	**27.0**	
BOD	mg/L	2.0	1.3	**2.0**	**1.3**	**1.7**	
Storm Event Rainfall	Inches	3.00	2.15	**3.00**	**2.15**	**N/A**	(5)

Notes:

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

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

(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 to sample collection.

Outfall Monitoring - Oregon City 2012-13 Location - Clackamette Cove Sample Site # OC007 Stream Name - Clackamas River Land Use - Industrial							
		Results					
		Composite Rain Event	Composite Rain Event	Statistics			
Analysis	Units	12/19/12	5/23/13	High	Low	Mean	Notes
Total Phosphate Seal	mg/L	0.1	ND	**0.1**	**ND**	**N/A**	(2)
Dissolved Oxygen - Winkler	mg/L	Not Required	9.8	**N/A**	**N/A**	**N/A**	(1)
Dissolved Oxygen - Field	mg/L	11.3	9.7	**11.3**	**9.7**	**10.5**	
Conductivity Field	uS	284.0	109.3	**284.0**	**109.3**	**196.7**	
Temperature Field	°C	5.2	11.4	**11.4**	**5.2**	**8.3**	
pH Field	Std Units	7.4	7.2	**7.4**	**7.2**	**7.3**	
Dissolved Copper ICPMS	ug/L	2.1	2.9	**2.9**	**2.1**	**2.5**	
Copper ICPMS	ug/L	3.5	4.1	**4.1**	**3.5**	**3.8**	
Dissolved Lead ICPMS	ug/L	0.1	0.2	**0.2**	**0.1**	**0.1**	
Lead ICPMS	ug/L	1.2	1.0	**1.2**	**1.0**	**1.1**	
Dissolved Zinc ICPMS	ug/L	10.3	14.0	**14.0**	**10.3**	**12.2**	
Zinc ICPMS	ug/L	17.3	18.0	**18.0**	**17.3**	**17.7**	
E. coli - Colilert	MPN/100mL	260.0	>2420	**>2420**	**260.0**	**N/A**	(3)(4)
Ammonia Nitrogen Low Seal	mg/L	0.1	ND	**0.1**	**ND**	**N/A**	(2)
Nitrate-Nitrite	mg/L	0.3	0.2	**0.3**	**0.2**	**0.2**	
Ortho Phosphate Seal	mg/L	ND	ND	**N/A**	**ND**	**N/A**	(2)
Total Dissolved Solids	mg/L	153.0	87.0	**153.0**	**87.0**	**120.0**	
Total Solids	mg/L	198.0	85.0	**198.0**	**85.0**	**141.5**	
Total Suspended Solids	mg/L	9.0	9.0	**9.0**	**9.0**	**9.0**	
Volatile Solids	mg/L	97.0	ND	**97.0**	**<1**	**N/A**	
Hardness	mg/L	110.0	54.0	**110.0**	**54.0**	**82.0**	
BOD	mg/L	2.9	2.6	**2.9**	**2.6**	**2.8**	
Storm Event Rainfall	Inches	3.00	2.15	**3.00**	**2.15**	**N/A**	(5)

Notes:

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

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

(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 to sample collection.

Instream Monitoring - Oregon City 2012-13 Location - 17082 Holly Ln. (Holly Ln. Bridge) Sample Site # OC010 Stream Name - Abernethy Creek (Upstream)							
		Results					
		Composite Rain Event	Composite Rain Event	Statistics			
Analysis	Units	12/19/12	4/19/13	High	Low	Mean	Notes
Total Phosphate Seal	mg/L	ND	0.1	**0.1**	**ND**	**N/A**	(2)
Dissolved Oxygen - Winkler	mg/L	Not Required	Not Required	**N/A**	**N/A**	**N/A**	(1)
Dissolved Oxygen - Field	mg/L	11.8	10.5	**11.8**	**10.5**	**11.1**	
Conductivity Field	uS	64.1	70.6	**70.6**	**64.1**	**67.4**	
Temperature Field	°C	8.0	12.2	**12.2**	**8.0**	**10.1**	
pH Field	Std Units	7.4	7.5	**7.5**	**7.4**	**7.4**	
Dissolved Copper ICPMS	ug/L	0.5	0.6	**0.6**	**0.5**	**0.5**	
Copper ICPMS	ug/L	1.2	1.2	**1.2**	**1.2**	**1.2**	
Dissolved Lead ICPMS	ug/L	0.0	0.1	**0.1**	**0.0**	**0.1**	
Lead ICPMS	ug/L	0.5	0.4	**0.5**	**0.4**	**0.4**	
Dissolved Zinc ICPMS	ug/L	2.5	4.0	**4.0**	**2.5**	**3.3**	
Zinc ICPMS	ug/L	4.1	4.0	**4.1**	**4.0**	**4.1**	
E. coli - Colilert	MPN/100mL	68.0	133.0	**133.0**	**68.0**	**100.5**	(3)(4)
Ammonia Nitrogen Low Seal	mg/L	ND	ND	**N/A**	**ND**	**N/A**	(2)
Nitrate-Nitrite	mg/L	1.3	0.6	**1.3**	**0.6**	**1.0**	
Ortho Phosphate Seal	mg/L	ND	ND	**N/A**	**ND**	**N/A**	(2)
Total Dissolved Solids	mg/L	53.0	67.0	**67.0**	**53.0**	**60.0**	
Total Solids	mg/L	82.0	81.0	**82.0**	**81.0**	**81.5**	
Total Suspended Solids	mg/L	13.0	14.0	**14.0**	**13.0**	**13.5**	
Volatile Solids	mg/L	43.0	40.0	**43.0**	**40.0**	**41.5**	
Hardness	mg/L	19.0	31.0	**31.0**	**19.0**	**25.0**	
BOD	mg/L	ND	ND	**N/A**	**ND**	**N/A**	(2)
Storm Event Rainfall	Inches	3.00	0.41	**3.0**	**0.4**	**N/A**	(5)

Notes:

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

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

(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 to sample collection.

Instream Monitoring - Oregon City 2012-13 Location - 316 17th St. @ Railroad Tressel Sample Site # OC011 Stream Name - Abernethy Creek (Downstream)							
		Results					
		Composite Rain Event	Composite Rain Event	Statistics			
Analysis	Units	12/19/12	4/19/13	High	Low	Mean	Notes
Total Phosphate Seal	mg/L	ND	0.1	**0.1**	**ND**	**N/A**	(2)
Dissolved Oxygen - Winkler	mg/L	Not Required	Not Required	**N/A**	**N/A**	**N/A**	(1)
Dissolved Oxygen - Field	mg/L	11.8	10.1	**11.8**	**10.1**	**10.9**	
Conductivity Field	uS	72.4	81.7	**81.7**	**72.4**	**77.1**	
Temperature Field	°C	7.6	12.2	**12.2**	**7.6**	**9.9**	
pH Field	Std Units	7.2	7.2	**7.2**	**7.2**	**7.2**	
Dissolved Copper ICPMS	ug/L	0.6	1.0	**1.0**	**0.6**	**0.8**	
Copper ICPMS	ug/L	1.4	1.2	**1.4**	**1.2**	**1.3**	
Dissolved Lead ICPMS	ug/L	0.1	0.1	**0.1**	**0.1**	**0.1**	
Lead ICPMS	ug/L	0.6	0.3	**0.6**	**0.3**	**0.4**	
Dissolved Zinc ICPMS	ug/L	3.3	4.0	**4.0**	**3.3**	**3.7**	
Zinc ICPMS	ug/L	5.4	6.0	**6.0**	**5.4**	**5.7**	
E. coli - Colilert	MPN/100mL	88.0	161.0	**161.0**	**88.0**	**124.5**	(3)(4)
Ammonia Nitrogen Low Seal	mg/L	ND	ND	**N/A**	**ND**	**N/A**	(2)
Nitrate-Nitrite	mg/L	1.4	0.6	**1.4**	**0.6**	**1.0**	
Ortho Phosphate Seal	mg/L	ND	ND	**N/A**	**ND**	**N/A**	(2)
Total Dissolved Solids	mg/L	49.0	68.0	**68.0**	**49.0**	**58.5**	
Total Solids	mg/L	87.0	87.0	**87.0**	**87.0**	**87.0**	
Total Suspended Solids	mg/L	11.0	19.0	**19.0**	**11.0**	**15.0**	
Volatile Solids	mg/L	40.0	67.0	**67.0**	**40.0**	**53.5**	
Hardness	mg/L	24.0	33.0	**33.0**	**24.0**	**28.5**	
BOD	mg/L	0.1	ND	**N/A**	**ND**	**N/A**	(2)
Storm Event Rainfall	Inches	3.00	0.41	**3.0**	**0.4**	**N/A**	(5)

Notes:

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

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

(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 to sample collection.

Instream Monitoring - Oregon City 2012-13 Location - Behind 415 McLoughlin Blvd. Sample Site # OC012 Stream Name - Coffee Creek							
		Results					
		Composite Rain Event	Composite Rain Event	Statistics			
Analysis	Units	12/19/12	4/19/13	High	Low	Mean	Notes
Total Phosphate Seal	mg/L	ND	0.0	**0.0**	**ND**	**N/A**	(2)
Dissolved Oxygen - Winkler	mg/L	Not Required	Not Required	**N/A**	**N/A**	**N/A**	(1)
Dissolved Oxygen - Field	mg/L	11.0	11.2	**11.2**	**11.0**	**11.1**	
Conductivity Field	uS	100.3	46.1	**100.3**	**46.1**	**73.2**	
Temperature Field	°C	9.5	10.9	**10.9**	**9.5**	**10.2**	
pH Field	Std Units	7.1	7.3	**7.3**	**7.1**	**7.2**	
Dissolved Copper ICPMS	ug/L	0.5	1.0	**1.0**	**0.5**	**0.7**	
Copper ICPMS	ug/L	0.7	1.8	**1.8**	**0.7**	**1.3**	
Dissolved Lead ICPMS	ug/L	0.1	0.1	**0.1**	**0.1**	**0.1**	
Lead ICPMS	ug/L	0.4	0.8	**0.8**	**0.4**	**0.6**	
Dissolved Zinc ICPMS	ug/L	12.1	10.0	**12.1**	**10.0**	**11.1**	
Zinc ICPMS	ug/L	13.5	13.0	**13.5**	**13.0**	**13.3**	
E. coli - Colilert	MPN/100mL	200.0	196.0	**200.0**	**196.0**	**198.0**	(3)(4)
Ammonia Nitrogen Low Seal	mg/L	ND	ND	**N/A**	**ND**	**N/A**	(2)
Nitrate-Nitrite	mg/L	3.4	1.3	**3.4**	**1.3**	**2.4**	
Ortho Phosphate Seal	mg/L	ND	ND	**N/A**	**ND**	**N/A**	(2)
Total Dissolved Solids	mg/L	53.0	40.0	**53.0**	**40.0**	**46.5**	
Total Solids	mg/L	87.0	48.0	**87.0**	**48.0**	**67.5**	
Total Suspended Solids	mg/L	3.0	4.0	**4.0**	**3.0**	**3.5**	
Volatile Solids	mg/L	44.0	21.0	**44.0**	**21.0**	**32.5**	
Hardness	mg/L	33.0	26.0	**33.0**	**26.0**	**29.5**	
BOD	mg/L	2.3	ND	**2.3**	**ND**	**N/A**	(2)
Storm Event Rainfall	Inches	3.00	0.41	**3.0**	**0.4**	**N/A**	(5)

Notes:

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

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

(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 to sample collection.

Instream Monitoring - Oregon City 2012-13 Location - Behind 13530 Redland Rd. Sample Site # OC013 Stream Name - Park Place Creek							
		Results					
		Composite Rain Event	Composite Rain Event	Statistics			
Analysis	Units	12/19/12	4/19/13	High	Low	Mean	Notes
Total Phosphate Seal	mg/L	ND	0.1	**0.1**	**ND**	**N/A**	(2)
Dissolved Oxygen - Winkler	mg/L	Not Required	Not Required	**N/A**	**N/A**	**N/A**	(1)
Dissolved Oxygen - Field	mg/L	8.0	7.3	**8.0**	**7.3**	**7.6**	
Conductivity Field	uS	234.0	205.3	**234.0**	**205.3**	**219.7**	
Temperature Field	°C	9.1	11.5	**11.5**	**9.1**	**10.3**	
pH Field	Std Units	7.1	7.0	**7.1**	**7.0**	**7.0**	
Dissolved Copper ICPMS	ug/L	1.0	1.5	**1.5**	**1.0**	**1.3**	
Copper ICPMS	ug/L	1.6	2.2	**2.2**	**1.6**	**1.9**	
Dissolved Lead ICPMS	ug/L	0.0	0.0	**0.0**	**0.0**	**0.0**	
Lead ICPMS	ug/L	0.4	0.4	**0.4**	**0.4**	**0.4**	
Dissolved Zinc ICPMS	ug/L	6.1	8.0	**8.0**	**6.1**	**7.1**	
Zinc ICPMS	ug/L	8.5	9.0	**9.0**	**8.5**	**8.8**	
E. coli - Colilert	MPN/100mL	130.0	238.0	**238.0**	**130.0**	**184.0**	(3)(4)
Ammonia Nitrogen Low Seal	mg/L	0.3	0.3	**0.3**	**0.3**	**0.3**	
Nitrate-Nitrite	mg/L	2.0	1.1	**2.0**	**1.1**	**1.6**	
Ortho Phosphate Seal	mg/L	ND	ND	**N/A**	**ND**	**N/A**	(2)
Total Dissolved Solids	mg/L	142.0	128.0	**142.0**	**128.0**	**135.0**	
Total Solids	mg/L	166.0	140.0	**166.0**	**140.0**	**153.0**	
Total Suspended Solids	mg/L	4.0	7.0	**7.0**	**4.0**	**5.5**	
Volatile Solids	mg/L	67.0	80.0	**80.0**	**67.0**	**73.5**	
Hardness	mg/L	95.0	75.0	**95.0**	**75.0**	**85.0**	
BOD	mg/L	1.2	1.1	**1.2**	**1.1**	**1.2**	
Storm Event Rainfall	Inches	3.00	0.41	**3.0**	**0.4**	**N/A**	(5)

Notes:

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

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

(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 to sample collection.

Instream Monitoring - Oregon City 2012-13 Location - Singer Creek Park Sample Site # OC014 Stream Name - Singer Creek (Upstream)							
		Results					
		Composite Rain Event	Composite Rain Event	Statistics			
Analysis	Units	12/19/12	4/19/13	High	Low	Mean	Notes
Total Phosphate Seal	mg/L	ND	0.05	**0.05**	**ND**	**N/A**	(2)
Dissolved Oxygen - Winkler	mg/L	10.9	10.3	**10.9**	**10.3**	**10.6**	
Dissolved Oxygen - Field	mg/L	10.9	11.2	**11.2**	**10.9**	**11.0**	
Conductivity Field	uS	85.0	62.6	**85.0**	**62.6**	**73.8**	
Temperature Field	°C	10.2	10.4	**10.4**	**10.2**	**10.3**	
pH Field	Std Units	7.2	7.2	**7.2**	**7.2**	**7.2**	
Dissolved Copper ICPMS	ug/L	0.3	0.5	**0.5**	**0.3**	**0.4**	
Copper ICPMS	ug/L	1.0	1.8	**1.8**	**1.0**	**1.4**	
Dissolved Lead ICPMS	ug/L	0.1	0.1	**0.1**	**0.1**	**0.1**	
Lead ICPMS	ug/L	0.8	1.2	**1.2**	**0.8**	**1.0**	
Dissolved Zinc ICPMS	ug/L	2.7	5.0	**5.0**	**2.7**	**3.9**	
Zinc ICPMS	ug/L	4.2	6.0	**6.0**	**4.2**	**5.1**	
E. coli - Colilert	MPN/100mL	20.0	59.0	**59.0**	**20.0**	**39.5**	(3)(4)
Ammonia Nitrogen Low Seal	mg/L	ND	ND	**N/A**	**ND**	**N/A**	(2)
Nitrate-Nitrite	mg/L	3.2	2.1	**3.2**	**2.1**	**2.7**	
Ortho Phosphate Seal	mg/L	ND	ND	**N/A**	**ND**	**N/A**	(2)
Total Dissolved Solids	mg/L	48.0	64.0	**64.0**	**48.0**	**56.0**	
Total Solids	mg/L	79.0	64.0	**79.0**	**64.0**	**71.5**	
Total Suspended Solids	mg/L	8.0	15.0	**15.0**	**8.0**	**11.5**	
Volatile Solids	mg/L	40.0	3.0	**40.0**	**3.0**	**21.5**	
Hardness	mg/L	34.0	31.0	**34.0**	**31.0**	**32.5**	
BOD	mg/L	0.1	ND	**0.1**	**ND**	**N/A**	(2)
Storm Event Rainfall	Inches	3.00	0.41	**3.0**	**0.4**	**N/A**	(5)

Notes:

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

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

(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 to sample collection.

Instream Monitoring - Oregon City 2012-13 Location - 507 7th St., Manhole # SD0726 Sample Site # OC015 Stream Name - Singer Creek (Downstream)							
		Results					
		Composite Rain Event	Composite Rain Event	Statistics			
Analysis	Units	12/19/12	4/19/13	High	Low	Mean	Notes
Total Phosphate Seal	mg/L	ND	0.05	**0.05**	**ND**	**N/A**	(2)
Dissolved Oxygen - Winkler	mg/L	Not Required	Not Required	**N/A**	**N/A**	**N/A**	(1)
Dissolved Oxygen - Field	mg/L	11.3	11.2	**11.3**	**11.2**	**11.3**	
Conductivity Field	uS	137.9	67.7	**137.9**	**67.7**	**102.8**	
Temperature Field	°C	9.5	10.6	**10.6**	**9.5**	**10.1**	
pH Field	Std Units	7.0	7.2	**7.2**	**7.0**	**7.1**	
Dissolved Copper ICPMS	ug/L	0.5	1.2	**1.2**	**0.5**	**0.9**	
Copper ICPMS	ug/L	0.9	2.4	**2.4**	**0.9**	**1.7**	
Dissolved Lead ICPMS	ug/L	0.1	0.2	**0.2**	**0.1**	**0.2**	
Lead ICPMS	ug/L	0.8	1.7	**1.7**	**0.8**	**1.2**	
Dissolved Zinc ICPMS	ug/L	8.6	8.0	**8.6**	**8.0**	**8.3**	
Zinc ICPMS	ug/L	9.8	12.0	**12.0**	**9.8**	**10.9**	
E. coli - Colilert	MPN/100mL	440	>2420	**>2420**	**440**	**N/A**	(3)(4)
Ammonia Nitrogen Low Seal	mg/L	ND	ND	**N/A**	**ND**	**N/A**	(2)
Nitrate-Nitrite	mg/L	2.9	1.4	**2.9**	**1.4**	**2.2**	
Ortho Phosphate Seal	mg/L	ND	ND	**N/A**	**ND**	**N/A**	(2)
Total Dissolved Solids	mg/L	57.0	62.0	**62.0**	**57.0**	**59.5**	
Total Solids	mg/L	117.0	77.0	**117.0**	**77.0**	**97.0**	
Total Suspended Solids	mg/L	4.0	14.0	**14.0**	**4.0**	**9.0**	
Volatile Solids	mg/L	62.0	37.0	**62.0**	**37.0**	**49.5**	
Hardness	mg/L	40.0	36.0	**40.0**	**36.0**	**38.0**	
BOD	mg/L	3.1	ND	**3.1**	**ND**	**N/A**	(2)
Storm Event Rainfall	Inches	3.00	0.41	**3.0**	**0.4**	**N/A**	(5)

Notes:

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

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

(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 to sample collection.

Mercury Monitoring - Oregon City 2012-13
Location - Clackamette Cove
Sample Site # OC007
Stream Name - Clackamas River
Land Use - Industrial

			Results					
Analysis	Units	MDL	Grab Rain Event 3/20/13	Qualifier	Duplicate Rain Event 3/20/13	Qualifier	Blank Sample	Qualifier
Mercury Total	ng/L	0.16	4.61		4.39		0.15	U
Mercury Dissolved	ng/L	0.15	1.50		1.43			
Methyl Mercury Total	ng/L	0.02	0.07		0.07			
Methyl Mercury Dissolved	ng/L	0.02	0.020	U	0.022	B		
Total Suspended Solids	mg/L	1	22.0	H	21.4	H	0.30	H, U

Qualifier Notes

B Detected by the instrument, the result is > the Maximum Detection Limit (MDL) but < or = the MRL. Result is reported and considered an estimate.

H Holding time and/or preservation requirements not met. Result is estimated.

U Result is < or = to the MDL or client requested reporting limit (CRRL). Result is reported as the MDL or CRRL.

Rainfall for sampling effort was 0.55” as measured from the beginning of the rain event to the collection of the last sample.

Appendix C

Public Education and Outreach Information

Public Education and Awareness Activities
July 1, 2012 – June 30, 2013

Summary of Activities

Date	Event	Location	Contact Total	Program/Subject
8/14/12	Trail News – Autumn	N/A	All OC residents; available on website	Keep leaves out of streets, catch basins clear
8/24/12	Down the River Clean-up	Clackamas River	All residents and site users	Event added to "Latest News" on OC website & Facebook
9/9/12	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
9/30/12	Message on Utility Bill	N/A	Utility customers	Soap up your car, not your river
11-12/12	Information on Oregon Environmental Council website	N/A	Viewers of OEC website	Love Your River campaign-OC provided their contact information for those interested in catch basin marking
11/13/12	Trail News – Winter	N/A	All OC residents; available on website	Partners for Watershed Health Community Covenant; Inclement weather road care (de-icing vs. sand)
3/8/13	Trail News – Spring	N/A	All OC residents; available on website	Lawn Care Fertilizers: Organic or Chemical; Help Improve water quality in OC (Temp TMDL); 27,000 Gallon Question (rain garden promotion by Clackamas County SWCD)
3/13/13	Natural Resources Committee Meeting Presentation by B&C	Oregon City City Hall	NRC members; available on city website	Recap of MS4 NPDES permit; new requirements of current permit; summary of additional resources needed
4/9/13	8th Annual Celebrate Water Event	Clackamas Community College	451*	5 staff members provided water quality-related displays
5/13/13	Trail News – Summer	N/A	All OC residents; available on website	Only Rain Down the Storm Drain! (IDDE)
5/22/13	Annual Water Quality Report mailing	N/A	15,658**	Water Quality information
5/31 – 6/14/13	Stormwater Banner display in City Hall Lobby	Oregon City City Hall	Visitors and staff at City Hall	Display of stormwater public education banner stand; latest water quality report and ACWA "Protecting Your Watershed" brochures available
6/11/13	City Commission Work Session Presentation by B&C	Oregon City City Hall	Commission & staff present; available on city website	Recap of MS4 NPDES permit; new requirements in current permit; summary of additional resources needed
2012-13	KOIN Public Service Announcements	N/A	Metro area	Television & web information about water quality

2012-13	Regional Coalition for Clean Rivers and Streams	N/A	Metro area	Television & web information about water quality
2012-13	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
2012-13	Oregon Environmental Council's "Love Your River" campaign	N/A	Viewers of OEC website	As a member of ACWA, Oregon City supported this campaign that brought attention to water quality issues

* 385 students (4th & 5th graders) + 11 teachers + 55 adult chaperones
** All Oregon City residents + residents within the UGB

Specific Activity Information

Trail News Articles

Autumn 2012:
Keep Catch Basins 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 2012-13:
Partners for Watershed Health

- Oregon City joined eight partners dedicated to the health and sustainability of our local watersheds.
- The redevelopment of the Environmental Learning Center at Clackamas Community College is first focus.

OC Inclement Weather Operations

- Magnesium Chloride (liquid de-icer) is used as another tool during storm events.
- Less sand equals less clean-up, less debris in catch basins.
- Public safety and environmental stewardship are both served by using de-icer.

Spring 2013:
Lawn Care Fertilizers – Organic or Chemical?

- Table presenting differences between the two types of fertilizers
- Pick organic for the health of your lawn, family, and environment

Help Us Improve Water Quality in Oregon City

- 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

The 27,000 Gallon Question (article submitted by the Clackamas County Soil and Water Conservation District)

- 47 inches of rainfall each year, onto a 1,000 square foot roof can generate 27,000 gallons of water
- Pollutants are picked up as the runoff flows into nearby streams
- Build a rain garden to treat the stormwater on-site
- Offer of a free rain garden consultation

Summer 2013:

Only Rain Down the Storm Drain!

- Explanation about Element #1 of OC SWMP – IDDE = only rain down the storm drain
- Link provided to SWMP on OC website
- Report illegal dumping of anything down storm drains
- Link to Metro for proper waste disposal information

Special Events

The 10th Annual Down the (Clackamas) River Clean Up – 9/9/12

This event was promoted on the city website and facebook page. Oregon City was unable to participate, but did provide monetary support to event organizers, We Love Clean Rivers, for six raft seats.

Presentation to Oregon City's Natural Resources Committee – 3/3/13

An associate from Brown and Caldwell, our stormwater consultants, provided information to Natural Resources Committee members using a power point presentation. Oregon City's MS4 permit requirements were outlined, highlighting the new requirements of our latest permit. A summary of additional resources needed for compliance was also provided. The presentation can be found here:
http://www.orcity.org/sites/default/files/oc_3rd_commissioners_meeting_w-o_3_13_2013.pdf

8th Annual Celebrate Water Event – 4/9/13

Five OCPW staff members participated in this annual educational event, held at Clackamas Community College. 385 4th and 5th grade students, along with 11 teachers and 55 adult chaperones, had the opportunity to learn about water conservation and water quality protection, among other water-related topics. Oregon City's booth featured a display about OCPW activities related to water quality protection, a stormwater banner highlighting the city's major drainage basins and ways to protect and improve water quality, and a drinking water/wastewater/stormwater interactive model.

Figure 1: Celebrate Water Event, Interactive Model Display

Presentation to the Oregon City Commission – 6/11/13

An associate from Brown and Caldwell, our stormwater consultants, provided information to Oregon City Commission members, using a power point presentation, during a commission work session. Oregon City's MS4 permit requirements

were outlined, highlighting the new requirements of our latest permit. A summary of additional resources needed for compliance was also provided.

Miscellaneous Items

Message on Utility Bill (mailed 9/30/12)
Soap up your car, not your river! When you wash your car in your driveway or on the street, the dirty water runs into a storm drain and into a local river or stream. What's better? Wash your car on the grass or use a commercial car wash. Visit www.oeconline.org for more tips.

Annual Water Quality Report – 5/22/13

The 2013 report included the following topics specific to stormwater:

- Compliance with the Clean Water Act – a short history of the Clean Water Act and and explanation about Oregon City's MS4 permit and SWMP.
- Pollution Prevention – suggested actions for residents to help prevent pollution of stormwater.
- Contact information for participation in the citywide catch basin marking and stenciling program.
- Photos with the following captions:
    - Detention pond and sign that says "Protecting Your Neighborhood Streams" – "Only rain down the storm drain! Call 503.657.8241 to report illegal dumping into catch basins or detention ponds."
    - Street sweeper and operator with thumbs-up – "Street sweeping reduces the amount of pollutants and sediments that enter our streams and rivers. Please trim trees to allow at least a ten foot clearance."

A total of 15,658 copies of the water quality report were mailed to Oregon City residents, including those in the Urban Growth Boundary, the third week of May 2013.

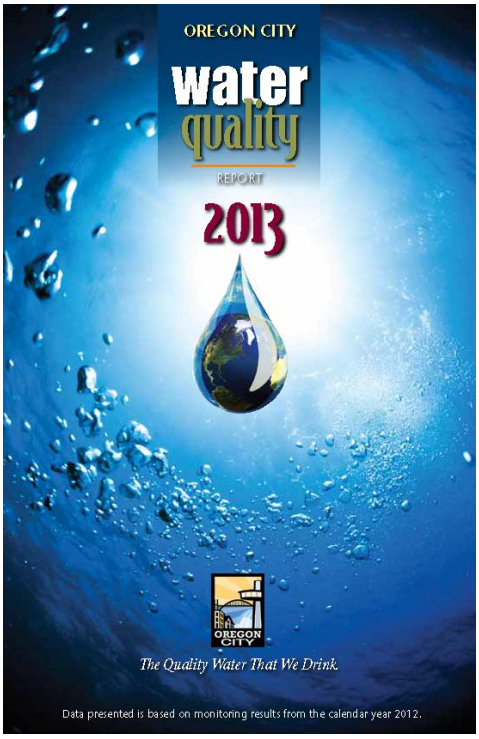

Figure 2: Cover of Annual Water Quality Report

Stormwater Banner Display in City Hall Lobby – 5/31/13 – 6/14/13

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

- Never dump anything down storm drains or into streams
- Sweep driveways and patios clean instead of hosing them down
- Repair your 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 more information about Oregon City's SWMP. The ACWA brochure, "Protecting Your Watershed", and Oregon City's latest Water Quality Report were also available.

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

"Do the Right Thing" Campaign on KOIN Channel 6 Television and Website

Oregon City continues to partner with other agencies in the Portland metro area by 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

Oregon Environmental Council "Love Your River" Campaign

As a member of ACWA, Oregon City financially supported this web-based campaign to raise awareness about water quality and pollution prevention. Activities included the "Love Your River Challenge" that encouraged participants to make positive behavioral changes. The focus of these challenges included tree planting, green cleaning, toxic-free gardening, trash and pet waste pick up, car washing, only rain in the storm drain, and household toxic trash.

During the November/December 2012 challenge, Oregon City provided contact information for their promotion of storm drain marking or stenciling to discourage illegal dumping.

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, visit the Coalition website at http://cleanriversandstreams.org/

Appendix D

Willamette River
TMDL Implementation Plan
Annual Report

Brown AND Caldwell

Technical Memorandum

6500 SW Macadam Avenue, Suite 200
Portland, Oregon 97239
Tel: 503-244-7005
Fax: 503-244-9095

Prepared for: City of Oregon City

Project Title: Oregon City TMDL Implementation Plan Annual Report

Project No: 141631

Technical Memorandum

Subject: Willamette River TMDL Implementation Progress Report, Year 4

Date: September 25, 2013

To: Martin Montalvo, Oregon City Public Works Operations Manager

From: Angela Wieland, P.E., Brown and Caldwell

Copy to: Doug Drake, Lower Willamette Basin Coordinator
Oregon Department of Environmental Quality

Introduction

The City of Oregon City (City) submitted its 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. The 2012–2013 reporting year (July 2012–June 2013) is the fourth year of implementation of the TMDL Plan. This progress report provides a summary of the City's efforts during implementation year four.

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 2012–2013 MS4 NPDES Annual Report, submitted to DEQ on November 1, 2013.

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 $8,000 per year for the first five years of TMDL implementation towards efforts to enhance riparian vegetation. Table 1 lists how this commitment has been met.

On April 10, 2013, DEQ invited designated management agencies (DMAs) with TMDL obligations to a TMDL implementation workshop. The intent of the workshop was to: 1) provide background information and summarize TMDL implementation strategies conducted by select agencies, and 2) discuss the need for DEQ to conduct a 5-year look back on TMDL implementation this year (2013). At the time, the City of Oregon City,

along with other Clackamas County Phase I co-permittees, had only completed three years of TMDL implementation. A follow up meeting with DEQ was held on May 22, 2013 to discuss TMDL implementation schedules specific for the Clackamas County Phase I co-permittees. At the request of DEQ, the City of Oregon City submitted an abbreviated 3-year TMDL Review Report to DEQ in July 2013. The submitted TMDL Review Report summarized accomplishments to date and outlined limitations and difficulties with ongoing implementation of the City's TMDL Plan. This annual report expands on and provides supporting information related to content needed for the 3-year TMDL Review Report.

Table 1. TMDL Implementation Plan Progress Report 2012–2013
Summary of Strategies to Address Temperature (as described in the TMDL Plan)

Best Management Practice or Activity	Commitment/Implementation Strategy	Measurable Goal	Implementation Tracking/Performance Measure	2012–2013 Activities	Responsible Division
Public Education	Attend regularly scheduled coordination meetings with the Greater Oregon City Watershed Council.	Attend a minimum of one meeting annually during implementation period.	Track meetings attended.	Oregon City's Water Quality Coordinator attended 2 meetings during the 2012-2013 reporting period. The mayor of Oregon City is currently the vice-chair of the Greater Oregon City Watershed Council (GOCWC) and regularly attends meetings. Oregon City's Public Works Stormwater Division Supervisor attended one meeting on May 14, 2013 with representatives from GOCWC, Metro, and Oregon City Parks Department to discuss possible storm retrofit project for Scatter Canyon (a tributary to Newell Creek).	Public Works
	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.	The following temperature-related educational materials were disseminated by Oregon City Public Works: 1. 10th Annual Down the (Clackamas) River Clean Up – website and facebook promotion encouraging participation 2. Spring 2013 Oregon City Trail News - article about lowering stormwater temperature and riparian planting See Appendix C of the City's 2012–2013 MS4 NPDES Annual Report for specific details.	Public Works
Implement Stormwater Design Standards	Implement provisions of Chapter 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 low impact development (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.	The City continues to explore options related to updated stormwater design standards in order to address language of the recently reissued MS4 NPDES permit. Options include adoption of a local design manual with LID provisions already reflected or to update the City's own LID design standards for consistency with the permit language. Finalization is expected in conjunction with compliance deadlines established in the permit.	Public Works
Preservation of Existing Shade	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 13. • Adopt Title 13 provisions by either amending Chapter 17.49 of the development code or drafting a new ordinance during the implementation period.	Track any enforcement actions taken to protect existing shade. Track modifications to the City's development code to address Title 13.	Code Enforcement Action: There were no code enforcement actions during this reporting period. Required by the Planning Division: No development applications within the NROD were processed that included additional tree plantings and/or improvement of the existing condition of the water resource vegetative corridor. Four development applications were processed that included exemptions from Section 17.49 based on ground truthing / site specific analysis. No modifications to Oregon City Municipal Code Section 17.49 were conducted during the 2012-2013 reporting period.	Planning and Public Works
Planting Activities for Identified Shade Opportunity Areas	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.	• Track ground truthing activities to refine priority opportunity areas. • Track planting activities for public, high priority areas. • Track planting activities for other identified shade opportunity areas. • Track any revegetation and maintenance activities required.	Planting Activities for Public High Priority Areas: No planting in high priority areas during this reporting period. Other Planting Activities on Public Areas (not in identified shade opportunity areas): 1. Various City Parks/Trails –planted 99 trees Re-vegetation and Maintenance Activities: 1. John Adams Park (Abernethy Creek) - continued coordination with SOLVE & GOCWC to remove invasives around native trees and shrubs (annual event). 2. Stormwater Quality Facilities (city wide) – planted 78 trees, 54 plants and shrubs 3. Singer Creek Falls – planted 10 trees and 207 shrubs; removed invasives	Planning and Public Works