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MS4 NPDES Permit Compliance Annual Report

for

Clackamas County Service District No. 1

(including the City of Happy Valley) and

the Surface Water Management Agency of Clackamas County
(including the City of Rivergrove)

July 1, 2013 – June 30, 2014

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October 31, 2014

Clackamas County Service District No. 1

Surface Water Management Agency of Clackamas County

(Including the City of Happy Valley and the City of Rivergrove)

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4)

STORMWATER MANAGEMENT PLAN

We, the undersigned, hereby submit this National Pollutant Discharge Elimination System (NPDES) Municipal Stormwater System Annual Report in accordance with NPDES Permit Number 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.

J. Michael Read, Interim Director
Water Environment Services

Jason Tuck, City Manager
City of Happy Valley

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SECTION 1 INTRODUCTION

1.1 BACKGROUND

Clackamas County Service District No. 1 (CCSD#1), the Surface Water Management Agency of Clackamas County (SWMACC), the City of Happy Valley, and the City of Rivergrove are co-permittees on the same Phase I Municipal Separate Storm Sewer System (MS4) permit. The other Phase I co-permittees on this same MS4 permit include the Oak Lodge Sanitary District, Clackamas County Department of Transportation and Development (DTD), and the following cities: Oregon City, Lake Oswego, West Linn, Milwaukie, Gladstone, Wilsonville, and Johnson City. Phase I communities are generally those with a population of 100,000 or more. Clackamas County co-permittees are classified as Phase I communities because they meet this threshold collectively, though not separately. The Clackamas County MS4 permit was issued by DEQ on December 15, 1995, was renewed by DEQ on March 3, 2004, and was modified by DEQ on July 27, 2005. A renewal permit was issued on March 16, 2012.

A joint Stormwater Management Plan (SWMP) was developed in 1993 for CCSD#1 and SWMACC, pursuant to the (then pending) issuance of initial MS4 permits to Phase 1 communities in Oregon. The 1993 SWMP was updated in 2000. Further revisions were proposed in 2006 as part of the revised SWMPs for CCSD#1 (which includes the City of Happy Valley) and for SWMACC (which includes the City of Rivergrove). A revised SWMP was implemented for each District in May 1, 2012 (2012 SWMP).

This document serves as the annual report for the NPDES MS4 permit and associated SWMPs revised in 2012 for CCSD#1, SWMACC, and the cities of Happy Valley and Rivergrove. In years past we have combined the TMDL activities in the annual report for SWMACC's Tualatin River TMDL and Willamette River Implementation Plan. This year those will be reported under a separate report.

1.2 DISTRICT DEMOGRAPHICS

Both CCSD#1 and SWMACC are administered by Clackamas County Water Environment Services (WES) and together cover approximately 21,815 acres of land under the MS4 permit. Specific information for each District is below.

CCSD#1

CCSD#1 is comprised of four geographic subunits, including:

- Fischer's Forest Park - in the Redland area
- Hoodland - in and near Welches, Wemme, and Rhododendron
- Boring - in the hamlet of Boring
- Portland metropolitan area

Only the Portland metro area subunit of CCSD#1 is regulated by the MS4 permit. The remaining subunits serve rural areas or very small urban areas that are not within the Portland metro area's Urban Growth Boundary (UGB). This Portland subunit is known as CCSD#1-UGB. The developed area of the City of Happy Valley lies within CCSD#1-UGB, and the remainder of Happy Valley will be annexed into CCSD#1 as it is developed.

SWMACC

SWMACC is a largely rural area with a small urban component in the City of Rivergrove. Some urbanized, unincorporated lands are also within SWMACC. While SWMACC includes the City of Rivergrove and all of the unincorporated lands in Clackamas County that drain to the Tualatin River and Lake Oswego, only a small portion of the District is within the Portland metro area's UGB. This portion of SWMACC is regulated by the MS4 NPDES permit.

There is limited new development within the District, most of which occurs within the City of Rivergrove. Due to annexations to the cities of Lake Oswego and West Linn, the area under SWMACC's jurisdiction is decreasing.

1.3 DOCUMENT ORGANIZATION

According to Schedule B(5) of the 2012 MS4 Permit, each co-permittee must submit an annual report, summarizing accomplishments and implementation of the MS4 SWMP. This annual report covers permit year 18 (or year 2 under the renewed permit of 2012) and it documents SWMP related activities that occurred from July 1, 2013 to June 30, 2014. Table 1 summarizes the annual report submittal requirements and provides the location in this document where each of the requirements is addressed.

Table 1 NPDES MS4 Annual Report Submittal Requirement Locations in the Document

Annual Report Schedule B(5) Submittal Requirements:	Document Section Where the Annual Report Submittal Requirement is Met:
§a. The status of implementing the stormwater management program and each SWMP program element, including progress in meeting the measurable goals identified in the SWMP.	Section 3.4
§b. Status or results, or both, of any public education program effectiveness evaluation conducted during the reporting year and a summary of how the results were or will be used for adaptive management.	Section 3.3
§c. A summary of the adaptive management process implementation during the reporting year, including any proposed changes to the stormwater management program [e.g., new Best Management Practices (BMPs)] identified through implementation of the adaptive management process.	Section 3.0
§d. Any proposed changes to SWMP program elements that are designed to reduce TMDL pollutants to the maximum extent practicable (MEP).	Section 3.1
§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 5.0
§f. A summary of monitoring program results, including monitoring data that are accumulated throughout the reporting year and any assessments or evaluations conducted.	Section 4.1 and Appendix B and C
§g. Any proposed modifications to the monitoring plan that are 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, including results of ongoing field screening and follow-up activities related to illicit discharges.	Section 3.4
§i. A summary, as it relates to MS4 discharges, describing land use changes, Urban Growth Boundary (UGB) expansion, land annexations, and new development activities that occurred within these areas during the reporting year. The number of new post-construction permits issued and an estimate of the total new and replaced impervious surface area related to development projects that commenced during the reporting year must also be included.	Section 3.4
§j. A summary, as related to MS4 discharges, describing concept planning or other activities conducted in preparation of UGB expansion or land annexation, if anticipated for the following year.	Section 7.0

SECTION 2 WATERBODIES AND ASSOCIATED TMDLS

CCSD#1

CCSD#1 falls entirely within the Willamette River basin, and thus is subject to the Willamette River Total Maximum Daily Load (TMDL) that was issued in September 2006. The pollutants covered under the Willamette TMDL include:

- DDT & dieldrin (for Johnson Creek only)
- Temperature
- Mercury
- Bacteria (E. coli)

The tributaries to the Willamette River receiving discharges from CCSD#1's MS4 permit area (including the City of Happy Valley) include, but are not limited to the following:

- Johnson Creek
    - Mitchell Creek
- Kellogg Creek
    - Mt. Scott Creek
        - Cedar Creek
            - Mel Brook Creek
        - Dean Creek
        - Phillips Creek
- Clackamas River
    - Cow Creek
    - Carli Creek
    - Sieben Creek
        - Rose Creek
        - Sunshine Creek
    - Rock Creek
        - Graham Creek
        - Trillium Creek

SWMACC

SWMACC falls within the Tualatin River basin. The Tualatin River, a major tributary to the Willamette River, was issued a TMDL in 2001. Subsequently the TMDL implementation plan was updated in 2006 to include the mercury TMDL associated with the Willamette River TMDL. The pollutants covered under the Tualatin TMDL include:

- Temperature
- Dissolved Oxygen
- pH and chlorophyll A (total phosphorus)
- Bacteria (E. coli)
- Mercury

There are no rivers or creeks within SWMACC's MS4 permit area. The following creeks are subject to the Tualatin TMDL:

- Tualatin River
    - Pecan Creek
    - Saum Creek
    - Wilson Creek
    - Carter Creek (tributary to Fanno Creek)
    - Rock Creek "South"
    - Tate Creek

Reporting on TMDL's for this reporting year will be in a separate report.

SECTION 3 STORMWATER MANAGEMENT PLAN (SWMP 2012) OVERVIEW AND ACTIVITIES

With respect to MS4 annual reporting requirements, this section covers the following items per schedule B (5) of the MS4 permit:

§a. The status of implementing the stormwater management program and each SWMP program element, including progress in meeting the measurable goals identified in the SWMP.

§c. A summary of the adaptive management process implementation during the reporting year, including any proposed changes to the stormwater management program (e.g., new BMPs) identified through implementation of the adaptive management process.

§d. Any proposed changes to SWMP program elements that are designed to reduce TMDL pollutants to the maximum extent practicable (MEP).

§h. A summary describing the number and nature of enforcement actions, inspections, and public education programs, including results of ongoing field screening and follow-up activities related to illicit discharges.

3.1 PROPOSED CHANGES TO SWMP ACTIVITIES

Both Districts submitted NPDES MS4 permit renewal applications to DEQ on September 2, 2008. As part of these applications, the districts evaluated and revised their SWMPs. SWMP changes are presented in this report, and became effective May 1, 2012. No further changes are anticipated to the 2012 SWMP.

3.2 STATUS OF THE IMPLEMENTATION OF SWMP COMPONENTS

BMP's summaries will include the tracking measures, measurable goals, and implementation activities outlined in the 2012 SWMP. A more complete listing of the Willamette and Tualatin TMDL activities can be found under a separate report

The Districts' SWMPs are organized into sections covering the required SWMP components per permit schedule A(4), shown below:

Component #1

Illicit Discharge Detection and Elimination

- Conduct Dry Weather Inspections
- Implement the Spill Response Program
- Respond to Reports Involving Illicit Discharges

Component #2

Industrial and Commercial Facilities

- Screen Existing and New Industrial Facilities
- Address Other Industrial Facilities

Component #3

Construction Site Runoff

- Conduct Procedures for Site Planning
- Implement Requirements for Structural and Non-Structural Best Management Practices
- Conduct Training for Construction Site Operators
- Identify Priorities for Inspecting Sites and Conducting Enforcement Actions

Component #4

Education and Outreach

- Public Education to Reduce Discharges of Pesticides, Herbicides and Fertilizers
- Proper Disposal Practices to Reduce Discharges of Pesticides, Herbicides and Fertilizers
- Facilitate Public Reporting of Illicit Discharges and Spills and Other Types of Improper Disposal of Materials
- Participate in a Public Education Effectiveness Evaluation
- Training for Employees

Component #5

Public Involvement and Participation

- Provide for Public Participation with SWMP and Benchmark Submittals

Component #6

Post-Construction Site Runoff

- Planning Procedures for New Development and Significant Redevelopment
- Updated Procedures for New Development and Significant Redevelopment
- BMP Sizing Tool Development to address Hydromodification (CCSD#1 and City of Happy Valley only)

Component #7

Pollution Prevention for Municipal Operations BMPs

- Street Sweeping
- Operations & Maintenance for Public Streets
- Proper Road Maintenance Practices to Reduce the Discharge of Pesticides, Herbicides and Fertilizers
- Landscape Maintenance Practices to Reduce the Discharge of Pesticides, Herbicides and Fertilizers
- Control Infiltration and Cross Connections to the District's Stormwater System
- Flood Management Projects and Water Quality (CCSD#1 and City of Happy Valley only)
- Detention Pond Retrofit Program (CCSD#1 and City of Happy Valley only)

Component #8

Structural Stormwater Facility Operations and Maintenance

- Maintenance of Conveyance System Components and Structural Controls
- Conduct Catch basin Cleaning and Maintenance
- Storm Drain Cleaning Assistance Program
- Private Water Quality Facility Maintenance Program

3.3 PUBLIC EDUCATION AND ADDITIONAL ACTIVITIES

The Districts perform a variety of stormwater related outreach and public involvement activities each year in addition to those outlined in the Districts' SWMPs. These activities include public education campaigns; presentations and course development; public engagement; intergovernmental coordination; and staff training. These strategies are implemented each year to increase citizen and stakeholder awareness and engagement in programs and services provided by the Districts to help strengthen the Districts' identity within the community and to expand information-sharing efforts.

Throughout the year, the Districts creates awareness for ratepayers (both residential and business) and the general public about the impact of stormwater pollution on public health and the health of the region's rivers and streams. Awareness messages and outreach activities are designed to educate area residents, students, and businesses about their personal link to protecting, restoring and enhancing water quality to maintain healthy watersheds. The goal of these communication efforts is to build public awareness, change daily behavior or business practices, and encourage stewardship that will improve stormwater quality and protect the health of our rivers.

Through citizen and stakeholder outreach, business workshops and public education programs, the Districts continue to engage the public and other jurisdictions in decision-making. The Districts continue to seek out opportunities to maintain an ongoing two-way dialogue with customers, citizens, other utilities, stewardship organizations, businesses, and schools to build partnerships in the region.

Outreach over the course of the 2013-2014 year is detailed in BMP#13

3.4 BEST MANAGEMENT PRACTICES REPORTING

BMP#1: CONDUCT DRY WEATHER INSPECTIONS

DISTRICTS REQUIRED TO REPORT: CCSD#1 AND SWMACC

BMP Description: The purpose of dry-weather outfall inspections is to detect an illicit discharge at the outfall or confirm that they are not present. If flow is detected during dry weather, District staff track it upstream through the storm sewer system to the source, and then address, or if necessary, control the discharge. Illicit discharges are detected during dry-weather inspections through the use of hand-held water quality measuring equipment and through visual inspections by the inspector. When a visual inspection or a pollutant level measured at an outfall indicates that an illicit discharge may be present, an upstream investigation through the storm sewer system is performed. When the discharge's source is located, District staff work with the property owner and/or business owner to evaluate, and if necessary, control the discharge.

TRACKING MEASURES

(1) Number of outfalls inspected during dry-weather
(2) Number and type of illicit discharges encountered and controlled
(3) Status of updating procedures to address new permit requirements

CCSD#1 TRACKING MEASURE RESPONSES

(1) Thirty-two
(2) Zero illicit discharges, spills, and non-stormwater discharges were discovered during the dry-weather outfall inspection work in CCSD#1.
(3) The following three written procedures were implemented during this reporting period to address recent MS4 permit requirements: 1) The final Enforcement Response Plan was placed into effect on October 1, 2012, as required by the permit's Schedule A(4)(a)(ii), and 2) The written *Rationale for the Pollutant Parameter Action Levels* (formalized in a letter addressed to Mr. Benjamin Benninghoff, Stormwater Coordinator for the Oregon Department of Environmental Quality dated October 29, 2012) which are used during dry-weather storm sewer system field screening work at priority locations was placed into effect on October 29, 2012, as required by the permit's Schedule A(4)(a)(iii), and 3) The written summary of the current Priority Locations for conducting dry-weather storm sewer system field screening work was placed into effect on October 25, 2012, as required by the permit's Schedule A(4)(a)(iv).

SWMACC TRACKING MEASURE RESPONSES

(1) Five
(2) Zero illicit discharges, spills, and non-stormwater discharges were discovered during the dry-weather outfall inspection work in SWMACC.
(3) The following three written procedures were implemented during this reporting period to address recent MS4 permit requirements: 1) The final Enforcement Response Plan was placed into effect on October 1, 2012, as required by the permit's Schedule A(4)(a)(ii), and 2) The written *Rationale for the Pollutant Parameter Action Levels* which are used during dry-weather storm sewer system field screening work at priority locations was placed into effect on October 29, 2012, as required by the permit's Schedule A(4)(a)(iii), and 3) The written summary of the current Priority Locations for conducting dry-weather storm sewer system field screening work was placed into effect on October 25, 2012, as required by the permit's Schedule A(4)(a)(iv).

MEASURABLE GOALS

(1) Inspect major or priority outfalls for the presence of illicit discharges at least once per year.
(2) Update maps of major outfalls on an annual basis.
(3) Update dry weather field screening program to address new permit requirements by November 1, 2012

PROGRESS ON MEASURABLE GOALS FOR BOTH DISTRICTS

(1) Attained. All major and priority outfalls were inspected once for the presence of illicit discharges, spills, and non-stormwater discharges.
(2) Attained. Maps of major outfalls were reviewed and no updates were warranted.
(3) Attained. The dry weather field screening program was updated to address new permit requirements in effect November 1, 2012.

BMP#2: IMPLEMENT THE SPILL RESPONSE PROGRAM

DISTRICTS REQUIRED TO REPORT: CCSD#1, SWMACC AND DTD

BMP Description: The Districts' Spill Response Program prevents, contains, and responds to spills of dangerous, hazardous and other materials in the MS4-permitted areas of CCSD#1 and SWMACC, The Districts' Spill response Program ensures that the actual or possible release of dangerous /hazardous materials to the MS4 is properly addressed. Except for minor incidents, the Districts' Spill Response Program personnel always coordinate closely with other agencies and departments, including Clackamas County Fire District No. 1 (and for certain incidents involving hazardous materials, the Gresham HazMat Team), DEQ, Oregon State Police, Clackamas County's Road Department (DTD), and Oregon's Department of Transportation (ODOT).

TRACKING MEASURES

(1) Number of reported spills to the MS4 system
(2) Number and type of response to the reported spills

CCSD#1 TRACKING MEASURE RESPONSE

(1) Eight spills in CCSD#1 were reported to, or located by, WES during the 2013-2014 reporting period. Two of these spills resulted in a discharge to the District's, County's, and/or City's MS4. Another 4 of the 8 spills entered privately owned storm sewer systems but did not enter any MS4. The remaining 2 spills did not enter any storm sewer system.
(2) Each of these 8 spills received a response from WES. .

SWMACC TRACKING MEASURE RESPONSE

(1) No spills occurred in SWMACC during the 2013-2014 reporting period, according to our records.
(2) NA

MEASURABLE GOALS

- Implement the spill response program and associated protocols

PROGRESS ON MEASURABLE GOALS

- Measureable Goals were attained. The program and its Standard Operating Procedures were implemented.

BMP#3: RESPOND TO REPORTS INVOLVING ILLICIT DISCHARGES

DISTRICTS REQUIRED TO REPORT: CCSD#1 AND SWMACC

BMP Description: Reports are often received from Oregon's DEQ, ODOT, Water Districts, Fire Districts, cities, citizens, CCSD#1 and SWMACC co-workers, DTD employees and others which allege that an illicit discharge has occurred or is occurring. When reports are received which allege that an illicit discharge has occurred or is occurring, the Districts will attempt to confirm the allegation in a timely manner. If it can be confirmed than an illicit discharge has occurred or is occurring, District staff will cooperate with the property owner and/or business owner to evaluate, and if necessary, control the discharge. Control options that may be applied or recommended by the District include, but are not limited to:

- The removal of certain pollutants from the wastewater prior to discharge to the storm sewer system (i.e. cease usage of soap when washing).
- Issuance of the property discharge permit from DEQ. A discharge that has been authorized and controlled by a DEQ water quality permit is not an illicit discharge.
- Application the wastewater to dry land with no discharge to surface waters or storm sewers. This option is inappropriate for certain types of wastewaters, discharge rates, and soil types and may require the issuance of a WPCF permit from DEQ.
- Wastewater reuse without any discharge.
- Hauling the wastewater off-site for property disposal.
- With the necessary permits, discharge the wastewater to CCSD#1's sanitary sewer.

TRACKING MEASURES

(1) Number of alleged (a) illicit discharges and (b) non-stormwater (i.e., fire suppression flows and de-chlorinated flows from swimming pools) discharges which were reported each year; and,
(2) Number of illicit discharges that were controlled.

CCSD#1 TRACKING MEASURES RESPONSES

(1) Total numbers
    a. Six illicit discharges were reported to have occurred in CCSD#1, and all 6 illicit discharges were confirmed by WES to have occurred.
    b. Nine non-stormwater discharges were reported to have occurred. All 9 were confirmed by WES to have occurred. Specific non-stormwater discharges which were documented during the 2013-2014 reporting period include roof washing, pavement washing at an industrial facility, excess fire suppression flows, broken potable water lines, and a de-chlorinated discharge from a swimming pool. Car and pavement washing in residential areas are also typically considered to be non-stormwater discharges; therefore CCSD#1 acknowledges there are an unknown number of non-stormwater discharges which occur and remain unreported.
(2) Number of illicit discharges which were controlled: Of the 6 illicit discharges which were reported and confirmed to have occurred, all 6 were promptly traced to the source and controlled.

SWMACC TRACKING MEASURES RESPONSES

(1) Total numbers
    a. Zero illicit discharges were reported to have occurred in SWMACC.
    b. Zero non-stormwater discharges were reported to have occurred in SWMACC.
(2) Number controlled: Not applicable

MEASURABLE GOALS

- Respond to reports involving alleged illicit discharges within two weeks.

PROGRESS ON MEASURABLE GOALS

- This measurable goal was met. The Districts' responded to all reports involving alleged illicit discharges within two weeks.

BMP#4: SCREEN EXISTING AND NEW INDUSTRIAL FACILITIES

DISTRICTS REQUIRED TO REPORT: CCSD#1 AND SWMACC

BMP Description: Once during the permit term, CCSD#1 will review their new industrial development applications to determine whether any existing or new facilities would be subject to an industrial stormwater NPDES permit. This determination will occur based on a review of the facilities proposed activities and the applicable Standard Industrial Classification (SIC) codes related to the 1200-series NPDES permit. If a facility is identified that would be subject to an industrial stormwater NPDES permit, the facility and DEQ will be notified within 30 days.

TRACKING MEASURE

Track the number of existing or new industrial facilities subject to a stormwater industrial NPDES permit during the permit term.

CCSD#1 TRACKING MEASURE RESPONSE

To the best of our knowledge, about 27 facilities in CCSD#1 are currently in possession of a 1200Z permit and an additional facility is in possession of a 1200A permit. During the 2013-2014 reporting period, WES notified one industrial facility (Enoch Manufacturing) that they may be required to apply for a 1200Z permit, as required by the MS4 permit's schedule A(4)(b)(ii).

SWMACC TRACKING MEASURES RESPONSES

During the 2013-2014 reporting period, WES did not notify any industries in SWMACC that they might need to apply for a 1200Z permit. This aligns with expectations, since little or no acreage in SWMACC's MS4-permitted area is zoned for industrial uses.

MEASURABLE GOALS

- Review new industrial development applications once during the permit term to identify additional facilities who may need to obtain a 1200Z permit or a waiver from permit coverage.

PROGRESS ON MEASURABLE GOALS

- During the 2013-2014 reporting year, a strategy for reviewing the existing industrial facilities in CCSD#1 (for 1200Z permit eligibility) was proposed by staff and approved by WES management. WES is on track to attain this goal during the permit term.

BMP#5: ADDRESS OTHER INDUSTRIAL FACILITIES

DISTRICTS REQUIRED TO REPORT: CCSD#1 AND SWMACC

BMP Description: The facilities that are addressed by the District for this BMP are those that are not required to obtain a 1200Z permit, and/or are anticipated to contribute a substantial load of pollutants to the MS4.

Facilities will primarily be inspected on a complaint-driven basis, but it is possible that some inspections will be conducted by the District during source tracking activities if the District's storm event monitoring work or routine monitoring work shows that excessive levels of one or more pollutants are present. All facilities that are the subject of a complaint will be inspected in a timely manner by District staff. The implementation of control measures for stormwater discharges from these facilities will be deemed necessary by the District if the presence of excess levels of stormwater pollution can be confirmed by the district. For instances where the presence of excess levels of pollution in stormwater has been confirmed by the District, and in the event that the discharger's initial attempts to improve stormwater quality do not produce the required improvement, then District personnel will continue to provide guidance and technical assistance until the facilities stormwater quality improves.

The presence of excess levels of pollution in stormwater can generally be confirmed by two general methods: visual and analytical. Analytical methodologies include hand-held meters, and those performed by an environmental laboratory. The District will use visual or analytical methods at the District's discretion.

Industrial users permitted under the pretreatment program 40CFR403 have an annual facility inspection which includes a review of storm water facilities. As of 2014, this includes 21 industries.

In addition, the District has implemented a Storm Drain Cleaning Assistance Program. See BMP #28 CCSD#1.

TRACKING MEASURES

(1) The number of inspections performed, and where applicable, monitoring data collected.
(2) The number of letters, enforcement actions, or other contacts made.

(3) Number of pretreatment inspections performed (CCSD#1 – only).

CCSD#1 TRACKING MEASURES RESPONSES

(1) Zero inspections were performed in CCSD#1, and no significant stormwater quality monitoring data was collected by WES from any single industrial or commercial facility during the reporting period. See Tracking Measure #3 for work of this nature which might have been performed by IPT/SC.
(2) Zero letters were sent and zero enforcement actions were undertaken during the reporting period. See Tracking Measure #3 for work of this nature which might have been performed by IPT/SC.
(3) In 2013, 21 industrial users were inspected.

SWMACC TRACKING MEASURES RESPONSES

(1) Zero inspections were performed in the MS4-permitted portion of SWMACC; this geographic area has no industrial facilities and a very small number of commercial facilities. No significant stormwater quality monitoring data was collected by WES from any single facility in SWMACC during the reporting period. Zero letters were sent and no enforcement actions were undertaken during the reporting period.

MEASURABLE GOALS

- Notify and work with industries to improve stormwater management if an inspection is conducted that indicates improvement is needed.

PROGRESS ON MEASURABLE GOALS

- No improvement related notices were issued as a result of the 21 inspections performed during the reporting period.

BMP#6: CONDUCT PROCEDURES FOR SITE PLANNING

DISTRICTS REQUIRED TO REPORT: CCSD#1, SWMACC AND HAPPY VALLEY

BMP Description:

CCSD#1 and SWMACC Service Area Development Review

The Districts review all development plans for new construction or redevelopment projects in the Districts' service areas (disturbing sites of 800 sq. ft. or greater) through the building permit process. All reviews are conducted in accordance with the Surface Water Management Rules and Regulations for CCSD#1 and SWMACC. These regulations require submittal of an erosion prevention and sediment control (EPSC) plan containing methods and/or interim facilities to be constructed or used concurrently with land development. Plan submittals are required to provide details of erosion control measures, schedules for construction, and a maintenance schedule for erosion control activities.

The Districts also administer the 1200C permitting program for the areas inside Clackamas County and outside the incorporated cities (with the exception of Gladstone as the District administers the program for that City).

City of Happy Valley Service Area Development Review

The city of Happy Valley reviews all development plans for new construction or redevelopment projects in the District's service area through the land use and building permit processes. The pertinent regulations are in Sections 8 and 15 of the Happy Valley Municipal Code. These regulations require submittal of an erosion prevention and sediment control plan, which contains methods and/or interim facilities to be constructed or used concurrently with land development. Plan submittals are required to provide details of erosion control measures, schedules for construction, and a maintenance schedule for erosion control activities. 1200C permits in the city of Happy Valley are administered by DEQ.

CCSD#1, SWMACC & Happy Valley

The Erosion Prevention and Sediment Control Planning and Design Manual is part of the EPSC requirements and is also offered as an educational resource to the development community for preparation of plans for erosion prevention and sediment control by both the city of Happy Valley and the districts. In addition to erosion prevention and sediment control, the document also includes measures related to good house-keeping and addressing non-stormwater related waste. A multi-jurisdictional team revised this manual in December 2009.

TRACKING MEASURES

(1) Annual number of permitted active construction projects (i.e., those projects disturbing 800 sq. ft. or more).
(2) Annual number of site plan reviews and approved plans.

TRACKING MEASURES RESPONSES

	Annual number of permitted active construction projects	Annual number of site plan reviews and approved plans
CCSD#1	97	97
SWMACC	27	27
Happy Valley	362	359

MEASURABLE GOALS

- Review all applicable erosion and sediment control plans submitted as part of the building permit.

PROGRESS ON MEASURABLE GOALS

- All applicable erosion and sediment control plans are reviewed.

BMP# 7: IMPLEMENT REQUIREMENTS FOR STRUCTURAL AND NON-STRUCTURAL BEST MANAGEMENT PRACTICES

DISTRICTS REQUIRED TO REPORT: CCSD#1, SWMACC AND HAPPY VALLEY

BMP Description: CCSD#1 Service Area/SWMACC/City of Happy Valley Service Area

Structural and non-structural BMPs are required for all construction disturbing 800 sq. ft. of land or more by the District's erosion prevention and sediment control regulations. Erosion control plans require specific descriptions of erosion prevention measures, and implementation of control measures for any erosion identified prior to and concurrent with construction activities. Maintenance of all erosion control measures pursuant to an approved plan is the applicant's responsibility.

TRACKING MEASURES

See tracking measures for BMP #6

TRACKING MEASURES RESPONSES

See tracking measure responses for BMP #6

MEASURABLE GOALS

- District: CCSD#1 and SWMACC: Require structural and non-structural BMPs for erosion prevention and sediment control on all construction sites disturbing 800 sq. ft. of land or more
- City of Happy Valley: Require structural and non-structural BMPs for erosion control prevention and sediment control on all construction sites disturbing 800 sq. ft. of land or more.

PROGRESS ON MEASURABLE GOALS

- District: CCSD#1 and SWMACC: Required structural and non-structural BMPs for erosion prevention and sediment control on all construction sites disturbing 800 sq. ft. of land or more
- City of Happy Valley: Required structural and non-structural BMPs for erosion control prevention and sediment control on all construction sites disturbing 800 sq. ft. of land or more.

BMP#8: CONDUCT TRAINING FOR CONSTRUCTION SITE OPERATORS

DISTRICTS REQUIRED TO REPORT: CCSD#1, SWMACC AND HAPPY VALLEY

BMP Description: The Districts and the City of Happy Valley participate in the same activities regarding educational and training measures for construction site operators. These activities include the following:

- The *Erosion Prevention and Sediment Control Planning and Design Manual* was developed in coordination with multiple regional jurisdictions. It is available for contractors, citizens, or others involved with construction activities within the permit area.
- The Districts and the City of Happy Valley provide information to contractors during the permit review process, including pre-construction review meetings. District and city staff meet with developers and contractors to discuss requirements and to visit sites to review specific requirements.
- The Districts and the City of Happy Valley have initiated a voluntary certification program for erosion control through Clackamas Community College. The certification process and procedure are coordinated with other jurisdictions in Clackamas County.
- The Districts and the City of Happy Valley have partnered with regional jurisdictions, the Oregon Association of General Contractors and the Homebuilders Association of Metropolitan Regional Erosion Prevention Awards Program. Developed to provide recognition for contractors and developers with outstanding achievements in exceeding local erosion control requirements, the program provides recipients with media recognition, peer recognition and prizes donated by vendors of erosion prevention and sediment control products and services. The annual Regional Erosion Prevention Awards Program provides the development community with incentive to seek education regarding erosion prevention BMPs, improve BMP selection and installation and to better monitor and maintain the BMP's used in their projects. Additional benefits of the program include education for inspection staff and help with the standardization of erosion prevention requirements and reductions in noncompliance with erosion control requirements. In 2007-2008, participants included over 28 jurisdictions from 5 counties within Oregon and southern Washington.

TRACKING MEASURES

(1) Track the number and type of educational and training events the District conducts and/or participates in annually.

TRACKING MEASURES RESPONSES

(1) The *Erosion Prevention and Sediment Control Planning and Design Manual* was available for download from the WES website. In addition, WES staff participated in the development of the *ACWA Construction Site Stormwater Guide.* This guide will be offered to contractors by WES staff as need arises. In regards to the training by Clackamas Community College and the certification program, there are no certified individuals at this time. This program is currently under review and revision. The downturn in the building industry has resulted in

insufficient interest in the program to warrant offering certification training or the awards program at this time. Once development increases to sufficient levels, the certification training and awards program will be revisited.

MEASURABLE GOALS

- Conduct training for new employees as appropriate and whenever there is a significant update to the *Erosion Prevention and Sediment Control Planning and Design Manual*.

PROGRESS ON MEASURABLE GOALS

- No applicable new employees have been hired and there have been no changes to the manual. Training will be provided as needed.

BMP# 9: IDENTIFY PRIORITIES FOR INSPECTING SITES AND CONDUCTING ENFORCEMENT ACTIONS

DISTRICTS REQUIRED TO REPORT: CCSD#1, SWMACC AND HAPPY VALLEY

BMP Description:

CCSD#1 Service Area

The District inspects all construction project sites disturbing 800 sq. ft. of land or more for implementation of erosion prevention and sediment control BMPs within the district's service area. Additionally Water Environment Services is an Agent of DEQ in the issuance and administration of NPDES 1200C permits for developments disturbing areas one acre or larger throughout unincorporated Clackamas County and, by agreement, within the Oak Lodge Sanitary District and the cities of Gladstone and Rivergrove. District staff inspects construction sites a minimum of three times (initial, unscheduled and final) during construction to verify proper implementation of required BMPs. Additional monitoring inspections are performed as necessary.

Priorities for monitoring inspections are based on site-specific characteristics (i.e., watershed, grade, percent of soil cover to be removed, construction practices, season, and proximity to sensitive areas). Based on the recommendations from the WAPs, the prioritization process has been formally codified and inspection resources are allocated based on priority.

Note: CCSD#1 Asset Management and Stormwater staff have developed a protocol for identifying high priority erosion control sites based on a number of criteria related to: site location; stage of development; and adjacency to sensitive features and other factors. A preliminary ranking scheme was developed and several CCSD#1 staff were trained on the protocol and sent out into the field to perform an initial ranking of all existing erosion control sites. These data have been collected and compiled in the District's Permits database. This database will be used to refine the ranking process and track all future erosion control inspections. The prioritization ranking scheme and inspection records will be used to allocate future erosion control resources based on priority.

The Districts monitor compliance with the erosion prevention and sediment control regulations and has the authority to issue deficiency notices, charge re-inspection fees, issue fines and stop land-disturbing development work at the site until provisions of the regulations are met.

Records of activities are maintained on file at the District. Erosion control plans are filed as well as inspection reports that describe non-compliance/enforcement actions.

City of Happy Valley Service Area

The City inspects all construction project sites disturbing 800 sq. ft. of land or more for implementation of erosion prevention and sediment control BMPs within the District's disturbing areas one acre or larger inside the city limits. City staff inspections construction sites a minimum of twice during construction to verify proper implementation of required BMPs. Additional inspections are performed as necessary.

The City monitors compliance with the erosion control regulations and has the authority to issue deficiency notices, charge re-inspection fees, issue fines and stop land-disturbing development work at the site until provisions of the regulations are met.

Records of activities are maintained on file at Happy Valley City Hall. Erosion control plans are filed as well as inspection reports that describe non-compliance-enforcement actions.

Enforcement procedures are documented in the District's rules and regulations.

TRACKING MEASURES

(1) Annual number of permitted sites and percentage of sites inspections
(2) Annual number of erosion control inspections conducted.
(3) Annual number of enforcement actions.

TRACKING MEASURES RESPONSES

Tracking Measure	CCSD#1	Happy Valley	SWMACC
(1) Annual number of permitted sites and percentage of sites inspections	97; 100% of sites inspected	364; 100% of sites inspected	27; 100% of sites inspected
(2) Annual number of erosion control inspections conducted.	734	1082	268
(3) Annual number of enforcement actions.	62	0	0

MEASURABLE GOALS

(1) Inspect construction sites disturbing 800s.f. of land or more a minimum of three times during construction to verify proper implementation of required BMPs.
(2) Monitor compliance with the erosion control regulations for sites disturbing 800s.f. or more of land and when necessary, issue deficiency notices, charge re-inspection fees, issue fines and stop land-disturbing development work at the site until provisions of the regulations are met.

PROGRESS ON MEASURABLE GOALS

CCSD#1 & SWMACC

(1) Attained. Measurable goals are being met by performing an initial visit and final visit and one unscheduled visit. Measurable goals are being met.
(2) Attained. Measurable goals are being met as described in the tracking measures listed above.

HAPPY VALLEY

(1) Attained. Measurable goals are being met as described in the tracking measures listed above.
(2) Attained. Measurable goals are being met as described in the tracking measures listed above.

BMP#10: PUBLIC EDUCATION TO REDUCE DISCHARGES OF PESTICIDES, HERBICIDES AND FERTILIZERS

DISTRICTS REQUIRED TO REPORT: CCSD#1 AND SWMACC

BMP Description: CCSD#1 administers a public education program which provides information that attempts to motivate workers and residents to reduce stormwater pollution that is caused by the application of pesticides, herbicides, and fertilizers in the Districts. Educational information is shared with the public through the use of:

- Articles in newsletters
- Districts' website
- U.S. Geological Survey publications
- Local public involvement campaigns
- Brochures

Common topics that are addressed by this program include:

- Less harmful alternatives to the use of pesticides, herbicides, and fertilizers are provided. For example, use of ladybugs to eat insect pests is encouraged as an alternative to pesticide application.
- Information about the potential hazards to water quality, public health, and aquatic life associated with the misuse of pesticides, herbicides, and fertilizers in the District.
- Users are reminded that pesticide and herbicide products need to be used in a manner consistent with the product's label.

TRACKING MEASURES:

(1) Track program messages delivered, type of communication piece, and where appropriate the number of people affected.

CCSD#1 AND SWMACC TRACKING MEASURES RESPONSES

- Happy Valley Newsletter (Distribution: 16,000/month)
    - *"Dear Citizens of Happy Valley"* Student letter about watershed health, July 2013
    - *"Using fertilizers or pesticides? Please use caution before applying and during application*, September 2013
    - *Watch Out for the "Watershed Warriors" They are lurking. And fighting to keep local rivers and streams healthy!* October 2013
    - *Partners Collectively Provide Health Benefits to our Rivers and Streams,* May 2014
- Happy Valley Radio1700AM WQQK343 (Up to 3 miles radius includes 16,000+)
    - *"Fertilizer/Pesticide Careful Use" radio PSA*, On air between August 2013 through June 2014
- Clackamas County Citizen News (Distribution: 177,000)
    - WES*: All about clean cars, river and streams,* Summer 2013
    - EcoBiz ad, recognizing environmentally-safe landscaping services, Summer 2013
    - *Watch out for Watershed Warriors,* Fall 2013
    - Event ad, *We All Live Up Stream* Fall 2013
    - *Clear storm drains to protect property and waterways,* Winter 2014
    - *North Clackamas Park gets help from WES, Parks District, Milwaukie,* Winter 2014
    - *Watershed science benefits all,* Spring 2014
    - *RiverHealth stewardship program awards…,* Spring 2014
- Facebook (Likes: 2,007)
    - *Did you know that pesticides have been detected in our rivers and streams?*, May 28, 2014
- Twitter (Followers: 2,794)
    - *Did you know that pesticides have been detected in our rivers and streams?*, May 28, 2014
- RiverHealth.org (11,241 total sessions; 1,283 "Watershed Health" page sessions)
    - *Please read labels on fertilizer and pesticide containers* – Home Page info
    - Brochure—*Integrated Pest Management*
    - Brochure—*Think Smart about Pesticides*
    - Videos
        - *Smart Gardening*
        - *Watershed Health Education Program*
        - *Down the Drain*
        - *Water Celebration*
        - *Clackamas County Water Education Team*
- Regional Coalition for Clean River and Streams
    - Website (CleanRiversandStreams.org): 3,607 sessions
    - *Don't be a water hazard*—mini-campaign (May-June, 2014)
        - Radio: 896,400 impressions
        - TV: 10,450,000 impressions
        - Facebook: 43,527,842 impressions
        - Brochures (*Protecting our Watersheds*)
    - Events
        - Clackamas County Fair
        - Down the River Clean up

        - Johnson Creek Watershed Wide Event
        - Rock Creek Watershed Wide Event
        - Celebrating Water
        - We All Live Upstream – Watershed Wide Event
- Watershed Health Education Program (WHEP)
    - Classroom and field presentation and activities addressing "If it's on the ground, it's in the water."
    - WHEP videos addressing water quality shared via events, classrooms, Internet (EcoEd and the Intertwine), websites and social media
    - Youth-created presentations and PSAs shared in classrooms, Internet, websites, and the Clackamas County Government Channel
    - Celebrating Water Event at Clackamas Community College where four high schools create interactive displays to educate 5th graders on water quality issues
        - 2,000 teachers and youth
- Tualatin River Discovery Day Shuttle in SWMACC
    - Educated riders about surface water contaminants and how to help protect the watershed
        - 70 riders

MEASURABLE GOALS

(1) Continue to maintain relevant public education materials on the County's website.
(2) Prepare a minimum of one relevant article per year for inclusion with Clackamas County customer billing statements.
(3) Pursue additional relevant USGS studies if the opportunity presents itself.

PROGRESS ON MEASURABLE GOALS

(1) Attained. Public Education materials are located on the Districts' website. www.clackamas.us/wes/
(2) Attained. The August 2014 bill included, *What are we doing to make sure it all still works in 20 years?* Also, in March 2014, there was a message inserted directly on the bill. Please see Appendix D for copies of relevant articles listed in the Tracking Measures and both Measureable Goals 1) and 2).
(3) Attained. Staff explored the possibility of working with USGS on additional studies. No new studies were scheduled during the 2013-2014 reporting period. A previously scheduled surface/stormwater pesticide monitoring study was launched during the 2013-2014 reporting period with the USGS and most of the MS4 permit's co-permittees. Creek water and stormwater samples were collected during storms in September 2013 and subsequently analyzed by USGS' laboratory. Water samples were collected from an outfall in SWMACC, and outfall in CCSD#1 (Happy Valley), from 3 creeks in CCSD#1, and from many other monitoring locations in NW Clackamas County. Sediment samples were collected in NW Clackamas County in September 2013 at many sites in creek beds and at storm sewer outfalls; the outfall sediment samples were collected through the use of an innovative device called a SIFT. The report's findings, once published, will be shared with the public.

BMP#11: PROPER DISPOSAL PRACTICES TO REDUCE DISCHARGES OF PESTICIDES, HERBICIDES AND FERTILIZERS

DISTRICTS REQUIRED TO REPORT: CCSD#1 AND SWMACC

BMP Description: When the District receives inquiries from the public about the proper disposal method for empty containers that once held pesticides/herbicides or for disposal of unwanted quantities of these products, citizens are promptly forwarded to Metro's informational phone number (503-234-3000).

TRACKING MEASURES

- Number of calls received and referred to Metro annually.

CCSD#1 AND SWMACC TRACKING MEASURES RESPONSES

- Approximately three calls were received for both Districts.

MEASURABLE GOALS

- Refer all pesticide/herbicide disposal related calls to METRO.

PROGRESS ON MEASURABLE GOALS

- This measurable goal was attained.

BMP#12: FACILITATE PUBLIC REPORTING OF ILLICIT DISCHARGES AND SPILLS AND OTHER TYPES OF IMPROPER DISPOSAL OF MATERIALS

DISTRICTS REQUIRED TO REPORT: CCSD#1, SWMACC AND PUBLIC & GOVERNMENT RELATIONS

BMP Description: The District implements a program to promote, publicize, and facilitate public reporting of the presence of illicit discharges and other types of improper disposal of materials into the MS4. After District staff has received a report which relates to one of these discharges, they investigate and, if appropriate, applies control measures. See BMP #3.

TRACKING MEASURES

1) Describe news articles reported per year when appropriate.
2) Describe type of public complaints received. Resulting follow-up actions per year will be kept in a database.

CCSD#1 & SWMACC TRACKING MEASURES RESPONSES

1) Published in both the Citizen News Fall 2013 issue and the Happy Valley Today October 2013 issue was the, *Watch Out for the "Watershed Warriors"* article. Also, the ASWA Spring Newsletter 2014 published the article, *School Kids Today – Rate Payers Tomorrow."* Any relevant articles published during the reporting period will be accessible on one or both of our websites; www.riverhealth.org and, www.clackamas.us/wes/. Please also see Appendix D.
2) The relevant type of request for service (aka. "complaints") which were received from the public are placed in the following categories by WES: #1: spills, #2: illicit discharges, and #3: non-stormwater discharges (which are not rain/snowmelt, yet are allowed to be discharged to the MS4). Examples from the 2013-2014 reporting period include house paint (spill), sewage from a septic system (illicit discharge) and chlorinated potable water discharged from broken water mains (non-stormwater discharge). All follow-up actions, conducted in response to the receipt of these requests, were stored in WES's Computerized Maintenance Management System (CMMS), Lucity.

MEASURABLE GOALS

(1) Include a relevant article in The Citizen News (for the County) once a permit term.
(2) a) Continue to include area for public complaints on the county's website, and b) track number of complaints reported.

PROGRESS ON MEASURABLE GOALS

1) The Citizen New articles
    a. *Watch out for Watershed Warriors,* Fall 2013
    b. Event ad, *We All Live Up Stream* Fall 2013
2) Complaints
    a) This measureable goal references the area on Water Environment Service's website(s) where the public can report the presence of illicit discharges and other types of improper disposal of materials into the MS4 was attained. Reports can be made on either 2 web pages:
        1. http://web3.clackamas.us/complaint/reportproblem.jsp
        2. http://www.clackamas.us/wes/contact.html
    b) This measureable goal tracks the number of reported spills, illicit discharges and improper disposal incidents which were received from a WES website. We were notified about one illicit discharge via the WES website during the 2013-2014 reporting period. No reports about spills or non-stormwater discharges were received from a WES website during the 2013-2014 reporting period. All other reports were received by WES via email, telephone, and the media.

BMP#13: PARTICIPATE IN PUBLIC EDUCATION EFFECTIVENESS EVALUATION

DISTRICTS REQUIRED TO REPORT: CCSD#1 AND SWMACC

BMP Description: Over the permit term CCSD#1 will provide information related to an effectiveness evaluation. This may be conducted in coordination with other local Phase 1 jurisdictions. The effectiveness evaluation information will focus on assessing changes in targeted behaviors and will allow for additional information that can be used in adaptive management of the CCSD#1 education and outreach strategy.

TRACKING MEASURES

(1) Report on activities annually.

CCSD#1 & SWMACC TRACKING MEASURES RESPONSES

- CCSD#1 Watershed Health Education Program (WHEP) student pre and post knowledge assessments for evaluation. WHEP partners with science educators to help CCSD#1 facilitate awareness and stewardship of local streams and watersheds. WHEP activities are directed toward science classes in the Clackamas School District and align with the U.S. Environmental Protection Agency's (EPA) Environmental Education Continuum and focus on protecting America's Waters:
    - Stamberger Outreach Consulting (surface water issues and rain gardens)
        - Each high school student that received in-classroom lessons filled out a pre assessment before receiving instruction and a post assessment afterwards. Data was entered for each class separately and compared both within classes and across classes to look for indications of educational impact.
    - Patrick Edwards, PhD (macro-invertebrate and stream habitat study as indicator of water quality)
        - Student assessment was administered during the 2013/14 to assess the major objectives of the WHEP program. The survey contained 8 items designed to asses Objective 1 Raising Awareness (survey items 1, 4 and 7), Objective 2 problem Solving (items 3 and 8), and Objective 3 Stewardship (2 and 6). Results were analyzed and summarized for each school.
- SWMACC Tualatin River Discover Day verbal pre and post quiz delivered in a fun and engaging manner during van shuttle trips for evaluation:
    - Public was verbally pre and post quizzed while entering and exiting shuttle van from Tualatin River put-in, take-out or parking areas on watershed health issues (proper disposal of pet waste, washing cars in commercial car washes instead of on driveways, encouraging proper use of pesticides and fertilizers). This event targets many families with school-age children who enjoy being quizzed along with they are parents. Evaluation consisted of comparing tally of correct answers to wrong answers for each trip.

MEASURABLE GOALS

- Provide/compile information regarding a public education effectiveness evaluation over the permit term.

PROGRESS ON MEASURABLE GOALS

- CCSD#1 Watershed Health Education Program student pre and post knowledge assessments
    - Stamberger Outreach Consulting
        - Percent change in correct answers varied across classes. When all classes were looked at together, the percent improvement in correct answers was very statistically significant, as was the percent change in 13 of the 16 classes when looked at individually. One class had a negative percent change and two classes had only 4% and 7% change, which were not significant. As in-classroom curriculum was very similar across all classes and taught by only two SOC staff members with classes usually receiving instruction from the same staff person throughout the program, we feel that these variations are not due to variations in implementation. Many variables could have influenced variation among percent change, including, we believe, differences in learning style across classes, differences in classroom culture, classroom conditions when the assessment was implemented, language barriers, and many other potential variables. Some classroom teachers collected grades on the post-assessments, which we believe increased student effort, while other classes may have employed less effort, knowing the assessments were not being graded.
    - Patrick Edwards, PhD
        - Results show clear gains in student awareness and knowledge of water quality issues in CCSD#1 and the capacity stewardship. The mean score in the post exam increased from 39% to 70%.. For example, in the post survey, more students were able to: name stream insects and native plants in the post survey (items 4, 6, and 7); name the watershed in which they lived (item 2), identify more sources of water pollution (item 2) and invasive species (item 6).
- SWMACC Tualatin River Discover Day van trip quizzes
    - Upon leaving the shuttle van, everyone knew the correct answers to the questions and left smiling and vowing to protect water quality!

BMP#14: TRAINING FOR EMPLOYEES

DISTRICTS REQUIRED TO REPORT: CCSD#1 AND SWMACC

BMP Description: CCSD# 1 and SWMACC

A variety of training is provided to CCSD#1 staff associated with stormwater management. Training and advisory committee opportunities are made available through local agencies and groups involved with a broad range of water quality issues including stormwater (e.g., Oregon Association of Clean Water Agencies conferences). Such training is provided based on need and availability.

With respect to fire fighting-related training activities, fire fighting is conducted within the permit area by Clackamas County Fire District #1. They have a training center at SE 130th in Clackamas County. The training center includes a valve that is used to divert training flows into the sanitary system. CCSD#1 will check-in with the Fire District during the permit term to ensure they are using the valve. Check-ins will include discussion related to training and the potential for other waste waters to enter the system.

TRACKING MEASURES

Track the number of employees receiving training in stormwater management annually.

CCSD#1 & SWMACC TRACKING MEASURES RESPONSES

- EPA National SW Calculator webcast – 4 FTEs
- Accela the county's permits tracking system –6 FTEs
- EPA The Pitfalls of Urban Hydrology & What U Need to Know – 3 FTEs
- Plat and Subdivision Law in Oregon workshop – 2 FTEs
- National Stormwater Calculator Webinar (October 23, 2014 – 3 FTE
- Urban Hydrology Webinar (January 30, 2014) – 2 FTEs
- Water Environment School (March 25-27, 2014) – 3 FTEs
- ACWA Stormwater Summit (May 15, 2014) – 3FTEs
- Restoration Webinar (May 20, 2014) – 1 FTE
- First Responder Awareness + Operations HAZMAT Training (May 12, 2014) full day and 1 hour refresher courses - 22 FTEs
- ACWA Annual Conference in Bend (July 2013) - 1 FTE

MEASURABLE GOALS

(1) Attend relevant stormwater management related training based on need and availability.
(2) Check-in with the Fire District regarding stormwater issues.

PROGRESS ON MEASURABLE GOALS

(1) Attained. As demonstrated in the Tracking Measure for this BMP, Employees are provided training based on need and availability.

(2) Not applicable as of this reporting period.

BMP# 15: PROVIDE FOR PUBLIC PARTICIPATION WITH SWMP AND BENCHMARK SUBMITTALS

DISTRICTS REQUIRED TO REPORT: CCSD#1 AND SWMACC

BMP Description: Schedule A(4)(e) of the District's MS4 NPDES permit requires CCSD#1 to provide opportunity for public participation in the development, implementation, and modification of the

CCSD#1 Stormwater Management Plan (SWMP) and pollutant load reduction benchmark development.

SWMP revisions and pollutant load reduction benchmarks are required for submittal to DEQ at the permit renewal submittal (180-days prior to permit expiration). Prior to submittal of these items, CCSD#1 will provide the public with an opportunity to comment on the revised draft SWMP and proposed pollutant load reduction benchmarks for a minimum of 30 days. Comments on the documents will be collected and considered and response to comments will be publically provided.

TRACKING MEASURES

N/A

CCSD#1 & SWMACC TRACKING MEASURES RESPONSES

N/A

MEASURABLE GOALS

(1) Provide for public participation with the SWMP and pollutant load reduction benchmarks prior to the permit renewal application deadline.
(2) Provide for public participation with the monitoring plan due to the department by September 1, 2012.

PROGRESS ON MEASURABLE GOALS

(1) Benchmarks will be developed in the upcoming year. Public participation is anticipated to occur in autumn of 2015.
(2) Monitoring plan public participation occurred in the summer of 2012.

BMP#16: PLANNING PROCEDURES FOR NEW DEVELOPMENT AND SIGNIFICANT REDEVELOPMENT

DISTRICTS REQUIRED TO REPORT: CCSD#1 AND SWMACC

BMP Description: This BMP covers the planning procedures for developing, implementing, and enforcing controls to reduce the discharge of pollutants from storm sewers collecting runoff from areas of significant development or redevelopment. These controls include county-funded capital improvement projects to provide new stormwater treatment facilities in previously developed areas and regulations requiring such facilities with all new land development or redevelopment projects. For residential subdivisions and partitions of parcels with the potential to create more than two additional lots as currently zoned, and for developments having more than 5,000 sq. ft. of impervious surface, on-site stormwater flow control, water quality treatment, and infiltration facilities are required. For 2 and 3 lot partitions that cannot be further partitioned under current zoning, flow control is not required if there are no downstream impacts. All subdivisions and partitions must include a storm water management plan. Infiltration facilities are required where soil conditions

permit. With respect to maintenance of the private facilities that are constructed, the following applies:

Private Residential Storm System Maintenance (e.g. subdivisions)

Properties with private storm systems for new residential developments are required as part of the development approval process to inspect and maintain their storm systems themselves (e.g. through a Homeowners Association) or to sign an agreement that they will have the District staff maintain their systems on their behalf in exchange for a monthly on-site management fee.

Private Non-Residential Storm System Maintenance (e.g. commercial, industrial, etc.)

Private storm systems for new non-residential development and redevelopment are required as part of the development approval process to sign an agreement to inspect, maintain and, if needed, clean their storm systems annually. Further, they must report on these activities to the District annually. The District is compiling a database of these private facilities to allow for tracking of compliance with the terms of the agreements. In addition, the district has implemented a Storm Drain Cleaning Assistance Program. See CCSD#1 BMP #28

Maps are updated to include the location, type and drainage area of new facilities resulting from CCCSD#1's post construction standards.

TRACKING MEASURES

(1) The number and type of flow control, water quality treatment or infiltration facilities installed in accordance with the requirements.
(2) Narrative to describe the status of the private facility database.
(3) Narrative to describe results of tracking compliance with private facility maintenance agreements.

CCSD#1 & SWMACC TRACKING MEASURES RESPONSES

(1) Districts:
    a. CCSD#1: 1 Water Quality, infiltration and flow control ponds;
    b. SWMACC: 0 Water Quality, infiltration and flow control ponds.
(2) The Districts have an ongoing and internal process to inventory new, existing or reconstructed stormwater facilities and incorporate specifications of the SW facilities into a GIS data layer. The GIS data layer is integrated into the maintenance software and is utilized to schedule and perform routine maintenance of the SW facilities. CCSD#1 and SWMACC track private water quality and flow control facilities in GIS. To date, over 2800 private facilities have been tracked. WES also tracks the "drainage area" of specific water quality facilities in order to determine overall BMP coverage for the Districts.
(3) **Commercial/Industrial**: In 2013/14 the District implemented the fifth year of a Storm Drain Cleaning Assistance Program (SCAP) for private facilities.
    CCSD#1: Approximately 140 agreements, 35 reported for a total of 330 structures inspected and cleaned.
    SWMACC: Approximately 10 agreements, 4 reported for a total of 16 structures inspected and cleaned.
    Total of cleaning through SCAP and other methods: 130 businesses participating, 647 structures inspected and cleaned, and 26,030 gallons of material removed.

Subdivisions: The District maintains cleans and inspects 326 detention pond facilities 186 storm structures and 24593 feet of conduit for maintenance agreement areas. In 2014 cleaning and inspections were performed on 83% of the private storm conveyance systems; vegetation control is conducted as needed throughout the year at all detention pond facilities. Pond restoration was performed at seven facilities along with three completed pond retrofits.

MEASURABLE GOALS

(1) Continue to implement and enforce controls for stormwater quality treatment from new and redevelopment.
(2) Track the location, type and drainage area of new water quality facilities using GIS.
(3) Continue with work to compile a database of private facilities
(4) Annually, check in on compliance with terms of private facility maintenance agreements.

PROGRESS ON MEASURABLE GOALS

(1) WES continues to implement and enforce controls for stormwater quality treatment from new and redevelopment.
(2) The location, type and drainage area of new water quality facilities are entered in to GIS.
(3) Updating and refining the database of private facilities is ongoing.
(4) WES staff met to check in on compliance with terms of private facility maintenance agreements. It was determined that the program should be discussed with the new Surface Water Manager (goal is to hire by end of 2014). Possible changes to the program and to the SWMP will be evaluated at that time.

BMP#17: UPDATE PROCEDURES FOR NEW DEVELOPMENT AND SIGNIFICANT REDEVELOPMENT

DISTRICTS REQUIRED TO REPORT: CCSD#1 AND SWMACC

BMP Description: The County conducted watershed evaluations and developed watershed action plans for the Kellogg Creek and Rock Creek watersheds in 2009. Recommendations in the action plans included proposed changes to the District's stormwater standards for new and re-development. As a result, CCSD#1 embarked on a process to revise and update their standards in late 2009. Updated standards will include new thresholds for meeting standards and increased emphasis on infiltration, on-site retention, and the duration of peak flows in order to address impacts associated with hydro-modification. In addition, the design storm is being evaluated to ensure it will address the capture and treatment of 80% of average annual runoff. CCSD#1 anticipates adoption of the standards and development of a guidance manual to meet new permit requirements by June 30, 2013.

TRACKING MEASURES

CCSD#1

(1) Track status of adopting

SWMACC

(2) Track status of policy development

CCSD#1 & SWMACC TRACKING MEASURES RESPONSES

(1) CCSD#1 Completed July 1, 2013

July 1, 2013 Water Environments Services adopted new CCSD#1 stormwater standards which included the MS4 requirement to capture and treat the 80th percentile storm event. The new standard allows Low Impact Development Approach (LIDA) to mitigate stormwater runoff.
The newly adopted stormwater standards are a guide for the development community to assist in the planning and design of a stormwater management plan.

The District is also in the process of conducting a public educational process to inform stakeholders within the development community on the value of implementing a low impact development approach to treat stormwater runoff. As part of the public process, the District is emphasizing the feasibility of a low impact development/green infrastructure approach to mitigating stormwater runoff.

(2) Ongoing

The District will continue to discuss the stormwater requirements within SWMACC with developers, customers and engineers to assure the MS4 permit requirements are being fully implemented. The MS4 area within the SWMACC boundary is a geographically small area within the City of Rivergrove and the District only receives a couple of new proposals for development each year. With limited funding and resources, the District is not proposing to implement any substantial changes to the SWMACC Rules and Regulations or standards at this time.

MEASURABLE GOALS

CCSD#1:

(1) Complete all updates to the standards in order to meet new permit requirements by June 30, 2013.
(2) Complete the guidance manual for developers to facilitate the implementation of the new standards by June 30, 2013.

SWMACC:

(1) Policy development and implementation by November 1, 2014

PROGRESS ON MEASURABLE GOALS

CCSD#1

(1) Completed.

CCSD#1 completed the updates to the standards on July 1, 2013 by adopting new CCSD#1 stormwater standards. These standards included the MS4 requirement to capture and treat the 80th percentile storm event.

(2) Completed.

The newly adopted stormwater standards combined with the BMP Sizing Tool and Planning Tool are guides to assist the development community with planning and design of SWM facilities to mitigate stormwater runoff.

SWMACC

(1) In Progress: See tracking measure

Both Districts

In addition to the measurable goals above, WES staff participated in a multi-jurisdictional effort to create the "Field Guide: Maintaining Rain Gardens, Swales and Stormwater Planters". A limited number of hardcopies were ordered and future copies will be available thru a second printing or by download from the website.

BMP#18: SIZING TOOL DEVELOPMENT TO ADDRESS HYDROMODIFICATION

DISTRICTS REQUIRED TO REPORT: CCSD#1

BMP Description: Develop a simplified tool for development engineers to easily size LID BMPs to address the duration of elevated flow levels in addition to addressing flow volumes and peaks. Use of the tool in designing LID BMPs is expected to ultimately address the long-term impacts of increased runoff from development. To address flow durations, a long-term continuous simulation of hydrology is required. As a result, designing and sizing BMPs becomes more complicated than traditional design practices focused on a single design event. In order to make the BMP design process easier for the development community, neighboring states have developed a sizing tool. Currently, there are no BMP design/sizing tools to address the impacts of hydromodification that are applicable to local conditions such as rainfall patterns and critical channel forming flows. This tool will provide a simple, consistent and defensible methodology for designing/sizing LID throughout Clackamas County and the region to address hydromodification impacts.

TRACKING MEASURES

(1) Net impervious area treated by LID
(2) Number of applications submitted using tool.
(3) Customer Feedback/Community Relations

CCSD#1 TRACKING MEASURES RESPONSES

(1) 3500 sq ft
(2) 1

(3) Currently conducting a public education outreach regarding the application and use of the stormwater BMP and GIS Planning Tool.

MEASURABLE GOALS

- The primary goal is to develop, by June 30, 2013, a tool to assist development engineers with the design/sizing of stormwater management facilities in order to reduce target pollutants and stream degradation impacts (i.e., hydromodification) associated with the development of impervious surfaces.

PROGRESS ON MEASURABLE GOALS

- Attained. The sizing tool has been developed.

BMP# 19: STREET SWEEPING

DISTRICTS REQUIRED TO REPORT: CCSD#1 (#19) AND SWMACC (#18)

BMP Description: Major arterial curbed streets within the DTD service area (which includes CCSD#1) are swept on a regular basis by DTD. The frequency varies depending on a variety of factors (for example, traffic volumes). For information on their street sweeping activities, refer to DTD MS4 NPDES SWMP.

Major arterial curbed streets within the City of Happy Valley service area are swept on a regular basis by the City. The frequency varies depending on a variety of factors (for example, traffic volumes).

TRACKING MEASURES

(1) Number of miles that were swept in Happy Valley, and
(2) Mass or volume of material removed during sweeping in Happy Valley

For DTD, see tracking measures in the DTD MS4 NPDES SWMP.

CCSD#1 AND SWMACC TRACKING MEASURES RESPONSES

(1) 8,000 miles swept
(2) 757 cubic yards of material removed.

MEASURABLE GOALS

CCSD#1

- DTD; See DTD's MS4 NPDES SWMP.
- City of Happy Valley Roads: Sweep approximately 100 lane miles of curbed streets per year on average.

SWMACC

- See DTD's MS4 NPDES SWMP

PROGRESS ON MEASURABLE GOALS

CCSD#1

- DTD; See DTD's MS4 NPDES SWMP.
- City of Happy Valley Roads: This measurable goal has been attained. Since the issuance of this permit in 2012, the average lane miles of curbed streets swept on average exceeds 4000 miles.

SWMACC

- See DTD's MS4 NPDES SWMP

BMP# 20: OPERATIONS & MAINTENANCE FOR PUBLIC STREETS

DISTRICTS REQUIRED TO REPORT: CCSD#1 (#20) AND SWMACC (#19)

BMP Description: Operations and maintenance of public streets within the DTD service area (which includes CCSD#1) is the responsibility of DTD. For information on their activities, refer to the DTD MS4 NPDES SWMP.

Public streets within the city of Happy Valley are carried out by the city as follows:

- Road repair activities: These are conducted by Happy Valley as needed in a manner that minimizes or prevents erosion. When possible, this work is scheduled during the dry season.
- Litter control: This involves 1) the removal of large dead animals from roadways, 2) preventing illegal solid waste dumping through signage and enforcement actions against offenders, 3) removal of illegal solid waste dumps, and 4) the District's "Adopt-a-Road" program, which enlists the support for litter removal on specific road segments from individuals, families, community groups and businesses.
- Ice removal work: This is performed by Happy Valley on certain paved streets on an as-needed basis. The frequency varies depending on a range of factors, inkling personnel availability, air temperature, road surface temperature, humidity, and precipitation.
- Road sanding: This enhances traction during ice/snow events. After the ice/snow event when practical, the sand is removed from the roadway with mechanical sweeping machines.

TRACKING MEASURES

(1) Mass or volume of material removed by the city of Happy Valley "Adopt-a-Road" program.
(2) Number of illegal solid waste dumps that are removed in the city of Happy Valley.
(3) Mass or volume of material that is removed by the elimination of illegal solid waste dumping sites in the City of Happy Valley.

(4) Amount of sand applied and then removed by Happy Valley as a result of a snow/ice event and time of removal after the event.

TRACKING MEASURES RESPONSES

Tracking measure responses refer only to the work performed by the City of Happy Valley. For information on DTD activities, please refer to the DTD MS4 NPDES SWMP.

(1) 3
(2) 8
(3) The volume of material removed is not available. Illegal dumps are removed via a partnership between the City of Happy Valley, Metro and the Multnomah County Sheriff's office.
(4) 78 yards of sand applied; 50 yards were removed after storm event

MEASURABLE GOALS

- DTD: See DTD's MS4 NPDES SWMP
- Remove illegal solid waste dumps as they are discovered
- Collect sand applied for ice/snow events within 10 days of the end of the event.

PROGRESS ON MEASURABLE GOALS

- Attained. Illegal dumps are removed as they are discovered within the City of Happy Valley.
- Sand applied for ice/snow events was collected within 10 days of the end of the event.

BMP# 21: PROPER ROAD MAINTENANCE PRACTICES TO REDUCE THE DISCHARGE OF PESTICIDES, HERBICIDES AND FERTILIZERS

DISTRICTS REQUIRED TO REPORT: CCSD#1 (#21) AND SWMACC (#20)

BMP Description: Proper road maintenance practices to reduce the discharge of pesticides, herbicides, and fertilizers within the DTD service area (which includes CCSD#1, SWMACC, and County roads in Happy Valley) is the responsibility of DTD. For information on their activities, refer to the DTD MS4 NPDES SWMP.

Proper road maintenance practices within the city of Happy Valley are carried out by the city as follows:

Herbicides are occasionally but rarely used in road maintenance operations in the MS4-permitted area. In fact, in many years, no herbicides have been applied for roadside vegetation control in the district's area. This is due to the facts that: a) most roads in the MS4-permitted area are paved, have curbs, and are served by piped storm sewer systems, and b) any vegetation present in the road right-of-way is usually part of a landscape maintained by the property's owner. In most of the instances that involve Road Department roadside vegetation management activity within the MS4-permitted

area, mowing is the preferred vegetation control system. When herbicides are used, these products are always used in a manner consistent with the product's label.

Happy Valley has adopted the Oregon Department of Transportation (ODOT) Routine Road Maintenance Manual which includes integrated pest management. The manual governs the manner in which maintenance crews proceed on a wide variety of routine maintenance activities. The ODOT manual received approval from the National Marine Fisheries Service (NOAA Fisheries) as being exempt from "takings" with respect to salmonids listed as endangered. In other words, the practices in the manual have been designed to eliminate the adverse impacts of road maintenance activities on salmonid habitat while preserving the ability to maintain the functional integrity of the road system.

TRACKING MEASURES

Happy Valley – The quantity of herbicide products used per zip code. This is the same data that will be reported to Oregon's Department of Agriculture per the Pesticide Use Reporting System.

For DTD, see tracking measures in the DTD MS4 NPDES SWMP.

CCSD#1, HAPPY VALLEY AND SWMACC TRACKING MEASURES RESPONSES

City of Happy Valley herbicide usage:

No Herbicides used on roadways. Quantity of Magnesium chloride/De-icing – 7,500 gallons

City of Happy Valley Landscape Maintenance Product Usage:

Chemical Usage – City Hall: 1.5 gallons-roundup at 3% / 60 lbs – fertilizer
Public Works Yard: 6 gallons-roundups at 3%
CPC: 3 gallons-roundup at 3% / 50 lbs - fertilizer
Park: 50 gallons-roundup at 3% / - 1,000 lbs-fertilizer / 85 gallons-garlon
City Owned Open Spaces: 28 gallons-roundups at 3% / 13 gallons-garlon / 3 gallons-crossbow
Note: All public buildings are located within the 97086 zip code.

MEASURABLE GOALS

For DTD: See DTD's MS4 NPDES SWMP for measurable goals.

- For Happy Valley Roads: continue to implement the integrated pest management portion of the ODOT Routine Road Maintenance Manual,

PROGRESS ON MEASURABLE GOALS

- The City of Happy Valley is following the guidelines set forth in the December, 2012 Integrated Pest Management Plan.

BMP#22: LANDSCAPE MAINTENANCE PRACTICES TO REDUCE THE DISCHARGE OF PESTICIDES, HERBICIDES AND FERTILIZERS

DISTRICTS REQUIRED TO REPORT: CCSD#1 AND HAPPY VALLEY (#22), SWMACC (#21), AND DTD

BMP Description: Herbicides, pesticides and fertilizers are used by Clackamas County and the City of Happy Valley in landscape maintenance applications around County and City owned buildings and facilities. When herbicides and pesticides are used, these products are used in a manner consistent with the product's label.

During the previous permit term (2004-2009), the county and city performed the following tasks in an attempt to reduce the discharge of pollutants associated with landscape maintenance activities:

- Assembled a list of all County and City of Happy Valley buildings and facilities in the districts' MS4 permit areas.
- Met with the proper County facilities and building maintenance personnel to inform them that herbicides, pesticides and fertilizers must be used with care in landscape maintenance applications around County-owned buildings and facilities in the District. These personnel were encouraged to:
  (1) Substitute the use of these products for other, less harmful ones,
  (2) Use less herbicide, pesticide and fertilizer, if possible, when they are used, and
  (3) Naturescape with native plants, which are likely to need less herbicides, pesticides and fertilizers, whenever possible.

For this permit term, this BMP will include:

- Going back to these personnel to check-in on progress and to continue to encourage activities which reduce landscape maintenance related discharges of pesticides/herbicides/fertilizers. Please note that lands and buildings which have been leased by the city of Happy Valley and Clackamas County (i.e., the library at Clackamas Town Center) are not included in this BMP, for lease terms do not, or tend to not, provide the city or County with the authority to make landscaping decisions.
- Assembling a list of lands in CCSD#1's MS4 permit area that are not owned by Clackamas County, CCSD#1, or the City of Happy Valley, but are owned by other local governments. These local governments have their own board of directors. Water Authority, Clackamas River Water, Clackamas County Fire District No. 1, and the North Clackamas School District, are not MS4 permit holders. After this list has been assembled, we will meet with each local government during this permit term to request that they consider taking the same steps that County and City employees were asked to take (i.e., use less toxic herbicides if herbicides must be used).

TRACKING MEASURES

(1) The number of meetings conducted.
(2) The results and follow-up activities conducted as a result of the meetings.

TRACKING MEASURES RESPONSES (ALL DISTRICTS)

(1) None of these meetings were held during 2013-2014
(2) NA

MEASURABLE GOALS

(1) Check back in with all County and City of Happy Valley buildings and facilities that were visited (during the last permit cycle) at least once during this permit cycle.
(2) Develop and implement an Integrated Pest Management (IPM) plan by December 31, 2012.

PROGRESS ON MEASURABLE GOALS

(1) Since this requirement took effect for the first time in 2012, and the work product is not due until 2017, no direct progress was made on this item during the 2013-2014 reporting period.
(2) This measureable goal has already been achieved for the City Happy Valley, SWMACC and CCSD#1. The MS4 permit required these co-permittees to implement an IPM plan by December 31, 2012 and it continued to be implemented during the 2013-2014 reporting period. The City of Rivergrove was also bound by this same MS4 permit requirement, but they elected to create and submit their own separate IPM Plan to DEQ.

BMP# 23: CONTROL INFILTRATION AND CROSS CONNECTIONS TO THE DISTRICT'S STORMWATER SYSTEM

DISTRICTS REQUIRED TO REPORT: CCSD#1 (#23) AND SWMACC (#22)

BMP Description: The District's prevent ex-filtration of lows from municipal sanitary sewers in the following ways:

- Through ownership of a relatively new sanitary sewer system. Most of the infrastructure in CCSD#1-UGB's sanitary sewer system has been constructed since 1974 and its condition is generally sound and free of cracks and leaks.
- Through the presence of a rigorous maintenance program involving routine cleaning and inspection of lines to ensure that there are very few leaks. Lines are inspected with a television camera on a periodic basis. Tree roots, which could cause leakage, are removed whenever identified.

The districts prohibit cross-connections in new/redevelopments through the development building permit review and issuance process. This system , which features plan review in other office and field inspections by certified plumbing inspectors, ensures that fixtures that need to be plumbed into CCSD#1's and SWMACC's sanitary sewer system or a private septic system are actually plumbed into those systems, preventing hundreds of illicit discharges per year. The Districts are able to identify and control the ex-filtration of flows from municipal sanitary sewers when it occurs by:

- Performing dry weather inspections at all major or priority outfalls on an annual basis to detect non-stormwater flows, and

- Receiving and promptly responding to reports from citizens of unusual colors, odors and solids.

TRACKING MEASURES

(1) Number of cross-connections/sanitary discharges identified.
(2) The number and type of inspections performed, abatement actions and enforcement actions taken.

CCSD#1 TRACKING MEASURES RESPONSES

(1) 0
(2) 2 These inspections were site visits and would consist of visual or TV inspections to determine possible cross connections. No cross-connections were found during the inspection so no enforcement actions were taken.

SWMACC TRACKING MEASURES RESPONSES

(1) 0
(2) 0

MEASURABLE GOALS

Eliminate any identified sanitary discharges to the storm system.

PROGRESS ON MEASURABLE GOALS

No sanitary discharges to the storm system occurred during the report period, however, a system is in place to insure that any cross connection that is identified is immediately addressed and corrected via connection to the sanitary system.

BMP# 24: FLOOD MANAGEMENT PROJECTS AND WATER QUALITY

DISTRICTS REQUIRED TO REPORT: CCSD#1(#24)

BMP Description: There are two components to this BMP. The first is to ensure that water quality is assessed and addressed when developing capital improvement projects (CIPs) for flooding. The second is to examine the existing system to determine whether water quality retrofits would be beneficial and feasible.

CIPs: The District hired a consultant for development of Watershed Action Plans which were completed in July 2009. These Action Plans were based on watershed assessments which identified prioritized and scheduled projects and actions necessary to address factors limiting watershed health. The Action Plans include recommendations for site specific and reach oriented solutions and management programs for the significant, and often, interrelated, problems related to flooding, erosion and deposition, water quality, and habitat. One of the main goals and outcomes of the Action Plans was to prioritize what stormwater management actions and activities should be conducted in

specific sub-basin areas, such as where to assist the operations and maintenance program in targeting specific activities in various locals. Another main goal of the Watershed Action Plans is to protect, restore, and enhance the health and function of a watershed. Action Plans are currently being utilized to:

1) Identify key problems and opportunities;
2) Identify areas where efforts should be focused both in terms of protection and restoration efforts and asset management activities;
3) Implement policies, programs, and standards in specific areas.
4) Build support for implementation and serve as a tool for funding.

As a result, the stormwater CIP process includes consideration of water quality benefits.

Retrofits: As structural facility inspections occur under CCSD#1 BMP #26, sediment and debris from the facilities are removed. In the process of conducting this maintenance, facilities are sometimes found to be dysfunctional due to design flaws. As a result, facilities are sometimes retrofitted or reconstructed. In addition, projects resulting from the Watershed Action Plans described above include retrofits in addition to proposed new CIP facilities. A specific program to retro fit detection facilities is also described under CCSD#1 BMP#25.

TRACKING MEASURES

(1) Number of retrofits constructed that address water quality treatment.
(2) Number of flood management projects implemented or constructed and the percentage of those projects that include water quality components.
(3) Number of riparian enhancement projects completed each year. Number of acres enhanced.

CCSD#1 TRACKING MEASURES RESPONSES

- 3
- 3; 100% of these included water quality components.
- 72 Riparian projects completed with 41.6 acres enhanced.
    - 1500 plantings
    - Removed 25.9 ac invasives
    - Planted 1,406 trees, 5, 280 shrubs and 121 herbaceous plants
    - Recruited 4,087 volunteers who worked 12,278 hours

MEASURABLE GOALS

- Ensure all planned stormwater CIPs include consideration of water quality.

PROGRESS ON MEASURABLE GOALS

- All WES retrofit projects are planned and constructed using current industry standards for water quality and treatment. Plans and specifications are developed for each specific project.

BMP# 25: DETENTION POND RETROFIT PROGRAM

DISTRICTS REQUIRED TO REPORT: CCSD#1 (#25)

BMP Description: One recommendation from the Watershed Action Plans is to upgrade and change the performance of older detention facilities in the watershed. Since 1993, when the first stormwater requirements were adopted, the stormwater management standards have been changed four times. Facilities constructed prior to 1995, are generally thought to be in the greatest need of updating to more current performance standards. A retrofit program has been initiated to design specific modifications for selected facilities (or collection of facilities). Facilities built before 1995 are targeted, but additional facilities constructed prior to using the current standards may also be considered. A test basin will be selected to focus initial retrofit activities and will consider a) the number of older facilities; b) the potential or need for protection or improvement in the sub-basin; c) the location of a monitoring station that could be used to evaluative before and after conditions (to show improvements and value); and d) the ease and opportunity to make immediate improvements.

The facility improvements will consider changes to outlet structures; expansion or optimization of available storage; increasing flow control for small storms in exchange for flood control; modifying flow paths or changing the water quality treatment method; improving the aesthetics, landscape, or access control; and major expansion (e.g. acquire additional land), consolidation or replacement. The evaluation will be conducted in two phases – Phase 1 was an assessment phase where existing systems were reviewed, a test sub-basin was selected, alternatives and preferences were identified, opportunities were considered. The remaining sub-basins were evaluated, and a plan was devised for consideration by CCSD#1. Phase 2, will be preparing the design documents to implement the proposed changes for CCSD#1 crews or contract bids.

TRACKING MEASURES

(1) Track pilot testing activities.
(2) Number, type and location of retrofits.

CCSD#1 TRACKING MEASURES RESPONSES

(1) No piloted tests or activities were conducted during the reporting period.
(2) 3 retrofits/restorations were completed. Two were in the Rock Creek Basin and one was in the Johnson Creek Basin. They consisted of removal of excess silt, dirt and invasive vegetation and the replacement with filter river rock, filter fabric, and new media for the growth of the new native plantings.

MEASURABLE GOALS

- The primary goal of the retrofit is to retrofit existing ponds to improve their function to better meet watershed health goals. The goal will be to conduct 2 to 5 retrofits per year.

PROGRESS ON MEASURABLE GOALS

- Three retrofits/restorations were completed last year which improved function and better facilitated watershed health goals. This was accomplished by removing excess silt, dirt and

invasive vegetation as well as replacing bed material with filter river rock, filter fabric, and a new media to encourage the growth of native plants.

BMP# 26: MAINTENANCE OF CONVEYANCE SYSTEM COMPONENTS AND STRUCTURAL CONTROLS

DISTRICTS REQUIRED TO REPORT: CCSD#1 (#26) AND SWMACC (#23)

BMP Description: The District maintains conveyance and treatment components of the storm water system that are located outside the right-of-way of publicly owned roads in maintenance agreement subdivisions or that are owned by the District. The conveyance components include, but are not limited to, culverts, storm sewer lines (8" or greater in diameter) and inlets. The stormwater treatment components of the system include, but are not limited to, vegetated above ground stormwater detention facilities, sedimentation manholes, and various types of underground property pollution control systems.

Maintenance records are kept by both DTD and the District.

The District and DTD are working on the development of an intergovernmental agreement to clarify and coordinate maintenance activities. Based on the growing needs of the District for stormwater maintenance, the District purchased a vehicle for conveyance system and structural controls maintenance. Additional, there is one full time equivalent (FTE) dedicated to inspection of structures in a specified area prior to assigning a maintenance vehicle to that area. The district currently utilizes Clackamas County Correction crews for maintenance of stormwater detention/water quality needs.

NOTE: CCSD#1 is currently conducting Watershed Action Plans (WAPs) that are projected to be completed by the end of the permit term which is currently anticipated to be 2017. The WAPs will identify high priority areas based on a watershed assessment, set and focus maintenance responsibilities and priorities, and develop performance metrics to assess overall effectiveness. The WAP outcomes may result in new or revised Measurable Goals related to frequency and prioritization of maintenance activities.

TRACKING MEASURES

(1) Miles of ditches and storm lines maintained
(2) Number and type of components inspected and/or cleaned, and
(3) Mass or volume of material removed during cleaning.

CCSD#1 AND SWMACC TRACKING MEASURES RESPONSE

(1) CCSD#1 ditch and storm conduit maintained 0.13 miles
    - The District did not perform maintenance work in the SWMACC area in 2013/2014
(2) CCSD#1 cleaned and inspected the following number and type of structures
    - Control structures 52
    - Vortex separators 57
    - Catch basins 337
    - Manholes 127
    - 0.13 miles conduit cleaned, maintained and TV inspected

- Detention ponds inspected 211
- Water quality relief ponds inspected 94
- Detention ponds maintained 218
    - The District did not perform maintenance work in the SWMACC area in 2013/2014

(3) Total volume of material removed during maintenance from all assets 1080cu.ft.

- Storm structures 525cu.ft.
- Ponds 555cu.ft.

MEASURABLE GOALS

CCSD#1

- Clean storm lines and ditches on an as-needed basis, identify inspection frequency.
- Maintain structural water quality facilities on a 3-year cycle.
- Conduct conveyance system assessment by January 31, 2013.

PROGRESS ON MEASURABLE GOALS

- Attained: All storm ditches and pipes were cleaned as needed and found by Preventative Maintenance inspections which occur annually at a targeted rate of 15% of all structures or requests for service are received by residents of the District.
- In progress: Structural water quality facilities are now on annual preventative maintenance schedules. Any new structures that are added to the system are added to the preventative maintenance schedule.
- The conveyance system is completely mapped. For accuracy WES staff has conducted the activity of using a GPS unit to get a more accurate location for each structure in the system. This process is approximately 95% complete.

BMP# 27: CONDUCT CATCH BASIN CLEANING AND MAINTENANCE

DISTRICTS REQUIRED TO REPORT: CCSD#1 (#27) AND SWMACC (#24)

BMP Description: CCSD#1 cleans all District owned or District operated/maintained catch basins once every two years; cleaning approximately 15% of the catch basins each year. Catch basin cleaning activities primarily occur during the dry weather season, but during the fall, certain catch basins may be cleaned more frequently if needed. Utility crews utilize a database to document inspection and maintenance activities for the annual reports. Repair or replacement of public catch basins is scheduled following inspection.

TRACKING MEASURES

(1) Track the percent of District owned or District operated/maintained catch basins cleaned per year.
(2) Track the volume of debris removed during cleaning activities.

CCSD#1 AND SWMACC TRACKING MEASURES RESPONSES

See above CCSD#1 BMP #26 (SWMACC BMP #23)

MEASURABLE GOALS

- Clean 15% of District owned or District operated maintained public catch basins each year.
- Schedule repair or replacement of catch basins based on inspection results.

PROGRESS ON MEASURABLE GOALS

- The District cleaned 3.40% of District owned or operated public catch basins during the reporting period.
- Attained; repairs and replacements have been scheduled based on the results of inspections performed as part of the Preventative Maintenance goals or at the time of scheduled or requested cleaning.

BMP# 28: STORM DRAIN CLEANING ASSISTANCE PROGRAM

DISTRICTS REQUIRED TO REPORT: CCSD#1 (#28) AND SWMACC (#25)

BMP Description: Stormdrain Cleaning Assistance Program (SCAP) industrial, commercial, and multi-family residential subdivisions have signed stormwater facility maintenance agreements with the District that obligate the signee to inspect and maintain their stormwater facilities and to report on their activities annually to the district. To assist commercial and industrial facilities with maintaining their devices and reporting on their activities, the district implemented a Stormdrain Cleaning Assistance Program which consists of the following components:

- Obtaining the lowest price quote from vendors for the cleaning of stormwater devices.
- Send notification to agreement holder as well as other commercial and industrial facilities of their obligation to maintain their devices and to report on their activities. The notification also includes an invitation to participate in a program to have their stormwater devices inspected and cleaned for a low price.
- Providing a list of business that wish to have their stormwater devices cleaned to the vendor.
- Tracking the number of annual reports submitted.
- Obtaining a summary from the vendor, the number of facilities visited as well as the number and types of structures maintained.

TRACKING MEASURES

(1) Number of agreement holders compared with the number of annual reports received and the number devices being serviced by the vendor.
(2) Total number of businesses serviced by the vendor with total number of devices maintained and volume of debris removed.

CCSD#1 AND SWMACC TRACKING MEASURES RESPONSES

(1)

District	# of Agreements	Annual Reports Received	# of Devices Serviced by Vendor & Others
CCSD#1	139	35	330
SWMACC	10	4	16

(2)

District	# of Businesses Serviced by Vendor	Total # of Devices Maintained by Vendor	Volume of Debris Removed
CCSD#1	31	167	10315 gals
SWMACC	0	0	0

This is the total # of businesses that reported cleaning their system (including those that used the Vendor):

District	# of Businesses Serviced by Vendor or Other	Total # of Devices Maintained	Volume of Debris Removed
CCSD#1	94	557	21282 gals
SWMACC	6	16+	2068 gals
Out of District	30	74	2680 gals

MEASURABLE GOALS

- Continue to provide assistance to commercial and industrial facilities to support their water quality facility maintenance.

PROGRESS ON MEASURABLE GOALS

- Work continues on providing assistance to commercial and industrial facilities to support their water quality facility maintenance. WES staff participated in a multi-jurisdictional effort to create the "*Field Guide: Maintaining Rain Gardens, Swales and Stormwater Planters*". A limited number of hardcopies were ordered and future copies will be available thru a second printing or by download from the website. For 2015, WES is exploring the possibility of a joint program in partnership with the Oak Lodge Sanitary District and the cities of Fairview, Gresham, Milwaukie, Troutdale and Wood Village.

BMP# 29: PRIVATE WATER QUALITY FACILITY MAINTENANCE PROGRAM

DISTRICTS REQUIRED TO REPORT: CCSD#1 (#29) AND SWMACC (#26)

BMP Description: This BMP includes maintenance agreements for stormwater quality and detention structures in residential areas. Since approximately 1996, developers of nearly all newly constructed single-family residential subdivisions have elected to voluntarily sign an agreement that requires, for a monthly fee, District staff to maintain, clean and/or repair their privately owned stormwater quality and/or detention infrastructure. This infrastructure varies from subdivision to subdivision, but may include two or more of the following: catch basins, below-ground stormwater detention tanks, above-ground storm water detention and/or water quality ponds, below-ground vortex separators, and swales. On a periodic basis, pollution is removed from these structures and properly disposed of.

TRACKING MEASURES

(1) Number of structures inspected and cleaned.

CCSD#1 AND SWMACC TRACKING MEASURES RESPONSES

District	# of Structures Inspected	# of Structures Cleaned
CCSD#1	969	729
SWMACC	0	0

- WES preformed no maintenance in the SWMACC area in 2013/2014

MEASURABLE GOALS

(1) Inspect 70% of our maintenance agreement subdivisions annually.
(2) Cleaning and repair schedules will be developed based on inspection outcomes.
(3) All non-maintenance agreement cleaning and repairs will be request or service driven.
(4) Emergency driven cleaning and maintenance will be addressed within 24 hours of the call being received.
(5) All non-emergency driven cleaning and maintenance will be addressed within 72 hours of the call being received.

PROGRESS ON MEASURABLE GOALS

(1) Attained: Inspected and/or conducted vegetation control on 100% of our maintenance agreement subdivisions annually.
(2) Attained: Cleaning activities are scheduled and conducted based on inspection results and requests for service from customers.
(3) Attained: All non-maintenance agreement cleaning and repairs were completed and or redirected to the responsible party

(4) Attained: All emergency requests for service were addressed within 24 hours by WES staff. All emergency requests are scheduled based on a priority of the danger to life, road hazards and then property damage.
(5) Attained: All non-emergency requests were addressed and contact made with the customer by WES staff within 72 hours of receiving the request.

SECTION 4 STORMWATER MONITORING PROGRAM

4.1 STORMWATER MONITORING

During this permit year WES operated under the Surface/Stormwater Monitoring Plan submitted to DEQ on September 30, 2012, effective October 1, 2012. DEQ requested additional rationale to be submitted by June 30, 2013. This monitoring plan, entitled "Comprehensive Clackamas County Stormwater Monitoring Plan" was a joint effort by several co-permittees and applies to Clackamas County, CCSD#1, SWMACC, and the Cities of Gladstone, Milwaukie, Oregon City, Happy Valley, Rivergrove, and West Linn. The monitoring reports for both CCSD#1 and SWMACC, including the data accumulated over the reporting period, are included as Appendices B and C of this report.

4.2 WATERSHED ACTION PLANS AND OTHER MONITORING SURVEYS

CCSD#1 completed Watershed Action Plans (WAPs) for the two largest watersheds in the District (Kellogg-Mt. Scott Creeks and Rock Creek) in June 2010.

The top 11 high priority recommendations included:

1) Stakeholder Communication Plan
2) Update Erosion Prevention and Sediment Control Protocols
3) Regional Detention Pond Property Acquisition
4) Development of an integrated monitoring program (benthics, geomorphology, water quality)
5) Additional Benthic Macroinvertebrate Sampling
6) Development of a Channel Morphology Monitoring Program
7) Microbial Source Study
8) Updating the Surface Water Management Technical Design Standards
9) Improving Riparian Buffers
10) Priority Retrofit Program for Surface Water Detention Facilities
11) Enhanced Street Sweeping Program

During the current reporting cycle, WES has implemented or is in the process of implementing all of the top 11 recommendations listed above.

1) A Stakeholder Communications Plan has been developed and is being incrementally implemented. (Please see Public Participation/Intergovernmental Cooperation sections above.)
2) Erosion Control Protocols have been updated to facilitate the prioritization of erosion control sites based on a number of criteria.

3) WES purchased property that will be used to construct a regional stormwater treatment facility. This facility will serve a 500+ acre industrial area that is currently under-served in terms of water quality treatment. Final design for this facility is expected in early 2015 and construction will begin in 2016.
4) WES developed an integrated monitoring program that "clustered" monitoring sites for both the SWMACC and CCSD#1 Districts. WES sampling is conducted using this integrated program.
5) Benthic Macroinvertebrate/Geomorphology sampling sites have been integrated into the overall integrated monitoring program.
6) Channel Morphology Monitoring
7) Microbial Source Study was not performed. Instead a strategy that leveraged sanitary sewer activities to meet E.coli load reduction requirements was implemented.
8) Macroinvertebrate and Geomorphic surveys were conducted in the fall of 2011 in both the CCSD#1 and SWMACC service districts and are scheduled to be completed again in the fall of 2014.
9) Surface Water Technical Design Standards include new provisions that encourage the use of low impact development techniques, address hydromodification, and require enhancements to riparian buffer areas as part of development process. Use of the updated standards and BMP sizing tool is being promoted and encouraged.
10) District detention pond facilities have been evaluated for retrofit. Retrofits are focusing on addressing hydromodification impacts where feasible; improving water quality or both. The District intends to retrofit 2-5 detention facilities per year.
11) CCSD#1 and Happy Valley have an Intergovernmental Agreement (IGA) to establish an enhanced street sweeping program for streets within the CCSD#1 service district. The IGA is evaluated on a yearly basis and has been renewed for 2014.
12) WES partners have conducted 61 projects to improve riparian buffers within approximately 42 acres of riparian area along 18,975 linear feet of stream corridor during the 2012-13 fiscal year. These projects included planting over 7,500 trees and 17,130 shrubs by over 1,320 volunteers.

During the Spring/Summer of 2008, CCSD #1 contracted with the Oregon Department of Fish & Wildlife to conduct fish and habitat surveys in both CCSD #1 and SWMACC. Fish presence/absence surveys were conducted using a Smith Root LR24 backpack electrofisher from March to May 2008. Intensive fish surveys, also known as Multiple Pass Removal (MPR) surveys conducted from March through May 2008. Habitat surveys were conducted in summer, May through July, using ODFW Aquatic Inventories basin-type protocol for fish habitat surveys. HOBO Water Temperature Pro and Tidbit temperature loggers were placed in select streams and stream reaches from mid-June to mid-October, 2008. From March 2008 through June 2008, field staff sampled eight fish bearing streams in 38 total surveys within CCSD #1. Staff collected and examined over 6,000 individual fish throughout these basins.

These results along with an array of other past surveys and studies were utilized to perform detailed stream reach analyses for the 2009 Watershed Action Plans. Criteria for the assessment of aquatic habitat and biological communities were developed for habitat complexity, in-stream structure, substrate in riffle habitat, overhead shade, riparian buffer shade, summer flow, fish diversity and abundance and migration access. Criteria were also developed for hydrology and water quality. Assessment of these parameters illustrated that many of the issues related to hydrology and water quality also impact aquatic habitat and biological communities.

Recommendations from the WAPs for other monitoring surveys including additional benthic macroinvertebrate sampling and channel morphology were conducted October-December 2011; the reports are available on the Districts website at http://www.riverhealth.org/watershed-health.

SECTION 5 FUNDING, STAFF, AND EQUIPMENT

5.1 FUNDING – CCSD#1 & SWMACC

The Stormwater Management Program for CCSD#1 is funded through four primary sources: monthly stormwater utility fees, onsite stormwater maintenance fees, systems development charges (SDCs), and permit fees.

CCSD#1

In Fiscal Year 2013-14 the main funding for the Stormwater Management Program for CCSD#1 came from four sources (preliminary):

Monthly Stormwater Utility Fees	$	3,795,350.60
Maintenance Fees	$	273,600.82
Systems Development Charges (SDCs)	$	110,064.00
Stormwater and Erosion Control Permit Fees	$	111,973.84

All CCSD#1 customers pay the monthly program fee of $6.35 per Equivalent Service Unit (ESU) which is defined as one single-family residence or 2500 square feet of impervious surface for nonresidential customers. New single-family residential customers, since 1998, also pay a monthly maintenance agreement fee of $3 per ESU which is dedicated for maintenance of local subdivision stormwater conveyance, detention, treatment, and infiltration facilities.

SDCs are collected from new development and dedicated to planning, design, and construction of additional stormwater infrastructure capacity needed to accommodate growth. The current SDC rate is $205 per ESU.

SWMACC

In Fiscal Year 2013-14 the main funding for the Stormwater Management Program for SWMACC came from two sources:

Monthly Stormwater Utility Fees	$	175,401.00
Miscellaneous Income	$	11,350.00

All SWMACC customers pay the monthly program fee of $4 per Equivalent Service Unit (ESU), which is defined as one single-family residence. Only a small portion of this revenue was collected within the MS4-permitted area. Permit fees for stormwater and erosion control plan review and inspection are collected with every new development application. The current stormwater plan review fee is $400 or 4% of the installed cost of the surface water management system (whichever is greater) per subdivision or commercial/industrial development and $55 per single-family residential building permit. The erosion control review and inspection fee is $460 for the first acre, plus $80 per additional acre for subdivisions and commercial/industrial developments, while new single family residences are charged a flat rate of $310.

5.2 EXPENDITURES & BUDGET – CCSD#1 & SWMACC

The following tables display actual expenditures for permit activities for both districts for the previous two reporting periods, the actual expenditures for the 2011-2013 periods, and the budgeted and estimated expenditures for the 2013-2014 reporting period.

Table 2 Stormwater Program Funding and Expenditures for CCSD#1

CCSD#1	10/11 Actual	11/12 Actual	12/13 Actual	13/14 Budget	13/14 Estimate
Resources	**6,877,126**	**6,958,918**	**7,093,861**	**7,132,067**	**7,278,378**
Materials & Services	3,542,082	3,699,809	3,762,305	4,242,081	2,777,686
Capital Outlay	562,107	481,840	408,574	1,882,000	1,242,000
Transfers	379,413	379,052	379,728	379,633	379,633
Contingency	0	0	0	701,013	0
Ending Fund Balance	3,133,994	2,880,057	2,951,828	1,803,340	4,121,059
Total Requirements	**7,055,489**	**6,958,918**	**7,093,861**	**7,132,067**	**7,278,378**

Table 3 Stormwater Program Funding and Expenditures for SWMACC

SWMACC	10/11 Actual	11/12 Actual	12/13 Actual	13/14 Budget	13/14 Estimate
Resources	**365,517**	**341,568**	**327,452**	**240,474**	**406,437**
Materials & Services	206,853	220,853	109,855	194,630	87,671
Capital Outlay	0	0	0	0	0
Contingency	0	0	0	19,463	0
Ending Fund Balance	158,983	120,715	217,597	26,381	318,766
Total Requirements	**365,647**	**341,568**	**327,452**	**240,474**	**406,437**

5.3 STAFF – CCSD#1 & SWMACC

Staffing for surface water program management activities are integrated throughout WES. Staff is provided from the various divisions of WES as listed below and is dedicated both to CCSD#1 and SWMACC.

Operations and Maintenance Services

These services include Stormwater System Maintenance.

- 0.5 FTE Operations Manager
- 1.0 FTE Surface Water Technicians
- 4.0 FTE Sanitary and Stormwater Technicians (fka Collection System Technicians)
- 1.2 FTE Seasonal Employees
- 0.25 FTE Resource Specialist
- Have also contracted with Happy Valley for 1 FTE

Technical Services

These services include planning, development review, capital projects and erosion control.

- 0.75 FTE Surface Water Program Coordinator
- 0.2 FTE Senior Soils Scientist
- 0.5 FTE Development Review Supervisor
- 1.0 FTE Administrative Support
- 0.5 FTE Senior Civil Engineer
- 1.0 FTE Environmental Policy Specialist
- 1.0 FTE Surface Water Technician
- 1.0 FTE Plan Reviewer
- 0.5 FTE Erosion Control Inspectors
- Additional staff contracted through DTD for floodplain, natural resource buffer review and miscellaneous land use issues.

Environmental Monitoring Services

Environmental monitoring services include MS4 Permit compliance (Field Screening, Inspection of Illicit Connections, Management of Programs, Industrial Stormwater and Monitoring) within two service districts.

- 0.3 FTE Program Manager
- 0.6 FTE Water Quality Analyst
- 0.2 FTE Sample Collection (through Environmental Monitoring).
- 0.2 FTE Additional staff performs spill response, laboratory analysis on samples and continuous surface water monitoring

Public Involvement and Outreach

Public involvement and outreach includes development of brochures, public awareness materials, inter-jurisdictional coordination on public education, public meetings and workshops, etc.

- 0.5 FTE Community Relations Specialist
- 1.0 FTE Community Relations Assistant
- 0.2 FTE Surface Water Technician

5.4 TRAINING – CCSD#1 & SWMACC

Staff attended the following conferences and events:

- PNCWA 2013 Annual Conference, September 2013
- Stream Evaluation and Assessment Workshop, September 2013
- APWA Street Maintenance & Collections Systems, October 2013
- Water Leadership Symposium, October 2013
- Stormwater Chemistry Principles & Applications Workshop, November 2013
- Restoration Project Management, December 2013
- Organic Land Care Accreditation Workshop, January 2014
- Bioengineering Techniques for Restoring Physical Processes Workshop, February 2014
- PNPCA Water Environment School, March 2014
- APWA Developing Leader, March 2014
- Stormwater Best Management Practice Handbook for Municipalities Workshop, April 2014
- ACWA Stormwater Summit, May 2014

5.5 EQUIPMENT – CCSD#1 & SWMACC

Stormwater management activities require a range of equipment. This equipment is owned by the County Road Department or by WES. Additional equipment is rented or contracted out. A partial list of equipment used for stormwater management activities includes:

- Combination Vacuum/Hydrocleaner trucks
- Regenerative air sweepers
- 1 ton utility vehicles
- 3 and 5 yd dump trucks
- 16 ft Felling trailer
- Skid steer front end loader
- Mini excavator
- Dye testing and smoke testing equipment
- Sampling stations and sampling gear
- Volunteer stream restoration tool trailer
- 6 in. trailer mounted dry prime pump
- Additional larger excavation equipment as needed
- Private conveyor material placement equipment

5.6 FUNDING FOR DEVELOPMENT REVIEW, EROSION CONTROL & STREET SWEEPING - CITY OF HAPPY VALLEY

For the City of Happy Valley, permit fees for development and erosion control plan review and inspection fees are split into two categories: a) Subdivision and PUD Projects, and b) Commercial and High-Density Residential Projects. The fee structure for Subdivision and PUD Projects is a $485 base fee up to 1 acre plus $85 per acre or fraction thereof for sites greater than 1 acre. The fee structure for Commercial and High-Density Residential Projects is a $500 base fee up to 1 acre plus $100 per acre or fraction thereof for sites greater than 1 acre. In the July 2013 through June 2014 fiscal year, the City collected approximately $215,683.38 in development review and erosion control permit fees.

Funds for Street Sweeping are budgeted through General Funds.

5.7 STAFF - CITY OF HAPPY VALLEY

Public Works Department
Street Sweeping, stormwater related issues and topics in Happy Valley

- 1.0 FTE Program Manager
- 4.0 FTE Street Maintenance Employees
- 0.5 FTE Administrative Assistant
- Additional staff as needed

Engineering Services
Engineering development review, capital projects, and erosion control, and stormwater related issues and topics in Happy Valley.

- 1.0 FTE Program Manager
- 1.0 FTE Engineer
- Additional staff as needed.

5.8 TRAINING - CITY OF HAPPY VALLEY

City staff attended the following conferences and events:

- Oregon Water Education Foundation (38th Annual Water Environment School)
- American Water Works Association (35th Annual Water Works School)
- APWA Spring Conference
- APWA Preventative Maintenance of Roadways Conference

5.9 EQUIPMENT - CITY OF HAPPY VALLEY

Street Sweeping and erosion control activities require a range of equipment. This equipment is owned by the City. Additional equipment is rented or contracted out. A partial list of equipment used for these activities includes:

- (2) Regenerative air sweepers
- (1) Mechanical sweeper
- (1) 35 HP tractor
- (4) utility trucks
- (2) 2 yd dump trucks
- (1) 5 yd dump truck
- (1) Rubber tired backhoe

SECTION 6 LEGAL AUTHORITIES

CCSD#1 and SWMACC

Both SWMACC and CCSD#1 have several ordinances and County Board Orders in place, giving them the legal authority to implement the programs and activities as described in the SWMPs.

Through County Board Order No. 92-289, SWMACC has the authority to construct capital improvements, to address surface water quality and quantity, and to provide nonpoint source pollution controls to meet state and federal regulations. County Board Order No. 93-196 provides CCSD#1 with this same authority within its jurisdiction. Since both Districts' SWMPs are in place to satisfy both state and federal water quality regulations, the Districts have legal authority to implement these SWMPs through the above mentioned County Board Orders.

County Board Order No. 88-179 provides the County with legal authority to enforce illicit connection regulations for excavation and grading, sewage disposal, and grading and filling.

Additionally, Zoning and Development Ordinance, Section 1008 provides legal authority for the implementation of erosion control standards and enforcement, water quality, quantity, and conveyance design standards for new and redevelopment projects. The purpose of this ordinance is to minimize the amount of stormwater runoff resulting from development utilizing nonstructural controls where possible, maintain and improve water quality, prevent and/or reduce soil erosion, prevent structural and environmental damage.

City of Happy Valley

Most SWMP related activities are conducted by CCSD#1, and the legal authority to conduct those activities is described above. However, the City does conduct some of these activities, such as plan review, and construction inspection for erosion control measures within City limits, and public street maintenance and cleaning activities. The City has legal authority to implement these activities through Municipal Code Sections 8, 15, and 10 respectively.

SECTION 7 OVERVIEW OF PLANNING, LAND USE CHANGES AND DEVELOPMENT ACTIVITIES WITHIN THE UGB

Land use did not significantly change within the Service Districts and the adjacent UGB expansion areas over the course of the 2013-2014 reporting period.

Within Clackamas County Service District No.1 ("CCSD#1") 4.25 acres was annexed to the territory during this reporting period. Approximately 33 acres were developed in CCSD#1 in accordance with the District Standards, Stormwater Management Plan ("SWMP") and Willamette River TMDL Implementation Plan.

The Surface Water Management Agency of Clackamas County ("SWMACC") boundary currently is the portion Tualatin River Drainage Basin within the County of Clackamas. The SWMACC District is slowly decreasing in size due to the adjacent cities are expanding into this service area. No land was development within the SWMACC District.

Both Districts require development to mitigate stormwater form impervious areas. The District, through the regulations and standards, requires development to address water quality, quantity and infiltration. The development which occurred during this reporting period in both Districts was constructed in compliance with the MS4 Permit and TMDL Plans.

The District is forecasting similar growth in this reporting year to occur over the next reporting period. The development activities occurring in 2014-2015 will be reported in next year's annual report.

SECTION 8 PROPOSED CHANGES TO SWMP AND/OR TMDL IMPLEMENTATION PLAN

No changes are anticipated.

SECTION 9 PUBLIC COMMENT – ANNUAL REPORTS

Schedule A (4) (e) Public Involvement and Participation requires a public participation approach that provides opportunities for the public to effectively participate in the development, implementation and modification of the co-permittee's stormwater management program. The approach must include provisions for receiving and considering public comments on the monitoring plan due to the Department by September 1, 2012, annual reports, SWMP revisions, and the TMDL pollutant load reduction benchmark development.

The 2013/2014 Annual Report was made available to the public on the District's website and available by hard copy. Public comment was opened October 6, 2014 and ended noon October 20, 2014. During that time, no comments were received.

SECTION 10 ADAPTIVE MANAGEMENT

BMP Implementation data and environmental monitoring data analysis has been performed throughout this reporting period. Permittees are therefore moving into the third operational 'phase' of the adaptive management approach and are set to evaluate the stormwater program during the next reporting period. The Implementation plan for the permit renewal will include any changes as a result of adaptive management. The goal of adaptively managing the SWMP is on track.

SECTION 11 APPENDICES

APPENDIX A GUIDE TO ACRONYMS

Abbreviation	Definition
BMP	Best Management Practice
CCSD#1	Clackamas County Service District #1
CCCSMP	Comprehensive Clackamas County Stormwater Monitoring Plan
CIP	Capital Improvement Project
DEQ	Department of Environmental Quality
DTD	Clackamas County Department of Transportation and Development
EPSC	Erosion Prevention and Sediment Control
LID	Low Impact Development
MEP	Maximum Extent Practicable
MS4	Municipal Separate Storm Sewer System
NPDES	National Pollutant Discharge Elimination System
ODOT	Oregon Department of Transportation
PSU	Portland State University
SCAP	Stormdrain Cleaning Assistance Program
SIC	Standard Industrial Classification
SWMACC	Surface Water Management Agency of Clackamas County
SWRP	Student Watershed Research Program
TBPAC	Tualatin Basin Public Awareness Committee
TMDL	Total Maximum Daily Load
UGB	Urban Growth Boundary
WAP	Watershed Action Plan
WPCF	Water Pollution Control Facility

APPENDIX B ENVIRONMENTAL MONITORING REPORT

JULY 1, 2013 – JUNE 30, 2014 MONITORING YEAR

As part of the National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) permit requirement, Clackamas County Water Environment Services (WES), on behalf of Clackamas County, Clackamas County Service District #1 (CCSD#1), the Surface Water Management Agency of Clackamas County (SWMACC), the City of Rivergrove, and the City of Happy Valley implements a stormwater and creek water monitoring program. Specific monitoring requirements and objectives are defined in Schedule B of the March 2012 Clackamas County MS4 NPDES permit (number 101348). Note that these five co-permittees are also regulated by either the Willamette TMDL or the Tualatin TMDL.

Given the effort associated with implementing an effective environmental monitoring program that adequately meets all permit requirements and objectives, nine Clackamas County co-permittees (including Clackamas County, CCSD#1, SWMACC, and the Cities of Rivergrove and Happy Valley) agreed to consolidate efforts and prepare one comprehensive stormwater monitoring plan several years ago. This plan is called the Comprehensive Clackamas County NPDES MS4 Stormwater Monitoring Plan (CCCSMP). An updated version of the CCCSMP went into effect on June 30 1, 2013 and is now being implemented.

Environmental Monitoring Program Description

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 permittee's SWMP, through the use of performance indicators or metrics. Results of the program monitoring are reported in a separate section of this MS4 NPDES/TMDL Annual Report. The second component is environmental monitoring, which includes actual collection and analysis of water quality samples. Environmental monitoring efforts reported for compliance with MS4 NPDES permit conditions consist of instream sample collection and stormwater outfall sample collection.

Summary of Monitoring Data

Instream monitoring was conducted at eight locations on seven tributaries to the Willamette River within the CCSD#1 service boundary and at one location on one tributary to the Tualatin River within the SWMACC service area. Note that the SWMACC creek monitoring location is not located in the geographic area which is regulated by SWMACC's MS4 permit. Time-weighted instream composite samples were collected three times during storms during the monitoring year in CCSD#1 and SWMACC; grab samples were collected during an additional routinely scheduled six visits to all nine instream monitoring locations under varying weather conditions during the July 1st-June 30th monitoring year.

Storm sewer outfall monitoring was conducted at four locations which discharge to tributaries of the Willamette and Clackamas Rivers in CCSD#1. Outfall monitoring was also conducted at a location in the City of Rivergrove in SWMACC. Time-weighted composite samples were taken during three visits to these five outfall locations during the year.

Complete results of the instream and outfall sample collection efforts conducted by WES for the 2013-2014 monitoring year are provided in Table 4 (for monitoring conducted within CCSD#1) and Table 5 (for monitoring conducted within SWMACC).

During the 2013-2014 monitoring year, the MS4 Permit's Schedule B (see Table B-1s) required the initiation of some storm event monitoring for total mercury and related pollutants at an outfall in SWMACC and at an outfall in CCSD#1 between October 1, 2013 and April 30, 2014. The storm was caught on April 9, 2014. The data from this storm is in the following table:

	Rivergrove Boat Ramp Outfall in SWMACC	SE Oregon Trail Dr. Outfall in CCSD#1
Total Methyl Mercury	0.706 ng/L	0.121 ng/L
Total Mercury	9.88 ng/L	3.46 ng/L

Table B-1s in the MS4 permit specified that the following data should have been obtained during this storm from each outfall for: 1) total mercury, 2) total methyl mercury, 3) dissolved total mercury, 4) dissolved methyl mercury, 5) dissolved oxygen, 6) pH, 7) stormwater temperature, 8) conductivity, and 9) total suspended solids. Unfortunately, an error was made, and the data for parameters #3 through #9 were not obtained from the April 9, 2014 storm. As soon as this situation was discovered, it was promptly self-disclosed to the Department of Environmental Quality (Department) in a May 23, 2014 email. To rectify the situation, the District committed to monitor a storm during the period from October 1, 2014 to April 30, 2015 and analyze the samples for all of the required parameters".

Discussion of Monitoring Data

The benefit of participation in a coordinated monitoring effort with other co-permittees is that resources may be more widely distributed and the data produced will provide comprehensive information for the County as a whole. Monitoring data continues to be collected with the expectation that some analyses would be conducted annually and submitted with the annual compliance reports, while other analyses would be conducted after several years of data have been collected (e.g., the 5-year permit period) so that the data are more statistically robust in terms of providing information.

Monitoring data compiled into Tables 4 and 5 include baseline statistics (mean, maximum, and minimum) at each sampling location. This annual monitoring report summary addresses requirements identified in the CCCSMP, Chapter 7 Data Analysis and Interpretation.

For instream monitoring sites, data were segregated according to whether samples were collected during Storm Event weather conditions or not. One benefit of this comparison is that it more readily identifies the impact of stormwater runoff on instream water quality, although many of the monitoring events which were not conducted during Storm Events were often conducted soon after a storm had moved through; the water quality data from these events is clearly influences by the runoff from the recent storm. Review of the Storm Event monitoring data should be conducted while considering the rainfall depth associated with the storm event. Precipitation depths for Storm Events which were monitored are listed below (rainfall for SWMACC storms was recorded at the Portland Community College's Sylvania Campus and rainfall for CCSD#1 storms was recorded at the Pleasant Valley School near the City of Happy Valley, unless noted otherwise in the table):

Storm Event Monitoring Date	Sites Monitored	Rain Prior to Event	Rain During Sample Collection Period	Total Rainfall (prior to & during event)
11/7/2013	5 CCSD#1 Creeks	2.28 inches fell in the 6.5 days prior to collecting the samples (0.72 inch fell in the 24 hours prior to collecting the samples).	0.17	2.45 inches
11/19/2013	3 CCSD#1 Creeks and Pecan Creek in SWMACC	SWMACC: 0.75 inch in preceding 24 hrs CCSD#1: 0.77 inch in preceding 24 hrs	SWMACC: 0.07 inch CCSD#1: 0.09 inch	SWMACC: 0.82 inch CCSD#1: 0.86 inch
1/28/2014	All 4 CCSD#1 outfalls	0.01 inch (There were 9 rain-free days prior to this storm)	0.38 inch	0.39 inch
2/12/2014	All 8 CCSD#1 Creeks	1.77 inches in preceding 66 hours (0.57 inch in the 24 hours before samples were collected)	none	1.77 inches
2/27/2014	All 4 CCSD#1 outfalls	0.01 in the preceding 24 hours (Only 0.01 additional rain fell in the preceding 65 hours)	0.20 inch	0.21 inch
3/3/2014	Pecan Creek in SWMACC	0.87 inch during preceding 29 hours (from 6am on March 2nd to 10am on March 3rd)	none	0.87 inch
3/5/2014	All 8 CCSD#1 Creeks	0.31 inch in preceding 8 hours	0.09	0.4 inch
3/28/2014	Cow Creek in CCSD#1	1.72 inch fell in the 80 hours prior to collecting the samples at 11:55am (0.57 inch fell in the 7 hours before the sample was collected).	0.01 inch (this was a Routinely scheduled visit, so samples were not composited over a 2-4 hour period, unlike the other monitoring events in this table)	1.73 inches
3/28/2014	Pecan Creek in SWMACC	0.49 inch fell in preceding 11 hours	0.18	0.67 inch
4/17/2014	3 CCSD#1 outfalls and the SWMACC outfall	SWMACC: 0.32 inch in preceding 14 hrs * CCSD#1: 0.25 inch in preceding 12 hrs*	SWMACC: 0.16 inch CCSD#1: 0.10 inch	SWMACC: 0.48 inch CCSD#1: 0.35 inch
5/8/2014	One CCSD#1 outfall and the SWMACC outfall	SWMACC: 0.09 or 0.10 (only 0.01 inch fell in the 76 hrs prior to this rain) CCSD#1: 0.07 (no rain fell in the 77 hours prior to this rainfall)	SWMACC: 0.25 CCSD#1: 0.31	SWMACC: 0.34 or 0.35 inch CCSD#1: 0.38 inch
6/12/2014	SWMACC outfall	0.0 inch in the preceding 24 hours (zero rain fell in the preceding 13 days)	0.13 inch (measured at the Conestoga Aquatic Center in Tigard, OR)	0.13

* = The monitoring event at outfalls on April 17, 2014 did not have an Antecedent Dry Period as defined by the MS4 permit

In conjunction with the monitoring data summary included in Tables 4 and 5, WES has prepared a generalized stormwater quality index to assist the reader with drawing conclusions and making informed decisions based on the monitoring results. This index has been included as Attachment 1.

Individual fact sheets for each instream and storm sewer outfall monitoring location have been prepared which summarize the monitoring location's drainage area conditions and associated environmental monitoring results. The fact sheets have been included as Attachment 2.

Table 4 CCSD#1 Water Quality and Flow Monitoring Results

Carli Creek

				Water Quality Standard Comparison																	Additional Parameters of Concern										Supporting Parameters			
WES ID and Location	Date	Rain Event (Y/N)	Visit Type (Routine/ Storm)	Temp (C)	WQ Std[1] (C)	DO (mg/L)	WQ Std[2] (mg/L)	Nitrate (mg/L)	WQ Std[3] (mg/L)	E. coli (MPN per 100ml)	Water Quality Std (MPN per 100ml)	Copper, Diss-olved (ug/L)	Guidance Conc (Chronic) (ug/L)	Guidance Conc (Acute) (ug/L)	Lead, Diss-olved (ug/L)	Water Quality Std (Chronic) (ug/L)	Water Quality Std (Acute) (ug/L)	Zinc, Diss-olved (ug/L)	Water Quality Std (Chronic) (ug/L)	Water Quality Std (Acute) (ug/L)	Total Solids (mg/L)	Total Suspended Solids (mg/L)	BOD (mg/L)	Total Dissolved Solids (mg/L)	Ammonia (mg/L)	Total Phosphorus (mg/L)	Ortho-phosphate (mg/L)	Copper, Total (ug/L)	Lead, Total (ug/L)	Zinc, Total (ug/L)	Hardness (mg/L)	Reported Flow (CFS)	pH	Conducti-vity (uS/cm)
#05 SE 120th & Carpenter Manhole	11/7/13	Y	Storm	11.3	18	10.3	6.5	0.27	10	770	406	2.47	2.83	3.78	0.19	0.57	14.51	40.5	38	37	70	25.0	4.0	36	< 0.05	0.09	0.05	7.8	2.76	78.0	26	11.39	7.4	26.4
#05 SE 120th & Carpenter Manhole	2/12/14	Y	Storm	10.7	18	9.8	6.5	1.13	10	687	406	1.3	6.52	9.47	0.07	1.68	43.02	33	86	86	119	10.0	1.0	99	< 0.05	0.06	0.04	1.6	0.60	25.0	69	5.04	6.6	177.9
#05 SE 120th & Carpenter Manhole	3/5/14	Y	Storm	11.9	18	9.8	6.5	0.27	10	105	406	1.4	2.17	2.81	0.08	0.40	10.18	35	29	29	61	22.8	2.3	50	< 0.05	< 0.04	< 0.04	2.3	1.07	36.0	19	25.68	7.0	58.1
			Mean	11.3		10.0		0.56		382		1.7			0.1			36.2			83	19.3	2.4	62	0.03	0.06	0.04	3.9	1.48	46.3	38	14.04	7.0	87.5
			Maximum	11.9		10.3		1.13		770		2.47			0.19			41			119	25.0	4.0	99	< 0.05	0.09	0.05	7.8	2.76	78.0	69	25.68	7.4	177.9
			Minimum	10.7		9.8		0.27		105		1.30			0.07			33			61	10.0	1.0	36	< 0.05	< 0.04	0.04	1.6	0.60	25.0	19	5.04	6.6	26.4
Water Quality Exceedance (number of samples)				0		0		0		2			0	0		0	0		2	2														
#05 SE 120th & Carpenter Manhole	9/23/13	N	Routine	16.7	18	8.4	6.5	0.48	10	1733	406	2.3	3.74	5.13	0.12	0.81	20.90	43	50	49	102	7.0	1.3	86	< 0.05	0.04	0.04	3.5	0.85	51.0	36	NA	6.9	67.3
#05 SE 120th & Carpenter Manhole	10/10/13	N	Routine	15.3	18	8.35	6.5	1.22	10	11	406	0.7	8.03	11.91	< 0.01	2.19	56.17	12	106	105	176	7.0	0.0	171	< 0.15	1.27	0.04	1.5	0.36	18.0	88	2.01	7.1	176.8
#05 SE 120th & Carpenter Manhole	10/24/13	N	Routine	15.2	18	9.5	6.5	0.98	10	19	406	0.71	9.64	14.58	< 0.01	2.76	70.93	18	127	126	183	6.0	< 1.3	180	< 0.05	< 0.08	0.07	1.5	0.32	26.9	109	1.36	7.1	238
#05 SE 120th & Carpenter Manhole	12/16/13	N	Routine	12.5	18	11.4	6.5	1.19	10	3	406	0.6	9.34	14.07	< 0.01	2.65	68.10	13	123	122	188	4.0	< 1.2	192	< 0.15	< 0.08	0.05	1.2	0.21	21.0	105	2.62	7.0	257
#05 SE 120th & Carpenter Manhole	5/5/14	N	Routine	13.4	18	9.5	6.5	0.93	10	17	406	1	6.52	9.47	0.04	1.68	43.02	21	86	86	130	4.0	0.4	134	< 0.05	< 0.04	0.04	1.6	0.33	27.0	69	1.87	7.0	171.9
#05 SE 120th & Carpenter Manhole	6/2/14	N	Routine	14.9	18	8.6	6.5	1.09	10	> 2420	406	0.6	8.65	12.93	< 0.01	2.41	61.77	12	114	113	190	1.7	< 1.2	160	< 0.05	0.04	0.05	0.9	0.24	14.0	96	1.14	6.9	232
			Mean	14.7		9.3		0.98		60		0.99			0.03			19.83			162	5.0	0.6	154	0.04	0.24	0.05	1.7	0.39	26.3	84	1.80	7.0	191
			Maximum	16.7		11.4		1.22		> 2420		2.30			0.12			43.00			190	7.0	1.3	192	< 0.15	1.27	0.07	3.5	0.85	51.0	109	2.62	7.1	257
			Minimum	12.5		8.35		0.48		3		0.60			< 0.01			12.00			102	1.7	0.0	86	< 0.05	0.04	0.04	0.9	0.21	14.0	36	1.14	6.9	67
Water Quality Exceedance (number of samples)				0		0		0		2			0	0		0	0		0	0														

Sieben Creek

				Water Quality Standard Comparison																	Additional Parameters of Concern										Supporting Parameters			
WES ID and Location	Date	Rain Event (Y/N)	Visit Type (Routine/ Storm)	Temp (C)	WQ Std[1] (C)	DO (mg/L)	WQ Std[2] (mg/L)	Nitrate (mg/L)	WQ Std[3] (mg/L)	E. coli (MPN per 100ml)	Water Quality Std (MPN per 100ml)	Copper, Diss-olved (ug/L)	Guidance Conc (Chronic) (ug/L)	Guidance Conc (Acute) (ug/L)	Lead, Diss-olved (ug/L)	Water Quality Std (Chronic) (ug/L)	Water Quality Std (Acute) (ug/L)	Zinc, Diss-olved (ug/L)	Water Quality Std (Chronic) (ug/L)	Water Quality Std (Acute) (ug/L)	Total Solids (mg/L)	Total Suspended Solids (mg/L)	BOD (mg/L)	Total Dissolved Solids (mg/L)	Ammonia (mg/L)	Total Phosphorus (mg/L)	Ortho-phosphate (mg/L)	Copper, Total (ug/L)	Lead, Total (ug/L)	Zinc, Total (ug/L)	Hardness (mg/L)	Reported Flow (CFS)	pH	Conducti-vity (uS/cm)
#07 Sieben Creek at Hwy 212	11/7/13	Y	Storm	11.5	18	9.5	6.5	0.51	10	> 2420	406	2.43	3.29	4.46	0.05	0.69	17.68	17.9	43.79	43.44	142	86	2.3	55	< 0.05	0.24	0.05	8.7	2.74	66	31	7.34	7.2	51.8
#07 Sieben Creek at Hwy 212	2/12/14	Y	Storm	7.9	18	10.8	6.5	1.56	10	1553	406	1.9	5.21	7.39	0.17	1.25	32.15	18	68.99	68.43	131	27	0.7	33	< 0.05	0.08	< 0.04	2.3	0.7	17	53	6.14	6.8	103.8
#07 Sieben Creek at Hwy 212	3/5/14	Y	Storm	10.7	18	10.8	6.5	0.69	10	461	406	1.9	3.29	4.46	0.12	0.69	17.68	19	43.79	43.44	90	20	1.1	50	< 0.05	< 0.04	< 0.04	2.0	0.59	16	31	12.38	6.9	66.4
			Mean	10.0		10.4		0.92		1201		2.1			0.1			18.3			121	44	1.4	46	0.03	0.11	0.03	4.3	1.34	33	38	8.62	7.0	74.0
			Maximum	11.5		10.8		1.56		> 2420		2.43			0.17			19			142	86	2.3	55	< 0.05	0.24	0.05	8.7	2.74	66	53	12.38	7.2	103.8
			Minimum	7.9		9.5		0.51		461		1.90			0.05			18			90	20	0.7	33	< 0.05	< 0.04	< 0.04	2.0	0.59	16	31	6.14	6.8	51.8
Water Quality Exceedance (number of samples)				0		0		0		3			0	0		0	0		0	0														
#07 Sieben Creek at Hwy 212	9/23/13	N	Routine	14.8	18	9.1	6.5	0.47	10	> 2420	406	2.6	3.47	4.73	0.05	0.74	18.96	15	46.18	45.80	38	9	1.2	72	< 0.05	< 0.04	< 0.04	3.8	0.38	18	33	NA	7.0	51.5
#07 Sieben Creek at Hwy 212	10/10/13	N	Routine	10.6	18	10	6.5	1.31	10	86	406	1	4.95	6.99	0.05	1.17	30.14	8	65.66	65.13	121	2	0.2	114	< 0.15	0.05	< 0.04	1.3	0.16	9	50	0.05	7.4	107
#07 Sieben Creek at Hwy 212	10/24/13	N	Routine	10.3	18	13	6.5	1.58	10	38	406	1.28	6.12	8.83	< 0.01	1.54	39.60	7	80.94	80.28	133	4	< 1.3	136	< 0.05	< 0.08	0.08	1.1	0.21	9.2	64	< 0.01	7.0	161
#07 Sieben Creek at Hwy 212	12/16/13	N	Routine	6.2	18	11.6	6.5	1.59	10	96	406	0.7	5.54	7.91	0.02	1.36	34.84	6	73.37	72.78	135	1	< 1.2	128	< 0.15	< 0.08	0.05	1.0	0.11	8	57	< 0.01	6.9	156.8
#07 Sieben Creek at Hwy 212	5/5/14	N	Routine	12.0	18	10.6	6.5	1.02	10	326	406	1.6	4.09	5.67	0.03	0.92	23.51	14	54.35	53.91	98	3	0.6	99	< 0.05	< 0.04	< 0.04	2.0	0.12	16	40	< 0.01	7.3	111.3
#07 Sieben Creek at Hwy 212	6/2/14	N	Routine	13.2	18	9.65	6.5	1.64	10	147	406	0.6	5.79	8.31	< 0.01	1.44	36.88	8	76.63	76.01	160	8	< 1.2	130	< 0.05	< 0.04	0.05	0.9	0.19	7	60	0.03	7.4	160
			Mean	11.2		10.7		1.27		182		1.30			0.03			10			114	4.6	0.6	113	0.04	0.03	0.04	1.7	0.20	11.2	51	0.02	7.2	125
			Maximum	14.8		13		1.64		> 2420		2.60			0.05			15			160	9.0	< 1.3	136	< 0.15	< 0.08	0.08	3.8	0.38	18.0	64	0.05	7.4	161
			Minimum	6.2		9.1		0.47		38		0.60			< 0.01			6			38	1.3	0.2	72	< 0.05	< 0.04	< 0.04	0.9	0.11	7.0	33	< 0.01	6.9	52
Water Quality Exceedance (number of samples)				0		0		0		1			0	0		0	0		0	0														

Phillips Creek

				Water Quality Standard Comparison																	Additional Parameters of Concern										Supporting Parameters			
WES ID and Location	Date	Rain Event (Y/N)	Visit Type (Routine/ Storm)	Temp (C)	WQ Std[1] (C)	DO (mg/L)	WQ Std[2] (mg/L)	Nitrate (mg/L)	WQ Std[3] (mg/L)	E. coli (MPN per 100ml)	Water Quality Std (MPN per 100ml)	Copper, Diss-olved (ug/L)	Guidance Conc (Chronic) (ug/L)	Guidance Conc (Acute) (ug/L)	Lead, Diss-olved (ug/L)	Water Quality Std (Chronic) (ug/L)	Water Quality Std (Acute) (ug/L)	Zinc, Diss-olved (ug/L)	Water Quality Std (Chronic) (ug/L)	Water Quality Std (Acute) (ug/L)	Total Solids (mg/L)	Total Suspended Solids (mg/L)	BOD (mg/L)	Total Dissolved Solids (mg/L)	Ammonia (mg/L)	Total Phosphorus (mg/L)	Ortho-phosphate (mg/L)	Copper, Total (ug/L)	Lead, Total (ug/L)	Zinc, Total (ug/L)	Hardness (mg/L)	Reported Flow (CFS)	pH	Conducti-vity (uS/cm)
#11 Phillips Creek at SE 84th Ave.	11/7/13	Y	Storm	11.3	18	10.5	6.5	0.35	10	> 2420	406	2.55	2.93	3.91	0.13	0.59	15.14	20.2	38.96	38.64	128	69	2.7	55	< 0.05	0.11	0.05	10.1	5.41	65	27	NA	6.9	37.2
#11 Phillips Creek at SE 84th Ave.	2/12/14	Y	Storm	8.2	18	9.5	6.5	1.36	10	260	406	2	5.37	7.65	0.18	1.31	33.49	22	71.19	70.61	131	19	3.0	124	< 0.05	0.09	< 0.04	3.1	1	19	55	NA	6.5	134.7
#11 Phillips Creek at SE 84th Ave.	3/5/14	Y	Storm	11.0	18	10.2	6.5	0.48	10	260	406	2.2	3.29	4.46	0.17	0.69	17.68	24	43.79	43.44	88	20	1.5	60	< 0.05	< 0.08	< 0.04	3.0	1.05	25	31	NA	6.8	86.2
			Mean	10.2		10.1		0.73		547		2.3			0.2			22.1			116	36	2.4	80	0.03	0.08	0.03	5.4	2.49	36	38	NA	6.7	86.0
			Maximum	11.3		10.5		1.36		> 2420		2.55			0.18			24			131	69	3.0	124	< 0.05	0.11	0.05	10.1	5.41	65	55	NA	6.9	134.7
			Minimum	8.2		9.5		0.35		260		2.00			0.13			20			88	19	1.5	55	< 0.05	< 0.08	< 0.04	3.0	1.00	19	27	NA	6.5	37.2
Water Quality Exceedance (number of samples)				0		0		0		1			0	0		0	0		0	0														
#11 Phillips Creek at SE 84th Ave.	9/23/13	N	Routine	15.9	18	9.2	6.5	0.42	10	2420	406	2.3	4.27	5.93	0.1	0.97	24.82	24	56.65	56.19	113	9	0.8	105	< 0.05	0.06	< 0.04	3.4	0.68	27	42	NA	7.1	73
#11 Phillips Creek at SE 84th Ave.	10/10/13	N	Routine	12.9	18	8.35	6.5	0.09	10	291	406	0.8	6.60	9.60	0.04	1.70	43.71	11	87.33	86.62	140	1	0.3	144	< 0.15	< 0.04	0.05	1.0	0.24	12	70	NA	7.5	130
#11 Phillips Creek at SE 84th Ave.	10/24/13	N	Routine	12.7	18	10	6.5	0.48	10	68	406	0.52	7.40	10.89	0.02	1.97	50.61	6.3	97.79	96.99	141	1	< 1.3	146	< 0.05	< 0.08	0.08	0.9	0.21	8.2	80	NA	7.4	171
#11 Phillips Creek at SE 84th Ave.	12/16/13	N	Routine	7.9	18	12.5	6.5	0.75	10	5	406	0.8	6.60	9.60	0.03	1.70	43.71	11	87.33	86.62	145	2	< 1.2	145	< 0.15	< 0.08	< 0.04	1.6	0.17	14	70	NA	7.0	189.8
#11 Phillips Creek at SE 84th Ave.	5/5/14	N	Routine	13.2	18	9.5	6.5	0.46	10	272	406	2.1	4.09	5.67	0.1	0.92	23.51	18	54.35	53.91	89	5	0.9	88	< 0.05	< 0.04	< 0.04	2.9	0.48	24	40	1.84	7.4	106.8
#11 Phillips Creek at SE 84th Ave.	6/2/14	N	Routine	15.2	18	8.85	6.5	0.74	10	687	406	0.7	6.76	9.86	0.05	1.76	45.08	11	89.44	88.71	160	4	< 1.2	160	< 0.05	< 0.04	0.04	1.2	0.49	14	72	0.66	7.1	180
			Mean	13.0		9.7		0.49		188		1.20			0.06			14			131	3.7	0.6	131	0.04	0.03	0.04	1.8	0.38	16.5	62	1.25	7.3	142
			Maximum	15.9		12.5		0.75		2420		2.30			0.10			24			160	9.0	< 1.3	160	< 0.15	< 0.08	0.08	3.4	0.68	27.0	80	1.84	7.5	190
			Minimum	7.9		8.35		0.09		5		0.52			0.02			6			89	1.0	0.3	88	< 0.05	< 0.04	< 0.04	0.9	0.17	8.2	40	0.66	7.0	73
Water Quality Exceedance (number of samples)				0		0		0		2			0	0		0	0		0	0														

Kellogg Ck at Rowe Middle School

				Water Quality Standard Comparison																	Additional Parameters of Concern										Supporting Parameters			
WES ID and Location	Date	Rain Event (Y/N)	Visit Type (Routine/ Storm)	Temp (C)	WQ Std[1] (C)	DO (mg/L)	WQ Std[2] (mg/L)	Nitrate (mg/L)	WQ Std[3] (mg/L)	E. coli (MPN per 100ml)	Water Quality Std (MPN per 100ml)	Copper, Diss-olved (ug/L)	Guidance Conc (Chronic) (ug/L)	Guidance Conc (Acute) (ug/L)	Lead, Diss-olved (ug/L)	Water Quality Std (Chronic) (ug/L)	Water Quality Std (Acute) (ug/L)	Zinc, Diss-olved (ug/L)	Water Quality Std (Chronic) (ug/L)	Water Quality Std (Acute) (ug/L)	Total Solids (mg/L)	Total Suspended Solids (mg/L)	BOD (mg/L)	Total Dissolved Solids (mg/L)	Ammonia (mg/L)	Total Phosphorus (mg/L)	Ortho-phosphate (mg/L)	Copper, Total (ug/L)	Lead, Total (ug/L)	Zinc, Total (ug/L)	Hardness (mg/L)	Reported Flow (CFS)	pH	Conducti-vity (uS/cm)
#27 Kellogg Creek at Rowe Middle Schoo	11/19/13	Y	Storm	11.0	18	10.2	6.5	0.43	10	687	406	1.98	3.56	4.86	0.13	0.76	19.61	14.4	47.36	46.98	105	48	2.4	66	< 0.05	0.15	0.05	6.1	3.23	49	34	204.43	6.8	88.1
#27 Kellogg Creek at Rowe Middle Schoo	2/12/14	Y	Storm	7.8	18	12.8	6.5	1.40	10	345	406	2.3	5.62	8.04	0.19	1.38	35.52	18	74.46	73.86	151	51	1.5	105	< 0.05	0.1	0.04	3.1	1.3	21	58	107.83	7.0	105.7
#27 Kellogg Creek at Rowe Middle Schoo	3/5/14	Y	Storm	11.4	18	10	6.5	0.62	10	345	406	1.7	4.01	5.53	0.13	0.89	22.86	18	53.20	52.77	106	27	1.6	68	< 0.05	< 0.08	0.04	2.4	1.05	20	39	104.13	6.9	82.1
			Mean	10.1		11.0		0.82		434		2.0			0.2			16.8			121	42	1.8	80	0.03	0.10	0.04	3.9	1.86	30	44	138.80	6.9	92.0
			Maximum	11.4		12.8		1.40		687		2.30			0.19			18			151	51	2.4	105	< 0.05	0.15	0.05	6.1	3.23	49	58	204.43	7.0	105.7
			Minimum	7.8		10		0.43		345		1.70			0.13			14			105	27	1.5	66	< 0.05	< 0.08	0.04	2.4	1.05	20	34	104.13	6.8	82.1
			Water Quality Exceedance (number of samples)	0		0		0		1			0	0		0	0		0	0														
#27 Kellogg Creek at Rowe Middle Schoo	9/23/13	N	Routine	15.4	18	8.4	6.5	0.75	10	> 2420	406	2.4	3.56	4.86	0.12	0.76	19.61	13	47.36	46.98	139	18	1.6	133	< 0.05	0.12	0.05	4.2	1.04	20	34	21.10	6.8	69.8
#27 Kellogg Creek at Rowe Middle Schoo	10/10/13	N	Routine	12.5	18	10.05	6.5	1.34	10	308	406	1	7.48	11.02	0.06	2.00	51.30	7	98.82	98.02	159	4	< 2.0	153	< 0.15	0.05	0.06	1.4	0.35	9	81	6.35	7.3	140.6
#27 Kellogg Creek at Rowe Middle Schoo	10/24/13	N	Routine	12.5	18	10	6.5	1.31	10	186	406	0.68	8.18	12.17	0.03	2.24	57.57	5.1	108.05	107.17	173	3	< 1.3	179	< 0.05	< 0.08	0.08	1.1	0.2	7	90	6.16	7.5	200
#27 Kellogg Creek at Rowe Middle Schoo	12/16/13	N	Routine	7.2	18	12.3	6.5	1.42	10	63	406	0.8	7.48	11.02	0.05	2.00	51.30	5	98.82	98.02	164	10	< 1.2	159	< 0.15	< 0.08	0.05	1.6	0.59	15	81	8.24	6.8	207
#27 Kellogg Creek at Rowe Middle Schoo	5/5/14	N	Routine	13.6	18	10	6.5	0.65	10	345	406	1.8	5.37	7.65	0.11	1.31	33.49	11	71.19	70.61	120	8	0.9	119	< 0.05	0.11	0.05	2.5	0.52	15	55	16.10	6.9	132.3
#27 Kellogg Creek at Rowe Middle Schoo	6/2/14	N	Routine	16.7	18	9.05	6.5	1.27	10	291	406	0.7	7.64	11.28	0.06	2.05	52.69	8	100.89	100.07	190	6	< 1.2	170	< 0.05	< 0.04	0.07	1.1	0.37	8	83	5.62	7.3	206
			Mean	13.0		10.0		1.12		309		1.23			0.07			8			158	8.1	0.9	152	0.04	0.06	0.06	2.0	0.51	12.3	71	10.60	7.1	159
			Maximum	16.7		12.3		1.42		> 2420		2.40			0.12			13			190	18.0	< 2.0	179	< 0.15	0.12	0.08	4.2	1.04	20.0	90	21.10	7.5	207
			Minimum	7.2		8.4		0.65		63		0.68			0.03			5			120	3.0	0.9	119	< 0.05	< 0.04	0.05	1.1	0.20	7.0	34	5.62	6.8	70
			Water Quality Exceedance (number of samples)	0		0		0		1			0	0		0	0		0	0														

Mt Scott Creek

				Water Quality Standard Comparison																	Additional Parameters of Concern										Supporting Parameters			
WES ID and Location	Date	Rain Event (Y/N)	Visit Type (Routine/ Storm)	Temp (C)	WQ Std[1] (C)	DO (mg/L)	WQ Std[2] (mg/L)	Nitrate (mg/L)	WQ Std[3] (mg/L)	E. coli (MPN per 100ml)	Water Quality Std (MPN per 100ml)	Copper, Diss-olved (ug/L)	Guidance Conc (Chronic) (ug/L)	Guidance Conc (Acute) (ug/L)	Lead, Diss-olved (ug/L)	Water Quality Std (Chronic) (ug/L)	Water Quality Std (Acute) (ug/L)	Zinc, Diss-olved (ug/L)	Water Quality Std (Chronic) (ug/L)	Water Quality Std (Acute) (ug/L)	Total Solids (mg/L)	Total Suspended Solids (mg/L)	BOD (mg/L)	Total Dissolved Solids (mg/L)	Ammonia (mg/L)	Total Phosphorus (mg/L)	Ortho-phosphate (mg/L)	Copper, Total (ug/L)	Lead, Total (ug/L)	Zinc, Total (ug/L)	Hardness (mg/L)	Reported Flow (CFS)	pH	Conducti-vity (uS/cm)
#15 Mt. Scott Creek in NCCP	11/19/13	Y	Storm	11.1	18	9.7	6.5	0.31	10	1300	406	2.12	3.20	4.32	0.11	0.66	17.04	14.9	42.59	42.25	127	79	2.4	55	< 0.05	0.14	< 0.04	8.4	4.95	62	30	142.03	6.8	72.2
#15 Mt. Scott Creek in NCCP	2/12/14	Y	Storm	7.3	18	11.2	6.5	1.31	10	345	406	2.1	4.95	6.99	0.2	1.17	30.14	20	65.66	65.13	126	35	1.9	107	< 0.05	0.1	< 0.04	2.8	1.1	18	50	89.57	6.8	106.8
#15 Mt. Scott Creek in NCCP	3/5/14	Y	Storm	10.8	18	10	6.5	0.54	10	387	406	1.6	3.74	5.13	0.06	0.81	20.90	16	49.71	49.31	104	29	1.3	77	< 0.05	0.05	< 0.04	2.4	1.12	18	36	87.93	6.9	77.7
			Mean	9.7		10.3		0.72		558		1.9			0.1			17.0			119	48	1.9	80	0.03	0.10	0.02	4.5	2.39	33	39	106.51	6.8	85.6
			Maximum	11.1		11.2		1.31		1300		2.12			0.20			20			127	79	2.4	107	< 0.05	0.14	< 0.04	8.4	4.95	62	50	142.03	6.9	106.8
			Minimum	7.3		9.7		0.31		345		1.60			0.06			15			104	29	1.3	55	< 0.05	0.05	< 0.04	2.4	1.10	18	30	87.93	6.8	72.2
			Water Quality Exceedance (number of samples)	0		0		0		1			0	0		0	0		0	0														
#15 Mt. Scott Creek in NCCP	9/23/13	N	Routine	15.2	18	8.2	6.5	0.52	10	> 2420	406	2.4	3.38	4.59	0.11	0.71	18.32	15	44.99	44.62	110	13	1.6	86	< 0.05	0.06	0.04	4.1	0.88	21	32	16.40	6.9	62.8
#15 Mt. Scott Creek in NCCP	10/10/13	N	Routine	12.8	18	9.85	6.5	0.62	10	127	406	1.3	7.00	10.25	0.07	1.84	47.15	7	92.58	91.83	148	5	0.5	141	< 0.15	0.06	0.05	1.7	0.37	9	75	3.64	7.4	134.5
#15 Mt. Scott Creek in NCCP	10/24/13	N	Routine	13.0	18	8.4	6.5	0.45	10	62	406	0.92	8.42	12.55	0.04	2.33	59.67	5.8	111.09	110.19	170	2	< 1.3	171	< 0.05	< 0.08	0.07	1.8	0.3	7.7	93	3.34	7.4	205
#15 Mt. Scott Creek in NCCP	12/16/13	N	Routine	6.9	18	11.3	6.5	0.76	10	31	406	0.9	8.11	12.04	0.03	2.22	56.87	7	107.03	106.16	157	2	< 1.2	168	< 0.15	< 0.08	0.04	1.4	0.21	10	89	3.05	6.8	209
#15 Mt. Scott Creek in NCCP	5/5/14	N	Routine	13.7	18	9.5	6.5	0.33	10	613	406	2.1	6.03	8.70	0.13	1.52	38.92	11	79.87	79.22	110	5	1.0	101	< 0.05	0.06	0.04	2.9	0.46	15	63	10.90	6.8	131
#15 Mt. Scott Creek in NCCP	6/2/14	N	Routine	16.3	18	7.9	6.5	0.54	10	214	406	0.8	7.72	11.40	0.06	2.08	53.39	5	101.91	101.09	190	4	< 1.2	160	< 0.05	0.05	0.06	1.3	0.39	7	84	3.24	7.4	205
			Mean	13.0		9.2		0.54		206		1.40			0.07			8			148	5.3	0.8	138	0.04	0.05	0.05	2.2	0.44	11.6	73	6.76	7.1	158
			Maximum	16.3		11.3		0.76		> 2420		2.40			0.13			15			190	13.0	1.6	171	< 0.15	< 0.08	0.07	4.1	0.88	21.0	93	16.40	7.4	209
			Minimum	6.9		7.9		0.33		31		0.80			0.03			5			110	2.0	0.5	86	< 0.05	0.05	0.04	1.3	0.21	7.0	32	3.05	6.8	63
			Water Quality Exceedance (number of samples)	0		0		0		2			0	0		0	0		0	0														

Rock Creek

				Water Quality Standard Comparison																	Additional Parameters of Concern										Supporting Parameters			
WES ID and Location	Date	Rain Event (Y/N)	Visit Type (Routine/ Storm)	Temp (C)	WQ Std[1] (C)	DO (mg/L)	WQ Std[2] (mg/L)	Nitrate (mg/L)	WQ Std[3] (mg/L)	E. coli (MPN per 100ml)	Water Quality Std (MPN per 100ml)	Copper, Diss-olved (ug/L)	Guidance Conc (Chronic) (ug/L)	Guidance Conc (Acute) (ug/L)	Lead, Diss-olved (ug/L)	Water Quality Std (Chronic) (ug/L)	Water Quality Std (Acute) (ug/L)	Zinc, Diss-olved (ug/L)	Water Quality Std (Chronic) (ug/L)	Water Quality Std (Acute) (ug/L)	Total Solids (mg/L)	Total Suspended Solids (mg/L)	BOD (mg/L)	Total Dissolved Solids (mg/L)	Ammonia (mg/L)	Total Phosphorus (mg/L)	Ortho-phosphate (mg/L)	Copper, Total (ug/L)	Lead, Total (ug/L)	Zinc, Total (ug/L)	Hardness (mg/L)	Reported Flow (CFS)	pH	Conducti-vity (uS/cm)
#16 Rock Creek near Mouth	11/7/13	Y	Storm	11.0	18	9.9	6.5	1.92	10	770	406	1.53	4.78	6.73	0.1	1.12	28.80	6.7	63.43	62.92	130	41	< 2.0	84	< 0.05	0.13	0.05	3.7	1.35	14	48	29.75	6.9	107.6
#16 Rock Creek near Mouth	2/12/14	Y	Storm	6.8	18	11.2	6.5	2.00	10	687	406	1.1	4.95	6.99	0.11	1.17	30.14	7	65.66	65.13	143	69	1.0	48	< 0.05	0.13	< 0.04	2.0	1.1	7	50	132.3	6.8	74.7
#16 Rock Creek near Mouth	3/5/14	Y	Storm	10.4	18	11.5	6.5	1.31	10	435	406	1	3.65	5.00	0.1	0.79	20.25	6	48.54	48.14	102	26	0.8	81	< 0.05	< 0.04	0.04	1.3	0.63	5	35	62.56	6.9	73.8
			Mean	9.4		10.9		1.74		613		1.2			0.1			6.6			125	45	0.9	71	0.03	0.09	0.04	2.3	1.03	9	44	74.87	6.9	85.4
			Maximum	11.0		11.5		2.00		770		1.53			0.11			7			143	69	< 2.0	84	< 0.05	0.13	0.05	3.7	1.35	14	50	132.3	6.9	107.6
			Minimum	6.8		9.9		1.31		435		1.00			0.10			6			102	26	0.8	48	< 0.05	< 0.04	< 0.04	1.3	0.63	5	35	29.75	6.8	73.8
			Water Quality Exceedance (number of samples)	0		0		0		3			0	0		0	0		0	0														
#16 Rock Creek near Mouth	9/23/13	N	Routine	14.5	18	9.4	6.5	0.66	10	> 2420	406	1.2	4.61	6.47	0.05	1.07	27.47	7	61.19	60.69	118	9	1.1	124	< 0.05	0.09	0.07	1.8	0.25	4	46	NA	6.8	89
#16 Rock Creek near Mouth	10/10/13	N	Routine	10.9	18	9.9	6.5	1.80	10	81	406	0.7	5.46	7.78	0.03	1.33	34.17	3	72.28	71.70	118	3	0.3	117	< 0.15	< 0.04	0.05	1.0	0.18	3	56	4.17	7.5	104.5
#16 Rock Creek near Mouth	10/24/13	N	Routine	10.5	18	11.5	6.5	0.74	10	10	406	0.48	6.92	10.12	< 0.01	1.81	46.46	2.8	91.54	90.79	97	2	< 1.3	119	< 0.05	< 0.08	0.07	0.6	0.11	3.3	74	2.35	7.6	149.5
#16 Rock Creek near Mouth	12/16/13	N	Routine	6.3	18	12.6	6.5	1.46	10	193	406	0.5	5.12	7.26	0.03	1.23	31.48	2	67.88	67.33	98	2	< 1.2	102	< 0.15	< 0.08	< 0.04	0.6	0.14	2	52	1.74	6.9	120
#16 Rock Creek near Mouth	5/5/14	N	Routine	12.2	18	10.7	6.5	0.89	10	365	406	0.7	3.83	5.27	0.04	0.84	21.55	4	50.88	50.47	87	5	0.6	84	< 0.05	< 0.04	< 0.04	0.9	0.17	4	37	6.32	7.3	100.8
#16 Rock Creek near Mouth	6/2/14	N	Routine	14.0	18	9.5	6.5	0.69	10	35	406	0.4	5.54	7.91	0.01	1.36	34.84	6	73.37	72.78	130	3	< 1.2	120	< 0.05	< 0.04	0.05	0.8	0.17	2	57	0.91	6.8	145.5
			Mean	11.4		10.6		1.04		130		0.66			0.03			4			108	4.0	0.6	111	0.04	0.04	0.05	1.0	0.17	3.1	54	3.10	7.2	118
			Maximum	14.5		12.6		1.80		> 2420		1.20			0.05			7			130	9.0	< 1.3	124	< 0.15	0.09	0.07	1.8	0.25	4.0	74	6.32	7.6	150
			Minimum	6.3		9.4		0.66		10		0.40			< 0.01			2			87	1.5	0.3	84	< 0.05	< 0.04	< 0.04	0.6	0.11	2.0	37	0.91	6.8	89
			Water Quality Exceedance (number of samples)	0		0		0		1			0	0		0	0		0	0														

Kellogg Ck at SE Rusk Rd

				Water Quality Standard Comparison																	Additional Parameters of Concern										Supporting Parameters			
WES ID and Location	Date	Rain Event (Y/N)	Visit Type (Routine/ Storm)	Temp (C)	WQ Std[1] (C)	DO (mg/L)	WQ Std[2] (mg/L)	Nitrate (mg/L)	WQ Std[3] (mg/L)	E. coli (MPN per 100ml)	Water Quality Std (MPN per 100ml)	Copper, Diss-olved (ug/L)	Guidance Conc (Chronic) (ug/L)	Guidance Conc (Acute) (ug/L)	Lead, Diss-olved (ug/L)	Water Quality Std (Chronic) (ug/L)	Water Quality Std (Acute) (ug/L)	Zinc, Diss-olved (ug/L)	Water Quality Std (Chronic) (ug/L)	Water Quality Std (Acute) (ug/L)	Total Solids (mg/L)	Total Suspended Solids (mg/L)	BOD (mg/L)	Total Dissolved Solids (mg/L)	Ammonia (mg/L)	Total Phosphorus (mg/L)	Ortho-phosphate (mg/L)	Copper, Total (ug/L)	Lead, Total (ug/L)	Zinc, Total (ug/L)	Hardness (mg/L)	Reported Flow (CFS)	pH	Conducti-vity (uS/cm)
#14 Kellogg Creek at SE Rusk Rd	11/19/13	Y	Storm	11.4	18	9.6		0.99	10	411	406	2.35	3.47	4.73	0.1	0.74	18.96	25.3	46.18	45.80	103	26	1.9	95	< 0.05	< 0.04	0.07	4.6	1.69	43	33	12.03	6.9	121
#14 Kellogg Creek at SE Rusk Rd	2/12/14	Y	Storm	8.1	18	10.8	6.5	1.95	10	214	406	1.7	5.54	7.91	0.16	1.36	34.84	24	73.37	72.78	127	17	1.4	119	< 0.05	0.1	0.06	1.6	0.6	16	57	6.87	6.6	120.1
#14 Kellogg Creek at SE Rusk Rd	3/5/14	Y	Storm	10.9	18	9.8	6.5	1.12	10	1120	406	1.6	4.35	6.07	0.1	0.99	25.48	22	57.79	57.32	110	16	1.2	92	< 0.05	< 0.08	0.06	1.8	0.56	17	43	13.87	6.8	91.3
			Mean	10.1		10.1		1.35		462		1.9			0.1			23.8			113	20	1.5	102	0.03	0.05	0.06	2.7	0.95	25	44	10.92	6.8	110.8
			Maximum	11.4		10.8		1.95		1120		2.35			0.16			25			127	26	1.9	119	< 0.05	0.10	0.07	4.6	1.69	43	57	13.87	6.9	121.0
			Minimum	8.1		9.6		0.99		214		1.60			0.10			22			103	16	1.2	92	< 0.05	< 0.04	0.06	1.6	0.56	16	33	6.87	6.6	91.3
			Water Quality Exceedance (number of samples)	0		0		0		2			0	0		0	0		0	0														
#14 Kellogg Creek at SE Rusk Rd	9/23/13	N	Routine	14.7	18	7.7	6.5	1.98	10	> 2420	406	1.6	5.71	8.17	0.06	1.41	36.20	15	75.55	74.94	235	10	1.4	147	< 0.05	0.12	0.08	2.7	0.51	16	59	NA	6.7	115.8
#14 Kellogg Creek at SE Rusk Rd	10/10/13	N	Routine	12.6	18	7.9	6.5	2.91	10	488	406	0.5	7.24	10.63	0.03	1.92	49.22	6	95.71	94.94	181	2	0.3	167	0.32	0.09	0.08	0.8	0.26	8	78	2.17	7.0	150.9
#14 Kellogg Creek at SE Rusk Rd	10/24/13	N	Routine	12.3	18	11.2	6.5	2.91	10	166	406	0.41	7.79	11.53	0.02	2.11	54.08	6.8	102.94	102.11	180	3	< 1.3	174	< 0.05	< 0.08	0.10	0.6	0.23	7.2	85	1.80	7.1	194.4
#14 Kellogg Creek at SE Rusk Rd	12/16/13	N	Routine	8.9	18	10.3	6.5	2.86	10	76	406	0.5	7.32	10.76	0.05	1.95	49.92	9	96.75	95.97	175	6	< 1.2	173	< 0.15	0.1	0.09	0.9	0.41	11	79	2.40	6.9	198.7
#14 Kellogg Creek at SE Rusk Rd	5/5/14	N	Routine	12.3	18	8.5	6.5	1.72	10	172	406	0.9	6.20	8.96	0.07	1.57	40.28	14	82.01	81.35	150	7	0.7	144	< 0.05	0.12	0.07	1.2	0.25	16	65	3.40	6.7	165.8
#14 Kellogg Creek at SE Rusk Rd	6/2/14	N	Routine	14.6	18	7.75	6.5	2.23	10	206	406	0.4	7.40	10.89	0.06	1.97	50.61	8	97.79	96.99	200	4	< 1.2	170	< 0.05	< 0.04	0.08	0.8	0.32	10	80	3.00	6.8	196.3
			Mean	12.6		8.9		2.44		284		0.72			0.05			10			187	5.3	0.7	163	0.08	0.08	0.08	1.2	0.33	11.4	74	2.55	6.9	170
			Maximum	14.7		11.2		2.91		> 2420		1.60			0.07			15			235	10.0	1.4	174	0.32	0.12	0.10	2.7	0.51	16.0	85	3.40	7.1	199
			Minimum	8.9		7.7		1.72		76		0.40			0.02			6			150	2.0	0.3	144	< 0.05	< 0.04	0.07	0.6	0.23	7.2	59	1.80	6.7	116
			Water Quality Exceedance (number of samples)	0		0		0		2			0	0		0	0		0	0														

Cow Creek at SE Last Road

				Water Quality Standard Comparison																	Additional Parameters of Concern										Supporting Parameters			
WES ID and Location	Date	Rain Event (Y/N)	Visit Type (Routine/ Storm)	Temp (C)	WQ Std[1] (C)	DO (mg/L)	WQ Std[2] (mg/L)	Nitrate (mg/L)	WQ Std[3] (mg/L)	E. coli (MPN per 100ml)	Water Quality Std (MPN per 100ml)	Copper, Diss-olved (ug/L)	Guidance Conc (Chronic) (ug/L)	Guidance Conc (Acute) (ug/L)	Lead, Diss-olved (ug/L)	Water Quality Std (Chronic) (ug/L)	Water Quality Std (Acute) (ug/L)	Zinc, Diss-olved (ug/L)	Water Quality Std (Chronic) (ug/L)	Water Quality Std (Acute) (ug/L)	Total Solids (mg/L)	Total Suspended Solids (mg/L)	BOD (mg/L)	Total Dissolved Solids (mg/L)	Ammonia (mg/L)	Total Phosphorus (mg/L)	Ortho-phosphate (mg/L)	Copper, Total (ug/L)	Lead, Total (ug/L)	Zinc, Total (ug/L)	Hardness (mg/L)	Reported Flow (CFS)	pH	Conducti-vity (uS/cm)
#24 Cow Creek at SE Last Road	11/7/13	Y	Storm	11.5	18	8.9	6.5	0.15	10	> 2420	406	4.22	3.02	4.05	0.25	0.61	15.77	57.1	40.18	39.85	91	51	2.4	55	< 0.05	0.14	0.04	13.1	4.25	107	28	11.12	7.9	41.1
#24 Cow Creek at SE Last Road	2/12/14	Y	Storm	7.5	18	10	6.5	0.65	10	179	406	2.5	5.62	8.04	0.12	1.38	35.52	64	74.46	73.86	70	19	0.8	57	< 0.05	0.05	< 0.04	2.8	0.8	47	58	12.72	6.1	123.5
#24 Cow Creek at SE Last Road	3/5/14	Y	Storm	11.0	18	8.5	6.5	0.23	10	308	406	2	3.74	5.13	0.05	0.81	20.90	43	49.71	49.31	77	20	1.3	66	< 0.05	< 0.04	< 0.04	3.0	1.1	39	36	11.1	7.1	73.6
#24 Cow Creek at SE Last Road	3/28/14	Y	Routine	10.5	18	9.5	6.5	0.14	10	737	406	2.6	2.07	2.67	0.24	0.37	9.58	45	27.63	27.41	97	64	2.5	45	< 0.15	0.09	< 0.20	11.1	4.65	97	18	8.53	5.7	42.3
			Mean	10.1		9.2		0.31		560		3.1			0.2			55.4			84	45	1.9	52	0.04	0.09	0.05	9.0	3.23	84	35	10.79	6.7	70.1
			Maximum	11.5		10		0.65		> 2420		4.22			0.25			64			97	64	2.5	66	< 0.15	0.14	< 0.20	13.1	4.65	107	58	12.72	7.9	123.5
			Minimum	7.5		8.5		0.14		179		2.00			0.05			43			70	19	0.8	45	< 0.05	< 0.04	0.04	2.8	0.80	39	18	8.53	5.7	41.1
			Water Quality Exceedance (number of samples)	0		0		0		2			2	1		0	0		2	2														
#24 Cow Creek at SE Last Road	9/23/13	N	Routine	15.4	18	6.4	6.5	0.33	10	> 2420	406	6.1	3.11	4.19	0.28	0.64	16.40	70	41.39	41.05	100	13	2.7	75	< 0.05	0.11	0.05	9.6	2	94	29	NA	6.7	45.9
#24 Cow Creek at SE Last Road	10/10/13	N	Routine	11.6	18	8.7	6.5	0.18	10	365	406	2.3	7.72	11.40	0.04	2.08	53.39	21	101.91	101.09	137	4	0.5	142	< 0.15	< 0.04	< 0.04	2.7	0.23	22	84	0.10	6.9	154.1
#24 Cow Creek at SE Last Road	5/5/14	N	Routine	13.5	18	8.5	6.5	0.09	10	1120	406	1.8	5.71	8.17	0.05	1.41	36.20	21	75.55	74.94	100	4	1.7	104	< 0.05	< 0.04	< 0.04	2.6	0.37	31	59	0.04	7.1	131.4
#24 Cow Creek at SE Last Road	6/2/14	N	Routine	14.9	18	7.95	6.5	0.23	10	261	406	1.4	7.32	10.76	0.17	1.95	49.92	15	96.75	95.97	160	2	< 1.2	160	< 0.05	< 0.04	< 0.04	1.8	0.39	15	79	0.04	7.2	189.4
#24 Cow Creek at SE Last Road	6/19/14	N	Routine	17.8	18	8.3	6.5	0.16	10	186	406	1.1	6.76	9.86	0.07	1.76	45.08	11	89.44	88.71	160	3	0.5	170	< 0.05	< 0.04	< 0.04	1.6	0.2	16	72	0.01	7.0	167.6
			Mean	14.6		8.0		0.20		545		2.54			0.12			27.60			131	5.20	1.20	130.20	0.04	0.04	0.03	3.66	0.64	35.60	65	0.05	7.0	138
			Maximum	17.8		8.7		0.33		> 2420		6.10			0.28			70			160	13.0	2.7	170	< 0.15	0.11	0.05	9.6	2.00	94.0	84	0.10	7.2	189
			Minimum	11.6		6.4		0.09		186		1.10			0.04			11			100	2.0	0.5	75	< 0.05	< 0.04	< 0.04	1.6	0.20	15.0	29	0.01	6.7	46
			Water Quality Exceedance (number of samples)	0		1		0		2			1	1		0	0		1	1														

#101 SE Pheasant Court Outfall

				Water Quality Standard Comparison																	Additional Parameters of Concern										Supporting Parameters			
WES ID and Location	Date	Rain Event (Y/N)	Visit Type (Routine/ Storm)	Temp (C)	WQ Std[1] (C)	DO (mg/L)	WQ Std[2] (mg/L)	Nitrate (mg/L)	WQ Std[3] (mg/L)	E. coli (MPN per 100ml)	Water Quality Std (MPN per 100ml)	Copper, Diss-olved (ug/L)	Guidance Conc (Chronic) (ug/L)	Guidance Conc (Acute) (ug/L)	Lead, Diss-olved (ug/L)	Water Quality Std (Chronic) (ug/L)	Water Quality Std (Acute) (ug/L)	Zinc, Diss-olved (ug/L)	Water Quality Std (Chronic) (ug/L)	Water Quality Std (Acute) (ug/L)	Total Solids (mg/L)	Total Suspended Solids (mg/L)	BOD (mg/L)	Total Dissolved Solids (mg/L)	Ammonia (mg/L)	Total Phosphorus (mg/L)	Ortho-phosphate (mg/L)	Copper, Total (ug/L)	Lead, Total (ug/L)	Zinc, Total (ug/L)	Hardness (mg/L)	Reported Flow (CFS)	pH	Conducti-vity (uS/cm)
#101 SE Pheasant Court Outfall	1/28/14	Y	Storm	7.4	18	10.4	6.5	0.16	10	261	406	4.2	1.14	1.39	0.18	0.17	4.35	64	15.36	15.23	50	13	4.2	19	0.08	< 0.04	0.04	5.7	1.77	75	9	1.73	6.6	34.2
#101 SE Pheasant Court Outfall	2/27/14	Y	Storm	6.8	18	12.2	6.5	0.15	10	40	406	3.5	2.07	2.67	< 0.1	0.37	9.58	47	27.63	27.41	46	18	3.1	38	0.08	< 0.04	< 0.04	3.8	1	39	18	2.02	7.0	36.2
#101 SE Pheasant Court Outfall	4/17/14	Y	Storm	13.0	18	9.5	6.5	0.36	10	> 2420	406	6.8	1.36	1.68	0.47	0.21	5.47	65	18.20	18.06	34	6	5.0	13	0.1	0.06	< 0.04	8.8	1.86	81	11	1.7	6.4	24.3
			Mean	9.1		10.7		0.22		293		4.8			0.2			58.7			43	12	4.1	23	0.09	0.03	0.03	6.1	1.54	65	13	1.82	6.7	31.6
			Maximum	13.0		12.2		0.36		> 2420		6.80			0.47			65			50	18	5.0	38	0.10	0.06	0.04	8.8	1.86	81	18	2.02	7.0	36.2
			Minimum	6.8		9.5		0.15		40		3.50			< 0.10			47			34	6	3.1	13	0.08	< 0.04	0.04	3.8	1.00	39	9	1.7	6.4	24.3
			Water Quality Exceedance (number of samples)	0		0		0		1			3	3		2	0		3	3														

#104 SE Tolbert Street Outfall

				Water Quality Standard Comparison																	Additional Parameters of Concern										Supporting Parameters			
WES ID and Location	Date	Rain Event (Y/N)	Visit Type (Routine/ Storm)	Temp (C)	WQ Std[1] (C)	DO (mg/L)	WQ Std[2] (mg/L)	Nitrate (mg/L)	WQ Std[3] (mg/L)	E. coli (MPN per 100ml)	Water Quality Std (MPN per 100ml)	Copper, Diss-olved (ug/L)	Guidance Conc (Chronic) (ug/L)	Guidance Conc (Acute) (ug/L)	Lead, Diss-olved (ug/L)	Water Quality Std (Chronic) (ug/L)	Water Quality Std (Acute) (ug/L)	Zinc, Diss-olved (ug/L)	Water Quality Std (Chronic) (ug/L)	Water Quality Std (Acute) (ug/L)	Total Solids (mg/L)	Total Suspe-nded Solids (mg/L)	BOD (mg/L)	Total Dissolved Solids (mg/L)	Ammonia (mg/L)	Total Phosphorus (mg/L)	Ortho-phosphate (mg/L)	Copper, Total (ug/L)	Lead, Total (ug/L)	Zinc, Total (ug/L)	Hardness (mg/L)	Reported Flow (CFS)	pH	Conducti-vity (uS/cm)
#104 SE Tolbert Street Outfall	1/28/14	Y	Storm	8.1	18	9	6.5	0.31	10	50	406	5.6	2.36	3.09	0.32	0.44	11.40	57	31.49	31.23	109	63	8.2	45	0.28	0.1	0.06	12.2	6.34	100	21	2.31	6.7	110.6
#104 SE Tolbert Street Outfall	2/27/14	Y	Storm	7.0	18	11.6	6.5	0.17	10	35	406	3	2.93	3.91	< 0.1	0.59	15.14	45	38.96	38.64	78	40	4.5	37	0.14	0.12	< 0.04	5.0	3.6	47	27	1.84	7.0	43
#104 SE Tolbert Street Outfall	4/17/14	Y	Storm	13.3	18	9	6.5	0.49	10	1553	406	6.2	2.65	3.50	0.51	0.52	13.26	61	35.26	34.97	60	32	5.6	17	0.35	0.14	< 0.04	11.0	5.65	101	24	0.05	6.8	32.2
			Mean	9.5		9.9		0.32		140		4.9			0.3			54.3			82	45	6.1	33	0.26	0.12	0.03	9.4	5.20	83	24	1.40	6.8	61.9
			Maximum	13.3		11.6		0.49		1553		6.20			0.51			61			109	63	8.2	45	0.35	0.14	0.06	12.2	6.34	101	27	2.31	7.0	110.6
			Minimum	7.0		9		0.17		35		3.00			< 0.10			45			60	32	4.5	17	0.14	0.10	< 0.04	5.0	3.60	47	21	0.05	6.7	32.2
			Water Quality Exceedance (number of samples)	0		0		0		1			3	2		0	0		3	3														

#103 SE Oregon Trail Dr. Outfall

				Water Quality Standard Comparison																	Additional Parameters of Concern										Supporting Parameters			
WES ID and Location	Date	Rain Event (Y/N)	Visit Type (Routine/ Storm)	Temp (C)	WQ Std[1] (C)	DO (mg/L)	WQ Std[2] (mg/L)	Nitrate (mg/L)	WQ Std[3] (mg/L)	E. coli (MPN per 100ml)	Water Quality Std (MPN per 100ml)	Copper, Diss-olved (ug/L)	Guidance Conc (Chronic) (ug/L)	Guidance Conc (Acute) (ug/L)	Lead, Diss-olved (ug/L)	Water Quality Std (Chronic) (ug/L)	Water Quality Std (Acute) (ug/L)	Zinc, Diss-olved (ug/L)	Water Quality Std (Chronic) (ug/L)	Water Quality Std (Acute) (ug/L)	Total Solids (mg/L)	Total Suspe-nded Solids (mg/L)	BOD (mg/L)	Total Dissolved Solids (mg/L)	Ammonia (mg/L)	Total Phosphorus (mg/L)	Ortho-phosphate (mg/L)	Copper, Total (ug/L)	Lead, Total (ug/L)	Zinc, Total (ug/L)	Hardness (mg/L)	Reported Flow (CFS)	pH	Conducti-vity (uS/cm)
#103 SE Oregon Trail Dr. Outfall	1/28/14	Y	Storm	8.2	18	9.5	6.5	0.31	10	1414	406	4.2	2.17	2.81	0.13	0.40	10.18	78	28.93	28.69	69	32	10.0	33	0.15	0.05	< 0.04	7.4	1.8	114	19	0.28	6.6	96
#103 SE Oregon Trail Dr. Outfall	2/27/14	Y	Storm	8.3	18	10.6	6.5	0.37	10	166	406	2.2	3.02	4.05	< 0.1	0.61	15.77	70	40.18	39.85	82	27	3.8	74	0.14	< 0.04	< 0.04	3.3	1.1	70	28	0.21	7.3	136
#103 SE Oregon Trail Dr. Outfall	4/17/14	Y	Storm	12.9	18	9.6	6.5	0.56	10	115	406	4.8	2.93	3.91	0.26	0.59	15.14	83	38.96	38.64	45	12	5.5	10	0.21	0.07	< 0.04	6.1	1.28	99	27	0.18	6.7	48.2
			Mean	9.8		9.9		0.41		300		3.7			0.1			77.0			65	24	6.4	39	0.17	0.05	0.02	5.6	1.39	94	25	0.22	6.9	93.4
			Maximum	12.9		10.6		0.56		1414		4.80			0.26			83			82	32	10.0	74	0.21	0.07	< 0.04	7.4	1.80	114	28	0.28	7.3	136.0
			Minimum	8.2		9.5		0.31		115		2.20			< 0.10			70			45	12	3.8	10	0.14	< 0.04	< 0.04	3.3	1.10	70	19	0.18	6.6	48.2
			Water Quality Exceedance (number of samples)	0		0		0		1			2	2		0	0		3	3														

#102 SE Webster Road Outfall

				Water Quality Standard Comparison																	Additional Parameters of Concern										Supporting Parameters			
WES ID and Location	Date	Rain Event (Y/N)	Visit Type (Routine/ Storm)	Temp (C)	WQ Std[1] (C)	DO (mg/L)	WQ Std[2] (mg/L)	Nitrate (mg/L)	WQ Std[3] (mg/L)	E. coli (MPN per 100ml)	Water Quality Std (MPN per 100ml)	Copper, Diss-olved (ug/L)	Guidance Conc (Chronic) (ug/L)	Guidance Conc (Acute) (ug/L)	Lead, Diss-olved (ug/L)	Water Quality Std (Chronic) (ug/L)	Water Quality Std (Acute) (ug/L)	Zinc, Diss-olved (ug/L)	Water Quality Std (Chronic) (ug/L)	Water Quality Std (Acute) (ug/L)	Total Solids (mg/L)	Total Suspe-nded Solids (mg/L)	BOD (mg/L)	Total Dissolved Solids (mg/L)	Ammonia (mg/L)	Total Phosphorus (mg/L)	Ortho-phosphate (mg/L)	Copper, Total (ug/L)	Lead, Total (ug/L)	Zinc, Total (ug/L)	Hardness (mg/L)	Reported Flow (CFS)	pH	Conducti-vity (uS/cm)
#102 SE Webster Road Outfall	1/28/14	Y	Storm	7.5	18	5.7	6.5	0.24	10	40	406	8.07	2.17	2.81	0.08	0.40	10.18	1207	28.93	28.69	77	39	4.9	30	0.16	< 0.04	< 0.04	14.2	2.13	1358	19	1.18	6.8	52.6
#102 SE Webster Road Outfall	2/27/14	Y	Storm	7.1	18	10.5	6.5	0.48	10	22	406	3.5	2.74	3.64	< 0.1	0.54	13.88	**284**	36.50	36.20	58	15	2.0	49	0.05	< 0.04	< 0.04	6.8	0.5	210	25	1.65	7.1	103.5
#102 SE Webster Road Outfall	5/8/14	Y	Storm	16.0	18	8.7	6.5	0.29	10	461	406	7.4	2.17	2.81	0.13	0.40	10.18	46	28.93	28.69	89	28	4.6	61	0.08	0.09	0.04	11.2	1.24	72	19	1.04	6.8	32.6
			Mean	10.2		8.3		0.34		74		6.3			0.1			512.3			75	27	3.8	47	0.10	0.04	0.03	10.7	1.29	547	21	1.29	6.9	62.9
			Maximum	16.0		10.5		0.48		461		8.07			0.13			1207			89	39	4.9	61	0.16	0.09	< 0.04	14.2	2.13	1358	25	1.65	7.1	103.5
			Minimum	7.1		5.7		0.24		22		3.50			0.08			46			58	15	2.0	30	0.05	< 0.04	< 0.04	6.8	0.50	72	19	1.04	6.8	32.6
			Water Quality Exceedance (number of samples)	0		1		0		1			3	2		0	0		3	3														

Notes:

General: Red font indicates that the dissolved values are higher than the total. QC
Green font indicates that orthophosphate value is higher than total phosphorus. QC
N/A = Data is not available

1) WQ Standard of 18 C per DEQ's Temperature Water Quality Standard Implementation IMD 2008 for salmon and trout rearing and migration
2) 6.5 mg/L selected as target minimum DO concentraiton for cool water habitat
also corresponds to the Ecology "good" criteria and the Chlorphyl a TMDL in the tualatin for mainstem Tualatin R
3) Geometric means were calculated for E. coli and entered in the row titled "mean"
4) Volatile Solids data (mg/L), which was collected at a few sites on a few dates, is available upon request

Table 5 SWMACC's Water Quality and Flow Monitoring Results

Pecan Creek

				Water Quality Standard Comparison																	Additional Parameters of Concern														Supporting Parameters			
WES ID and Location	Date	Rain Event (Y/N)	Visit Type (Routine/ Storm)	Temp (C)	WQ Std[1] (C)	DO (mg/L)	WQ Std[2] (mg/L)	Nitrate (mg/L)	WQ Std[3] (mg/L)	E. coli (MPN per 100ml)	Water Quality Std (MPN per 100ml)	Copper, Diss-olved (ug/L)	Guidance Conc (Chronic) (ug/L)	Guidance Conc (Acute) (ug/L)	Lead, Diss-olved (ug/L)	Water Quality Std (Chronic) (ug/L)	Water Quality Std (Acute) (ug/L)	Zinc, Diss-olved (ug/L)	Water Quality Std (Chronic) (ug/L)	Water Quality Std (Acute) (ug/L)	Total Solids (mg/L)	Total Suspe-nded Solids (mg/L)	Total Volatile Solids (mg/L)	Total Dissolved Solids (mg/L)	Ammonia (mg/L)	Total Phosph-orus (mg/L)	BOD (mg/L)	Ortho-phosphate (mg/L)	Copper, Total (ug/L)	Water Quality Std (Chronic) (ug/L)	Lead, Total (ug/L)	Water Quality Std (Chronic) (ug/L)	Zinc, Total (ug/L)	Water Quality Std (Chronic) (ug/L)	Hardness (mg/L)	Reported Flow (CFS)	pH	Conducti-vity (uS/cm)
#11 Pecan Creek at SW Mossy Brae Rd	11/19/13	Y	Storm	11.0	18	10.6	6.5	0.66	10	> 2420	406	2.5	4.18	5.80	0.16	0.94	24.17	6.3	55.50	55.05	255	176	71	75	< 0.05	0.49	4.1	0.06	10.70	5.52	4.97	1.04	58	49.8	41	6.47	7.7	120.9
#11 Pecan Creek at SW Mossy Brae Rd	3/3/14	Y	Storm	9.1	18	11.5	6.5	0.87	10	365	406	2	3.20	4.32	0.2	0.66	17.04	6	42.59	42.25	154	71	63	80	< 0.05	0.16	0.8	0.05	3.00	4.23	1.30	0.70	12	38.2	30	8.22	7.2	79.3
#11 Pecan Creek at SW Mossy Brae Rd	3/28/14	Y	Storm	9.6	18	10	6.5	0.58	10	2420	406	2.5	3.38	4.59	0.31	0.71	18.32	11	44.99	44.62	196	150	54	87	< 0.15	0.33	1.5	< 0.20	7.00	4.47	3.37	0.76	29	40.4	32	10.14	5.6	73.9
			Mean	9.9		10.7		0.69		1288		2.3			0.2			7.8			202	132.3	62.7	80.7	0.0	0.33	2.1	0.1	6.9		3.21		33		34	8.28	6.83	91.4
			Maximum	11.0		11.5		0.87		> 2420		2.50			0.31			11			255	176	71	87	< 0	0.49	4.1	< 0	11		4.97		58		41	10.14	7.7	120.9
			Minimum	9.1		10		0.58		365		2.00			0.16			6			154	71	54	75	< 0	0.16	0.8	0	3		1.30		12		30	6.47	5.6	73.9
			Water Quality Exceedance (number of samples)	0.0		3		0.00		2			0	0		0	0		0	3									2		3		1					
#11 Pecan Creek at SW Mossy Brae Rd	9/23/13	N	Routine	14.1	18	8.9	6.5	1.07	10	> 2420	406	1.9	4.09	5.67	0.08	0.92	23.51	8	54.35	53.91	133	13	68	120	< 0.05	0.11	0.6	0.06	3.20	5.40	0.57	1.01	7	48.8	40	NA	7.1	85.9
#11 Pecan Creek at SW Mossy Brae Rd	10/10/13	N	Routine	9.6	18	5.55	6.5	1.06	10	387	406	1	3.20	4.32	0.05	0.66	17.04	4	42.59	42.25	110	4	44	100	< 0.15	< 0.04	< 2.0	0.04	1.00	4.23	0.17	0.70	3	38.2	30	1.14	6.8	91.1
#11 Pecan Creek at SW Mossy Brae Rd	10/24/13	N	Routine	9.9	18	10.5	6.5	1.01	10	93	406	0.62	4.87	6.86	0.02	1.15	29.47	1.9	64.55	64.03	102	20	87	118	< 0.05	< 0.08	< 1.3	0.05	1.28	6.43	0.50	1.30	5.4	57.9	49	0.84	7.3	123
#11 Pecan Creek at SW Mossy Brae Rd	12/16/13	N	Routine	5.2	18	11.8	6.5	1.21	10	36	406	0.6	6.28	9.09	0.02	1.60	40.97	2	83.08	82.41	96	4	57	119	< 0.15	< 0.08	< 1.2	< 0.04	0.80	8.29	0.17	1.90	5	74.5	66	0.98	6.3	136
#11 Pecan Creek at SW Mossy Brae Rd	5/5/14	N	Routine	11.1	18	10.6	6.5	0.63	10	291	406	1.2	3.56	4.86	0.08	0.76	19.61	5	47.36	46.98	98	11	37	84	< 0.05	< 0.04	0.3	< 0.04	1.80	4.70	0.30	0.82	6	42.5	34	2.14	7.2	102.3
#11 Pecan Creek at SW Mossy Brae Rd	6/2/14	N	Routine	12.7	18	9.25	6.5	0.98	10	816	406	0.6	4.01	5.53	0.02	0.89	22.86	5	53.20	52.77	102	11	39	83	< 0.05	< 0.04	< 1.2	0.04	1.00	5.29	0.29	0.98	2	47.7	39	1.14	7	118.3
			Mean	10.4		9.4		0.97		301		0.99			0.05			4			107	10.4	55.3	104.0	0.04	0.04	0.6	0.04	1.51		0.33		4.7		43	1.25	6.95	109.4
			Maximum	14.1		11.8		1.21		> 2420		1.90			0.08			8			133	20.0	87.0	120.0	< 0.15	0.11	< 2.0	0.06	3.20		0.57		7		66	2.14	7.3	136.0
			Minimum	5.2		5.55		0.63		36		0.60			0.02			2			96	3.6	37.0	83.0	< 0.05	< 0.04	0.3	0.04	0.80		0.17		2		30	0.84	6.3	85.9
			Water Quality Exceedance (number of samples)	0.0		5		0.00		2			0	0		0	0		0	6									0		0		0					

River Grove Boat Ramp Outfall

				Water Quality Standard Comparison																	Additional Parameters of Concern														Supporting Parameters			
WES ID and Location	Date	Rain Event (Y/N)	Visit Type (Routine/ Storm)	Temp (C)	WQ Std[1] (C)	DO (mg/L)	WQ Std[2] (mg/L)	Nitrate (mg/L)	WQ Std[3] (mg/L)	E. coli (MPN per 100ml)	Water Quality Std (MPN per 100ml)	Copper, Diss-olved (ug/L)	Guidance Conc (Chronic) (ug/L)	Guidance Conc (Acute) (ug/L)	Lead, Diss-olved (ug/L)	Water Quality Std (Chronic) (ug/L)	Water Quality Std (Acute) (ug/L)	Zinc, Diss-olved (ug/L)	Water Quality Std (Chronic) (ug/L)	Water Quality Std (Acute) (ug/L)	Total Solids (mg/L)	Total Suspe-nded Solids (mg/L)	Total Volatile Solids (mg/L)	Total Dissolved Solids (mg/L)	Ammonia (mg/L)	Total Phosph-orus (mg/L)	BOD (mg/L)	Ortho-phosphate (mg/L)	Copper, Total (ug/L)	Water Quality Std (Chronic) (ug/L)	Lead, Total (ug/L)	Water Quality Std (Chronic) (ug/L)	Zinc, Total (ug/L)	Water Quality Std (Chronic) (ug/L)	Hardness (mg/L)	Reported Flow (CFS)	pH	Conducti-vity (uS/cm)
#203 River Grove Boat Ramp Outfall	4/17/14	Y	Storm	12.7	18	8.2	6.5	1.95	10	> 2420	406	4.2	6.03	8.70	0.06	1.52	38.92	14	79.87	79.22	140	14	57	100	< 0.05	0.09	2.1	0.05	5.70	7.97	0.67	1.79	18	71.7	63	NA	6.2	179
#203 River Grove Boat Ramp Outfall	5/8/14	Y	Storm	14.4	18	7.7	6.5	1.00	10	1986	406	6.3	4.53	6.33	0.03	1.04	26.81	21	60.06	59.57	110	11	44	110	< 0.05	0.05	1.9	0.04	9.20	5.98	0.72	1.17	30	53.9	45	NA	6.7	146.1
#203 River Grove Boat Ramp Outfall	6/12/14	Y	Storm	18.8	18	8	6.5	2.53	10	29	406	1.5	7.56	11.15	0.03	2.03	52.00	7	99.85	99.04	270	51	72	190	< 0.05	0.20	1.7	0.04	3.40	9.98	0.82	2.50	19	89.6	82	NA	6.6	273
			Mean	15.3		8.0		1.70		518		4.0			0.0			14.0			140	25	58	133	0.03	0.11	1.9	0.04	6.10		0.74		22		63	NA	6.5	199.4
			Maximum	18.8		8.2		2.53		> 2420		6.30			0.06			21			270	51	72	190	< 0.05	0.20	2.1	0.05	9.20		0.82		30		82	NA	6.7	273.0
			Minimum	12.7		7.7		1.00		29		1.50			0.03			7			110	11	44	100	< 0.05	0.05	1.7	0.04	3.40		0.67		18		45	NA	6.2	146.1
			Water Quality Exceedance (number of samples)	1		0		0		2			1	0		0	0		0	3									1		0		0					

Notes:

General: Red font indicates that the dissolved values are higher than the total. QC

#N/A = Data is not available

* = creek flow backed up due to high Tualatin River flows, so actual flow not known

1) WQ Standard of 18 C per DEQ's Temperature Water Quality Standard Implementation IMD 2008 for salmon and trout rearing and migration
2) No instream monitoring locations specifically referenced in the Tualatin River TMDL - 6.5 mg/L selected as target minimum DO concentraiton for cool water habitat also corresponds to the Ecology "good" criteria and the Chlorphyl a TMDL in the tualatin for mainstem Tualatin R
3) Table 20 - Protection of human health for water and fish ingestion
4) Geometric means were calculated for E. coli and entered in the row titled "mean"

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WATER ENVIRONMENT SERVICES
WATER QUALITY INDEX

Clackamas County Water Environment Services (WES) conducts water quality and flow monitoring of water in streams and from discharges from storm sewer outfalls. Monitoring is conducted so that WES can make informed decisions and establish priorities to improve water quality and watershed health through CCSD#1 and SWMACC. Monitoring results collected in the field and analyzed in laboratories are documented, tracked, and reported to the Oregon Department of Environmental Quality (DEQ) in accordance with terms of WES' municipal NPDES MS4 permit.

Selected pollutant parameters that have the potential to impact the beneficial uses (i.e., water contact recreation, fishing, etc.) of surface water bodies, sources of pollutant discharges, and potential management practices to address these sources are identified in some instances. To assist WES in making informed decisions related to the monitoring data collected, an indication of appropriate pollutant concentration levels is provided as well.

TEMPERATURE

Why is it a problem?

Fish species including salmonids and trout require water temperatures lower than 61 degrees Fahrenheit to survive and reproduce. Warm temperatures also reduce the amount of dissolved oxygen in water, which is also essential for survival.

What are the potential sources?

The most typical and significant sources include the following:

- Removal of streamside vegetation results in decreased shade and increased thermal heat load.
- Decreased flow as a result of flow diversions results in lower instream depths and flow velocities and hence greater susceptibility to increased temperatures.
- Channel erosion can contribute to elevated instream temperatures as it can cause sedimentation and reduced flow depths.
- Impoundments such as dams and ponds result in longer residence times for solar heating of the water.
- Point sources can also contribute to increased temperatures. Sources include non-contact cooling wastewater from some industrial processes.

What are some potential solutions?

Riparian planting and increased shade; maintain stormwater runoff flows and volumes consistent with pre-developed conditions; and encourage infiltration of runoff (groundwater discharges to streams typically have lower temperatures than surface discharges).

What temperature levels are appropriate?

Temperature ranges are based on documented temperatures required for salmon and trout rearing and migration (18 C) and salmon and steelhead spawning (13 C).

- Temperatures exceeding 18 degrees Celsius.....Poor
- Temperatures ranging from to 13 to 18 degrees Celsius.....Fair
- Temperatures lower than 13 degrees Celsius.....Good

CONDUCTIVITY

Why is it a problem?

Conductivity is a measure of the ability of the water to pass an electrical current. Instream conductivity is typically constant. Therefore, changes in conductivity can be an indicator of the presence of illicit or wastewater discharges entering a waterbody, as conductivity is affected by the presence of inorganic, dissolved solids including chloride, nitrate, phosphate, and sulfate.

What are the potential sources?

The most typical and significant sources of changing conductivity include the following:

- Increasing temperature
- Illicit discharges including process waters and wastewaters

What are some potential solutions?

- Riparian plantings and increased shade (to minimize fluctuations in stream temperatures)
- Implementation of an illicit discharge detection and elimination program

What conductivity levels are appropriate?

Conductivity ranges are based on the suitability of the water to support various fish and macroinvertebrate species. Conductivity outside of the optimum range could indicate that the water may be unsuitable to support various species. The identified range is based on EPA's guidelines.

- Conductivity greater than 500 umhos/cm or less than 150 umhos/cm.....Poor
- Conductivity between 150 umhos/cm and 500 umhos/cm.....Good

PH

Why is it a problem?

pH is a measure of the acidity of the waterbody. Aquatic organisms are sensitive to deviations from a normal range of pH.

What are the potential sources?

The most typical and significant sources include the following:

- Lime soil additives and fertilizers.
- Acid rain created by fossil fuel combustion.
- Illicit discharges including process waters and wastewaters.

What are some potential solutions?

Implementation of an integrated pest management program; public education related to the use of pesticides and fertilizers; implementation of an illicit discharge detection and elimination program.

What pH levels are appropriate?

pH ranges are based on the suitability of the water to support of various fish and macroinvertebrate species. Instream pH outside of the optimum range could indicate that the water may be unsuitable to support various species. The following identified range is based on DEQ's OAR 340-041-0021:

- pH lower than 6.5 and higher than 8.5 ..... Poor
- pH ranging from 6.5 to 8.5 ..... Good

DISSOLVED OXYGEN

Why is it a problem?

Fish and other aquatic organisms require dissolved oxygen for survival. Adequate dissolved oxygen concentrations are required to ensure that oxygen can be transferred from the water to the organism's blood stream efficiently. Dissolved oxygen is also necessary for various biological and chemical processes and to facilitate decomposition of organic matter in water and bed sediment. Low dissolved oxygen concentrations can lead to a buildup of organic matter and limit fish and other aquatic organisms' survival.

What are the potential sources?

The most typical and significant sources include the following:

- Dissolved oxygen concentrations are reduced with elevated temperatures resulting from the removal of streamside vegetation and decreased or stagnant flow.
- Discharge of oxygen-demanding wastes (wastewater and stormwater runoff) that carry pollutant s (sediments, nutrients, and organic matter) that require oxygen for decomposition or chemical reactions.

What are the solutions?

Plant riparian vegetation to lower instream temperatures; filter pollutants prior to discharge; reduce fertilizer and pesticide usage and discharge; prevent erosion and control sediment; implement setbacks for livestock and animals; implement practices that reduce impediments to flow (e.g., reduce use of impoundments, promote infiltration to support groundwater recharge and summer flows).

What Dissolved Oxygen levels are appropriate?

Dissolved oxygen ranges are based on DEQ's documented dissolved oxygen concentrations required for maintenance of cold-water aquatic life.

- Dissolved oxygen concentrations less than 6.5 mg/L ..... Poor
- Dissolved oxygen concentrations ranging from 6.5 mg/L to 8 mg/L ..... Fair
- Dissolved oxygen concentrations higher than 8 mg/L ..... Good

NUTRIENTS (NITROGEN AND PHOSPHORUS)

Why are they a problem?

High levels of nutrients (most commonly in the form of nitrogen and\or phosphorus) can over-stimulate biological growth (i.e., algal production). When plants die and decompose, they reduce the

dissolved oxygen concentrations in a water body. Some forms of nutrients (e.g., ammonia and nitrate) may be toxic to organisms. High nutrient levels may also contribute to odor problems and aesthetic concerns related to algal blooms.

What are the potential sources?

The most typical and significant sources (of nitrogen and phosphorus specifically) include the following:

- Agricultural activities and urban landscaping practices that use fertilizers;
- Human waste products, commonly from septic systems and impaired sanitary sewers;
- Animal waste products; and
- Vehicle exhaust.

What are some of the potential solutions?

Land cultivation management practices and landscaping with native plants that limit the discharge of nutrient-rich fertilizers into surface waters; implementation of pet waste programs; riparian plantings and implementation of setback requirements to limit livestock and animals from accessing stream channels and allow for filtration of nutrient-rich runoff; implementation of an illicit discharge program and/ or plan review activities to identify and remove potential human nutrient sources; stormwater runoff treatment utilizing filtration or infiltration unit processes (to address the various chemical forms of nutrients); public education related to proper disposal practices for household chemicals.

What nutrient concentrations are appropriate?

Nutrient water quality criteria are temperature and pH dependent. Some states (not Oregon) have identified state-wide water quality criteria for nutrients.

In the absence of nutrient water quality criteria, nutrient concentrations ranges are provided for nitrate (given its effect on human health) and total phosphorus (based on EPA's 1986 water quality criteria for freshwater aesthetics).

- Nitrate concentrations greater than 10 mg/L ..... Poor
- Nitrate concentrations less than 10 mg/L..... Good
- Total phosphorus concentrations greater than 0.14 mg/L..... Poor or Fair
- Total phosphorus concentrations equal to or less than 0.14 mg/L ..... Good

Note: The total phosphorus concentration of 0.14 mg/L is the Load Allocation and Waste Load Allocation which was specified in the Tualatin TMDL for the monitored creek in SWMACC. This concentration is also used for comparative purposes for creeks and storm sewer outfalls in CCSD#1, for a watershed-specific total phosphorus concentration has not been established yet by DEQ for any of the watersheds in CCSD#1.

BACTERIA (FECAL COLIFORM AND *E COLI*)

Why is it a problem?

Fecal coliform and *E coli* (a subset of fecal coliform bacteria) are found in the intestines of warm blooded animals. Presence indicates fecal matter in the water and is used as an indicator of pathogens that may cause a potential human health risk. Human exposure to high bacteria concentrations could potentially lead to skin irritation and gastrointestinal ailments if consumed.

What are the potential sources?

Animal feces (either wild or domestic) and human waste, which may be attributed to impaired sanitary sewer or septic systems and illicit discharges

What are some of the potential solutions?

Implementation of pet waste disposal programs; riparian plantings and implementation of setback requirements to limit livestock and animals from accessing stream channels and to allow for filtration of bacteria from runoff; implementation of an illicit discharge program and/or plan review activities to identify and remove any human bacteria sources such as sewer system cross-connections; public education related to proper disposal practices for animal waste; ensure that septic systems are in a properly functioning condition; and stormwater runoff treatment utilizing infiltration unit processes.

What bacteria levels are appropriate?

E coli is currently monitored both instream and in runoff by the County. E coli concentration ranges are based on DEQ's documented bacteria water quality standards applicable for recreational beneficial uses.

- *E coli* concentrations exceeding 406 Counts/100 mL ..... Poor
- *E coli* concentrations ranging from 126 Counts/100 mL to 406 Counts/100 mL ..... Fair
- *E coli* concentrations less than 126 Counts/100 mL ..... Good

Note: The E coli water quality standards are as follows: a 30-day log mean of 126 Counts/100 mL, based on a minimum of five samples, and no single sample shall exceed 406 Counts/100 mL.

SOLIDS AND SEDIMENT

Why are they a problem?

Excessive levels of solids and sediment can lead to high turbidity levels, loss of aquatic habitat, elevated sediment deposition on stream beds and other stream channel modification. Suspended sediment can reduce plant photosynthesis, which in turn can lower instream dissolved oxygen levels and affect the food chain for fish. Finally, solids and sediment can result in elevated instream temperatures through modification of the stream channel depth to width ratio, which facilitates heat exchange, and the addition of dark colored, fine sediment which store more solar radiation and increase temperatures. Suspended solids are also typically used as a surrogate for other contaminants that bind to or absorb onto fine particles (e.g., heavy metals).

What are the potential sources?

Construction site runoff from sites with ineffective erosion and sediment control practices/programs; agricultural, landscaping and logging activities; pavement, tire, and vehicular

abrasion; litter and garbage accumulation; increased runoff flows from impervious surfaces that cause channel erosion.

What are some of the potential solutions?

Riparian plantings and implementation of setback requirements to allow for settling and filtration of solids and sediment from runoff; implementation of an erosion and sediment control program including provisions for enforcement of active construction sites with ineffective controls; roadway maintenance including catchbasin cleaning and regular street sweeping; stormwater runoff treatment utilizing sedimentation, filtration, and infiltration unit processes.

What sediment levels are appropriate?

Total suspended solids (TSS) instream and in runoff are currently monitored by WES. Instream water quality standards do not exist for sediments. In general, instream levels of TSS in creeks in CCSD#1 and SWMACC on rain-free days is expected to be below 25 mg/L. Concentrations of TSS on rainy days can often be in the hundreds due to erosion of upland soils, etc.

METALS (COPPER, LEAD, AND ZINC)

Why are they a problem?

Metals at elevated concentrations are toxic to aquatic ecosystems and some metals can bioaccumulate in aquatic organisms (mercury in fish tissue, for example). Metals are relatively soluble (tendency to exist in the dissolved form instead of being combined with sediment) in natural waters and partition based on the pH and hardness of the discharge, which limits the effectiveness of many treatment methods/technologies.

What are the potential sources?

Vehicular traffic through the combustion of fossil fuels and the wear and tear of tires and brake pads; metal corrosion from gutters, roofs, etc; improper disposal of paints, vehicle components (tires, wheel weights, batteries, etc); wood preservatives; pesticides usage.

What are some of the potential solutions?

Management of solids and sediment in stormwater runoff, specifically utilizing sedimentation, filtration, and infiltration unit processes; roadway maintenance including catchbasin cleaning and regular street sweeping; integrated pest management practices that limit the discharge of pesticides and fertilizers into surface waters; residential pick-up and recycling programs; implementation of an erosion and sediment control program including provisions for enforcement of active construction sites with ineffective controls; public education related to proper disposal practices for household chemicals.

What metals levels are appropriate?

The toxicity of metals to aquatic life is dependent on water pH and hardness. Guidance values and water quality standards for acute and chronic exposure are established based on the water's hardness. Acute toxicity implies that the stimulus is severe enough to rapidly induce an effect. Chronic toxicity implies that the stimulus would induce an effect if it continues for a relatively long period of time.

- Dissolved metal concentrations which exceed the guidance value..... Poor
- Dissolved metal concentrations which are equal to the guidance value ..... Fair

- Dissolved metal concentrations which are less than the guidance value..... Good

Note: Using a hardness concentration range between 25 mg/L and 100 mg/L, the following ranges of acute and chronic dissolved metal concentrations are provided:

- Dissolved copper conc. (guidance value: **chronic** exposure) .....2.8 – 9.0 ug/L
- Dissolved copper conc. (guidance value: **acute** exposure) ..... 3.7 – 14.0 ug/L
- Dissolved lead conc. (WQ Standard value: **chronic** exposure) .....0.6 - 2.6 ug/L
- Dissolved lead conc. (WQ Standard value: **acute** exposure).....14 – 65 ug/L
- Dissolved zinc conc. (WQ Standard values: **acute & chronic** exposure)…… .....37 – 119 ug/L

As of January 31, 2013, the total amount of copper in discharges to surface waters is regulated by the State of Oregon, but only the dissolved amount of lead and zinc in these discharges is regulated. The appropriate Freshwater Chronic and Acute Criteria, which are also hardness-dependent, have been calculated and compared to our copper, lead, and zinc data. See the Fact Sheets for more information.

ENVIRNOMENTAL MONITORING REPORT ATTACHMENT 2

MONITORING SITE FACT SHEETS

FACT SHEET INDEX

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Drainage Characteristics

- Tributary to the Clackamas River
- Dominant Land Uses = Industrial (Clackamas Industrial Area)

Monitoring Location

Carli Creek begins where a 54" diameter Clackamas County-owned storm sewer system ends. The creek then flows for ~ 1/2 mile before it meets the Clackamas River. Due to the lack of access to the creek itself, the monitoring location is located at the 1st manhole upgradient from the outfall. This manhole is in the intersection of SE 120th Avenue and Carpenter Drive in Clackamas.

2013-2014 Monitoring Results (provided in tabular format)

Instream monitoring data collected during the 2013/2014 MS4/TMDL reporting year were sorted based on whether the data were collected during storm event conditions or not. Three monitoring events were conducted during storms and the other six monitoring events were not.

Data were analyzed and comprehensive results are provided below for storm and non-storm event conditions. Where water quality standards exceedances are indicated, the basis for that determination is provided in the attached Clackamas County Water Quality Index (Attachment 1). Although not reflected in the table below, total dissolved solids, water flow rate, and conductivity were also measured.

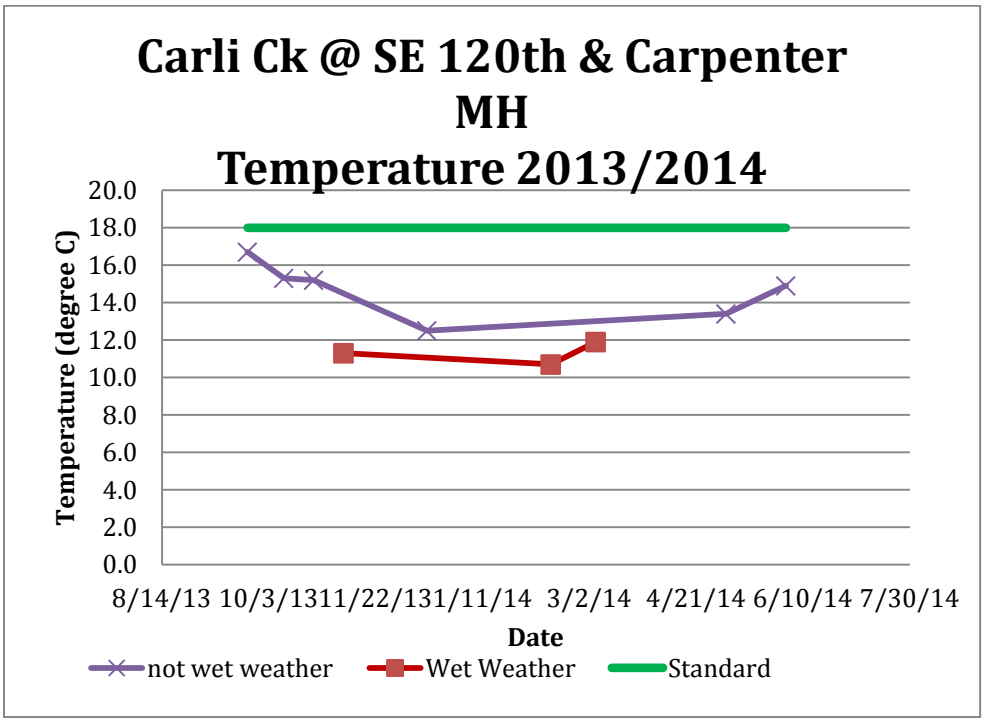
	Temperature (C)	Dissolved Oxygen (mg/L)	Nitrate (mg/L)	E coli (Counts/100 mL)	Total Copper (ug/L)	Dissolved Copper (ug/L)	Total Lead (ug/L)	Dissolved Lead (ug/L)	Total Zinc (ug/L)	Dissolved Zinc (ug/L)	Total Solids (mg/L)	Total Suspended Solids (mg/L)	BOD (mg/L)	Ammonia (mg/L)	Total Phosphorus (mg/L)	Orthophosphate (mg/L)	Hardness (mg/L)	pH
Monitored Storms (3 events)																		
Mean	11.3	10.0	0.56	382	3.89	1.7	1.48	0.11	46.3	36.2	83	19	2.4	0.03	0.06	0.04	38	7.0
Maximum	11.9	10.3	1.13	770	7.76	2.5	2.76	0.19	78.0	40.5	119	25	4.0	<0.05	0.09	0.05	69	7.4
Minimum	10.7	9.8	0.27	105	1.60	1.3	0.60	0.07	25.0	33.0	61	10	1.0	<0.05	<0.04	0.04	19	6.6
Exceedance of guidance value or criteria (# exceed/total)	0/3	0/3	0/3	2/3	1/3	0/3	2/3	0/3	2/3	2/3	NA	NA	NA	0/3	0/3	NA	NA	0/3
Other Weather Conditions (6 monitoring events)																		
Mean	14.7	9.3	0.98	60	1.70	1.0	0.39	0.03	26.3	19.8	162	5	0.6	0.04	0.24	0.05	84	7.0
Maximum	16.7	11.4	1.22	>2420	3.50	2.3	0.85	0.12	51.0	43.0	190	7	1.3	<0.15	1.27	0.07	109	7.1
Minimum	12.5	8.4	0.48	3	0.90	0.6	0.21	<0.01	14.0	12.0	102	2	0.0	<0.05	0.04	0.04	36	6.9
Exceedance of guidance value or criteria (# exceed/total)	0/6	0/6	0/6	2/6	0/6	0/6	0/6	0/6	1/6	0/6	NA	NA	NA	0/6	0/6	NA	NA	0/6

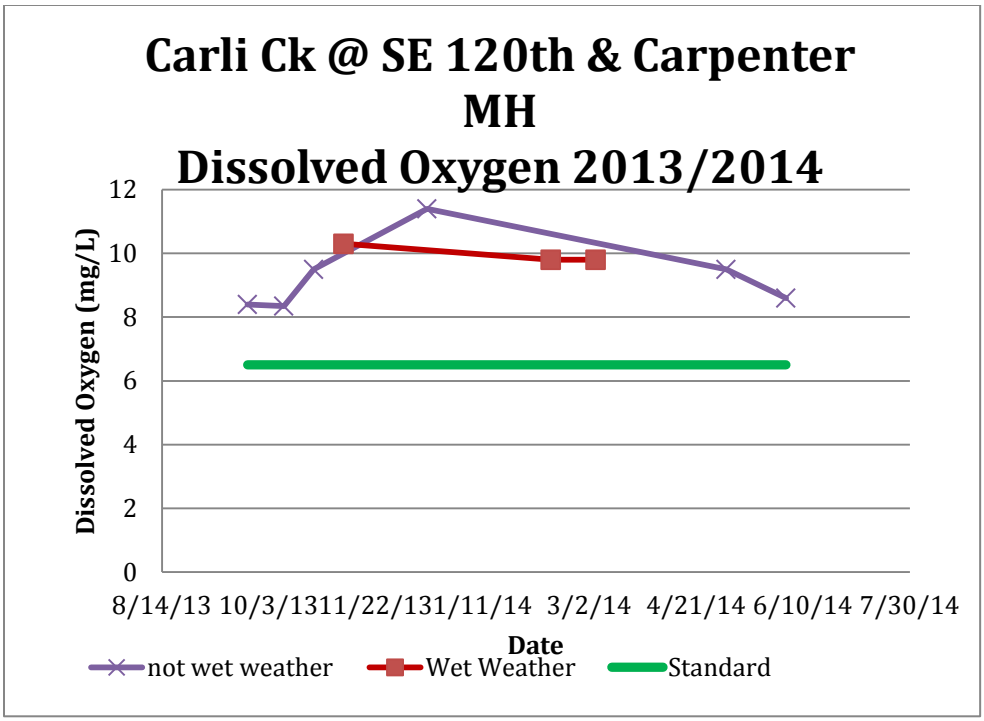
Note: Exceedance totals for metals data is based on exceedances of chronic guidance values and chronic criteria, not acute guidance values and acute criteria.

Also Note: The geometric mean value is shown for E. coli in the row titled "Mean"

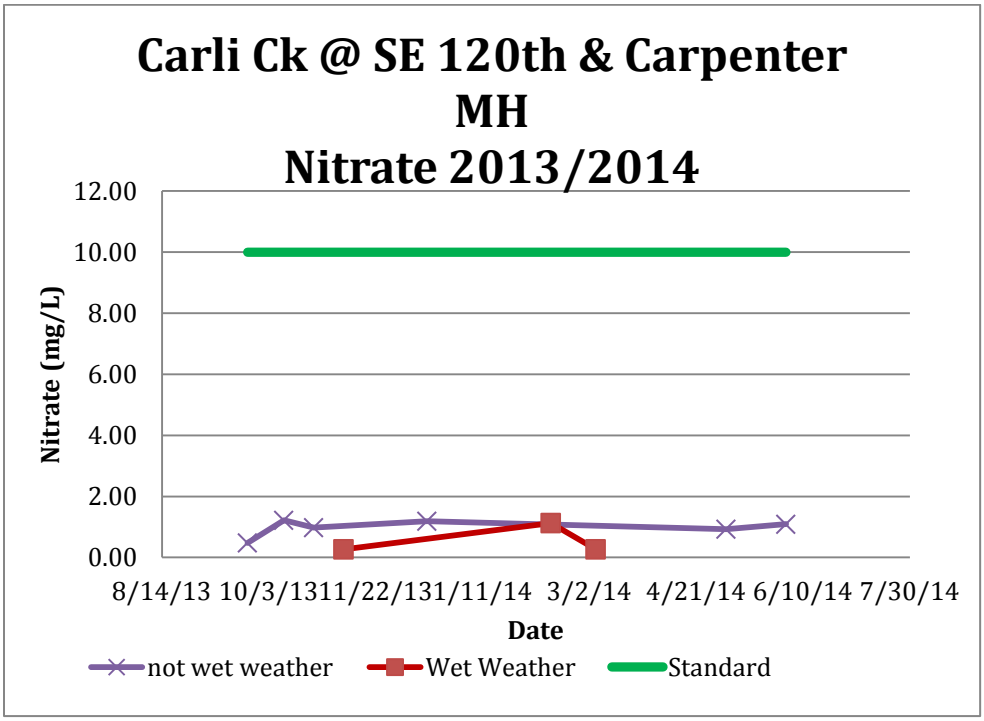
2013/2014 Monitoring Results (provided in graphical format)

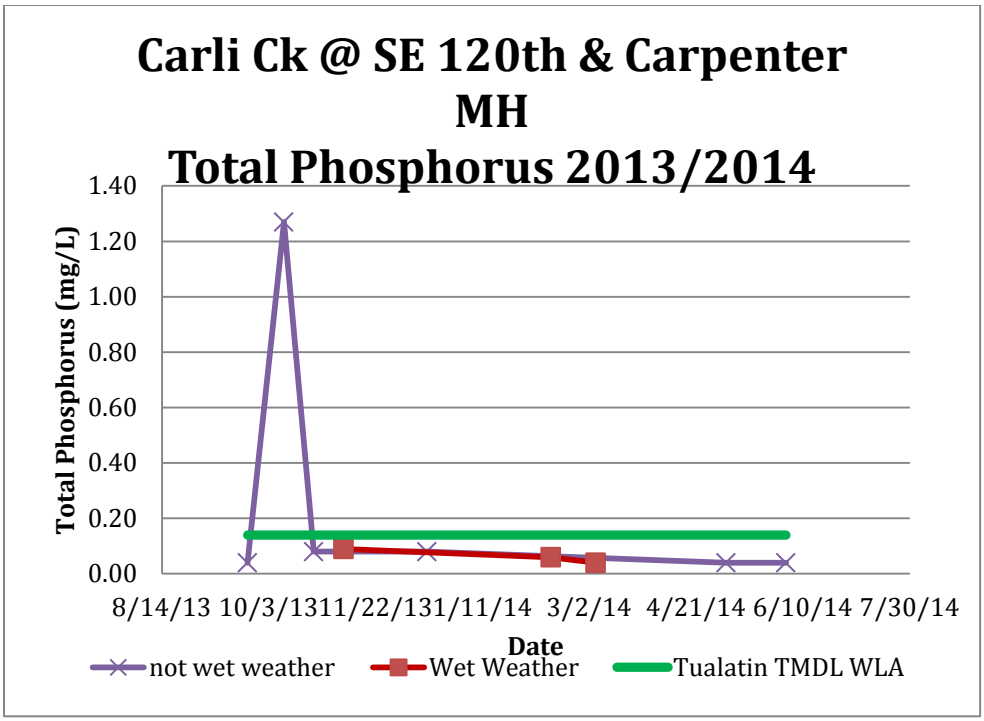
Monitoring results for select parameters have been plotted to indicate either adherence to the water quality standard (where standards apply) or to indicate whether data are in a "healthy" range as referenced in the attached Clackamas County Water Quality Index (Attachment 1). In cases where the monitoring result is less than the laboratory method's detection limit, the plotted value is the laboratory method's detection limit.



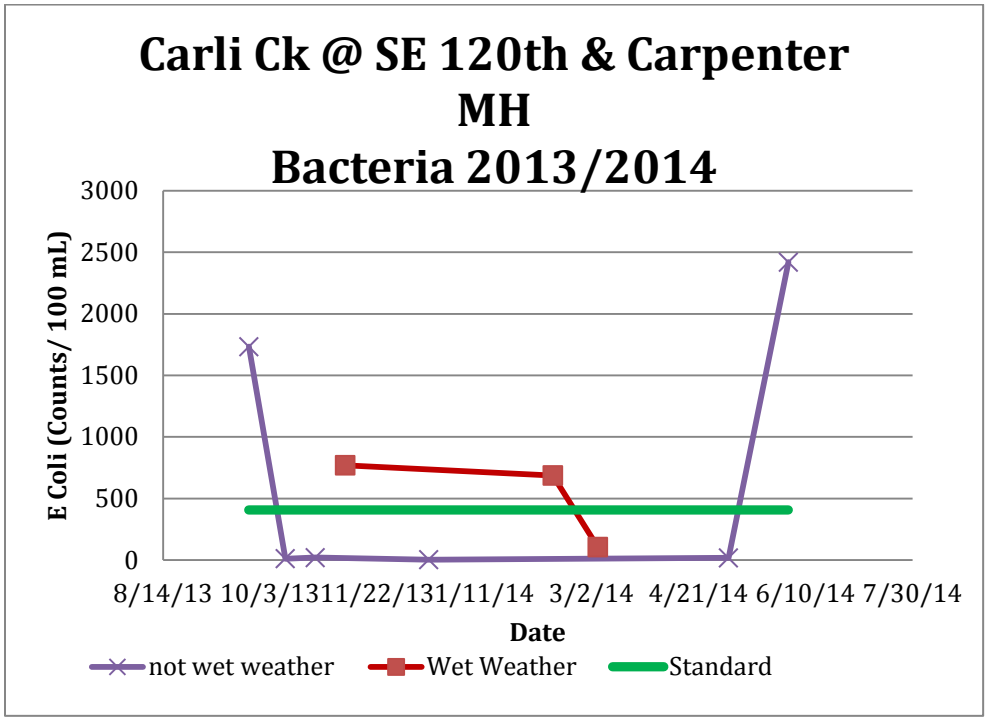


Please note that for dissolved oxygen, the standard is a minimum concentration that the samples should not drop below.

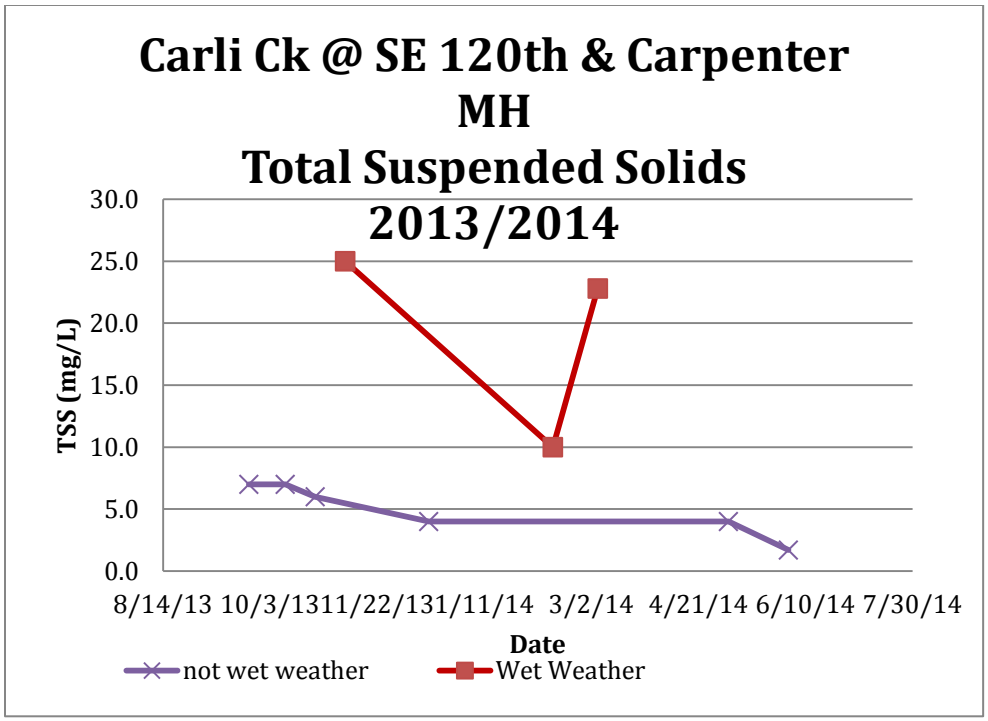




Note: The comparison is made here to the Waste Load Allocation for total phosphorus in the Tualatin TMDL, for the Clackamas River watershed does not have a specific guidance value for instream total phosphorus



Note: The >2420 bacteria value is charted as 2420 colonies/100ml



2013/2014 Monitoring Results Discussion

The 406 colonies/100 ml standard for E. coli was exceeded during 4 of the 9 monitoring events. Total phosphorus concentrations were below the 0.14 mg/L guidance value during 8 of the 9 monitoring events. The highest total suspended solids value was only 25 mg/L. The State of Oregon's instream criteria for: 1) total copper were exceeded during one of the storms, and 2) dissolved zinc were exceeded during two storms. Measured pH values were protective of watershed health during all 9 monitoring events.

Drainage Characteristics

- Tributary to the Clackamas River
- Dominant Land Uses = Primarily single-family and multi-family residential, commercial, open space, and government-owned (Clackamas High School, Oregon Trail Elementary, Sunnyside Elementary, and numerous park sites are in the watershed). A modest amount of rural residential lands are also present.

Monitoring Location

Sieben Creek is monitored at the point where Highway 212/224 crosses the creek (in the 13600 block of Hwy 212/224).

2013/2014 Monitoring Results (provided in tabular format)

Instream monitoring data collected during the 2013/2014 MS4/TMDL reporting year were sorted based on whether the data were collected during storm event conditions or not. Three monitoring events were conducted during storms and the other 6 monitoring events were not.

Data were analyzed and comprehensive results are provided below for storm and non-storm event conditions. Where water quality standards exceedances are indicated, the basis for that determination is provided in the attached Clackamas County Water Quality Index (Attachment 1). Although not reflected in the table below, total dissolved solids, water flow rate, and conductivity were also measured.

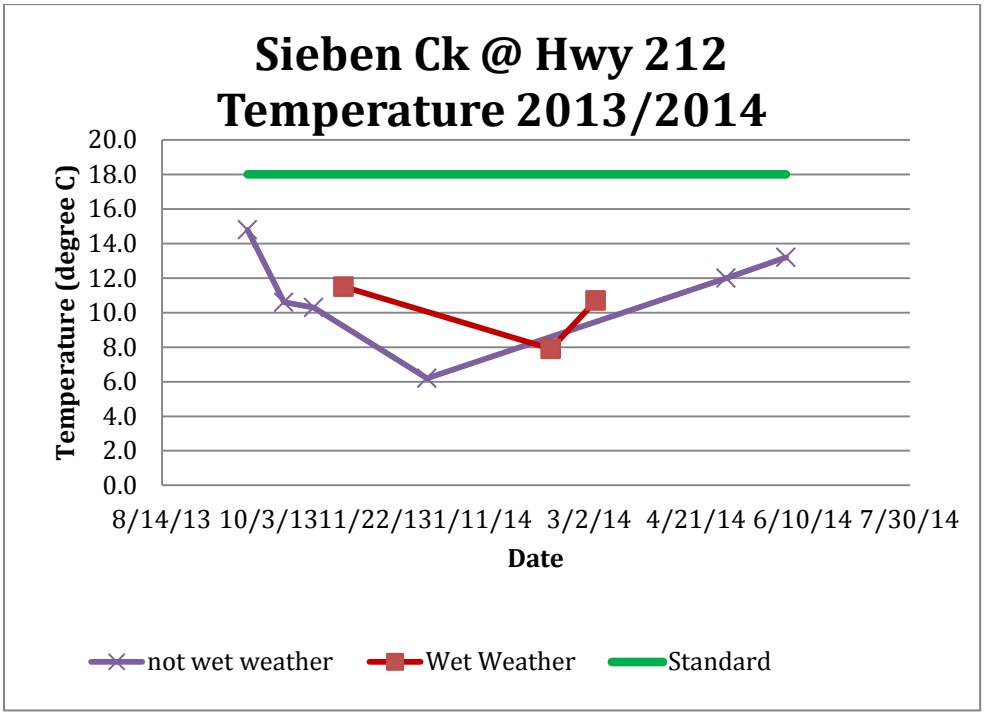
	Temperature (C)	Dissolved Oxygen (mg/L)	Nitrate (mg/L)	E coli (Counts/100 mL)	Total Copper (ug/L)	Dissolved Copper (ug/L)	Total Lead (ug/L)	Dissolved Lead (ug/L)	Total Zinc (ug/L)	Dissolved Zinc (ug/L)	Total Solids (mg/L)	Total Suspended Solids (mg/L)	BOD (mg/L)	Ammonia (mg/L)	Total Phosphorus (mg/L)	Orthophosphate (mg/L)	Hardness (mg/L)	pH
Monitored Storms (3 events)																		
Mean	10.0	10.4	0.92	1201	4.33	2.1	1.34	0.11	33.0	18.3	121	44	1.4	0.03	0.11	0.03	38	7.0
Maximum	11.5	10.8	1.56	>2420	8.70	2.4	2.74	0.17	66.0	19.0	142	86	2.3	<0.05	0.24	0.05	53	7.2
Minimum	7.9	9.5	0.51	461	2.00	1.9	0.59	0.05	16.0	17.9	90	20	0.7	<0.05	<0.04	<0.04	31	6.8
Exceedance of guidance value or criteria (# exceed/total)	0/3	0/3	0/3	3/3	1/3	0/3	1/3	0/3	1/3	0/3	NA	NA	NA	0/3	1/3	NA	NA	0/3
Other Weather Conditions (6 monitoring events)																		
Mean	11.2	10.7	1.27	182	1.69	1.3	0.20	0.03	11.2	9.7	114	5	0.6	0.04	0.03	0.04	51	7.2
Maximum	14.8	13.0	1.64	>2420	3.80	2.6	0.38	0.05	18.0	15.0	160	9	<1.3	<0.15	<0.08	0.08	64	7.4
Minimum	6.2	9.1	0.47	38	0.90	0.6	0.11	<0.01	7.0	6.0	38	1	0.2	<0.05	<0.04	<0.04	33	6.9
Exceedance of guidance value or criteria (# exceed/total)	0/6	0/6	0/6	1/6	0/6	0/6	0/6	0/6	0/6	0/6	NA	NA	NA	0/6	0/6	NA	NA	0/6

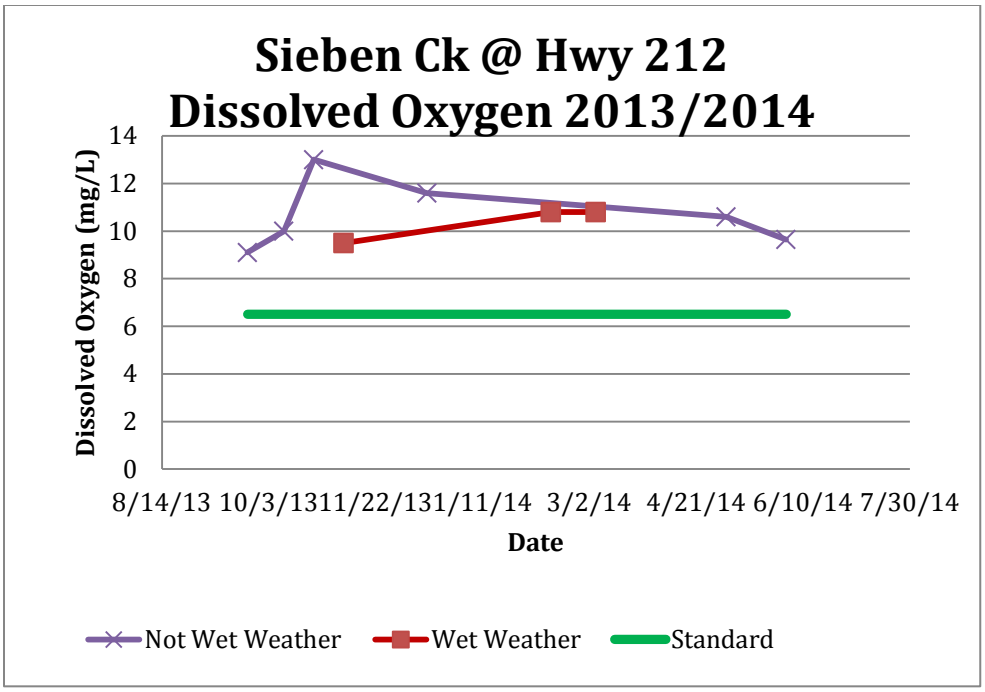
Note: Exceedance totals for metals data is based on exceedances of chronic guidance values and chronic criteria, not acute guidance values and acute criteria.

Also Note: The geometric mean value is shown for E. coli in the row titled "Mean"

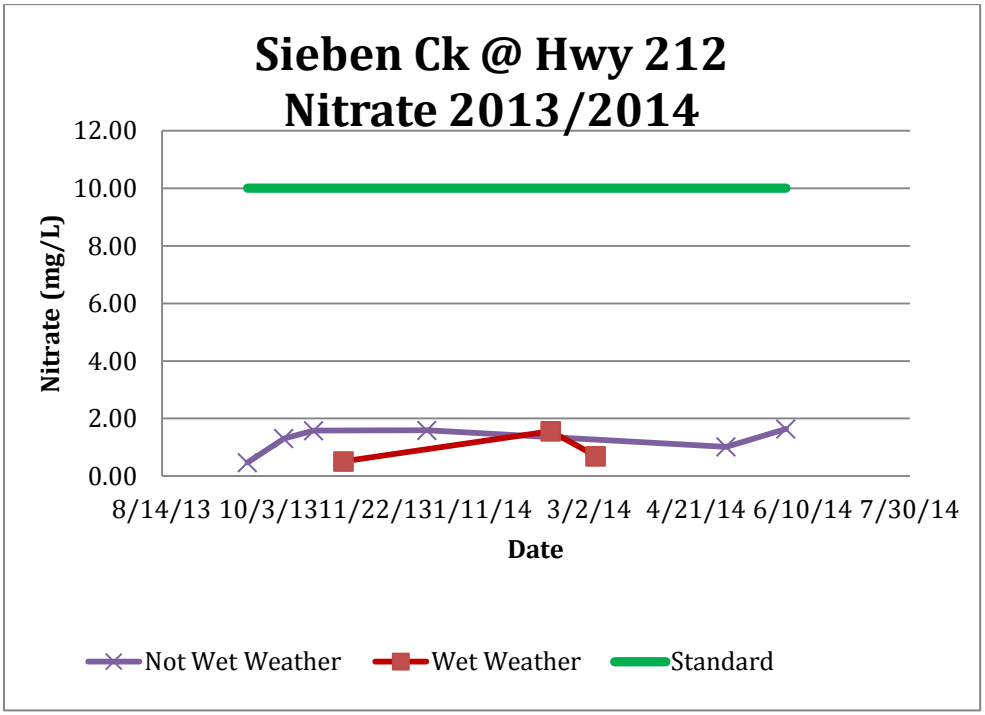
2013/2014 Monitoring Results (provided in graphical format)

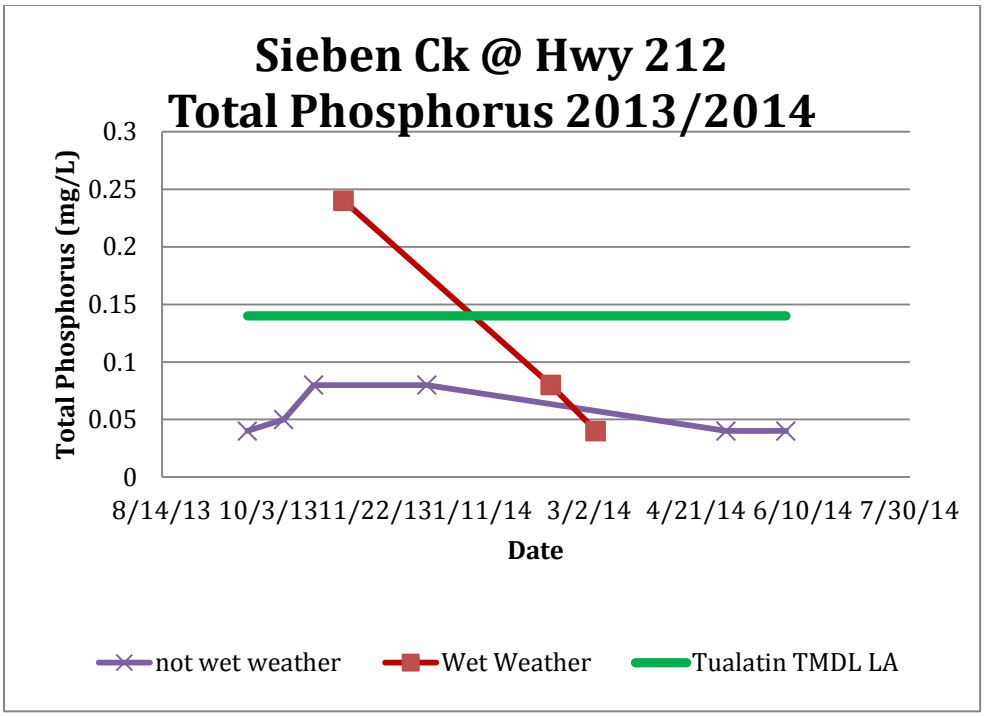
Monitoring results for select parameters have been plotted to indicate either adherence to the water quality standard (where standards apply) or to indicate whether data are in a "healthy" range as referenced in the attached Clackamas County Water Quality Index (Attachment 1). In cases where the monitoring result is less than the laboratory method's detection limit, the plotted value is the laboratory method's detection limit.



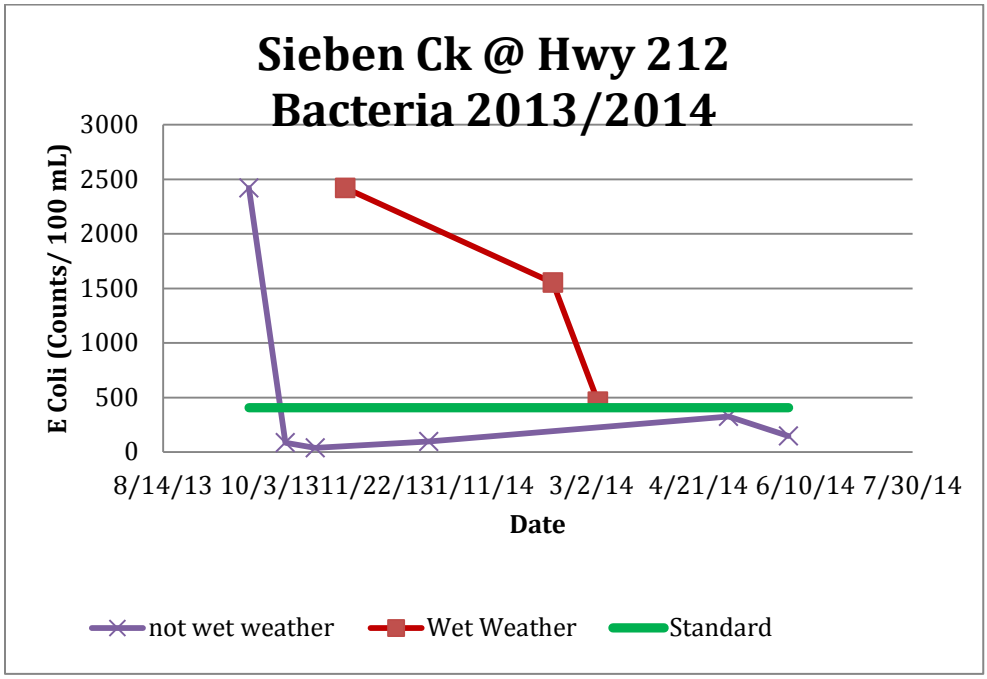


Please note that for dissolved oxygen, the standard is a minimum concentration that the samples should not drop below.

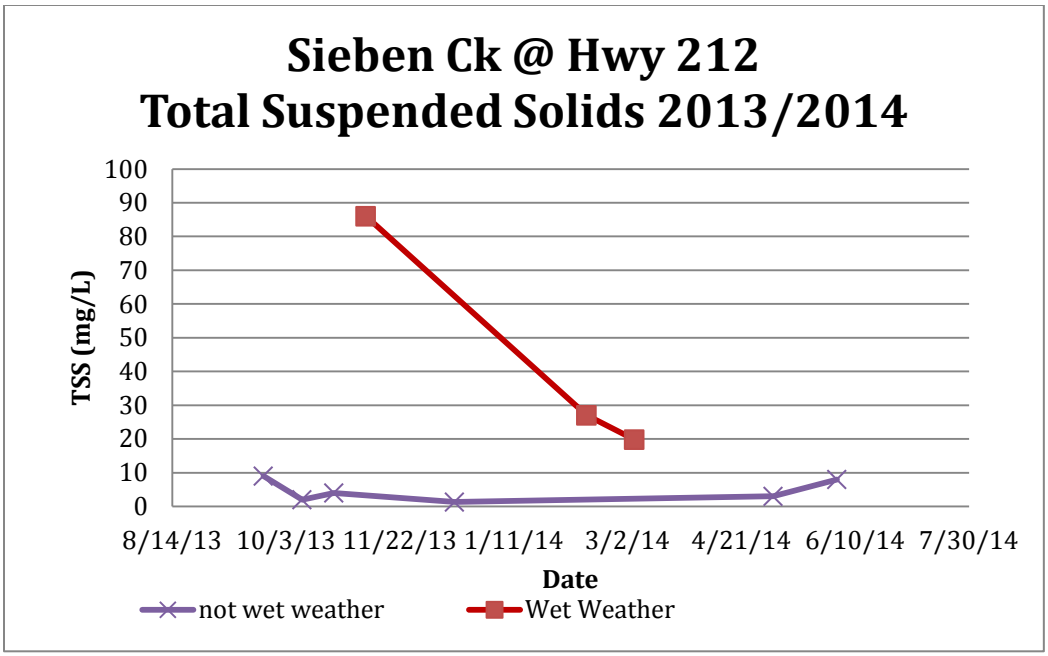




Note: The comparison is made here to the Load Allocation for total phosphorus in the Tualatin TMDL, for the Clackamas River watershed does not have a specific guidance value for instream total phosphorus



Note: The two >2420 bacteria values are charted as 2420 colonies/100ml



2013/2014 Monitoring Results Discussion

The 406 colonies/100 ml standard for E. coli was exceeded on 4 occasions. The measured total phosphorus concentration exceeded the 0.14 mg/L guidance value during one storm; the total suspended solids value for this same storm was 86 mg/L. Dissolved oxygen levels were above 6.5 mg/L, and ammonia was undetectable, during all 9 monitoring events. The chronic guidance values and regulated criteria for *total* copper, *total* zinc, and *total* lead were all exceeded during the storm on November 7, 2013. The chronic guidance values and regulated criteria for *dissolved* copper, *dissolved* lead, and *dissolved* zinc were not exceeded during any of the 9 monitoring events.

Drainage Characteristics

- Tributary to Mt. Scott Creek in the Kellogg-Mt. Scott Watershed
- Dominant Land Uses = Over half of the watershed is zoned for commercial or transportation purposes (roads, highways, light rail, etc.). A significant portion of the rest of the watershed is high and moderate density residential.

Monitoring Location

This site is monitored at the point where SE 84th Avenue crosses the creek. This is near the Costco store in Clackamas.

2013/2014 Monitoring Results (provided in tabular format)

Instream monitoring data collected during the 2013/2014 MS4/TMDL reporting year were sorted based on whether the data were collected during storm event conditions or not. Three monitoring events were conducted during storms and the other 6 monitoring events were not.

Data were analyzed and comprehensive results are provided below for storm and non-storm event conditions. Where water quality standards exceedances are indicated, the basis for that determination is provided in the attached Clackamas County Water Quality Index (Attachment 1). Although not reflected in the table below, total dissolved solids, water flow rate, and conductivity were also measured.

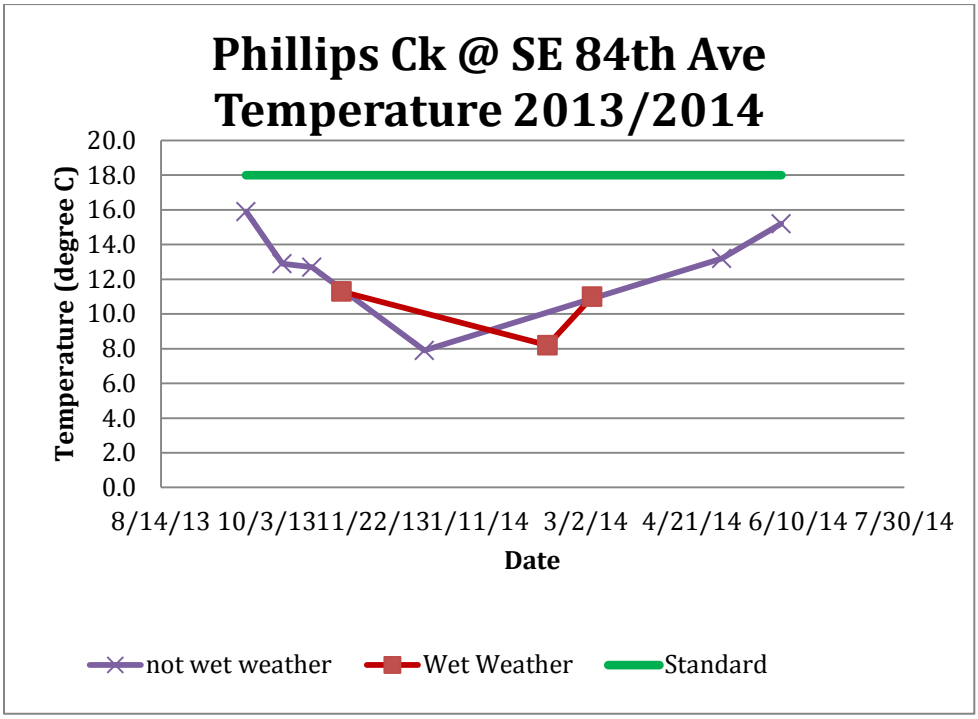
	Temperature (C)	Dissolved Oxygen (mg/L)	Nitrate (mg/L)	E coli (Counts/100 mL)	Total Copper (ug/L)	Dissolved Copper (ug/L)	Total Lead (ug/L)	Dissolved Lead (ug/L)	Total Zinc (ug/L)	Dissolved Zinc (ug/L)	Total Solids (mg/L)	Total Suspended Solids (mg/L)	BOD (mg/L)	Ammonia (mg/L)	Total Phosphorus (mg/L)	Orthophosphate (mg/L)	Hardness (mg/L)	pH
Monitored Storms (3 events)																		
Mean	10.2	10.1	0.73	547	5.41	2.3	2.49	0.16	36.3	22.1	116	36	2.4	0.03	0.08	0.03	38	6.7
Maximum	11.3	10.5	1.36	>2420	10.12	2.6	5.41	0.18	65.0	24.0	131	69	3.0	<0.05	0.11	0.05	55	6.9
Minimum	8.2	9.5	0.35	260	3.00	2.0	1.00	0.13	19.0	20.2	88	19	1.5	<0.05	<0.08	<0.04	27	6.5
Exceedance of guidance value or criteria (# exceed/total)	0/3	0/3	0/3	1/3	1/3	0/3	2/3	0/3	1/3	0/3	NA	NA	NA	0/3	0/3	NA	NA	0/3
Other Weather Conditions (6 monitoring events)																		
Mean	13.0	9.7	0.49	188	1.83	1.2	0.38	0.06	16.5	13.6	131	4	0.6	0.04	0.03	0.04	62	7.3
Maximum	15.9	12.5	0.75	2420	3.40	2.3	0.68	0.10	27.0	24.0	160	9	<1.3	<0.15	<0.08	0.08	80	7.5
Minimum	7.9	8.4	0.09	5	0.89	0.5	0.17	0.02	8.2	6.3	89	1	0.3	<0.05	<0.04	<0.04	40	7.0
Exceedance of guidance value or criteria (# exceed/total)	0/6	0/6	0/6	2/6	0/6	0/6	0/6	0/6	0/6	0/6	NA	NA	NA	0/6	0/6	NA	NA	0/6

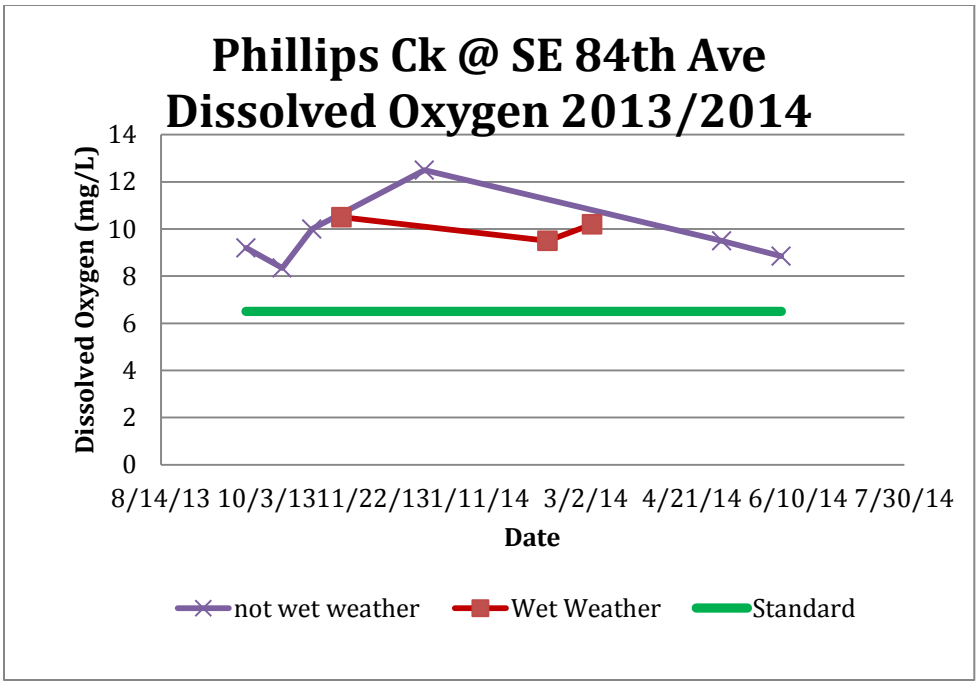
Note: Exceedance totals for metals data is based on exceedances of chronic guidance values and chronic criteria, not acute guidance values and acute criteria.

Also Note: The geometric mean value is shown for E. coli in the row titled "Mean"

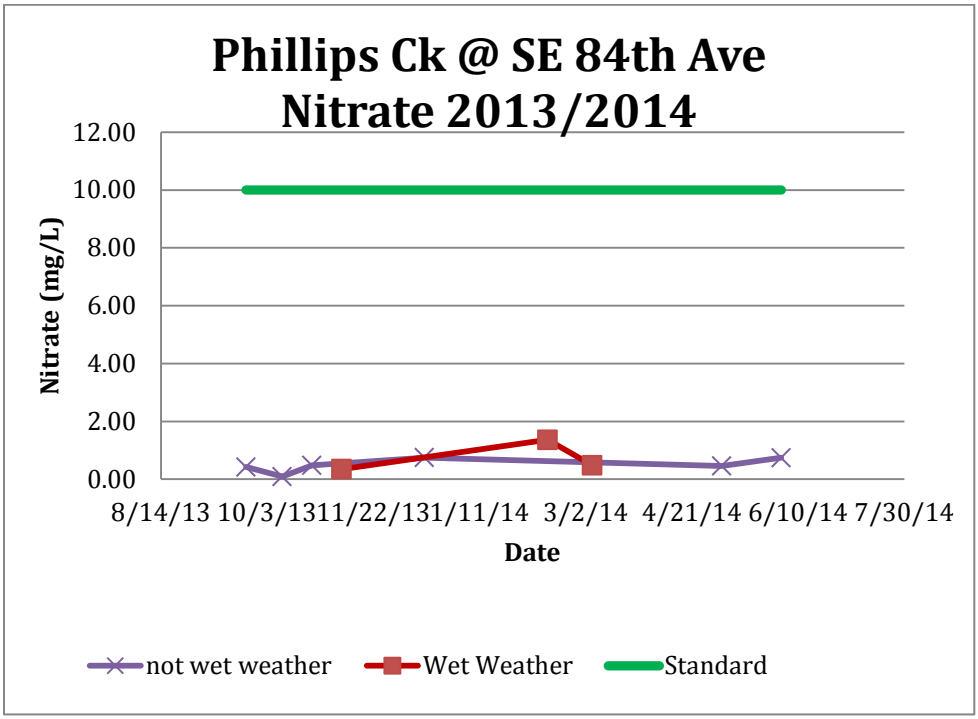
2013/2014 Monitoring Results (provided in graphical format)

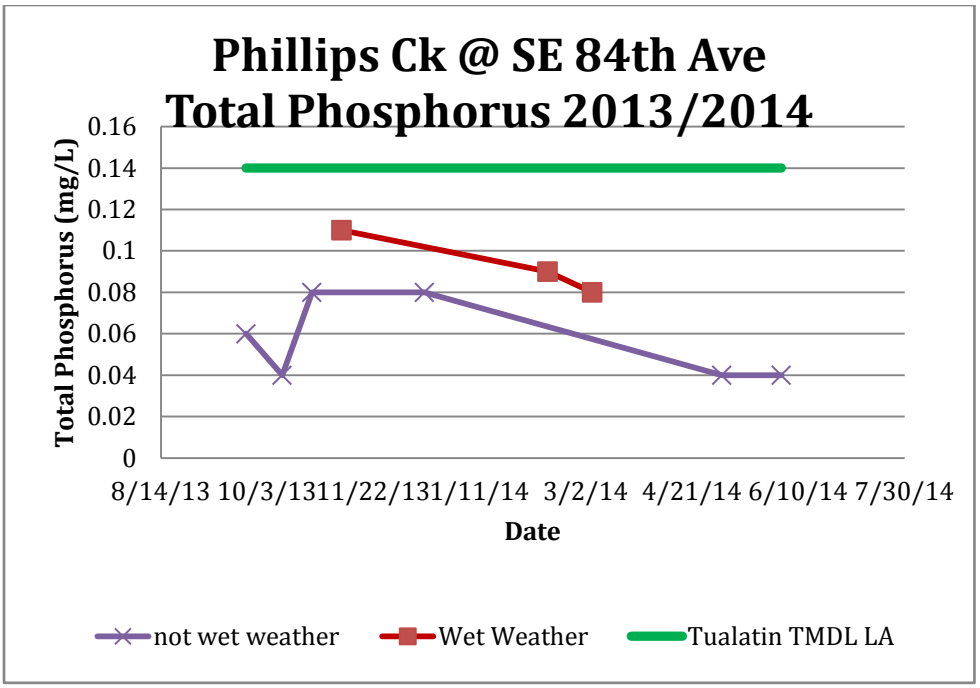
Monitoring results for select parameters have been plotted to indicate either adherence to the water quality standard (where standards apply) or to indicate whether data are in a "healthy" range as referenced in the attached Clackamas County Water Quality Index (Attachment 1). In cases where the monitoring result is less than the laboratory method's detection limit, the plotted value is the laboratory method's detection limit.



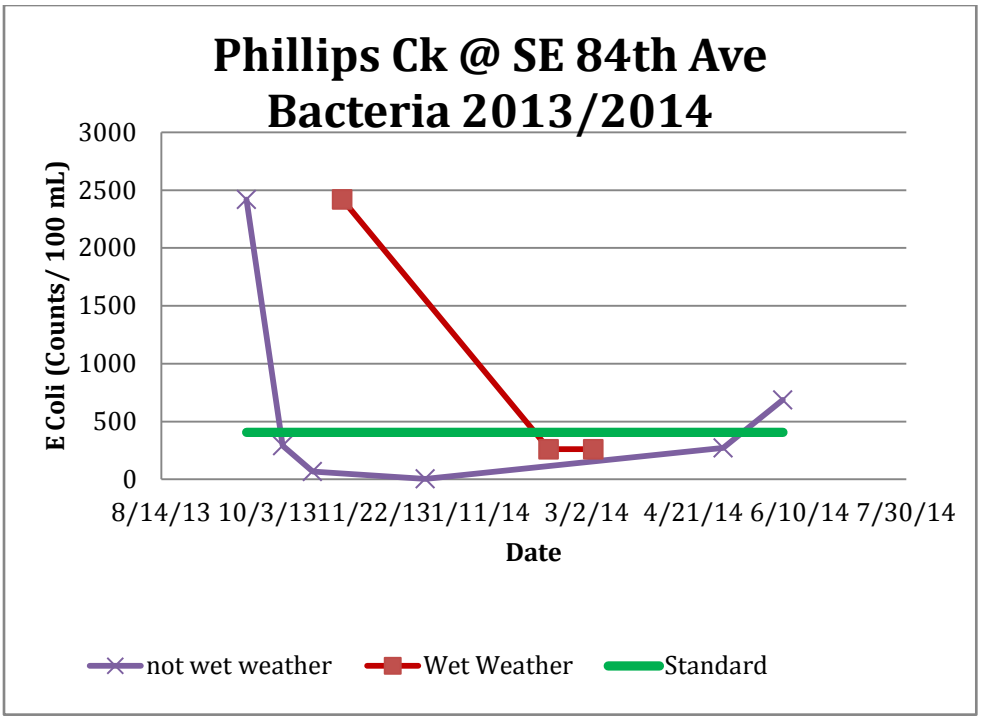


Note that for dissolved oxygen, the standard is a minimum concentration that the samples should not drop below.

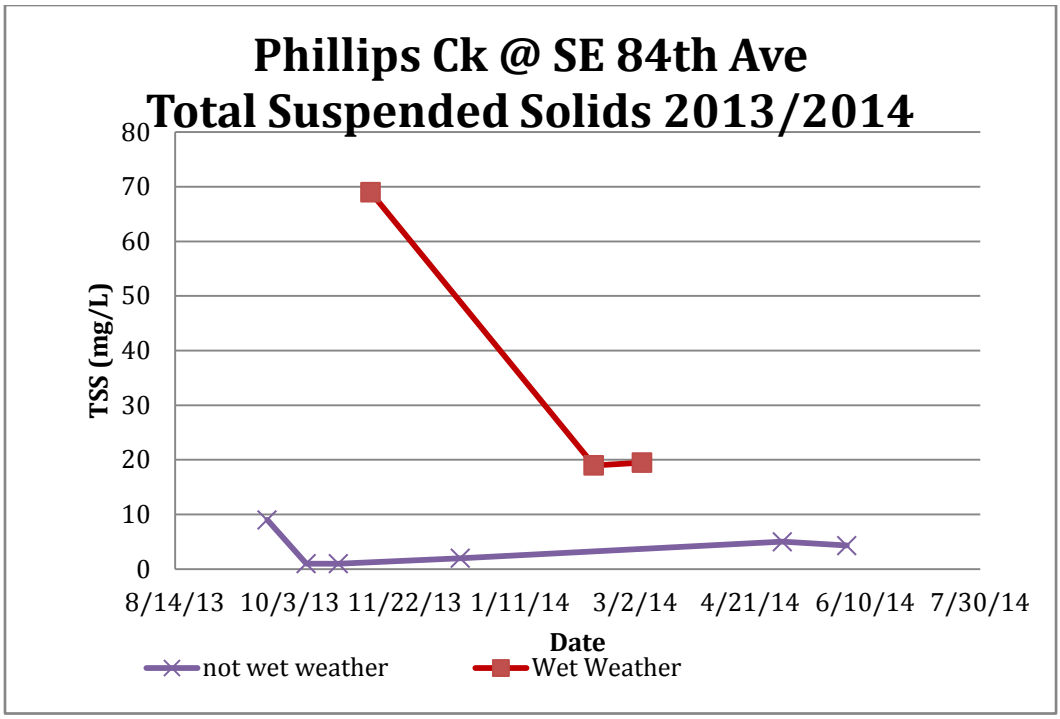




Note: The comparison is made here to the Load Allocation for total phosphorus in the Tualatin TMDL, for the Kellogg-Mt. Scott Creek watershed does not have a specific guidance value for instream total phosphorus



Note: The >2420 bacteria value is charted as 2420 colonies/100ml



2013/2014 Monitoring Results Discussion

All pH levels were between 6.5 and 8.5, which is protective of watershed health. The 406 colonies/100 ml standard for E. coli was exceeded during 3 of the 9 events. Ammonia was not detected during any of the 9 monitoring events. The total phosphorus concentration was below the 0.14 mg/L guidance value during all monitoring events. The regulated criterion for total copper was exceeded during one storm. The guidance value for *total* zinc was exceeded during one storm and the guidance value for *total* lead was exceeded during 2 storms.

Drainage Characteristics

- Tributary to the Willamette River
- Dominant Land Uses = Various

Monitoring Locations

Upstream instream location = at SE Rusk Road.

Downstream instream location = Rowe Middle School at 3606 SE Lake Road in the City of Milwaukie

2013/2014 Monitoring Results (provided in tabular format)

Instream monitoring data collected during the 2013/2014 MS4/TMDL reporting year were sorted based on whether the data were collected during storm event conditions or not. Three monitoring events were conducted during storms and the other 6 monitoring events were not.

Data were analyzed and comprehensive results are provided below for storm and non-storm event conditions. Where water quality standards exceedances are indicated, the basis for that determination is provided in the attached Clackamas County Water Quality Index (Attachment 1). Although not reflected in the table below, water flow rate, total dissolved solids, and conductivity were also measured.

Kellogg Ck at SE Rusk Rd	Temperature (C)	Dissolved Oxygen (mg/L)	Nitrate (mg/L)	E coli (Counts/100 mL)	Total Copper (ug/L)	Dissolved Copper (ug/L)	Total Lead (ug/L)	Dissolved Lead (ug/L)	Total Zinc (ug/L)	Dissolved Zinc (ug/L)	Total Solids (mg/L)	Total Suspended Solids (mg/L)	BOD (mg/L)	Ammonia (mg/L)	Total Phosphorus (mg/L)	Orthophosphate (mg/L)	Hardness (mg/L)	pH
Monitored Storms (3 events)																		
Mean	10.1	10.1	1.35	462	2.67	1.9	0.95	0.12	25.3	23.8	113	20	1.5	0.03	0.05	0.06	44	6.8
Maximum	11.4	10.8	1.95	1120	4.60	2.4	1.69	0.16	43.0	25.3	127	26	1.9	<0.05	0.10	0.07	57	6.9
Minimum	8.1	9.6	0.99	214	1.60	1.6	0.56	0.10	16.0	22.0	103	16	1.2	<0.05	<0.04	0.06	33	6.6
Exceedance of guidance value or criteria (# exceed/total)	0/3	0/3	0/3	2/3	1/3	0/3	1/3	0/3	1/3	0/3	NA	NA	NA	0/3	0/3	NA	NA	0/3
Other Weather Conditions (6 monitoring events)																		
Mean	12.6	8.9	2.44	284	1.17	0.7	0.33	0.05	11.4	9.8	187	5	0.7	0.08	0.08	0.08	74	6.9
Maximum	14.7	11.2	2.91	>2420	2.70	1.6	0.51	0.07	16.0	15.0	235	10	1.4	0.32	0.12	0.10	85	7.1
Minimum	8.9	7.7	1.72	76	0.64	0.4	0.23	0.02	7.2	6.0	150	2	0.3	<0.05	<0.04	0.07	59	6.7
Exceedance of guidance value or criteria (# exceed/total)	0/6	0/6	0/6	2/6	0/6	0/6	0/6	0/6	0/6	0/6	NA	NA	NA	0/6	0/6	NA	NA	0/6

Note: Exceedance totals for metals data is based on exceedances of chronic guidance values and chronic criteria, not acute guidance values and acute criteria.

Also Note: The geometric mean value is shown for E. coli in the row titled "Mean"

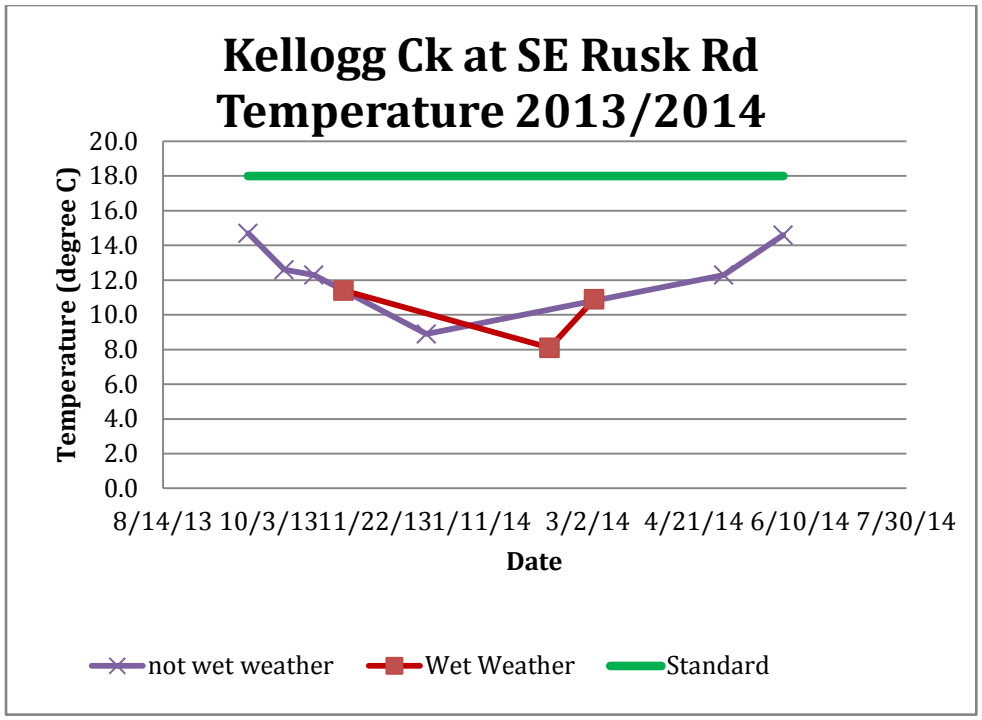
Kellogg Ck at Rowe Middle School	Temperature (C)	Dissolved Oxygen (mg/L)	Nitrate (mg/L)	E coli (Counts/100 mL)	Total Copper (ug/L)	Dissolved Copper (ug/L)	Total Lead (ug/L)	Dissolved Lead (ug/L)	Total Zinc (ug/L)	Dissolved Zinc (ug/L)	Total Solids (mg/L)	Total Suspended Solids (mg/L)	BOD (mg/L)	Ammonia (mg/L)	Total Phosphorus (mg/L)	Orthophosphate (mg/L)	Hardness (mg/L)	pH
Monitored Storms (3 events)																		
Mean	10.1	11.0	0.82	434	3.87	2.0	1.86	0.15	30.0	16.8	121	42	1.8	0.03	0.10	0.04	44	6.9
Maximum	11.4	12.8	1.40	687	6.10	2.3	3.23	0.19	49.0	18.0	151	51	2.4	<0.05	0.15	0.05	58	7.0
Minimum	7.8	10.0	0.43	345	2.40	1.7	1.05	0.13	20.0	14.4	105	27	1.5	<0.05	<0.08	0.04	34	6.8
Exceedance of guidance value or criteria (# exceed/total)	0/3	0/3	0/3	1/3	1/3	0/3	2/3	0/3	1/3	0/3	NA	NA	NA	0/3	1/3	NA	NA	0/3
Other Weather Conditions (6 monitoring events)																		
Mean	13.0	10.0	1.12	309	1.98	1.2	0.51	0.07	12.3	8.2	158	8	0.9	0.04	0.06	0.06	71	7.1
Maximum	16.7	12.3	1.42	>2420	4.20	2.4	1.04	0.12	20.0	13.0	190	18	<2.0	<0.15	0.12	0.08	90	7.5
Minimum	7.2	8.4	0.65	63	1.07	0.7	0.20	0.03	7.0	5.0	120	3	0.9	<0.05	<0.04	0.05	34	6.8
Exceedance of guidance value or criteria (# exceed/total)	0/6	0/6	0/6	1/6	0/6	0/6	1/6	0/6	0/6	0/6	NA	NA	NA	0/6	0/6	NA	NA	0/6

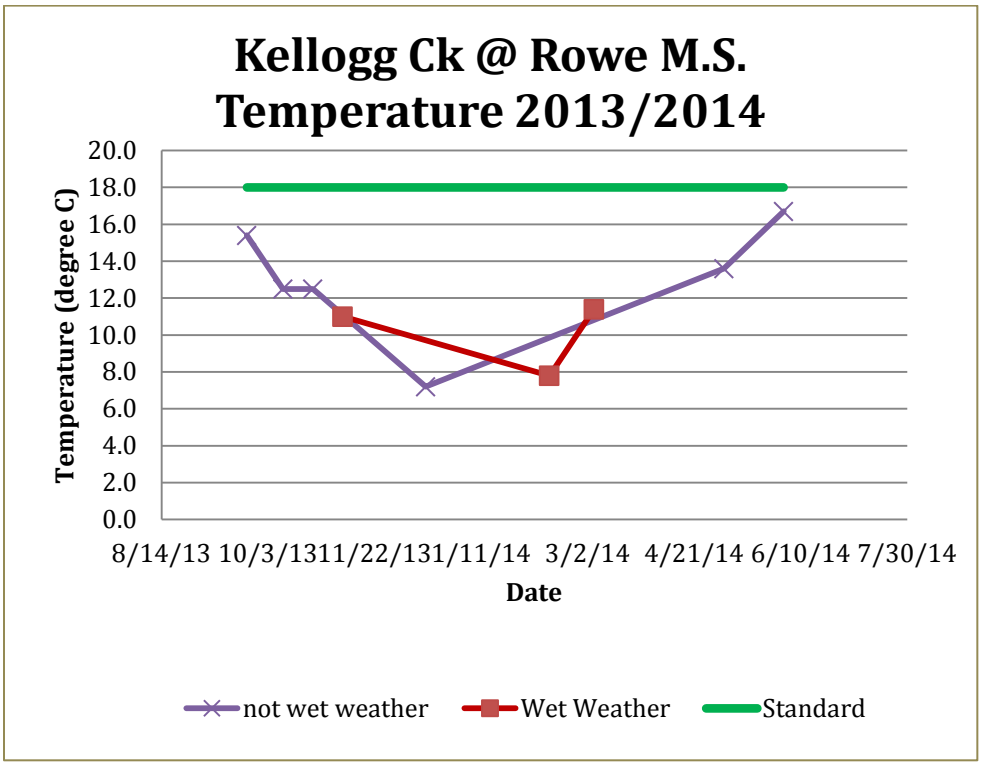
Note: Exceedance totals for metals data is based on exceedances of chronic guidance values and chronic criteria, not acute guidance values and acute criteria.

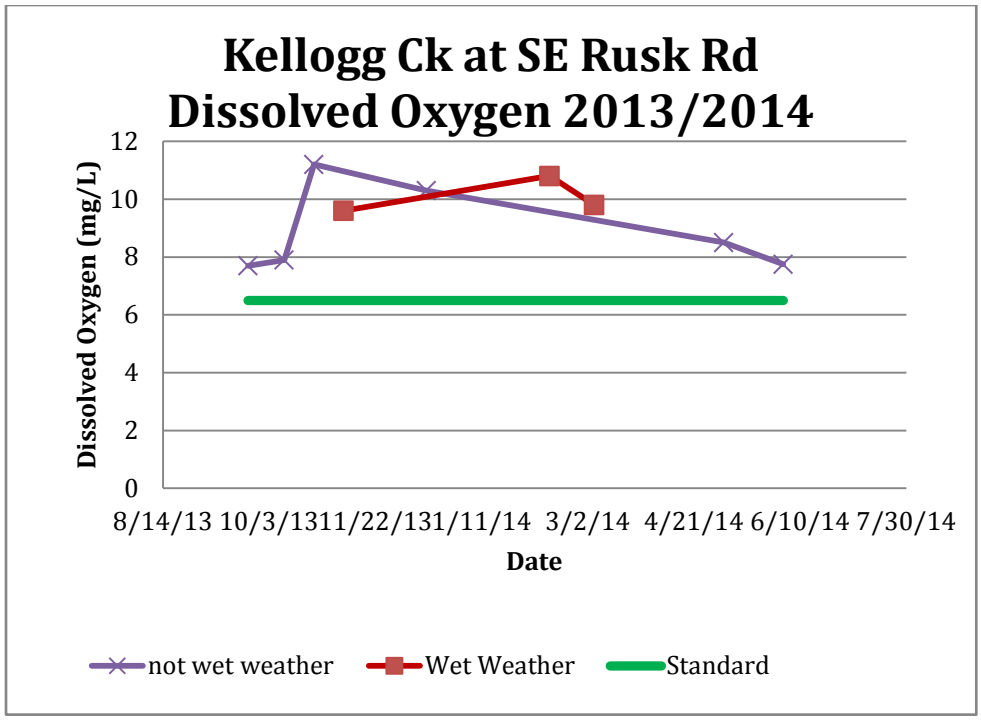
Also Note: The geometric mean value is shown for E. coli in the row titled "Mean"

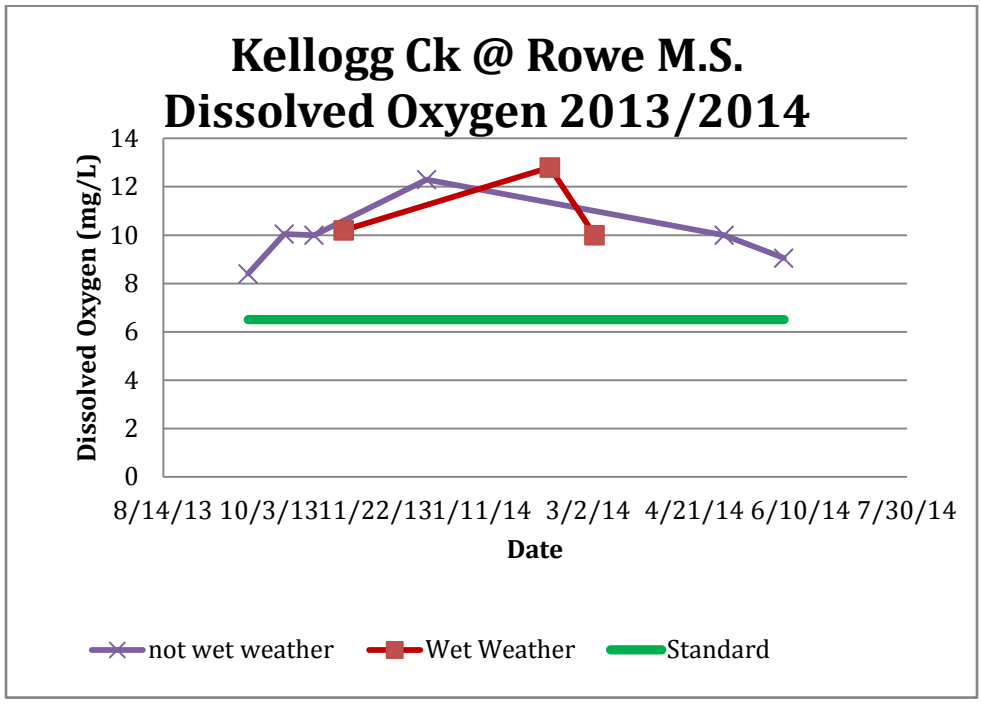
2013/2014 Monitoring Results (provided in graphical format)

Monitoring results for select parameters have been plotted to indicate either adherence to the water quality standard (where standards apply) or to indicate whether data are in a “healthy” range as referenced in the attached Clackamas County Water Quality Index (Attachment 1). In cases where the monitoring result is less than the laboratory method's detection limit, the plotted value is the laboratory method's detection limit.

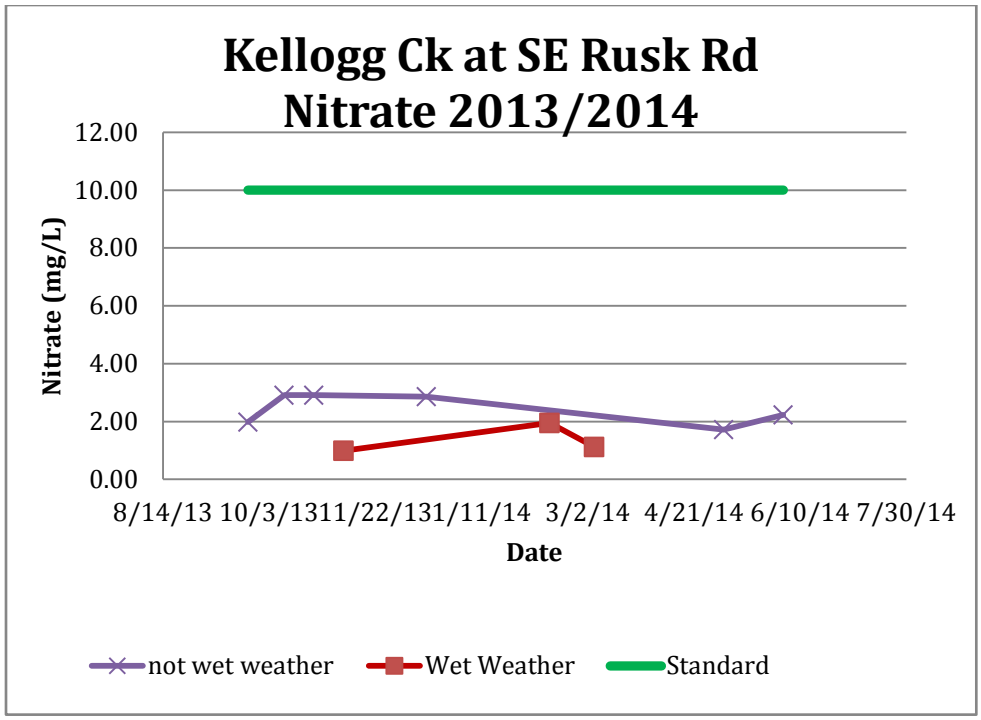

Kellogg Ck at SE Rusk Rd
Temperature 2013/2014
Temperature (degree C)
20.0
18.0
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
8/14/13
10/3/13
11/22/13
1/11/14
3/2/14
4/21/14
6/10/14
7/30/14
Date
not wet weather
Wet Weather
Standard

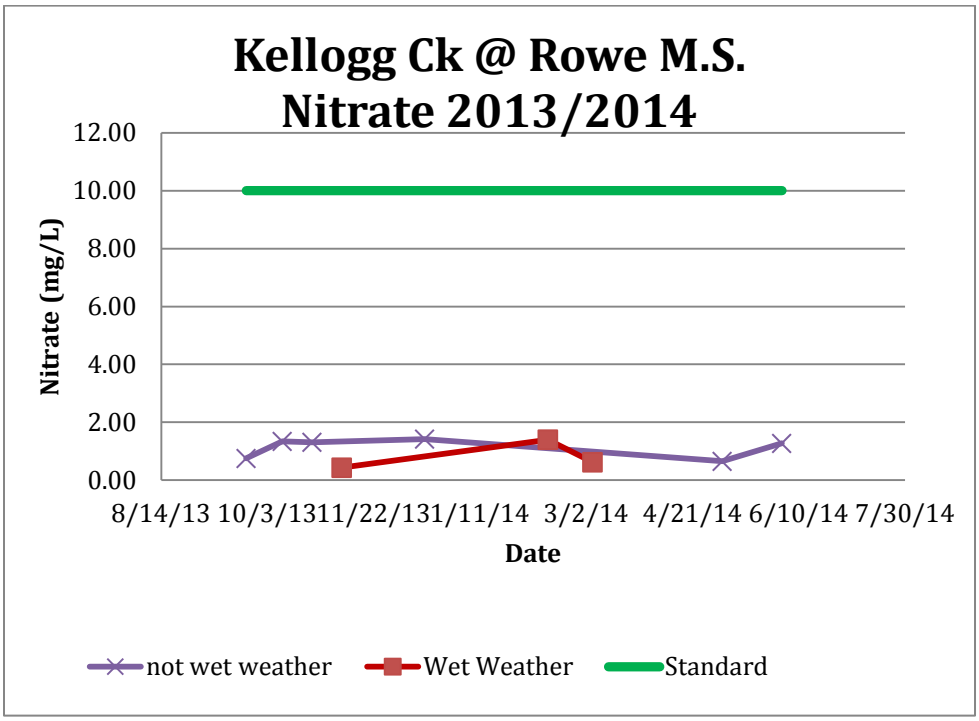

Kellogg Ck @ Rowe M.S.
Temperature 2013/2014
Temperature (degree C)
20.0
18.0
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
8/14/13
10/3/13
11/22/13
1/11/14
3/2/14
4/21/14
6/10/14
7/30/14
Date
not wet weather
Wet Weather
Standard

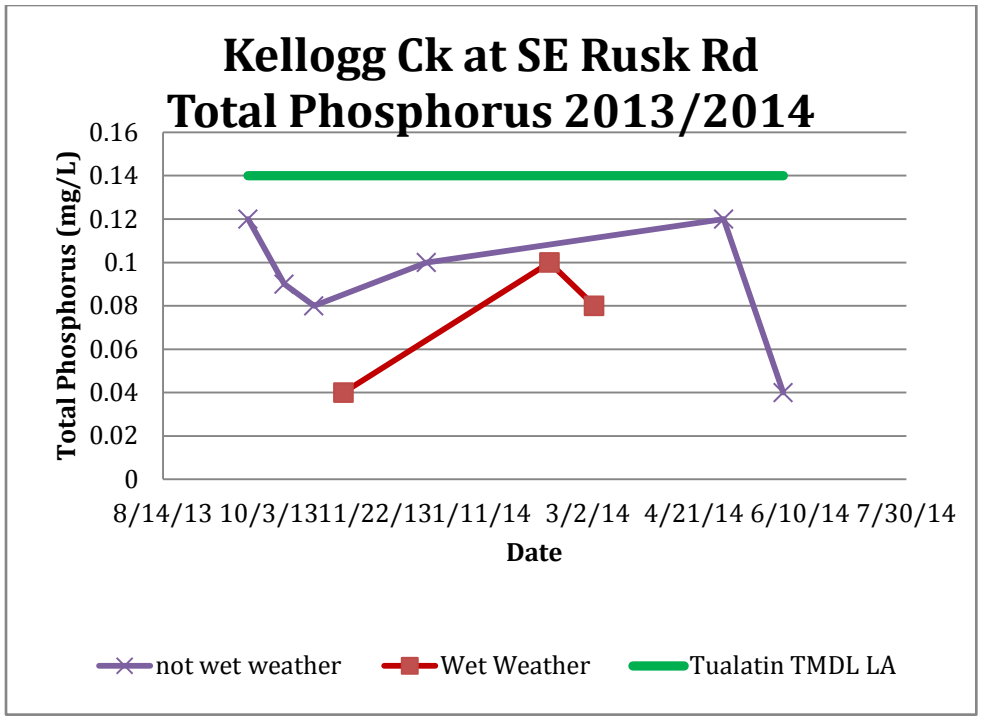


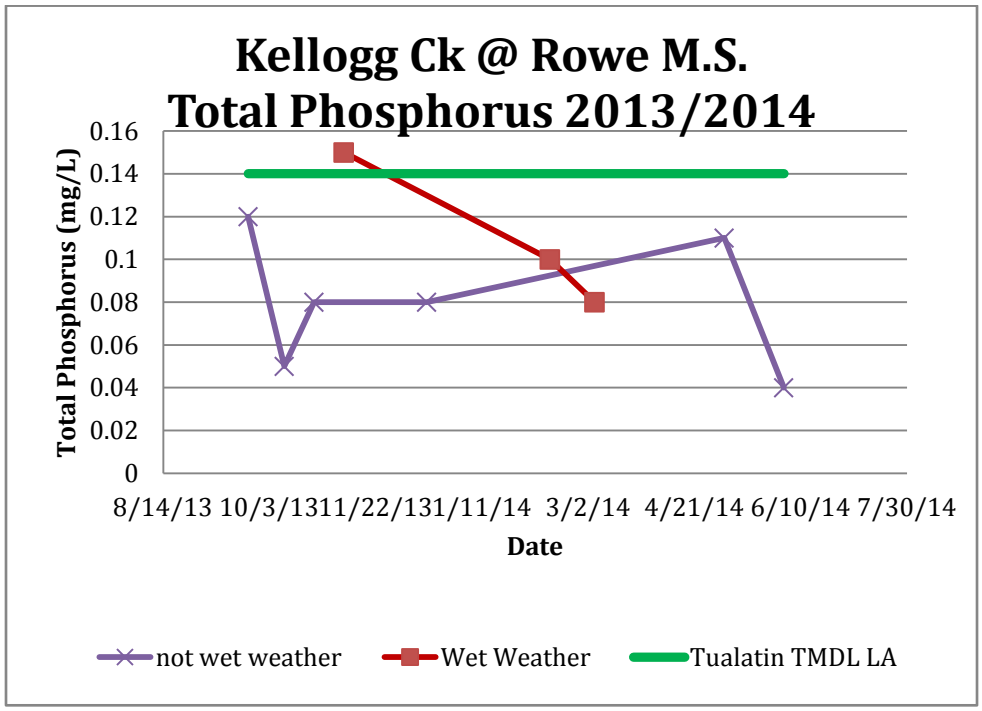


Please note that for dissolved oxygen, the standard is a minimum concentration that the samples should not drop below.

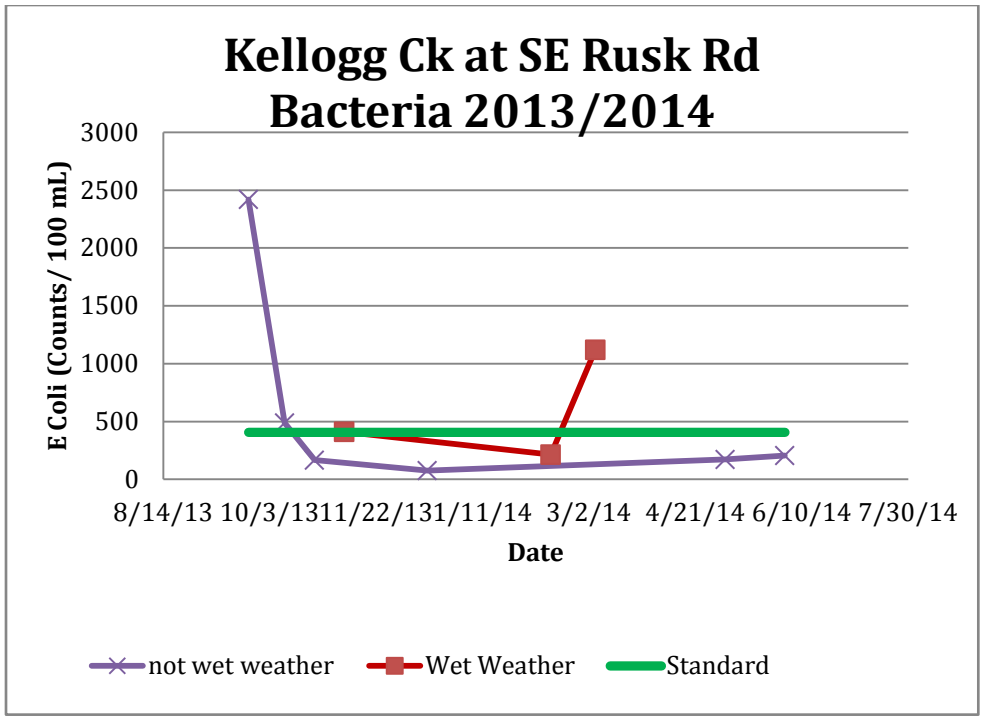

Kellogg Ck at SE Rusk Rd
Nitrate 2013/2014
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Nitrate (mg/L)
8/14/13
10/3/13
11/22/13
1/11/14
3/2/14
4/21/14
6/10/14
7/30/14
Date
not wet weather
Wet Weather
Standard


Kellogg Ck @ Rowe M.S.
Nitrate 2013/2014
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Nitrate (mg/L)
8/14/13
10/3/13
11/22/13
1/11/14
3/2/14
4/21/14
6/10/14
7/30/14
Date
not wet weather
Wet Weather
Standard

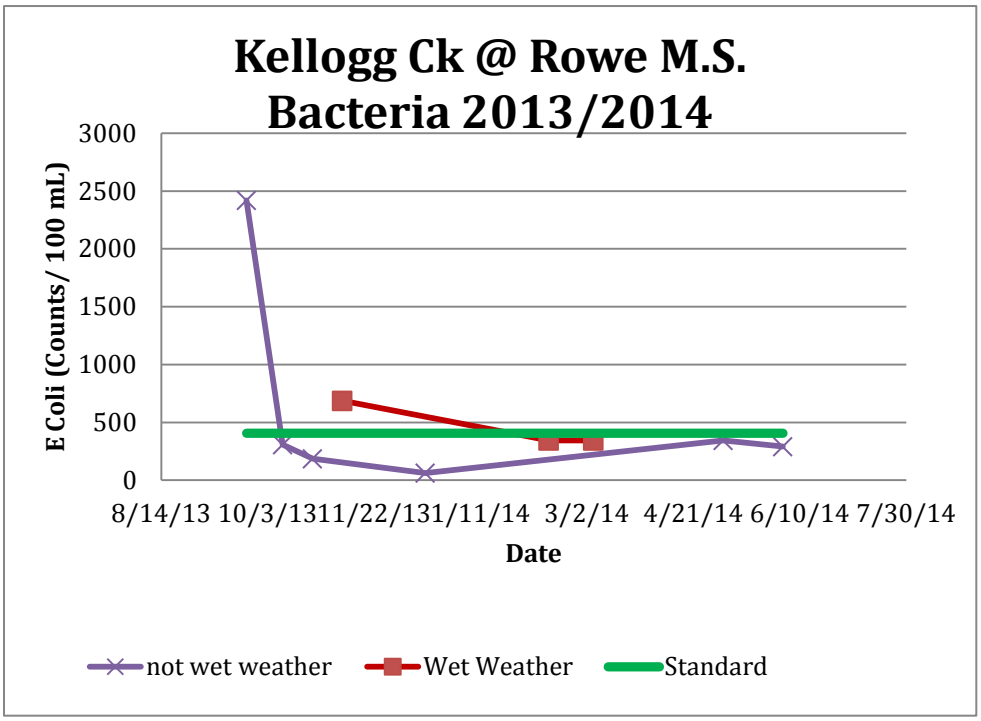




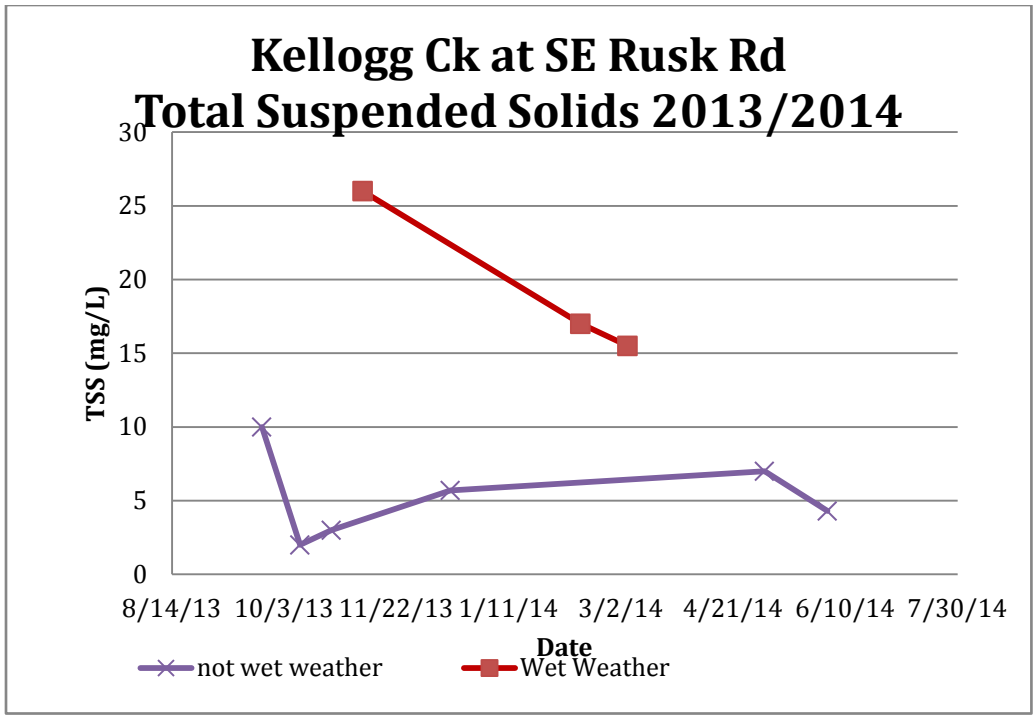
Note: The comparison is made here in these two charts to the Load Allocation for total phosphorus in the Tualatin TMDL, for the Kellogg Creek watershed does not have a specific guidance or regulated value for instream total phosphorus

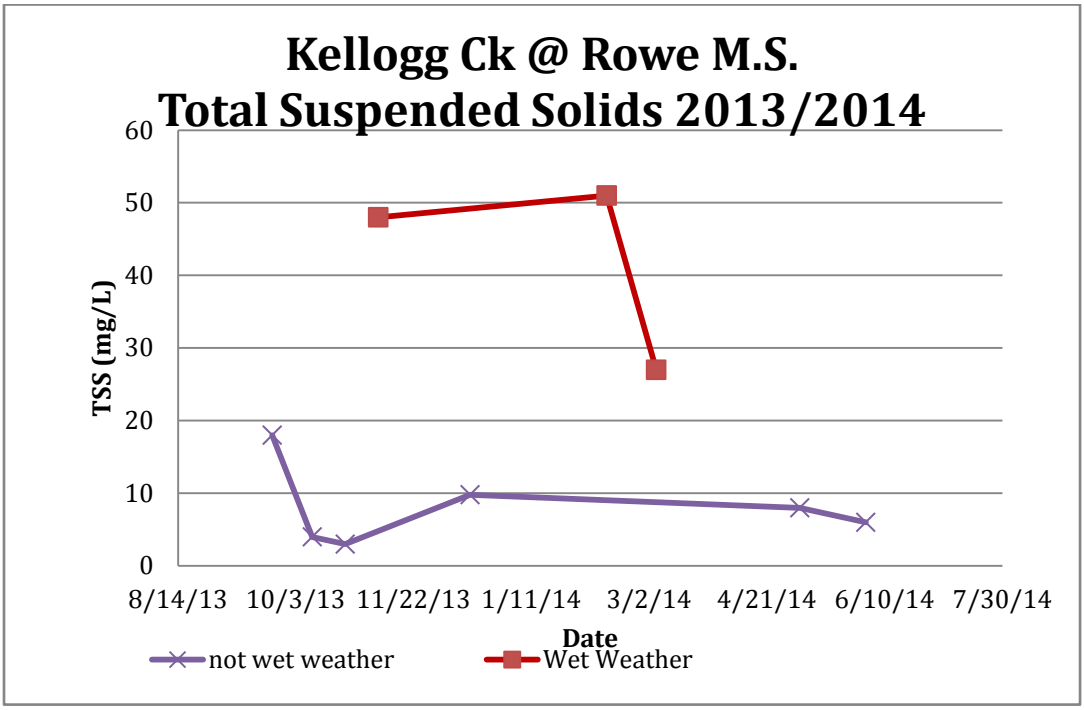


Note: The >2420 bacteria value is charted as 2420 colonies/100ml



Note: The >2420 bacteria value is charted as 2420 colonies/100ml


Kellogg Ck at SE Rusk Rd
Total Suspended Solids 2013/2014
TSS (mg/L)
30
25
20
15
10
5
0
8/14/13
10/3/13
11/22/13
1/11/14
3/2/14
4/21/14
6/10/14
7/30/14
Date
not wet weather
Wet Weather


Kellogg Ck @ Rowe M.S.
Total Suspended Solids 2013/2014
TSS (mg/L)
60
50
40
30
20
10
0
8/14/13
10/3/13
11/22/13
1/11/14
3/2/14
4/21/14
6/10/14
7/30/14
Date
not wet weather
Wet Weather

2013/2014 Monitoring Results Discussion

All pH levels at both sites were between 6.5 and 8.5, which is protective of watershed health, during all monitoring events. The 406 colonies/100 ml standard for E. coli was exceeding during 4 of the 9 events at the Rusk Road site, and during 2 of the 9 events at the Middle School site. At both monitoring sites, the regulated criteria for *total* copper and the guidance value for *total* zinc was exceeded during one of the storms. The guidance value for *total* lead was exceeded during 1 storm at the Rusk Road site and during 3 monitoring events (including 2 storms) at the Middle School site.

Drainage Characteristics

- Largest tributary in the Kellogg Creek Watershed
- Dominant Land Uses = Mixed. Large portions of the watershed are used for urban single-family and multi-family housing, commercial, transportation (i.e. I-205), open space, and industry.

Monitoring Location

Mt. Scott Creek is monitored in the main North Clackamas Parks & Recreation District Park near its confluence with Kellogg Creek. This park is near the intersection of SE Rusk Road and Highway 224. The precise location of the creek monitoring location is near the Southern end of SE Casa Del Rey Dr.

2013-2014 Monitoring Results (provided in tabular format)

Instream monitoring data collected during the 2013/2014 MS4/TMDL reporting year were sorted based on whether the data were collected during storm event conditions or not. Three monitoring events were conducted during storms and the other 6 monitoring events were not.

Data were analyzed and comprehensive results are provided below for storm and non-storm event conditions. Where water quality standards exceedances are indicated, the basis for that determination is provided in the attached Clackamas County Water Quality Index (Attachment 1). Although not reflected in the table below, total dissolved solids, water flow rate, and conductivity were also measured.

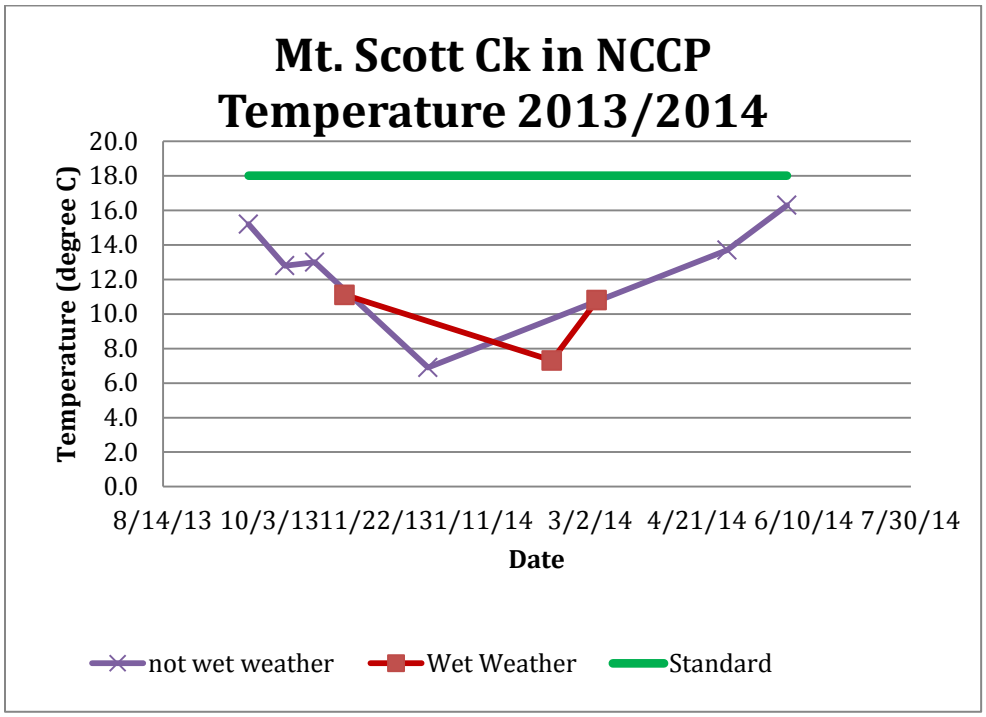
	Temperature (C)	Dissolved Oxygen (mg/L)	Nitrate (mg/L)	E coli (Counts/100 mL)	Total Copper (ug/L)	Dissolved Copper (ug/L)	Total Lead (ug/L)	Dissolved Lead (ug/L)	Total Zinc (ug/L)	Dissolved Zinc (ug/L)	Total Solids (mg/L)	Total Suspended Solids (mg/L)	BOD (mg/L)	Ammonia (mg/L)	Total Phosphorus (mg/L)	Orthophosphate (mg/L)	Hardness (mg/L)	pH
Monitored Storms (3 events)																		
Mean	9.7	10.3	0.72	558	4.53	1.9	2.39	0.12	32.7	17.0	119	48	1.9	0.03	0.10	0.02	39	6.8
Maximum	11.1	11.2	1.31	1300	8.40	2.1	4.95	0.20	62.0	20.0	127	79	2.4	<0.05	0.14	<0.04	50	6.9
Minimum	7.3	9.7	0.31	345	2.40	1.6	1.10	0.06	18.0	14.9	104	29	1.3	<0.05	0.05	<0.04	30	6.8
Exceedance of guidance value or criteria (# exceed/total)	0/3	0/3	0/3	1/3	1/3	0/3	2/3	0/3	1/3	0/3	NA	NA	NA	0/3	0/3	NA	NA	0/3
Other Weather Conditions (6 monitoring events)																		
Mean	13.0	9.2	0.54	206	2.20	1.4	0.44	0.07	11.6	8.5	148	5	0.8	0.04	0.05	0.05	73	7.1
Maximum	16.3	11.3	0.76	>2420	4.10	2.4	0.88	0.13	21.0	15.0	190	13	1.6	<0.15	<0.08	0.07	93	7.4
Minimum	6.9	7.9	0.33	31	1.30	0.8	0.21	0.03	7.0	5.0	110	2	0.5	<0.05	0.05	0.04	32	6.8
Exceedance of guidance value or criteria (# exceed/total)	0/6	0/6	0/6	2/6	0/6	0/6	1/6	0/6	0/6	0/6	NA	NA	NA	0/6	0/6	NA	NA	0/6

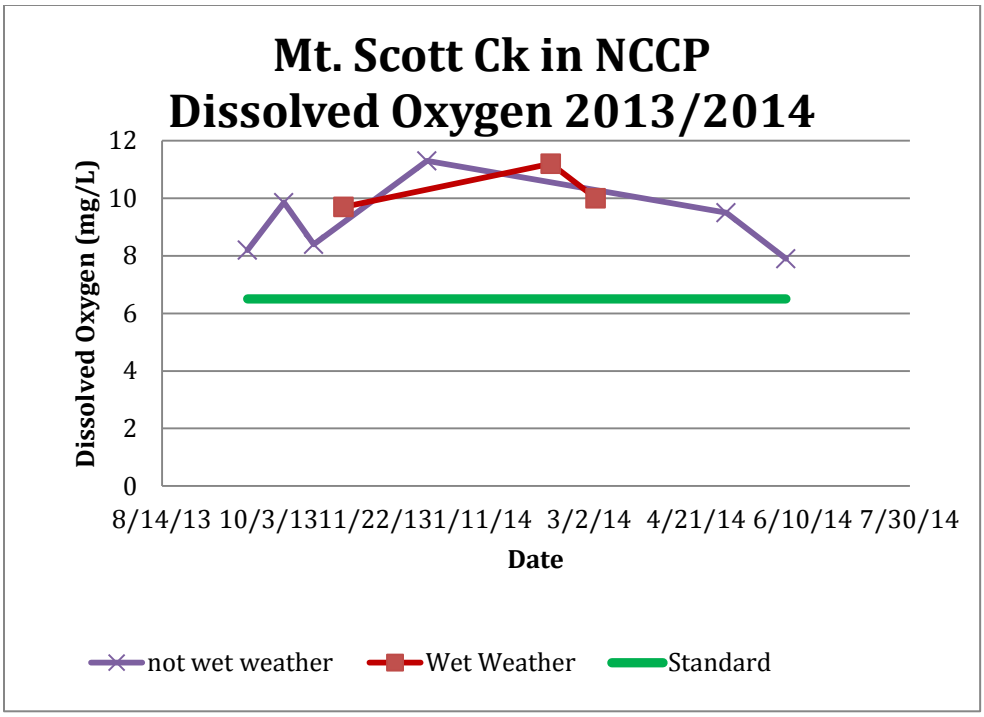
Note: Exceedance totals for metals data is based on exceedances of chronic guidance values and chronic criteria, not acute guidance values and acute criteria.

Also Note: The geometric mean value is shown for E. coli in the row titled "Mean"

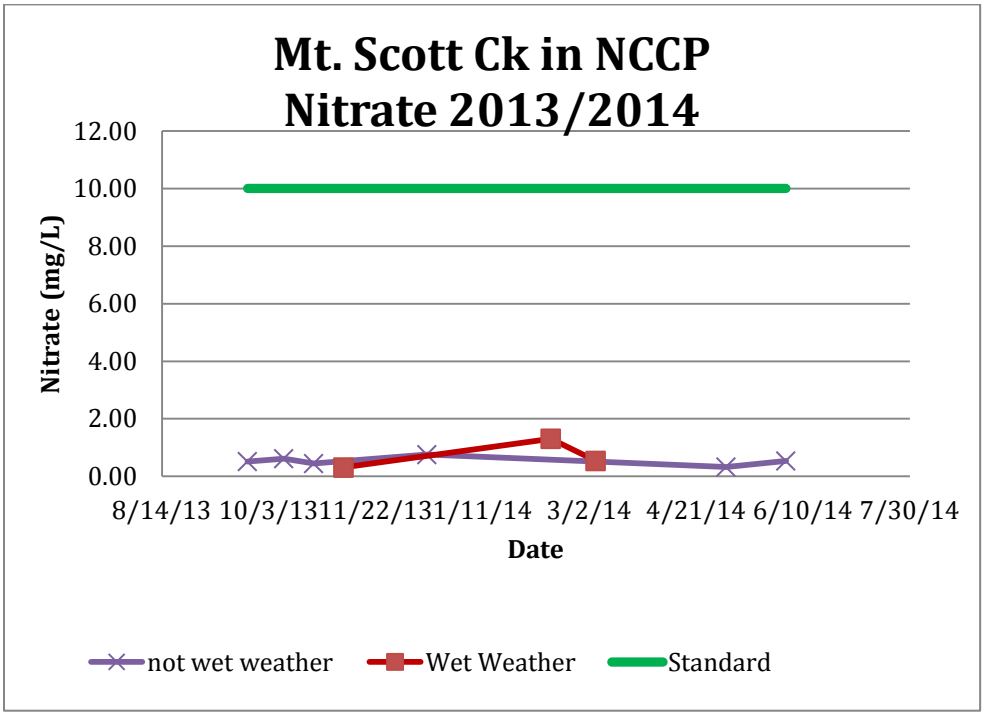
2013/2014 Monitoring Results (provided in graphical format)

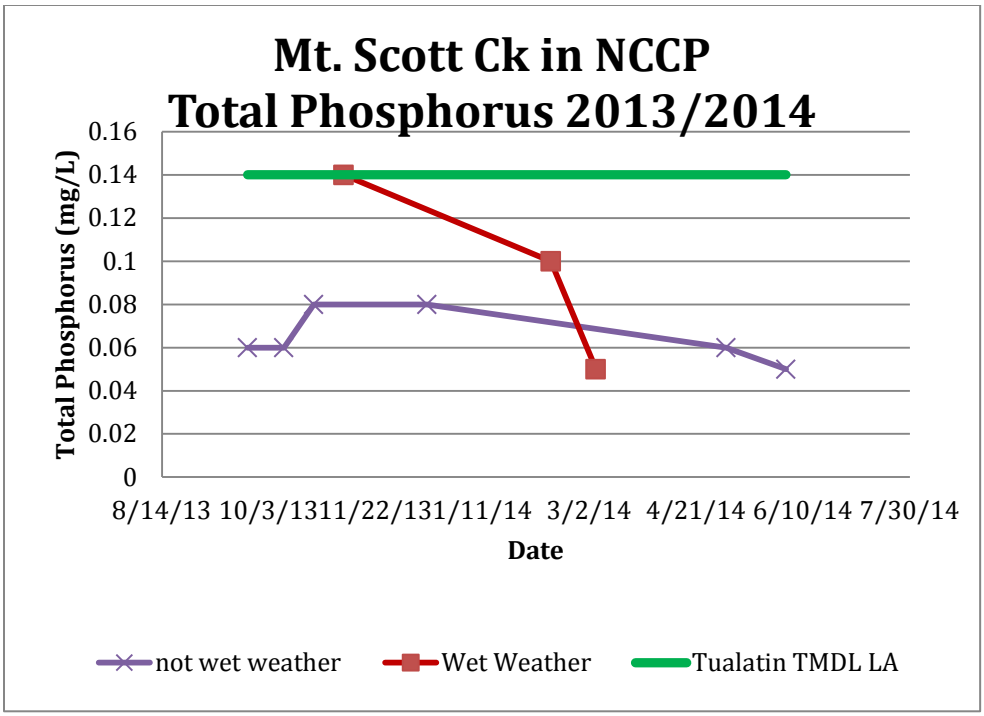
Monitoring results for select parameters have been plotted to indicate either adherence to the water quality standard (where standards apply) or to indicate whether data are in a "healthy" range as referenced in the attached Clackamas County Water Quality Index (Attachment 1). In cases where the monitoring result is less than the method's detection limit, the plotted value is the method's detection limit.



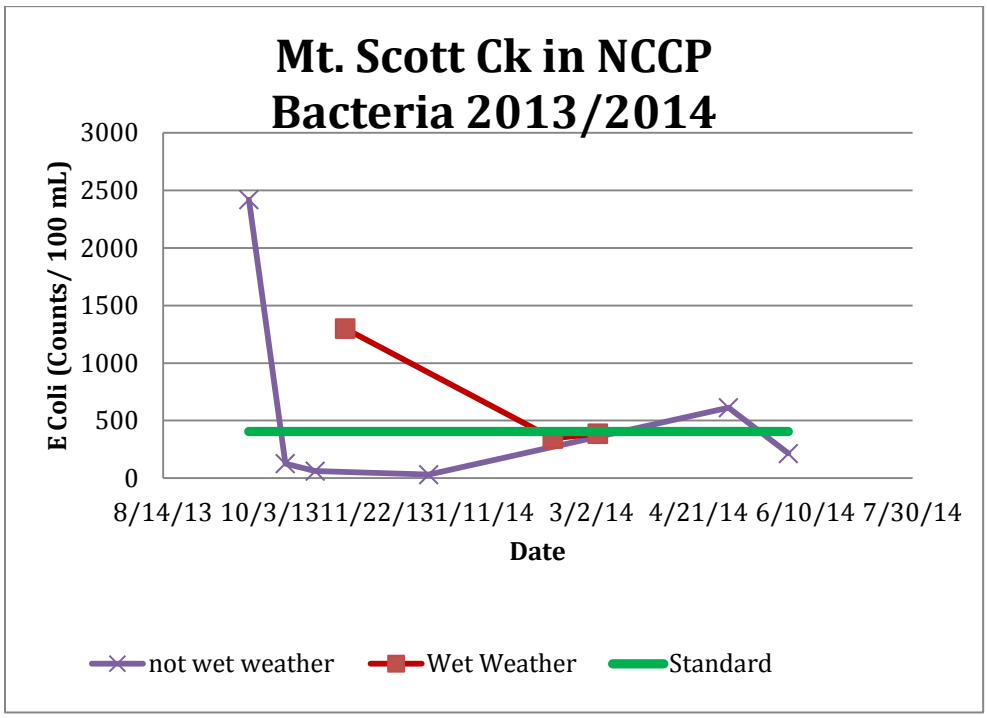


Please note that for dissolved oxygen, the standard is a minimum concentration that the samples should not drop below.

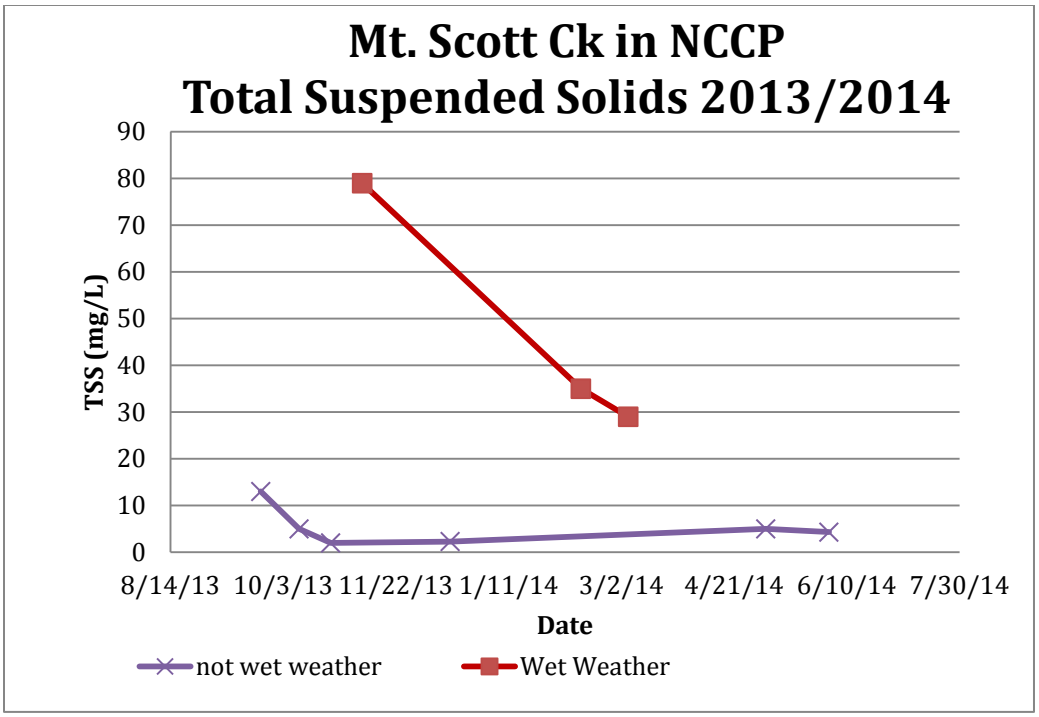




Note: The comparison is made here to the Load Allocation for total phosphorus in the Tualatin TMDL, for the Kellogg-Mt. Scott Creek watershed does not have a specific guidance value for instream total phosphorus



Note: The >2420 bacteria value is charted as 2420 colonies/100ml



2013/2014 Monitoring Results Discussion

The total phosphorus concentrations were at or below the 0.14 mg/L guidance value during all monitoring events. Measured pH levels were between 6.5 and 8.5, which is protective of watershed health, during all monitoring events. The 406 colonies/100 ml standard for E. coli was exceeding during 3 of the 9 monitoring events. The State of Oregon's instream criteria for total copper was exceeded during one storm. The guidance value for total lead was exceeded during two storms and during a Routine instream monitoring event which did not occur during a storm.

Drainage Characteristics

- Tributary to the Clackamas River
- Dominant Land Uses = Rural residential, agriculture, and urban single-family residential. Some open space, multi-family urban residential and commercial lands are also present.

Monitoring Location

Rock Creek is monitored downstream from the Hwy 212/224 bridge. The location is ~650 feet upstream from the Creek's confluence with the Clackamas River.

2013/2014 Monitoring Results (provided in tabular format)

Instream monitoring data collected during the 2013/2014 MS4/TMDL reporting year were sorted based on whether the data were collected during storm event conditions or not. Three monitoring events were conducted during storms and the other 6 monitoring events were not.

Data were analyzed and comprehensive results are provided below for storm and non-storm event conditions. Where water quality standards exceedances are indicated, the basis for that determination is provided in the attached Clackamas County Water Quality Index (Attachment 1). Although not reflected in the table below, water flow rate, total dissolved solids, and conductivity were also measured.

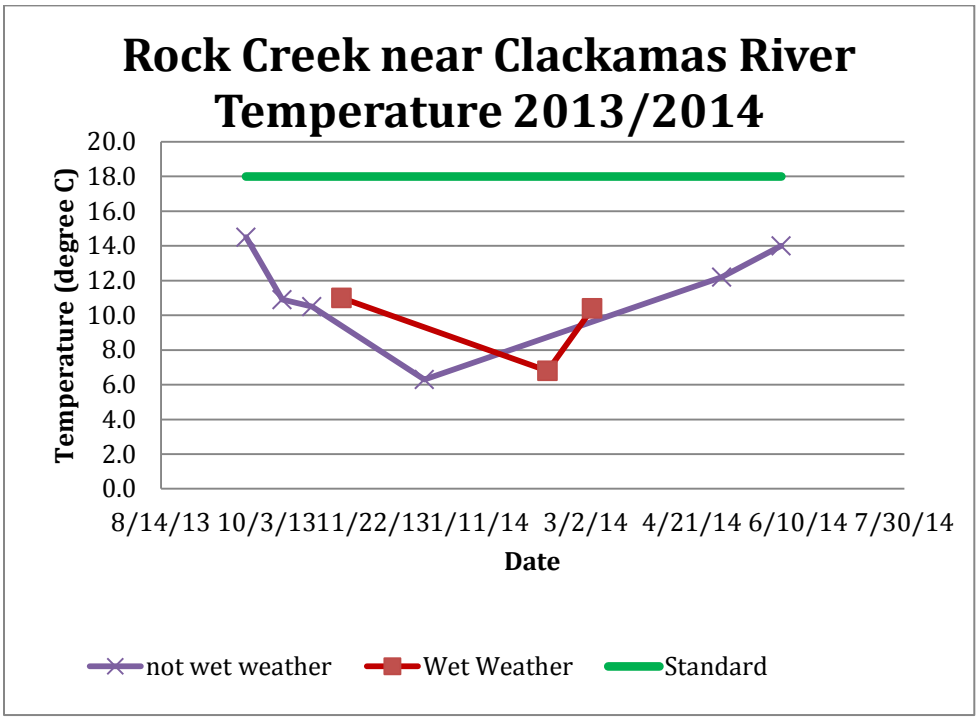
	Temperature (C)	Dissolved Oxygen (mg/L)	Nitrate (mg/L)	E coli (Counts/100 mL)	Total Copper (ug/L)	Dissolved Copper (ug/L)	Total Lead (ug/L)	Dissolved Lead (ug/L)	Total Zinc (ug/L)	Dissolved Zinc (ug/L)	Total Solids (mg/L)	Total Suspended Solids (mg/L)	BOD (mg/L)	Ammonia (mg/L)	Total Phosphorus (mg/L)	Orthophosphate (mg/L)	Hardness (mg/L)	pH
Monitored Storms (3 events)																		
Mean	9.4	10.9	1.74	613	2.34	1.2	1.03	0.10	8.7	6.6	125	45	0.9	0.03	0.09	0.04	44	6.9
Maximum	11.0	11.5	2.00	770	3.72	1.5	1.35	0.11	14.0	7.0	143	69	<2.0	<0.05	0.13	0.05	50	6.9
Minimum	6.8	9.9	1.31	435	1.30	1.0	0.63	0.10	5.0	6.0	102	26	0.8	<0.05	<0.04	<0.04	35	6.8
Exceedance of guidance value or criteria (# exceed/total)	0/3	0/3	0/3	3/3	0/3	0/3	1/3	0/3	0/3	0/3	NA	NA	NA	0/3	0/3	NA	NA	0/3
Other Weather Conditions (6 monitoring events)																		
Mean	11.4	10.6	1.04	130	0.96	0.7	0.17	0.03	3.1	4.1	108	4	0.6	0.04	0.04	0.05	54	7.2
Maximum	14.5	12.6	1.80	>2420	1.80	1.2	0.25	0.05	4.0	7.0	130	9	<1.3	<0.15	0.09	0.07	74	7.6
Minimum	6.3	9.4	0.66	10	0.60	0.4	0.11	<0.01	2.0	2.0	87	2	0.3	<0.05	<0.04	<0.04	37	6.8
Exceedance of guidance value or criteria (# exceed/total)	0/6	0/6	0/6	1/6	0/6	0/6	0/6	0/6	0/6	0/6	NA	NA	NA	0/6	0/6	NA	NA	0/6

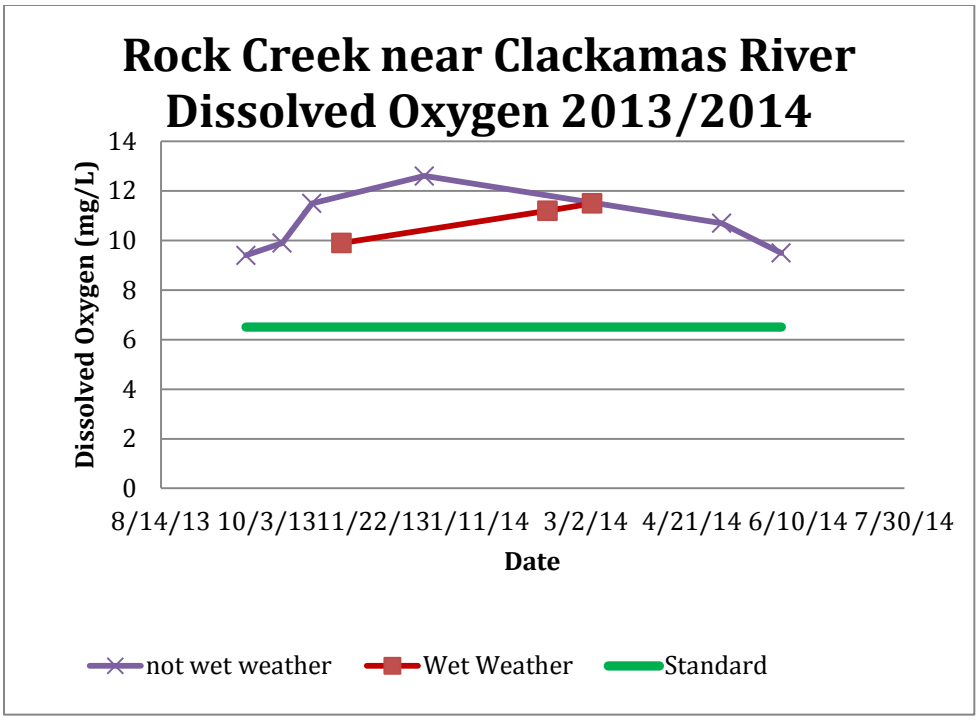
Note: Exceedance totals for metals data is based on exceedances of chronic guidance values and chronic criteria, not acute guidance values and acute criteria.

Also Note: The geometric mean value is shown for E. coli in the row titled "Mean"

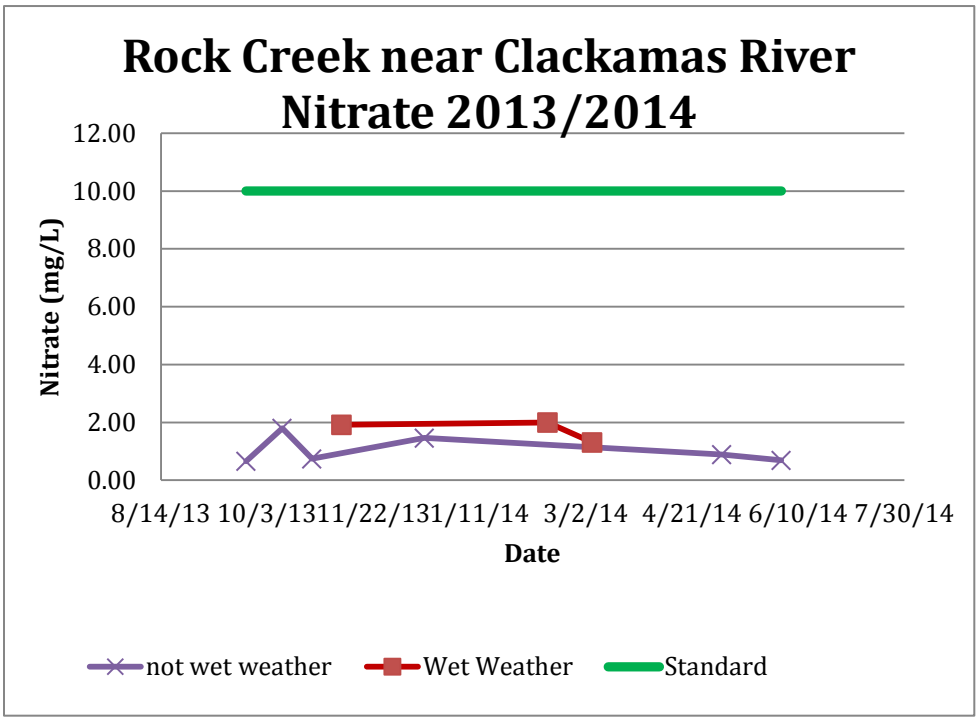
2013/2014 Monitoring Results (provided in graphical format)

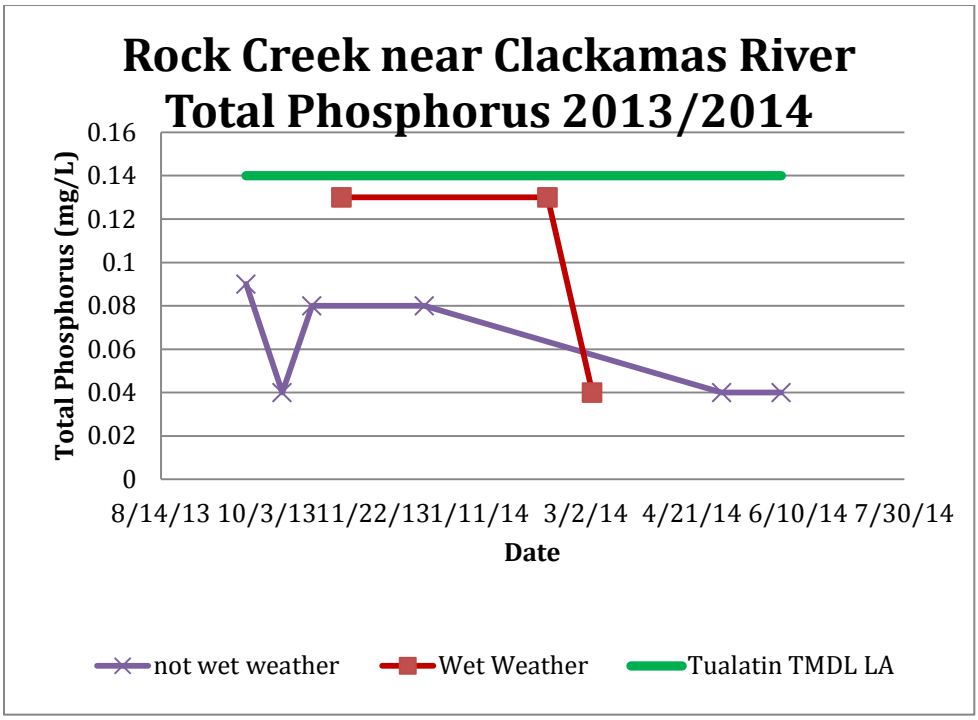
Monitoring results for select parameters have been plotted to indicate either adherence to the water quality standard (where standards apply) or to indicate whether data are in a "healthy" range as referenced in the attached Clackamas County Water Quality Index (Attachment 1). In cases where the monitoring result is less than the method's detection limit, the plotted value is the method's detection limit.



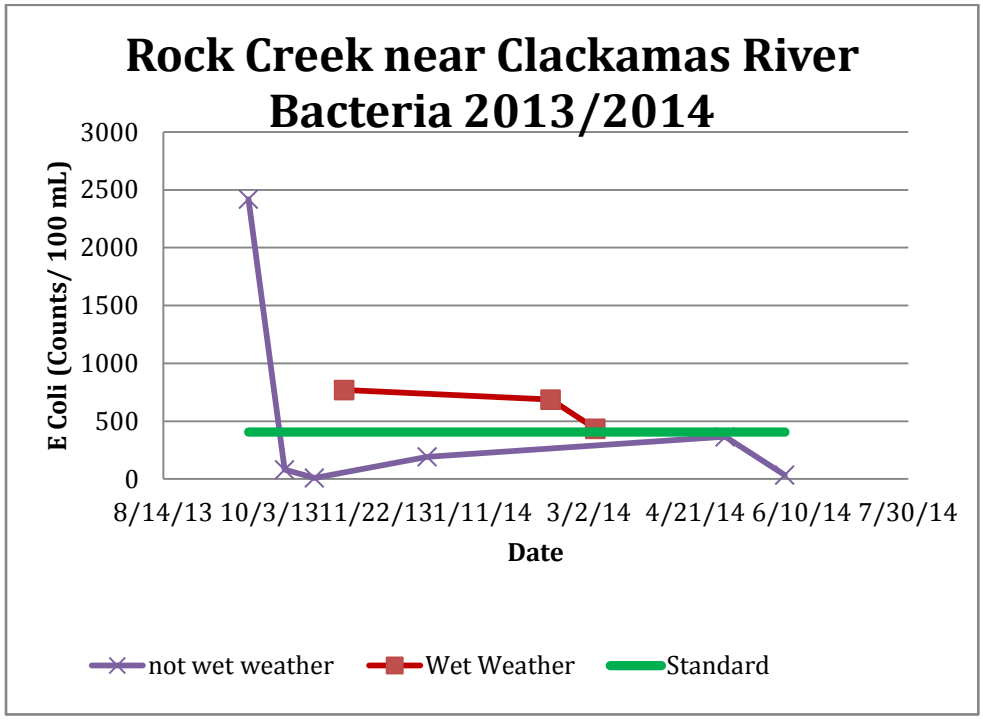


Note: For dissolved oxygen, the standard is a minimum concentration that the samples should not drop below.

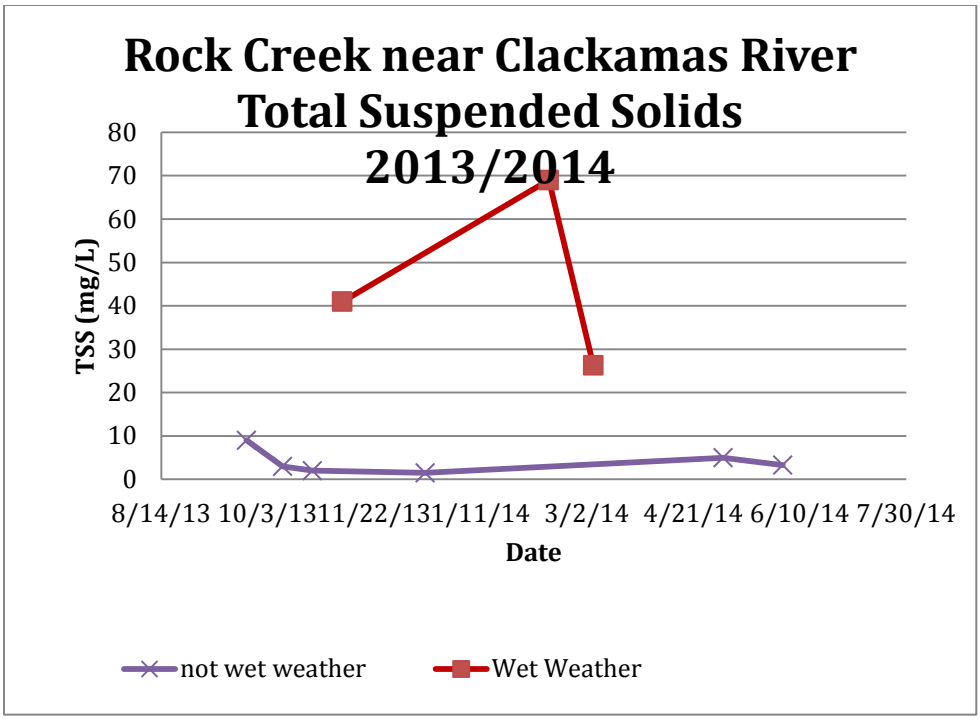




Note: The comparison is made here to the Load Allocation for total phosphorus in the Tualatin TMDL, for the Clackamas River watershed does not have a specific guidance value for instream total phosphorus



Note: The >2420 bacteria value is charted as 2420 colonies/100ml



2013/2014 Monitoring Results Discussion

The 406 colonies/100 ml standard for E. coli was exceeded during all 3 storms and during 1 of the Routine monitoring events. All pH levels were between 6.5 and 8.5, which is protective of watershed health. Ammonia was not detected during any monitoring events. Total phosphorus concentrations were below 0.14 mg/L during all monitoring events. The chronic guidance value for *total* lead was exceeded during one storm. All dissolved oxygen levels were at or above 9.5, which is protective of watershed health. The average TSS value for monitored storms at this site was 45 mg/L.

Drainage Characteristics

- Tributary to the Clackamas River
- Dominant Land Use = Industrial (Clackamas Industrial Area)

Monitoring Location

Cow Creek is monitored at the point where it flows under the Western end SE Last Road.

2013/2014 Monitoring Results (provided in tabular format)

Instream monitoring data collected during the 2013/2014 MS4/TMDL reporting year were sorted based on whether the data were collected during storm event conditions or not. Four monitoring events were conducted during storms and the other 5 monitoring events were not.

Data were analyzed and comprehensive results are provided below for storm and non-storm event conditions. Where water quality standards exceedances are indicated, the basis for that determination is provided in the attached Clackamas County Water Quality Index (Attachment 1). Although not reflected in the table below, water flow rate, total dissolved solids, and conductivity were also measured.

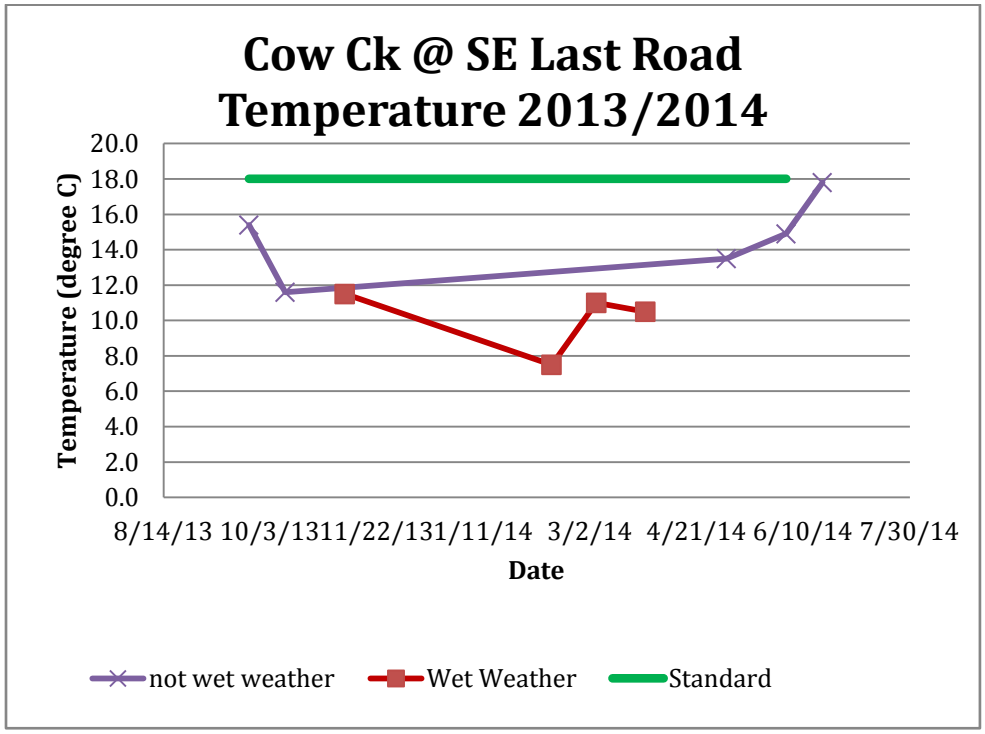
	Temperature (C)	Dissolved Oxygen (mg/L)	Nitrate (mg/L)	E coli (Counts/100 mL)	Total Copper (ug/L)	Dissolved Copper (ug/L)	Total Lead (ug/L)	Dissolved Lead (ug/L)	Total Zinc (ug/L)	Dissolved Zinc (ug/L)	Total Solids (mg/L)	Total Suspended Solids (mg/L)	BOD (mg/L)	Ammonia (mg/L)	Total Phosphorus (mg/L)	Orthophosphate (mg/L)	Hardness (mg/L)	pH
Monitored Storms (4 events)																		
Mean	10.1	9.2	0.31	560	9.01	3.1	3.23	0.20	83.7	55.4	84	45	1.9	0.04	0.09	0.05	35	6.7
Maximum	11.5	10.0	0.65	>2420	13.14	4.2	4.65	0.25	107.0	64.0	97	64	2.5	<0.15	0.14	<0.20	58	7.9
Minimum	7.5	8.5	0.14	179	2.80	2.0	0.80	0.05	39.0	43.0	70	19	0.8	<0.05	<0.04	0.04	18	5.7
Exceedance of guidance value or criteria (# exceed/total)	0/4	0/4	0/4	2/4	2/4	2/4	3/4	0/4	2/4	2/4	NA	NA	NA	0/4	0/4	NA	NA	2/4
Other Weather Conditions (5 monitoring events)																		
Mean	14.6	8.0	0.20	545	3.66	2.5	0.64	0.12	35.6	27.6	131	5	1.2	0.04	0.04	0.03	65	7.0
Maximum	17.8	8.7	0.33	>2420	9.60	6.1	2.00	0.28	94.0	70.0	160	13	2.7	<0.15	0.11	0.05	84	7.2
Minimum	11.6	6.4	0.09	186	1.60	1.1	0.20	0.04	15.0	11.0	100	2	0.5	<0.05	<0.04	<0.04	29	6.7
Exceedance of guidance value or criteria (# exceed/total)	0/5	1/5	0/5	2/5	1/5	1/5	1/5	0/5	1/5	1/5	NA	NA	NA	0/5	0/5	NA	NA	0/5

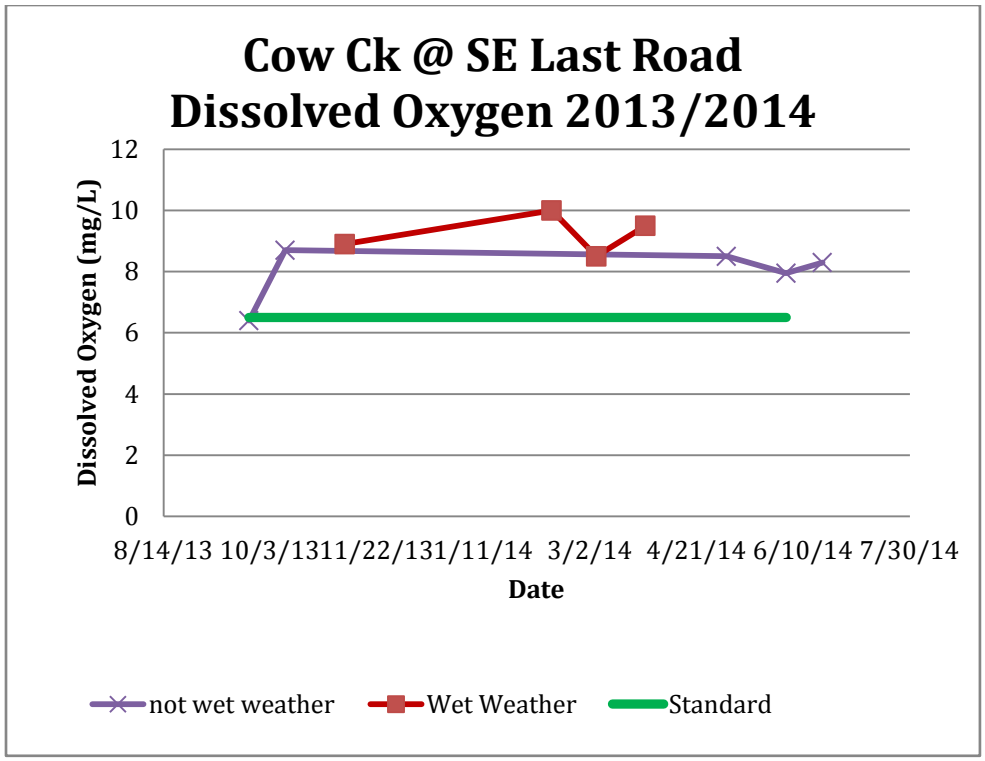
Note: Exceedance totals for metals data is based on exceedances of chronic guidance values and chronic criteria, not acute guidance values and acute criteria.

Also Note: The geometric mean value is shown for E. coli in the row titled "Mean"

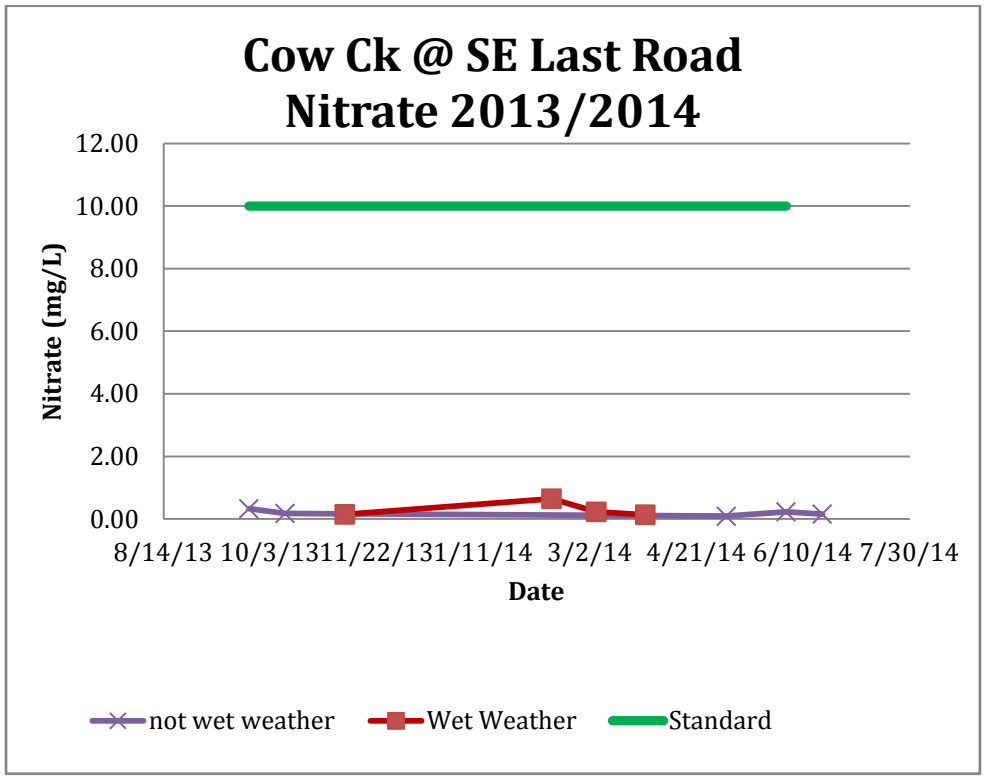
2013/2014 Monitoring Results (provided in graphical format)

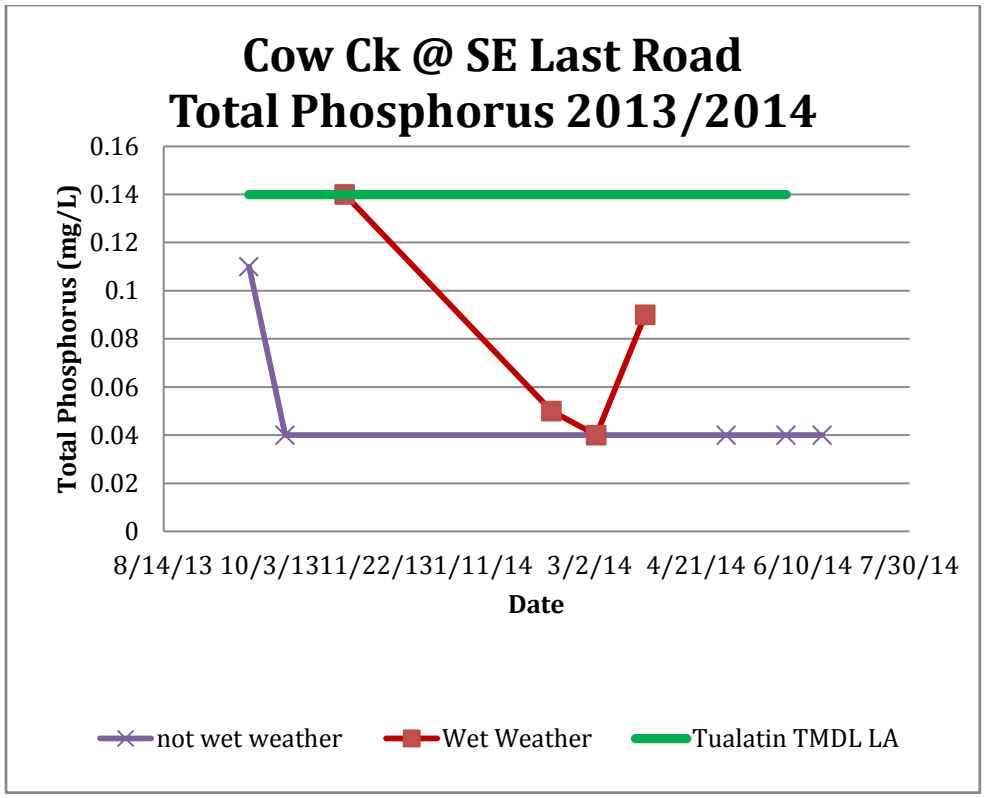
Monitoring results for select parameters have been plotted to indicate either adherence to the water quality standard (where applicable) or to indicate whether data are in a "healthy" range as referenced in the Clackamas County Water Quality Index (Attachment 1). In cases where the monitoring result is less than the method's detection limit, the plotted value is the method's detection limit.



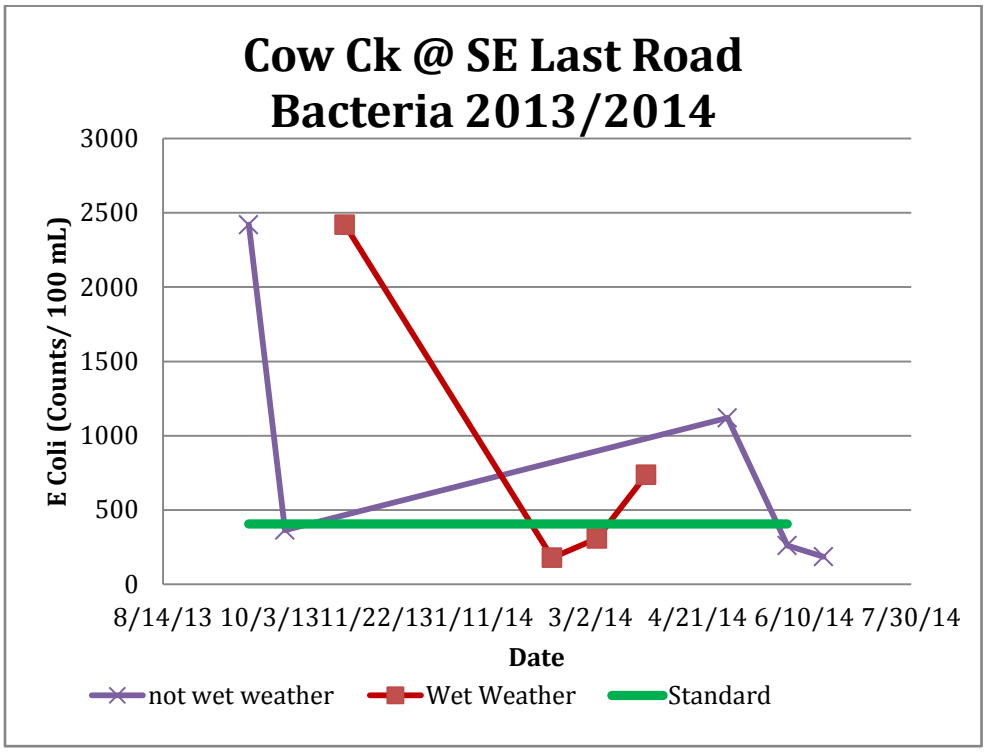


Please note that for dissolved oxygen, the standard is a minimum concentration that the samples should not drop below.

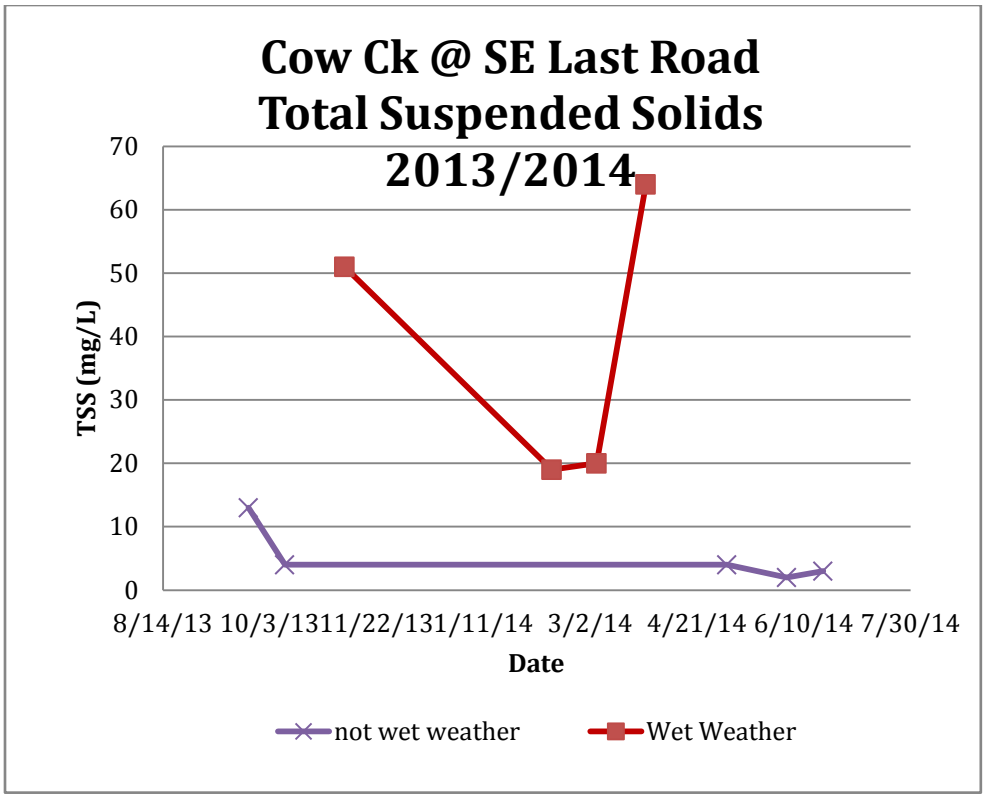




Note: The comparison is made here to the Load Allocation for total phosphorus in the Tualatin TMDL, for the Clackamas River watershed does not have a specific guidance value for instream total phosphorus



Note: The two >2420 bacteria values are charted as 2420 colonies/100ml



2013/2014 Monitoring Results Discussion

The pH level was below the water quality standard's range on 2 occasions; both of these monitoring events were during storms. Four exceedances of the 406 colonies/100 ml standard for E. coli were recorded. Total phosphorus concentrations were at or below the 0.14 mg/L guidance value during all 9 monitoring events. Chronic guidance values and regulated criteria for *total* & *dissolved* copper, *total* lead, and *total* & *dissolved* zinc were exceeded during at least one monitoring event. The regulated criteria for *total* copper were exceeded during 3 monitoring events. The guidance value for *total* lead was exceeded during 4 monitoring events.

Drainage Characteristics (Two Outfalls in the Mt Scott Creek Watershed)

- Dominant Land Uses = Mixed Use

NPDES Monitoring Locations:

The SE Pheasant Ct. outfall discharges to a railroad-owned ditch at SE Pheasant Ct. This ditch drains into Mt. Scott Creek

The SE Tolbert St. outfall's monitoring location is the 1st catch basin upgradient from the outfall at a railroad-owned ditch. This flow-through catch basin is in the intersection of SE Tolbert St. and 94th Ave. This ditch drains into Dean Creek. Dean Ck is a tributary to Mt. Scott Creek.

2013/2014 Monitoring Results (provided in tabular format)

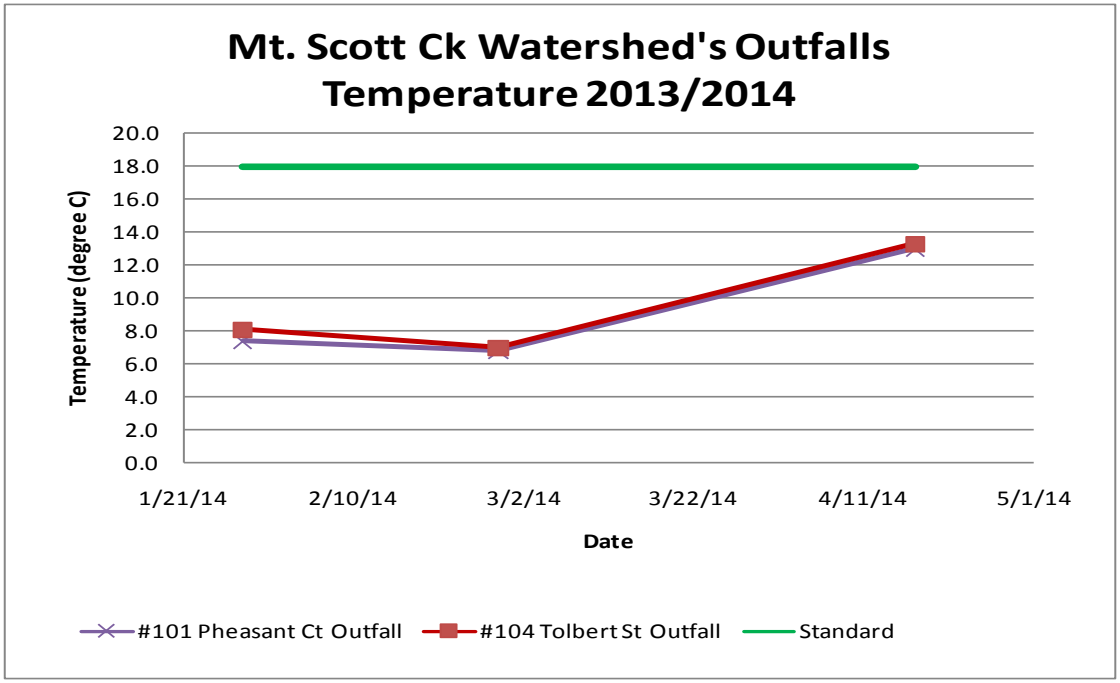
Outfall monitoring data collected during the 2013/2014 MS4 permit reporting year are provided in the following table. A total of three runoff sampling events were conducted at each location during storm event conditions. Data were analyzed and comprehensive results are provided below. Where water quality standards or guidance value exceedances are indicated, the basis for that determination is provided in the attached Clackamas County Water Quality Index (Attachment 1). Although not reflected in the table below, water flow rate, total dissolved solids, and conductivity were also measured at both locations.

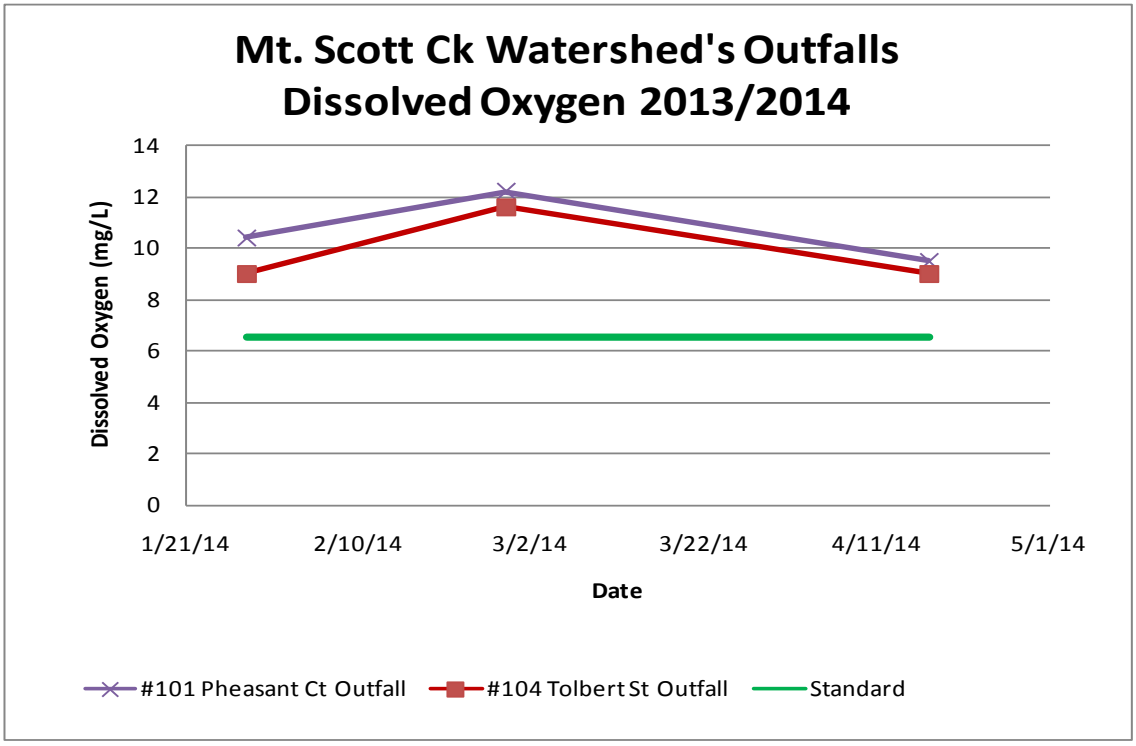
	Temperature (C)	Dissolved Oxygen (mg/L)	Nitrate (mg/L)	E coli (Counts/100 mL)	Total Copper (ug/L)	Dissolved Copper (ug/L)	Total Lead (ug/L)	Dissolved Lead (ug/L)	Total Zinc (ug/L)	Dissolved Zinc (ug/L)	Total Solids (mg/L)	Total Suspended Solids (mg/L)	BOD (mg/L)	Ammonia (mg/L)	Total Phosphorus (mg/L)	Orthophosphate (mg/L)	Hardness (mg/L)	pH
SE Pheasant Court Outfall (site #101): 3 storms																		
Mean	9.1	10.7	0.22	293	6.10	4.8	1.54	0.23	65.0	58.7	43	12	4.1	0.09	0.03	0.03	13	6.7
Maximum	13.0	12.2	0.36	>2420	8.80	6.8	1.86	0.47	81.0	65.0	50	18	5.0	0.10	0.06	0.04	18	7.0
Minimum	6.8	9.5	0.15	40	3.80	3.5	1.00	<0.10	39.0	47.0	34	6	3.1	0.08	<0.04	0.04	9	6.4
Exceedance of guidance value or criteria (# exceed/total)	0/3	0/3	0/3	1/3	3/3	3/3	3/3	2/3	3/3	3/3	NA	NA	NA	0/3	0/3	NA	NA	1/3
SE Tolbert Outfall (site#104): 3 storms																		
Mean	9.5	9.9	0.32	140	9.40	4.9	5.20	0.29	82.7	54.3	82	45	6.1	0.26	0.12	0.03	24	6.8
Maximum	13.3	11.6	0.49	1553	12.20	6.2	6.34	0.51	101.0	61.0	109	63	8.2	0.35	0.14	0.06	27	7.0
Minimum	7.0	9.0	0.17	35	5.00	3.0	3.60	<0.10	47.0	45.0	60	32	4.5	0.14	0.10	<0.04	21	6.7
Exceedance of guidance value or criteria (# exceed/total)	0/3	0/3	0/3	1/3	3/3	3/3	3/3	0/3	3/3	3/3	NA	NA	NA	0/3	0/3	NA	NA	0/3

Note: Exceedance totals for metals data is based on exceedances of chronic guidance values and chronic criteria, not acute guidance values and acute criteria. Also note: The geometric mean value is shown for E. coli in the row titled "Mean"

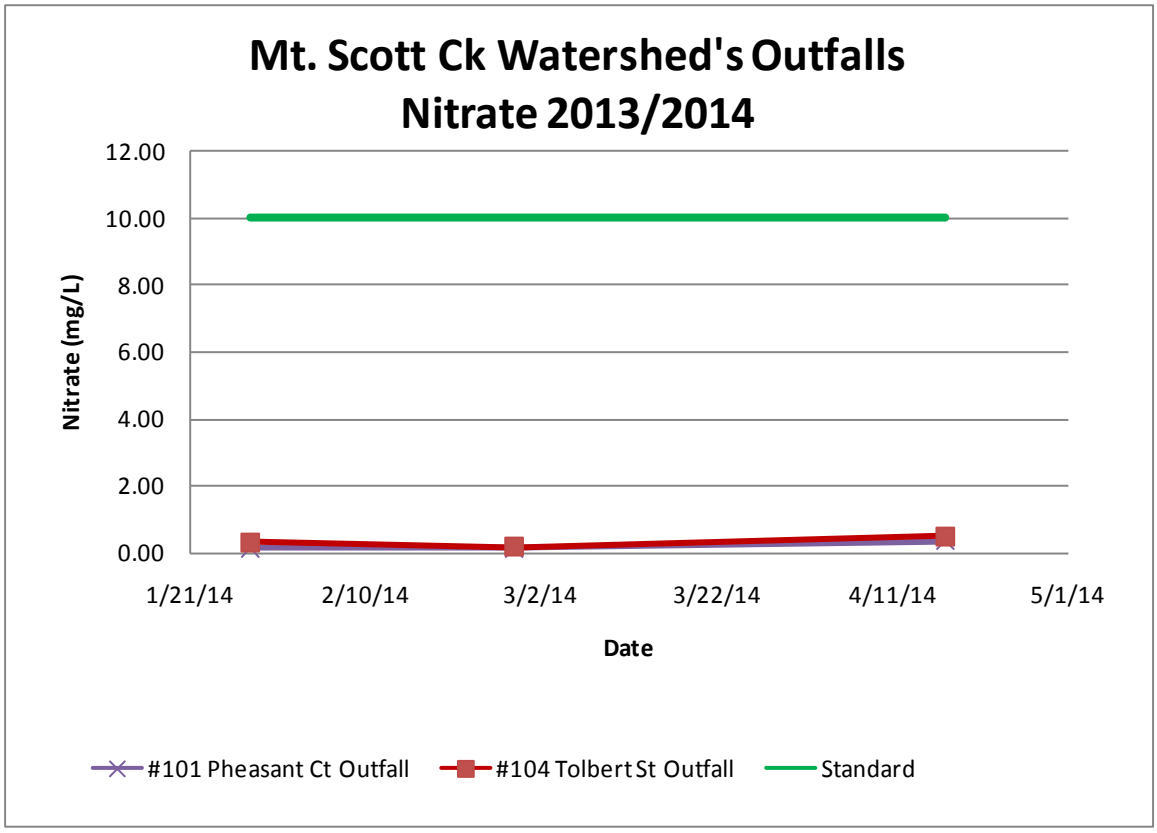
2013/2014 Monitoring Results (provided in graphical format)

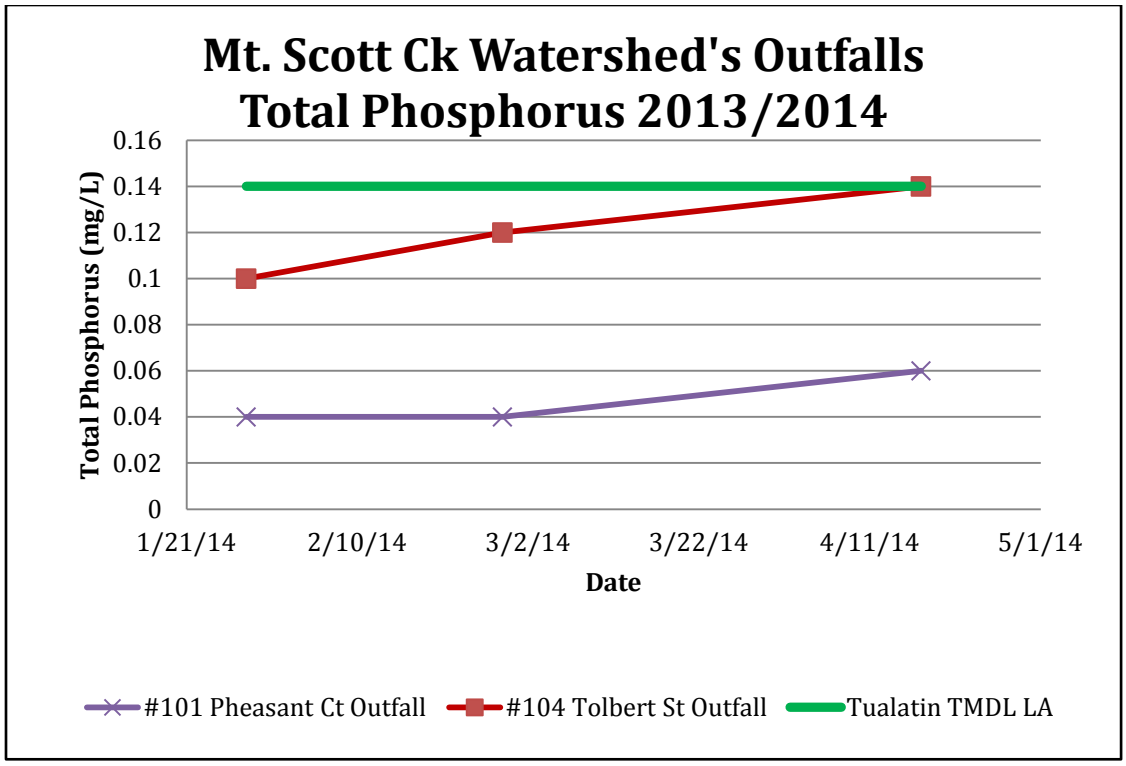
Monitoring results for select parameters have been plotted to indicate either adherence to the water quality standard (where standards apply) or to indicate whether data are in a "healthy" range as referenced in the attached Clackamas County Water Quality Index (Attachment 1). In cases where the monitoring result is less than a laboratory method's detection limit, the plotted value is the laboratory method's detection limit.



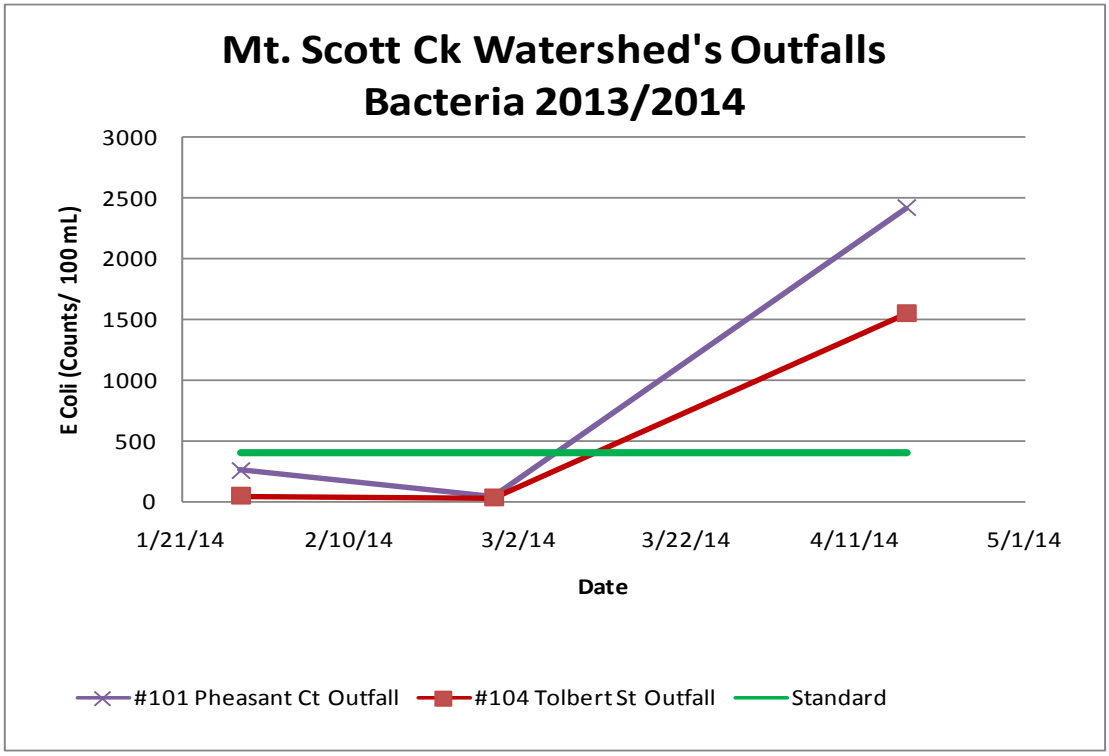


Please note that for dissolved oxygen, the standard is a minimum concentration that the samples should not drop below.

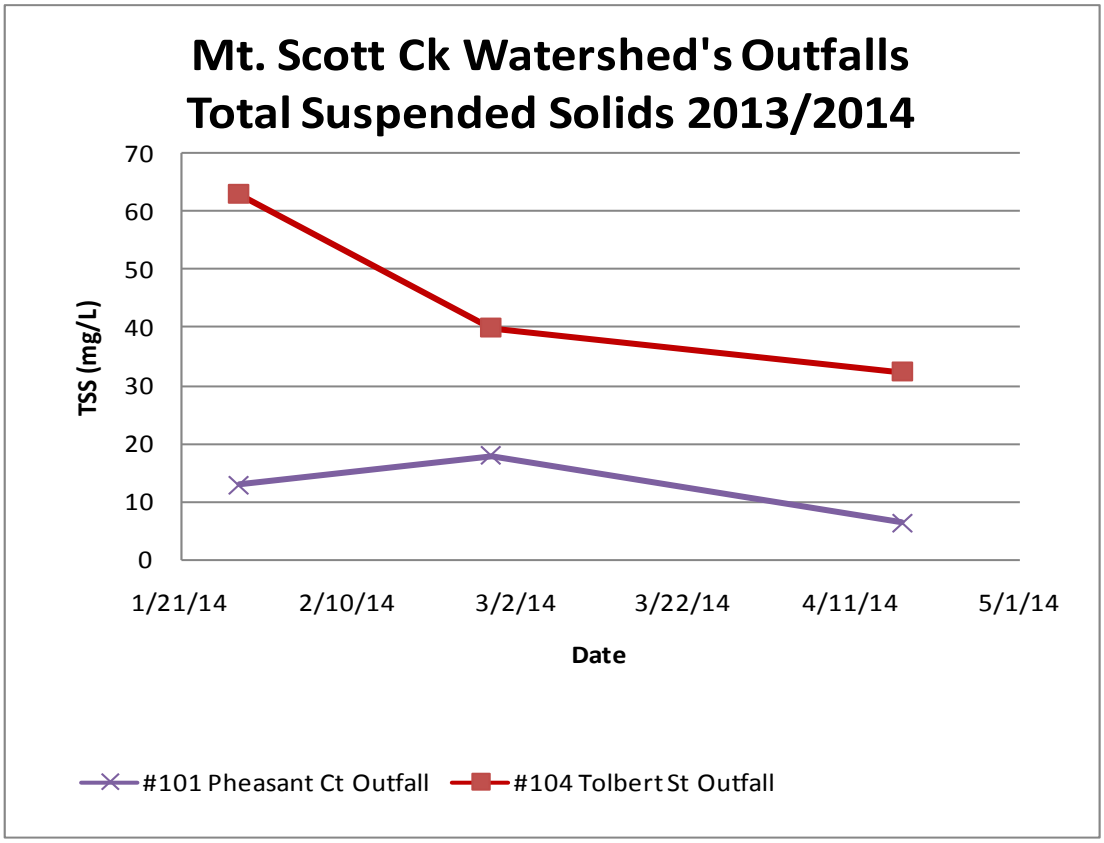




Note: The comparison is made here to the Load Allocation for total phosphorus in the Tualatin TMDL, for the Kellogg-Mt. Scott watershed does not have a specific guidance value for instream total phosphorus



Note: The >2420 bacteria value is charted as 2420 colonies/100ml



2013/2014 Monitoring Results Discussion

The chronic guidance values and regulated criteria for *total* copper, *dissolved* copper, *total* zinc, *dissolved* zinc, and *total* lead were exceeded during all 3 storms at both sites. The regulated criterion for dissolved lead was exceeded at the Pheasant Ct outfall during 2 storms. Both outfalls discharge directly to vegetated railroad-owned ditches. These ditches are expected to remove a portion of some pollutants, such as *total* copper, before the flows reach the nearest creek.

All of the pH levels at the Tolbert St. outfall were between 6.5 and 8.5, which is protective of watershed health. The pH value during one storm at the Pheasant Ct. outfall was slightly outside this range (6.4 units). The 406 colonies/100 ml standard for E. coli was exceeded during one storm at each outfall. Ammonia was detected during all 3 monitored storms at both outfalls. The total phosphorus concentration was at or below the 0.14 mg/L guidance value during all of the monitored storms at both outfalls. Average TSS values were higher at the SE Tolbert St. outfall (45 mg/L) compared to the average value at the SE Pheasant Ct. outfall (12 mg/L).

The April 17, 2014 monitoring event at these two outfalls did not have an Antecedent Dry Period as defined by MS4 permit Schedule B(3)(b)(ii); roughly 0.25 inch of rain had fallen before the first samples were collected from this storm. In this instance, it was not possible to have an Antecedent Dry Period.

Drainage Characteristics (Located in the Sieben Creek Watershed)

Dominant Land Uses = Commercial

NPDES Monitoring Locations:

The SE Oregon Trail Drive outfall discharges into an un-named tributary of Rose Creek. Rose Creek is Sieben Creek's largest tributary. Sieben Creek is in the Clackamas River watershed. The outfall is located between the Happy Valley Public Library at 13793 SE Sieben Park Way and the Sunnyside Village Apartment complex at 14480 SE Sunnyside Road.

2013/2014 Results (provided in tabular format)

Outfall monitoring data collected during the 2013/2014 MS4 permit reporting year are provided in the following table. A total of three monitoring events were conducted during storm event conditions. Data were analyzed and comprehensive results are provided below. Where water quality standards or guidance value exceedances are indicated, the basis for that determination is provided in the attached Clackamas County Water Quality Index (Attachment 1). Although not reflected in the table below, water flow rate, total dissolved solids, and conductivity were also measured.

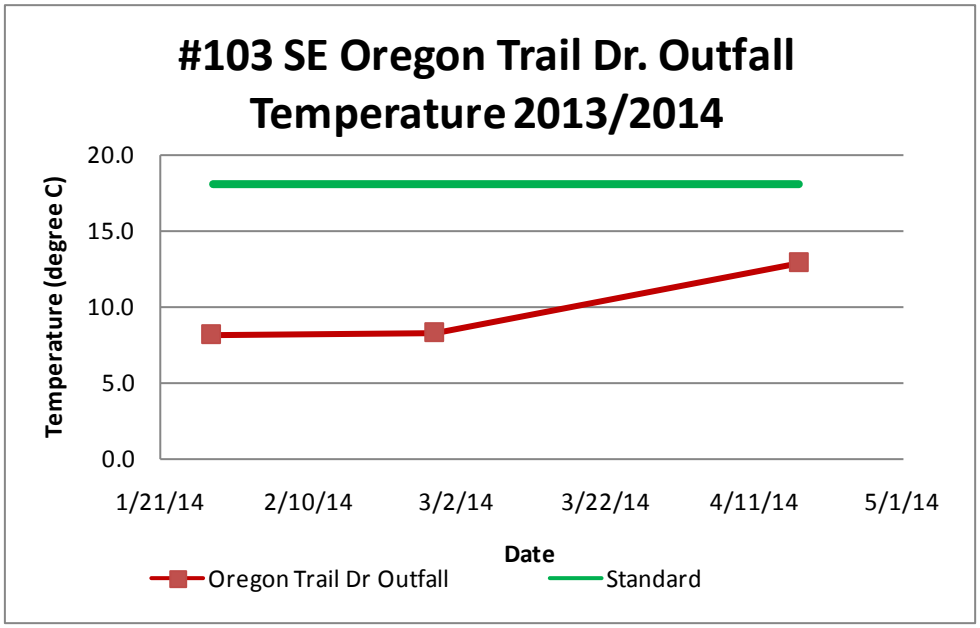
	Temperature (C)	Dissolved Oxygen (mg/L)	Nitrate (mg/L)	E coli (Counts/100 mL)	Total Copper (ug/L)	Dissolved Copper (ug/L)	Total Lead (ug/L)	Dissolved Lead (ug/L)	Total Zinc (ug/L)	Dissolved Zinc (ug/L)	Total Solids (mg/L)	Total Suspended Solids (mg/L)	BOD (mg/L)	Ammonia (mg/L)	Total Phosphorus (mg/L)	Orthophosphate (mg/L)	Hardness (mg/L)	pH
SE Oregon Trail Drive Outfall (site #103): 3 storms																		
Mean	9.8	9.9	0.41	300	5.60	3.7	1.39	0.15	94.3	77.0	65	24	6.4	0.17	0.05	0.02	25	6.9
Maximum	12.9	10.6	0.56	1414	7.40	4.8	1.80	0.26	114.0	83.0	82	32	10.0	0.21	0.07	<0.04	28	7.3
Minimum	8.2	9.5	0.31	115	3.30	2.2	1.10	<0.10	70.0	70.0	45	12	3.8	0.14	<0.04	<0.04	19	6.6
Exceedance of guidance value or criteria (# exceed/total)	0/3	0/3	0/3	1/3	2/3	2/3	3/3	0/3	3/3	3/3	NA	NA	NA	0/3	0/3	NA	NA	0/3

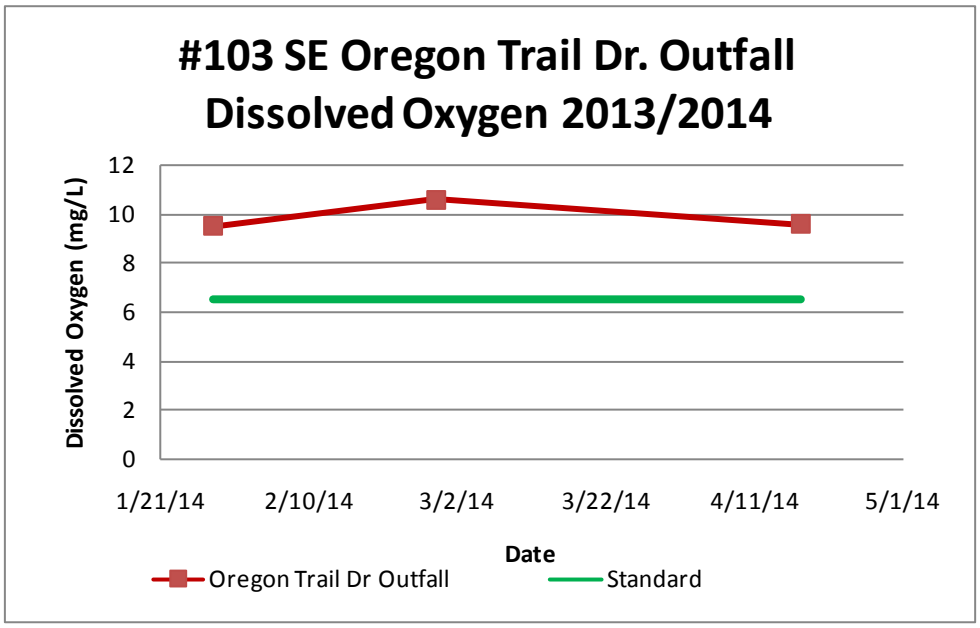
Note: Exceedance totals for metals data is based on exceedances of chronic guidance values and chronic criteria, not acute guidance values and acute criteria.

Also note: The geometric mean value is shown for E. coli in the row titled "Mean"

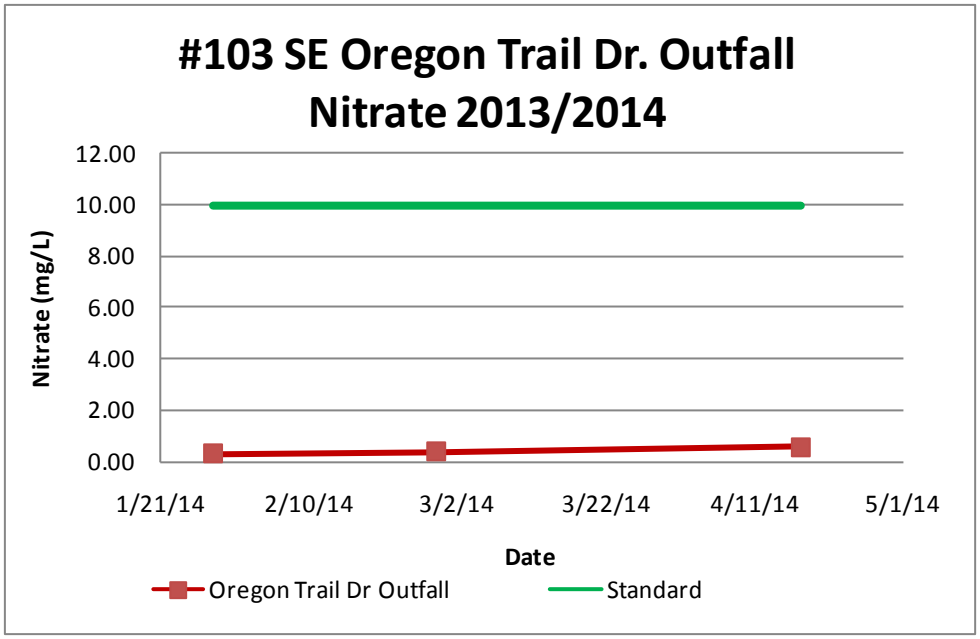
2013/2014 Monitoring Results (provided in graphical format)

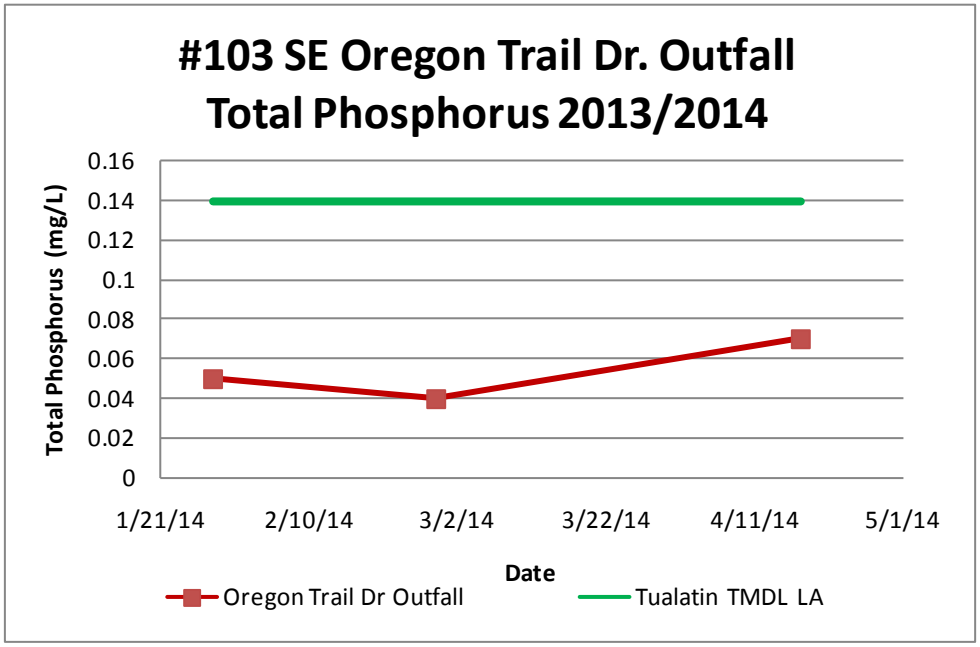
Monitoring results for select parameters have been plotted to indicate either adherence to the water quality standard (where standards apply) or to indicate whether data are in a "healthy" range as referenced in the attached Clackamas County Water Quality Index (Attachment 1). In cases where the monitoring result is less than a laboratory method's detection limit, the plotted value is the laboratory method's detection limit.



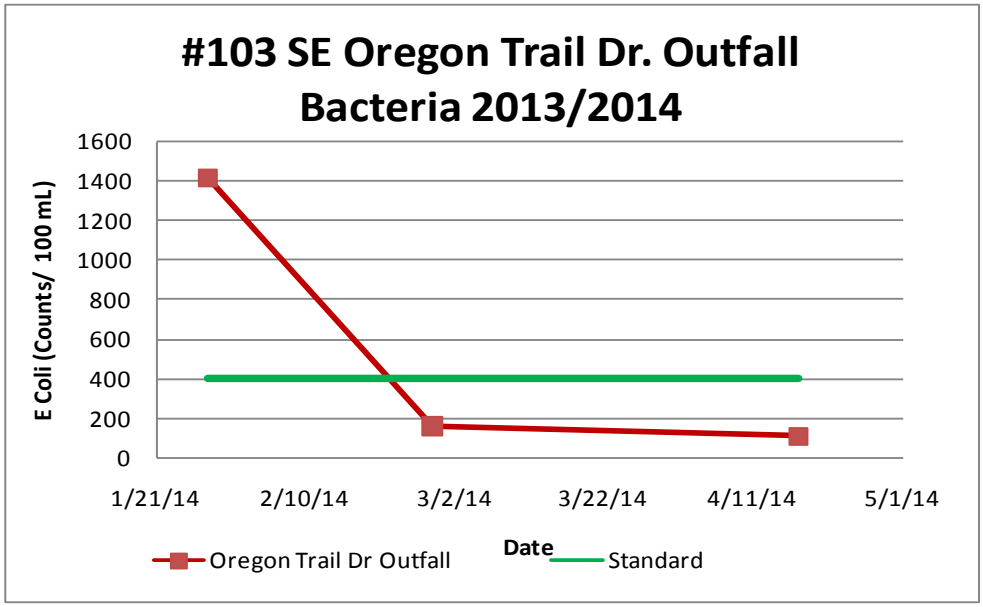


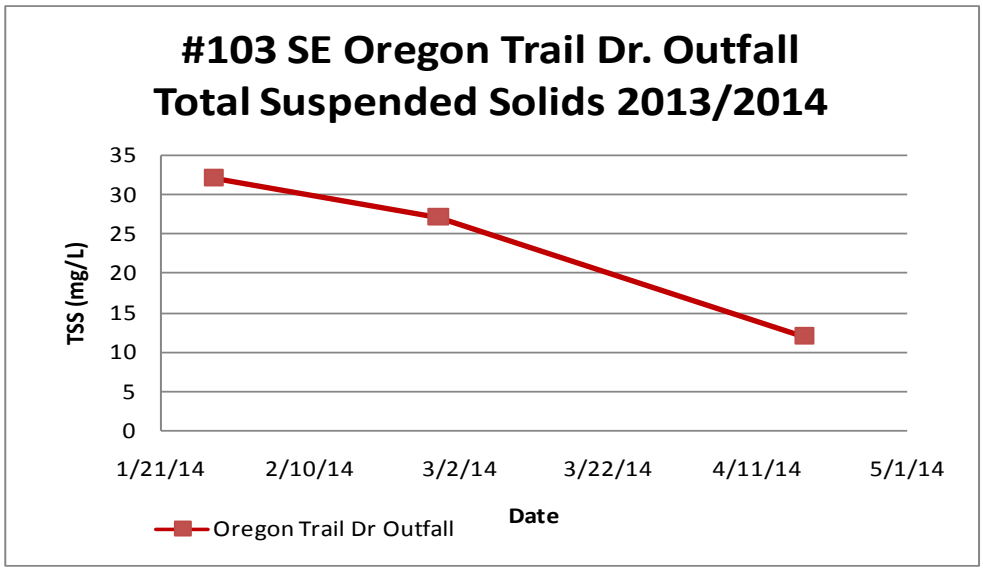
Note: For dissolved oxygen, the standard is a minimum concentration that the samples should not drop below.





Note: The comparison is made here to the Load Allocation for total phosphorus in the Tualatin TMDL, for the Clackamas River watershed does not have a specific guidance value for instream total phosphorus





2013/2014 Monitoring Results Discussion

The pH level was between 6.5 and 8.5, which is protective of watershed health, during all 3 storms. The 406 colonies/100 ml standard for E. coli was exceeded during 1 storm. During all 3 storms, total phosphorus concentrations were below the 0.14 mg/L guidance value. The chronic guidance values and regulated criteria for *total* lead, *total* zinc, and *dissolved* zinc were exceeded during all 3 storms. The regulated chronic criteria for *total* copper and the guidance values for *dissolved* copper were exceeded during 2 storms.

The April 17, 2014 monitoring event at this outfall did not have an Antecedent Dry Period as defined by MS4 permit Schedule B(3)(b)(ii); roughly 0.25 inch of rain had fallen before the first samples were collected from this storm. In this instance, it was not possible to have an Antecedent Dry Period.

SE WEBSTER ROAD OUTFALL FACT SHEET

Drainage Characteristics (Located in the Kellogg Creek Watershed)

Dominant Land Uses = Single-family urban residential

NPDES Monitoring Locations:

The SE Webster Road outfall discharges into Kellogg Creek at the place where SE Webster Road crosses the creek.

Results (provided in tabular format)

Outfall monitoring data collected during the 2013/2014 MS4 permit reporting year are provided in the following table. A total of three monitoring events were conducted during storm event conditions. Data were analyzed and comprehensive results are provided below. Where water quality standards or guidance value exceedances are indicated, the basis for that determination is provided in the attached Clackamas County Water Quality Index (Attachment 1). Although not reflected in the table below, water flow rate, total dissolved solids, and conductivity were also measured.

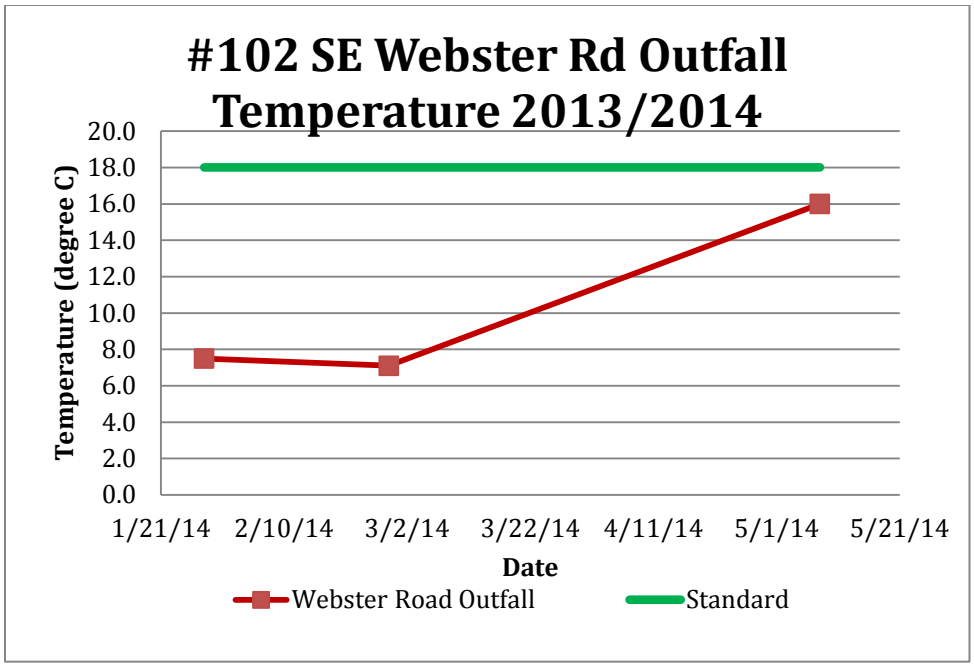
	Temperature (C)	Dissolved Oxygen (mg/L)	Nitrate (mg/L)	E coli (Counts/100 mL)	Total Copper (ug/L)	Dissolved Copper (ug/L)	Total Lead (ug/L)	Dissolved Lead (ug/L)	Total Zinc (ug/L)	Dissolved Zinc (ug/L)	Total Solids (mg/L)	Total Suspended Solids (mg/L)	BOD (mg/L)	Ammonia (mg/L)	Total Phosphorus (mg/L)	Orthophosphate (mg/L)	Hardness (mg/L)	pH
SE Webster Road Outfall (site #102): 3 storms																		
Mean	10.2	8.3	0.34	74	10.73	6.3	1.29	0.09	546.7	512.3	75	27	3.8	0.10	0.04	0.03	21	6.9
Maximum	16.0	10.5	0.48	461	14.20	8.1	2.13	0.13	1358.0	1207.0	89	39	4.9	0.16	0.09	<0.04	25	7.1
Minimum	7.1	5.7	0.24	22	6.80	3.5	0.50	0.08	72.0	46.0	58	15	2.0	0.05	<0.04	<0.04	19	6.8
Exceedance of guidance value or criteria (# exceed/total)	0/3	1/3	0/3	1/3	3/3	3/3	2/3	0/3	3/3	3/3	NA	NA	NA	0/3	0/3	NA	NA	0/3

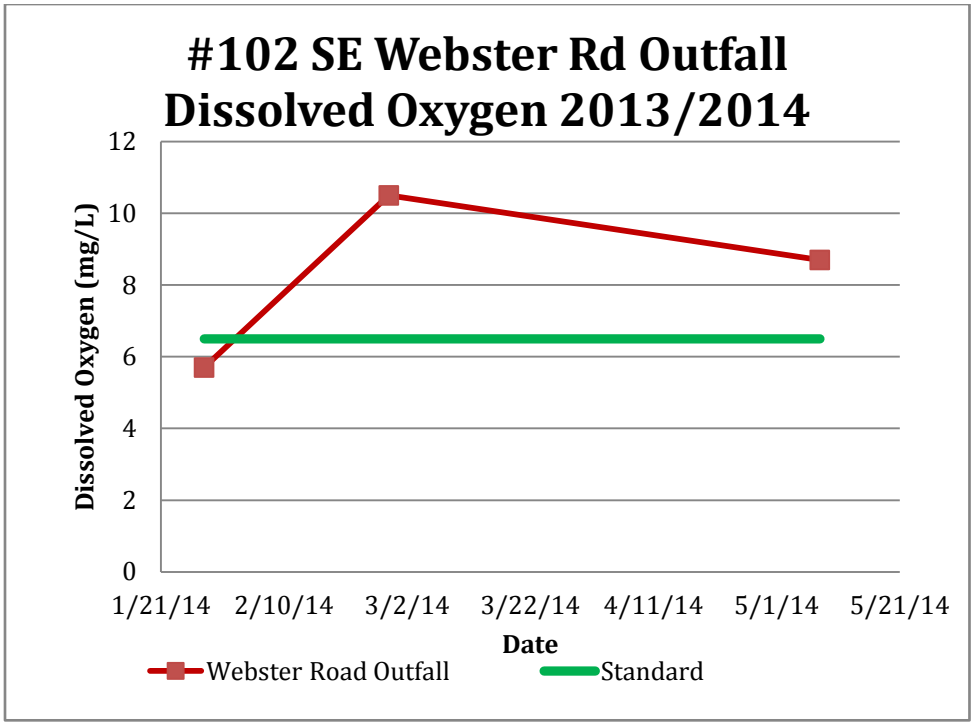
Note: Exceedance totals for metals data is based on exceedances of chronic guidance values and chronic criteria, not acute guidance values and acute criteria.

Also note: The geometric mean value is shown for E. coli in the row titled "Mean"

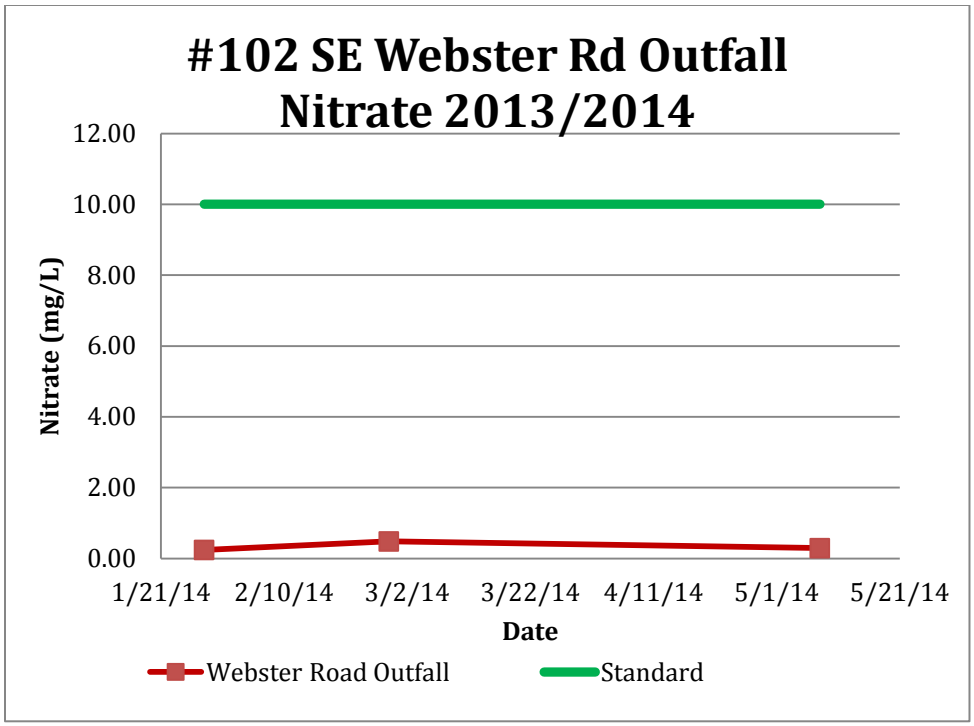
2013/2014 Monitoring Results (provided in graphical format)

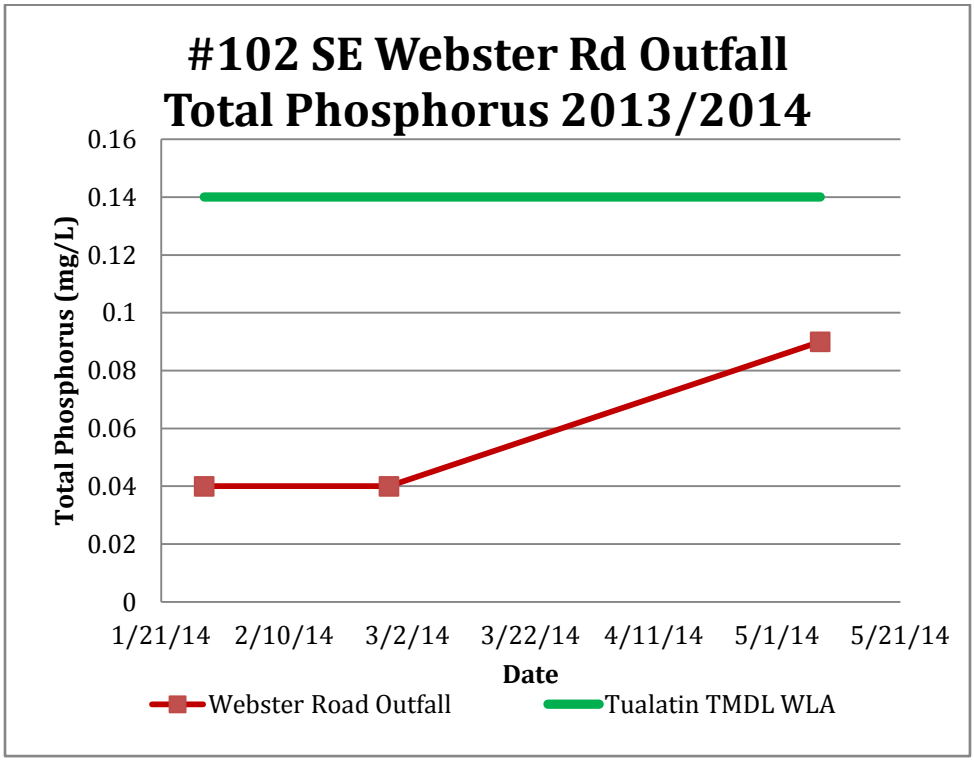
Monitoring results for select parameters have been plotted to indicate either adherence to the water quality standard (where standards apply) or to indicate whether data are in a "healthy" range as referenced in the attached Clackamas County Water Quality Index (Attachment 1). In cases where the monitoring result is less than a laboratory method's detection limit, the plotted value is the laboratory method's detection limit.



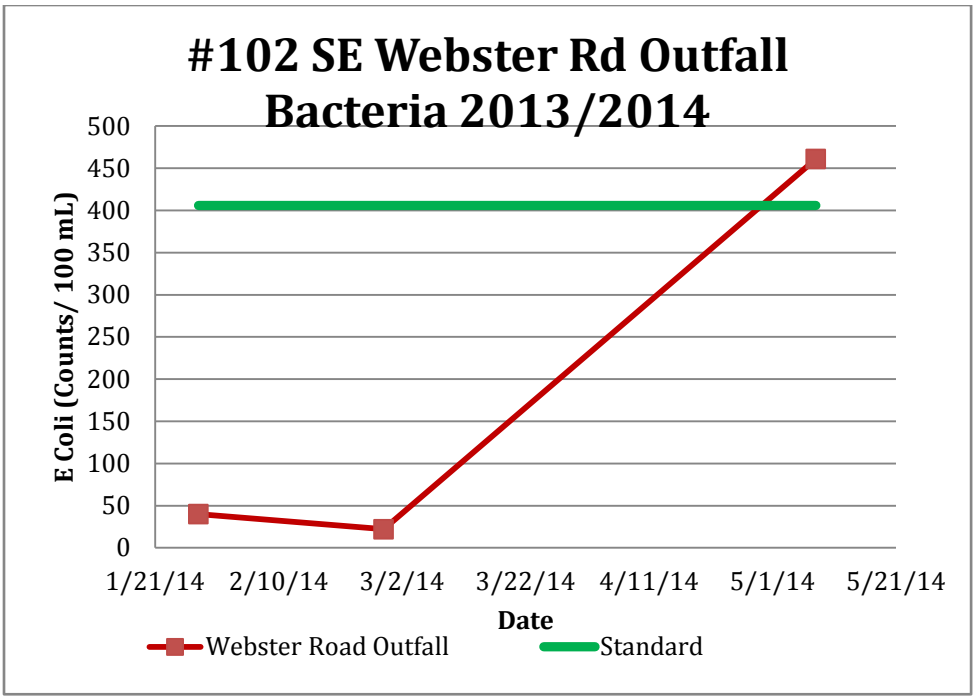


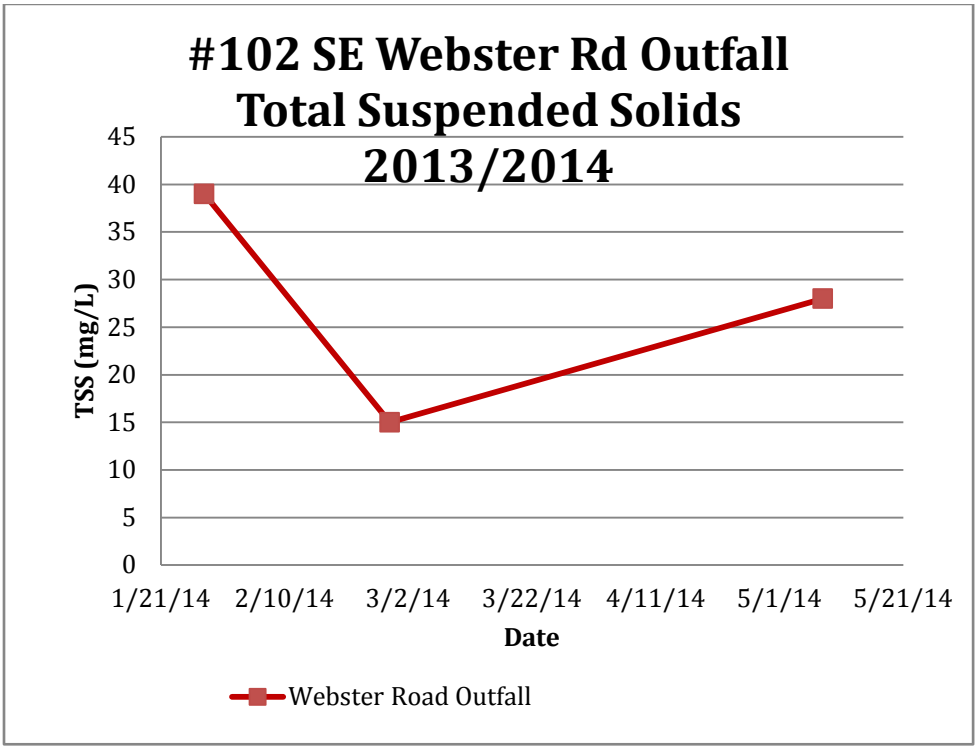
Note that for dissolved oxygen, the standard is a minimum concentration that the samples should not drop below.





Note: The comparison is made here to the Waste Load Allocation for total phosphorus in the Tualatin TMDL, for the Kellogg Creek watershed does not have a specific guidance value for instream total phosphorus


#102 SE Webster Rd Outfall
Bacteria 2013/2014
E Coli (Counts/ 100 mL)
500
450
400
350
300
250
200
150
100
50
0
1/21/14
2/10/14
3/2/14
3/22/14
4/11/14
5/1/14
5/21/14
Date
Webster Road Outfall
Standard


#102 SE Webster Rd Outfall
Total Suspended Solids
2013/2014
TSS (mg/L)
45
40
35
30
25
20
15
10
5
0
1/21/14
2/10/14
3/2/14
3/22/14
4/11/14
5/1/14
5/21/14
Date
Webster Road Outfall

2013/2014 Monitoring Results Discussion

The pH level was between 6.5 and 8.5, which is protective of watershed health, during all 3 storms. The 406 colonies/100 ml standard for E. coli was exceeded during 1 storm. The total phosphorus concentration was below the 0.14 mg/L guidance value during all 3 storms.

The chronic guidance values and regulated criteria for *total* copper, *dissolved* copper, *total* zinc, and *dissolved* zinc were exceeded during all 3 storms. The guidance value for *total* lead was exceeded during 2 storms.

Exceptionally high levels of *total* zinc (1,358 ug/L or 1.358 mg/L) and *dissolved* zinc (1,207 ug/L or 1.207 mg/L) were recorded at this site during the storm on January 28, 2014. These levels are ~11.6 times higher than the level which is potentially harmful to aquatic life in Kellogg Creek. This was the first monitored storm of the 2013-2014 monitoring year. Levels of *total* zinc and *dissolved* zinc were much lower during the storms which were monitored on February 27, 2014 and May 8, 2014. In an effort to trace the zinc to a smaller geographic area, several additional places within the storm sewer system were also sampled during the May 8, 2014 storm. The zinc levels at these other places and at the outfall were much lower during this storm; the zinc could not be traced to a sub-section of the outfall's watershed during this storm.

The highest *total* copper value that was recorded at any creek or outfall monitoring site in CCSD#1 in 2013-2014 (14.2 ug/L) was also recorded during the storm on January 28, 2014. Levels of copper were lower during the other storms which were monitored during 2013-2014.

January 28, 2014's dissolved oxygen value was 5.7 mg/L, which is below the lowest water quality standard (6.5 mg/L) for dissolved oxygen. The dissolved oxygen levels which were recorded during the other storms were in a range which is protective of watershed health.

Drainage Characteristics

- Tributary to the Tualatin River
- Dominant Land Uses = Rural residential, agriculture, open space, and urban (100% of the urbanized lands are in the City of Lake Oswego, however)

Monitoring Location

This instream monitoring location is at SW Mossy Brae Road in SWMACC. This location is not within the Portland metro area's urban growth boundary, so it is not within the geographic area that is regulated by SWMACC's MS4 permit.

2013/2014 Monitoring Results (provided in tabular format)

Instream monitoring data collected during the 2013/2014 MS4/TMDL reporting year were sorted based on whether the data were collected during storm event conditions or not. Three monitoring events were conducted during storms and the other 6 monitoring events were not.

Data were analyzed and comprehensive results are provided below for storm and non-storm event conditions. Where water quality standards exceedances are indicated, the basis for that determination is provided in the attached Clackamas County Water Quality Index (Attachment 1). Although not reflected in the table below, water flow rate, total dissolved solids, total volatile solids, and conductivity were also measured.

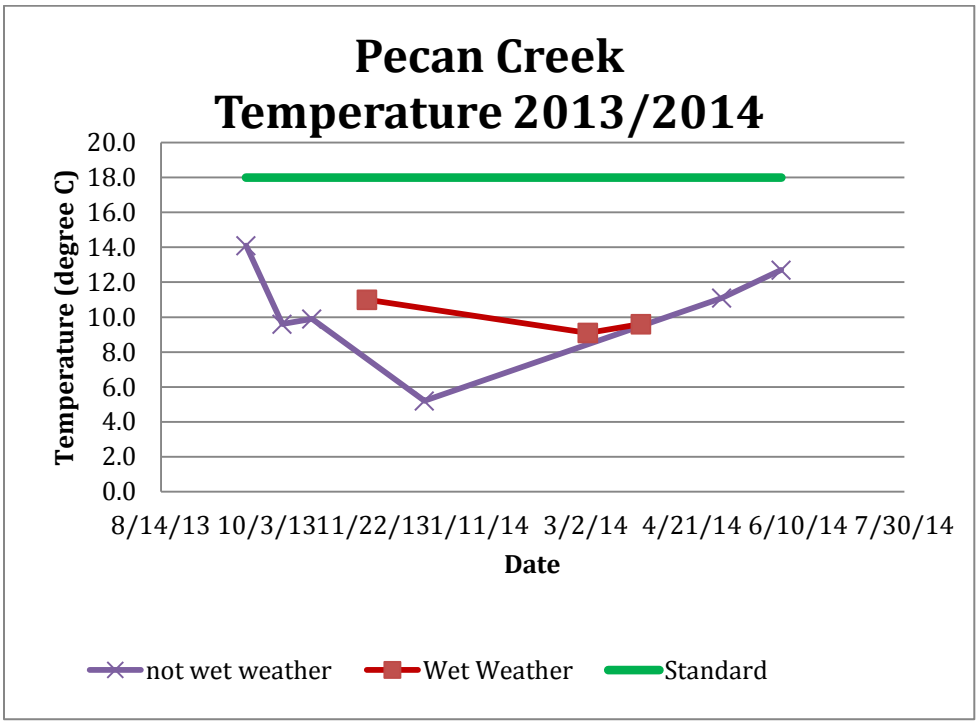
	Temperature (C)	Dissolved Oxygen (mg/L)	Nitrate (mg/L)	E coli (Counts/100 mL)	Total Copper (ug/L)	Dissolved Copper (ug/L)	Total Lead (ug/L)	Dissolved Lead (ug/L)	Total Zinc (ug/L)	Dissolved Zinc (ug/L)	Total Solids (mg/L)	Total Suspended Solids (mg/L)	BOD (mg/L)	Ammonia (mg/L)	Total Phosphorus (mg/L)	Orthophosphate (mg/L)	Hardness (mg/L)	pH
Monitored Storms (3 events)																		
Mean	9.9	10.7	0.69	1288	6.90	2.3	3.2	0.22	33	7.8	202	132	2.1	0.04	0.33	0.07	34	6.8
Maximum	11.0	11.5	0.87	>2420	10.70	2.5	5.0	0.31	58	11.0	255	255	4.1	<0.15	0.49	<0.20	41	7.7
Minimum	9.1	10.0	0.58	365	3.00	2.0	1.3	0.16	12	6.0	154	154	0.8	<0.05	0.16	0.05	30	5.6
Exceedance of guidance value or criteria (# exceed/total)	0/3	0/3	0/3	2/3	2/3	0/3	3/3	0/3	1/3	0/3	NA	NA	NA	0/3	3/3	NA	NA	1/3
Other Weather Conditions (6 monitoring events)																		
Mean	10.4	9.4	0.97	301	1.51	1.0	0.3	0.05	5	4.3	107	10	0.6	0.04	0.04	0.04	43	7.0
Maximum	14.1	11.8	1.21	>2420	3.20	1.9	0.6	0.08	7	8.0	133	20	<2.0	<0.15	0.11	0.06	66	7.3
Minimum	5.2	5.6	0.63	36	0.80	0.6	0.2	0.02	2	1.9	96	4	0.3	<0.05	<0.04	0.04	30	6.3
Exceedance of guidance value or criteria (# exceed/total)	0/6	1/6	0/6	2/6	0/6	0/6	0/6	0/6	0/6	0/6	NA	NA	NA	0/6	0/6	NA	NA	1/6

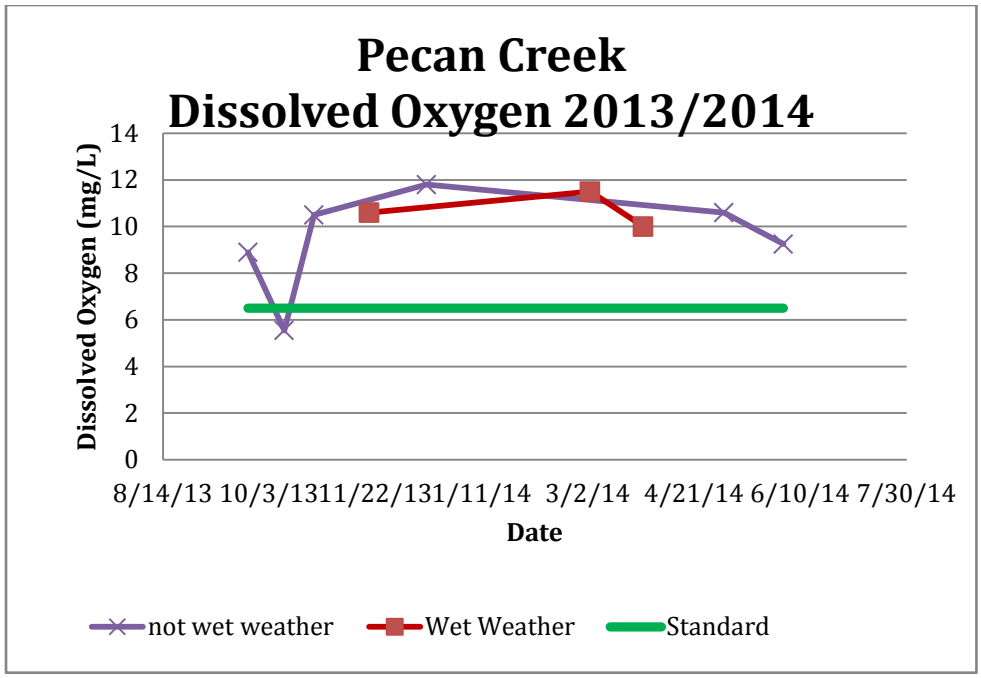
Note: Exceedance totals for metals data is based on exceedances of chronic guidance values and chronic criteria, not acute guidance values and acute criteria.

Also Note: The geometric mean value is shown for E. coli in the row titled "Mean"

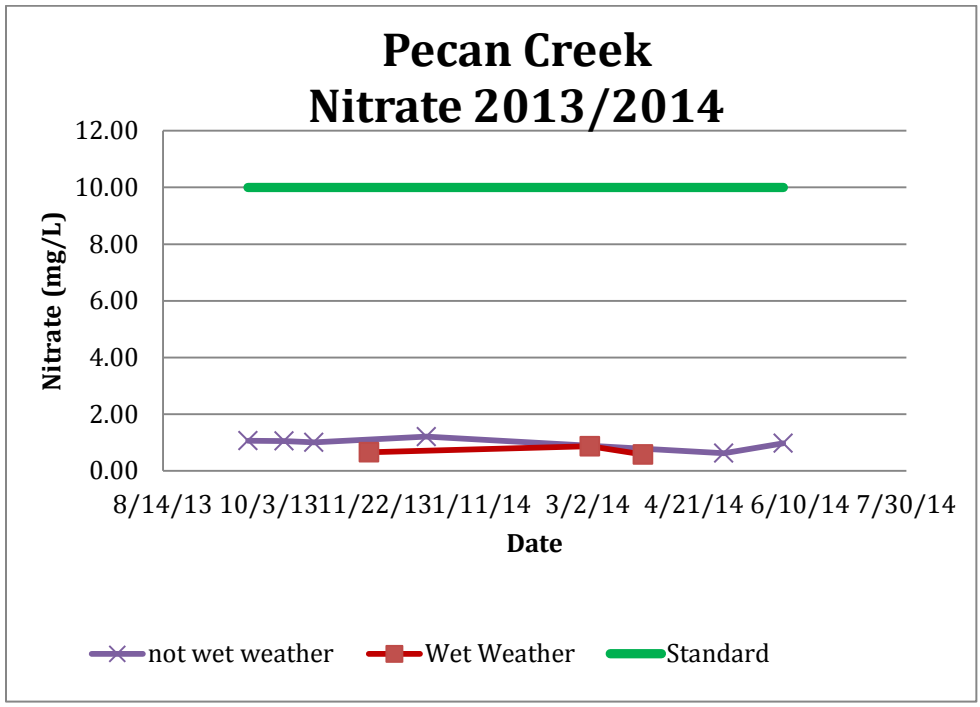
2013/2014 Monitoring Results (provided in graphical format)

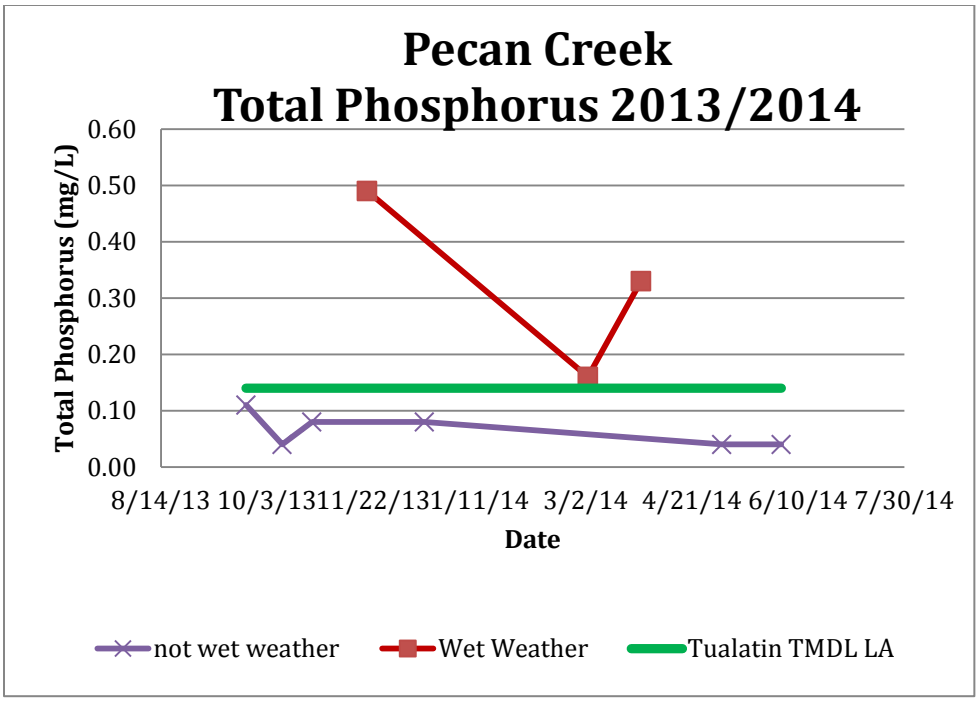
Monitoring results for select parameters have been plotted to indicate either adherence to the water quality standard (where standards apply) or to indicate whether data are in a "healthy" range as referenced in the attached Clackamas County Water Quality Index (Attachment 1). In cases where the monitoring result is less than the method's detection limit, the plotted value is the method's detection limit.



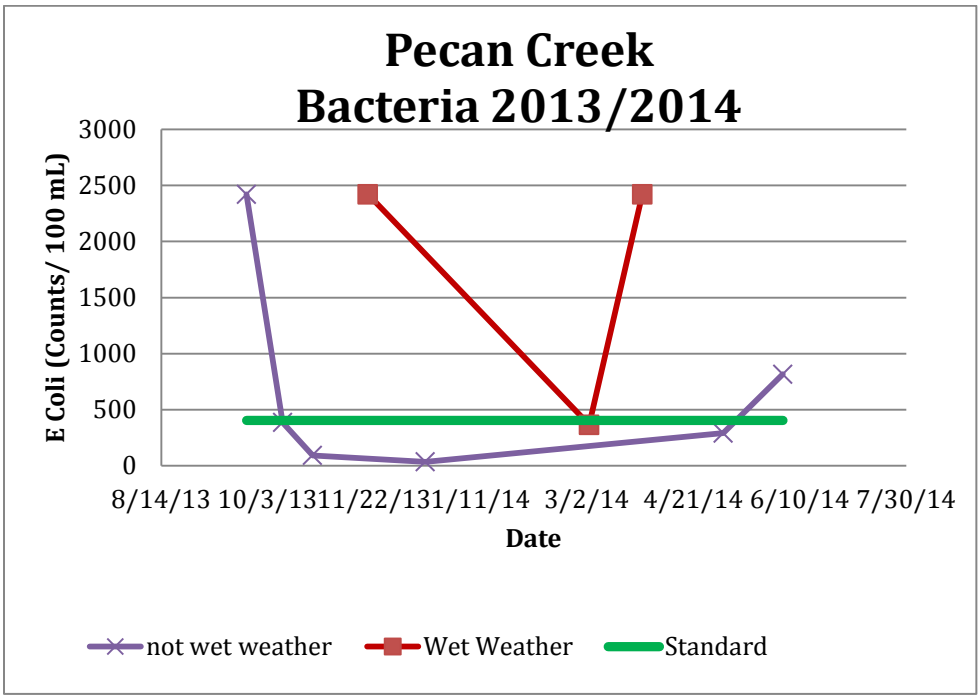


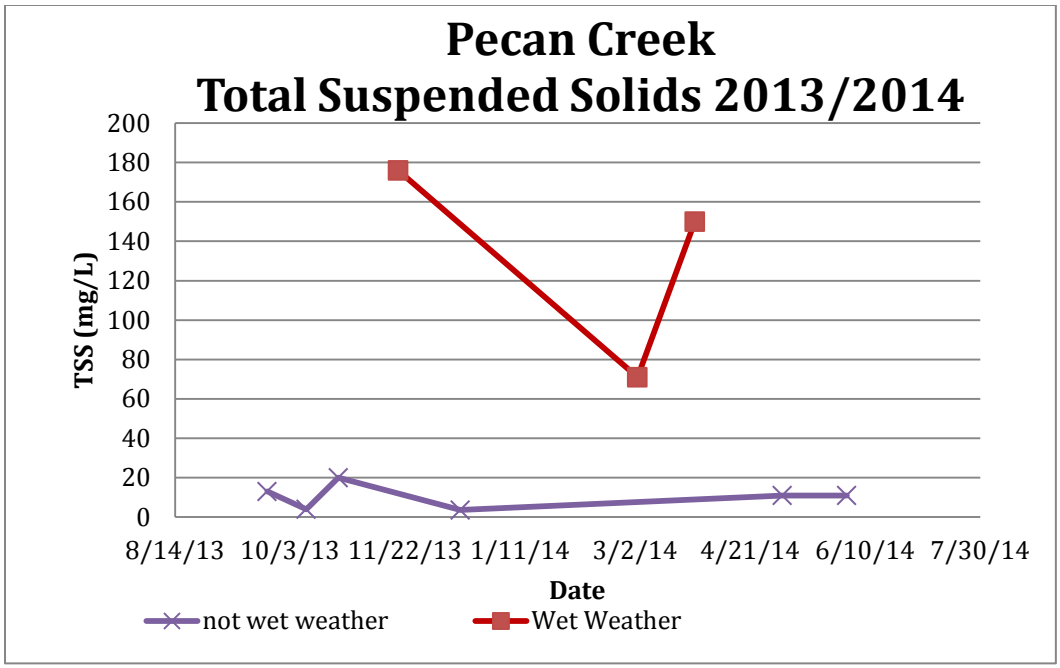
Please note that for dissolved oxygen, the standard is a minimum concentration that the samples should not drop below.





TMDL LA = Total Maximum Daily Load's Load Allocation





2013/2014 Monitoring Results Discussion

During the 3 monitored storms, the water quality standard for *total* copper was exceeded twice; the guidance value for *total* lead was exceeded during all 3 storms; the guidance value for *total* zinc was exceeded during one storm. The 406 colonies/100 ml standard for E. coli was exceeding during 2 of the three monitored storms and during 2 of the 6 routine monitoring events. The total phosphorus concentration was above 0.14 mg/L, the TMDL Load Allocation for this portion of the Tualatin River watershed, during all 3 monitored storms. Ammonia was not detected during any of the 9 monitoring events. Measured pH values were not protective of watershed health during 2 of the monitoring events. The dissolved oxygen level was 5.55 mg/L, which is below the water quality standard, indicating poor water quality, during a routine monitoring event.

Drainage Characteristics (Upstream Outfall)

- Dominant Land Use = Single-family urban residential

NPDES Monitoring Location

Outfall to the Tualatin River located between the houses at 5638 SW Dogwood Dr and 5600 SW Dogwood Dr in the City of Rivergrove (also in the SWMACC). This site was monitored for the first time by WES in the July 1, 2013 to June 30, 2014 monitoring year.

2013/2014 Monitoring Results (provided in tabular format)

Outfall monitoring data collected during the 2013/2014 NPDES MS4 reporting year are provided in the following table. A total of three runoff sampling events were conducted during wet weather conditions.

Data were analyzed and comprehensive results are provided below. Where water quality standards or guidance value exceedances are indicated, the basis for that determination is provided in the attached Clackamas County Water Quality Index (Attachment 1). Although not reflected in the table below, water flow rate, total dissolved solids, total volatile solids, and conductivity were also measured.

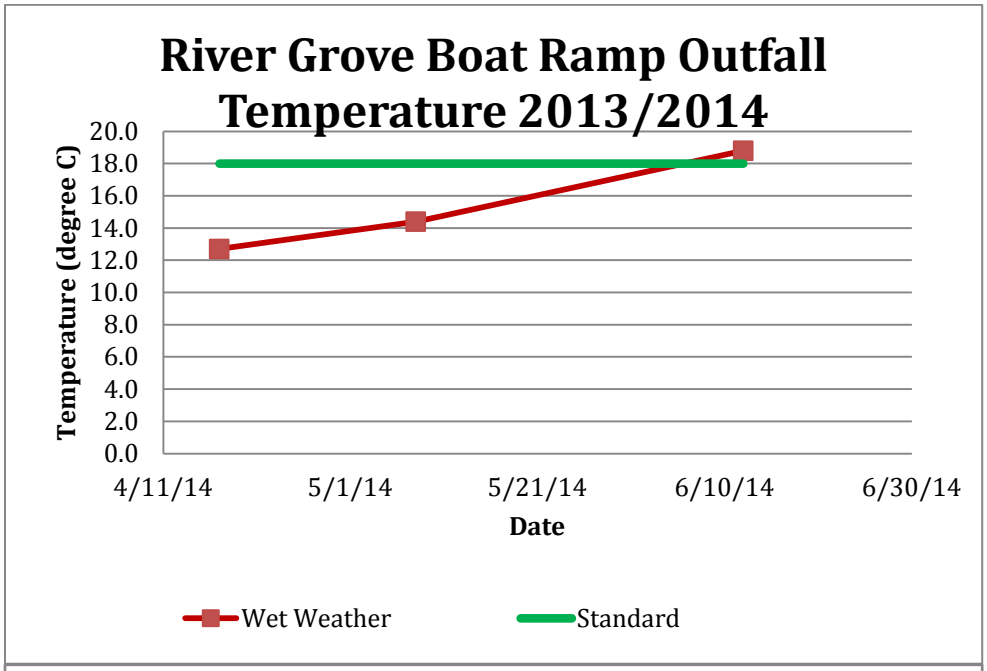
	Temperature (C)	Dissolved Oxygen (mg/L)	Nitrate (mg/L)	E coli (Counts/100 mL)	Total Copper (ug/L)	Dissolved Copper (ug/L)	Total Lead (ug/L)	Dissolved Lead (ug/L)	Total Zinc (ug/L)	Dissolved Zinc (ug/L)	Total Solids (mg/L)	Total Suspended Solids (mg/L)	BOD (mg/L)	Ammonia (mg/L)	Total Phosphorus (mg/L)	Orthophosphate (mg/L)	Hardness (mg/L)	pH
Monitored Storms (3 events)																		
Mean	15.3	8.0	1.70	518	6.10	4.0	0.7	0.04	22	14.0	140	25	1.9	0.03	0.11	0.04	63	6.5
Maximum	18.8	8.2	2.53	>2420	9.20	6.3	0.8	0.06	30	21.0	270	270	2.1	<0.05	0.20	0.05	82	6.7
Minimum	12.7	7.7	1.00	29	3.40	1.5	0.7	0.03	18	7.0	110	110	1.7	<0.05	0.05	0.04	45	6.2
Exceedance of guidance value or criteria (# exceed/total)	1/3	0/3	0/3	2/3	1/3	0/3	0/3	0/3	0/3	0/3	NA	NA	NA	0/3	1/3	NA	NA	1/3

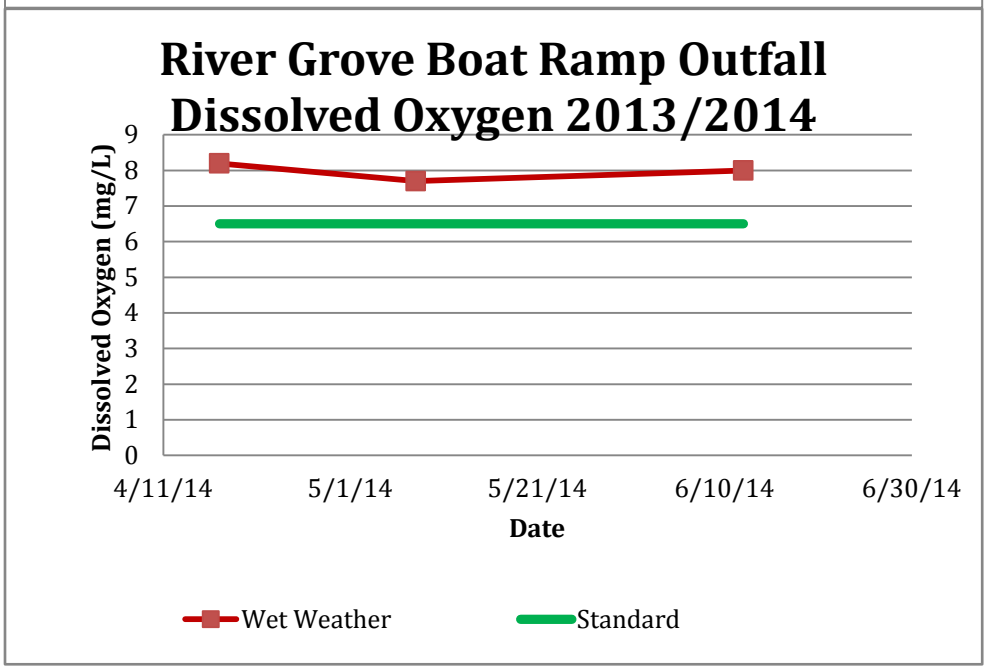
Note: Exceedance totals for metals data is based on exceedances of chronic guidance values and chronic criteria, not acute guidance values and acute criteria.

Also note: The geometric mean value is shown for E. coli in the row titled "Mean".

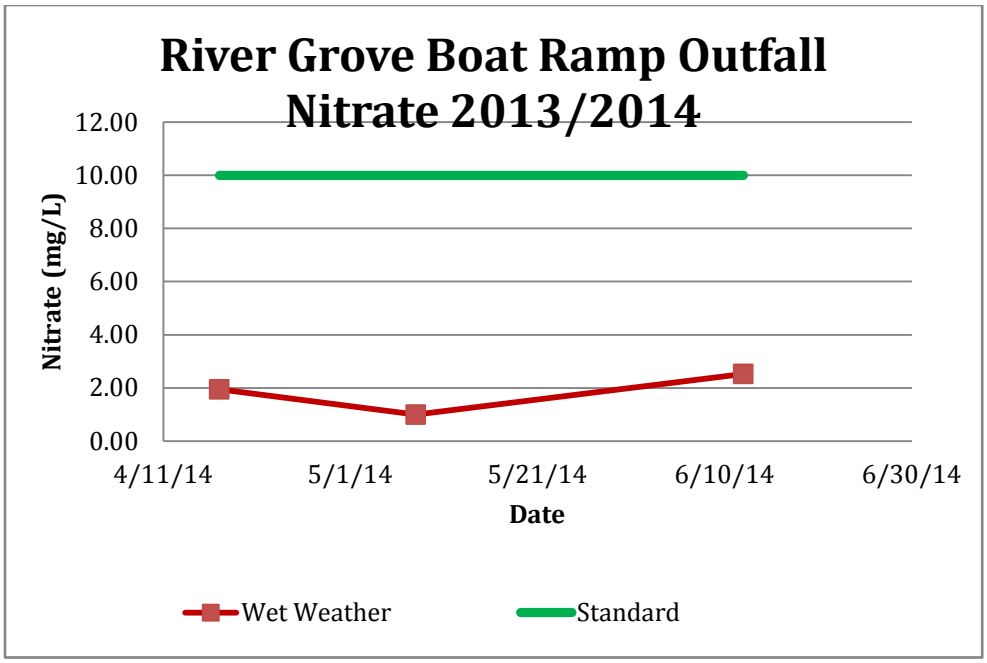
2013/2014 Monitoring Results (provided in graphical format)

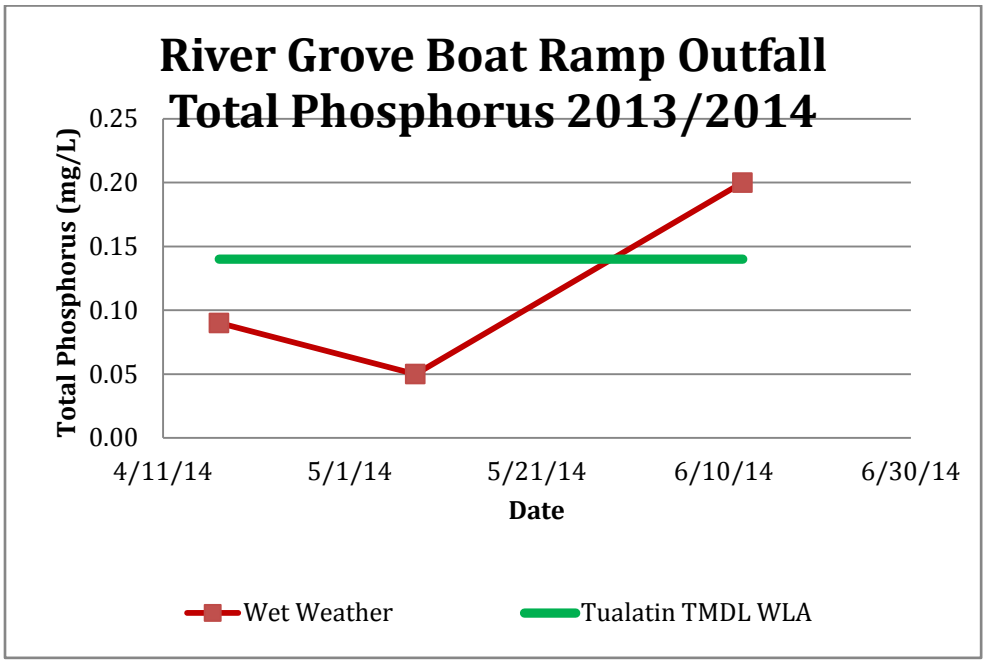
Monitoring results for select parameters have been plotted to indicate either adherence to the water quality standard (where standards apply) or to indicate whether data are in a "healthy" range as referenced in the attached Clackamas County Water Quality Index (Attachment 1). In cases where the monitoring result is less than the method's detection limit, the plotted value is the method's detection limit.



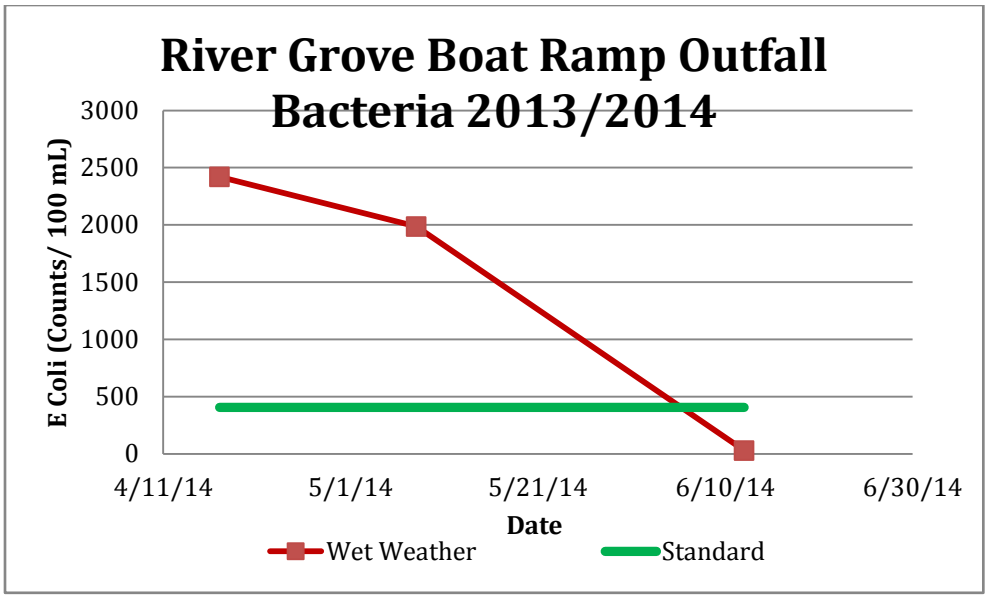


Note: For dissolved oxygen, the standard is a minimum concentration that the samples should not drop below.

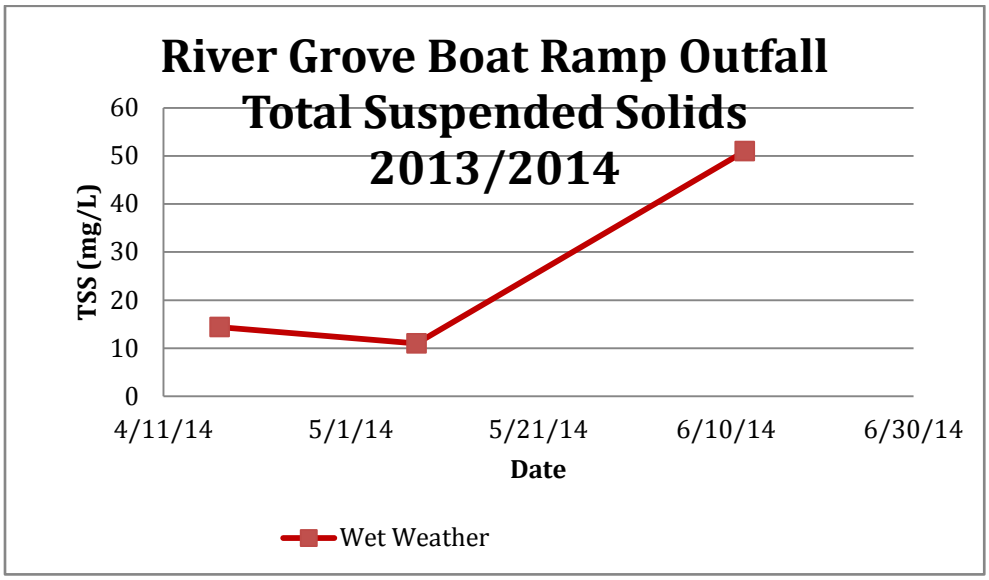




TMDL WLA = Total Maximum Daily Load's Waste Load Allocation



Note: The >2420 bacteria value is charted as 2420 colonies/100ml



2013/2014 Monitoring Results Discussion

The water quality standard for bacteria was exceeded during 2 of the storms. The total phosphorus concentration was above 0.14 mg/L, the TMDL Load Allocation for the Tualatin River, during one of the monitoring events. The water quality standard for total copper was exceeded during one of the storms. When stormwater enters the River from this outfall, it mixes in the waters of the River, so any toxicity which might be present quickly drops, because the Tualatin River is large and typically has much higher hardness values than stormwater discharges from this outfall; higher hardness values yield lower toxicity for any given concentration of copper. The dissolved form of copper, and total & dissolved lead and zinc, were at levels which are protective of watershed health, during the 3 storms. The pH level during 1 of the storms was below 6.5, which indicates poor water quality.

The April 17, 2014 monitoring event at this outfall did not have an Antecedent Dry Period as defined by MS4 permit Schedule B(3)(b)(ii); roughly 0.25 inch of rain had fallen before the first samples were collected from this storm. In this instance, it was not possible to have an Antecedent Dry Period.

APPENDIX C PARTNER REPORTS

CCSD #1 Riparian Restoration and Enhancement Reporting Form

Project name: ___Deerfield Park___ **Taxlot no.** 12E35CA02600

Organization info:

Organization name	**Friends of Trees**
Project manager	**Logan Lauvray**
Phone number	**503-467-2515**

Project info:

Fiscal year for activities (e.g. 2013-14)	**2013-14**
Stream/Tributary	**Tributary to Sieben Creek**
Watershed Action Plan Priority Rating (H, I, M or NA)	**N/A**
Length of stream worked on, linear feet	**500 feet**
Left bank, right bank, (looking downstream) or both	**Both**
Width-left bank	**30 feet**
Width-right bank	**30 feet**
Approx area worked on, acres	**1.45 acres**

Landowner name and address __Deerfield Park HOA numbers 3 and 4

Landowner contact and agreement obtained: Yes: **X** No___ Attached: Yes___ No: **X**

*Attach map and site plan showing creek & extent of work area, number and locations of LWD or other habitat features, and photos of work. Please send map showing **parcel and area worked on**, and shape file if possible. May use http://metromap.metro-region.org/metromap.cfm?Accept=accept .

Focus of **restoration activities: Use (M) for Major; (m) for minor activity for activities below.**

Riparian vegetation planting ____Instream____Cleanup:___ Erosion ____Other: **Invasive Removal**

Invasives removed, acres: **.2 acres** Dominant invasive species: **none**

Removal techniques used: **Cutting** Herbicides used: _____

Level of infestation: Heavy, dense____ Moderate:___ Light, scattered **X**____

Maintenance visit: Year 0:___ Year 1:___ Year 2:___ Year 3:___ Year 4 **X**___ Other_____

Note: Year 0 means year plants were installed, Year 1 means first year after planting.

Maintenance type performed: **Herbicide applied to and cutting of invasive Himalayan Blackberry, clearing non-native grass competition away from installed trees and shrubs.**

Monitoring results

% survival	% weed cover	% bare soil	Other results or performance standards
79%	40%	5%	Note that the weed % is for the project area where monitoring has occurred, not the site as a whole. Two invasive species (Himalayan Blackberry and Reed Canary Grass) are present on the site and have < 20% cover. We are actively attempting to eradicate / control these two species. The rest of the weed cover % is made up of non-native grasses and other small non-native herbaceous weeds that FOT does not attempt to control as they do not pose a long term threat to the native tree and shrub establishment.

Planned accomplishments or recommendations for future work on this site: **FOT plans on continuing maintenance efforts, keeping invasive cover to a minimum. The goal is to have invasive cover less than 10%. We will continue to cut the blackberry and have a contractor re-spray the blackberry in the fall. We will continue to monitor the site for invasive and native species cover. We will continue to monitor the plantings, and recording data in regards to plant and canopy cover. There is a small area within the property that may benefit from some infill planting; however, we will reevaluate that next season.**

Estimate for future maintenance: approx. $ per year	$500 / year
Estimate for future maintenance: approx. # of years	Two

CCSD #1 Riparian Restoration and Enhancement Reporting Form

Project name: Rose Creek, Oregon Trail Elementary **Taxlot no.** 22E01CD00100

Organization info:

Organization name	**Friends of Trees**
Project manager	**Logan Lauvray**
Phone number	**503-467-2515**

Project info:

Fiscal year for activities (e.g. 2013-14)	**2013-2014**
Stream/Tributary	**Rose Creek – tributary to Sieben Creek**
Watershed Action Plan Priority Rating (H, I, M or NA)	**Intermediate**
Length of stream worked on, linear feet	**720 ft.**
Left bank, right bank, (looking downstream) or both	**Both**
Width-left bank	40 ft.
Width-right bank	40 ft.
Approx area worked on, acres	2.2 acres

Landowner name and address: Clackamas County Water Environment Services

Landowner contact and agreement obtained: Yes **X** No___ Attached: Yes___ No **X**

*Attach map and site plan showing creek & extent of work area, number and locations of LWD or other habitat features, and photos of work. Please send map showing **parcel and area worked on**, and shape file if possible. May use http://metromap.metro-region.org/metromap.cfm?Accept=accept .

Focus of **restoration activities: Use (M) for Major; (m) for minor activity for activities below.**

Riparian vegetation planting _**M**_Instream___Cleanup____Erosion ____Other_____

Invasives removed, acres_1/2 acre_ Dominant invasive species: Rubus armeniacus, Hedera helix, Ilex aquifolium, Buddleia davidii, Prunus sp.

Removal techniques used: Cutting Herbicides used: None

Level of infestation: Heavy, dense___ Moderate_X_ Light, scattered _____

Maintenance visit: Year 0 _X_ Year 1 _X_ Year 2 _X_ Year 3 _X_ Year 4 _X_ Year 5 _X_ Other_____

Note: Year 0 means year plants were installed, Year 1 means first year after planting.

Maintenance type performed: Cutting grasses and blackberry from project area. Contractor cut Blackberry, Ivy and Holly from the area.

Natives planted (list species, numbers, and form-bare root or container, etc.):

Trees	No.	Density or spacing	Size/form
Fraxinus latifolia	1	6-10 feet	3 gallon
Malus fusca	15	6-10 feet	1 gallon
Rhamnus purshiana	10	6-10 feet	1 gallon
Total # trees	**26**		
Shrubs			
Holodiscus discolor	45	1-2 feet	1 gallon
Lonicera involuctra	55	1-2 feet	1 gallon
Mahonia aquifolium	45	1-2 feet	1 gallon
Oemleria cerasiformis	50	1-2 feet	1 gallon
Physocarpus capitatus	45	1-2 feet	1 gallon
Rubus parviflorus	50	1-2 feet	1 gallon
Rubus spectabilis	45	1-2 feet	1 gallon
Spiraea douglasii	55	1-2 feet	1 gallon
Spiraea douglasii	50	1-2 feet	bareroot
Total # shrubs	**440**		

Other materials such as coffee bags, geotextile, stakes, browse protection, mulch, soil amendments, fencing, signage, etc.

Material	Approx.number or amount
Mulch (Medium Fir)	3 cubic yards

List any permits you obtained, if any, including in-water work window __N/A_____

Donated hours

No. of volunteers	Total donated hours	Hourly rate	Value of volunteer time
77	95	?	Student (5th graders from OTE and High School students from Sabin-Schellenberg Tech Center) time during the regular school day.
8	22	$22.14	$487.08

# of volunteers in WES district zip codes:		% of volunteers in WES district zip codes:	

Mileage:

Monitoring results

% survival	% weed cover	% bare soil	Other results or performance standards
76%	80%+	5%	Note that the weed % is for the project area where monitoring has occurred, not the site as a whole. Himalayan Blackberry within sampling plot was 10-20% cover. We are actively attempting to eradicate / control this species. The rest of the weed cover % is made up of non-native grasses and other small non-native herbaceous weeds that FOT does not attempt to control as they do not pose a long term threat to establishment of natives.

Planned accomplishments or recommendations for future work on this site: We anticipate having an annual planting with all 5th grade classes from Oregon Trail Elementary School. On site, FOT plans on continuing maintenance efforts, with a goal of further reducing invasive species cover to less than 10%. Additionally, we will continue to cut agronomic grasses from around planted natives allowing them to get established. We will also continue to monitor the site and inventory invasives and natives to determine overall species coverage. We plan to continue Himalayan blackberry and non-native tree removal on adjacent portions of the site to have them prepared for future native tree and shrub planting areas. Due to concerns expressed by neighbors in the past about tall, dry grasses, we will be mowing the entire grass field area two times per spring/summer season. With continued planting efforts with OTE we should be reducing the amount of area that needs to be mowed over the long term and thus eventually reducing the maintenance costs once these trees and shrubs are established and beginning to shade out the grasses.

We will use the "Rose Creek - Conceptual Site Plan and Management Plan" prepared by ESA for WES to help guide our future work.

Estimate for future maintenance: approx. $ per year	$4,000 / year
Estimate for future maintenance: approx. # of years	3+ (depending on number of additional years of plantings with OTE)

Lessons learned (how will management activities change based on results to date, what worked well, how to respond to unanticipated conditions, advice for those undertaking similar work, etc.):_**There were no surprises / lessons learned from this site this season.** ____

Please provide copies of the following items:

1) List of projects or events conducted with the Watershed Health Partnership with the North Clackamas School District, including project name, project type, number of students involved (if available).
2) Representative samples of digital photos taken for WES projects and indicate which can be used in WES publications and websites.

CCSD #1 Riparian Restoration and Enhancement Reporting Form

Project name: _RHSP JCWC Springwater_____ **Taxlot no**._12E29BC00901____

Organization info:

Organization name	**Johnson Creek Watershed Council**
Project manager	**Noah Jenkins**
Phone number	**502-652-7477**

Project info:

Fiscal year for activities (e.g. 2013-14)	**2013-14**
Stream/Tributary	**Johnson Creek**
Watershed Action Plan Priority Rating (H, I, M or NA)	**H**
Length of stream worked on, linear feet	**400**
Left bank, right bank, (looking downstream) or both	**Right bank**
Width-left bank	
Width-right bank	50
Approx area worked on, acres	0.05

Landowner name and address __Portland Parks and Recreation 8931 SE Flavel St_____

Landowner contact and agreement obtained: Yes_X__ No___ Attached: Yes___ No_X__

*Attach map and site plan showing creek & extent of work area, number and locations of LWD or other habitat features, and photos of work. Please send map showing **parcel and area worked on**, and shape file if possible. May use http://metromap.metro-region.org/metromap.cfm?Accept=accept .

Focus of **restoration activities: Use (M) for Major; (m) for minor activity for activities below.**

Riparian vegetation planting _M_Instream____Cleanup_m___Erosion _____Other_____

Invasives removed, acres__0.05___ Dominant invasive species_Armenian blackberry, English ivy____

Removal techniques used_Manual cutting, digging Herbicides used: glyphosate (for cut-stump holly)

Level of infestation: Heavy, dense_x___ Moderate_____ Light, scattered _____

Maintenance visit: Year 0__x___ Year 1____ Year 2____ Year 3____ Year 4____ Other_____

Note: Year 0 means year plants were installed, Year 1 means first year after planting.

Maintenance type performed:__Mulching, watering_____

Natives planted (list species, numbers, and form-bare root or container, etc.):

Trees	No.	Density or spacing	Size/form
Serviceberry	10	10'	Bare root
Vine maple	1	n/a	Lg pot
Total # trees	11		
Shrubs			
Red elderberry, thimbleberry, snowberry, Nootka rose, Pacific ninebark	20 ea.	3'	Bare root
Black twinberry	25	3'	Sm pot
Total # shrubs	125		
Herbs			
Total # herbs			
Seeds-species	lbs.	or % composition	
Total lbs. seed			

Other materials such as coffee bags, geotextile, stakes, browse protection, mulch, soil amendments, fencing, signage, etc.

Material	Approx.number or amount
Mulch	1 unit (= 7.5 cu. Yd)

List any permits you obtained, if any, including in-water work window __None_____

Donated hours

No. of volunteers	Total donated hours	Hourly rate	Value of volunteer time
118	322	$22	$7,084

# of volunteers in WES district zip codes:	?	% of volunteers in WES district zip codes:	?

Mileage:

Miles	Rate	Amount

Monitoring results

% survival	% weed cover	% bare soil	Other results or performance standards
85	65	15	

Planned accomplishments or recommendations for future work on this site: Continue removing/treating invasive species on the rest of the site, add more plantings as invasives are cleared._____

Estimate for future maintenance: approx. $ per year	$2,000
Estimate for future maintenance: approx. # of years	5

Lessons learned (how will management activities change based on results to date, what worked well, how to respond to unanticipated conditions, advice for those undertaking similar work, etc.):_Late notification of the grant award made it impossible to execute the work as it was originally planned, since we missed the window for fall herbicide treatment; we were able to work on a portion of the site using volunteers and hand-digging. We hope to be able to implement additional work on this site during the coming fiscal year.____

Please provide copies of the following items:

3) List of projects or events conducted with the Watershed Health Partnership with the North Clackamas School District, including project name, project type, number of students involved (if available). **Three classes from Milwaukie High School (total 100 students) worked on the site.**
4) Representative samples of digital photos taken for WES projects and indicate which can be used in WES publications and websites.

Volunteer Ryan Johnson and AmeriCorps member Sarah Eastman planting the site

Gail Shaloum and another volunteer at Watershed Wide Event

CCSD #1 Riparian Restoration and Enhancement Reporting Form

Project name: Cedar Way Open Space **Taxlot no**. 12E35BC05300

Organization info:

Organization name	NCUWC
Project manager	This is a NCUWC and WES project; it is described on the NCUWC website.
Phone number	NCUWC #503-550-9282

Project info:

Fiscal year for activities (e.g. 2013-14)	FY 13-14
Stream/Tributary	Kellogg Mt Scott
Watershed Action Plan Priority Rating (H, I, M or NA)	
Length of stream worked on, linear feet	1088 ft / .206 mi
Left bank, right bank, (looking downstream) or both	
Width-left bank	
Width-right bank	
Approx area worked on, acres	1.37 ac / 59,732.2 sq ft

Landowner name and address: City of Happy Valley

Landowner contact and agreement obtained: Yes_x__ No___ Attached: Yes___ No_x__

*Attach map and site plan showing creek & extent of work area, number and locations of LWD or other habitat features, and photos of work. Please send map showing **parcel and area worked on**, and shape file if possible. May use http://metromap.metro-region.org/metromap.cfm?Accept=accept .

Focus of **restoration activities: Use (M) for Major; (m) for minor activity for activities below.**

Riparian vegetation planting __x__Instream__x_Cleanup____Erosion x_____Other_____

Invasives removed, acres and Dominant invasive species: hours + herbicide cost on 5/13/14 = $70. hours + herbicide cost on 6/24/14 = $560.

Removal techniques used: Spot spray on 10/23/13. Herbicides used: 4 gallons of 2% garlon 3A, 1% competitor. Site Monitor on 5/13/14 and cut on 6/24/14. Site monitor visit on 6/23/14.

Level of infestation: Heavy, dense___ Moderate____ Light, scattered _____

Maintenance visit: Year 0____ Year 1 - FY 13-14 was first year in SSP___ Year 2____ Year 3____ Year 4____ Other_____

Note: Year 0 means year plants were installed, Year 1 means first year after planting.

Maintenance type performed: remove weeds, spray invasives

Planned accomplishments or recommendations for future work on this site: There is an educational sign installed on the site. Photos of the site are on the NCUWC website. The site is considered enrolled in the SSP as of 2013 to provide funding for maintenance of the site, so it is a new site for WES SSP FY 13-14.

Lessons learned (how will management activities change based on results to date, what worked well, how to respond to unanticipated conditions, advice for those undertaking similar work, etc.): Plants that were installed are going to be removed to accommodate the upcoming work in the stream that will address the downcutting and erosion activity. NCUWC, Happy Fish Restoration Landscaping, and WES are working together to plan the most effective way to accomplish the necessary work. The previously installed plants will be retained as much as possible. WES is funding the project to repair the downcutting and erosion activity. The project should occur in summer 2014.

CCSD #1 Riparian Restoration and Enhancement Reporting Form

Project name: Kent and Susan Elliott **Taxlot no.**___12E34DD02000_____

Organization info:

Organization name	NCUWC
Project manager	NCUWC (with Happy Fish Restoration Landscaping)
Phone number	503-550-9282

Project info:

Fiscal year for activities (e.g. 2013-14)	FY 13-14
Stream/Tributary	Kellogg Mt Scott
Watershed Action Plan Priority Rating (H, I, M or NA)	
Length of stream worked on, linear feet	192.4 ft / .036 mi
Left bank, right bank, (looking downstream) or both	
Width-left bank	
Width-right bank	
Approx area worked on, acres	.42 ac / 18,312.3 sq ft

Landowner name and address: Kent and Susan Elliott 12345 SE 122nd Ave

Landowner contact and agreement obtained: Yes_x__ No___ Attached: Yes___ No__x_

*Attach map and site plan showing creek & extent of work area, number and locations of LWD or other habitat features, and photos of work. Please send map showing **parcel and area worked on**, and shape file if possible. May use http://metromap.metro-region.org/metromap.cfm?Accept=accept .

Focus of **restoration activities: Use (M) for Major; (m) for minor activity for activities below.**

Riparian vegetation planting ___Instream___Cleanup____Erosion ____Other_____

Invasives removed, acres and Dominant invasive species: Blackberry and knotweed are the primary invasive plants. On 5/20/14 the hours + herbicide cost = $580.

Removal techniques used: spray. Herbicides used: On 7/3/13, 15 gal of 2% garlon 3A, 1% competitor was used on blackberry. On 10/17/13, .5 gal of 2% glyphosphate, 2% competitor was used on knotweed. On 5/20/14, 12 gallons of 2% rodeo, 2% element 3A, 1% competitor was used on spot spray. On 6/23/14 site monitor and drop off SSP sign.

Maintenance visit: Year 0____ Year 1____ Year 2____ Year 3_x___ Year 4____ Other_____

Note: Year 0 means year plants were installed, Year 1 means first year after planting.

Maintenance type performed: remove weeds, spray invasives

Planned accomplishments or recommendations for future work on this site: They enrolled in SSP in 2011. They will take a WES SSP sign.

CCSD #1 Riparian Restoration and Enhancement Reporting Form

Project name: Michael and Linda Jewett **Taxlot no.**___22E08BB02116_____

Organization info:

Organization name	NCUWC
Project manager	NCUWC (with Happy Fish Restoration Landscaping)
Phone number	503-550-9282

Project info:

Fiscal year for activities (e.g. 2013-14)	FY 13-14
Stream/Tributary	Kellogg Mt Scott
Watershed Action Plan Priority Rating (H, I, M or NA)	
Length of stream worked on, linear feet	178.62 ft / .033 mi
Left bank, right bank, (looking downstream) or both	
Width-left bank	
Width-right bank	
Approx area worked on, acres	.265 ac / 11,553.56 sq ft

Landowner name and address: Michael and Linda Jewett, 14443 SE Creekside Dr

Landowner contact and agreement obtained: Yes_x__ No___ Attached: Yes___ No_x__

*Attach map and site plan showing creek & extent of work area, number and locations of LWD or other habitat features, and photos of work. Please send map showing **parcel and area worked on**, and shape file if possible. May use http://metromap.metro-region.org/metromap.cfm?Accept=accept .

Focus of **restoration activities: Use (M) for Major; (m) for minor activity for activities below.**

Riparian vegetation planting _x__Instream___Cleanup____Erosion ____Other_____

Invasives removed, acres and Dominant invasive species: Hours cost on 6/17/14 = $310.

Removal techniques used: spray Herbicides used: On 10/17/13, for knotweed treatment, .5 gal of 2% glyphosphate, 2% competitor was used. On 6/17/14 a cut was done. No herbicide.

Level of infestation: Heavy, dense___ Moderate____ Light, scattered _____

Maintenance visit: Year 0____ Year 1____ Year 2____ Year 3__x__ Year 4____ Other_____

Note: Year 0 means year plants were installed, Year 1 means first year after planting.

Maintenance type performed: remove weeds, spray invasives

Planned accomplishments or recommendations for future work on this site: They enrolled in the SSP in 2011. They received a SSP yard sign in June 2014. We have photos of the SSP yard sign.

CCSD #1 Riparian Restoration and Enhancement Reporting Form

Project name: David Kohl **Taxlot no.**_____11E36CB04600_____

Organization info:

Organization name	NCUWC
Project manager	NCUWC (with Happy Fish Restoration Landscaping)
Phone number	503-550-9282

Project info:

Fiscal year for activities (e.g. 2013-14)	FY 13-14
Stream/Tributary	Kellogg Mt Scott
Watershed Action Plan Priority Rating (H, I, M or NA)	
Length of stream worked on, linear feet	221.065 ft / .042 mi
Left bank, right bank, (looking downstream) or both	
Width-left bank	
Width-right bank	
Approx area worked on, acres	.165 ac / 7183.45 sq ft

Landowner name and address: David Kohl, 12006 SE McLoughlin Blvd

Landowner contact and agreement obtained: Yes_x__ No___ Attached: Yes___ No_x__

*Attach map and site plan showing creek & extent of work area, number and locations of LWD or other habitat features, and photos of work. Please send map showing **parcel and area worked on**, and shape file if possible. May use http://metromap.metro-region.org/metromap.cfm?Accept=accept .

Focus of **restoration activities: Use (M) for Major; (m) for minor activity for activities below.**

Riparian vegetation planting _x___Instream____Cleanup_____Erosion ____Other_____

Invasives removed, acres and Dominant invasive species: On 5/20/14 the hours + herbicide cost = $570.

Removal techniques used: spray. Herbicides used: On 8/29/13, 45 gal of 4% rodeo, 2% garlon 3A, 2% competitor was used on ivy. On 5/20/14 a spot spray of 8 gallons of 4% rodeo, 2% element 3A, 1% competitor was used.

Level of infestation: Heavy, dense____ Moderate_____ Light, scattered _____

Maintenance visit: Year 0_____ Year 1_____ Year 2_____ Year 3___x__ Year 4_____ Other_____

Note: Year 0 means year plants were installed, Year 1 means first year after planting.

Maintenance type performed: remove weeds and spray invasives

Planned accomplishments or recommendations for future work on this site: Enrolled in the SSP in 2012. Will take a SSP yard sign. Will participate in the July 19, 2014 NCUWC Annual Willamette River Tour.

CCSD #1 Riparian Restoration and Enhancement Reporting Form

Project name: Lavonne Leighton **Taxlot no.**__22E06DB01900_____

Organization info:

Organization name	NCUWC
Project manager	NCUWC (with Happy Fish Restoration Landscaping)
Phone number	503-550-9282

Project info:

Fiscal year for activities (e.g. 2013-14)	FY 13-14
Stream/Tributary	Kellogg Mt Scott
Watershed Action Plan Priority Rating (H, I, M or NA)	
Length of stream worked on, linear feet	378.42 ft / .072 mi
Left bank, right bank, (looking downstream) or both	
Width-left bank	
Width-right bank	
Approx area worked on, acres	.855 ac / 37,246.98 sq ft

Landowner name and address: Lavonne Leighton, 5303 SE Aldercrest Rd

Landowner contact and agreement obtained: Yes__x_ No___ Attached: Yes___ No_x_

*Attach map and site plan showing creek & extent of work area, number and locations of LWD or other habitat features, and photos of work. Please send map showing **parcel and area worked on**, and shape file if possible. May use http://metromap.metro-region.org/metromap.cfm?Accept=accept .

Focus of **restoration activities: Use (M) for Major; (m) for minor activity for activities below.**

Riparian vegetation planting _x___Instream____Cleanup_____Erosion ____Other_____

Invasives removed, acres and Dominant invasive species: On 6/18/14 hours cost $310.

Removal techniques used: spray. Herbicides used: On 8/7/13, 8 gal of 2% garlon 3A, 2% competitor was used for ivy. On 6/18/14 a cut was done. No herbicide used.

Level of infestation: Heavy, dense____ Moderate_____ Light, scattered _____

Maintenance visit: Year 0_____ Year 1_____ Year 2___x__ Year 3_____ Year 4_____ Other_____

Note: Year 0 means year plants were installed, Year 1 means first year after planting.

Maintenance type performed: remove weeds, spray invasives

Planned accomplishments or recommendations for future work on this site: Enrolled in SSP in 2012. Will take a SSP yard sign.

CCSD #1 Riparian Restoration and Enhancement Reporting Form

Project name: Alice Szanto **Taxlot no.**____22E06DD00501_____

Organization info:

Organization name	NCUWC
Project manager	NCUWC (with Happy Fish Restoration Landscaping)
Phone number	503-550-9282

Project info:

Fiscal year for activities (e.g. 2013-14)	FY 13-14
Stream/Tributary	Kellogg Mt Scott
Watershed Action Plan Priority Rating (H, I, M or NA)	
Length of stream worked on, linear feet	418.27 ft / .079 mi
Left bank, right bank, (looking downstream) or both	
Width-left bank	
Width-right bank	
Approx area worked on, acres	.688 ac / 29970.03 sq ft

Landowner name and address: Alice Szanto, 14220 SE Parmenter Dr

Landowner contact and agreement obtained: Yes_x__ No___ Attached: Yes___ No__x_

*Attach map and site plan showing creek & extent of work area, number and locations of LWD or other habitat features, and photos of work. Please send map showing **parcel and area worked on**, and shape file if possible. May use http://metromap.metro-region.org/metromap.cfm?Accept=accept .

Focus of **restoration activities: Use (M) for Major; (m) for minor activity for activities below.**

Riparian vegetation planting __x__Instream____Cleanup_____Erosion ____Other_____

Invasives removed, acres and Dominant invasive species: Approx hours cost for 6/17/14 = $69.

Removal techniques used: spray. Herbicides used: On 10/17/13, .5 gal of 2% glyphosphate 2% competitor was used for knotweed treatment. On 6/17/14 cut was done. No herbicide.

Level of infestation: Heavy, dense___ Moderate____ Light, scattered _____

Maintenance visit: Year 0____ Year 1____ Year 2____ Year 3 x Year 4____ Other_____

Note: Year 0 means year plants were installed, Year 1 means first year after planting.

Maintenance type performed: remove weeds, spray invasives

Planned accomplishments or recommendations for future work on this site: Enrolled in SSP in 2011.

Lessons learned (how will management activities change based on results to date, what worked well, how to respond to unanticipated conditions, advice for those undertaking similar work, etc.): This site is part of the group of sites that have a beaver in the area. Ms Szanto attended the January 2014 neighborhood living with beavers meeting held at the Morasch home. Ms Szanto was quoted in the Clackamas Review article by Ellen Spitaleri entitled "Make Way for Beavers." She agreed to take photos of a SSP sign in her yard but she did not want to retain the sign in her yard.

CCSD #1 Riparian Restoration and Enhancement Reporting Form

Project name: Linda and Doug Burgard **Taxlot no.** 22E06DD00500

Organization info:

Organization name	NCUWC
Project manager	NCUWC (with Happy Fish Restoration Landscaping)
Phone number	503-550-9282

Project info:

Fiscal year for activities (e.g. 2013-14)	FY 13-14
Stream/Tributary	Kellogg Mt Scott
Watershed Action Plan Priority Rating (H, I, M or NA)	
Length of stream worked on, linear feet	261.23 ft / .049 mi
Left bank, right bank, (looking downstream) or both	
Width-left bank	
Width-right bank	
Approx area worked on, acres	.508 ac / 22137.06 sq ft

Landowner name and address: Linda and Doug Burgard, 14230 SE Parmenter

Landowner contact and agreement obtained: Yes_x__ No___ Attached: Yes___ No__x_

*Attach map and site plan showing creek & extent of work area, number and locations of LWD or other habitat features, and photos of work. Please send map showing **parcel and area worked on**, and shape file if possible. May use http://metromap.metro-region.org/metromap.cfm?Accept=accept .

Focus of **restoration activities: Use (M) for Major; (m) for minor activity for activities below.**

Riparian vegetation planting __x_Instream____Cleanup_____Erosion _____Other_____

Invasives removed, acres and Dominant invasive species: Approx hours for 6/17/14 = $69.

Removal techniques used and Herbicides used: On 6/17/14 a cut was done. No herbicide.

Level of infestation: Heavy, dense___ Moderate____ Light, scattered _____

Maintenance visit: Year 0____ Year 1____ Year 2____ Year 3__x__ Year 4____ Other_____

Note: Year 0 means year plants were installed, Year 1 means first year after planting.

Maintenance type performed:_____

Planned accomplishments or recommendations for future work on this site: Enrolled in SSP in 2011. They received a SSP yard sign in January 2014. We have a photo of the sign. They were part of the January 2014 neighborhood meeting about living with beavers held at the Morasch home. They were quoted in the Ellen Spitaleri article in the Clackamas Review.

CCSD #1 Riparian Restoration and Enhancement Reporting Form

Project name: Bill and Kathy Calder **Taxlot no.** 12E35CB04200

Organization info:

Organization name	NCUWC
Project manager	NCUWC (with Happy Fish Restoration Landscaping)
Phone number	503-550-9282

Project info:

Fiscal year for activities (e.g. 2013-14)	FY 13-14
Stream/Tributary	Kellogg Mt Scott
Watershed Action Plan Priority Rating (H, I, M or NA)	
Length of stream worked on, linear feet	121.55 ft / .023 mi
Left bank, right bank, (looking downstream) or both	
Width-left bank	
Width-right bank	
Approx area worked on, acres	.301 ac / 13152.67 sq ft

Landowner name and address: Bill and Kathy Calder, 12001 SE 122nd Ave

Landowner contact and agreement obtained: Yes_x__ No___ Attached: Yes___ No__x_

*Attach map and site plan showing creek & extent of work area, number and locations of LWD or other habitat features, and photos of work. Please send map showing **parcel and area worked on**, and shape file if possible. May use http://metromap.metro-region.org/metromap.cfm?Accept=accept .

Focus of **restoration activities: Use (M) for Major; (m) for minor activity for activities below.**

Riparian vegetation planting ___x_Instream____Cleanup_____Erosion _____Other

Invasives removed, acres_____ Dominant invasive species_____

Removal techniques used_____ Herbicides used: _____None ____

Level of infestation: Heavy, dense___ Moderate____ Light, scattered _____

Maintenance visit: Year 0____ Year 1____ Year 2____ Year 3_x___ Year 4____ Other_____

Note: Year 0 means year plants were installed, Year 1 means first year after planting.

Maintenance type performed:_____

Planned accomplishments or recommendations for future work on this site: Enrolled in SSP in 2011.

CCSD #1 Riparian Restoration and Enhancement Reporting Form

Project name: Clackamas Community Land Trust **Taxlot no**. 22E06AD00804; 22E06AD00805; 22E06AD00806; 22E06AD00807

Organization info:

Organization name	NCUWC
Project manager	NCUWC (with Happy Fish Restoration Landscaping)
Phone number	503-550-9282

Project info: For stream info, see also the NCUWC WES SSP stream spreadsheet.

Fiscal year for activities (e.g. 2013-14)	FY 13-14
Stream/Tributary	Kellogg Mt Scott
Watershed Action Plan Priority Rating (H, I, M or NA)	
Length of stream worked on, linear feet	136.54 ft + 108.63 ft / .026 mi + .021 mi
Left bank, right bank, (looking downstream) or both	
Width-left bank	
Width-right bank	
Approx area worked on, acres	.0007 ac + .038 ac + .226 ac / 29.1 mi + 1670.3 mi + 9853.86 mi

Landowner name and address: Clackamas Community Land Trust, 5600 SE Kayla Ct (22E06AD00804); 5682 SE Kayla Ct (22E06AD00805); 12978 SE Madeira Dr (22E06AD00806); 12988 SE Madeira Dr (22E06AD00807)

Landowner contact and agreement obtained: Yes_x__ No___ Attached: Yes___ No__x_

*Attach map and site plan showing creek & extent of work area, number and locations of LWD or other habitat features, and photos of work. Please send map showing **parcel and area worked on**, and shape file if possible. May use http://metromap.metro-region.org/metromap.cfm?Accept=accept .

Focus of **restoration activities: Use (M) for Major; (m) for minor activity for activities below.**

Riparian vegetation planting __x_Instream____Cleanup____Erosion ____Other_____

Invasives removed, acres and Dominant invasive species: hours + cost of herbicide = $1205.

Removal techniques used and Herbicides used: site monitor on 4/10/14, daylight cut on 4/24/14, spot spray on 5/16/14. Herbicide is 2% rodeo, 2% element 3A, 1% competitor. 33.5 gallons.

Level of infestation: Heavy, dense___ Moderate____ Light, scattered _____

Maintenance visit: Year 0____ Year 1__x__ Year 2____ Year 3____ Year 4____ Other_____

Note: Year 0 means year plants were installed, Year 1 means first year after planting.

Maintenance type performed:_____

Planned accomplishments or recommendations for future work on this site: Enrolled in SSP in 2013. Previously these properties (considered one site) were paid for through a grant. This site is considered a new site for WES SSP in FY 13-14. They do not have a SSP yard sign. We do not have photos of the site.

CCSD #1 Riparian Restoration and Enhancement Reporting Form

Project name: Michael Clifford **Taxlot no.**__22E05CB00400_____

Organization info:

Organization name	NCUWC
Project manager	NCUWC (with Happy Fish Restoration Landscaping)
Phone number	503-550-9282

Project info:

Fiscal year for activities (e.g. 2013-14)	FY 13-14
Stream/Tributary	Kellogg Mt Scott
Watershed Action Plan Priority Rating (H, I, M or NA)	
Length of stream worked on, linear feet	43.04 ft / .008 mi
Left bank, right bank, (looking downstream) or both	
Width-left bank	
Width-right bank	
Approx area worked on, acres	.11 ac / 4994.3 sq ft

Landowner name and address: Michael Clifford, 13480 SE Ruscliff Rd,

Landowner contact and agreement obtained: Yes_x__ No___ Attached: Yes___ No__x_

*Attach map and site plan showing creek & extent of work area, number and locations of LWD or other habitat features, and photos of work. Please send map showing **parcel and area worked on**, and shape file if possible. May use http://metromap.metro-region.org/metromap.cfm?Accept=accept .

Focus of **restoration activities: Use (M) for Major; (m) for minor activity for activities below.**

Riparian vegetation planting __x_Instream____Cleanup_____Erosion _____Other_____

Invasives removed, acres and Dominant invasive species: Cost of hours on 6/18/14 = $125.

Removal techniques used and Herbicides used: ON 6/18/14 a cut was done. No herbicide.

Level of infestation: Heavy, dense____ Moderate_____ Light, scattered _____

Maintenance visit: Year 0____ Year 1____ Year 2___x__ Year 3____ Year 4____ Other_____

Note: Year 0 means year plants were installed, Year 1 means first year after planting.

Maintenance type performed:_____

Planned accomplishments or recommendations for future work on this site: Enrolled in SSP in 2012. He did not respond to the inquiry as to whether he would like a SSP yard sign. We don't have photos of the site.

CCSD #1 Riparian Restoration and Enhancement Reporting Form

Project name: Nick Coleman_____**Taxlot no.**__22E08BB03400_

Organization info:

Organization name	NCUWC
Project manager	NCUWC (with Happy Fish Restoration Landscaping)
Phone number	503-550-9282

Project info:

Fiscal year for activities (e.g. 2013-14)	FY 13-14
Stream/Tributary	Kellogg Mt Scott
Watershed Action Plan Priority Rating (H, I, M or NA)	
Length of stream worked on, linear feet	248.24 ft / .047 mi
Left bank, right bank, (looking downstream) or both	
Width-left bank	
Width-right bank	
Approx area worked on, acres	.22 ac / 9743.48 sq ft

Landowner name and address: Nick Coleman, 6207 SE Theissen Rd,

Landowner contact and agreement obtained: Yes_x__ No___ Attached: Yes___ No__x_

*Attach map and site plan showing creek & extent of work area, number and locations of LWD or other habitat features, and photos of work. Please send map showing **parcel and area worked on**, and shape file if possible. May use http://metromap.metro-region.org/metromap.cfm?Accept=accept .

Focus of **restoration activities: Use (M) for Major; (m) for minor activity for activities below.**

Riparian vegetation planting __x_Instream____Cleanup_____Erosion _____Other_____

Invasives removed, acres and Dominant invasive species: hours + herbicide cost = $105.

Removal techniques used and Herbicides used: On 4/23/14 daylight cut was done.

Level of infestation: Heavy, dense____ Moderate_____ Light, scattered _____

Maintenance visit: Year 0_____ Year 1_____ Year 2__x___ Year 3_____ Year 4_____ Other_____

Note: Year 0 means year plants were installed, Year 1 means first year after planting.

Planned accomplishments or recommendations for future work on this site: Enrolled in SSP in 2012. He did not respond to the inquiry as to whether he would like a SSP yard sign.

CCSD #1 Riparian Restoration and Enhancement Reporting Form

Project name: __Rosemary Crites_____**Taxlot no.**__22E06CA01800_____

Organization info:

Organization name	NCUWC
Project manager	NCUWC (with Happy Fish Restoration Landscaping)
Phone number	503-550-9282

Project info:

Fiscal year for activities (e.g. 2013-14)	FY 13-14
Stream/Tributary	Kellogg Mt Scott
Watershed Action Plan Priority Rating (H, I, M or NA)	
Length of stream worked on, linear feet	172.93 ft / .033 mi
Left bank, right bank, (looking downstream) or both	
Width-left bank	
Width-right bank	
Approx area worked on, acres	.300 ac / 13054.26 sq ft

Landowner name and address: Rosemary Crites, 4917 SE Aldercrest Rd,

Landowner contact and agreement obtained: Yes_x__ No___ Attached: Yes___ No__x_

*Attach map and site plan showing creek & extent of work area, number and locations of LWD or other habitat features, and photos of work. Please send map showing **parcel and area worked on**, and shape file if possible. May use http://metromap.metro-region.org/metromap.cfm?Accept=accept .

Focus of **restoration activities: Use (M) for Major; (m) for minor activity for activities below.**

Riparian vegetation planting __x_Instream____Cleanup_____Erosion _____Other_____

Invasives removed, acres_____ Dominant invasive species_____

Removal techniques used_____ Herbicides used: _____None ____

Level of infestation: Heavy, dense___ Moderate____ Light, scattered _____

Maintenance visit: Year 0____ Year 1____ Year 2____ Year 3_x___ Year 4____ Other_____

Note: Year 0 means year plants were installed, Year 1 means first year after planting.

Maintenance type performed:_____

CCSD #1 Riparian Restoration and Enhancement Reporting Form

Project name: __Steve and Tracy Dearborn_____**Taxlot no.**____12E35BD00100_____

Organization info:

Organization name	NCUWC
Project manager	NCUWC (with Happy Fish Restoration Landscaping)

Phone number	503-550-9282

Project info:

Fiscal year for activities (e.g. 2013-14)	FY 13-14
Stream/Tributary	Kellogg Mt Scott
Watershed Action Plan Priority Rating (H, I, M or NA)	
Length of stream worked on, linear feet	139.16 ft / .026 mi
Left bank, right bank, (looking downstream) or both	
Width-left bank	
Width-right bank	
Approx area worked on, acres	.32 ac / 14096.02 sq ft

Landowner name and address: Steve and Tracy Dearborn, 13100 SE Scott Creek Lane,

Landowner contact and agreement obtained: Yes_x__ No___ Attached: Yes___ No__x_

*Attach map and site plan showing creek & extent of work area, number and locations of LWD or other habitat features, and photos of work. Please send map showing **parcel and area worked on**, and shape file if possible. May use http://metromap.metro-region.org/metromap.cfm?Accept=accept .

Focus of **restoration activities: Use (M) for Major; (m) for minor activity for activities below.**

Riparian vegetation planting __x_Instream____Cleanup_____Erosion _____Other_____

Invasives removed, acres_____ Dominant invasive species_____

Removal techniques used and Herbicides used: Site monitor and sign drop off on 6/23/14.

Level of infestation: Heavy, dense____ Moderate_____ Light, scattered _____

Maintenance visit: Year 0_____ Year 1_____ Year 2_____ Year 3__x___ Year 4_____ Other_____

Note: Year 0 means year plants were installed, Year 1 means first year after planting.

Maintenance type performed:_____

Planned accomplishments or recommendations for future work on this site: Enrolled in SSP in 2011. Did not respond to inquiry as to whether they wanted an SSP yard sign.

CCSD #1 Riparian Restoration and Enhancement Reporting Form

Project name: ____Edith Doering_____**Taxlot no.**_21E01AA01641_ _____

Organization info:

Organization name	NCUWC
Project manager	NCUWC (with Happy Fish Restoration Landscaping)
Phone number	503-550-9282

Project info:

Fiscal year for activities (e.g. 2013-14)	FY 13-14
Stream/Tributary	Kellogg Mt Scott

Watershed Action Plan Priority Rating (H, I, M or NA)	
Length of stream worked on, linear feet	73.297 ft / .0138 mi
Left bank, right bank, (looking downstream) or both	
Width-left bank	
Width-right bank	
Approx area worked on, acres	.121 ac / 5283.30 sq ft

Landowner name and address: Edith Doering, 4060 SE Licyntra Lane,

Landowner contact and agreement obtained: Yes_x__ No___ Attached: Yes___ No__x_

*Attach map and site plan showing creek & extent of work area, number and locations of LWD or other habitat features, and photos of work. Please send map showing **parcel and area worked on**, and shape file if possible. May use http://metromap.metro-region.org/metromap.cfm?Accept=accept .

Focus of **restoration activities: Use (M) for Major; (m) for minor activity for activities below.**

Riparian vegetation planting __x_Instream____Cleanup_____Erosion _____Other_____

Invasives removed, acres and Dominant invasive species: Hours cost $185 for 6/18/14.

Removal techniques used and Herbicides used: On 6/18/14 a cut was done. No herbicide.

Level of infestation: Heavy, dense___ Moderate_____ Light, scattered _____

Maintenance visit: Year 0_____ Year 1_____ Year 2___x__ Year 3_____ Year 4_____ Other_____

Note: Year 0 means year plants were installed, Year 1 means first year after planting.

Planned accomplishments or recommendations for future work on this site: Enrolled in SSP in 2012. Said she might be moving to a retirement home so did not want to take a SSP yard sign.

CSD #1 Riparian Restoration and Enhancement Reporting Form

Project name: ____Elaine Dorset_____**Taxlot no.**_22E06DD01900_____

Organization info:

Organization name	NCUWC
Project manager	NCUWC (with Happy Fish Restoration Landscaping)
Phone number	503-550-9282

Project info:

Fiscal year for activities (e.g. 2013-14)	FY 13-14
Stream/Tributary	Kellogg Mt Scott
Watershed Action Plan Priority Rating (H, I, M or NA)	
Length of stream worked on, linear feet	161.5 ft / .031 mi
Left bank, right bank, (looking downstream) or both	
Width-left bank	
Width-right bank	
Approx area worked on, acres	.106 ac / 4640.96 sq ft

Landowner name and address: Elaine Dorset, 5915 SE Willow Lane,

Landowner contact and agreement obtained: Yes_x__ No___ Attached: Yes___ No__x_

*Attach map and site plan showing creek & extent of work area, number and locations of LWD or other habitat features, and photos of work. Please send map showing **parcel and area worked on**, and shape file if possible. May use http://metromap.metro-region.org/metromap.cfm?Accept=accept .

Focus of **restoration activities: Use (M) for Major; (m) for minor activity for activities below.**

Riparian vegetation planting __x_Instream____Cleanup_____Erosion _____Other_____

Invasives removed, acres and Dominant invasive species: Hours + herbicide cost for 6/17/14 = $310.

Removal techniques used and Herbicides used: On 6/17/14 cut was done. No herbicide.

Level of infestation: Heavy, dense____ Moderate_____ Light, scattered _____

Maintenance visit: Year 0_____ Year 1_____ Year 2_x____ Year 3_____ Year 4_____ Other_____

Note: Year 0 means year plants were installed, Year 1 means first year after planting.

Maintenance type performed:_____

Planned accomplishments or recommendations for future work on this site: Enrolled in SSP in 2012. She declined the offer of a SSP yard sign.

CCSD #1 Riparian Restoration and Enhancement Reporting Form

Project name: __Tony Dyche_____**Taxlot no.**__22E03DA00136_____

Organization info:

Organization name	NCUWC
Project manager	NCUWC (with Happy Fish Restoration Landscaping)
Phone number	503-550-9282

Project info:

Fiscal year for activities (e.g. 2013-14)	FY 13-14
Stream/Tributary	Kellogg Mt Scott
Watershed Action Plan Priority Rating (H, I, M or NA)	
Length of stream worked on, linear feet	93.89 ft / .018 mi
Left bank, right bank, (looking downstream) or both	
Width-left bank	
Width-right bank	
Approx area worked on, acres	.081 ac / 3549.02 sq ft

Landowner name and address: Tony Dyche, 13545 SE 119th Dr

Landowner contact and agreement obtained: Yes_x__ No___ Attached: Yes___ No__x_

*Attach map and site plan showing creek & extent of work area, number and locations of LWD or other habitat features, and photos of work. Please send map showing **parcel and area worked on**, and shape file if possible. May use http://metromap.metro-region.org/metromap.cfm?Accept=accept .

Focus of **restoration activities: Use (M) for Major; (m) for minor activity for activities below.**

Riparian vegetation planting __x_Instream___Cleanup____Erosion ____Other_____

Invasives removed, acres_____ Dominant invasive species_____

Removal techniques used_____ Herbicides used: _____None ___

Level of infestation: Heavy, dense___ Moderate____ Light, scattered _____

Maintenance visit: Year 0__x___ Year 1____ Year 2____ Year 3____ Year 4____ Other_____

Note: Year 0 means year plants were installed, Year 1 means first year after planting.

Maintenance type performed:_4 hours of activity in April – June 2014 on various dates to plan site work and perform it.

Planned accomplishments or recommendations for future work on this site: Enrolled in SSP in 2013 (signed the Landowner Agreement Form); considered a NEW SITE for FY 13-14. He did not respond to the inquiry as to whether he would like a SSP yard sign.

CCSD #1 Riparian Restoration and Enhancement Reporting Form

Project name: Al & Karen Fitzpatrick **Taxlot no.** 22E08BB02111

Organization info:

Organization name	NCUWC
Project manager	NCUWC (with Happy Fish Restoration Landscaping)
Phone number	503-550-9282

Project info:

Fiscal year for activities (e.g. 2013-14)	FY 13-14
Stream/Tributary	Kellogg Mt Scott
Watershed Action Plan Priority Rating (H, I, M or NA)	
Length of stream worked on, linear feet	82.15 ft / .016 mi
Left bank, right bank, (looking downstream) or both	
Width-left bank	
Width-right bank	
Approx area worked on, acres	.06 ac / 2632.58 sq ft

Landowner name and address: Al and Karen Fitzpatrick, 14499 SE Creekside Dr,

Landowner contact and agreement obtained: Yes_x__ No___ Attached: Yes___ No__x_

*Attach map and site plan showing creek & extent of work area, number and locations of LWD or other habitat features, and photos of work. Please send map showing **parcel and area worked on**, and shape file if possible. May use http://metromap.metro-region.org/metromap.cfm?Accept=accept .

Focus of **restoration activities: Use (M) for Major; (m) for minor activity for activities below.**

Riparian vegetation planting __x_Instream____Cleanup_____Erosion _____Other_____

Invasives removed, acres and Dominant invasive species: Hours cost $125 on 6/17/14.

Removal techniques used and Herbicides used: On 6/17/14 cut was done. No herbicide.

Level of infestation: Heavy, dense____ Moderate_____ Light, scattered _____

Maintenance visit: Year 0_____ Year 1_____ Year 2_____ Year 3___x__ Year 4_____ Other_____

Note: Year 0 means year plants were installed, Year 1 means first year after planting.

Maintenance type performed:_____

Planned accomplishments or recommendations for future work on this site: Enrolled in SSP in 2011. They agreed to have a SSP yard sign.

CCSD #1 Riparian Restoration and Enhancement Reporting Form

Project name: Kendra Garinger-Archie **Taxlot no.** 22E08BC03600

Organization info:

Organization name	NCUWC
Project manager	NCUWC (with Happy Fish Restoration Landscaping)
Phone number	503-550-9282

Project info:

Fiscal year for activities (e.g. 2013-14)	FY 13-14
Stream/Tributary	Kellogg Mt Scott
Watershed Action Plan Priority Rating (H, I, M or NA)	
Length of stream worked on, linear feet	108.48 ft / .021 mi
Left bank, right bank, (looking downstream) or both	
Width-left bank	
Width-right bank	
Approx area worked on, acres	.124 ac / 5395.56 sq ft

Landowner name and address: Kendra Garinger-Archie, 6408 SE Aldercrest Ct

Landowner contact and agreement obtained: Yes_x__ No___ Attached: Yes___ No__x_

*Attach map and site plan showing creek & extent of work area, number and locations of LWD or other habitat features, and photos of work. Please send map showing **parcel and area worked on**, and shape file if possible. May use http://metromap.metro-region.org/metromap.cfm?Accept=accept .

Focus of **restoration activities: Use (M) for Major; (m) for minor activity for activities below.**

Riparian vegetation planting __x_Instream____Cleanup_____Erosion _____Other_____

Invasives removed, acres_____ Dominant invasive species_____

Removal techniques used_____ Herbicides used: _____None ___

Level of infestation: Heavy, dense___ Moderate____ Light, scattered _____

Maintenance visit: Year 0____ Year 1____ Year 2____ Year 3_x__ Year 4____ Other_____

Note: Year 0 means year plants were installed, Year 1 means first year after planting.

Maintenance type performed:_____

Planned accomplishments or recommendations for future work on this site: Enrolled in SSP in 2011. Received SSP yard sign in June 2014. We have a photo of the yard sign.

CCSD #1 Riparian Restoration and Enhancement Reporting Form

Project name: __Casey & Geoff Gaydos_____**Taxlot no.**__22E06AB01700_____

Organization info:

Organization name	NCUWC
Project manager	NCUWC (with Happy Fish Restoration Landscaping)
Phone number	503-550-9282

Project info:

Fiscal year for activities (e.g. 2013-14)	FY 13-14
Stream/Tributary	Kellogg Mt Scott
Watershed Action Plan Priority Rating (H, I, M or NA)	
Length of stream worked on, linear feet	90.41 ft / .017 mi
Left bank, right bank, (looking downstream) or both	
Width-left bank	
Width-right bank	
Approx area worked on, acres	.106 ac / 4615.18 sq ft

Landowner name and address: Casey and Geoff Gaydos, 5200 SE Casa Del Rey Dr,

Landowner contact and agreement obtained: Yes_x__ No___ Attached: Yes___ No__x_

*Attach map and site plan showing creek & extent of work area, number and locations of LWD or other habitat features, and photos of work. Please send map showing **parcel and area worked on**, and shape file if possible. May use http://metromap.metro-region.org/metromap.cfm?Accept=accept .

Focus of **restoration activities: Use (M) for Major; (m) for minor activity for activities below.**

Riparian vegetation planting __x_Instream____Cleanup_____Erosion _____Other_____

Invasives removed, acres and Dominant invasive species: hours + herbicide cost = $485 on 6/5/14. on 6/18/14 the cost of work was $155.

Removal techniques used and Herbicides used: On 6/5/14 a spot spray was done using 5 gallons of 4% rodeo, 2% element 3A, 1% competitor. On 6/18/14 a cut was done. No herbicide.

Level of infestation: Heavy, dense___ Moderate____ Light, scattered _____

Maintenance visit: Year 0____ Year 1____ Year 2__x__ Year 3____ Year 4____ Other_____

Note: Year 0 means year plants were installed, Year 1 means first year after planting.

Maintenance type performed:_____

Planned accomplishments or recommendations for future work on this site: Enrolled in SSP in 2012. Did not respond to contact about getting a SSP yard sign.

CCSD #1 Riparian Restoration and Enhancement Reporting Form

Project name: Brian and Sarah Gresham **Taxlot no.** 22E03AD00223

Organization info:

Organization name	NCUWC
Project manager	NCUWC (with Happy Fish Restoration Landscaping)
Phone number	503-550-9282

Project info:

Fiscal year for activities (e.g. 2013-14)	FY 13-14
Stream/Tributary	Kellogg Mt Scott
Watershed Action Plan Priority Rating (H, I, M or NA)	
Length of stream worked on, linear feet	109.13 ft / .026 mi
Left bank, right bank, (looking downstream) or both	
Width-left bank	
Width-right bank	
Approx area worked on, acres	.108 ac / 4716.57 sq ft

Landowner name and address: Brian and Sarah Gresham, 13284 SE 119th Ct,

Landowner contact and agreement obtained: Yes_x__ No___ Attached: Yes___ No__x_

*Attach map and site plan showing creek & extent of work area, number and locations of LWD or other habitat features, and photos of work. Please send map showing **parcel and area worked on**, and shape file if possible. May use http://metromap.metro-region.org/metromap.cfm?Accept=accept .

Focus of **restoration activities: Use (M) for Major; (m) for minor activity for activities below.**

Riparian vegetation planting __x_Instream____Cleanup_____Erosion _____Other_____

Invasives removed, acres_____ Dominant invasive species_____

Removal techniques used_____ Herbicides used: _____None ____

Level of infestation: Heavy, dense____ Moderate_____ Light, scattered _____

Maintenance visit: Year 0____ Year 1____ Year 2_x____ Year 3____ Year 4____ Other_____

Note: Year 0 means year plants were installed, Year 1 means first year after planting.

Maintenance type performed:_____

Planned accomplishments or recommendations for future work on this site: Enrolled in SSP in 2012. Tricia talked to Sarah on 5/19/14 and Sarah said they sold the house and don't know the new owners. Chris and Tricia will reach out to the new owners.

CCSD #1 Riparian Restoration and Enhancement Reporting Form

Project name: Robert Henderson **Taxlot no.** 22E06DA01501

Organization info:

Organization name	NCUWC
Project manager	NCUWC (with Happy Fish Restoration Landscaping)
Phone number	503-550-9282

Project info:

Fiscal year for activities (e.g. 2013-14)	FY 13-14
Stream/Tributary	Kellogg Mt Scott
Watershed Action Plan Priority Rating (H, I, M or NA)	
Length of stream worked on, linear feet	200.37 ft / .038 mi
Left bank, right bank, (looking downstream) or both	
Width-left bank	
Width-right bank	
Approx area worked on, acres	.126 ac/ 5472.61 sq ft

Landowner name and address: Robert Henderson, 13986 SE Rusk Rd

Landowner contact and agreement obtained: Yes_x__ No___ Attached: Yes___ No__x_

*Attach map and site plan showing creek & extent of work area, number and locations of LWD or other habitat features, and photos of work. Please send map showing **parcel and area worked on**, and shape file if possible. May use http://metromap.metro-region.org/metromap.cfm?Accept=accept .

Focus of **restoration activities: Use (M) for Major; (m) for minor activity for activities below.**

Riparian vegetation planting __x_Instream____Cleanup_____Erosion _____Other_____

Invasives removed, acres and Dominant invasive species: hours + herbicide cost = $185.

Removal techniques used and Herbicides used: On 6/17/14 cut was done. No herbicide.

Level of infestation: Heavy, dense___ Moderate____ Light, scattered _____

Maintenance visit: Year 0____ Year 1____ Year 2__x___ Year 3____ Year 4____ Other_____

Note: Year 0 means year plants were installed, Year 1 means first year after planting.

Maintenance type performed:_____

Planned accomplishments or recommendations for future work on this site: Enrolled in SSP in 2012. Did not respond to inquiry as to whether he wanted a SSP yard sign.

CCSD #1 Riparian Restoration and Enhancement Reporting Form

Project name: __Sharon House_____**Taxlot no.**___22E06BC03600_____

Organization info:

Organization name	NCUWC
Project manager	NCUWC (with Happy Fish Restoration Landscaping)
Phone number	503-550-9282

Project info:

Fiscal year for activities (e.g. 2013-14)	FY 13-14
Stream/Tributary	Kellogg Mt Scott
Watershed Action Plan Priority Rating (H, I, M or NA)	
Length of stream worked on, linear feet	336.58 ft / .064 mi
Left bank, right bank, (looking downstream) or both	
Width-left bank	
Width-right bank	
Approx area worked on, acres	.395 ac / 17211.55 sq ft

Landowner name and address: Sharon House, 4207 SE Aldercrest

Landowner contact and agreement obtained: Yes_x__ No___ Attached: Yes___ No__x_

*Attach map and site plan showing creek & extent of work area, number and locations of LWD or other habitat features, and photos of work. Please send map showing **parcel and area worked on**, and shape file if possible. May use http://metromap.metro-region.org/metromap.cfm?Accept=accept .

Focus of **restoration activities: Use (M) for Major; (m) for minor activity for activities below.**

Riparian vegetation planting __x_Instream____Cleanup_____Erosion _____Other_____

Invasives removed, acres_____ Dominant invasive species_____

Removal techniques used_____ Herbicides used: _____None ____

Level of infestation: Heavy, dense___ Moderate____ Light, scattered _____

Maintenance visit: Year 0____ Year 1____ Year 2__x___ Year 3____ Year 4____ Other_____

Note: Year 0 means year plants were installed, Year 1 means first year after planting.

Maintenance type performed:_____

Planned accomplishments or recommendations for future work on this site: Enrolled in SSP in 2012. Received a SSP yard sign. Will participate in the 2014 NCUWC Willamette River Tour. Very pleased with the work Chris has done so far.

CCSD #1 Riparian Restoration and Enhancement Reporting Form

Project name: __Kathy and Bill Jones_____**Taxlot no.**___22E08BB02506 _____

Organization info:

Organization name	NCUWC
Project manager	NCUWC (with Happy Fish Restoration Landscaping)
Phone number	503-550-9282

Project info:

Fiscal year for activities (e.g. 2013-14)	FY 13-14
Stream/Tributary	Kellogg Mt Scott
Watershed Action Plan Priority Rating (H, I, M or NA)	
Length of stream worked on, linear feet	139.86 ft / .026 mi
Left bank, right bank, (looking downstream) or both	
Width-left bank	
Width-right bank	
Approx area worked on, acres	.147 ac/ 6409.29 sq ft

Landowner name and address: Kathy and Bill Jones, 6266 SE Acorn Ct

Landowner contact and agreement obtained: Yes_x__ No___ Attached: Yes___ No__x_

*Attach map and site plan showing creek & extent of work area, number and locations of LWD or other habitat features, and photos of work. Please send map showing **parcel and area worked on**, and shape file if possible. May use http://metromap.metro-region.org/metromap.cfm?Accept=accept .

Focus of **restoration activities: Use (M) for Major; (m) for minor activity for activities below.**

Riparian vegetation planting __x_Instream____Cleanup_____Erosion _____Other_____

Invasives removed, acres_____ Dominant invasive species_____

Removal techniques used_____ Herbicides used: _____None ____

Level of infestation: Heavy, dense____ Moderate_____ Light, scattered _____

Maintenance visit: Year 0_____ Year 1_____ Year 2_____ Year 3__x___ Year 4_____ Other_____

Note: Year 0 means year plants were installed, Year 1 means first year after planting.

Maintenance type performed:_____

Planned accomplishments or recommendations for future work on this site: Enrolled in SSP in 2011. Did not respond to inquiry as to whether they would like a SSP yard sign.

CCSD #1 Riparian Restoration and Enhancement Reporting Form

Project name: __Richard (Rick) Jones_____**Taxlot no.**__21E01AB00800_____

Organization info:

Organization name	NCUWC
Project manager	NCUWC (with Happy Fish Restoration Landscaping)
Phone number	503-550-9282

Project info:

Fiscal year for activities (e.g. 2013-14)	FY 13-14
Stream/Tributary	Kellogg Mt Scott
Watershed Action Plan Priority Rating (H, I, M or NA)	
Length of stream worked on, linear feet	204.88 ft / .039 mi
Left bank, right bank, (looking downstream) or both	
Width-left bank	
Width-right bank	
Approx area worked on, acres	.330 ac / 14396.4 sq ft

Landowner name and address: Richard Jones, 12414 SE Oatfield Rd,

Landowner contact and agreement obtained: Yes_x__ No___ Attached: Yes___ No__x_

*Attach map and site plan showing creek & extent of work area, number and locations of LWD or other habitat features, and photos of work. Please send map showing **parcel and area worked on**, and shape file if possible. May use http://metromap.metro-region.org/metromap.cfm?Accept=accept .

Focus of **restoration activities: Use (M) for Major; (m) for minor activity for activities below.**

Riparian vegetation planting __x_Instream____Cleanup_____Erosion _____Other_____

Invasives removed, acres and Dominant invasive species:_ivy/total cost of hours + herbicide = $645

Removal techniques used and Herbicides used: Ivy treatment done on 6/19/14. Contractor lists 21 gallons of herbicide used: 4% glyphosphate, 2% garlon 3A, 2% competitor.

Level of infestation: Heavy, dense____ Moderate_____ Light, scattered _____

Maintenance visit: Year 0_____ Year 1___x__ Year 2_____ Year 3_____ Year 4_____ Other_____

Note: Year 0 means year plants were installed, Year 1 means first year after planting.

Maintenance type performed:_____

Planned accomplishments or recommendations for future work on this site: Enrolled in SSP in 2013. Considered one of the new sites for WES in FY 13-14. Wants to have a SSP yard sign.

CCSD #1 Riparian Restoration and Enhancement Reporting Form

Project name: __John and Betty Kellogg_____**Taxlot no.**_22E05CC00600_____

Organization info:

Organization name	NCUWC
Project manager	NCUWC (with Happy Fish Restoration Landscaping)
Phone number	503-550-9282

Project info:

Fiscal year for activities (e.g. 2013-14)	FY 13-14
Stream/Tributary	Kellogg Mt Scott
Watershed Action Plan Priority Rating (H, I, M or NA)	

Length of stream worked on, linear feet	45 ft
Left bank, right bank, (looking downstream) or both	
Width-left bank	
Width-right bank	
Approx area worked on, acres	.027 ac / 1183.05 sq ft

Landowner name and address: John and Betty Kellogg, 14329 SE Oakwood Ave,

Landowner contact and agreement obtained: Yes_x__ No___ Attached: Yes___ No__x_

*Attach map and site plan showing creek & extent of work area, number and locations of LWD or other habitat features, and photos of work. Please send map showing **parcel and area worked on**, and shape file if possible. May use http://metromap.metro-region.org/metromap.cfm?Accept=accept .

Focus of **restoration activities: Use (M) for Major; (m) for minor activity for activities below.**

Riparian vegetation planting __x_Instream____Cleanup_____Erosion _____Other_____

Invasives removed, acres and Dominant invasive species: ivy, hours + herbicide cost = $725

Removal techniques used and Herbicides used: cut/stump treatment, used 15 ounces of rodeo on 6/25/14.

Level of infestation: Heavy, dense____ Moderate_____ Light, scattered _____

Maintenance visit: Year 0___x__ Year 1_____ Year 2_____ Year 3_____ Year 4_____ Other_____

Note: Year 0 means year plants were installed, Year 1 means first year after planting.

Maintenance type performed:_____

Planned accomplishments or recommendations for future work on this site: Enrolled in SSP in 2014. Considered one of the new sites for FY 13-14 with WES. Did not respond to inquiry as to whether they wanted a SSP yard sign. Was part of the neighborhood living with beavers meeting in January 2014.

CCSD #1 Riparian Restoration and Enhancement Reporting Form

Project name: Richard Kidd_____**Taxlot no.**__22E06AB01800_____

Organization info:

Organization name	NCUWC
Project manager	NCUWC (with Happy Fish Restoration Landscaping)
Phone number	503-550-9282

Project info:

Fiscal year for activities (e.g. 2013-14)	FY 13-14
Stream/Tributary	Kellogg Mt Scott
Watershed Action Plan Priority Rating (H, I, M or NA)	
Length of stream worked on, linear feet	66.05 ft / .013 mi
Left bank, right bank, (looking downstream) or both	

Width-left bank	
Width-right bank	
Approx area worked on, acres	.058 ac /2540.11 sq ft

Landowner name and address: Richard Kidd, 5187 SE Casa Del Rey Dr

Landowner contact and agreement obtained: Yes_x__ No___ Attached: Yes___ No__x_

*Attach map and site plan showing creek & extent of work area, number and locations of LWD or other habitat features, and photos of work. Please send map showing **parcel and area worked on**, and shape file if possible. May use http://metromap.metro-region.org/metromap.cfm?Accept=accept .

Focus of **restoration activities: Use (M) for Major; (m) for minor activity for activities below.**

Riparian vegetation planting __x_Instream____Cleanup_____Erosion _____Other_____

Invasives removed, acres and Dominant invasive species: Cost of hours on 6/18/14 = $155.

Removal techniques used and Herbicides used: On 6/18/14 a cut was done. No herbicide.

Level of infestation: Heavy, dense____ Moderate_____ Light, scattered _____

Maintenance visit: Year 0_____ Year 1_____ Year 2_____ Year 3___x__ Year 4_____ Other_____

Note: Year 0 means year plants were installed, Year 1 means first year after planting.

Maintenance type performed:_____

Planned accomplishments or recommendations for future work on this site: Enrolled in SSP in 2011. Did not respond to inquiry as to whether he wanted a SSP yard sign.

CCSD #1 Riparian Restoration and Enhancement Reporting Form

Project name: Kenneth & Teresa Kubo **Taxlot no**. 22E08CA02704

Organization info:

Organization name	NCUWC
Project manager	NCUWC (with Happy Fish Restoration Landscaping)
Phone number	503-550-9282

Project info:

Fiscal year for activities (e.g. 2013-14)	FY 13-14
Stream/Tributary	Kellogg Mt Scott
Watershed Action Plan Priority Rating (H, I, M or NA)	
Length of stream worked on, linear feet	117.28 ft / .022 mi
Left bank, right bank, (looking downstream) or both	
Width-left bank	
Width-right bank	
Approx area worked on, acres	.207 ac / 9024.09 sq ft

Landowner name and address: Kenneth and Teresa Kubo, 6811 SE Bixel Way,

Landowner contact and agreement obtained: Yes_x__ No___ Attached: Yes___ No__x_

*Attach map and site plan showing creek & extent of work area, number and locations of LWD or other habitat features, and photos of work. Please send map showing **parcel and area worked on**, and shape file if possible. May use http://metromap.metro-region.org/metromap.cfm?Accept=accept .

Focus of **restoration activities: Use (M) for Major; (m) for minor activity for activities below.**

Riparian vegetation planting __x_Instream___Cleanup____Erosion ____Other_____

Invasives removed, acres and Dominant invasive species: 6/18/14 hours = $250.

Removal techniques used and Herbicides used: A cut was done 6/18/14. No herbicide.

Level of infestation: Heavy, dense___ Moderate____ Light, scattered _____

Maintenance visit: Year 0____ Year 1____ Year 2__x__ Year 3____ Year 4____ Other_____

Note: Year 0 means year plants were installed, Year 1 means first year after planting.

Maintenance type performed:_____

Planned accomplishments or recommendations for future work on this site: Enrolled in SSP in 2012. Received SSP yard sign in June 2014. We have a photo of it. Was going to participate in the 2014 Willamette River Tour but cancelled on 7/7/14.

CCSD #1 Riparian Restoration and Enhancement Reporting Form

Project name: Elizabeth & Todd Lawson-Weber **Taxlot no**. 22E06CA01000

Organization info:

Organization name	NCUWC
Project manager	NCUWC (with Happy Fish Restoration Landscaping)
Phone number	503-550-9282

Project info:

Fiscal year for activities (e.g. 2013-14)	FY 13-14
Stream/Tributary	Kellogg Mt Scott
Watershed Action Plan Priority Rating (H, I, M or NA)	
Length of stream worked on, linear feet	115.80 ft/ .022 mi
Left bank, right bank, (looking downstream) or both	
Width-left bank	
Width-right bank	
Approx area worked on, acres	.264 ac / 11511.63 sq ft

Landowner name and address: Elizabeth and Todd Lawson-Weber, 13380 SE Kuehn Rd

Landowner contact and agreement obtained: Yes_x__ No___ Attached: Yes___ No__x_

*Attach map and site plan showing creek & extent of work area, number and locations of LWD or other habitat features, and photos of work. Please send map showing **parcel and area worked on**, and shape file if possible. May use http://metromap.metro-region.org/metromap.cfm?Accept=accept .

Focus of **restoration activities: Use (M) for Major; (m) for minor activity for activities below.**

Riparian vegetation planting __x_Instream___Cleanup____Erosion ____Other_____

Invasives removed, acres_____ Dominant invasive species_____

Removal techniques used_____ Herbicides used: _____None ___

Level of infestation: Heavy, dense___ Moderate____ Light, scattered _____

Maintenance visit: Year 0____ Year 1____ Year 2____ Year 3_x___ Year 4____ Other_____

Note: Year 0 means year plants were installed, Year 1 means first year after planting.

Maintenance type performed:_____

Planned accomplishments or recommendations for future work on this site: Enrolled in SSP in 2011. Wants to have a SSP yard sign. This site is part of the OWEB grant that includes 2 other properties in the WES SSP. Very pleased with the work done so far.

CCSD #1 Riparian Restoration and Enhancement Reporting Form

Project name: ___Grace Lim_____**Taxlot no.**__12E34DD02200_____

Organization info:

Organization name	NCUWC
Project manager	NCUWC (with Happy Fish Restoration Landscaping)
Phone number	503-550-9282

Project info:

Fiscal year for activities (e.g. 2013-14)	FY 13-14
Stream/Tributary	Kellogg Mt Scott
Watershed Action Plan Priority Rating (H, I, M or NA)	
Length of stream worked on, linear feet	352.70 ft/ .067 mi
Left bank, right bank, (looking downstream) or both	
Width-left bank	
Width-right bank	
Approx area worked on, acres	.59 ac / 25757.57 sq ft

Landowner name and address: Grace Lim, 12450 SE 117th Ave,

Landowner contact and agreement obtained: Yes_x__ No___ Attached: Yes___ No__x_

*Attach map and site plan showing creek & extent of work area, number and locations of LWD or other habitat features, and photos of work. Please send map showing **parcel and area worked on**, and shape file if possible. May use http://metromap.metro-region.org/metromap.cfm?Accept=accept .

Focus of **restoration activities: Use (M) for Major; (m) for minor activity for activities below.**

Riparian vegetation planting __x_Instream____Cleanup_____Erosion _____Other_____

Invasives removed, acres and Dominant invasive species: ivy, hours + herbicide cost = $520

Removal techniques used and Herbicides used: ivy treament on 6/19/14 with 4% glyphosphate, 2% garlon, and 2% competitor. 23 gallons.

Level of infestation: Heavy, dense____ Moderate_____ Light, scattered _____

Maintenance visit: Year 0__x___ Year 1_____ Year 2_____ Year 3_____ Year 4_____ Other_____

Note: Year 0 means year plants were installed, Year 1 means first year after planting.

Maintenance type performed:_____

Planned accomplishments or recommendations for future work on this site: Enrolled in SSP in 2013. She is part of the new sites for WES for FY 13-14. She wants a SSP yard sign. She was going to participate in the 2014 NCUWC Willamette River Tour in July but sent her friend instead as she was out of the country.

CCSD #1 Riparian Restoration and Enhancement Reporting Form

Project name: Scott & Eloise Lisset **Taxlot no.** 22E08BB03200

Organization info:

Organization name	NCUWC
Project manager	NCUWC (with Happy Fish Restoration Landscaping)
Phone number	503-550-9282

Project info:

Fiscal year for activities (e.g. 2013-14)	FY 13-14
Stream/Tributary	Kellogg Mt Scott
Watershed Action Plan Priority Rating (H, I, M or NA)	
Length of stream worked on, linear feet	46.32 ft/ .009 mi
Left bank, right bank, (looking downstream) or both	
Width-left bank	
Width-right bank	
Approx area worked on, acres	.098 ac / 4268.02 sq ft

Landowner name and address: Scott & Eloise Lisset, 6146 SE Kellogg Ct

Landowner contact and agreement obtained: Yes_x__ No___ Attached: Yes___ No__x_

*Attach map and site plan showing creek & extent of work area, number and locations of LWD or other habitat features, and photos of work. Please send map showing **parcel and area worked on**, and shape file if possible. May use http://metromap.metro-region.org/metromap.cfm?Accept=accept .

Focus of **restoration activities: Use (M) for Major; (m) for minor activity for activities below.**

Riparian vegetation planting __x_Instream____Cleanup_____Erosion _____Other_____

Invasives removed, acres_____ Dominant invasive species_____

Removal techniques used_____ Herbicides used: _____None ___

Level of infestation: Heavy, dense___ Moderate____ Light, scattered _____

Maintenance visit: Year 0____ Year 1____ Year 2____ Year 3___x_ Year 4____ Other_____

Note: Year 0 means year plants were installed, Year 1 means first year after planting.

Maintenance type performed:_____

Planned accomplishments or recommendations for future work on this site: Enrolled in SSP in 2011. Will take a SSP yard sign.

CCSD #1 Riparian Restoration and Enhancement Reporting Form

Project name: Rod & Pamela Martens **Taxlot no.** 22E08BC04500

Organization info:

Organization name	NCUWC
Project manager	NCUWC (with Happy Fish Restoration Landscaping)
Phone number	503-550-9282

Project info:

Fiscal year for activities (e.g. 2013-14)	FY 13-14
Stream/Tributary	Kellogg Mt Scott
Watershed Action Plan Priority Rating (H, I, M or NA)	
Length of stream worked on, linear feet	446.49 ft / .085 mi
Left bank, right bank, (looking downstream) or both	
Width-left bank	
Width-right bank	
Approx area worked on, acres	.478 ac / 20832.24 sq ft

Landowner name and address: Rod and Pamela Martens, 6620 SE Aldercrest Ct

Landowner contact and agreement obtained: Yes_x__ No___ Attached: Yes___ No__x_

*Attach map and site plan showing creek & extent of work area, number and locations of LWD or other habitat features, and photos of work. Please send map showing **parcel and area worked on**, and shape file if possible. May use http://metromap.metro-region.org/metromap.cfm?Accept=accept .

Focus of **restoration activities: Use (M) for Major; (m) for minor activity for activities below.**

Riparian vegetation planting __x_Instream____Cleanup_____Erosion _____Other_____

Invasives removed, acres_____ Dominant invasive species_____

Removal techniques used_____ Herbicides used: _____None ___

Level of infestation: Heavy, dense___ Moderate____ Light, scattered _____

Maintenance visit: Year 0____ Year 1____ Year 2____ Year 3___x_ Year 4____ Other_____

Note: Year 0 means year plants were installed, Year 1 means first year after planting.

Maintenance type performed:_____

Planned accomplishments or recommendations for future work on this site: Enrolled in SSP in 2011. Did not respond to inquiry if they wanted a SSP yard sign.

CCSD #1 Riparian Restoration and Enhancement Reporting Form

Project name: __Rod McColloch_____**Taxlot no**._22E06DA02500_____

Organization info:

Organization name	NCUWC
Project manager	NCUWC (with Happy Fish Restoration Landscaping)
Phone number	503-550-9282

Project info:

Fiscal year for activities (e.g. 2013-14)	FY 13-14
Stream/Tributary	Kellogg Mt Scott
Watershed Action Plan Priority Rating (H, I, M or NA)	
Length of stream worked on, linear feet	86.94 ft/ .016 mi
Left bank, right bank, (looking downstream) or both	
Width-left bank	
Width-right bank	
Approx area worked on, acres	.11 ac / 4882.44 sq ft

Landowner name and address: Rod McColloch, 6101 SE Parmenter Ct

Landowner contact and agreement obtained: Yes_x__ No___ Attached: Yes___ No__x_

*Attach map and site plan showing creek & extent of work area, number and locations of LWD or other habitat features, and photos of work. Please send map showing **parcel and area worked on**, and shape file if possible. May use http://metromap.metro-region.org/metromap.cfm?Accept=accept .

Focus of **restoration activities: Use (M) for Major; (m) for minor activity for activities below.**

Riparian vegetation planting __x_Instream____Cleanup_____Erosion _____Other_____

Invasives removed, acres and Dominant invasive species: hours + herbicide cost = $125 for 6/17/14.

Removal techniques used and Herbicides used: On 6/17/14 a cut was done. No herbicide.

Level of infestation: Heavy, dense____ Moderate_____ Light, scattered _____

Maintenance visit: Year 0____ Year 1____ Year 2____ Year 3___x__ Year 4____ Other_____

Note: Year 0 means year plants were installed, Year 1 means first year after planting.

Maintenance type performed:_____

Planned accomplishments or recommendations for future work on this site: Enrolled in SSP in 2011. Did not respond to the inquiry as to whether they would like a SSP yard sign.

CCSD #1 Riparian Restoration and Enhancement Reporting Form

Project name: Edwin and Lisa McFarlane **Taxlot no.** 22E08BB02110

Organization info:

Organization name	NCUWC
Project manager	NCUWC (with Happy Fish Restoration Landscaping)
Phone number	503-550-9282

Project info:

Fiscal year for activities (e.g. 2013-14)	FY 13-14
Stream/Tributary	Kellogg Mt Scott
Watershed Action Plan Priority Rating (H, I, M or NA)	
Length of stream worked on, linear feet	69.10 ft/ .013 mi
Left bank, right bank, (looking downstream) or both	
Width-left bank	
Width-right bank	
Approx area worked on, acres	.097 ac / 4261.85 sq ft

Landowner name and address: Edwin and Lisa McFarlane, 14505 SE Creekside Dr,

Landowner contact and agreement obtained: Yes_x__ No___ Attached: Yes___ No__x_

*Attach map and site plan showing creek & extent of work area, number and locations of LWD or other habitat features, and photos of work. Please send map showing **parcel and area worked on**, and shape file if possible. May use http://metromap.metro-region.org/metromap.cfm?Accept=accept .

Focus of **restoration activities: Use (M) for Major; (m) for minor activity for activities below.**

Riparian vegetation planting __x_Instream____Cleanup_____Erosion _____Other_____

Invasives removed, acres_____ Dominant invasive species_____

Removal techniques used_____ Herbicides used: _____None ____

Level of infestation: Heavy, dense____ Moderate_____ Light, scattered _____

Maintenance visit: Year 0_____ Year 1_____ Year 2_____ Year 3_____ Year 4_____ Other_____

Note: Year 0 means year plants were installed, Year 1 means first year after planting.

Maintenance type performed:_____

Planned accomplishments or recommendations for future work on this site: Enrolled in SSP in 2012. They want a SSP yard sign.

CCSD #1 Riparian Restoration and Enhancement Reporting Form

Project name: Don McLoughlin **Taxlot no.** 22E06DB00800

Organization info:

Organization name	NCUWC
Project manager	NCUWC (with Happy Fish Restoration Landscaping)
Phone number	503-550-9282

Project info:

Fiscal year for activities (e.g. 2013-14)	FY 13-14
Stream/Tributary	Kellogg Mt Scott
Watershed Action Plan Priority Rating (H, I, M or NA)	
Length of stream worked on, linear feet	410.46 ft / .078 mi
Left bank, right bank, (looking downstream) or both	
Width-left bank	
Width-right bank	
Approx area worked on, acres	.830 ac / 36188.75 sq ft

Landowner name and address: Don McLoughlin, 13775 SE Rusk Rd,

Landowner contact and agreement obtained: Yes_x__ No___ Attached: Yes___ No__x_

*Attach map and site plan showing creek & extent of work area, number and locations of LWD or other habitat features, and photos of work. Please send map showing **parcel and area worked on**, and shape file if possible. May use http://metromap.metro-region.org/metromap.cfm?Accept=accept .

Focus of **restoration activities: Use (M) for Major; (m) for minor activity for activities below.**

Riparian vegetation planting __x_Instream____Cleanup_____Erosion _____Other_____

Invasives removed, acres_____ Dominant invasive species_____

Removal techniques used_____ Herbicides used: _____None ____

Level of infestation: Heavy, dense___ Moderate____ Light, scattered _____

Maintenance visit: Year 0____ Year 1____ Year 2_x___ Year 3____ Year 4____ Other_____

Note: Year 0 means year plants were installed, Year 1 means first year after planting.

Maintenance type performed:_____

Planned accomplishments or recommendations for future work on this site: Enrolled in SSP in 2012. He will take a SSP yard sign.

CCSD #1 Riparian Restoration and Enhancement Reporting Form

Project name: Steven and Marsha Morasch **Taxlot no.** 22E06DD00703

Organization info:

Organization name	NCUWC
Project manager	NCUWC (with Happy Fish Restoration Landscaping)
Phone number	503-550-9282

Project info:

Fiscal year for activities (e.g. 2013-14)	FY 13-14
Stream/Tributary	Kellogg Mt Scott
Watershed Action Plan Priority Rating (H, I, M or NA)	
Length of stream worked on, linear feet	166.88 ft/ .040 mi
Left bank, right bank, (looking downstream) or both	
Width-left bank	
Width-right bank	
Approx area worked on, acres	.449 ac/ 19554.15 sq ft

Landowner name and address: Steven and Marsha Morasch, 6031 SE Aldercrest Rd,

Landowner contact and agreement obtained: Yes_x__ No___ Attached: Yes___ No__x_

*Attach map and site plan showing creek & extent of work area, number and locations of LWD or other habitat features, and photos of work. Please send map showing **parcel and area worked on**, and shape file if possible. May use http://metromap.metro-region.org/metromap.cfm?Accept=accept .

Focus of **restoration activities: Use (M) for Major; (m) for minor activity for activities below.**

Riparian vegetation planting __x_Instream____Cleanup_____Erosion _____Other_____

Invasives removed, acres and Dominant invasive species: Approx cost for 6/17/14 = $69.

Removal techniques used and Herbicides used: On 6/17/14 a cut was done. No herbicide.

Level of infestation: Heavy, dense____ Moderate_____ Light, scattered _____

Maintenance visit: Year 0_____ Year 1_____ Year 2_x____ Year 3_____ Year 4_____ Other_____

Note: Year 0 means year plants were installed, Year 1 means first year after planting.

Maintenance type performed:_____

Planned accomplishments or recommendations for future work on this site: Enrolled in SSP in 2012. They have a SSP yard sign. They were part of the neighborhood living with beavers meeting in January 2014; they hosted the event.

CCSD #1 Riparian Restoration and Enhancement Reporting Form

Project name: Agnes Obritschkewitsch_____**Taxlot no.**_22E06CA00901_____

Organization info:

Organization name	NCUWC
Project manager	NCUWC (with Happy Fish Restoration Landscaping)

Phone number	503-550-9282

Project info:

Fiscal year for activities (e.g. 2013-14)	FY 13-14
Stream/Tributary	Kellogg Mt Scott
Watershed Action Plan Priority Rating (H, I, M or NA)	
Length of stream worked on, linear feet	243.43 ft / .046 mi
Left bank, right bank, (looking downstream) or both	
Width-left bank	
Width-right bank	
Approx area worked on, acres	.547 ac / 23867.4 sq ft

Landowner name and address: Agnes Obritschkewitsch, 13558 SE Kuehn,

Landowner contact and agreement obtained: Yes_x__ No___ Attached: Yes___ No__x_

*Attach map and site plan showing creek & extent of work area, number and locations of LWD or other habitat features, and photos of work. Please send map showing **parcel and area worked on**, and shape file if possible. May use http://metromap.metro-region.org/metromap.cfm?Accept=accept .

Focus of **restoration activities: Use (M) for Major; (m) for minor activity for activities below.**

Riparian vegetation planting __x_Instream____Cleanup_____Erosion _____Other_____

Invasives removed, acres_____ Dominant invasive species_____

Removal techniques used_____ Herbicides used: _____None ____

Level of infestation: Heavy, dense____ Moderate_____ Light, scattered _____

Maintenance visit: Year 0_____ Year 1_____ Year 2_____ Year 3__x___ Year 4_____ Other_____

Note: Year 0 means year plants were installed, Year 1 means first year after planting.

Maintenance type performed:_____

Planned accomplishments or recommendations for future work on this site: Enrolled in SSP in 2011. She did not want a SSP yard sign. This site is part of an OWEB grant that includes 2 other properties in the WES SSP. She has been very pleased by Chris's work.

CCSD #1 Riparian Restoration and Enhancement Reporting Form

Project name: Bruce Paullin and Sharon White _____**Taxlot no**.__22E08BB02505_ _____

Organization info:

Organization name	NCUWC
Project manager	NCUWC (with Happy Fish Restoration Landscaping)
Phone number	503-550-9282

Project info:

Fiscal year for activities (e.g. 2013-14)	FY 13-14
Stream/Tributary	Kellogg Mt Scott
Watershed Action Plan Priority Rating (H, I, M or NA)	
Length of stream worked on, linear feet	147.11 ft / .028 mi
Left bank, right bank, (looking downstream) or both	
Width-left bank	
Width-right bank	
Approx area worked on, acres	.016 ac/ 6931.79 sq ft

Landowner name and address: Bruce Paullin and Sharon White, 6275 SE Acorn Ct

Landowner contact and agreement obtained: Yes_x__ No___ Attached: Yes___ No__x_

*Attach map and site plan showing creek & extent of work area, number and locations of LWD or other habitat features, and photos of work. Please send map showing **parcel and area worked on**, and shape file if possible. May use http://metromap.metro-region.org/metromap.cfm?Accept=accept .

Focus of **restoration activities: Use (M) for Major; (m) for minor activity for activities below.**

Riparian vegetation planting __x_Instream____Cleanup_____Erosion _____Other_____

Invasives removed, acres_____ Dominant invasive species_____

Removal techniques used_____ Herbicides used: _____None ____

Level of infestation: Heavy, dense____ Moderate_____ Light, scattered _____

Maintenance visit: Year 0_____ Year 1_____ Year 2__x___ Year 3_____ Year 4_____ Other_____

Note: Year 0 means year plants were installed, Year 1 means first year after planting.

Maintenance type performed:_____

Planned accomplishments or recommendations for future work on this site: Enrolled in SSP in 2012. They will take a SSP yard sign. They will participate in the 2014 Willamette River Tour in July.

APPENDIX D 2013-14 CCSD#1 & SWMACC MS4 PERMIT COMPLIANCE ANNUAL REPORT PUBLIC OUTREACH, ARTICLES, NEWSLETTERS, SAMPLES, ETC.

- **School Kids Today – Rate Payers Tomorrow**

  Ryan Johnson and Gari Johnson with Clackamas Water Environment Services partnered with Rich McConaghy with the City of Vancouver Water Resources Education Center to highlight the important aspects of environmental education.

Environmental Education Ryan Johnson & Gari Johnson

  At the Water Resources Education Center, Vancouver uses programs to educate students and adults on stormwater pollution reduction actions, and drinking water conservation tips. On site education focuses on school groups (K – 12), walk in visitors, and special events. The Center also has 3,000+ students, including 55 teachers from 25 schools, involved in a student watershed monitoring network. The Center has built a number of strategic partners to help fund its environmental education program.

  Clackamas County Water Environment Services focuses on cultivating comprehensive water education through community partnerships. The District is partnering its master planning efforts for both wastewater and stormwater services through 2030 by asking who the ratepayers will be in 2030 and targeting education programs to them. Ryan Johnson and Gari Johnson shared the key elements of the program, including engaging K-12 students in an overall watershed health education. Like Vancouver, identifying partnerships for an overall watershed education program is an important component. A consortium of water-related agencies in Clackamas County uses a number of techniques including a Celebrating Water event, a teacher training workshop, activity kits, mobile demonstration rain garden, and peer-to-peer support. Now in its 5th year, the Watershed Health Education Program reaches 2,000 students and their families annually.

Copies of all the presentations are posted on the ACWA web site at *www.oracwa.org*, 'resources', 'conferences/workshops presentations.'

Clackamas County Service District No. 1 (CCSD #1)
Water Environment Services
A Department of Clackamas County
503-742-4567 www.clackamas.us/wes - Billing Inquiries
www.riverhealth.org - for District Information

ACCOUNT NO.	DUE DATE
02-18885-09	3/20/2014

CUSTOMER NAME	BILL DATE	BALANCE FORWARD	INCLUDES PAYMENTS RECEIVED BY
DON & SHARON HERNDON	2/25/2014	0.00	2/24/2014

SERVICE FROM	SERVICE TO
2/01/2014	3/01/2014

ADDRESS 14440 SEBRIDGEION ST

SERVICE DESCRIPTION OF SERVICES	UNITS	AMOUNT
Previous balance		48.70
Payments as of 2/20/2014		-48.70
111 SANITARY SEWER	1	40.00
251 SURFACE WATER	1	6.35
51M ON-SITE MAINTENANCE	1	3.00

PLEASE PAY THIS AMOUNT 49.35

BABY WIPES, WET WIPES, ANTIBACTERIAL WIPES AND BATHROOM WIPES MAY GO DOWN THE TOILET BUT CAN EASILY GET STUCK IN SEWER PIPES AND CAUSE COSTLY BACKUPS IN YOUR HOME AND NEIGHBORHOOD. EVEN IF THE PACKAGING SAYS IT'S FLUSHABLE, DON'T DO IT! THROW ALL WIPES IN THE TRASH! FOR MORE INFORMATION, VISIT: RiverHealth.org/rate-payer-information

Detach and Return The Remittance Coupon Below With Your Payment

Clackamas County Service District No. 1
Water Environment Services
A Department of Clackamas County
150 Beavercreek Rd.
Oregon City, OR 97045

DUE DATE	AMOUNT DUE
3/20/2014	49.35

ACCOUNT NO.	AMOUNT PAID
02-18885-09	

☐ check for change of address
(see back of stub for details)

Remit To: Water Environment Services
PO Box 6940
Portland, OR 97228-6940

Green Roofs provide habitat for urban bug's life

Dimitri Meierhofer, a Swiss scientist working on behalf of UG Lab and the Green Roof Competence Centre of the Zurich University of Applied Sciences, is conducting a study of bugs (invertebrates) that live within rooftop ecosystems internationally.

One of those green roofs ecosystems just happens to be in Clackamas County.

In addition to green roofs in San Francisco and Mexico City, the Dry Season Green Roof Biodiversity Study (non-irrigated green roofs) is being conducted on the rooftop garden at the Tri-City Wastewater Treatment Plant in Oregon City.

According to the experts at UG Lab, "Green Roofs have a long history that spans many cultures, continents and climates. Green Roofs, also referred to as 'living roofs,' can serve many functions within the urban fabric of the built environment, such as reducing storm water flows, energy use and heat island effect. They also provide much needed habitat and offer critical wildlife support within our cities worldwide." (UG Lab Courses. Retrieved from http://site.uglab.co/#Courses)

The green roof garden at the Tri-City Wastewater Treatment Plant covers 20,000 square feet with a minimum depth of three inches of soil and is covered with hardy native plants. In addition to providing water storage during a rainfall event, this local green roof is proving to be home to an entire ecosystem.

"Green Roofs, also referred to as 'living roofs,' can serve many functions within the urban fabric of the built environment, such as reducing storm water flows, energy use and heat island effect. They also provide much needed habitat and offer critical wildlife support within our cities worldwide." *- UG Lab*

UP ON THE ROOF | Swiss scientist Dimitri Meierhofer works on top of the Tri-City Wastewater Treatment Plant, where he is studying bugs that live within rooftop ecosystems. For more information, visit RiverHealth.org or Tri-Cityservicedistrict.org.

RiverHealth Stewardship Program grants $152,000 for watershed health

The Clackamas County Board of Commissioners approved awards totaling more than $152,000 to six regional organizations to help improve watershed health across Clackamas County Service District No. 1 (CCSD #1).

Out of 13 applications submitted by six organizations, the RiverHealth Stewardship Program will fund 11 projects. Funded projects will enhance water quality, restore fish habitat, manage invasive species, organize volunteer events, and remove trash from waterways.

The grants will also support the continued stewardship of previously restored project sites.

Stewardship includes invasive species control, occasional irrigation, occasional mowing or placing mulch around plants, infill planting, monitoring plants and taking other measures as necessary to ensure they survive.

DIGGING IN THE DIRT | Water Environment Services' Clackamas County Service District No. 1 supports projects to enhance water quality, restore fish habitat and manage invasive species along with the help of volunteers Isis Navarro (left) and Breanna Doss.

The projects are located throughout CCSD #1 watersheds, including Rock Creek, Kellogg Creek, Mt. Scott Creek, Phillips Creek, Johnson Creek and the Clackamas River.

Projects that provide stewardship of previously restored sites were given highest priority because they protect the district's investment made in recent years. Depending on the level of invasive species infestation, stewardship generally continues for three to five years after installation.

Aggressive, invasive plants overrun our native plants unless they are removed. The invasives do not provide the type of habitat needed by native animals. Keeping the invasives under control and ensuring that native plants survive will return the riparian areas to a more natural and healthy condition.

Priority was given to projects in areas rated high by the district's Watershed Action Plans, which guide the work of the CCSD #1 Surface Water Management program, as well as projects expected to provide connectivity between restored sites or protected natural areas and those expected to provide high value community outreach.

Funding was provided to SOLVE, Clackamas River Basin Council, Friends of Trees, North Clackamas Urban Watersheds Council, Johnson Creek Watershed Council, and Clackamas County Soil and Water Conservation District.

CCSD #1 Volunteer Tree Planting Opportunities:
SOLVE
Feb. 8 - Mt Scott Creek at 129th
Feb. 22 - Rock Creek Troge Road
March 15 - Rock Creek Troge Road
March 22 - Mt Scott Creek at 129th
Register at solveoregon.org

Clackamas River Basin Council
March 15 - Rock Creek Watershed Wide Event
Pendarvis Farm at 16581 SE Hagen Road
Register at clackamasriver.org/events

Johnson Creek Watershed Council
Johnson Creek Watershed Wide Event
March 1- Springwater Trail
Between Linwood and Bell in Milwaukie
Register by emailing amy@jcwc.org

For more information and updates on events, visit RiverHealth.org

We All Live Upstream
A WATERSHED EVENT

Mark your calendars for FREE family-friendly fun

WE ALL LIVE UPSTREAM

On Saturday, Nov. 2, from 10 a.m. to 2 p.m. at Rex Putnam High School, your family will enjoy learning about all the little things we can do upstream to make a big difference to our local rivers and streams.

Get ready for live music, guest speakers, entertainment, delicious treats, prizes and hands-on water-focused activities for all ages.

WES
Clackamas River Basin Council
RiverHealth
Oak Lodge Sanitary District
Healthy Rivers
Conservation District
SOLVE
North Clackamas Urban Watersheds Council

Fall *2013*

Do you know what happens after you flush?

Visit **www.RiverHealth.org**
to watch *Down the Drain*,
an informative and entertaining short film
that incorporates
playful stop-motion animation
to better understand
where wastewater goes
when we flush.

Clackamas County Water Environment Services is proud to announce that Down the Drain *is a finalist in a national awards competition.*

Clear storm drains to protect property and waterways

Heavy rains combined with fall foliage bring the potential for high water and pollutants reaching local waterways.

Storm drains are the metal grates on streets connecting to underground pipes that carry rain and snowmelt to nearby rivers, streams or groundwater.

Regularly clearing storm drains of leaves and debris helps reduce flooding and possible property damage while protecting the health of rivers and streams.

The Oregon Environmental Council and Clackamas County Water Environment Services offer the following tips:

CLEAN STORM DRAINS | Keeping storm drains clear in the fall and winter is challenging as leaves fall. Do not dispose of automotive oil or hazardous chemicals in a storm drain. Recycle oil and take hazardous chemicals to a household hazardous waste drop-off site. To find one in your area, call 1-800-732-9253 or visit earth911.com.

- Look at the storm drain grates in front of homes or businesses before and right after a rain or snow storm. Then make sure they're free of leaves and debris.
- Use a rake or pitch fork to clear leaves and debris from the storm drain. Do not try to remove the grate, only the debris on top of the grate. Dispose of leaves in yard waste containers or compost bins. If possible, spread the leaves on a garden to protect and nourish perennials.
- When leaves fall into the street, rake them one foot away from the curb so they won't block the path of rain water.
- Call the local public works department if a storm drain is clogged.
- Visit a city or community's website for nearby official leaf drop off sites and events or visit http://www.clackamas.us/recycling/yarddebris.html

Dumping into a storm drain isn't just wrong, it's against the law. Automotive fluid, paint, household materials and pesticides should never be poured into a storm drain where they end up polluting rivers and groundwater.

- Do not drain a pool, hot tub or wastewater into a storm drain. Send it into the sanitary sewer system via a toilet, sink or tub drain.
- Do not pour out coffee or soda into the street from a car. Pour it onto a lawn or planted area where the soil can soak it up and break it down. Better yet, bring it inside and pour it down the sink.
- Do not dispose of automotive oil or hazardous chemicals in a storm drain. Recycle oil and take hazardous chemicals to a household hazardous waste drop-off site.

To find a local drop-off site, call 1-800-732-9253 or visit or www.oregonmetro.gov/findarecycler or www.earth911.com

For more information visit www.RiverHealth.org

Watch out for 'Watershed Warriors'

The next time you head to the City of Happy Valley, be warned. There are Watershed Warriors afoot, and on the airwaves, too. Watershed Warriors are fighting to keep rivers and streams healthy in Clackamas County Service District No. 1.

Tune into Happy Valley radio 1700AM to hear the voices of North Clackamas children explaining why grease should go into the trash and not go down the drain, why cars should be taken to commercial car wash facilities and not washed in driveways or parking lots, and why fertilizer should be used carefully and at a minimum so it doesn't enter our storm drains and ground water.

BEWARE: When in Happy Valley, look out for kids in superhero capes who proclaim, "Use your brain when it comes to the drain!"

Thank you for helping to protect public health and the environment in Clackamas County Service District No. 1. To learn more about Watershed Warriors and the CCSD #1 Watershed Health Education Program, visit RiverHealth.org.

RiverHealth

SUPERHEROES LURKING | Left to right are Ally Foteff, Sojourner Elementary; Xander Hey, LaSalle High; Zac Foteff, Happy Valley Middle; Pieper James, Clackamas High; and Emma Foteff, Happy Valley Elementary. Xander and Pieper are chair and co-chair of the Happy Valley Youth Council.

Happy Valley
TODAY

VOLUME 5 ISSUE 07 **JULY 2013** ♦ 16000 SE Misty Drive ♦ Happy Valley, OR 97086 ♦ Telephone (503) 783-3800

Check out our Web site at www.RiverHealth.org

RiverHealth

Clackamas County · Water Environment Services

Dear Citizens of Happy Valley,

Its summertime and I bet you're as excited as I am for family picnics, canoeing, catching fish and cooling off in our local streams! We're so lucky we have water all around us to enjoy.

I just wanted you to know that I appreciate our rivers and streams so much more today, because my teacher was part of the Water Environment Services Watershed Health Education Program. In class and on field trips, we learned the science behind protecting wildlife, plants and trees that live in and near the water. We studied the importance of water quality to public health and the environment, and how we can help maintain or restore our urban watersheds.

School is out for the summer, but I know we need to work together every day to keep our local rivers and streams free of chemicals and trash, and shaded by native plants, or we ALL pay the price. If you live, play, work or teach in Clackamas County Service District #1 and want to learn more about the Watershed Health Education Program, please visit riverehealth.org and join me today in protecting our watersheds!

Sincerely,
A Watershed Health Education Program Student

Happy Valley
TODAY

VOLUME 5 ISSUE 08 **AUGUST 2013** ♦ 16000 SE Misty Drive ♦ Happy Valley, OR 97086 ♦ Telephone (503) 783-3800

Happy Valley TODAY

Check out our Web site at www.RiverHealth.org

Keep Wipes out of the Pipes and Cease the Grease

Flushing items such as cleaning and baby wipes can cause damage

Did you know that flushing items such as cleaning and baby wipes can cause damage to Clackamas County Service District No. 1's sewer system?

Many things routinely flushed down the toilet or washed down the drain, including those sold as "flushable," can cause expensive maintenance problems and sewer back-ups in your home, the public sewer system and in the environment.

Please **DO NOT** flush or put down the drain the following items:

- Baby and cleaning wipes
- Paper towels
- Cotton balls, swabs and pads
- Facial wipes and tissue
- Feminine products including the applicators
- Unused medications
- Chemicals
- Fats, oils and grease

Fats, Oils, and Grease (FOG) come from meat, butter, lard, sauce, gravy, salad dressing, dairy and cooking oil. When FOG goes down the drain it solidifies and can cause sewer pipes to clog. This can lead to raw sewage backups that could affect homes, lawns, neighborhoods, streets, rivers and streams and possibly harm public health and the environment. Please pour, scrape and wipe FOG into a disposable container then throw into the trash and ***NEVER*** pour FOG down the drain!

To receive a FREE fat trapper bag and scraper for your kitchen while supplies last, please email info@riverhealth.org.

Happy Valley
TODAY

VOLUME 5 ISSUE 09 **SEPTEMBER 2013** ♦ 16000 SE Misty Drive ♦ Happy Valley, OR 97086 ♦ Telephone (503) 783-3800

Happy Valley TODAY

Check out our Web site at www.RiverHealth.org

Using Fertilizers or Pesticides?

Please use CAUTION before applying and during application

Fertilizers and pesticides have the potential to contaminate our community's water. After being applied to farmland, gardens and lawns, they can make their way into ground water or surface waters, including those which are used for drinking water, such as our Clackamas River.

Pesticides can be beneficial for the control of pests like weeds and insects, but ***every*** pesticide (including organic pesticides) has some level of toxicity to non-targeted organisms, such as fish which live in neighborhood streams. Please always read the label completely before using any pesticide. Pesticides which are sprayed on a windy day can drift onto neighboring property or into a creek. Pesticides which are applied before rain can wash into a storm drain which is directly connected to a local waterway. Pesticide labels have "environmental hazard statements" that do the following:

- Describe of the product's relative risk to waterways
- List the required precautions that applicators must take to protect water (EXAMPLE: Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark)
- Name sensitive species like fish, amphibians or birds

Besides reading fertilizer and pesticide descriptions thoroughly, please be mindful if you spill or over-distribute a product on your sidewalks or driveways. Sweeping up the product prior to watering or a downpour is a small practice that can make a big difference to our water quality, and our health.

Please consider the resources below when using fertilizers and pesticides:

Healthy Lawn Healthy Environment
http://www.epa.gov/oppfead1/Publications/lawncare.pdf

OSU Extension Pesticide Properties Database
http://npic.orst.edu/ingred/ppdmove.htm

On behalf of Clackamas County Service District No. 1, thank you for helping to protect public health and the environment. Please visit RiverHealth.org for more information.

Happy Valley
TODAY

VOLUME 5 ISSUE 10 **OCTOBER 2013** ♦ 16000 SE Misty Drive ♦ Happy Valley, OR 97086 ♦ Telephone (503) 783-3800

Check out our Web site at www.RiverHealth.org

RiverHealth

Watch Out for the "Watershed Warriors"

They are lurking...and fighting to keep local rivers and streams healthy!

Be warned- there are Watershed Warriors afoot in Happy Valley, and on the airwaves, too! Watershed Warriors are fighting to keep rivers and streams healthy in Clackamas County Service District No. 1.

Tune in to Happy Valley radio 1700 AM to hear the voices of North Clackamas students explaining why grease should go into the trash and not go down the drain; why cars should be taken to commercial car wash facilities and not washed in driveways or parking lots; and why fertilizer should be used carefully and at a minimum so it doesn't enter our storm drains and ground water.

SUPERHEROES (front row left to right) are: Zac Foteff, HV Middle School; Ally Foteff, Sojourner Elementary and Emma Foteff, HV Elementary. (Back row left to right) are Xander Hey, LaSalle HS and Pieper James, Clackamas HS. Xander and Pieper are the Chair and Co-Chair of the Happy Valley Youth Council.

BEWARE-- When in Happy Valley, look out for the kids in Superhero capes who proclaim, "Use your brain when it comes to the drain!"

Thank you for helping to protect public health and the environment in Clackamas County Service District #1. To learn more about Watershed Warriors and the CCSD #1 Watershed Health Education Program, visit RiverHealth.org.

Happy Valley
TODAY
Happy Valley Oregon
A monthly publication provided to the Community
VOLUME 5 ISSUE 11 **NOVEMBER 2013** ♦ 16000 SE Misty Drive ♦ Happy Valley, OR 97086 ♦ Telephone (503) 783-3800

RiverHealth

Serving Clackamas County Service District No. 1

Clackamas County Water Environment Services

www.riverhealth.org

Storm Drains Need Your Help

Help clear storm drains to protect your property and our water

Heavy rains combined with fall foliage bring the potential for high water and pollutants reaching our waterways. It's now time to pay attention to your storm drains.

What is a storm drain?

Storm drains are the metal grates on streets connecting to underground pipes that carry rain and snowmelt to nearby rivers, streams or groundwater.

Regularly clearing your storm drains of leaves and debris helps reduce flooding and possible property damage while protecting the health of our rivers and streams—our valuable shared sources of drinking water. The Oregon Environmental Council and Water Environment Services offer the following tips:

- Look at the storm drain grates in front of your home or business before and right after a rain or snow storm to make sure they're free of leaves and debris.

- Use a rake or pitch fork to clear leaves and debris from the storm drain. Do not try to remove the grate, only the debris on top of the grate. Dispose of leaves in your yard waste container or compost bin. If possible, spread the leaves on your garden to protect and nourish your perennials.

- When leaves fall into the street, rake them one foot away from the curb so they won't block the path of rain water.

If you can't clean a clogged storm drain yourself, call the Happy Valley Public Works Department at (503) 783-3800. Please never dump anything into a storm drain. It's against the law!

Business owners can now affordably maintain their storm drains to reduce the chances of high water on commercial property ***AND*** meet annual storm drain cleaning requirements. Please email info@RiverHealth.org or call 503-742-4616 for a **discounted rate for commercial storm drain cleaning only**.

Thank you for helping to protect public health and the environment. For more information visit **www.RiverHealth.org**

RiverHealth

WES: All about clean cars, rivers, streams

Sunny warm weather brings out local car washers, but put on the brakes when it comes to washing cars in driveways, streets or parking lots.

Water Environment Services (WES), on behalf of Clackamas County Service District No. 1 (CCSD #1), wants to protect the environment by encouraging visits to commercial car wash facilities instead of washing vehicles where dirty water flows into storm drains that enter rivers and streams.

Diverting car washing wastewater away from the storm sewer system will improve the community's water quality and protect the health of people and the environment.

If washing the car in a driveway or street,

MIGHT AS WELL | Washing your car in the driveway isn't as safe for the environment as washing it in a commercial car wash facility, where the water is diverted from the storm sewer system.

wastewater contaminated by grime, dirt, metals, detergent, motor oil and/or other pollutants flows into a catch basin then discharges untreated into the nearest creek, wetland or river via the storm sewer pipes.

In comparison, commercial car wash facilities discharge their wastewater into the sanitary sewer system. The sanitary sewer system is piped to a wastewater treatment plant, which removes the pollution from the wastewater and then discharges the treated water into the Willamette River.

Especially harmful are large charitable car washing events. Instead of holding events in parking lots, consider partnering with a commercial car wash facility where volunteers can participate in the following ways:

- Hold signs on the sidewalk encouraging motorists to pull in for a wash
- Vacuum the car's interiors
- Dry and polish car exteriors

If you decide not to hold the fundraiser at a commercial car wash facility, simply do not wash vehicles outdoors on a paved surface if it drains into the storm sewer system.

Instead, do the following:

- Wash vehicles on grassy or other landscaped areas to ensure that all of the wastewater soaks into the ground
- Use the smallest possible amount of soap
- Do not wash engines, transmissions or undercarriages
- Use a shut-off valve on a hose to conserve water and to generate less wastewater

To learn more about protecting watersheds and how to get involved, visit www.riverhealth.org

'Celebrating' water done on 2013's Earth Day

Celebrating Water, an annual event held at Clackamas Community College in honor of Earth Day for fourth- and fifth-graders from schools throughout Clackamas County, was a fun and engaging learning experience last month.

This watershed health education event featured multiple stage shows and interactive booth displays created by Clackamas High School science students and the many water-focused organizations that comprise the Clackamas Water Education Team and its partners.

Students learned about The Water Cycle, "Water Bugs" (macroinvertebrates), what not to put down the drain or flush (FOG = Fats, Oils and Grease, etc.), why it's important to scoop and dispose of doggy doo and much, much more.

If you are a fourth- or fifth-grade teacher and would like more information or to sign up for the 2014 Celebrating Water Earth Day event, email info@riverhealth.org.

Keep wipes out of pipes and freeze fat

Did you know that flushing items such as cleaning and baby wipes can cause damage to CCSD #1's sewer system?

Many things routinely flushed down the toilet or washed down the drain, including those sold as "flushable," can cause expensive maintenance problems and sewer back-ups in your home, the public sewer system and the environment.

The following are examples of what should not be flushed or washed down the drain:

- Baby and cleaning wipes
- Paper towels
- Cotton balls, swabs and pads
- Facial wipes and tissue
- Feminine products including applicators
- Unused medications
- Chemicals
- Fats, oils and grease

To receive a free fat trapper bag and scraper for your kitchen, email info@riverhealth.org.

For more information about the sanitary sewer system and to watch "Down the Drain," an educational video about what should not go down the drain, visit www.riverhealth.org.

Libraries get ready to *Dig Into Reading*

Libraries in Clackamas County are getting ready to Dig Into Reading with programs for kids of all ages. Families can participate in the summer reading program at any of the 13 libraries in the county.

In June, babies through teens may register to keep track of how much reading they do this summer. Last year more than 15,000 signed up in Clackamas County.

Readers may turn in the log for some prizes, including a Trailblazers ticket, a swim pass to the North Clackamas Aquatic Park and a coupon for a deluxe ride bracelet for Oaks Park.

Summer programs include magic to juggling to puppets, and younger children may sing and play at the library. Crafts, movies and gaming parties are offered at some libraries for teen programs.

For more information about the summer reading program, visit the local library or click on library events tab at www.lincc.org.

Commissioners extend six-month outreach plan

Continued from page one

Clackamas and Far West CPOs and territory that includes the Hamlet of Beavercreek, the Hamlet of Mulino and the Hamlet of Molalla Prairie.

- Commissioner Paul Savas is assigned to Outreach Area 3, which includes the areas of Damascus, Gladstone, Happy Valley, Oregon City and Carus; Carver-Logan, Clackamas, Clarkes-Highland, Holcomb-Outlook, Redland-Fischers Mill-Viola, Sunnyside United CPOs and the territory that includes the Hamlet of Beavercreek.
- Commissioner Martha Schrader is assigned to Outreach Area 2 in northern Clackamas County, covering Milwaukie, Gladstone and Jennings Lodge, Oak Grove Community Council, Southgate and Clackamas CPOs.
- Commissioner Tootie Smith is assigned to Outreach Area 1 in northwest Clackamas County. The area covers the cities of Lake Oswego, Rivergrove and West Linn; CPOs include Birdshill, Forest Highlands, Lake Forest, Rosewood, Skylands, Southwood Park and Stafford-Tualatin Valley and territory that includes the Hamlet of Stafford.

Additional information can be found on the county website at http://www.clackamas.us outlining the new outreach areas.

MY BILL | WATER ENVIRONMENT SERVICES

SURFACE WATER

Stormwater runoff is the most significant source of water pollution in our state. It washes pollutants into storm drains and drainage ditches, carrying silt, oil, chemicals, trash and pesticides to the nearest creek, stream or wetland. The polluted runoff can harm aquatic life and threaten our drinking water.

Water Environment Services, on behalf of Clackamas County Service District No. 1, provides the following services to ensure the health of our watersheds:

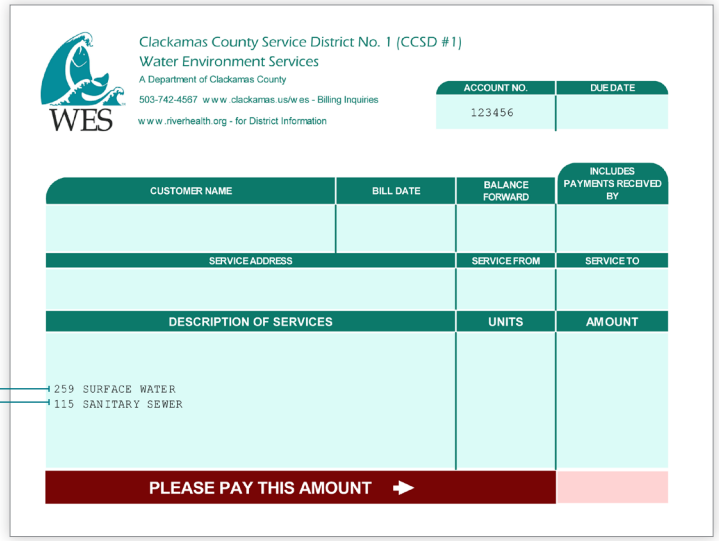
- Development review to promote water quality
- Long-term watershed planning
- Public outreach and partnerships for pollution prevention
- Watershed restoration projects
- Water quality monitoring
- Stormwater collection system cleaning and maintenance

SANITARY SEWER

Before sanitary sewer systems became common in the 1970s, our rivers were dangerously polluted, with millions of gallons of raw sewage entering our rivers and streams every day. In addition to compromising habitat for aquatic life, our rivers posed a huge threat to public health.

Today, Water Environment Services, on behalf of Clackamas County Service District No. 1, collects and cleans more than 3 billion gallons of wastewater annually before releasing it to our local rivers, protecting public health and the environment.

The district operates 17 pumping stations, four treatment facilities, and over 300 miles of pipes.



Clackamas County Service District No. 1 (CCSD #1)
Water Environment Services
A Department of Clackamas County
503-742-4567 www.clackamas.us/wes - Billing Inquiries
www.riverhealth.org - for District Information

WES

ACCOUNT NO.	DUE DATE
123456	

CUSTOMER NAME	BILL DATE	BALANCE FORWARD	INCLUDES PAYMENTS RECEIVED BY

SERVICE ADDRESS	SERVICE FROM	SERVICE TO

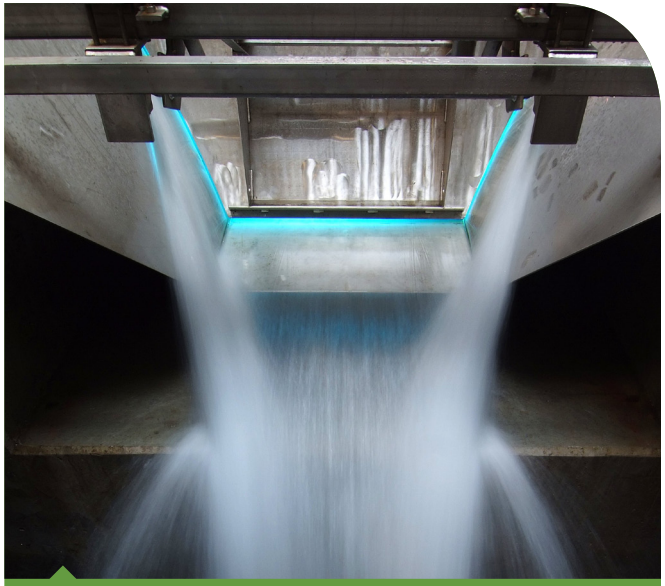
DESCRIPTION OF SERVICES	UNITS	AMOUNT
259 SURFACE WATER		
115 SANITARY SEWER		
PLEASE PAY THIS AMOUNT ➔		

Thank you for ***protecting public health*** and the ***environment***!

WATER ENVIRONMENT SERVICES

Additional Resources Online
riverhealth.org/watershed-health
riverhealth.org/wastewater-treatment

What are we doing to make sure it all still works in 20 years?



Clean, treated water at the Tri-City Water Pollution Control Plant

Water Environment Services (WES), on behalf of Clackamas County Service District No.1, is committed to protecting public health and the environment. By carefully examining growth trends and service needs, WES is planning for the future to ensure the system will keep our water clean for decades to come.

Our water quality system is the foundation of our economy and critical to sustain healthy, livable communities. The system needs to be properly maintained and ready to meet the evolving needs of the district. Your monthly rate supports the district's ability to produce over three billion gallons of clean water every year, while preparing to meet the needs of our growing communities into the future.

Find out more at: riverhealth.org

The Clackamas County Board of County Commissioners, acting as the governing board of Clackamas County Service District No. 1, approved a rate increase of $2 per month for sanitary sewer service. The surface water rate remains unchanged.

The new monthly sanitary sewer rate is $42 per month.

The surface water management rate will remain at $6.35 per month.

These rates are effective July 1, 2014.

Water Environment Services

ECOBIZ & MORE

MITCH FRISTER - ECOBIZ MANAGER

PACIFIC NW POLLUTION PREVENTION RESOURCE CENTER (PPRC)

OUTLINE

- **EcoBiz 101**
- **Standards & Process**
- **Business Case Studies**
- **P2 Metrics**
- **Next Steps**

38 slides

INTRODUCTION

- Work for Pacific Northwest Pollution Prevention Resource Center (PPRC), Seattle-based non-profit.

- Contracted to administer EcoBiz

- Attended Clackamas HS & PSU – BS Community Development

- Prior to EcoBiz - Clackamas County Office of Sustainability

ECOBIZ 101

- Voluntary, third-party verified environmental certification for businesses in Oregon.

- Available to automotive repair & body shops, carwashes, and Landscapers

- Administered by the Pollution Prevention Outreach Team (P2O)

ECOBIZ 101

- **1993 –** Beginnings of P2O team, multi-agency coordinated effort.
- **1999 –** Hawthorne Auto Clinic first Automotive EcoBiz.
- **2007 –** DeSantis Landscapes first Landscape EcoBiz
- **2014 -** 150 automotive shops and 26 landscaping firms

ECOBIZ 101

P20 TEAM INCLUDES:

ENVIRONMENTAL SERVICES
CITY OF PORTLAND
working for clean rivers

CITY OF GRESHAM

Metro

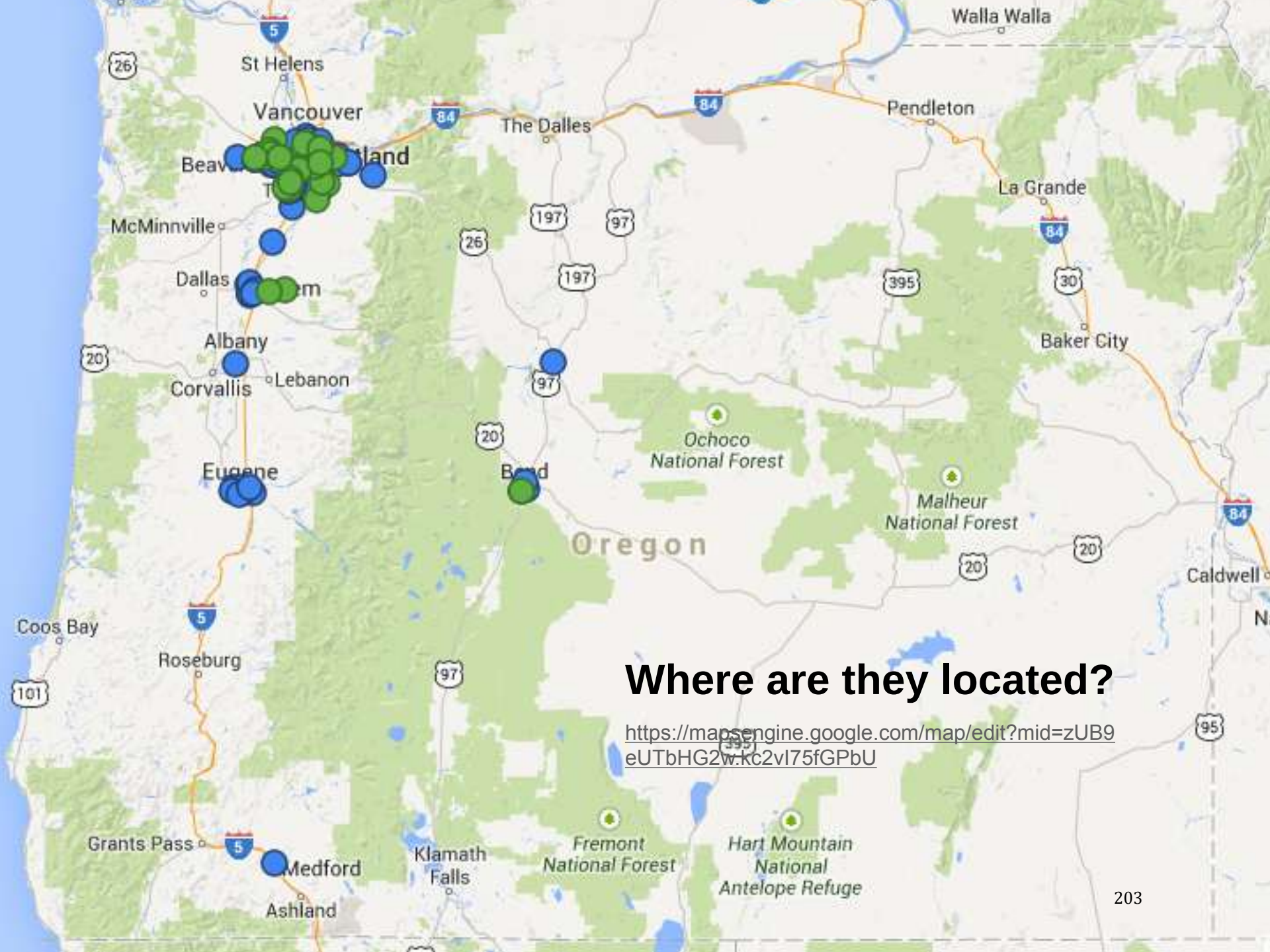
pacific northwest POLLUTION PREVENTION resource center
pprc

CleanWater Services

DEQ
State of Oregon Department of Environmental Quality

WATER ENVIRONMENT SERVICES
Beyond clean water. www.clackamas.us/wes
Water Quality Protection • Surface Water Management • Wastewater Collection & Treatment

WASHINGTON COUNTY OREGON



Where are they located?

https://mapsengine.google.com/map/edit?mid=zUB9eUTbHG2w.kc2vI75fGPbU

THE STANDARDS

Environmental Best Practices

Air, Water, & Hazardous Waste

3 – Categories

1. LEGAL
2. PROGRAM
3. ELECTIVE (need 80%)

CHECKLIST(S)

How we track our measure and track progress

ECOBIZ AUTOMOTIVE SERVICES CHECKLIST

Hazardous Materials

The wastes that are generated through use of those hazardous materials can sometimes be hazardous waste. Examples include discarded solvents, waste paints, or wastes that are ignitable or contain toxic components. A hazardous waste determination is required of all the wastes you discard.

Please contact your technical assistance provider for help whenever you have any questions about hazardous materials, potential hazardous waste, and how to manage or dispose of materials.

		Yes	No	N/A
HM1 *legal*	Have you determined your facility's hazardous waste generator status? • Conditionally Exempt Generator (CEG) • Small Quantity Generator (SQG) • Large Quantity Generator (LQG)	○	○	◉
HM2 *legal*	Are small, work-site sized containers labeled with the current content? Special containers are needed for flammable liquids. (OSHA Employee Right to Know.)	○	○	◉
HM3 *legal*	Are the hazardous materials used in your shop identified and labeled?	○	○	◉
HM4 *prog.*	Does your shop maintain hazardous material and waste containers in good condition? *This includes maintaining solvents and chemicals in sealed containers with tight-fitting lids to limit evaporation and reduce risk of spills.*	○	○	◉

Section 2 Site Design

SECTION 2 - SITE DESIGN

Does your company perform any landscape design services? ☐Yes ☐No
If no design work is performed, skip to ***Section 3 - General Installation*** on page 18

GENERAL DESIGN

GOAL: Design landscapes that are pest and disease resistant, water efficient, produce minimal green waste, and incorporate natural habitat.

21 – Legal

If your business does design work for public properties (or creates technical specifications for another company or individual to follow), do you employ a Registered Landscape Architect (ORS 671.310 to 671.459)?
☐ Yes ☐ No ☐ Not Applicable – no public design

22 – Legal

Which elements of your site plans assure access and safety standards defined by the Americans with Disabilities Act (ADA) are met for publicly accessible spaces?
☐ Not Applicable – no public design work is done

☐ Paving
☐ Grades
☐ Handrails
☐ Other (please describe)_____

23 – Program

For work on private property, are you or do you have a certified landscape designer on staff?
☐Yes ☐No

If yes, which certification?
(one required)
☐ APLD certification
☐ Registered Landscape Architect (ORS 671.310 to 671.459)
☐ College Degree (please describe)_____
☐ Other (please describe)_____

24 – Program

(at least one required)

Which of the following techniques do you use to investigate utility locations on-site?

☐ Call locator service
☐ Check service maps
☐ Pothole (hand dig to locate buried pipes)
☐ Previous site design notes/maps
☐ Homeowner interview
☐ Other (please describe)_____

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SITE VISITS

Businesses are certified by PPRC, DEQ and the local water authority (CWS, BES, etc.)

Initial site visits to confirm checklist answers, final certification visits with all parties.

Additional site visits for Landscapers to confirm practices are followed.

AUTO PROGRAM

AUTO PROGRAM

- Repair
- Auto Body & Painting
- Car Washes
- Radiator Repair Shops

SPILL PREVENTION & RESPONSE

- Spill kits at key locations – around tanks, liquid transfer areas, work areas, storage areas.

- Spill Plan Posted – has local and state spill numbers

- Spill Response Training – required annually.

photo credits: New Pig

SECONDARY CONTAINMENT

waste and product containers 55g +

110% volume of largest container in a given area

planning for the worst case scenario

$200 for 15 feet

$300, holds 4-55g drums

$1,000 for double walled 275 gallon tank

HAZ WASTE REDUCTION

Parts Washers - Aqueous Based Degreasers. Closed loop, non-toxic.
EcoBiz doesn't allow Chlorinated Solvents

Re-fillable Aerosols – Reduce VOC's and Haz. Waste. *(Sure Shot & Wurth Refillomat)*

http://www.epa.gov/dfe/pubs/projects/formulat/formpart.htm#

CASE STUDY

- 2nd Containment for storage room (build-a-berm)
- Added spill kits, started spill training
- Covered bin for metal
- Moves tires off-site daily
- Received Wash Water Permit

PRODUCT WASTE & STORAGE

- Properly managed, stored, labeled
- Oregon DEQ provides guidance
- Regular “Boneyard”Audits
- Determine generator status
- Covered storage

LANDSCAPE PROGRAM

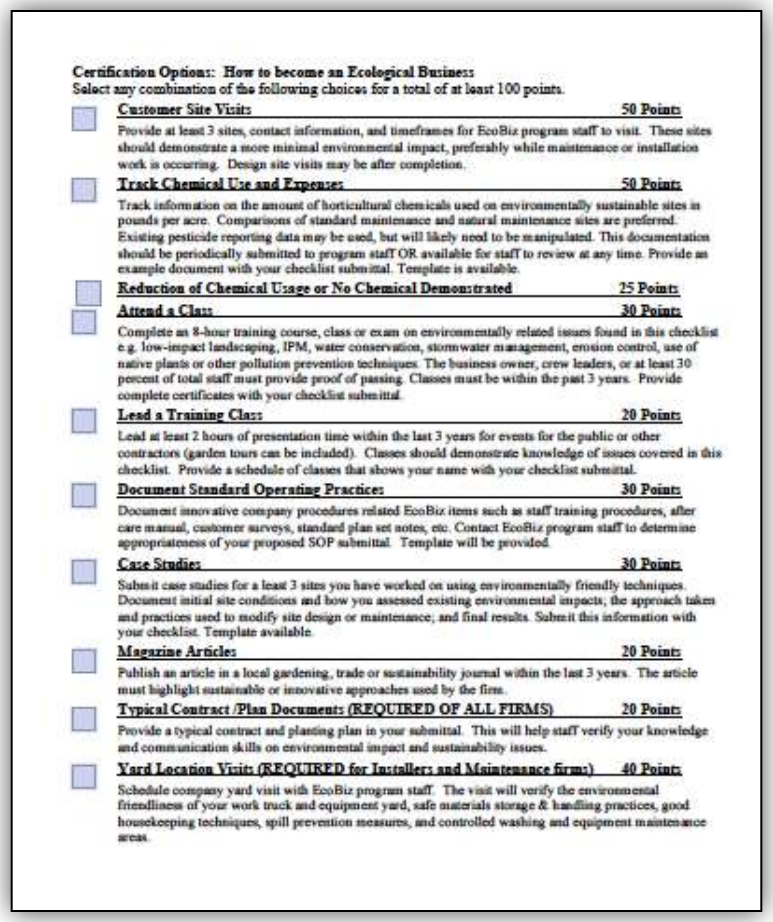
LANDSCAPE SECTIONS

- **Site Design**
- **Installation**
- **Site Maintenance**
- **Vehicles & Equipment**
- **Water Features & Ponds**
- **Hardscapes** *(patios, decks, fences)*
- **Irrigation Systems**
- **Turf**

Fairly in-depth: *36 pages, 159 questions*

CERTIFICATION OPTIONS

- Lead a training
- Write an article or case studies
- Typical Contract / Plan Document ***(Required)***
- Yard Location Visit ***(Required)***
- Customer site visit



Certification Options: How to become an Ecological Business
Select any combination of the following choices for a total of at least 100 points.

☐ **Customer Site Visits** — **50 Points**
Provide at least 3 sites, contact information, and timeframes for EcoBiz program staff to visit. These sites should demonstrate a more minimal environmental impact, preferably while maintenance or installation work is occurring. Design site visits may be after completion.

☐ **Track Chemical Use and Expenses** — **50 Points**
Track information on the amount of horticultural chemicals used on environmentally sustainable sites in pounds per acre. Comparisons of standard maintenance and natural maintenance sites are preferred. Existing pesticide reporting data may be used, but will likely need to be manipulated. This documentation should be periodically submitted to program staff OR available for staff to review at any time. Provide an example document with your checklist submittal. Template is available.

☐ **Reduction of Chemical Usage or No Chemical Demonstrated** — **25 Points**

☐ **Attend a Class** — **30 Points**
Complete an 8-hour training course, class or exam on environmentally related issues found in this checklist e.g. low-impact landscaping, IPM, water conservation, stormwater management, erosion control, use of native plants or other pollution prevention techniques. The business owner, crew leaders, or at least 30 percent of total staff must provide proof of passing. Classes must be within the past 3 years. Provide complete certificates with your checklist submittal.

☐ **Lead a Training Class** — **20 Points**
Lead at least 2 hours of presentation time within the last 3 years for events for the public or other contractors (garden tours can be included). Classes should demonstrate knowledge of issues covered in this checklist. Provide a schedule of classes that shows your name with your checklist submittal.

☐ **Document Standard Operating Practices** — **30 Points**
Document innovative company procedures related EcoBiz items such as staff training procedures, after care manual, customer surveys, standard plan set notes, etc. Contact EcoBiz program staff to determine appropriateness of your proposed SOP submittal. Template will be provided.

☐ **Case Studies** — **30 Points**
Submit case studies for a least 3 sites you have worked on using environmentally friendly techniques. Document initial site conditions and how you assessed existing environmental impacts; the approach taken and practices used to modify site design or maintenance; and final results. Submit this information with your checklist. Template available.

☐ **Magazine Articles** — **20 Points**
Publish an article in a local gardening, trade or sustainability journal within the last 3 years. The article must highlight sustainable or innovative approaches used by the firm.

☐ **Typical Contract /Plan Documents (REQUIRED OF ALL FIRMS)** — **20 Points**
Provide a typical contract and planting plan in your submittal. This will help staff verify your knowledge and communication skills on environmental impact and sustainability issues.

☐ **Yard Location Visits (REQUIRED for Installers and Maintenance firms)** — **40 Points**
Schedule company yard visit with EcoBiz program staff. The visit will verify the environmental friendliness of your work truck and equipment yard, safe materials storage & handling practices, good housekeeping techniques, spill prevention measures, and controlled washing and equipment maintenance areas.

GENERAL BUSINESS PRACTICES

Landscape contractor license

Insurance & Bond

Accreditations: *OLCA, PLANET, Oregon Tilth, College Coursework.*

STAFF TRAINING

Staff Training on a variety of topics:

- Principles of IPM
- Plant and pest identification
- Horticultural practices
- Erosion control
- Safe equipment handling procedures
- Equipment care and maintenance and more.

Douglas Spirea Photo: EMSWCD

CUSTOMER EDUCATION

"How do you help clients understand the advantages of "green" landscaping techniques and impacts on their property?"

- Plant maintenance
- Water use
- Waste reduction
- Pollution prevention

Photo credit EMSWCD

Tall Oregon Grape Photo: EMSWCD

VEHICLE WASHING

Less than 8 vehicles or equipment per week not required to obtain a permit. However, NO chemicals, soaps, detergents, steam, or hot water can be used.

Additional local requirements apply.

8+ vehicles or equipment

1. **Closed Loop Wash Water Recycling System**
2. **Discharge to sanitary, with permission**
3. **Use an approved off-site facility**
4. Discharge to surface waterways or storm sewer, with permission.*

*All require permission and documentation from the local sewage authority, and/or DEQ

CASE Study:
Willamette landscape services

Located in Tualatin, Oregon
Discharging into storm system prior to EcoBiz outreach
Installed a wash pad with closed loop wash water recycling system.

PRINCIPLES OF IPM

Integrated Pest Management:

Use preventative techniques to promote healthy plant growth, least-toxic methods for disease and pest control.

- Site monitoring and recordkeeping
- Pest / problem identification
- Pest tolerance levels / action triggers
- Cultural controls
- Physical / mechanical controls
- Biological controls
- Least toxic chemical controls
- Evaluation of treatment effectiveness

PRINCIPLES OF IPM

- Pest/disease resistant plants
- Water Conservation
- Maintenance of high species diversity
- Elimination of monocultures in plantings
- Mulching
- Removing weeds by hand
- Beneficial insects

Chemical Controls, if needed

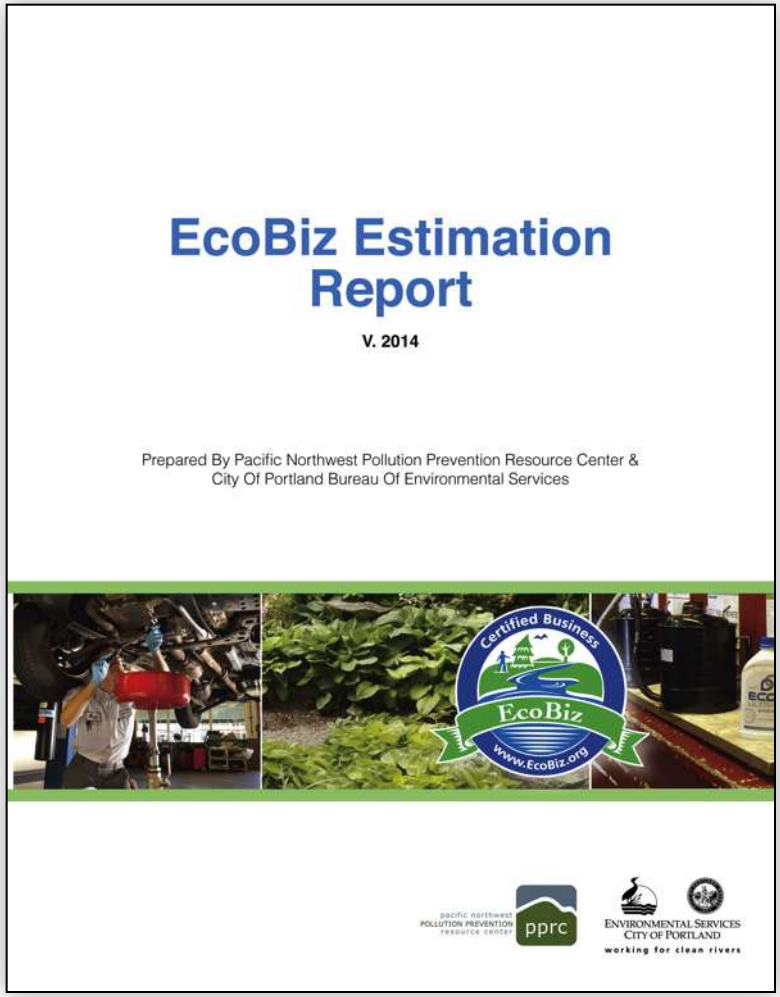
- Spot treatment, rather than blanket application
- Select chemical with lowest toxicity
- Appropriate timing for maximum control
- Appropriate chemical for the problem

P2: *DRAFT* ECOBIZ ESTIMATION REPORT

2014 - PPRC & City of Portland Bureau of Environmental Services develop a white paper linking standards to metrics.

StormCon August 6, 2014

"What Do Pollution Prevention BMPs Get Us? A New Methodology for Estimating Impacts for Landscape and Automotive Sectors"



LANDSCAPING P2 METRICS:

- Turf Replacement
- Minimizing Impervious area
- Erosion Control – Slopes> 10%
- Wet Weather Erosion control
- Tree Protection
- Beneficial Insects
- Environmentally Friendly Products
- Amending Soils

VEHICLE & EQUIPMENT WASHING

VARIABLES:

# of cars and equipment washed per month_____(#)

Assume equipment has the same pollutant loads as a car.

WATER: 50G per car using hose vs. 37G for recycling system

POLLUTANTS PREVENTED per car by diverting to sanitary:

1.21g of fuel and oil

2.25g of surfactants

0.086g of copper and zinc

34.46g of dissolved and suspended solids

0.39g of phosphorous and nitrates

SPILL TRAINING

Variables:

- Operator training reduces releases of materials 16.7%.
- Assume release is 5 gallons via drips and small spills every year
- Assume a 50 gallon spill every 20 years

Conversion

- 5 gallons released per year + (50 gallons / every 20 years) = 7.5 gallons released annually (normalized)

Formula

- 7.5 gals/year x 0.167 reduced by spill training = 1.25 gallons prevented from release by spill training per year

GRASS CYCLING

- Reduces green waste volume and fertilizer use by 25%
- Adds nitrogen, acts as a mulch.

Calculation: Greenwaste generation = # of turf acres managed/year x 15,246 lbs of grass clippings / acre = pounds of greenwaste prevented per year

Calculation: Nitrogen Needs = # of turf acres managed/year x 217.8 lbs of nitrogen needed/acre x 0.33 more Nitrogen used by standard turf without grasscycling = pounds of nitrogen diverted from the environment.

TRACKING DATA

EcoBiz Checklists now include area to input baseline data to help us track P2.

- Square feet of building space
- Number of employees
- Recycling volume
- Number of spill kits
- Purchasing data
- Acres managed using sustainable practices
- Energy & water efficiency upgrades – *Contact with ETO*

OPPORTUNITIES FOR AGENCIES

- Meet internal environmental and sustainability goals
- Learn techniques to cut waste and save money
- Comply with all legal requirements, industrial stormwater permit.
- Communicate successes to stake holders and the public
- Protect employees, the public and the environment.

STORMWATER CERTIFICATION

Developed standards (Guide + Checklist) for Landscapers who maintain storm water management facilities.

Looking at creating a training and preferred contractor list.

Working with Oregon DEQ determine if sediment removed from facilities can be considered “Clean Fill” or not a waste.

STORMWATER FIELD GUIDE

What's next

New website in July (www.EcoBiz.org)

- Promotion of certified businesses
- Mapping tool
- Responsive design

EPA P2 Grant to expand to Gresham, Clackamas, & outer Portland

Chinook Book Ad (September)

Stormwater Management Facility Certification (Late 2014)

QUESTIONS?

Mitchell Frister - EcoBiz Manager - PPRC

mfrister@pprc.org

503-348-6219

RESOURCES

EcoBiz

- Auto Checklist - http://www.ecobiz.org/Checklist%20Electronic%2005_09.pdf%20-%20Adobe%20Reader.pdf
- Auto Guide - http://www.ecobiz.org/KeepShopTune%20AUTO%20(11-2004).pdf
- Landscape Checklist - http://www.ecobiz.org/Version_13_11_10.pdf
- Landscape Guide - http://www.ecobiz.org/LANDSCAPE.pdf

Estimation Report – Email me.

Field Guide: Maintaining Rain Gardens, Swales and Stormwater Planters (2013) http://extension.oregonstate.edu/stormwater/sites/default/files/fieldguide.pdf