



2018-2019 Annual Report

For
National Pollutant Discharge Elimination System (NPDES)
Municipal Separate Storm Sewer System (MS4)
Permit Compliance
Permit #101348

Prepared by:
Oak Lodge Water Services District (OLWS)
Surface Water Management Program

October 2019

2019 Oak Lodge Water Services
March 2012 MS4 Permit
ANNUAL REPORT REQUIREMENTS

Table of Contents

1. Background.....	3
2. Report Organization.....	3
3. Status of SWMP Program and Associated Elements (B.5.a).....	3
4. Status of Public Education Effectiveness Programs (B.5.b).....	4
5. Adaptive Management Process (B.5.c).....	4
6. Proposed Changes to SWMP (B.5.d).....	4
7. Summary of SWM Program Expenditures (B.5.e).....	4
8. Summary of SWM Program Monitoring (B.5.f).....	5
9. Proposed Modifications to Monitoring Plan (B.5.g).....	5
10. SWMP Enforcement (B.5.h).....	5
11. Development Activities (B.5.i).....	5
12. District Boundary Expansion (B.5.j).....	5
13. Public Notice of 2018-2019 Annual Report.....	6
14. Appendix A – See Attached BMP Table.....	6
15. Appendix B – See Attached FY2018-2019 Sampling Summary.....	6

1. Background

The Board of Directors of Oak Lodge Sanitary District created a Surface Water Management program with the adoption of Ordinance 1001 in May of 1993. The purpose of the Surface Water Management Program is to:

- prevent pollutants from entering rivers, lakes, and streams;
- maintain and/or improve water quality; and
- restore or enhance properly functioning conditions in the watersheds.

Program development began officially on July 1, 1993, with the collection of Surface Water Management fees based on impervious surface area.

On January 1, 2017, Oak Lodge Sanitary District and Oak Lodge Water District officially consolidated into Oak Lodge Water Services District. Prior to this consolidation, Oak Lodge Sanitary District passed by Resolution (16-12) assigning all assets and obligations to the Oak Lodge Water Services District. Oak Lodge Water Services District understands that it now must meet the obligations it had made for the MS4 Permit.

Permit History

The Department of Environmental Quality issued a National Pollutant Discharge Elimination System Waste Discharge (NPDES) Permit No. 101348 dated December 15, 1995 to the District as a joint permit with Clackamas County. This five-year permit required the District to implement a stormwater management program to reduce the contribution of stormwater pollutants to the maximum extent practicable and to discharge stormwater to public waters through a municipal separate storm sewer system in conformance with the conditions in the permit.

That original NPDES permit expired on November 30, 2000 and the State of Oregon Department of Environmental Quality (DEQ) issued a new permit in March 2004 (NPDES-MS4 Permit 101348). Due to public comment, the DEQ reopened the permit in June 2004. After a public comment process, the DEQ issued the final Municipal Stormwater Permit on July 25, 2005. This permit was appealed by third party groups, and the Oregon Court of Appeals upheld the issued permit in 2010; the Oregon Supreme Court did not allow further review.

The District was issued another MS4 Permit on March 15, 2011. Based upon the new permit, the District prepared a revised Surface Water Management Plan and Surface Water Monitoring Plan. The Clackamas County MS4 permit was appealed after issuance by a co-permittee. The current MS4 permit was issued to the co-permittees in March 2012, and that permit is the basis for this annual report. That permit expired March 1, 2017 and the District is in the initial stages of negotiating the next permit with DEQ.

2. Report Organization

This report is organized based on the requirements of the March 2012 NPDES permit, Schedule B.5.a through B.5.k. The numbers listed after the report headings indicate the portion of the permit schedule that the section addresses. The report covers the activities of the District from July 1, 2018 to June 30, 2019. Information about implementation of required BMP's is summarized in Table 1. Brief summaries of each topic are described in this document.

3. Status of SWMP Program and Associated Elements (B.5.a)

The Oak Lodge Sanitary District (OLSD) implemented the Surface Water Management Plan in 2012 and was based on the two permits because the new/current permit was issued mid-cycle in March 2012. However, for the purpose of the annual report preparation, implementation of the SWMP is being reported based on the requirements in the current permit (permit 101348). This information is summarized in Appendix A of this report.

4. Status of Public Education Effectiveness Programs (B.5.b)

OLWS uses multiple avenues to educate the public about the importance of surface water protection. The District includes bi-monthly newsletters in our bills and posts the same information on our website.



Over time, the District has created, supported, and implemented a variety of additional programs and partnerships to provide outreach to the community about surface water issues. During the 2018-19 year, OLWS has continued to fund and participate in programs, including implementation of the “Dump Smart – It’s Just Not Water” materials, the “Watershed Health Education Program (WHEP)” with Rex Putnam High School and Ecology in Classrooms and the Outdoors, the “Stormdrain Cleaning Assistance Program” (SCAP) in partnership with 4 other municipalities, and support of local non-profit programs which provide experiential education focused on stormwater.

Another ongoing partnership for OLWS is with the North Clackamas Watersheds Council’s (NCWC). OLWS provides funds for the NCWC Streamside Stewards Program to educate landowners on best practices for watershed stewardship and to restore stream front properties in the OLWS service area. The goals of this program remain consistent with years past as listed in previous annual reports.

In addition to the efforts listed here, OLWS continues to participate in several cooperative MS4 stormwater utility outreach efforts including the Regional Coalition for Clean Rivers and Streams and the statewide Clean Rivers Coalition.

Please see the BMP’s for Public Education listed in Appendix A for full detail on the District’s progress toward public education and outreach efforts.

5. Adaptive Management Process (B.5.c)

Over time, OLWS will continue to evaluate the overall health of local watersheds using the information collected through the monitoring program. That information provides a valuable ‘snapshot’ of water quality in the District and provides District program management the opportunity to determine where to focus limited financial resources for program implementation. The District will target water quality issues that are trending toward exceeding state water quality standards; adjustments can be made to focus the messaging to the community about different water quality problems being observed. The anticipated outcome would be a reversal of negatively trending water quality factors because of actions taken by the District. Examples of actions might include stepped up inspection and enforcement in areas with documented water quality issues, targeted public outreach to smaller neighborhood or watershed groups that are the source of the problem, and targeted monitoring activities to try to minimize the area where the source of the water quality problems are coming from.

6. Proposed Changes to SWMP (B.5.d)

OLWS amended the SWMP during the 2012-2013 permit year as a result of the special conditions required of OLWS and Clackamas County related to public infrastructure maintenance. The SWMP amendment was approved by DEQ. There are currently no proposed changes to the SWMP anticipated.

OLWS will be revising its SWMP during the upcoming permit renewal process.

7. Summary of SWM Program Expenditures (B.5.e)

All revenue generated by the Watershed Protection Fee are retained within with the surface water management program. During the 2019 Fiscal Year, one Equivalent Service Unit (ESU) was \$9.10 per month for residential households. For commercial and industrial users their ESU equivalent is calculated by dividing their total impervious surface by the residential ESU, or 2,500 SF.

For the 2019 Fiscal Year, OLWS's expenditures for the surface water program totaled \$2,861,565. With \$888,210 being devoted to operational expenditures and \$1,973,355 to the Surface Water Management Capital Improvement fund.

Major projects include, the Boardman Wetland Complex, which will be completed in the 2020 Fiscal Year and a Watershed Master Plan that may carry into FY2021.

8. Summary of SWM Program Monitoring (B.5.f)

Surface water sampling occurred as is required in the NPDES permit. The sites sampled included instream samples, stormwater samples, and dry weather outfall monitoring from each site as listed in the updated Stormwater Monitoring Plan. In reviewing the water quality data, water quality elements for sediment and bacteria are elevated, with periodic exceedances of the state standard for e Coli.

Other testing elements appear to be within DEQ range, and program monitoring will continue per the procedures outlined in the 2012 Monitoring Plan.

Sample results are provided in Appendix A.

9. Proposed Modifications to Monitoring Plan (B.5.g)

OLWS is current on its 2018-2019 Monitoring Plan with no changes during this permit year.

OLWS did not seek modifications to its Storm Water Monitoring Plan this permit year.

10. SWMP Enforcement (B.5.h)

OLWS routinely inspects the various elements of the Surface Water system within the District. A summary of the inspections, enforcements, and ongoing activities related to illicit discharges can be found in Appendix A: Summary of BMP Implementation.

11. Development Activities (B.5.i)

Land within the Oak Lodge Sanitary District is largely built-out, with very little undeveloped land available for new development and redevelopment activities are more common. Appendix A: Summary of BMP Implementation summarizes the number and type of development activities that OLWS reviewed. Currently, there are no proposals for land annexations, and OLWS does not implement any part of the Urban Growth Boundary.

12. District Boundary Expansion (B.5.j)

When Oak Lodge Sanitary District consolidated with Oak Lodge Water District to form Oak Lodge Water Services District, its boundary grew by approximately 25%; this newly acquired area was already within Clackamas County Service District #1 (CCSD#1). In order to clarify whose authority would preside in this area, OLWS worked with

CCSD#1 to create a Memorandum of Understanding (MOU) that allowed CCSD#1 to continue its service in this area since this area naturally drained to watersheds CCSD#1 was already managing. This MOU was later adopted via OLWS Resolution 2017-5.

13. Public Notice of 2018-2019 Annual Report

OLWS solicited public comment on this annual report in the following manner:

- Public Notice and Solicitation of Comments on the OLWS Website: The 2018-2019 Annual Report posted on OLWS Website for 2 weeks in September 2019 for public review and comment;
- North Clackamas Watersheds Council: OLWS provides a direct invitation of availability of the report to NCWC and posted it on the OLWS website for review and comment;
- Notice of the Annual Report posting was sent to the District's "Interested Parties" email list.

14. Appendix A - See attached BMP Table on the following pages.

15. Appendix B - See attached FY2018-2019 Sampling Summary on the following pages.

Appendix A: BMP Table—OLWS 2018-2019 Summary of BMP Implementation

Best Management Practice	MS4 Permit Schedule A Requirement	BMP Description	Performance Measure	Annual Report 2018-2019
<p>Illicit Discharge Detection and Elimination</p> <p>Enforcement Response Plan and Pollution Parameter Action Levels</p>	<p>4.a.i – iii</p>	<p>BMP Description: In cases where an illicit discharge has resulted in a discharge that OLWS suspects resulted in a violation of state water quality standards, water quality samples may be collected at the suspected discharge point, as well as upstream and downstream of the discharge point. This is done in an effort to prove the impact on water quality that the illicit discharge has had. The samples will be tested at the laboratory based on field observations of the discharge in an effort to identify any pollutants present in the discharge. Staff will also investigate the source of the discharge by looking in the surface water system upstream of the discharge point; samples may be taken at locations suspected of originating the illicit discharge.</p> <p>In cases of an oily discharge, OLWS will notify DEQ through the OERS (Oregon Emergency Response System), which is in place to address oil spills into waterways and ditches. If the DEQ and/or EPA become involved, OLWS will provide a support role to these agencies. When the source of the illicit discharge is identified, OLWS will determine whether this discharge violated the District’s Surface Water Management Code, and if so, fines may be levied against the offending party, including all cleanup costs, investigative and sampling costs, and OLWS staff costs, including legal fees.</p> <p>OLWS will rely on State of Oregon water quality standards to determine a pollutant level that violates water quality as a trigger to initiate full enforcement action.</p>	<ol style="list-style-type: none"> 1. Documentation of Enforcement Plan 2. Response Procedures 3. Pollutant Parameter Action Levels 	<ol style="list-style-type: none"> 1. Illicit discharges are managed through the Districts documented Illicit Discharge Program. 2. OLWS maintains an SOP (Standard Operation Procedure) for staff to perform enforcement actions with illicit discharges. 3. OLWS has determined pollutant parameter action levels to match Oregon State water quality standards.
<p>Illicit Discharge Detection and Elimination</p> <p>Conduct Annual Dry Weather Field Screening</p>	<p>4.a.iv</p>	<p>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.</p>	<ol style="list-style-type: none"> (1) Number of outfalls inspected during dry-weather. (2) Number and type of illicit discharges that were encountered and controlled. (3) Status of updating procedures to address new permit requirements <p>Measurable Goals:</p> <ul style="list-style-type: none"> • Inspect major or priority outfalls for the presence of illicit discharges at least once per year. • Update maps of major outfalls on an annual basis. • Update dry weather field screening program to address new permit requirements by November 1, 2012. 	<ol style="list-style-type: none"> 1. Five Dry Weather Outfalls were inspected each quarter during the dry season of the 2018/2019 Permit year. 2. No illicit discharges were noted from the outfall inspections. 3. No new requirements were established for the 2016/2017 OLWS Storm Water Monitoring Plan.

Appendix A: BMP Table—OLWS 2018-2019 Summary of BMP Implementation

<i>Best Management Practice</i>	<i>MS4 Permit Schedule A Requirement</i>	<i>BMP Description</i>	<i>Performance Measure</i>	<i>Annual Report 2018-2019</i>
<p>Illicit Discharge Detection and Elimination</p> <p>Implement the Spill Response Program</p>	4.a.v	<p>BMP Description: The District’s Spill Response Program prevents, contains, and responds to spills of dangerous, hazardous and other materials. The District’s 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 District’s 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.</p>	<p>(1) Number of reported spills to the MS4 system.</p> <p>(2) Number and type of response to the reported spills.</p> <p>Measurable Goals:</p> <ul style="list-style-type: none"> Implement the spill response program and associated protocols. 	<p>Due to staff turnover and a lack of documentation, it is unknown how many storm water complaints of potential spills occurred during the 2018/2019 reporting period.</p> <p>At least 2 complaints were filed by the Pollution Prevention Specialist to DEQ for action. One of which was an enforceable event.</p>
<p>Respond to reports involving illicit discharges</p>	4.a.v – 4.a.xii	<p>BMP Description: Reports are often received from Oregon’s DEQ, Oregon’s ODOT, Water Districts, Fire Districts, cities, citizens, district 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, OLWS will attempt to confirm the allegation in a timely manner. If it can be confirmed that 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:</p> <ul style="list-style-type: none"> 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 proper discharge permit from DEQ. A discharge that has been authorized and controlled by a DEQ water quality permit is not an illicit discharge. Application of 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 proper disposal. With the necessary permits, discharge the wastewater to OLWS’s sanitary sewer system. 	<p>(1) Number of alleged illicit discharges and non-stormwater discharges which were reported each year</p> <p>(2) Number of illicit discharges that were controlled.</p> <p>Measurable Goals:</p> <ul style="list-style-type: none"> Respond to reports involving alleged illicit discharges within two weeks. 	<p>OLWS received at least 2 possible Illicit discharge complaints during the reporting year 2018/2019.</p> <p>At least 1 complaint was found to be reportable Illicit discharges.</p> <ul style="list-style-type: none"> Oak Lodge staff was found to be discharging sediment laden water into a catch basin that drained to Kellogg Creek. DEQ was made aware of the pumping and ultimately fined the District. Since this event, staff have been trained on how to properly dispose of this material and what to do in the event of seeing it happen elsewhere in the District. Staff vehicles have also been equipped with the necessary tools to manage these events quickly.
<p>Screen Existing and New Industrial Facilities</p>	4.b.i – 4.b.iii	<p>BMP Description: Once during the permit term, OLWS will review 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 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.</p>	<p>(1) Track the number of existing or new industrial facilities subject to a stormwater industrial NPDES permit during the permit term.</p> <p>Measurable Goals:</p> <ul style="list-style-type: none"> Review new industrial development applications once during the permit term to identify additional facilities needing to obtain 1200-Z permits. 	<p>The District currently has 2 1200Z permit holders in its boundaries.</p> <p>No new Industrial user accounts were opened in 2016/2017</p> <p>The District continually reviews all new industrial facilities through its development review process.</p>

Appendix A: BMP Table—OLWS 2018-2019 Summary of BMP Implementation

<i>Best Management Practice</i>	<i>MS4 Permit Schedule A Requirement</i>	<i>BMP Description</i>	<i>Performance Measure</i>	<i>Annual Report 2018-2019</i>
Address Other Industrial Facilities	4.b.i – iii	<p>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.</p> <p>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 facility’s stormwater quality improves.</p> <p>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.</p> <p>Industrial users permitted under the pretreatment program 40CFR403 have an annual facility inspection which includes a review of storm water facilities.</p>	<ol style="list-style-type: none"> 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 <p>Measurable Goals:</p> <ul style="list-style-type: none"> • Notify and work with industries to improve stormwater management if an inspection is conducted that indicates improvement is needed. 	<p>There are 4 commercial or industrial sites that were anticipated to contribute a substantial load of pollutants to the MS4 during 2018/2019.</p> <ol style="list-style-type: none"> 1. 16600 SE Kens Ct. (Blue Sky Filters) 2. 3901 SE Naef Rd. (NW Flex Space) 3. 3810 SE Naef Rd. (Stanley Tools) 4. 3701 SE Naef Rd (Buffalo Welding) <p>There is no storm event monitoring work or routine monitoring work showing excessive levels of pollutants present.</p> <p>There are no industrial users that are permitted under OLWS’s pretreatment program.</p> <p>There was no monitoring performed on stormwater discharged by OLWS’s commercial or industrial accounts.</p>
Construction Site Runoff Control Erosion Control Ordinances	4.c.i – 4.c.vi	<p>BMP Description:</p> <p><i>OLWS Surface Water Management Code</i></p> <p>The District updated the Surface Water Management Code (Rules and Regulations and Design and Construction Standards) in 2018 and 2019 respectively to match updated requirements through the MS4 permit and reconcile the SWWMP. The combined documents address regulatory and review requirements related to erosion control, tree removal, undisturbed buffers, and flow control and treatment requirements. These regulations require submittal of an erosion prevention and sediment control 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. OLWS administers “small lot” erosion control permits less than one acre and 1200CN permits for sites between 1-5 acres. OLWS has an agreement with Oregon DEQ for administration of the 1200-C sites greater than five acres in size.</p>	<p>(1) Implement Code</p> <p>Measurable Goals:</p> <ul style="list-style-type: none"> • Update SWMC and implement new code 	<p>The District makes updates the Surface Water Management Code (Rules and Regulations and Design and Construction Standards) annually as needed.</p>

Appendix A: BMP Table—OLWS 2018-2019 Summary of BMP Implementation

Best Management Practice	MS4 Permit Schedule A Requirement	BMP Description	Performance Measure	Annual Report 2018-2019
<p>Public Education and Outreach</p> <p>Topic: Reduce Discharges of Pesticides, Herbicides and Fertilizers</p>	<p>4.d.iii</p>	<p>BMP Description: OLWS 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 District. Educational information is shared with the public through the use of:</p> <ul style="list-style-type: none"> • Articles in newsletters • District’s website. • Through local public involvement campaigns. A recent example of a recent relevant public involvement campaign is the Oregon Environmental Literacy Plan (OELP), which is enacted as part of House Bill 2544 and lays out age appropriate environmental literacy education. • Brochures <p>Common topics that are addressed by this program include:</p> <ul style="list-style-type: none"> • 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. 	<p>(1) Track programs messages delivered, type of communication piece, and where appropriate, the number of people affected</p> <p>Measurable Goals:</p> <ul style="list-style-type: none"> • Continue to maintain relevant public education materials on the district’s website. • Prepare a minimum of one relevant article per year for inclusion with customer billing statements. 	<p>The following outreach efforts occurred last year: Six newsletters including surface water education topics in each;</p> <p>School Outreach: Administered Watershed Health Education Program (WHEP) with our high school partner, Rex Putnam H.S. OLWS conducted: six group plant tours for 3rd- college aged students; macroinvertebrates workshops for elementary and high school students; native plantings and watershed education for District 5-12th grade students; Rex Putnam WHEP annual report and Board presentation; planting at Rinearson Creek site with WHEP students and elementary school OELP students; partnered with Ecology in Classrooms and Outdoors to conduct water quality lessons; and supported restoration with View Acres Elementary School;</p> <p>Events: OLWS sponsored or participated in four events which contained water quality education, including the Oak Grove Trolley Trail Festival, the Jennings Lodge Community Planning Organization’s Picnic, the CCWET Celebrating Water Forum, the Children’s Clean Water Festival and the North Clackamas Watersheds Council - Watershed Wide Cleanup;</p> <p>Posted brochures include: “<i>Dump Smart:</i>” Proper Disposal for Paint, Power Washing, and Carpet Cleaning; <i>Think Smart About Pesticides</i> by Clackamas River Basin Council, and a pictorial fact sheet on spraying of pesticides and herbicides by the Clackamas River Water Providers;</p> <p>Participated in regional outreach groups, and public involvement campaigns, including: the Clean Rivers Coalition, Clackamas County Water Education Team (CCWET), and the Regional Coalition for Clean Rivers and Streams;</p> <p>Presented streamlined website access to relevant water quality education information for property owners, tenants, and educators including stormwater smart yard and garden maintenance.</p>

Appendix A: BMP Table—OLWS 2018-2019 Summary of BMP Implementation

<i>Best Management Practice</i>	<i>MS4 Permit Schedule A Requirement</i>	<i>BMP Description</i>	<i>Performance Measure</i>	<i>Annual Report 2018-2019</i>
Education and Outreach Privately Owned SWM Facility Education	4.d.iv	BMP Description: Privately owned SWM facilities require periodic inspection and maintenance to keep them working correctly. This effort focuses on outreach and education to those private landowners who own these types of facilities	(1) Number and Type of Education and Outreach efforts specific to privately owned facility inspection and maintenance.	<p>Inspection of 19 out of 115 total, letters sent to owners engaging them in awareness, cleaning, maintenance and functionality of their catchment systems.</p> <p>Participation in the Stormdrain Cleaning Assistance Program (SCAP) with mailers sent to 400+ property owners with private storm drains on their property.</p> <p>Email campaign planned to include all previous participants as well as accounts with email access in order to increase participation.</p>
Education and Outreach Erosion Control Contractor Training Opportunities	4.d.v	BMP Description: Provide notice to construction site operators concerning where education and training to meet erosion prevention and sediment control requirements can be obtained.	(1) Describe efforts to provide this notice	<p>Oak Lodge has four certified erosion control staff members and provides construction site operators notice and training opportunities on an ad hoc basis.</p> <p>Other OLWS erosion control training of staff this reporting year includes:</p> <ul style="list-style-type: none"> • OLWS field supervisor and one water utility worker attended the Erosion and Sediment Control Manager Certification (ODOT) • All Water and Sanitary Utility workers (11 staff members) attended a Stormwater Management Overview Training Video (Safe Personnel through SDAO)
Education and Outreach Effectiveness Evaluation	4.d.vi	BMP Description: Over the permit term, OLWS 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 OLWS education and outreach strategy.	(1) Report on activities annually. Measurable Goals: <ul style="list-style-type: none"> • Provide/compile information regarding a public education effectiveness evaluation over the permit term. 	During the 2013-2014 permit year, OLWS participated in a regional study about the effectiveness of various stormwater-related public outreach efforts within Oregon. The report was commissioned through Oregon Association of Clean Water Agencies. See Appendix B for a copy of the study.
Education and Outreach Employee Training	4.d.vii	BMP Description: A variety of training is provided to staff associated with surface water 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.	Track the number of employees receiving training in stormwater management annually. Measurable Goals: <ul style="list-style-type: none"> • Attend relevant stormwater management related training based on need and availability. 	<p>Specific Staff Trainings included:</p> <ul style="list-style-type: none"> • OLWS Pollution Prevention Specialist, Civil Engineer and Outreach / Education Coordinator received certification in the Northwest Environment Training Center’s “Certification in Erosion and Sediment Control Lead” (CESCL). 2 days. • OLWS Pollution Prevention Specialist attended Oregon Water Education Foundation’s Water Environment School at Clackamas Community College. 3 days. • OLWS field supervisor and one water utility worker attended the Erosion and Sediment Control Manager Certification (ODOT). • All Water and Sanitary Utility workers (11 staff members)

Appendix A: BMP Table—OLWS 2018-2019 Summary of BMP Implementation

Best Management Practice	MS4 Permit Schedule A Requirement	BMP Description	Performance Measure	Annual Report 2018-2019
				attended a Stormwater Management Overview Training Video (Safe Personnel through SDAO). <ul style="list-style-type: none"> • OLWS General Manager attended the ACWA Stormwater Conference. (3 days)
Public Education and Outreach Topic: Facilitate Public Reporting of Illicit Discharges	4.d.viii	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 have received a report which relates to one of these discharges, they investigate and, if appropriate, apply control measures. See BMP #3.	(1) Number illicit discharges reported. (2) Number of illicit discharges requiring action. (3) Number of educational events educating public about illicit discharges and procedures to report. (4) Number of publications educating public about illicit discharges and procedures to report. Measurable Goals: <ul style="list-style-type: none"> • Create a page for public complaints on the District’s website and track number of complaints for reporting. 	Potential illicit discharges reported: At least 2 Actions taken: 2 Educational Events: 1 – Staff Training in Certified Erosion Control Standards and Techniques Educational Publications: <ol style="list-style-type: none"> 1) Dump Smart Campaign – Painting, Carpet Cleaning and Pressure Washing 2) Where to Properly Dispose of unwanted or expired medications 3) EPA – Keep Salmon of Drugs 4) CRWP – Pesticides and Herbicides our of the River (Pictorial) 5) Regional Coalition for Clean Rivers and Streams -- River Starts Here Public submits complaints through the information email on the OLWS website, or calls staff directly. Complaints are coded in Lucity, the district’s Computerized Maintenance Management System.
Public Involvement and Participation	4.e	BMP Description: Schedule A.4.e of the District’s MS4 NPDES permit requires OLWS to provide opportunity for public participation in the development, implementation, and modification of the Storm Water Management Plan (SWMP). Prior to submittal of various milestone reports, OLWS will provide the public with an opportunity to comment for a period of 2 weeks prior to submittal dates. Comments on the documents will be collected and considered. Additionally, OLWS has many opportunities for members of the community to participate in various sub committees that provide oversight and guidance to OLWS management related to MS4 implementation.	(1) Provide for public participation with the SWMP and pollutant load reduction benchmarks prior to the permit renewal application deadline.	SWM Annual Report Public Notice: completed, announced at North Clackamas Watersheds Council and to OLWS Board Members; SWM Annual Report and Permit on website: completed; the website contains a variety MS4 related material, providing ongoing opportunities for public to comment. SWM Master Planning Advisory Committee: Oak Lodge Water Services District is seeking to complete two studies analyzing the benefits and costs of adding services in the Watershed Protection Program. To achieve this, the District has assembled an advisory committee comprised of residential customers, commercial customers and Board Members. Ultimately, this committee will make recommendations to the Board regarding adding these services or not.

Appendix A: BMP Table—OLWS 2018-2019 Summary of BMP Implementation

<i>Best Management Practice</i>	<i>MS4 Permit Schedule A Requirement</i>	<i>BMP Description</i>	<i>Performance Measure</i>	<i>Annual Report 2018-2019</i>
Construction Site Runoff Control	4.f.i - 4.f.iv	<p>BMP Description: <i>OLWS Development Review</i></p> <p>The District reviews all development plans for new construction or redevelopment projects in the District’s service area through the building permit process. All reviews are conducted in accordance with the OLWS Surface Water Management Code (SWMC). These regulations require submittal of a surface water management plan that addresses post-construction pollutant and runoff control measures. The OLWS SWMC was updated during this reporting year, and new, more stringent requirements for surface water management have been adopted.</p>	<p>(2) Annual number of permitted, active construction projects (i.e., those projects disturbing 800 s.f. or more).</p> <p>(3) Annual number of site plan reviews and approved plans.</p> <p>Measurable Goals:</p> <p>6) Review all applicable erosion and sediment control plans submitted as part of the building permit.</p>	<p>Number of development permits issued: 21</p> <p>Acreage of development activity: 14.095 Acres</p> <p>Number of erosion control permits issued: 120</p> <p>Number of erosion control inspections completed: 360</p> <p>Number of enforcements (violations that needed enforcement action): 1</p> <p>Identify any new industrial businesses in OLWS: 0</p> <p>Variance Requests: 1</p> <p>Appeals: 0</p> <p>Estimate of total new and replaced impervious surface area related to development projects: 9 acres</p>
Pollution Prevention for Municipal Operations Street Sweeping	4.g	<p>BMP Description: Major arterial curbed streets within the DTD service area (which includes OLWS) 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 the DTD MS4 NPDES SWMP.</p>	<p>(1) Number of miles that were swept within OLWS</p> <p>(2) Mass or volume of material removed during sweeping</p> <p>Measurable Goals:</p> <p>7) For DTD roads, see tracking measures in the DTD MS4 NPDES SWMP.</p>	<p>Information Request to CCDTD pending</p> <p>Clackamas DTD Street Sweeping within OLWS Boundary:</p> <p>(1) 226 Curb/ Shoulder Miles</p> <p>(2) 104 Cubic Yards debris removed</p> <p>(3) The district has entered into an agreement with the Clackamas County DTD to have its WRF impervious surface’s swept once a month. This BMP is a result of the Districts 1200Z Permit.</p>
Operations & Maintenance for Public Streets	4.g	<p>BMP Description: Operations and maintenance of public streets within the DTD service area (which includes OLWS) is the responsibility of DTD. For information on their activities, refer to the DTD MS4 NPDES SWMP.</p>	<p>Measurable Goals:</p> <ul style="list-style-type: none"> • DTD Roads: 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. 	<p>See Clackamas County/DTD’s MS4 Annual Report</p>

Appendix A: BMP Table—OLWS 2018-2019 Summary of BMP Implementation

<i>Best Management Practice</i>	<i>MS4 Permit Schedule A Requirement</i>	<i>BMP Description</i>	<i>Performance Measure</i>	<i>Annual Report 2018-2019</i>
Control Infiltration and Cross Connections to the District's Stormwater System	4.g	<p>BMP Description: The District prevents exfiltration of flows from municipal sanitary 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.</p> <p>The District prohibits cross-connections in new/redevelopments through the development and building permit review and issuance process. This system, which features plan review in the office and field inspections by certified plumbing inspectors, ensures that fixtures that need to be plumbed into OLWS's sanitary sewer system or a private septic system are actually plumbed into those systems, preventing hundreds of illicit discharges per year. The District is able to identify and control the exfiltration of flows from municipal sanitary sewers when it occurs by:</p> <ul style="list-style-type: none"> • 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. 	<p>(1) Number of cross-connections/ sanitary discharges identified.</p> <p>Measurable Goals:</p> <ul style="list-style-type: none"> • Eliminate any identified sanitary discharges to the storm system. 	No Cross-connections were found during the 2018/2019 permit year.
Flood Management Projects and Water Quality	4.g	<p>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.</p> <p><u>CIPs:</u> The District develops 5- and 10-year Capital Improvement Plans to identify major projects necessary to address water quality concerns. One of the main goals and outcomes of the CIP is 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 locales. Another main goal of the CIP is to build projects to protect, restore, and enhance the health and function of a watershed.</p>	<p>(1) Number of retrofits constructed that address water quality treatment.</p> <p>(2) Number of flood management projects implemented or constructed and the percentage of those projects that include water quality Components.</p> <p>Measurable Goals:</p> <ul style="list-style-type: none"> • Ensure all planned stormwater CIPs include consideration of water quality. 	Oak Lodge Water Services continues to fund North Clackamas Watersheds Council (NCWC) Streamside Stewards Program which enhances water quality and streamside health. In addition, the District funds the Backyard Habitat Certification Program in partnership with the Columbia Land Trust and the Portland Audubon Society. This program educates and informs the public on yard maintenance options that limit the use of herbicides and pesticides on private property that can get into our streams and reduce water quality.
Maintenance of Conveyance System Components and Structural Controls	4.g	<p>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 aboveground stormwater detention facilities, sedimentation manholes, and various types of underground proprietary pollution control systems. Maintenance records are kept by both DTD and the District.</p> <p>The District and DTD are working on the development of an intergovernmental agreement to clarify and coordinate maintenance activities.</p>	<p>(1) Miles of ditches and storm lines maintained</p> <p>(2) Number and type of components inspected and/or cleaned, and</p> <p>(3) Mass or volume of material removed during cleaning</p>	<p>(1) Ditch Cleaning by Clackamas County DTD: 275 ft</p> <p>(2) Culverts Cleaned by Clackamas County DTD: 3 culverts</p> <p>(3) Mass of Debris Removed by Clackamas County DTD: 8.34 cubic yards of material</p>

Appendix A: BMP Table—OLWS 2018-2019 Summary of BMP Implementation

Best Management Practice	MS4 Permit Schedule A Requirement	BMP Description	Performance Measure	Annual Report 2018-2019
Catchbasin Cleaning and Maintenance	4.g	BMP Description: OLWS cleans all District owned or District operated/maintained catch basins once every five years. 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.	(1) Track the number of District owned or District operated/maintained catch basins cleaned per year. (2) Track the mass or volume of debris removed during cleaning activities. Measurable Goals: <ul style="list-style-type: none"> • Clean OLWS District operated/maintained public catch basins on a 5-year rotational basis. • Schedule repair or replacement of catch basins based on inspection results. 	During this reporting period, OLWS and Clackamas Co. continued a coordinated approach to storm system inspection and maintenance (see updated SWMP Zone Map). (1) Catch basin Inspections: 480 (2) Catch basins and Structures Cleaned: OLWS: 184 (3) Structures Cleaned by CCDTD: 6 (4) Mass of Debris Removed by OLWS: 30 Cubic Yards (5) Mass of Debris Removed by CCDTD: 0.81 Cubic Yards
Private Surface Water Facility Maintenance Program	4.g	BMP Description: This BMP includes maintenance agreements for stormwater quality and detention structures in residential areas. There are very few of these facilities in OLWS. This infrastructure varies from subdivision to subdivision but may include any 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.	(1) Number of structures inspected and cleaned.	18 asset inspections were completed in the 2018/2019 permit year. All Facilities that needed cleaning were done. These Facilities were under an agreement with the District for cleaning and inspection. In addition, a letter was sent to 10% of owners of single-family private facilities with OLWS SWM Facility Agreements that explains the requirement to clean and maintain facilities.
Hydromodification Assessment	5.a – 5.d	BMP Description: OLWS anticipates partnering with adjacent co-permittees (CCSD#1, Clackamas County DTD) to 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.	(1) Net impervious area treated by LID. (2) Number of applications submitted using tool. (3) Customer Feedback/ Community Relations. Measurable Goals: <ul style="list-style-type: none"> • 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. 	In the OLWS SWMC code documents, stormwater management facility sizing guidelines accept two co-permittee tools; the WES sizing tool and the City of Portland PAC tool. Additionally, in 2019, Oak Lodge implemented a permit review software system (Accela) which tracks impervious surfaces more accurately and precisely than previous systems for future hydromodification assessment and treatment tracking.

Appendix B: OLWS Water Quality Sampling Data Results - Storm Sampling and Quarterly Stream Sampling
July 1, 2018 - June 30, 2019

SW 8 – SE Naef Rd / SE Blanton St – South Boardman Creek, 60' north of intersection

MS4 Sample Type: WET WEATHER, 3 events per year

DATE	TSS (mg/L)	BOD (mg/L)	Fecal coliform (MPN)	pH	Temp (celsius)	E. Coli (col/100)	CL2 (mg/L)	TDS (MGL)	COD (mg/L)	O&G (mg/L)	Total Phosphate (mg/L)	TKN (mg/L)	FLOATING SOLIDS	O&G SHEEN	Luminescent DO (mg/L)	Conductivity (µS/cm)	Nitrate (mg/L)	Hardness (mg/L)	Calcium (µg/L)	Magnesium (µg/L)	Total Copper (µg/L)	Total Lead (µg/L)	Total Zinc (µg/L)	Dissolved Copper (µg/L)	Dissolved Lead (µg/L)	Dissolved Zinc (µg/L)	Ortho-Phosphorous (mg/L)	Ammonia Nitrogen (mg/L)
10/29/2018	14	3.77	N/A	6.88	14.6	1410	N/A	79	N/A	ND	0.152	N/A	NONE	ND	10.26	86.9	1.23	36.6	9.92	2.86	0.00628	0.00137	0.132	0.00337	ND	0.083	0.081	ND<.0200
12/18/2018	11	ND	N/A	7.73	10.7	>2420	N/A	98	N/A	ND	0.206	N/A	NONE	ND	11.01	81	2.7	39.8	11.2	2.89	0.00645	0.00123	0.0902	0.00368	ND	0.056	0.12	0.064
4/5/2019	37	2.95	N/A	8.75	11.6	1730	N/A	79	N/A	ND	0.167	N/A	NONE	ND	10.34	58	474	27.9	7.29	2.35	0.00634	0.00436	0.114	0.00357	0.000353	0.0907	0.0439	0.028

SW 15 – 15000 SE Fair Oaks Ave – River Forest Creek – River Forest Lake influent

MS4 SAMPLE TYPE: Instream Sample, 4 times per year

DATE	TSS (mg/L)	BOD (mg/L)	Fecal coliform (MPN)	pH	Temp (celsius)	E. Coli (col/100)	CL2 (mg/L)	TDS (MGL)	COD (mg/L)	O&G (mg/L)	Total Phosphate (mg/L)	TKN (mg/L)	FLOATING SOLIDS	O&G SHEEN	Luminescent DO (mg/L)	Conductivity (µS/cm)	Nitrate (mg/L)	Hardness (mg/L)	Calcium (µg/L)	Magnesium (µg/L)	Total Copper (µg/L)	Total Lead (µg/L)	Total Zinc (µg/L)	Dissolved Copper (µg/L)	Dissolved Lead (µg/L)	Dissolved Zinc (µg/L)	Ortho-Phosphorous (mg/L)	Ammonia Nitrogen (mg/L)
8/16/2018	5	ND	N/A	7.77	18.1	272	N/A	141	N/A	ND	0.176	N/A	NO	ND	6	209.1	ND	85.1	21.6	7.58	0.00115	ND	0.00645	ND	ND	0.0045	0.11	ND
12/7/2019	ND	ND	N/A	7.58	4.2	90.8	N/A	141	N/A	ND	0.174	N/A	NO	ND	11.73	157.2	0.948	77.1	19.4	6.94	0.00121	ND	0.024	ND	ND	0.0229	0.033	ND
3/5/2019	ND	ND	N/A	6.86	3.2	63.1	N/A	131	N/A	ND	0.0214	N/A	NO	ND	13.3	150.6	1.68	71.2	17.9	6.47	0.00109	0.000441	0.0165	ND	ND	0.0129	0.0214	ND
6/4/2019	ND	ND	N/A	7.56	14.3	210	N/A	148	N/A	ND	0.136	N/A	NO	ND	9.07	164.2	0.46	79	20.2	6.93	0.00124	0.000273	0.00954	ND	ND	0.00785	0.0552	0.037

SW 12 – 3131 SE Walta Vista Ct – Lower Boardman Creek – 48" CMP outfall

MS4 SAMPLE TYPE: Instream Sample, 4 times per year

DATE	TSS (mg/L)	BOD (mg/L)	Fecal coliform (MPN)	pH	Temp (celsius)	E. Coli (col/100)	CL2 (mg/L)	TDS (MGL)	COD (mg/L)	O&G (mg/L)	Total Phosphate (mg/L)	TKN (mg/L)	FLOATING SOLIDS	O&G SHEEN	Luminescent DO (mg/L)	Conductivity (µS/cm)	Nitrate (mg/L)	Hardness (mg/L)	Calcium (µg/L)	Magnesium (µg/L)	Total Copper (µg/L)	Total Lead (µg/L)	Total Zinc (µg/L)	Dissolved Copper (µg/L)	Dissolved Lead (µg/L)	Dissolved Zinc (µg/L)	Ortho-Phosphorous (mg/L)	Ammonia Nitrogen (mg/L)
8/16/2018	6	ND	N/A	7.72	19.2	344	N/A	175	N/A	ND	0.146	N/A	NO	ND	6.88	233	0.272	87.9	21.6	8.21	0.00141	0.000601	0.0133	ND	ND	0.00463	0.071	0.03
12/7/2019	5	ND	N/A	7.49	5.5	214	N/A	154	N/A	ND	0.176	N/A	NO	ND	10.8	169.6	0.822	83	20.8	7.56	0.00189	0.000406	0.0206	ND	0.00102	0.015	0.038	0.053
3/5/2019	8	ND	N/A	6.36	4.5	73.3	N/A	135	N/A	ND	ND	N/A	NO	ND	11.72	165.9	1.42	79.8	20	7.24	0.00164	0.000708	0.0227	ND	ND	0.0148	0.0233	0.054
6/4/2019	ND	ND	N/A	7.55	15.2	313	N/A	153	N/A	ND	0.177	N/A	NO	ND	8.02	186.6	0.374	91.2	23	8.23	0.00156	0.000418	0.0124	ND	ND	0.00694	0.0882	0.078

SW 3 – Courtney Springs Creek on east side of SE McLoughlin Blvd, 350' north of SE Park Ave – outfall of 5' x 5' concrete box culvert

MS4 SAMPLE TYPE: Instream Sample, 4 times per year

DATE	TSS (mg/L)	BOD (mg/L)	Fecal coliform (MPN)	pH	Temp (celsius)	E. Coli (col/100)	CL2 (mg/L)	TDS (MGL)	COD (mg/L)	O&G (mg/L)	Total Phosphate (mg/L)	TKN (mg/L)	FLOATING SOLIDS	O&G SHEEN	Luminescent DO (mg/L)	Conductivity (µS/cm)	Nitrate (mg/L)	Hardness (mg/L)	Calcium (µg/L)	Magnesium (µg/L)	Total Copper (µg/L)	Total Lead (µg/L)	Total Zinc (µg/L)	Dissolved Copper (µg/L)	Dissolved Lead (µg/L)	Dissolved Zinc (µg/L)	Ortho-Phosphorous (mg/L)	Ammonia Nitrogen (mg/L)
8/16/2018	ND	ND	N/A	8	17.2	172	N/A	160	N/A	ND	0.122	N/A	NO	NO	8.64	217.9	0.864	91.5	23.5	8	0.00136	0.000251	0.00543	0.00101	ND	ND	0.06	ND
12/7/2019	ND	ND	N/A	7.71	8.5	64.4	N/A	138	N/A	ND	ND	N/A	NO	ND	11.63	156.8	1.37	77.5	20.1	6.65	0.00148	0.000213	0.0107	ND	ND	0.0098	0.029	0.02
3/5/2019	ND	ND	N/A	8.02	5.7	34.1	N/A	120	N/A	ND	ND	N/A	NO	ND	12.2	151.7	2.03	73.8	19.9	5.83	0.00129	0.00027	0.0175	ND	ND	0.0139	0.0204	0.022
6/4/2019	ND	ND	N/A	8.95	13.9	291	N/A	155	N/A	ND	0.101	N/A	NO	ND	10.05	167.1	1.02	80.8	21.4	6.67	0.0013	0.000437	0.00916	ND	ND	0.0052	0.087	0.031

ND = non detect
NO = None Observed