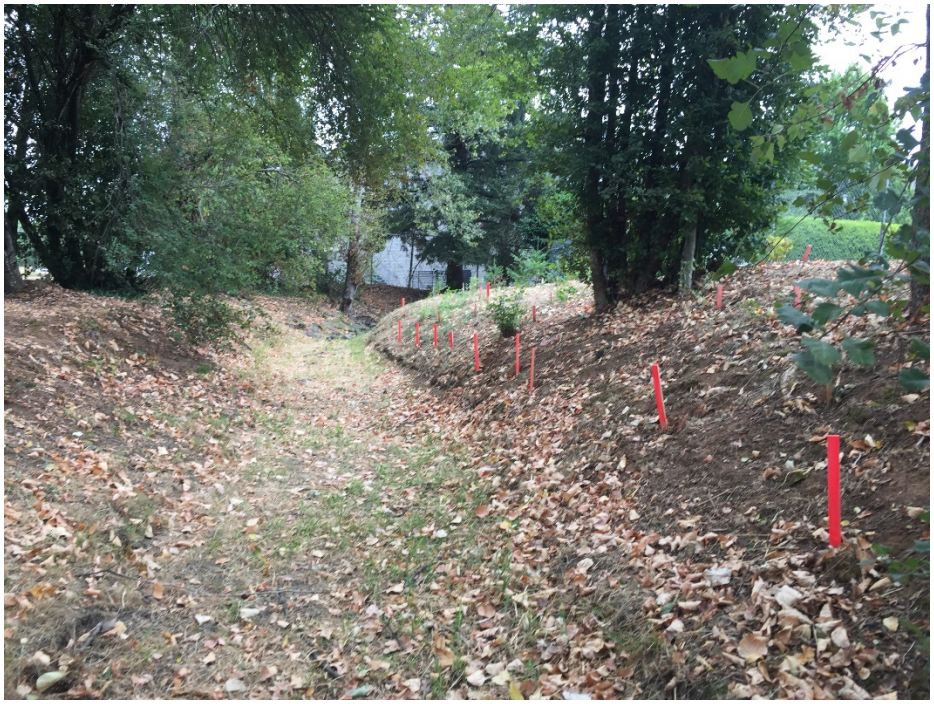
City of Oregon City, Oregon

National Pollutant Discharge Elimination System Municipal Separate Storm Sewer System Discharge Permit

2017–2018 Annual Report

Prepared for the
Oregon Department of Environmental Quality

November 1, 2018



Assisted By:

Brown AND Caldwell

CITY OF OREGON CITY

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
MUNICIPAL STORMWATER SYSTEM ANNUAL REPORT

JULY 1, 2017 – JUNE 30, 2018

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

10-23-18

John M. Lewis, PE
Public Works Director
City of Oregon City

Date

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1.0 Introduction

1.1 NPDES MS4 Permit Background and Permit Renewal

The Oregon Department of Environmental Quality (DEQ) regulates stormwater runoff from the City of Oregon City (City) through the National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) 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 Water Services District, and Clackamas County. Each co-permittee is a relatively small community, most having populations under 30,000 with some (Johnson City, Rivergrove) having populations significantly smaller.

The City's effective NPDES MS4 permit was issued March 16, 2012, after a multi-year negotiation process with DEQ and an additional year-long delay related to an appeal. The 2012 permit was not appealed, and thus maintains an effective date of March 16, 2012. The permit expired on March 1, 2017, and the City submitted its Permit Renewal Application on February 27, 2017. The Permit Renewal Application required an evaluation of proposed program and Stormwater Management Plan (SWMP) modifications, development of TMDL benchmarks, mapping, a maximum extent practicable (MEP) evaluation, updates to the City's environmental monitoring program, and an evaluation of proposed service area expansions and associated pollutant load estimates. The City's permit is currently in administrative extension, and the renewal date is unknown at this time.

Each co-permittee is required to submit an annual report, summarizing accomplishments and implementation of their individual SWMPs. This annual report documents stormwater management activities from July 1, 2017 to June 30, 2018 in conjunction with the City's 2012 NPDES MS4 permit. Although an updated SWMP was prepared and submitted as part of the Permit Renewal Application, the City's 2012 SWMP remains the effective NPDES MS4 program document for purposes of this annual report. During this administrative extension period, the City is continuing to implement its stormwater program in accordance with the 2012 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 NPDES MS4 permit.

Table 1: Summary of the NPDES MS4 Annual Report Requirements

	Annual reporting requirement	Location in document
a)	Status of implementing SWMP elements, including progress in meeting measurable goals.	Appendix A
b)	Status of any public education effectiveness evaluation conducted during the reporting year, and a summary of how results were used in adaptive management.	Appendix A
c)	Summary of the adaptive management process implementation during the reporting year including new BMPs.	Section 2.0
d)	Proposed changes to SWMP program elements to reduce TMDL pollutants to the MEP.	Section 2.0
e)	A summary of total stormwater program expenditures and funding sources over the reporting fiscal year, and those anticipated in the next fiscal year.	Section 3.0
f)	A summary of monitoring program results, including monitoring data that is accumulated throughout the reporting year.	Section 4.0 & Appendix B
g)	Any proposed modifications to the monitoring plan necessary to ensure that adequate data and information are collected to conduct stormwater program assessments.	Section 4.0
h)	A summary describing the number and nature of enforcement actions, inspections, and public education programs.[a]	Section 6.0 and Appendix A
i)	An overview, as related to MS4 discharges, describing land use changes, UGB expansions, land annexations, and new development activities. The number of new post-construction permits issued and estimate of new and replaced impervious surface must also be included.	Section 5.0
j)	A summary related to MS4 discharges describing concept planning or other activities in preparation of UGB expansions or land annexations.	Section 5.0 and Appendix A
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.

Per Section 5.5 of the City's Willamette Basin TMDL Implementation Plan, an annual progress report is also to be submitted to DEQ. Typically, this annual reporting requirement is addressed in combination with the annual report prepared for the NPDES MS4 permit. However, in 2018, DEQ requested the City's (and other co-permittees) participation in the Willamette Basin TMDL 5-Year Review survey, which takes the place of the City's TMDL annual reporting requirement for 2017-2018. Although 2017-2018 is the fourth year implementing the City's 2014 TMDL Implementation Plan, the City has completed the 5-Year Review survey and is not submitting a TMDL annual report.

2.0 Adaptive Management Process Implementation

2.1 Adaptive Management Program

In accordance with the issuance of the City's NPDES MS4 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 submitted adaptive management approach is consistent 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 measurable 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 include consideration of resource availability, budget/ funding, and overall need.

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

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

Additionally, at the end of the permit term, technical investigations and studies completed over the permit term are reviewed and used to help target and identify specific issues that need to be addressed to maintain waterbody health and help formulate BMP activities (measurable goals and tracking measures). During the 2012-2017 permit term, such technical studies included a water quality trends analysis, pollutant load reduction evaluation, hydromodification assessment, and a retrofit assessment.

During the 2016-2017 permit renewal application process, the City, with the assistance of a consultant, reviewed the adaptive management evaluation factors and the studies listed above. This information informed the City's MEP evaluation and proposed SWMP changes submitted as part of the Permit Renewal Application. Proposed program changes were categorized as an organizational change, a removed activity (due to completion), an implementation change (due to identified efficiencies and adjustments to internal processes and procedures), and a change due to consolidation of activities. An updated (2017) SWMP was also included, reflecting refinement of BMPs, measurable goals, and tracking measures, for use in future permit negotiations and reissuance.

2.2 SWMP Updates for the 2017–2018 Reporting Year

The 2017-2018 reporting year is the sixth full year in which the City's effective 2012 SWMP has been implemented. For the 2017-2018 permit year, no updates were made to the 2012 SWMP or BMP measurable goals and tracking measures, due to regulatory limitations preventing permit modifications while a permit is in administrative extension. It should be noted that a summary of proposed SWMP modifications was submitted with Oregon City's Permit Renewal Application on February 27, 2017, but those modifications have not been implemented pending reissuance of the permit.

2.3 Monitoring Plan Updates for the 2017-2018 Reporting Year

In June 2016, the City, as a participant in the Comprehensive Clackamas County NPDES MS4 Stormwater Monitoring Plan (CCCSMP), proposed modifications to the CCCSMP due to completion of monitoring obligations under the 2012 NPDES MS4 permit and an upcoming change in laboratory services. Detail related to specific modifications is described in Section 4.1.

Per Schedule B.2.e of the permit and 7.2 of the CCCSMP, in December 2016 the City submitted to DEQ a 30-day notice of the proposed CCCSMP modification for the Department's review and approval. As the City did not receive a response from DEQ within 30 days, the proposed modifications were deemed approved without written approval. The 2017 CCCSMP is the effective monitoring plan for the city of Oregon City.

The 2017-2018 reporting year is the first full year implementing the revised 2017 CCCSMP.

3.0 Summary of Program Expenditures

A summary of the City of Oregon City's revenue and expenditures for the 2017–2018 fiscal year and a projection of the City's revenue and expenditures for the 2018–2019 fiscal year are provided in Table 2, below. Projection of expenditures is considered draft at this time.

Table 2: City of Oregon City Revenue and Expenditures for 521 Stormwater Division

	Fiscal Year			
	2016/17 Audited Actual	**2017/18 Unaudited Actual**	**2018/19 Current Budget**	**2019/20 Projected Budget**
Beginning Fund Balance	$1,047,499	$1,352,381	$817,612	$463,804
Stormwater Fee Rates (per EDU per month)	**Rate = $9.35/$9.65 3% rate increase**	**Rate = $9.65/$9.94 3% rate increase**	**Rate = $9.94/$10.24 3% rate increase**	**Rate = $10.24/$10.54 3% rate increase**
Revenues				
Charges for Service	2,643,764	2,716,891	2,560,200	2,882,300
Intergovernmental	31,822	-	-	-
Interest Income	7,080	13,353	3,000	3,000
Miscellaneous Income	2,284	2,919	13,312	5,000
Erosion Control Permits	42,204	41,482	51,500	51,500
Project Management	25,055	29,266	26,409	26,409
TOTAL Revenues	2,752,209	2,803,911	2,654,421	2,968,209
Expenditures				
Personnel Services	1,095,615	1,119,194	1,237,977	1,251,900
Materials & Services	601,039	585,929	790,252	806,100
Capital Outlay Totals	166,723	558,622	575,000	575,000
Total Transfers	583,950	651,484	405,000	405,000
TOTAL Expenditures	2,447,327	2,915,228	3,008,229	3,038,000
Change in Fund Balance	304,882	(111,318)	(353,808)	(69,791)
Ending Fund Balance	**$ 1,352,381**	**$ 1,241,063**	**$ 463,804**	**$ 394,013**
Capital Outlay - Details				
Operations New Equip. >$5,000	$ 7,559	$ 4,440	$ -	$ -
Capital Construction	159,163	554,182	575,000	575,000
	$ 166,723	**$ 558,622**	**$ 575,000**	**$ 575,000**
Transfers - Details				
Transfer to Building Reserve	$ 300,000	$ 300,000	$ 300,000	$ 300,000
Transfer to Equipment Replacement	105,000	105,000	105,000	105,000
Interdept. Transfers	178,950	246,484	-	-
	$ 583,950	**$ 651,484**	**$ 405,000**	**$ 405,000**

4.0 Monitoring Data

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

Per the 2004 NPDES MS4 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 CCCSMP 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.

In 2016, the City, in collaboration with other co-permittees, participated in a series of workshops to propose modifications to the CCCSMP due to completion of monitoring obligations under the 2012 NPDES MS4 permit. Modifications reflected completion of some select, one-time monitoring obligations under the 2012 permit and refinement of monitoring locations, parameters, and activities based on information collected over the permit term. Key modifications included the following:

- Inclusion of Oak Lodge Water Services District and the City of Wilsonville instream, stormwater, and biologic monitoring activities
- Removal of mercury and pesticide monitoring activities, as those obligations have been met
- Removal of biochemical oxygen demand (BOD) and total volatile solids (for co-permittees outside of the Tualatin basin) from the analyte list, because of the limited usefulness of the collected data to date
- Adjustment of analytical methods and reporting limits based on consistency with Code of Federal Regulations (CFR) Title 40 and current laboratory capabilities
- Adjustment of monitoring locations to ensure geographic distribution of data and to continue to inform trends analyses

- Inclusion of routine instream sampling, in addition to targeted dry weather/wet weather instream sampling activities
- Removal of Clackamas County Service District #1's (CCSD #1's) geomorphic monitoring activities from the Plan, as physical conditions are evaluated during biologic (macroinvertebrate) monitoring activities
- Minor editorial updates to improve clarity and consistency with current practices

Per Schedule B.2.e of the permit and 7.2 of the CCCSMP, the City and other CCCSMP participants submitted to DEQ a 30-day notice of the proposed CCCSMP modifications for the Department's review and approval on December 16, 2016. As no response was received from DEQ within 30 days, the proposed modifications were deemed approved without written approval. Implementation of the 2017 CCCSMP began July 1, 2017. For this reporting year (2017–2018), the 2017 CCCSMP is the effective monitoring plan for the City of Oregon City.

As described in the CCCSMP, the NPDES MS4 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 2017–2018 reporting year included dry weather field screening, as described in the City's SWMP under the BMP 1-2: "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 instream 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 instream and outfall sample collection efforts for this reporting year are provided in Appendix B.

4.2 CCCSMP Updates and Modifications for the 2017–2018 Reporting Year

The 2017-2018 reporting year is the first full year implementing the revised 2017 CCCSMP. There have been no updates or modifications to the 2017 CCCSMP.

4.3 Summary of Monitoring Data

In accordance with the 2017 CCCSMP, Oregon City is required to conduct instream and outfall monitoring. Routine instream monitoring is required at six locations reflecting four tributaries to the Willamette River. Outfall monitoring is required at two outfall locations that discharge to the Clackamas River. Time-weighted composite (during storm events) and single grab samples are taken in accordance with the frequencies outlined in Table 3 below.

During the 2017 – 2018 monitoring year, the City of Oregon City collected all required instream samples (four events at six sites) and outfall samples (three events at two sites).

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

Table 3: 2017–2018 Oregon City Monitoring Locations and Required Frequencies

Site #	Location	Sample Type	Required Frequency	Routine Sampling
In-Stream Monitoring				
OC010is	Abernethy Creek at 17082 Holly Ln (Holly Ln Bridge)	Grab & Composite	4/year	Dry Weather (2/year) and Wet Weather (2/year)
OC011is	Abernethy Creek at 316 17th St (17th at railroad trestle)	Grab & Composite	4/year	Dry Weather (2/year) and Wet Weather (2/year)
OC012is	Coffee Creek behind 415 S McLoughlin (outfall at Willamette)	Grab & Composite	4/year	Dry Weather (2/year) and Wet Weather (2/year)
OC013is	Park Place Creek behind 13530 Redland Rd	Grab & Composite	4/year	Dry Weather (2/year) and Wet Weather (2/year)
OC014is	Singer Creek at the north end of Singer Creek Park (Linn Ave)	Grab & Composite	4/year	Dry Weather (2/year) and Wet Weather (2/year)
OC015is	Singer Creek 502 7th St (MH - 37138 located on Center St)	Grab & Composite	4/year	Dry Weather (2/year) and Wet Weather (2/year)
Outfall Monitoring				
OC006ofm	Clackamas River at O.C. Shopping Center	Composite	3/year	Storm Event
OC007ofm	Clackamas River at Clackamette Cove	Composite	3/year	Storm Event

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

5.1 Summary of Land-Use Changes and UGB Expansions

The following land use/ zoning changes and/or annexations were approved by the City between July 1, 2017 and June 30, 2018:

- Zone Changes:
  - ZC 17-02: 77-Lot Subdivision rezoned from R-10 to R-8 Single Family Residential
  - ZC 17-03: 28-Lot Subdivision rezoned from FU-10 to R-6 Single Family Residential
  - ZC 17-05: 92 acres from FU-10 to R-10 Single Family Residential
  - ZC 17-06: 12-Lot Subdivision rezoned from FU-10 to R-6 Single Family Residential
- Annexations:
  - AN 17-01: 0.95 Acres, 18851 Rose Road
  - AN 17-03: 6.33 Acres, Leland Road
  - AN 17-04: 92 Acres, a portion of the Park Place Concept Plan Area
  - AN 17-05: 2.90 Acres, Leland Road

5.2 Summary of Development Activities within the UGB

During the reporting year 2017 – 2018, there were 24 development applications reviewed and approved for compliance with water quality/water quantity standards. These included detailed development plans (2), site plan and design review (11), subdivisions (3), a minor partition (1), geologic hazard development (5), and concept plans (2). Estimated total new and replaced impervious surface area related to development projects that commenced during the reporting year equals 21.4 acres.

There were five public improvement projects (CIPs), including water quality and/or flow control projects, for this reporting period. One was contracted out and four 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 nine stormwater staff meetings conducted during the 2017 – 2018 reporting period. Dates, topics, and attendees are summarized below in Table 4.

Table 4: Staff Meetings and Training

Date/Time	Attendees	BMPs /Topics	Items Discussed	Next Steps/Program Adjustments
8/3/17 8:00-8:30	Gail Johnson, Brian Monnin	NPDES MS4 Stormwater Monitoring Plan	Schedule of stormwater monitoring	Changed sampling to reflect pre-determined sampling days for wet and dry weather sampling.
10/12/17 13:30-15:45	Jonathan Archibald, John Lewis, Aleta Froman- Goodrich, Gail Johnson, , from BC Alissa Maxwell, Ryan Retzlaff	Stormwater Master Plan CIP Strategy Workshop	Discuss schedule, project update, matrix and maps, hydrologic and hydraulic modeling, aging infrastructure, water quality retrofit evaluation	City staff to review potential project matrix and begin initial prioritization. BC to update model with discussion results.
1/10/18 14:15-14:45	Gail Johnson, Brian Monnin	BMP 8-4	Private Water Quality Facilities (PWQF). Forms used, initial letter to owner, contact information.	Created specific forms for each PWQF to make easier for owners to submit forms. Revised language and materials for initial letters.
1/15/18 14:30-15:45	Martin Montalvo, Gail Johnson, Pete Walter, Laura Terway, Nikkie West, Susie Peterson	TMDL	Introduction to Backyard Habitat Certification Program to be extended to Oregon City	Discuss ways for Oregon City and Backyard Habitat to partner in the future and how to tie in TMDL shade opportunity to private priority locations.
1/22/18	Representatives from the Clackamas Co-permittees	Clackamas Co-permittees meeting. NPDES MS4 Permit	Willamette Basin Mercury TMDL, Phase I permit implementation, monitoring plan implementation, education and outreach,	Discuss and review implementation plans. Look ahead at Phase I implementation impacts and future TMDL monitoring.
2/26/18 13:00-13:30	Gail Johnson, Brian Monnin, Lana Bespaly	BMP 8-4	Private Water Quality Facility, Maintenance Covenant Agreement	Discussed with owner the types of private water quality facilities on their property, reporting requirements, site inspection.
6/26/18	Representatives from the Clackamas Co-permittees	Clackamas Co-permittees meeting	TMDL 5 Year Review, Monitoring studies follow up, Coalition for Clean Rivers and Streams	Discussion on whether entities would be submitting their TMDL 5 year review early.
4/26/18 8:00-11:30	Brian Monnin, James Peck, Mallory Ott	Stormwater Master Plan	Hydromodification Sites	Monitored hydromodification sites.
5/10/18 14:00-15:00	Martin Montalvo, Lisa Oreskovich, Eric Hand, Brian Monnin	Stormwater Management Facilities Operation and Maintenance	Stormdrain Cleaning Assistance Program (SCAP)	Staff will create mailing list based on private catch basins, create a web form, and join the SCAP program.

Appendix A

Oregon City SWMP Implementation Status

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

BMP or activity	Addresses bacteria?	Addresses mercury?	Responsible department	Measurable goals (2012 SWMP)	Tracking measures (2012 SWMP)	Annual report information: tracking measure status, Permit year 2017 – 2018	Additional detail related to activities conducted
Element 1. Illicit Discharge Detection and Elimination							
BMP 1-1: Implement the Illicit Discharge Elimination Program	●	●	Oregon City Public Works Department (OCPW)	• Document and implement updated Standard Operating Procedures (SOPs) for the Illicit Discharge Detection and Elimination (IDDE) Program by November 1, 2012. • Conduct actions to remove identified illicit discharges in conjunction with timeframes outlined in OC's NPDES MS4 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 IDDE SOP was updated on 7/29/16 (see BMP 1-2, item 5). 2) No illicit discharge investigations were deemed necessary as a result of annual dry weather field screening conducted during this reporting period.	1) OC developed an IDDE SOP (effective date: November 1, 2012), in conjunction with other Clackamas County co-permittees. The SOP includes guidelines for identification and enforcement of illicit discharges.
BMP 1-2: Conduct Annual Dry Weather Field Screening	○	○	OCPW		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) Nine outfalls were inspected as part of annual dry weather field screening activities. 2) Outfalls were inspected on 8/6/17. Flow was observed at 2 of the outfalls; discharges were characterized as permissible. Site #2 427 Main Street had a minimal trickle, not enough flow to be sampled, and no odor. Site #7 Berry Hill had moderate flow observed but showed no signs of illicit discharge. Water as odorless, clear, no visible turbidity or floatables. Site #4 had a white substance in pool substrate next to outfall with no flow. Stream was dry next to outfall. Investigated upstream. Observed evidence of white substance. Unable to track origination of white substance. 3) N/A 4) N/A 5) No changes were made during this reporting year.	1) Dry weather screening was conducted at the following outfalls: 1. 99E and 6th Street (manhole 33556): 12-inch 2. 427 Main Street (manhole 33558): 15-inch 3. Abernethy Road at Tri-Lett: 15-inch 4. Clackamas River Drive: 48-inch 5. Metro Wetlands Pond: 48-inch 6. Falcon Drive: 30-inch 7. Berry Hill: 24-inch 8. Beavercreek at Hwy 213: 24-inch 9. Behind 1651 Beavercreek Road: 48-inch 2) Site #4 had white substance on pool substrate but no flow. Investigated upstream outfall site and water was clear, although there was evidence of a white substance on pool substrate and looked like it was dissipating. Stream was dry next to outfall 3) Same as #2.
BMP 1-3: Implement the Spill Response Program	○	○	Clackamas Fire District #1 (Hazardous Materials Team) and OCPW	• Respond to reports of hazardous and non-hazardous spills and follow the OC *Spill Response Plan*. • Report all hazardous and non-hazardous spills to DEQ as necessary.	1) Indicate the number of spills reported to OCPW and DEQ. 2) Track responses to reported spills. 3) Indicate sources, causes, and types of discharges resulting from spill activities. 4) Track any changes to the OC *Spill Response Plan*.	1) Four spills were reported to OCPW during the 2017-2018 reporting period. 2) Responses were appropriate for each spill. See list below. 3) One spill required DEQ reporting. Three spills were considered minor (non-reported) spills resulting primarily from vehicle accidents, mechanical failure, or materials spilled on roadway and had no discharges. • 1417 Madison St. – Reported to DEQ. Vehicular accident involving a passenger vehicle and a liquid asphalt tack cart. Approximately 50 gallons of liquid asphalt leaked onto the roadway surface and shoulder. OCPW responded and the material was cleaned up and disposed of in accordance with the OCPW Spill Response Plan. • 18th & Main St. – Picked up and disposed of large tote leaking roofing tar. Approximately 3 gallons of tar leaked from tote. OCPW responded and the material was cleaned up and disposed of in accordance with the OCPW Spill Response Plan. • Two spills regarding fuel and oil sheen on roadway- cleaning with absorbent material, sweeping, and proper disposal. These were minor and none required DEQ reporting. 4) There were no changes to the OC *Spill Response Plan* during this reporting period.	

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

BMP or activity	Addresses bacteria?	Addresses mercury?	Responsible department	Measurable goals (2012 SWMP)	Tracking measures (2012 SWMP)	Annual report information: tracking measure status, Permit year 2017 – 2018	Additional detail related to activities conducted
Element 2. Industrial and Commercial Facilities							
BMP 2-1: Screen Existing and New Industrial Facilities	○	○	OCPW	• Review the business license inventory for 1200Z industries once over the permit term. • Notify DEQ of any existing or new industrial facilities within OC that may be subject to an industrial stormwater NPDES permit.	1) Track the number of existing or new facilities subject to a stormwater industrial NPDES permit during the permit term.	1) The Water Quality Coordinator continued to review all new business license applications for potential water quality-related issues. 139 business license applications were reviewed during the 2017-2018 reporting period. The screening did not identify any additional facilities potentially subject to an industrial stormwater permit.	DEQ provided additional guidance on industrial facility screening in June 2013. OC's consultant has coordinated with DEQ related to the methodology and process for identifying "potential" 1200-Z permittees.
BMP 2-2: Implement an Industrial/Commercial Inspection Program for High Priority Facilities	○	○	OCPW	• Pursue approval to hire staff to implement a business inspection program. • Develop a priority list of industrial/commercial facilities for inspection. • Investigate 25% of OC's manufacturing businesses once during the permit term. • Develop an industrial/commercial inspection procedure by July 1, 2013.	1) Track the number of inspections conducted. 2) Report on inspection results and follow up actions. 3) Report on status of documenting and updating procedures.	1) Two inspections were conducted during the 2017-2018 reporting period. 2) Inspection of Excel Finishing, 1610 Red Soils Ct. #A was conducted on 12-19-17. One issue was noted – the automatic moisture valve release on a compressor needed to be housed from weather. OC will do follow-up visit prior to wet season to ensure valve is covered. Inspection of MCI Welding, 15942 Park Place Ct. was conducted on 5-14-18. No issues were noted. 3) Table 2 of the Industrial/Commercial Facility Inspection Program SOP was updated May 2018 to reflect current Oregon City manufacturing-related business license holders. The 2013 version identified 31 facilities. The updated version identifies 33 manufacturing businesses potentially subject to inspection.	• OC has not hired additional staff to implement the business inspection program. • OC developed an Industrial/Commercial Facility Inspection Program SOP July 1, 2013. The SOP includes procedures and guidelines related to facility screening, DEQ notification of potential industrial stormwater permit needs, and high pollutant source facility inspections. • OC investigated more than 25% of manufacturing businesses once during the permit term.
Element 3. Construction Site Runoff Control							
BMP 3-1: Implement the Erosion Control Ordinances	●	○	OCPW	• Review erosion control plans for all developments greater than 1,000 square feet. • Require erosion and sediment control plans not in compliance with standards to be amended and approved prior to construction. • By November 1, 2014, adopt the Clackamas County *Erosion Control Manual* or revise OC's manual in accordance with the NPDES MS4 permit requirements.	1) Record the number of erosion control plan reviews completed and approved. 2) Track the number of erosion control permits issued annually. 3) Report on the status of adopting the Clackamas manual or updating OC's manual.	1) 116 erosion control plans were reviewed and approved. 2) 116 erosion control permits were issued. 3) OC has adopted the Clackamas County *Erosion Control Manual*, in conjunction with its update of the City's *Stormwater and Grading Design Standards* manual.	
BMP 3-2: Provide Educational Information to Construction Site Operators	○	○	OCPW	• Continue to provide OC's most current erosion control manual on OC website. • Continue to offer discounts on erosion control permits to contractors completing the Erosion Control Certification Program.	1) Track the number of contractors receiving a discount on erosion control permit fees.	1) One contractor received a discount on permit fees.	

BMP 3-3:
Conduct Erosion Control Inspections
	●	○	OCPW	• Conduct a minimum of three erosion control inspections at each permitted site.
				• Conduct appropriate enforcement activities for erosion control violations.
					1) Record the number of erosion control inspections conducted annually.
					2) Report the number of notices of non-compliance issued during inspections.
						1) A total of 419 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) 21 notices of non-compliance were issued. Thirteen stop work orders were issued.
							• 1) The total number of inspections are comprised of:
							  • 135 initial site visits, Inspection 1
							  • 126 random inspections, Inspection 2
							  • 158 final inspections, Inspection 3

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

BMP or activity	Addresses bacteria?	Addresses mercury?	Responsible department	Measurable goals (2012 SWMP)	Tracking measures (2012 SWMP)	Annual report information: tracking measure status, Permit year 2017 – 2018	Additional detail related to activities conducted
Element 4. Education and Outreach							
BMP 4-1: Provide Public Education and Outreach Materials Regarding Stormwater Management	○	○	OCPW	• Include a water quality related article in each City newsletter, distributed to citizens three times per year. • Participate in the Regional Coalition for Clean Rivers and Streams (Coalition). • Seek out opportunities to partner with other agencies/jurisdictions/organizations to educate and promote watershed health and low impact development. • Periodically install signs near water quality structures and around OC promoting water quality. • Sponsor the volunteer catch basin stenciling program. • Distribute an annual water quality report to OC residents.	1) Track the number, types, and topics of public educational materials distributed to the public. 2) Report any large scale public educational campaigns initiated during a given year. 3) Track coordinated public outreach activities with other permittees.	1) The following educational activities were conducted (see Appendix C for details): • A total of six water quality-related articles were included in Trail News. • OC participated in one special event and promoted a second one on the city website. • The March 2018 utility bill included a message about Eco-Friendly Businesses. • Mailed 14,707 postcards announcing availability of the Annual Water Quality Report on OC's website. • Stormwater banner displayed at Pioneer Center (4-9-18 to 4-20-18). 2) Initiated efforts to join the regional Stormdrain Cleaning Assistance Program (SCAP) during the 2018-19 reporting year. 3) Coordinated efforts included: • Continued to sponsor the "Water…Do Your Part" campaign via KOIN media outlets. • Continued participation in the Coalition for Clean Rivers and Streams. • Continued participation with other agencies to promote water quality education through Clackamas River Water Providers.	OC continues to conduct catch basin marking and stenciling to increase public awareness. During this reporting period, 347 catch basins were either stenciled with the message "Dump No Waste – Drains to Stream" or had "No Dumping, Drains to Waterway" markers installed.
BMP 4-2: Participate in a Public Education Effectiveness Evaluation	○	○	OCPW	• Coordinate with other local, Phase I jurisdictions in providing/compiling information regarding a public education effectiveness evaluation by July 1, 2015.	1) Report on activities conducted annually.	1) OC submitted a Public Education Effectiveness Evaluation Summary to DEQ on June 29, 2015.	The Association of Clean Water Agencies (ACWA) Stormwater Committee completed a coordinated effort to compile existing educational survey information and develop conclusions to inform how public education efforts result in behavioral change. The study was conducted by DHM Consulting with cost shared among interested Phase I and Phase II communities, including OC.
BMP 4-3: Conduct Staff Training for Pest Management	○	○	OCPW and Parks	• Ensure OCPW and Parks Dept. staff conducting pest management activities are certified for spraying activities according to OSHA requirements. • Ensure licensed staff attends annual refresher courses.	1) Track the number of employees licensed for spraying activities. 2) Report number of employees that attended initial or refresher training.	1) Staff licensed for spraying activities: OCPW = 8; Parks Dept. = 7 2) Three OCPW staff and four Parks Department staff attended refresher training classes during the reporting period.	Annual refresher training is not required. OCPW and Parks Department staff attend refresher training per requirements of their licensing.
BMP 4-4: Conduct Staff Training in Spill Response	○	○	OCPW	• 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) Spill response training was conducted on March 20, 2018.	

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

BMP or activity	Addresses bacteria?	Addresses mercury?	Responsible department	Measurable goals (2012 SWMP)	Tracking measures (2012 SWMP)	Annual report information: tracking measure status, Permit year 2017 – 2018	Additional detail related to activities conducted
BMP 4-5: Ensure Municipal Staff Training in Stormwater Pollution Prevention	○	○	OCPW	• Conduct municipal training for employees associated with stormwater management in OC. • Coordinate with other Clackamas County co-permittees regarding regional water quality efforts. • Participate in training and advisory committee opportunities available through state and local agencies and groups. • Conduct regular stormwater staff meetings once or twice a year.	1) Track the number of employees receiving training in stormwater management annually. 2) Track OC staff participation in groups, committees, and organizations relevant to stormwater quality management. 3) Track regular stormwater staff meetings and staff attendance at those meetings.	1) OCPW Employees receiving training in stormwater management: • Four employees attended APWA Conferences (7/26/17) • One employee attended Urban Forestry Conference (6/7/18) • One employee attended Urban Pest Management/IPM training (2/7/18) • One employee attended Erosion Control and Stormwater Management (1/30/18) • One employee attended ACWA Stormwater Summit (5/9/18) 2) OC staff participates in the following groups and organizations: • ACWA - active participant in the ACWA Stormwater committee and Phase I Stormwater subcommittee • Continued collaboration with other co-permittees on Comprehensive Clackamas Stormwater Monitoring Program (CCCSMP) • Greater Oregon City Watershed Council • Clackamas County Water Education Team • Regional Coalition for Clean Rivers and Streams 3) There were 7 stormwater-related staff meetings conducted during the 2017-2018 reporting period.	3) Dates, topics, and attendees are summarized in Table 4 in Section 6.0 of the annual report.
Element 6. Post-Construction Site Runoff							
BMP 6-1: Implement Municipal Construction Standards	●	●	OC Community Development	Per OC's Development Code, review all new development and applicable redevelopment for conformance with current city stormwater standards and ordinances.	1) Track the number of development applications reviewed and approved for compliance with stormwater regulations. 2) Track the number, type, and drainage area of treatment facilities constructed annually.	1) 24 development applications were reviewed and approved for compliance with water quality/water quantity standards. For applications that proceed to the construction phase all constructed treatment facilities will be noted in the appropriate reporting period. 2) The following were constructed during the reporting period of 7/1/2017 through 6/30/2018: Private stormwater quality facilities included two Contech Storm Filter Vaults, one Contech Storm Filter Catch Basin, five cartridge water quality catch basins, Stormtech underground detention, stormwater flow control manhole, and 25 vegetated rain gardens; and public stormwater quality facilities included a linear vegetated swale and two Contech Storm Filter vaults • Total drainage area = 37.8 acres	2) Details of treatment facility construction: • CP-15-01 The Cove Phase 1 Garden Apartments: Private stormwater quality facilities included two Contech Storm Filter Vaults, one Contech Storm Filter Catch Basin, Public stormwater quality facilities included a linear vegetated swale and two Contech Storm Filter vaults • DP 16-03 Providence Willamette Falls Medical Office Building: Private stormwater management facilities included stormwater rain gardens, five cartridge water quality catch basins, Stormtech underground detention, stormwater flow control manhole, • DP 16-04 Clackamas Community College Information Technical Center Building: Private stormwater management facilities included 21 vegetated rain gardens dispersed throughout the development with a total surface area of 60,666 sq ft
BMP 6-2: Review and Update Code and Development Standards related to Stormwater Quality Control	●	●	OC Community Development	• Review OC's current/planned stormwater treatment and detention standards for compliance with new NPDES MS4 permit language. • Review OC's current public works development code provisions to ensure that applicable barriers to LID or green infrastructure (GI) are minimized and eliminated where practicable. • If necessary, update OC's post-construction stormwater design standards and code language by November 1, 2014.	1) Track progress related to review of OC's code and development standards per provisions in the NPDES MS4 permit. 2) Track any code/standards modifications made by ordinance.	1) The update has been completed. OC's 2015 *Stormwater and Grading Design Standards* meets the current NPDES MS4 permit language. The update prioritizes the use of LID and GI to the maximum extent practicable and addresses flow duration. 2) OC reviewed and updated the Oregon City Municipal Code Chapter 13.12 Stormwater Management, the *Stormwater and Grading Design Standards* manual, and the *Erosion and Sediment Control Standards* manual. The updated manuals were adopted through Resolution 15-14 and the associated municipal code update was adopted by Ordinance 15-1006 on May 20, 2015. No modifications were made during this reporting period.	

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

BMP or activity	Addresses bacteria?	Addresses mercury?	Responsible department	Measurable goals (2012 SWMP)	Tracking measures (2012 SWMP)	Annual report information: tracking measure status, Permit year 2017 – 2018	Additional detail related to activities conducted
Element 7. Pollution Prevention for Municipal Operations							
BMP 7-1: Conduct Street Sweeping and Roadway Repair Activities	●	●	OCPW	• Sweep city streets every 3-4 months on average, more frequently in high traffic areas and during leaf pick up and following deicing activities.	1) Track the average number of citywide sweeps per year. 2) Estimate the miles of streets swept per year. 3) Track volume of debris removed.	1) 7.48 city-wide sweeps were conducted for this reporting period. 2) During the 2017-2018 reporting period, 5,589 miles of roadway were swept. 3) 1,684 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	○	○	OCPW and Parks	• All chemical applicators, both contractor and city, must follow state laws related to the use of pesticides. • Applicators will complete spray reports for the application of chemicals.	1) Track any program changes regarding chemical application practices used by OC.	1) Both city and contracted chemical applicators comply with 2300-A, pesticide general permit requirements. Pesticide applications are kept at least three feet away from any water's edge. There were no program changes regarding chemical application practices used by OC.	
BMP 7-3: Implement a Program to Reduce the Impact of Stormwater Runoff from Municipal Facilities	○	○	OCPW	• By July 1, 2013, inventory municipal facilities subject to this permit requirement. • By July 1, 2013, identify whether there is a need for additional strategies to minimize discharge from these facilities.	1) Track updates to strategies used to minimize pollutant discharge from municipal waste storage facilities	1) OC developed a Stormwater Pollution Prevention Strategy document for municipal operations (SWPPS) July 1, 2013. The SWPPS includes a description of each of OC's six facilities that treat, store, or transport municipal waste. Additionally, it identifies potential pollutant sources as well as short and long term pollution reduction strategies. OC. The SWPPS was updated during the 2017-2018 reporting period to reflect these changes.	
BMP 7-4: Control Infiltration and Cross Connections to the City's Stormwater Conveyance System	●		OCPW	• Review new and redevelopment for possible cross-connections. • Eliminate cross connections upon identification.	1) Report whether any cross connections were discovered and describe follow up activities.	1) Four cross-connections were discovered and corrected during this reporting period. • 12667 Anita Pl. – Existing cross-connection discovered via routine storm video inspection. Corrections made within 5 days of discovery. • 19937 Capital Ct. – Existing cross-connection discovered via routine storm video inspection. Corrections made within 5 days of discovery. • 20153 Woodglen Way - Existing cross-connection discovered via routine storm video inspection. Corrections made within 5 days of discovery. • 916 Main St. – Plumber connected to wrong pipe during remodel of building. Corrections made by plumber and inspected by Building & OCPW.	• Dye tests are performed by OCPW upon request from plumbing inspector if there are questions regarding sewer connections. • New construction storm and sanitary stub out standards have been revised – sanitary remains 4-inch-diameter pipe, storm was increased to 6-inch-diameter pipe, curbs are being stamped where lateral cross underneath - SS = sanitary, ST = storm, to avoid confusion in future. • Routine storm sewer video inspection continues and cross-connections are repaired when identified.
BMP 7-5: Coordinate with Local Fire Department related to Pollutant Discharge from Fire Fighting Training Activities			OCPW	• By November 1, 2012, contact Clackamas Fire District #1 to determine what activities are conducted to minimize pollutant discharges associated with firefighting training activities. • As applicable, provide educational information to Clackamas Fire District #1 by November 1, 2012.	1) Track contacts made with Clackamas Fire District #1.	1) No contacts were made during this reporting period.	On 9/12/12 OC's Water Quality Coordinator contacted Clackamas Fire District #1 to discuss firefighting training activities conducted in OC. Per an email dated 9/13/12 the Battalion Chief for Training & Safety confirmed that all foam drills were conducted at their primary training facility in Clackamas. Any training activities at the four OC stations use water only.
BMP 7-6: Conduct Master Planning and Implement Capital Projects for Stormwater Quality Enhancement	●	●	OCPW	• The *Citywide Master Plan* is planned to be updated and adopted December 2018. • 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 update to OC's *City-wide Drainage Master Plan* commenced with a kick-off workshop on 12/1/2015. Funding has been allocated through 2018. OC's *City-wide Drainage Master Plan* is planned to be adopted December 2018. 2) A total of 5 water quality-related CIP projects were constructed during this reporting period. • One project was contracted out, for a total cost of $487,616. • Four projects were completed in-house, for a total cost of $22,000. 3) Mapping: • The CIP projects have been mapped. • The in-house CIP projects have been mapped.	2) The following are details of the in-house CIP projects completed during this reporting period: • Contracted CIP project completed during this reporting period: • In-house CIP projects completed during this reporting period: • Installed one sumped catch basins, 75 feet of 10" pipe. • Installed one sumped catch basins, 25 feet of 8" pipe. • Installed two 400 st. bio/infiltration swales

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

BMP or activity	Addresses bacteria?	Addresses mercury?	Responsible department	Measurable goals (2012 SWMP)	Tracking measures (2012 SWMP)	Annual report information: tracking measure status, Permit year 2017 – 2018	Additional detail related to activities conducted
Element 8. Stormwater Management Facilities Operation and Maintenance							
BMP 8-1: Conduct Stormwater Conveyance System Cleaning and Maintenance	●	●	OCPW	• Maintain, repair, and/or replace conveyance system components when needed, based on ongoing inspections. • Update the stormwater system map when discrepancies are found.	1) Estimation of the volume of debris removed per year during public conveyance system cleaning activities (in conjunction with BMP 8-2).	See BMP 8-2.	
BMP 8-2: Conduct Catch Basin Cleaning and Maintenance	●	●	OCPW	• Inspect at least 33% of the public catch basins annually. • Schedule the repair, and replacement of catch basins as needed, based on inspections. • Update the stormwater system map when discrepancies are found.	1) Track the percentage of total public catch basins inspected and/or maintained annually. 2) Track the volume of sediment removed during cleaning activities conducted annually (also includes volume from BMP 8-1). 3) Track the number of catch basin replacements annually. 4) Track the number of public catch basins added to OC's catch basin inventory annually.	1) 71% of public catch basins were maintained during this reporting period. 2) 230 cubic yards of sediment were removed (includes sediment from pipes, culverts, manholes, open channels, and catch basins). 3) Zero catch basins were replaced. Four catch basins repaired. 4) 67 catch basins were added to OC's inventory.	71% = 3,157 public catch basins
BMP 8-3: Public Structural Control Facility Cleaning and Maintenance	●	●	OCPW	• Inspect and maintain public structural control facilities in accordance with documented frequencies and procedures. • Update the public structural control facility inventory as needed. • Update the stormwater system map in accordance with new public facility installations and when discrepancies are found.	1) Track the number of public structural facilities inspected and maintained. 2) Track the volume of sediment removed during cleaning. 3) Track changes to the public structural control facility inventory as needed.	1) 209 public structural facilities and 22,868 sq ft of bioswale were inspected during the reporting period. See the next column for maintenance details. 2) 32.5 cubic yards of sediment were removed during maintenance/cleaning. 3) Additional public structural facilities added to inventory: • Added 1 stormwater quality pond and 1,876 sq ft of bioswale were added to the inventory this past year	1) The following public structural facilities were inspected and maintained during the reporting period: • ponds = 85 inspected; 85 maintained • bioswales = 22,868 sq ft maintained. • rain gardens = 3 inspected; 3 maintained • detention pipes = 27 inspected; 3 cleaned • water quality vaults = 4 inspected; no maintenance required • pollution control/flow control manholes = 90 inspected; 65 cleaned
BMP 8-4: Private Structural Control Facility Cleaning and Maintenance	●	●	OCPW	• Require new private water quality facilities to submit maintenance agreements to OC. • Compile an inventory of existing private structural water quality facilities and work to collect maintenance agreements for these by July 1, 2013. • Implement an inspection strategy for private water quality facilities by July 1, 2013.	1) Track the number of maintenance agreements submitted to OC each year. 2) Track progress related to the inventory and mapping of existing private structural facilities. 3) Track the status of updating the inventory and map of private water quality facilities. 4) Track the status of developing procedures in accordance with permit requirements.	1) OC continues to require maintenance agreements for private water quality facilities. Ten maintenance agreements were recorded during this reporting period. 2) Files have been reviewed for existing private structural facilities. An inventory list has been created. 3) Initial mapping is complete; refinements ongoing. 4) OC developed SOPs for public water quality facilities and private water quality facilities July 1, 2013. The SOPs outline procedures for ongoing mapping and inventory activities, as well as facility inspections. For private facilities, OC requires a maintenance agreement and submission of annual inspection records.	1) The following are details for the newly recorded private water quality facilities: • CP-15-01 The Cove Phase 1 Garden Apartments: One maintenance agreement was recorded for private stormwater quality facilities including two Contech Storm Filter Vaults, one Contech Storm Filter Catch Basin • DP 16-03 Providence Willamette Falls Medical Office Building: Eight maintenance agreements were recorded for each property with private stormwater management facilities including stormwater rain gardens, five cartridge water quality catch basins, Stormtech underground detention, stormwater flow control manhole. • MP 13-01 Minor Partition: One maintenance agreement for two stormwater energy dissipators was recorded. 4) The SOP for private water quality facilities was reviewed and minor adjustments made (April 28, 2017) to better align terminology with the updated Maintenance Covenant and Access Easement.

Appendix B

Oregon City Monitoring Data

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Outfall Monitoring - Oregon City 2017 - 2018
Location - Oregon City Shopping Center
Sample Site # OC006
Stream Name - Clackamas River
Land Use - Commercial

		Results						
		Composite Wet Weather	Composite Wet Weather	Composite Wet Weather	Statistics			
Analysis	Units	11/21/2017	2/14/2018*	2/28/2018	High	Low	Mean	Notes
Total Phosphate Seal	mg/L	0.07	0.12	0.16	**0.16**	**0.07**	**0.12**	
Dissolved Oxygen - Winkler	mg/L	8.3	13	11.0	**13**	**8.3**	**10.8**	(1)
Dissolved Oxygen - Field	mg/L	9.66	11.29	11.45	**11.45**	**9.66**	**10.80**	
Dissolved Oxygen - Field	% Saturation	88.2	94.9	95.6	**95.6**	**88.2**	**92.9**	
Conductivity - Field	µS/cm	48	34.5	38.1	**48**	**34.5**	**40.2**	
Temperature - Field	°C	11.4	7.0	7.2	**11.4**	**7.0**	**8.5**	
pH - Field	Std Units	6.95	7.42	6.58	**7.42**	**6.58**	**6.98**	
Dissolved Copper	µg/L	ND	4.51	3.62	**4.51**	**ND**	**3.46**	(2)
Copper	µg/L	5.94	13.5	9.23	**13.5**	**5.94**	**9.56**	
Dissolved Lead	µg/L	ND	0.21	ND	**0.21**	**ND**	**0.14**	(2)
Lead	µg/L	7.07	10.7	3.72	**10.7**	**3.72**	**7.16**	
Dissolved Zinc	µg/L	24	35.7	29.9	**35.7**	**24**	**29.9**	
Zinc	µg/L	41.7	84.8	56.5	**84.8**	**41.7**	**61.0**	
E. coli - Colilert	MPN/100mL	548	194	326	**548**	**194**	**356**	(3)(4)
Ammonia Nitrogen Low Seal	mg/L	ND	ND	ND	**ND**	**ND**	**ND**	(2)
Nitrate-Nitrite	mg/L	0.1951	0.2845	ND	**0.2845**	**ND**	**0.2**	(2)
Ortho Phosphate Seal	mg/L	ND	ND	ND	**ND**	**ND**	**ND**	(2)
Total Dissolved Solids	mg/L	27	32	30	**32**	**27**	**30**	
Total Suspended Solids	mg/L	13	51	34	**51**	**13**	**33**	
Hardness	mg/L	10	12	14	**14**	**10**	**12**	
Storm Event Rainfall	Inches	0.26	0.32	0.16	**0.32**	**0.16**	**0.25**	(5)
Antecedent Dry Period								

Notes:

(1) Dissolved Oxygen (Winker Method) samples are taken once per sampling event as QA/QC for eletronic meter.

(2) An "ND" designation is understood to be "less than the lower reporting limit " and treated as 1/2 the detection limit for calculations. N/A is Not Applicable. NM is Not Measured.

(3) MPN = Most Probable Number

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

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

(*) Only two grab samples for composite. Rain event ended during sampling.

Outfall Monitoring - Oregon City 2017 - 2018
Location - Clackamette Cove
Sample Site # OC007
Stream Name - Clackamas River
Land Use - Industrial

		Results						
		Composite Wet Weather	Composite Wet Weather	Composite Wet Weather	Statistics			
Analysis	Units	11/21/2017	2/14/2018*	2/28/2018	High	Low	Mean	Notes
Total Phosphate Seal	mg/L	0.08	0.07	0.09	**0.09**	**0.07**	**0.1**	
Dissolved Oxygen - Winkler	mg/L	NM	NM	NM	**NM**	**NM**	**NM**	(2)
Dissolved Oxygen - Field	mg/L	6.16	7.35	7.41	**7.41**	**6.16**	**6.97**	
Dissolved Oxygen - Field	% Saturation	54.9	59.7	61.7	**61.7**	**54.9**	**58.8**	
Conductivity - Field	µS/cm	143.5	472	499	**499**	**143.5**	**371.5**	
Temperature - Field	°C	10.4	7.2	7.5	**10.4**	**7.2**	**8.4**	
pH - Field	Std Units	6.89	7.44	7.10	**7.44**	**6.89**	**7.14**	
Dissolved Copper	µg/L	5.73	2.07	2.28	**5.73**	**2.07**	**3.36**	
Copper	µg/L	5.24	4.08	6.39	**6.39**	**4.08**	**5.24**	
Dissolved Lead	µg/L	ND	ND	ND	**ND**	**ND**	**ND**	(2)
Lead	µg/L	4.68	4.84	1.43	**4.84**	**1.43**	**3.65**	
Dissolved Zinc	µg/L	22.3	28.6	31.1	**31.1**	**22.3**	**27.3**	
Zinc	µg/L	25.5	26.3	38.2	**38.2**	**25.5**	**30.0**	
E. coli - Colilert	MPN/100mL	>2421	79	138	**>2421**	**79**	**879**	(3) (4)
Ammonia Nitrogen Low Seal	mg/L	ND	ND	ND	**ND**	**ND**	**ND**	(2)
Nitrate-Nitrite	mg/L	0.318	0.333	0.475	**0.475**	**0.318**	**0.375**	
Ortho Phosphate Seal	mg/L	ND	ND	ND	**ND**	**ND**	**ND**	(2)
Total Dissolved Solids	mg/L	102	250	242	**250**	**102**	**198**	
Total Suspended Solids	mg/L	5	10	13	**13**	**5**	**9**	
Hardness	mg/L	68	202	164	**202**	**68**	**145**	
Storm Event Rainfall	Inches	0.26	0.32	0.16	**0.32**	**0.16**	**0.25**	(5)
Antecedent Dry Period								

Notes:

(1) Dissolved Oxygen (Winker Method) samples are taken once per sampling event as QA/QC for eletronic meter.

(2) An "ND" designation is understood to be "less than the lower reporting limit " and treated as 1/2 the detection limit for calculations. N/A is Not Applicable. NM is Not Measured.

(3) MPN = Most Probable Number

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

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

(*) Only two grab samples for composite. Rain event ended during sampling.

Instream Monitoring - Oregon City 2017 - 2018
Location - 17082 Holly Ln (Holly Ln Bridge)
Sample Site # OC010
Stream Name - Abernethy Creek (Upstream)

		Results							
		Grab Sample Dry Weather	Composite Wet Weather	Grab Wet Weather	Grab Sample Dry Weather	Statistics			
Analysis	**Units**	**8/14/2017**	**11/13/2017**	**2/12/2018**	**6/11/2018**	**High**	**Low**	**Mean**	**Notes**
Temperature - Field	°C	17.2	10.6	6.7	13.7	**17.2**	**6.7**	**12.1**	
Dissolved Oxygen - Winkler	mg/L	NM	NM	NM	NM	**NM**	**NM**	**NM**	(1)(2)
Dissolved Oxygen - Field	mg/L	8.03	10.40	12.30	9.72	**12.30**	**8.03**	**10.11**	
Dissolved Oxygen - Field	% Saturation	83.0	95.0	98.3	93.8	**98.3**	**83.0**	**92.5**	
pH - Field	Std Units	7.48	7.06	7.50	7.65	**7.65**	**7.06**	**7.42**	
Conductivity - Field	µS/cm	132.3	82.2	66.6	96.8	**132.3**	**66.6**	**94.5**	
Copper	µg/L	2.60	5.36	3.26	2.52	**5.36**	**2.52**	**3.44**	
Dissolved Copper	µg/L	ND	1.08	ND	2.57	**2.57**	**ND**	**1.16**	(2)
Lead	µg/L	0.41	4.38	4.39	4.10	**4.39**	**0.41**	**3.32**	
Dissolved Lead	µg/L	ND	ND	ND	ND	**ND**	**ND**	**ND**	(2)
Zinc	µg/L	7.17	6.7	4.77	4.04	**7.17**	**4.04**	**5.66**	
Dissolved Zinc	µg/L	ND	10.5	8.71	11.1	**11.10**	**ND**	**8.08**	(2)
Ammonia Nitrogen Low Seal	mg/L	ND	ND	ND	ND	**ND**	**ND**	**ND**	(2)
Hardness	mg/L	53.6	28	24	36.0	**54**	**24**	**35**	
Nitrate-Nitrite	mg/L	0.274	0.722	1.07	0.4853	**1.07**	**0.27**	**0.64**	
Ortho Phosphate Seal	mg/L	ND	ND	ND	ND	**ND**	**ND**	**ND**	(2)
Total Phosphate Seal	mg/L	0.12	0.12	0.14	0.17	**0.17**	**0.12**	**0.14**	
Total Dissolved Solids	mg/L	117	74	58	79.0	**117**	**58**	**82**	
Total Suspended Solids	mg/L	11	14	5	12	**14**	**5**	**11**	
E. coli - Colilert	MPN/100mL	201	127	23	461	**461**	**23**	**203**	(3)(4)
Storm Event Rainfall	Inches	0.00	0.55	0.00	0.00	**0.55**	**0.00**	**0.14**	(5)

Notes:

(1) Dissolved Oxygen (Winker Method) samples are taken once per sampling event as QA/QC for eletronic meter.

(2) An "ND" designation is understood to be "less than the lower reporting limit " and treated as 1/2 the detection limit for calculations. N/A is Not Applicable. NM is Not Measured.

(3) MPN = Most Probable Number

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

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

Instream Monitoring - Oregon City 2017 - 2018
Location - 316 17th St at Railroad Trestle
Sample Site # OC011
Stream Name - Abernethy Creek (Downstream)

		Results							
		Grab Sample Dry Weather	Composite Wet Weather	Grab Sample Wet Weather	Grab Sample Dry Weather	Statistics			
Analysis	**Units**	**8/14/2017**	**11/13/2017**	**2/12/2018**	**6/11/2018**	**High**	**Low**	**Mean**	**Notes**
Temperature - Field	°C	17.6	10.5	6.1	13.6	**17.6**	**6.1**	**12.0**	
Dissolved Oxygen - Winkler	mg/L	NM	NM	NM	NM	**NM**	**NM**	**NM**	(1)(2)
Dissolved Oxygen - Field	mg/L	7.74	10.43	12.25	9.35	**12.25**	**7.74**	**9.94**	
Dissolved Oxygen - Field	% Saturation	80.7	93.4	97.0	88.7	**97.0**	**80.7**	**90.0**	
pH - Field	Std Units	7.53	7.30	7.31	7.42	**7.53**	**7.30**	**7.39**	
Conductivity - Field	µS/cm	155.6	78.9	76.1	109.7	**155.6**	**76.1**	**105.1**	
Copper	µg/L	3.50	5.65	1.47	3.16	**5.65**	**1.47**	**3.45**	
Dissolved Copper	µg/L	ND	1.17	ND	1.91	**1.91**	**ND**	**1.02**	(2)
Lead	µg/L	0.39	4.99	4.05	4.88	**4.99**	**0.39**	**3.58**	
Dissolved Lead	µg/L	ND	ND	ND	ND	**ND**	**ND**	**ND**	(2)
Zinc	µg/L	7.92	11.9	ND	5.66	**11.9**	**ND**	**6.8**	(2)
Dissolved Zinc	µg/L	4.22	7.6	7.73	9.56	**9.56**	**4.2**	**7.29**	
Ammonia Nitrogen Low Seal	mg/L	ND	0.4	ND	0.8	**0.8**	**ND**	**0.3**	(2)
Hardness	mg/L	63.6	31.2	26	42.0	**64**	**26**	**41**	
Nitrate-Nitrite	mg/L	0.298	0.68	1.07	0.529	**1.07**	**0.30**	**0.64**	
Ortho Phosphate Seal	mg/L	ND	ND	ND	ND	**ND**	**ND**	**ND**	(2)
Total Phosphate Seal	mg/L	0.14	0.17	0.11	0.14	**0.17**	**0.11**	**0.14**	
Total Dissolved Solids	mg/L	136	75	61	87.0	**136**	**61**	**90**	
Total Suspended Solids	mg/L	7	36	5	13	**36**	**5**	**15**	
E. coli - Colilert	MPN/100mL	435	517	80	770	**770**	**80**	**451**	(3)(4)
Storm Event Rainfall	Inches	0.00	0.55	0.00	0.00	**0.6**	**0.0**	**0.1**	(5)

Notes:

(1) Dissolved Oxygen (Winker Method) samples are taken once per sampling event as QA/QC for eletronic meter.

(2) An "ND" designation is understood to be "less than the lower reporting limit " and treated as 1/2 the detection limit for calculations. N/A is Not Applicable. NM is Not Measured.

(3) MPN = Most Probable Number

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

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

Instream Monitoring - Oregon City 2017 - 2018
Location - Behind 415 S McLoughlin Blvd
Sample Site # OC012
Stream Name - Coffee Creek

Analysis	Units	Results: Grab Sample Dry Weather 8/14/2017	Composite Wet Weather 11/13/2017	Grab Sample Wet Weather 2/12/2018	Grab Sample Dry Weather 6/11/2018	Statistics: High	Low	Mean	Notes
Temperature - Field	°C	15.6	11.7	8.7	12.9	**15.6**	**8.7**	**12.2**	
Dissolved Oxygen - Winkler	mg/L	11.0	9.5	NM	NM	**11.0**	**9.5**	**10.25**	(1)(2)
Dissolved Oxygen - Field	mg/L	9.51	10.92	12.19	10.48	**12.19**	**9.51**	**10.78**	
Dissolved Oxygen - Field	% Saturation	95.2	100.3	100.9	97.9	**100.9**	**95.2**	**98.6**	
pH - Field	Std Units	7.44	7.25	7.29	7.43	**7.44**	**7.25**	**7.35**	
Conductivity - Field	µS/cm	96.5	73.1	84.2	81.3	**96.5**	**73.1**	**83.8**	
Copper	µg/L	2.93	3.79	1.41	1.92	**3.79**	**1.41**	**2.51**	
Dissolved Copper	µg/L	ND	ND	ND	1.18	**1.18**	**ND**	**0.67**	(2)
Lead	µg/L	0.54	4.42	4.42	5.10	**5.10**	**0.54**	**3.62**	
Dissolved Lead	µg/L	ND	ND	ND	ND	**ND**	**ND**	**ND**	(2)
Zinc	µg/L	15.4	23.1	11.7	11.3	**23.1**	**11.3**	**15.4**	
Dissolved Zinc	µg/L	14.1	14.4	20.20	14.7	**20.20**	**14.10**	**15.85**	
Ammonia Nitrogen Low Seal	mg/L	ND	ND	ND	ND	**ND**	**ND**	**ND**	(2)
Hardness	mg/L	34.4	26	28	28.0	**34.4**	**26.0**	**29.1**	
Nitrate-Nitrite	mg/L	1.58	1.93	2.68	2.30	**2.68**	**1.58**	**2.12**	
Ortho Phosphate Seal	mg/L	ND	ND	ND	ND	**ND**	**ND**	**ND**	(2)
Total Phosphate Seal	mg/L	0.09	0.09	0.06	0.05	**0.09**	**0.05**	**0.07**	
Total Dissolved Solids	mg/L	73	56	63	65.0	**73**	**56**	**64**	
Total Suspended Solids	mg/L	7	9	2	ND	**9**	**ND**	**5**	(2)
E. coli - Colilert	MPN/100mL	613	488	140	249	**613**	**140**	**373**	(3)(4)
Storm Event Rainfall	Inches	0.00	0.55	0.00	0.00	**0.55**	**0.00**	**0.14**	(5)

Notes:

(1) Dissolved Oxygen (Winker Method) samples are taken once per sampling event as QA/QC for eletronic meter.

(2) An "ND" designation is understood to be "less than the lower reporting limit " and treated as 1/2 the detection limit for calculations. N/A is Not Applicable. NM is Not Measured.

(3) MPN = Most Probable Number

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

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

Instream Monitoring - Oregon City 2017 - 2018
Location - Behind 13530 Redland Rd
Sample Site # OC013
Stream Name - Park Place Creek

		Results							
		Grab Sample Dry Weather	Composite Wet Weather	Grab Sample Wet Weather	Grab Sample Dry Weather	Statistics			
Analysis	**Units**	**8/14/2017**	**11/13/2017**	**2/12/2018**	**6/11/2018**	**High**	**Low**	**Mean**	**Notes**
Temperature - Field	°C	16.3	11.2	8.1	15.5	**16.3**	**8.1**	**12.8**	
Dissolved Oxygen - Winkler	mg/L	NM	NM	13	4.7	**13.0**	**4.7**	**8.9**	(1)(2)
Dissolved Oxygen - Field	mg/L	5.04	7.40	7.52	4.91	**7.52**	**4.91**	**6.22**	
Dissolved Oxygen - Field	% Saturation	51.2	67.3	61.6	46.5	**67.3**	**46.5**	**56.7**	
pH - Field	Std Units	7.00	6.94	6.97	6.99	**7.00**	**6.94**	**6.98**	
Conductivity - Field	µS/cm	315.0	181.9	297.0	225	**315.0**	**181.9**	**254.7**	
Copper	µg/L	4.94	5.13	2.2	3.55	**5.13**	**2.20**	**3.96**	
Dissolved Copper	µg/L	ND	1.84	1.21	3.51	**3.5**	**ND**	**1.77**	(2)
Lead	µg/L	1.06	4.93	4.39	4.37	**4.93**	**1.06**	**4.38**	
Dissolved Lead	µg/L	ND	ND	ND	ND	**ND**	**ND**	**ND**	(2)
Zinc	µg/L	24.7	16.6	10.7	11.8	**24.7**	**10.7**	**16.0**	
Dissolved Zinc	µg/L	4.59	9.2	13.80	14.8	**14.80**	**4.59**	**10.59**	
Ammonia Nitrogen Low Seal	mg/L	ND	ND	0.8	0.3	**0.8**	**ND**	**0.3**	(2)
Hardness	mg/L	127	67.2	118	90.0	**127**	**67**	**101**	
Nitrate-Nitrite	mg/L	0.926	1.657	1.09	1.25	**1.66**	**ND**	**1.23**	(2)
Ortho Phosphate Seal	mg/L	ND	ND	ND	ND	**ND**	**ND**	**ND**	(2)
Total Phosphate Seal	mg/L	0.13	0.19	0.15	0.14	**0.19**	**0.13**	**0.15**	
Total Dissolved Solids	mg/L	215	124	195	157	**215**	**124**	**173**	
Total Suspended Solids	mg/L	29	20	15	20	**29**	**15**	**21**	
E. coli - Colilert	MPN/100mL	365	365	21	345	**365**	**21**	**274**	(3)(4)
Storm Event Rainfall	Inches	0.00	0.55	0.00	0.00	**0.55**	**ND**	**0.14**	(5)

Notes:

(1) Dissolved Oxygen (Winker Method) samples are taken once per sampling event as QA/QC for eletronic meter.

(2) An "ND" designation is understood to be "less than the lower reporting limit " and treated as 1/2 the detection limit for calculations. N/A is Not Applicable. NM is Not Measured.

(3) MPN = Most Probable Number

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

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

Instream Monitoring - Oregon City 2017 - 2018
Location - North end of Singer Creek Park
Sample Site # OC014
Stream Name - Singer Creek (Upstream)

		Results							
		Grab Sample Dry Weather	Composite Wet Weather	Grab Sample Wet Weather	Grab Sample Dry Weather	Statistics			
Analysis	**Units**	**8/14/2017**	**11/13/2017**	**2/12/2018**	**6/11/2018**	**High**	**Low**	**Mean**	**Notes**
Temperature - Field	°C	14.0	11.2	6.5	11.7	**14.0**	**6.5**	**10.9**	
Dissolved Oxygen - Winkler	mg/L	NM	NM	NM	NM	**NM**	**NM**	**NM**	(1)(2)
Dissolved Oxygen - Field	mg/L	9.92	10.79	12.48	10.51	**12.48**	**9.92**	**10.93**	
Dissolved Oxygen - Field	% Saturation	96.9	99.4	100.8	97.2	**100.8**	**96.90**	**98.58**	
pH - Field	Std Units	7.85	7.32	7.45	7.47	**7.85**	**7.32**	**7.52**	
Conductivity - Field	µS/cm	88.0	69.5	78.6	77.3	**88.0**	**69.5**	**78.4**	
Copper	µg/L	2.79	2.49	1.33	2.13	**2.79**	**1.33**	**2.19**	
Dissolved Copper	µg/L	ND	ND	ND	3.02	**3.02**	**ND**	**1.13**	(2)
Lead	µg/L	1.21	4.29	4.90	5.28	**5.28**	**1.21**	**3.92**	
Dissolved Lead	µg/L	ND	ND	ND	ND	**ND**	**ND**	**ND**	(2)
Zinc	µg/L	9.2	7.8	4.34	5.74	**9.20**	**4.34**	**6.77**	
Dissolved Zinc	µg/L	ND	ND	8.54	9.28	**9.28**	**ND**	**5.46**	(2)
Ammonia Nitrogen Low Seal	mg/L	ND	ND	ND	ND	**ND**	**ND**	**ND**	(2)
Hardness	mg/L	31.2	23.2	26	26.0	**31**	**23**	**27**	
Nitrate-Nitrite	mg/L	1.89	2.17	2.81	2.54	**2.81**	**1.89**	**2.35**	
Ortho Phosphate Seal	mg/L	ND	ND	ND	ND	**ND**	**ND**	**ND**	(2)
Total Phosphate Seal	mg/L	0.08	0.1	ND	0.08	**0.10**	**ND**	**0.07**	(2)
Total Dissolved Solids	mg/L	68	55	62	66.0	**68**	**55**	**63**	
Total Suspended Solids	mg/L	27	6	6	13	**27**	**6**	**13**	
E. coli - Colilert	MPN/100mL	579	46	5	727	**727**	**5**	**339**	(3)(4)
Storm Event Rainfall	Inches	0.00	0.55	0.00	0.00	**0.55**	**ND**	**0.14**	(5)

Notes:

(1) Dissolved Oxygen (Winker Method) samples are taken once per sampling event as QA/QC for eletronic meter.

(2) An "ND" designation is understood to be "less than the lower reporting limit " and treated as 1/2 the detection limit for calculations. N/A is Not Applicable. NM is Not Measured.

(3) MPN = Most Probable Number

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

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

Instream Monitoring - Oregon City 2017 - 2018
Location - 502 7th St (Manhole # 37138)
Sample Site # OC015
Stream Name - Singer Creek (Downstream)

Analysis	Units	Results: Grab Sample Dry Weather 8/14/2017	Composite Wet Weather 11/13/2017	Grab Sample Wet Weather 2/12/2018	Grab Sample Dry Weather 6/11/2018	Statistics: High	Low	Mean	Notes
Temperature - Field	°C	16.6	11.1	6.5	12.3	**16.6**	**6.5**	**11.6**	
Dissolved Oxygen - Winkler	mg/L	NM	NM	NM	NM	**NM**	**NM**	**NM**	(1)(2)
Dissolved Oxygen - Field	mg/L	9.48	10.96	12.52	10.49	**12.52**	**9.48**	**10.86**	
Dissolved Oxygen - Field	% Saturation	97.5	100.1	101.6	98.2	**101.6**	**97.5**	**99.4**	
pH - Field	Std Units	7.69	7.25	7.46	7.47	**7.69**	**7.25**	**7.47**	
Conductivity - Field	µS/cm	101.2	87.6	88.9	89.6	**101.2**	**87.6**	**91.8**	
Copper	µg/L	5.64	3.15	1.59	2.68	**5.64**	**1.59**	**3.27**	
Dissolved Copper	µg/L	1.00	ND	ND	1.32	**1.32**	**ND**	**0.83**	(2)
Lead	µg/L	4.36	4.86	4.50	5.09	**5.09**	**4.36**	**4.70**	
Dissolved Lead	µg/L	ND	ND	ND	ND	**ND**	**ND**	**ND**	(2)
Zinc	µg/L	44.2	14.5	6.45	16.3	**44.2**	**6.5**	**20.4**	
Dissolved Zinc	µg/L	4.32	7.9	11.00	13.0	**13.00**	**4.32**	**9.1**	
Ammonia Nitrogen Low Seal	mg/L	ND	ND	ND	ND	**ND**	**ND**	**ND**	(2)
Hardness	mg/L	36.8	30	28	30.0	**37**	**28**	**31**	
Nitrate-Nitrite	mg/L	1.34	1.89	2.21	2.13	**2.21**	**1.34**	**1.89**	
Ortho Phosphate Seal	mg/L	ND	ND	ND	ND	**ND**	**ND**	**ND**	(2)
Total Phosphate Seal	mg/L	0.09	0.1	0.06	0.10	**0.10**	**0.06**	**0.09**	
Total Dissolved Solids	mg/L	83	74	70	76.0	**83**	**70**	**76**	
Total Suspended Solids	mg/L	18	10	4	12	**18**	**4**	**11**	
E. coli - Colilert	MPN/100mL	> 2421	365	5	579	**579**	**5**	**316**	(3)(4)
Storm Event Rainfall	Inches	0.00	0.55	0.00	0.00	**0.55**	**ND**	**0.14**	(5)

Notes:

(1) Dissolved Oxygen (Winker Method) samples are taken once per sampling event as QA/QC for eletronic meter.

(2) An "ND" designation is understood to be "less than the lower reporting limit " and treated as 1/2 the detection limit for calculations. N/A is Not Applicable. NM is Not Measured.

(3) MPN = Most Probable Number

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

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

Appendix C

Public Education and Outreach Information

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Public Education and Awareness Activities
July 1, 2017 – June 30, 2018

Summary of Activities

Date	Event	Location	Contact Total	Program/Subject
6/20/17 – 7/3/17	Stormwater Banner Display at City Hall	625 Center St Oregon City OR	Visitors & staff at City Hall	Display featuring Oregon City's major streams; tips to improve water quality
7/31/17	Trail News – Autumn	N/A	All OC residents; available on website	Keep the drains clean, rake your stormdrain
9/10/17	Down the River Clean-up	Clackamas River	All residents and site users	Event added to "Latest News" on OC website
11/6/17	Trail News – Winter	N/A	All OC residents; available on website	Pressure washing, best management practices
2/20/18	Trail News – Spring	N/A	All OC residents; available on website	Pay attention to what you flush down your toilet. Oregon City and WES
2/20/18	Trail News – Spring	N/A	All OC residents; available on website	Improve water quality by lowering water temperatures.
3/31/18	Message on Utility Bill	N/A	Utility bill recipients	Eco-Businesses
4/19/18	13th Annual Celebrating Water Event	Clackamas Community College	666*	Two staff members provided stormwater awareness display
4/30/18	Trail News – Summer	N/A	All OC residents; available on website	Help reduce bacteria levels in our Rivers and Streams Challenge
4/30/18	Trail News – Summer	N/A	All OC residents; available on website	Stream Crossing signs of local streams
4/13/18	Annual Water Quality Report	N/A	14,707**, available on city website	Water Quality information
2017-2018	KOIN Public Service Announcements	N/A	Metro area	Television & web information about water quality
2017-2018	Regional Coalition for Clean Rivers & Streams	N/A	Metro area	Pollution prevention messages via website
2017-2018	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

**666 students, 6 schools, 18 classes, 38 High School Volunteers*

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

Specific Activity Information

Trail News Articles

Autumn 2017

"Grate" Time to Rake

- Grab a rake, boots, gloves and a bin to collect leaves.
- Never stand on the drain or try to move it.
- Call Oregon City Public Works (OCPW) if assistance is needed.

Winter 2017 – 2018

- Pollution Prevention – Pressure Washing Best Management Practices
- Use dry cleanup methods first; sweep, blow, or vacuum sidewalks and driveways. Place the debris in the trash.
- Soak up oil and fluids using absorbents like cat litter, sawdust, or sand. Sweep the absorbent up and discard in the trash.
- Divert the wash water to a lawn or landscaped area away from the gutter and storm drain system.
- If diversion is not possible, use one or more bio-bags to prevent wash water from flowing into the street or to protect the affected catch basin. When the job is complete, dispose of the collected debris and remove the bags. Note: bio-bags will block debris such as moss or dirt from entering the storm system, but will not do so for petroleum-based residues or fine sediments.

Spring 2018

- Two Agencies – One Mission – Protecting Public and Environmental Health
  - Dispose of wipes in the trash, not down the toilet
  - Scrape grease into the trash or reuse it, never wash down a drain
  - The only appropriate "flushables" are human waste and toilet paper
- Improving Water Quality by Lowering Water Temperature
  - Lawn care and vehicle maintenance can help stormwater
  - Loss of urban landscape increases stream temperatures
  - Discussed City's TMDL Implementation plan on planting stream shade trees

Summer 2018

- Reducing Bacteria Levels in our Rivers & Streams is a Challenge – We Need Your Help!
  - Certain locations along the Willamette and Clackamas Rivers have too much harmful bacteria
  - Ways to help reduce bacteria – pick up after pets, refrain from feeding wild birds, ensure septic tanks, if used, are functioning properly

- Stream Crossing
  - Oregon City and Greater Oregon City Watershed Council (GOCWC) put up signs identifying local streams
  - Pay attention to the signs to gain a better understanding of where your local streams are

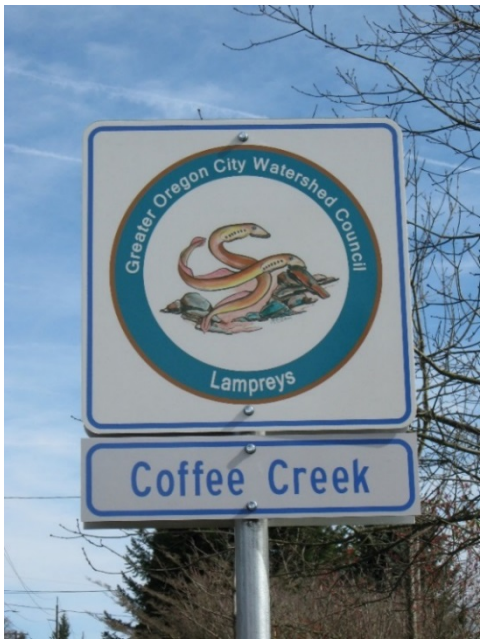

Figure 1: Greater Oregon City Watershed Council (GOCWC) stream sign at Coffee Creek

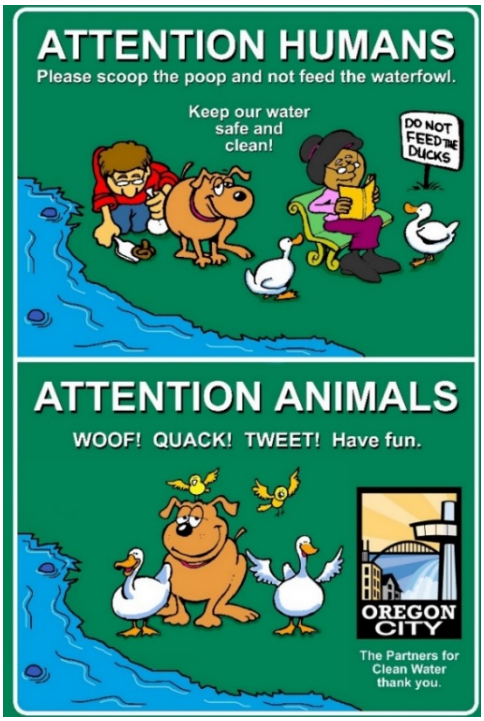

Figure 2: Graphic Included with Summer 2018 Train News Article About Reducing Bacteria Levels

Special Events

The 15th Annual Down the (Clackamas) River Clean Up – 9/10/17

This event was promoted on the Oregon City website (September 2017).

13th Annual Celebrating Water Event – 3/20/18

Two OCPW staff members participated in this annual educational event, held at Clackamas Community College. 666 4th and 5th grade students from 6 schools, 18 classes, with 38 High School Volunteers, had the opportunity to learn about water conservation and water quality protection, among other water-related topics. The 2018 booth featured an interactive display entitled "Take the Stormwater Runoff Challenge". A crossword puzzle of the same name was provided as a hand-out. Also featured was a stormwater banner display highlighting Oregon City's major drainage basins with ways to protect and improve water quality.

Miscellaneous Items

Message on Utility Bill (mailed 3/18/18)

Support Eco-Friendly Oregon Businesses! Find auto repair & body shops, landscapers, and car washes that meet high standards to reduce toxics, prevent pollution, and protect the environment. Find certified businesses at http://ecobiz.org/ or call 503.823.1325.

Annual Water Quality Report – 4/13/18

The 2018 report included the following topics specific to stormwater:

- The source of Oregon City's drinking water is the Clackamas River
- Protecting our drinking water source
- 2017 system improvement projects
- Pollution prevention suggestions:
  - Lawn and garden care
  - Vehicle care
  - Roof treatments
  - Pressure washing
  - Pet waste
- Lead in drinking water
- Photos/graphics with accompanying captions:
  - Cross Connection Backflow Prevention Program
  - Riparian Health- does a stream flow through your property
  - Photo of "DogiPot" with discussion of the importance of picking up after pets

Beginning on March 18, 2018 a total of 14,841 postcards were mailed to Oregon City residents announcing the on-line availability of the annual water quality report. Those with limited internet access were encouraged to request a printed copy of the report.

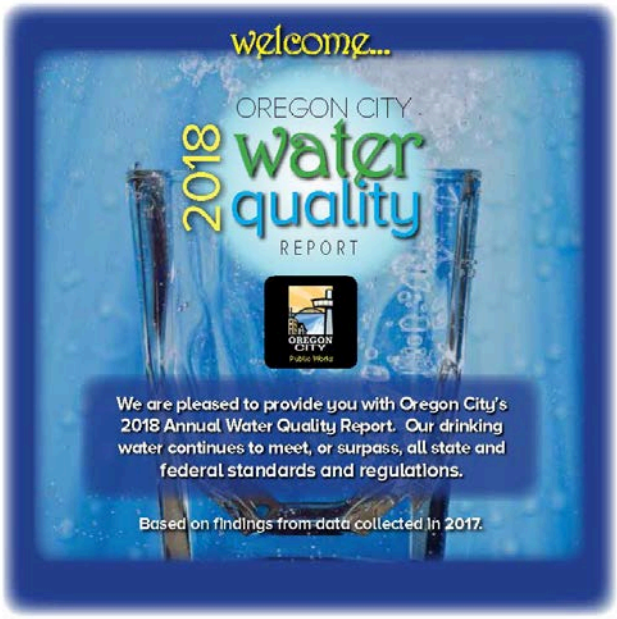

Figure 3: Photo on 2018 Annual Water Quality Report Postcard

Stormwater Banner Display at the Pioneer Center – 4/9/18 - 4/20/18

Visitors to the Pioneer Center (615 5th St), as well as city staff, could view our stormwater banner display featuring Oregon City's largest basins and streams. Included are the following suggestions to prevent stormwater runoff pollution and to improve water quality:

- Never dump anything down storm drains or into streams
- Sweep driveways and patios clean instead of hosing them down
- Repair 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 additional information about Oregon City's Stormwater Management Plan.

Clackamas River Water Providers – ongoing throughout the year

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

The Oregon City Website – ongoing throughout the year

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

Collaboration with Other Agencies

"Water…Do Your Part" Campaign on KOIN Channel 6 Television and Website (http://koin.com/water-do-your-part/)

Oregon City continues to partner with other agencies in the Portland metro area in sponsoring public education messaging via KOIN media outlets. The campaign identifies simple things that can be done to keep our rivers and streams healthy. The following topics were highlighted on their website, social media, and television during the 2017-2018 campaign:

- Fall Lawn Care
- Be Rain Ready
- Hot Tub
- RV Waste
- Pet Waste
- Wildlife Garden
- Native Plants
- Pesticides
- Invasives
- Cigarette butts/Littering
- Metro Garden
- Car Washing

Regional Coalition for 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 metro area, to educate the public about the impact of stormwater runoff pollution on the health of our rivers and streams. For specific information about the current campaign – The River Starts Here – visit the Coalition website at http://theriverstartshere.org/.