City of Milwaukie, Oregon

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

2020–2021 Annual Report

Prepared for the

Oregon Department of Environmental Quality

October 26, 2021

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CITY OF MILWAUKIE

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
MUNICIPAL STORMWATER SYSTEM ANNUAL REPORT

JULY 1, 2020 – JUNE 30, 2021

I, the undersigned, hereby submit this National Pollutant Discharge Elimination System (NPDES) Municipal Storm Water System Annual Report in accordance with NPDES Permit Number 101348. I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person, or persons, who manage the system, or those persons directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for known violations.

Name: Peter Passarelli
Title: Public Works Director
City of Milwaukie

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1.0 Introduction

1.1 MS4 NPDES Permit Background

The Oregon Department of Environmental Quality (DEQ) regulates stormwater runoff from the City of Milwaukie through the Municipal Separate Storm Sewer System (MS4) National Pollutant Discharge Elimination System (NPDES) Permit No. 101348, issued to Clackamas County and its co-permittees. Clackamas County co-permittees include the City of Milwaukie along with the cities of Lake Oswego, Gladstone, West Linn, Oregon City, Wilsonville, Happy Valley, Johnson City, Rivergrove, the Oak Lodge Sanitary District, and Clackamas County. Each co-permittee is a relatively small community, most having populations between 15,000 and 25,000 with some (Johnson City and Rivergrove) having populations significantly smaller.

The City's MS4 NPDES permit was reissued March 16, 2012, after a multi-year negotiation process with DEQ and an additional year-long delay related to an appeal. The 2012 reissued permit was not appealed, and thus maintains an effective date of March 16, 2012. The NPDES permit issued by DEQ to the City of Milwaukie on March 16, 2012, was for a term of five years, this permit expired on March 16, 2017. This annual report reflects requirements in the administrative extension of th2012 permit. A new MS4 permit was received from DEQ in September of 2021 and next year's annual report will reflect the new requirements from that permit.

Each co-permittee is required to submit an annual report, summarizing accomplishments and implementation of their individual Stormwater Management Plans (SWMPs). In conjunction with the reissuance of the city's permit, SWMP updates to address requirements of the reissued permit were submitted and approved by DEQ. This annual report documents stormwater management activities from July 1, 2020, to June 30, 2021, in conjunction with the city's MS4 NPDES permit covering the 2020-2021 reporting year.

1.2 Document Organization

The following table (Table 1) outlines the organization of this annual report document, with respect to the annual reporting requirements per Schedule B(5) of the city's MS4 NPDES permit.

Table 1: Summary of the MS4 NPDES Annual Report Requirements

	Annual reporting requirement	Location in document
a)	Status of implementing SWMP elements, including progress in meeting measurable goals.	Appendix A
b)	Status of any public education effectiveness evaluation conducted during the reporting year, and a summary of how results were used in adaptive management.	Appendix A
c)	Summary of the adaptive management process implementation during the reporting year including new BMPs.	Section 2.0
d)	Proposed changes to SWMP program elements to reduce TMDL pollutants to the MEP.	Section 2.0
e)	A summary of total stormwater program expenditures and funding sources over the reporting fiscal year, and those anticipated in the next fiscal year.	Section 3.0
f)	A summary of monitoring program results, including monitoring data that is accumulated throughout the reporting year.	Section 4.0 & Appendix B
g)	Any proposed modifications to the monitoring plan necessary to ensure that adequate data and information are collected to conduct stormwater program assessments.	Section 4.0
h)	A summary describing the number and nature of enforcement actions, inspections, and public education programs.[a]	Section 6 and Appendix A
i)	An overview, as related to MS4 discharges, describing land use changes, UGB expansions, land annexations, and new development activities. The number of new post-construction permits issued and estimate of new and replaced impervious surface must also be included.	Section 5.0
j)	A summary related to MS4 discharges describing concept planning or other activities in preparation of UGB expansions or land annexations.	Section 5.0 and Appendix A
NA)	Additional Efforts Conducted by the city.	Section 6.0

[a] Enforcement actions, inspections, and public education programs are included in the city's SWMP as BMPs, and are reported along with the status of implementing all components of the SWMP in Appendix A.

Each section of this report corresponds to the specific permit requirements in Schedule B(5). This report emphasizes efforts and activities associated with individual Best Management Practices (BMPs) from the city's 2012 SWMP, as summarized in Appendix A.

2.0 Adaptive Management Process Implementation

2.1 Adaptive Management Program

In accordance with the issuance of the city's renewed MS4 NPDES permit (in 2012), the city was required to document their adaptive management approach to assess annually and modify, as

necessary, existing and new SWMP components. The city submitted their approach to DEQ on November 1, 2012.

Historically, the city has implemented adaptive management principals to annually refine implementation methods and data collection activities in conjunction with their effective SWMP and BMPs. More significant modifications to SWMP activities occur every five years, in conjunction with their permit renewal application and updated permit requirements.
The city's adaptive management approach (submitted November 1, 2012) maintains consistency with the city's historical approach for implementing adaptive management principals.

Annually, as the city completes their NPDES MS4 annual report, the city reviews SWMP implementation through BMP-specific measurable goals and tracking measures. The city collects data and feedback from staff responsible for implementing and reporting on each BMP to gage whether implementation was deemed to be effective or whether there are suggested improvements to be made. Suggested adjustments to BMP implementation will include consideration of resource availability, budget/funding, and overall need.

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

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

Additionally, at the end of the permit term, technical investigations and studies are required in conjunction with compliance dates outlined in the permit. Such studies include (but are not limited to) a water quality trends analysis, pollutant load reduction evaluation, hydromodification assessment, and a retrofit assessment. All studies will help target and identify specific issues that need to be addressed to maintain waterbody health and help formulate BMP activities (measurable goals and tracking measures) that can be used to support improvements.

2.2 SWMP Updates for the 2020-2021 Reporting Year

The 2020-2021 reporting year is the ninth full permit year in which the city's effective SWMP (dated 2012) has been implemented. The 2020-2021 reporting year experienced unusual circumstances with the surge of the COVID-19 virus. Restrictions set by the governor and recommendations from health organizations impeded some work pertaining to the MS4 permit.

For the 2020-2021 permit year, no major updates were made to the 2012 SWMP or BMP measurable goals and tracking measures due to regulatory limitations prohibiting modifications to the SWMP while in administrative extension. Modifications were submitted to DEQ February 27, 2017, however have not been implemented due to reissuance of permit still pending.

3.0 Summary of Program Expenditures

Stormwater program expenditures are funded from stormwater utility fees collected. The stormwater utility fee for single family and duplex residential customers is $29.47 monthly, which was established in June 2021. In conjunction with approval of the City of Milwaukie's Stormwater Master Plan (in August 2013), City Council approved an additional rate increase effective for the next 10 years. Low-income customers pay 50% of the utility fee ($14.37). The commercial properties are charged based on the total amount of measured impervious surface divided by one EDU (2,706 sq. ft.).

Forecasted (non-audited) expenditures for 2020–2021 and 2021–2022 are listed below.

Table 2: Forecasted (Non-Audited) Expenditures for 2020–2021 and 2021–2022

2020-2021	
Personnel Services /8.5 FTEs	839,000
Materials and Services	718,000
Capital Outlay	3,853,000
Transfers	1,360,000
Total	**$6,770,000**

2021-2022	
Personnel Services / 8.5 FTEs	908,000
Materials and Services	717,000
Capital Outlay	3,109,000
Transfers	1,420,000
Total	**$6,154,000**

4.0 Monitoring Data

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

Per the 2004 MS4 NPDES permit requirements (Schedule B), the City of Milwaukie, Clackamas County and other co-permittees, were required to develop and implement a stormwater monitoring program. Given the effort associated with implementing an effective environmental monitoring program that adequately met all permit requirements and objectives, Clackamas County (i.e., CCSD#1 and SWMACC) and six other co-permittees including the City of Milwaukie

agreed to consolidate efforts and prepare one comprehensive stormwater monitoring plan. This plan, called the Coordinated Clackamas County Stormwater Monitoring Plan (CCCSMP), was prepared for submittal with the 2006 NPDES Permit Annual Compliance Reports. The plan was implemented beginning July 1, 2007, and minor editorial changes were made in 2008.

In conjunction with requirements of the 2012 reissued MS4 NPDES permit, the 2007/2008 CCCSMP was reviewed for consistency with revised monitoring objectives. Monitoring locations and frequencies were adjusted to reflect requirements of the 2012 Permit. Additional efforts related to mercury monitoring, pesticide monitoring, macroinvertebrate (biologic) monitoring, and geomorphic monitoring were added to the CCCSMP. Detailed information related to use of the time-composite sampling technique was added as an appendix. Additional information such as quality assurance procedures were also added in conjunction with Schedule B.2 of the 2012 Permit.

The updated (2012) CCCSMP was submitted to DEQ in September 2012. Comments from DEQ were received in October 2012, and final revisions to the 2012 CCCSMP were submitted to DEQ June 30, 2013. For this reporting year (2020–2021), the 2012 CCCSMP was the effective, implemented monitoring plan for the City of Milwaukie. The 2012 CCCSMP was implemented starting October 2012.

As described in the CCCSMP, the MS4 NPDES stormwater monitoring program requires two components. The first component is program monitoring, which involves the tracking and assessment of programmatic activities, as described in the individual permittees SWMP, through the use of performance indicators or metrics. Results of the program monitoring are reported in Appendix A as the annual tracking measures. The second component is environmental monitoring, which includes visual monitoring and the actual collection and analysis of samples. Visual monitoring efforts include dry weather field screening as described in the city's SWMP under the following BMP: "Implement the Illicit Discharge Elimination Program". Results of the visual monitoring efforts are reported in Appendix A under the applicable BMPs. Environmental monitoring also consists of instream sample collection and outfall sample collection, and the City's sampling efforts are outlined in more detail in Section 4.2 and 4.3 and in the CCCSMP. Results of the instream and outfall sample collection efforts are provided in Appendix B.

4.2 CCCSMP Updates and Modifications for the 2020-2021 Reporting Year

New requirements related to stormwater monitoring were outlined in the City's reissued MS4 NPDES permit (dated March 16, 2012). As mentioned in Section 4.1, new requirements included the documentation of a rationale related to the time-composite sampling methodology, documentation of laboratory quality assurance and control procedures, and inclusion of mercury, pesticide, and macroinvertebrate monitoring. Monitoring frequencies and parameters were also revised based on requirements in the 2012 Permit and experience implementing the CCCSMP since 2006.

For the City of Milwaukie, continuous, instream monitoring activities along Johnson Creek are being conducted as a joint effort with the US Geological Survey (USGS). However, pollutant parameters including conductivity, pH, dissolved oxygen, and total dissolved solids were not being collected in accordance with requirements of the 2012 MS4 NPDES permit. The City applied to DEQ for a permit modification to update Table B-1 of the reissued (2012) MS4 NPDES permit to reflect the monitoring efforts employed by the city and USGS. The request for permit modification was submitted June 21, 2013. The letter was received by DEQ on 6/24/2013 and was approved.

The City of Milwaukie submitted an update to its monitoring plan to DEQ for a 30-day review on February 16, 2017. No comments were received regarding this plan and the city started executing the plan on the implementation date of July 1, 2017.

4.3 Summary of Monitoring Data

In accordance with the 2012 CCCSMP, Milwaukie conducted instream and outfall monitoring. Continuous instream monitoring of Johnson Creek was also performed by USGS. The city conducted instream monitoring at one location (Minthorn Springs Creek at Harmony Road), a tributary to the Kellogg Creek. Outfall monitoring was conducted at one stormwater outfall location (Roswell Street prior to discharge in Johnson Creek).

Time composite grab samples are required at the instream monitoring location twice during the reporting year (during storm events over the wet weather season). Single grab samples are also required during two additional monitoring events (during the dry weather season) at the instream monitoring location. Time composite grab samples are required at the outfall monitoring location three times during the monitoring year.

The city's reissued MS4 NPDES permit (effective date: March 16, 2012) prescribed new monitoring requirements that took effect October 1, 2012.

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

The City of Milwaukie completed the two Mercury monitoring events in 2013 as required by permit conditions and petitioned DEQ to request eliminating further Mercury monitoring in a letter sent to DEQ via email on January 30, 2015. The City of Milwaukie received confirmation of permission to eliminate Mercury monitoring from its environmental monitoring requirements in an email from Lisa Cox, Municipal Stormwater Coordinator at DEQ on April 16, 2015.

5.0 Overview of Planning and Land Use Changes, Urban Growth Boundary (UGB) Expansions and New Development Activities

5.1 Stormwater Planning, Land Use Changes, and UGB Expansions

The City of Milwaukie updated their Citywide Stormwater Master Plan during the 2012-2013 reporting year. The updated Master Plan includes an evaluation of flooding and capacity deficiencies and capital improvement project development and prioritization for water quality and water quantity control. As part of the master plan, an evaluation of UIC's requiring retrofit or decommissioning was also conducted. The updated Master Plan addresses requirements of the city's water quality retrofit assessment, due July 1, 2015. The Master Plan was approved by City Council in August 2013. The city is planning on updating the Stormwater Master Plan in 2023.

During the 2020-2021 reporting year, the City processed one application for zoning changes for the Waverly Woods development.

The City of Milwaukie is located entirely within the UGB. City expansion is planned for certain unincorporated areas of the city located within the UGB. Recent annexation efforts have focused on properties that lie within or near the Johnson Creek floodplain, especially those properties that have on-site sewage disposal systems. City code requires hookup to public sewer upon annexation. The city annexed a total of four properties within fiscal year 2020–2021.

5.2 Summary of Development Activities within the UGB

Current development activities mainly involve in-fill and redevelopment of existing properties ranging from single-family homes to larger commercial developments. The City of Milwaukie requires stormwater management for new and redevelopment activities exceeding 500 square feet of impervious surface in accordance with the City of Portland's Stormwater Management Manual. Stormwater management is considered early in the development process. Recent water quality facilities installed in the city include bioswales, raingardens, and green street planter strips.

During fiscal year 2020–2021, One hundred eighty private redevelopment projects submitted development applications. For all private redevelopment activities (both residential and commercial), a total of approximately 10,200 square feet of new/redeveloped right-of-way impervious area is associated. All permit review included requirements for stormwater treatment.

The private developments that triggered water quality requirements created 26,607 square feet of treatment area for commercial facilities and 117,135 square feet of treatment area for residential.

Three CIPs, all of which included improvements to stormwater, were completed during the 2020–2021 reporting year. The McBrod Avenue project (started in March of 2020 but completed in November 2020) installed approximately 800 LF of new storm pipe, a Bio Clean KF-4 Membrane Filtration System, and three Bio Clean Modular Wetland Systems, the 22nd & River Rd SAFE project installed 125 square feet of raingardens with an overflow drain to the existing storm system, and the Meek Street Storm South Phase (completed Fall 2020) installed approximately

2,500 LF of storm drainage mainline, one stormwater detention facility at Oak Street roughly 12,000 square feet in size, and a new temporary connection to the Harrison Street system until the design of the north phase of the project is complete.

6.0 Additional Activities

The following stormwater-related activities occurred within the city and are not currently documented in Appendix A. A description of activities is provided by applicable BMP.

Implement the Illicit Discharge Elimination Program

A total of four illicit discharges was reported to the Public Works Department.

10/1/2020 Multiple City staff contacted the Environmental Services Coordinator concerning rock dumped on the side of roadway. Homeowner says contractor ignored their request to put rock in driveway. A written notice was given for a 72 hour clean up response. No citation was issued.

12/7/2020 Staff were notified of tracking from a construction site. Contractor was given a notice to clean roadway and install additional construction entrance if vehicles and/or equipment are leaving site from a different area other than the established construction entrance. No citation was issued.

4/29/2021 City Staff was notified of stockpiled material in front of 8629 SE 34th. A written notice was left at the front door to correct the deficiency within 72-hours. No citation was issued.

4/29/2021 City staff was notified of sediment spoils and construction material stockpiled on the street in front of 3416 SE Kathryn Ct. A written notice was left at the front door to correct the deficiency within 72-hours. No citation was issued.

Conduct Annual Dry Weather Field Screening

The 2020 dry weather field screenings took place in mid-August. Rainfall had been absent since August 6th, with only 0.08" of rainfall measured that day. Three days of no recorded rainfall had passed prior to the earliest inspection. No rain fell during the outfall inspection period.

All, but one reading taken from samples collected from flows during inspections at outfalls were below pollutant parameter action levels. One outfall (25228) had slightly higher than allowed conductivity. Staff could not rule out the meter as the reason for the higher reading.

An upstream investigation was launched including CCTV inspection in the pipe upstream from the outfall as a precaution.

Outfall #25273 8/10/2020 Trace of flow present- No sample collected for readings. Previous inspections have determined flow is piped under OLCC warehouse, presumed to be groundwater. CCTV inspection in 2013 revealed a 12 o'clock tap at 197.6' with no signs of discharge. Wet deposits were observed at a number of joints in pipe. At 358.5' a buried MH was discovered, ending TV inspection.

Outfall #65003 8/12/2020 Outfall fully submerged- upgradient MH is backwatered by wetland. Did not measure stagnant water. Checked all basins within Marketplace- no signs of illicit discharges.

Outfall #65031 8/10/2020 Small amount of flow from pipe; water appears clear. Not enough flow to sample this year. CCTV inspection performed in 2013 revealed no illegal taps to storm line. Samples taken from discharge 8/30/2017 for: bacti, nutrients, metals. Conductivity has historically been measured high at this outfall with sample results being inconclusive as to the source of the high conductivity. Previous dye test at 12400 SE Freeman resulted in dye present in sanitary sewer, but no dye evident in the storm system. City will continue to monitor this outfall and adjacent area for possible causes of high conductivity.

Implement the Spill Response Program

A total of three spills were reported and/or responded to by the Milwaukie Public Works (PW) Department:

City of Milwaukie Spill Response Summary 2020/2021

10/10/2020 Clackamas County Fire Department notified on call City staff of a car in a city owned parking lot in the downtown area that was leaking gasoline. Clackamas Fire applied granular absorbent material to the gasoline on the asphalt and contacted OERS. City staff placed an absorbent boom in the catch basin and the City's street sweeper operator swept the parking lot to collect the material. No responsible party was identified.

12/11/2020 Precision Cast Parts reported an onsite oil spill to OERS. City staff were notified via email chain from OERS/DEQ spill response email notification. The OERS report stated floor dry was used to absorb the oil. Booms were to be placed as well.

1/12/2021 City Staff were notified of paint spilling off the roof of an RV on Ochoco St. Staff investigated and made contact to correct.

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Appendix A

Milwaukie SWMP Implementation Status

Appendix A. Status of Implementing Components of Milwaukie's 2012 SWMP for FY 2020/2021

Key to Pollutant Symbols
A full circle (●) indicates the BMP is expected to address the parameter.
An empty circle (○) indicates the BMP may be expected to address the parameter.
A blank cell indicates that the effect of the BMP is unknown at this time.

2012 Best Management Practice or Activity	Addresses Bacteria?	Addresses Mercury?	Addresses DDT/Dieldrin? (via sediment management) *(addressed Note #2)*	Responsible Department	Measurable Goals (2012 SWMP)	Tracking Measures (2012)	Annual Report Information: Tracking Measure Status, Permit Year 2020/2021	Additional Detail Related to Activities Conducted
Element #1 Illicit Discharge Detection and Elimination								
Implement the Illicit Discharge Elimination Program	●	●	●	City of Milwaukie Public Works Department	• Document and implement the details of the city's IDDE program in a Standard Operating Procedures manual by November 1, 2012. • For identified illicit discharges, conduct appropriate actions to remove the discharge in conjunction with time frames outlined in the city's MS4 NPDES Permit and procedures documented in the city's IDDE SOP. • Track and record all identified illicit discharges and how such discharges were removed.	(1) Track the status of completing the IDDE SOP manual. (2) Track the number, location, resolution and enforcement activities related to any identified illicit discharge.	(1) The City of Milwaukie developed an IDDE SOP (effective date: November 1, 2012). The SOP includes guidelines for identification and enforcement of illicit discharges and pollutant parameter action levels and guidelines for tracking activities and follow-up procedures. This SOP was revised and updated on July 17, 2013, in preparation of an anticipated EPA audit. (2) Four illicit discharges were reported or responded to by Milwaukie Public Works staff during the reporting year. A description of the illicit connections and enforcement resolutions is described in Section 6.0.	See Section 6.0 for additional detail.
Conduct Annual Dry Weather Field Screening	○	○	○	City of Milwaukie Public Works Department	• Conduct annual dry-weather illicit discharge inspections for all priority outfalls. • Conduct investigations on all suspected non-permissible discharges. • Develop pollutant parameter action levels to assist in the identification of non-permissible discharges by November 1, 2012. • Annually maintain a map of dry weather screening priority locations (i.e., priority outfalls).	(1) Track the number and location of high priority outfalls inspected during dry weather illicit discharge inspection activities. (2) Summarize inspection results and indicate outfalls requiring sampling and/or investigations. (3) Indicate the outcome and resolution of any investigation activities conducted.	(1) 25 outfalls were inspected as part of the annual dry weather field screening activities (conducted August 10-12, 2020). (2) and (3) One outfall historically having high bacteria levels had too low of flow for sampling. Previous attempts to locate source were unsuccessful. City will continue to consider options to locate source. Fifteen outfalls had flows, ranging from trace amounts to steady flows or ponded, of unknown origin and were investigated. Results of the four dry weather field screenings outfalls with unknown flows are documented in Section 6.0. Multiple tv camera inspections and crew time have been spent trying to determine unknown sources of flow. No cross connections have been found. All sources, at this point, appear to be groundwater derived.	See Section 6.0 for additional detail.
Implement the Spill Response Program	○	○	○	Clackamas Fire District #1 (Hazardous Materials Team) and Milwaukie Public Works Department	• Respond to all reported non-hazardous material spills. • Equip all Public Works vehicles with spill response equipment, the Spill and Illicit Discharge Investigation Form, and spill response procedures continuously during the permit term.	(1) Indicate the number of spills reported to the Public Works Department. (2) Indicate the number of spills responded to by the Public Works Department. (3) Indicate sources, causes, and resulting types of discharges resulting from spill activities.	(1) The City of Milwaukie Public works department received calls for three spills during reporting year 2020-2021. (2) There were two spills responded to by Public Works for the 2020-2021 reporting year. One was gasoline from a single vehicle that was parked in a City owned parking lot and the other was paint coming off an RV roof. The one spill not investigated by the City was a private property spill reported to DEQ.	See Section 6.0 for additional detail.

2012 Best Management Practice or Activity	Addresses Bacteria?	Addresses Mercury?	Addresses DDT/Dieldrin? (via sediment management) (*addressed Note #2*)	Responsible Department	Measurable Goals (2012 SWMP)	Tracking Measures (2012)	Annual Report Information: Tracking Measure Status, Permit Year 2020/2021	Additional Detail Related to Activities Conducted
Minimize Water Quality Impacts Related to Water Line Flushing				City of Milwaukie Public Works Department	• When chlorinated water is discharged to the city's stormwater distribution system, the city tests the chlorine residual at all entry points to the storm sewer for a maximum allowable concentration of 0.10 PPM. • Requirements for chlorination/DE chlorination are discussed at all pre-construction meetings and requirements are referenced in applicable contract documents.	(1) Chlorine test data is tracked in monitoring sampling logs and daily logs and data is kept on file at city.	(1) City of Milwaukie performed limited flushing in this period.	Chlorine test data and supporting documents are kept on file at the City of Milwaukie Public Works Johnson Creek facility. (1) The City did not run our flushing program during the last year.
Element #2 **Industrial and Commercial Facilities**								
Screen Existing and New Industrial Facilities	○	○	○	City of Milwaukie Public Works Department	• Review the business license inventory and new industrial development applications once during the permit term to identify additional facilities needing to obtain 1200-Z permits. If facilities are identified, DEQ and the facility will be notified within 30 days.	(1) Track the number of existing or new facilities subject to a stormwater industrial NPDES permit once during the permit term.	The City of Milwaukie Public Works Department continues to screen new Business Tax Receipts received from businesses locating within the city to assess for the possibility of discharging pollutants or to be subject to a NPDES Stormwater Permit. Per the city's measurable goals, review of the existing business tax receipt inventory will be conducted once over the permit term to determine whether any existing or new facilities would be subject to an industrial stormwater NPDES permit.	The new Business Tax Receipts reviewed during the 2020/2021 reporting year were for either small businesses, home based businesses, and/or not subject to an industrial stormwater permit. The City of Milwaukie performed screening of its business inventory in the spring of 2021. No new industrial facilities were identified as potentially meeting the criteria for an industrial stormwater 1200Z permit from DEQ.
Conduct Industrial and Commercial Inspections	○	○	○	City of Milwaukie Public Works Department	• Inspect all facilities with 1200-Z permits two times per permit term. Inspect all commercial and industrial food service facilities required to install grease traps or grease interceptors in accordance with the city's FOG program at a minimum of semi-annually during the permit term. • Inspect any other high priority facilities if identified as potentially contributing a significant pollutant load. • Keep an inventory of all 1200-Z permitted industrial facilities within permit area and update it annually. • Require abatement measures for any industry found to be inappropriately discharging to the municipal stormwater system. • Develop an SOP for high priority facility inspections and implementation of strategies by July 1, 2013. • Develop an SOP for the FOG inspection program by July 1, 2013.	(1) Track the number of permitted (1200-Z) industrial facilities within the City. (2) Track the number of industrial and FOG inspections conducted. (3) Note any water quality concerns identified during inspections. (4) Report status and abatement measures required for any industry or food service facility found to be inappropriately discharging to the municipal stormwater system.	(1) The City of Milwaukie queried the active 1200-Z permits from DEQ in 2020. There are currently five active 1200-Z permit holders within the city's boundaries discharging to the City's MS4. (2) Per the city's measurable goals, the City of Milwaukie did inspect facilities with current 1200-Z Industrial Stormwater permits two times during the permit term. The city inspected the five 1200-Z permitted facilities for the second time within permit year 2016/2017. Additional inspection completed in 2019. The city completed 301 Fats, Oils and Grease (FOG) work orders for grease trap or interceptor inspections for restaurants located in the city. (3)(4) No additional abatement measures required during this reporting year.	(1) There are currently five active 1200-Z permit holders within the city's boundaries discharging to the city's MS4. (2) The five active 1200-Z permit holders were last inspected during the months of May and June 2016 and another in November 2019, under the current extended permit using the updated inspection form and SOP that was developed for inspections of high priority facilities and FOG inspections by the City of Milwaukie on June 13, 2013.
Element #3 **Construction Site Runoff Control**								

2012 Best Management Practice or Activity	Addresses Bacteria?	Addresses Mercury?	Addresses DDT/Dieldrin? (via sediment management) (*addressed Note #2*)	Responsible Department	Measurable Goals (2012 SWMP)	Tracking Measures (2012)	Annual Report Information: Tracking Measure Status, Permit Year 2020/2021	Additional Detail Related to Activities Conducted
Implement Erosion Control for New and Redevelopment	●	●	●	City of Milwaukie Public Works and Engineering Departments	• Require structural and non-structural erosion and sediment control BMPs for all construction sites disturbing an area greater than 500 ft2. • Require sites disturbing over 500 ft2 to acquire an erosion control permit prior to issuing them a plumbing and electrical permit. • Conduct site plan reviews for applicable new and re-development to ensure compliance with the City's erosion control standards.	(1) Report any updates or modifications to the "Erosion Prevention and Sediment Control Planning and Design Manual (2008)". (2) Record the number of erosion control plan reviews completed and approved.	(1) During the 2020-2021 permit year, the Erosion Prevention and Sediment Control Planning and Design Manual was updated. (2) During the 2020-2021 reporting year, there were 62 erosion control plan reviews completed and approved.	
Provide Educational Information to Construction Site Operators	○	○	○	City of Milwaukie Public Works Department	• Coordinate with other jurisdictions to provide Erosion Control Certification programs at the Clackamas Community College. • Give discounts on erosion control permit fees to contractors participating in the Erosion Control Certification Program.	(1) Track the number of contractors receiving a discount on erosion control permit fees. (2) Track number of program sessions and refresher courses offered each year.	(1) During the 2020-2021 reporting year, no contractors applied for this discount. (2) Due to the lack of participation in the program, regional partners decided to not schedule program sessions and refresher courses.	
Conduct Erosion Control Inspections	●	●	●	City of Milwaukie Public Works Department	• Inspect all sites disturbing over 500 ft2 at least twice during construction activities. • Issue erosion control violations when ineffective erosion control is observed. • Issue stop work orders or fines if erosion control violations are not resolved. Timelines for corrections at construction sites are indicated on the inspection report given to the permit holder. Depending on the infraction, the timeline for correction could be 24, 48, 72 hrs. or other.	(1) Record the number of erosion control inspections conducted annually. (2) Report the number of written notices of non-compliance issued during inspections and the number of stop work orders issued annually.	(1) There was a total of 194 erosion control inspections conducted during the 2020-2021 reporting year. (2) There were 27 non-compliance notices issued and no stop work orders during the 2020-2021 reporting year.	

2012 Best Management Practice or Activity	Addresses Bacteria?	Addresses Mercury?	Addresses DDT/Dieldrin? (via sediment management) *(addressed Note #2)*	Responsible Department	Measurable Goals (2012 SWMP)	Tracking Measures (2012)	Annual Report Information: Tracking Measure Status, Permit Year 2020/2021	Additional Detail Related to Activities Conducted
Element #4 Education and Outreach								
Provide Public Education and Outreach Materials Regarding Stormwater Management	○	○	○	City of Milwaukie Public Works Department	• Promote public awareness of water quality issues through newsletters, brochures, and/or bill inserts. A minimum of one distribution of educational materials will be conducted annually. • Send an annual stormwater brochure to city residents. • Conduct annual catch basin stenciling.	(1) Track the number, types, and topics of public educational materials dispersed to the public annually. (2) Indicate any large-scale public educational campaigns initiated during a given year. (3) Track coordinated public outreach activities with local co-permittees. (4) Record the number of catch basins stenciled in a given year. (5) Record the number of storm manhole lids that have been retrofitted annually.	(1) Public awareness events and programs that are currently in place are: "Leaf Drop Program", Milwaukie Earth Day, Arbor Day. The City updated its public tree code as well. (1) The City did not distribute stickers and magnets at public events and presentations highlighting the connection between street runoff, and local streams and fish. These stickers and magnets were designed by the city to represent our specific goals. (1) The City's stormwater outreach person was unable to visit Milwaukie High School and Rowe Middle School as planned due to the Covid-19 lockdown. Staff will investigate options of creating online presentation content for schools in the upcoming year. (2) and (3) The City of Milwaukie is actively partnered with a number of other jurisdictions in the Regional Coalition for Clean Rivers and Streams. The Coalition has teamed with local news agency KPTV/FOX News for commercial spots educating the public on various topics related to stormwater health and how the public can help. KGW news interviewed the City's Urban Forester on its Urban Forest and Climate Action Goal. The City made a short video highlighting its Urban Forest and Natural Resources Departments and Climate Action goals. See Appendix D. (4) The City of Milwaukie conducted its 17th annual "Leaf Drop Program." The Leaf Drop program allows residents to dispose of their leaves five Saturdays each year, in the months of November and December, during heavy leaf season, at no charge to the residents. (4) During the fiscal year 2020-2021, stormwater crew members installed medallions and painted stencils for our Public education. (4) During the 2020-2021 reporting year, the storm crew did not place any "Dump No Waste, Drains to Streams" lids on our conveyance system manholes.	(1) The City of Milwaukie's public awareness programs are promoted on the city website and in the "Pilot" which is mailed to all city customers and residents. Programs promote healthy streams by keeping leaves out of the drains, and garbage from being dumped illegally. Pilot articles aim to educate on the topics of: stream temperature, pesticide use, proper pool draining methods, and bacteria issues caused by dog and duck feces. (1) The City of Milwaukie adopted its Urban Forest Management Plan in March 2019. Within the plan, is information on how both public and private properties can utilize trees for stormwater benefits. To gather public information, the city sent out an online survey in September 2018.In addition, the City added "Branch Out Milwaukie" tool to look at percentage of vegetated canopy in specific areas. The City adopted a Climate Action Plan in October 2018 and began implementation of the actions within the plan in 2019. The Climate Action Plan contains many natural resource and land use actions and suggestions associated with additional stormwater benefits, including canopy expansion, inclusion of green infrastructure in development, reduction of paved and built surfaces, floodplain recovery, and more. City staff educate residents and businesses on the stormwater co-benefits on climate actions in public engagement opportunities.
Participate in a Public Education Effectiveness Evaluation	○	○	○	City of Milwaukie Public Works Department	• Coordinate with other local, Phase 1 jurisdictions in providing/compiling information regarding a public education effectiveness evaluation by July 1, 2015.	(1) Report on activities conducted annually.	(1) The ACWA Stormwater Committee initiated a coordinated effort to compile existing educational survey information and develop conclusions to inform how public education efforts result in behavioral change. A proposal was received from DHM Consulting. ACWA coordinated with DEQ to ensure that the study would meet DEQ's intended requirements. ACWA developed a cost share breakdown among interested Phase I and Phase II communities, and Milwaukie has agreed to participate in the effort. The City of Milwaukie completed the Public Education Effectiveness Evaluation permit requirement and submitted this report to DEQ via email 6/29/2015, following with mailing a paper copy to the Municipal Stormwater Coordinator. The Coordinator acknowledged receipt of this report on 7/2/2015.	

2012 Best Management Practice or Activity	Addresses Bacteria?	Addresses Mercury?	Addresses DDT/Dieldrin? (via sediment management) (*addressed Note #2*)	Responsible Department	Measurable Goals (2012 SWMP)	Tracking Measures (2012)	Annual Report Information: Tracking Measure Status, Permit Year 2020/2021	Additional Detail Related to Activities Conducted
Conduct Annual Staff Training	○	○	○	City of Milwaukie Public Works and Engineering Departments	• Provide city storm crews with approximately 40 hours of stormwater related training per year. • Continue to train all public works operations and maintenance staff involved with stormwater activities. • Conduct regular stormwater staff meetings one to four times per year.	(1) Track the hours of stormwater related training provided to city Stormwater crews each year. (2) Track number and responsibilities of staff participating in training each year. (3) Track regular stormwater staff meetings.	(1) During reporting year 2020-2021, one member of the Stormwater crew attended an online erosion control CESCL re-certification for approximately 6 hours total. Thirty-five members of Public Works viewed the online city spill response training at .5 hours each for a total of 17.5 hours. Total training hours is approximately 23.5 hours. (2) The Stormwater department employs a total of 8.50 FTE. One half Stormwater Supervisor, one half Environmental Services Coordinator, one Lead Utility Technician, three Utility Technician 2's, one full-time sweeper operator, one half Climate Action and Sustainability Coordinator, one Urban forester and one Natural Resources Technician 1. The duties include infrastructure maintenance, inspections, spill response, street sweeping, responding to flooding/citizen complaints, vehicle maintenance, training and education, administration and record keeping, assistance to the Engineering department, leaf pick up, rain garden and street tree maintenance, and erosion control plan review and inspections. (2) The Storm department has paid for the trainings and materials for Tree Risk Assessment Qualification that the Urban Forester is required to have. The Stormwater Department paid for trainings for the Natural Resource Technician to attend wetland delineation and managing vegetation for beaver short courses through Clackamas Community College's Professional Development Program. The Stormwater Department paid for training and testing fees for the Natural Resources Technician to obtain a Public Pesticide Applicator License from Oregon Department of Agriculture. (2) The Stormwater department paid for training and materials for the Urban Forester to maintain certification as a Qualified Tree Risk Assessor by the International Society of Arboriculture. The person provides assessment of large trees damaged by storms or age, with the interest of keeping our large, beneficial trees for their stormwater benefits, and appropriate species and location for replacements if removal is warranted. (3) The Stormwater crew meets each morning for a minimum of 15 minutes to discuss stormwater issues, local projects and related issues and equipment needs for the day. They also discuss stormwater issues with the public.	
Element #5 **Public Involvement and Participation**								

2012 Best Management Practice or Activity	Addresses Bacteria?	Addresses Mercury?	Addresses DDT/Dieldrin? (via sediment management) (*addressed Note #2*)	Responsible Department	Measurable Goals (2012 SWMP)	Tracking Measures (2012)	Annual Report Information: Tracking Measure Status, Permit Year 2020/2021	Additional Detail Related to Activities Conducted
Provide for Public Participation with Submittals				City of Milwaukie Public Works Department	• Provide a minimum 30-day public comment period for the updated SWMP elements and pollutant load reduction benchmarks prior to the permit renewal application deadline. • Provide a public comment period for the updated monitoring plan and annual reports prior to submittal to DEQ.	N/A	City of Milwaukie posted the annual 2019-2020 annual report on the city website for public comment.	
Participate in Intergovernmental Coordination Efforts	○	○	○	City of Milwaukie Public Works and Engineering Department	• Annually coordinate with other Clackamas County co-permittees regarding regional water quality efforts. • Annually participate with local agencies involved in water quality issues.	(1) Indicate groups, committees, and organizations with which the city is currently participating.	(1) The City of Milwaukie is currently involved with the following groups and organizations: • Clackamas County NPDES MS4 Co-permittees. • Johnson Creek Watershed Council. • Oregon Association of Clean Water Agencies. • American Public Works Association. • Water Environment Federation. • ACWA Water Pollution Control Facility Permit Committee • Clean River Coalition • Friends of trees • North Clackamas Watershed Council • Backyard Habitat Certification Program • Clackamas County Climate Utility Resiliency Group • Regional Habitat Connectivity Workgroup (Intertwine Alliance)	The City of Milwaukie has signed multiyear contracts with Backyard Habitat Certification Program, Johnson Creek Watershed Council and Johnson Creek Watershed Council for work related to plantings, including along stream banks. The Backyard Habitat Certification Program worked on 47 sites with a total of 495,173 sq. ft./11.37 acres. % properties reached certification levels within the program. Johnson Creek Watershed Council worked on 7 tax lots with plant establishment, weed control and infill planting. They are also working with ODOT on an ODOT property within the City of Milwaukie along Johnson Creek. North Clackamas Watershed Council worked on 12 sites, totaling 19 acres and 5,119 linear feet of streambank, and planted 570 trees and shrubs.
Element #6 **Post-Construction Site Runoff**								
Implement Municipal Development Codes	●	●	●	City of Milwaukie Engineering Department	• Until completion of the city's review and possible update of their applicable code and development standards to meet provisions of the city's NPDES permit, continue to review all new and re-development plans for conformance with the city's Development Standards including design standards for water quality facilities. • By November 1, 2014, review and revise if necessary, the city's design storm and inspection and enforcement response procedures to be in accordance with permit requirements.	(1) Track the number of development applications reviewed and approved for compliance with the stormwater regulations. (2) Track status of the design storm reviews. Note: The number and type of water quality facilities constructed/implemented to address these requirements will be tracked and mapped under Element 8: BMP Private Water Quality Facility Maintenance Program.	(1) Development applications including drainage reports are routinely reviewed for proper compliance with stormwater regulations. The following applications were reviewed and approved during the 2020-2021 reporting year: • Commercial (New) = 8 • Commercial (Additions) = 3 • Residential (New) = 44 • Residential (Additions) = 22	Residential improvements do not trigger a Water Quality Facility Agreement. All residential improvements will follow the stormwater design manual adopted by the city. Commercial additions do require a Water Quality Facility Agreement if the addition increases or changes more than 500 square feet of impervious surface connected to the city storm system.
Element #7								

2012 Best Management Practice or Activity	Addresses Bacteria?	Addresses Mercury?	Addresses DDT/Dieldrin? (via sediment management) (*addressed Note #2*)	Responsible Department	Measurable Goals (2012 SWMP)	Tracking Measures (2012)	Annual Report Information: Tracking Measure Status, Permit Year 2020/2021	Additional Detail Related to Activities Conducted
Conduct Street Sweeping and Roadway Repair Activities	●	●	●	City of Milwaukie Public Works Department	• Sweep curbed streets once per month. • Sweep roads promptly after icy conditions recede to remove fine gravel used for de-icing. • Schedule and conduct routine road repair and maintenance as needed, during the dry-weather conditions if possible.	(1) Track the number of miles swept per year. (2) Track the volume of debris removed during sweeping activities.	(1) and (2) During fiscal year 2020-2021 our Streets maintenance department swept 1,269 miles of curbed streets and removed 1,243 cubic yards of debris.	
Minimize Water Quality Impacts Associated with Landscape Management Practices	○	○	○	City of Milwaukie Public Works Department and Clackamas County Parks Department	• Require all chemical applicators (both city employees and city contractors) to be licensed and certified. • Use the Portland Integrated Pest Management (IPM) Program as a guide for appropriate pesticide and fertilizer application procedures along roadways, within public rights-of-way, and around water quality facilities.	(1) Track any policy and/or procedural changes associated with pest management activities within the City. (2) Track current number of staff licensed and certified for chemical application.	(1) During the reporting year 2015-2016, the Stormwater Department changed practice to only allow contractors and qualified staff to apply minimal amounts of pesticides to vegetation growing between the street surface and the curb line, prior to installation of a crack seal and slurry seal. During the 2020-2021 period 67.5 fluid ounces of glyphosate and 18 fluid ounces of triclopyr was applied to various parts of the City as needed. (2) The City of Milwaukie employs two staff persons certified as a Public Pesticide Applicator for small applications like crack sealing. If the need arises, city staff can also hire a licensed and certified contractor.	For many years the Stormwater staff has conducted manual removal of vegetation at all detention ponds and rain gardens and will continue to do so. Chemical application is a last resort only if the potential of the chemical entering the stormwater system is removed. A total of 85.5 oz of herbicide was applied during the 2020-2021 period.
Implement a Program to Reduce the Impact of Stormwater Runoff from Municipal Facilities	○	○	○	City of Milwaukie Public Works and Engineering Department	• Develop procedures for storage and disposal of street wastes in conjunction with operation of the covered, on-site Decant Facility. Such procedures shall be finalized by the beginning of the Decant Facility operation and implemented within 6 months thereafter.	N/A	The city completed construction of the Decant facility in July of 2012 and is continually working to enhance the facility operations for more sediment removal. The SOP for the facility was completed and the public works crews have been trained on the proper operation of the facility.	Public Works crews thoroughly understand the procedure for dumping and storing the sweeper and combo-machine materials. All material dumped in the facility is recorded daily. Electronic copies of the records are on file in the City of Milwaukie Public Works office.
Control Infiltration and Cross Connections to the Stormwater Conveyance System	●			City of Milwaukie Public Works and Engineering Department	• Investigate sanitary lines for damage every five to six years. • Inspect for cross-connections during annual dry weather outfall inspections and remove any discovered cross connections. • Review all new and re-development plans associated with new building permits for possible cross-connections; eliminate them upon discovery.	(1) Indicate whether any cross-connections were discovered during illicit discharge investigations and describe follow-up activities.	(1) Per results of the illicit discharge inspections, no cross connections were observed.	
Implement Master Plan Capital Improvement Projects for Stormwater Quality Improvement	●	●	●	City of Milwaukie Public Works and Engineering Department	• Annually contribute to the reserve fund for future CIP design and construction. • Review the CIP list and update as necessary each year.	(1) Track the number of CIP projects implemented each year and discuss the added benefit (water quality, habitat restoration, etc.) of each project. (2) Map the location and drainage area of CIPs. (3) Track the amount contributed to the CIP reserve fund each year. (4) Track changes to the CIP list.	(1) The city completed three CIP projects during FY 2020-2021, all of which included stormwater quality improvements. These CIP projects included installation of a Bio Clean KF-4 Membrane Filtration System, a Bio Clean Modular Wetland System, new storm line connections, a 125 square foot infiltration raingarden, and a new stormwater detention facility totaling 12,000 square feet. (2) As CIPs are constructed, the city's Asset Manager Technician incorporates as-builts into the Cityworks system and city's GIS database for future mapping needs. (3) The amount contributed from the Stormwater Fund for Capital Outlay projects (CIPs) was $4,115,000 (4) The city completed their Stormwater Master Plan in August 2013, which included an updated CIP list.	(1) One of the projects also included design that would re-purpose existing impervious surface and protect large existing trees along 22nd Avenue. (3) $1,200,000 was budgeted to Meek Street CIP project phases I & II. The project will benefit stormwater quality by rerouting piped stormwater to ponds instead of directly to receiving streams. Construction of one retention pond may allow other sections of city stormwater systems to be added to it at later.

2012 Best Management Practice or Activity	Addresses Bacteria?	Addresses Mercury?	Addresses DDT/Dieldrin? (via sediment management) (*addressed Note #2*)	Responsible Department	Measurable Goals (2012 SWMP)	Tracking Measures (2012)	Annual Report Information: Tracking Measure Status, Permit Year 2020/2021	Additional Detail Related to Activities Conducted
Element #8 | **Stormwater Management Facilities Operation and Maintenance**								
Conduct Stormwater Conveyance System Cleaning and Maintenance	●	●	●	City of Milwaukie Public Works Department	• Inspect stormwater conveyance system components (i.e., manholes, culverts and ditches) every two years and perform maintenance based on inspection results. • Perform ditch maintenance activities through an IGA between Clackamas County and the city based on inspection results.	(1) Track percent of conveyance system inspected each year. (2) Estimate the volume of debris removed during conveyance system cleaning activities. (3) Track the conveyance system repair efforts conducted.	(1) The city Stormwater Division video inspected 772 storm mains and/or laterals for a total of 50,991 linear feet. 54% of the catch basins and 81% of the sedimentation manholes were cleaned and inspected during FY 2020-2021 (2) The following volumes of debris were removed during conveyance cleaning activities: • 11,313.55 linear feet of lines cleaned. • A total of 181 sediment manholes were inspected and then cleaned if needed for a total debris amount of 15.9 cubic yards of debris removed. (3) The following maintenance/ repairs were conducted during reporting year 2020-2021: • 17 new catch basins were installed. • 3,756.2 sq. ft. of new rain gardens created and 1 annexed in from Clackamas County totaling 18,520.5 sq. ft. •4 Storm main fixed. • No UICs raised. •No new drywells installed	
Conduct Catch Basin Cleaning and Maintenance	●	●	●	City of Milwaukie Public Works Department	• Clean 50% of public catch basins each year. • Schedule repair or replacement of catch basins based on inspection results.	(1) Track the percent of total public catch basins cleaned per year. (2) Track the volume of debris removed during cleaning activities.	(1) During the 2020-2021 reporting year 884 catch basins were cleaned which translates to 54% of the total public catch basins. (2) The following volume of debris was removed during catch basin cleaning activities: • Catch basins = 62.5 cubic yards.	
Private Water Quality Facility Maintenance Program	●	●	●	City of Milwaukie Public Works Department	• Develop procedures to guide the private facility maintenance program by July 1, 2013.	(1) Track the number of onsite private stormwater quality facility inspections conducted annually.	(1) The Water Quality Facility Maintenance Agreement Program was completed and implemented FY 2011–2012. The City approved no new Private Water Quality Facilities during FY 2020-2021	The city participates in and promotes the regional Storm Drain Cleaning Assistance Program, (SCAP) incentivizing maintenance of storm drains on private property. During the fall 2019 and spring 2020 events, 33 clients signed up for the program and 93 private storm drains were cleaned.
Public Structural Control Facility Cleaning and Maintenance	●	●	●	City of Milwaukie Public Works Department	• Inspect and maintain public water quality facilities annually.	(1) Track the percent of total structural facilities inspected and maintained each year. (2) Track the volume of debris removed during cleaning activities.	(1) and (2) During the 2020-2021 reporting year, all public water quality facilities were inspected and/or maintained. During the fiscal year 2020-2021, the Stormwater Division's Landscape Maintenance workers have maintained 96 rain gardens and 7 detention ponds. • 264.21 hours of rain garden and 25.76 hours of detention pond maintenance were completed. 111 street trees were watered over 29 hours. 50 street trees were pruned in 41 hours for sweeper access. Activities included weeding, debris removal, watering, pruning, tilling, and planting/transplanting. 84.75 cubic yards of debris were removed during maintenance. • 264.21 hours of detention pond maintenance were completed.	

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Appendix B

Milwaukie Monitoring Data

Instream and Outfall Monitoring

Milwaukie collected two out of the three stormwater wet season samples during the wet season sampling period. Both Instream Wet and Dry season Instream samples were collected. The City attempted to sample up to the April 30 deadline for wet season sampling, however storms did not qualify per permit requirements. Inability to collect the final wet season sample was due to:

1) Limited staff for sampling (1 staff member). Additional staff in training during the 2020/2021 sampling season.
2) Timing of storms not coinciding with available lab hours after staff returned to work.
3) Forecasted storms did not amount to sufficient rainfall for sampling.

Results are listed in Tables B-1 and B-2 below.

Table B-1 Environmental Monitoring Results—Instream
Minthorn Springs Creek at Harmony Road

ML_65015_C & ML_65015_G							
Sample Date	**10/13/2020**	**11/03/2020**	**5/17/2021**	**6/10/2021**	**2019/20 Mean**	**2020/21 Mean**	**Trend over**
	mg/L	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**Previous year**
Colilert*	1986*	1300	11	55	299.5	838.0*	↑
Hardness	56.0	103	123	115	99.5	99.25	↓
Nitrate-Nitrite	0.110-0.0121	0.338	0.85	0.51	0.195	0.452	↑
Orthophosphate	0.127	0.14	0.04	0.07	0.1075	0.09425	↓
Total Phosphate	0.20	0.36	0.06	0.12	0.185	0.185	=
Copper	0.016	0.00847	0.00051	0.0006	0.0008	0.006395	↑
Dissolved Copper	0.014	0.00258	0.00042	0.0005	0.00065	0.004375	↑
Lead	ND	0.002851	<0.000020	0.00025	0.000325	0.00078025	↑
Dissolved Lead	ND	0.000041	<0.000020	0.00002	0.00045	0.00002025	↓
Zinc	0.047	.515	0.0069	0.0004	0.006	0.142325	↑
Dissolved Zinc	ND	.315	0.0046	0.0004	0.0045	0.08	↑
TSS	8	57.5	<5.0	2.0	3.0	18.125	↑
Ammonia	ND	0.198	<0.03	0.016	0.071**	0.061**	↓
Field Test							
Temperature (C)	15.2	12.5	15.4	15.6	17.4	14.675	↓
pH	7.28	7.3	8.03	8.0	7.625	7.6525	↑
DO-mg/l	7.2	7.5	9.2	8.7	7.0	8.15	↑
Conductivity	103.8	139.1	275.9	255.6	221.3	193.6	↓
Rainfall in.	.22	.32	dry	dry	0.00	0.135	↑

*= MPN/100ml

**= estimated mean calculated with a > or < value

Collecting samples for two out of three storms allowed for averaging data, however, lacks one set of results. Staff were unable to collect samples the previous year for various reasons (listed in lasts year's annual report) and therefore no trend can be shown for the previous two years for wet season sampling. Dry season sampling showed mostly an upward trend in results. For this year's sample analyzing the City utilized two separate labs. Worth noting, lead, dissolved lead and ammonia were all non-detect on the earlier of the two samples collected in both the Minthorn and Roswell locations. While pH continued to rise during the dry season sampling, conductivity decreased.

Table B-2 Environmental Monitoring Results—Outfall Roswell Outfall to Johnson Creek								
ML_23003_C								
Sample Date	**10/13/2020**	**11/03/2020**	**N/A**	**Min**	**Max**	**2019/20 Mean**	**2020/21 Mean**	**Trend over**
	mg/l	**mg/l**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**Previous year**
Colilert*	1733*	1300	N/A	1300	1733	N/A	1516.5	N/A
Hardness	32	18	N/A	18	32	N/A	25	N/A
Nitrate-Nitrite	0.0210	0.720	N/A	0.0210	0.720	N/A	0.3705	N/A
Orthophosphate	0.246	0.30	N/A	0.246	0.30	N/A	0.273	N/A
Total Phosphate	0.23	0.52	N/A	0.23	0.52	N/A	0.375	N/A
Copper	0.019	11.3	N/A	0.019	11.3	N/A	5.6595	N/A
Dissolved Copper	0.017	7.0	N/A	0.017	7.0	N/A	3.5085	N/A
Lead	ND	1.35	N/A	ND	1.35	N/A	0.675	N/A
Dissolved Lead	ND	0.084	N/A	ND	0.084	N/A	0.042	N/A
Zinc	0.048	658	N/A	0.048	658	N/A	329.024	N/A
Dissolved Zinc	0.020	547	N/A	0.020	547	N/A	273.51	N/A
TSS	10	25	N/A	10	25	N/A	17.5	N/A
Ammonia	ND	0.293	N/A	ND	0.239	N/A	0.1465	N/A
Field Test								
Temperature (C)	15.9	12.2	N/A	12.2	15.9	N/A	14.05	N/A
pH	7.20	6.92	N/A	6.92	7.20	N/A	7.06	N/A
DO-mg/l	8.8	8.8	N/A	8.8	8.8	N/A	8.8	N/A
Conductivity	54.4	96.2	N/A	54.4	96.2	N/A	75.3	N/A
Rainfall in.	.22	.32	N/A	.22	.32	N/A	0.27	N/A

*= MPN/100ml

**= estimated mean calculated with a < or > value

For reasons discussed previously, the third wet season sample was not collected during the 2020/2021 sampling year from the Roswell outfall.

The Roswell site is monitored at a point prior to flows being introduced to the Roswell Detention Pond & Wetland facility which offers further water quality treatment before discharging to Johnson Creek.

The City of Milwaukie did not monitor stormwater for Mercury in 2020/2021. The City of Milwaukie was granted permission to eliminate Mercury monitoring from its sampling requirements in an email dated 4/16/2015 from Lisa Cox, DEQ Municipal Stormwater Coordinator.

Continuous Monitoring

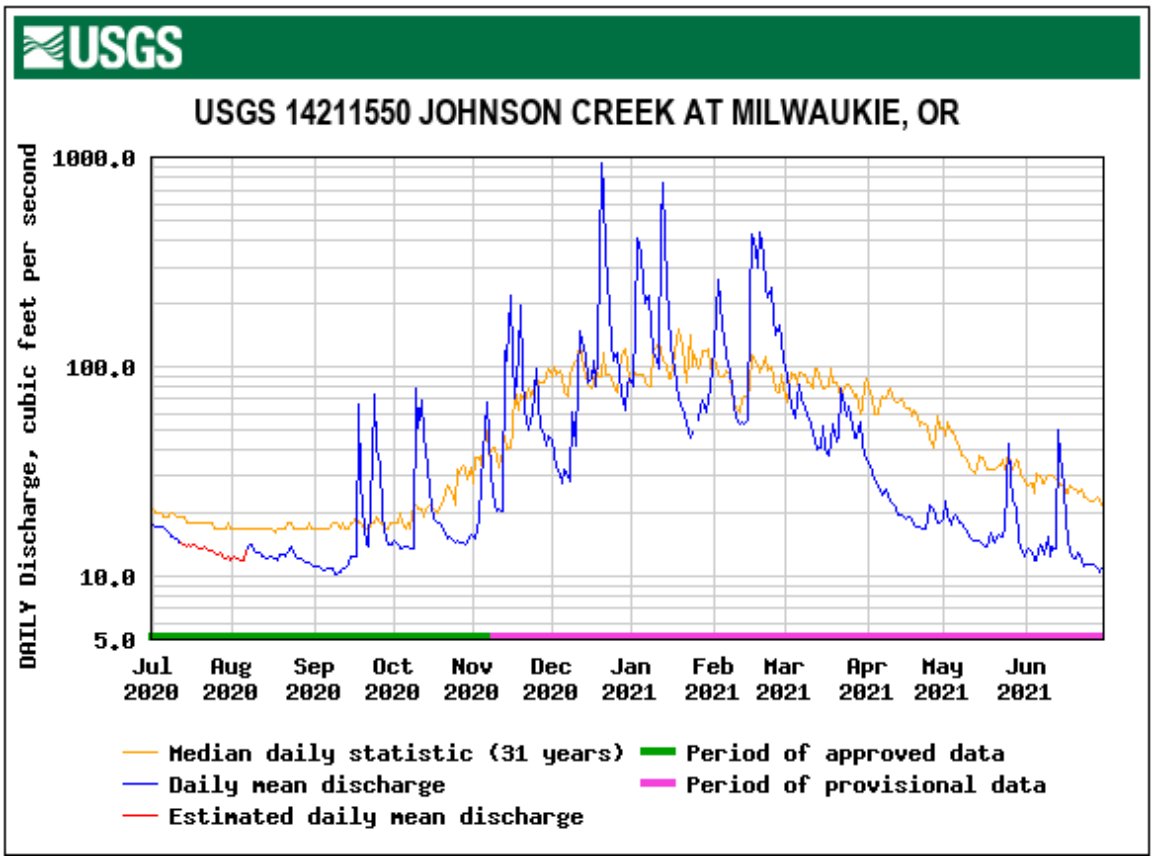
The City of Milwaukie continues to contract with the USGS for continuous hydrological monitoring of the Johnson Creek Basin at a cost of $17,600 per the 2019/2020 reporting year and the Joint Funding Agreement was renewed on 11/24/2020. Milwaukie is joined in this effort with the Cities of Gresham, and Portland, Multnomah and Clackamas Counties, and East Multnomah Soil and Water Conservation District. Continuous water quantity parameters- stream flow, gage height, and stream temperature are measured and recorded, with turbidity and suspended sediment monitoring occurring during USGS staff visits. Turbidity can be used as a surrogate for suspended sediment in the water which can be related to certain pesticides in the stream. Differences in turbidity between the upper basin (in Gresham) and this lower station may be related to land use. Further details for the data collected at this site can be found at:

https://waterdata.usgs.gov/nwis/dv?cb_00010=on&cb_00060=on&format=gif_stats&site_no=14211550&referred_module=sw&period=&begin_date=2020-07-28&end_date=2021-07-28

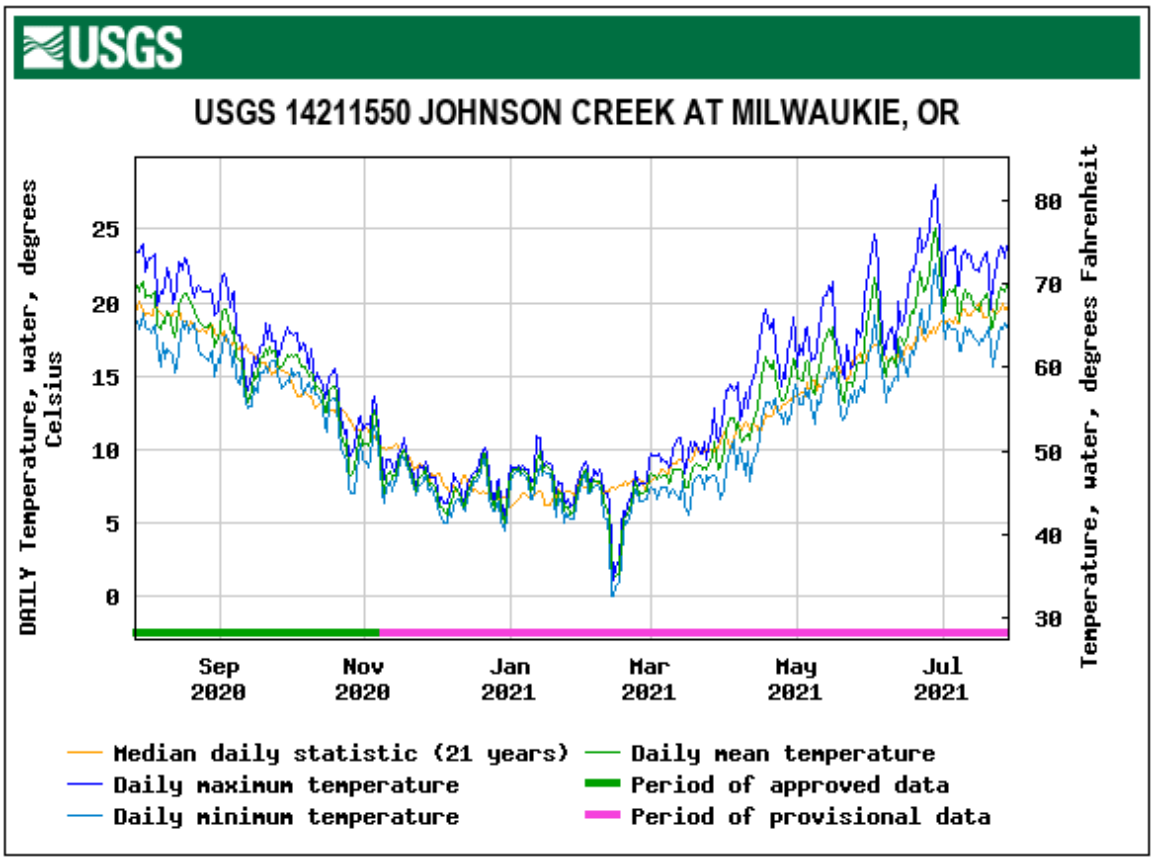
Continuous Monitoring Location information is as follows:

- USGS 14211550 Johnson Creek at Milwaukie, Oregon
- Location: Lat 45 degrees 27'11", Long 122 Degrees 38' 31", in NE ¼ SE ¼ SEC. 26, T. 1 S., R 1 E.
- Clackamas County, Hydrologic Unit 17090012, on the right bank upstream side of the Milport Rd. Bridge, in the city limits of Milwaukie, at mile 0.7.

Continuous flow monitoring data at USGS site #14211550 located on Johnson Creek at SE Milport Road in Milwaukie, Oregon.



Continuous temperature and discharge rate monitoring data at USGS site #14211550 located on Johnson Creek at SE Milport Road in Milwaukie, Oregon.


USGS
USGS 14211550 JOHNSON CREEK AT MILWAUKIE, OR
DAILY Temperature, water, degrees Celsius
Temperature, water, degrees Fahrenheit
25
20
15
10
5
0
80
70
60
50
40
30
Sep 2020
Nov 2020
Jan 2021
Mar 2021
May 2021
Jul 2021
Median daily statistic (21 years)
Daily maximum temperature
Daily minimum temperature
Daily mean temperature
Period of approved data
Period of provisional data

Appendix C

TMDL Implementation Plan

Appendix C: Temperature Management Strategies

Introduction

The City of Milwaukie (City) submitted its Willamette River Total Maximum Daily Load Implementation Plan (TMDL Plan) drafts to the Oregon Department of Environmental Quality (DEQ) in May and July 2020. DEQ approved the current TMDL Plan in August of 2020. The 2020/2021 reporting year (July 2020–June 2021) is the first year of the newly implemented TMDL Plan. This progress report provides a summary of the City's efforts during the first year of the new plan.

Background

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

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

Stormwater runoff in the Willamette Valley is not considered a problem with respect to temperature, and therefore, temperature is not a point source that is addressed under City's MS4 NPDES permit. Management strategies for nonpoint sources of temperature were developed and identified in the TMDL Plan. Historically, riparian vegetation removal and channel modifications result in reduced

baseflow, reduced stream shade, and increased instream temperatures. As part of the TMDL Plan, strategies to address temperature were identified.

Implementation Status

The City's MS4 NPDES permit serves as the Willamette River TMDL Plan for bacteria and mercury. Progress towards implementing best management strategies (or BMPs) to address bacteria and mercury are summarized in the City's 2020-2021 MS4 NPDES Annual Report, submitted to DEQ by November 1, 2021. Additionally, the City conducts the following activities to specifically address bacteria:

- Providing bag stations at Milwaukie parks for picking up pet waste.
- Require private systems to connect to the public system.
- Extend public collection systems to unincorporated areas northeast of the City.

Status related to these additional activities to address bacteria reduction are described in Section 5.1 of the City's 2020-2021 MS4 NPDES Annual Report.

The City sent both electronic (10/28/2020) and hard copies (Received 11/03/2020) of the annual report to DEQ.

The City's progress towards implementing strategies to address temperature is summarized in Table C-1 of this technical memorandum. Such strategies include pursuing removal of the Kellogg Creek Dam and applying for grants to support shade preservation activities. Additionally, the City conducts public education and outreach activities and implementation of development standards that promote infiltration, both of which would be expected to improve temperature in receiving waters.

> On April 10, 2013, DEQ invited designated management agencies (DMAs) with TMDL obligations to a TMDL implementation workshop. The intent of the workshop was to: 1) provide background information and summarize TMDL implementation strategies conducted by select agencies, and 2) discuss the need for DEQ to conduct a 5-year look back on TMDL implementation this year (2013). At the time, the City of Milwaukie, along with other Clackamas County Phase I co-permittees, had only completed three years of TMDL implementation.
>
> Currently, the City's status with regards to implementing their TMDL Plan is documented in the submitted TMDL annual reports, and this annual report supplements the previously submitted information.

Table C-1. TMDL Implementation Plan Management Strategies for Temperature Reduction				
BMP or Activity	Commitment/ Implementation Strategy	Measurable Goal(s)	Implementation Tracking/Performance Measure	City responses
Riparian Area Management	Promote preservation, restoration, and enhancement of riparian and instream habitat on public and private lands.	Continue to implement Milwaukie Municipal Code (MMC) Section 19.402 – Natural Resources and Comprehensive Plan Chapter 3 to address Title 3 and Title 13 requirements relative to designated water quality resource areas (including vegetated corridors) and habitat conservation areas (HCA) that may provide effective shade for surface waters.	• Annually track any changes to ordinances applicable to the MMC and Comprehensive Plan related to Title 3/ 13 compliance.	During the 2020/2021 year, the City made three updates to its Comprehensive Plan, with possibilities of pertaining to Metro Titles 3/13. These updates include an update to its flood hazard regulations (March/April 2021), a new Comprehensive Plan adopted in August 2020 with refreshed sections on natural resources and environmental quality, and the tree cutting ordinance (MMC 16.32) was updated in November 2020 to extend protections to trees on City owned properties.
		By November 1, 2014, review current development review processes with respect to development in a natural resource area. Refine the process to better track mitigation requirements and responsibilities.	• Annually track changes to development review processes.	There were no changes to development review processes in reporting year 2020/2021, however the new tree code can play into the development review for a project on a publicly owned site.
		By November 1, 2015, initiate a desktop analysis/ GIS analysis to identify and prioritize riparian areas and vegetated stream buffers for vegetation enhancement. This effort may be conducted in conjunction with the hydromodification assessment requirement in the NPDES MS4 permit.	• Annually track efforts to map and prioritize shade opportunity areas. • As applicable, document planting activities on public properties.	The City engaged the GIS Coordinator to initiate an effort to track and prioritize shade opportunity areas. From year to year the City will look at infrared imagery and perform remote sensing techniques to classify vegetation in order to evaluate changes in vegetative concentrations in the vegetative buffer along streambanks. The City will review GIS data using vegetative spatial analysis annually and will further evaluate compiled data once per permit term to target shade opportunity areas. (*addressed Note #1, 3*) The City is continuing to manage evergreen trees and replaced dead plantings as needed. Dying deciduous trees are being removed and replaced with drought tolerant, evergreen species. Invasive species are being controlled and removed from some of its sites. The City is continuing to plant drought tolerant and evergreen tree species around Oak Street detention pond. Invasive species are being controlled and removed from the site. The City is restoring a site adjacent to Mt. Scott creek with native and drought resistant species to add vegetation, improving stream shading, erosion control and water quality. The property was previously a home in a floodplain along Rusk Rd. purchased and removed by FEMA.

			The City continues to utilize its Branch Out Milwaukie tool. This will help determine future planting sites as well as measuring current canopy coverage, including in relation to socio-economic backgrounds. Tree plantings in lower income and lower tree canopy neighborhoods are being prioritized.
	During the desktop analysis to identify and prioritize riparian areas for vegetation enhancement, identify potential areas of cold water refugia and incorporate into the prioritization efforts.	N/A	In addition to the GIS/desktop analysis, the City discovered continuous temperature monitoring data from the USGS that indicates cold water refugia is potentially available for the Willamette River at the mouth of Johnson Creek. Please see Appendix 3-1 below. (*addressed Note #3)*
	Continue working with METRO to establish and implement drainage policies specific for Johnson Creek.	• Annually document coordination efforts with METRO.	The City of Milwaukie continues to coordinate with METRO on drainage policies within the City's boundaries.
	Partner with watershed councils (e.g., Johnson Creek Watershed Council)) in support of riparian planting projects. Partnership may include in-kind staff participation on governing boards, technical/ permitting support for sponsored projects within the City, or financial contributions.	• Annually document partnership efforts.	The City of Milwaukie partnered with the Johnson Creek Watershed Council by supporting JCWC with Milwaukie staff attending Johnson Creek Inter-Jurisdictional Committee meetings monthly. In addition, the City has signed agreements with North Clackamas Watershed Council's Streamside Partnership Program and Backyard Habitat Certification Program to work with homeowners to remove invasive plants and replant with native vegetation to benefit stormwater and creek shading. The City of Milwaukie has entered into 6-year contracts with each group in July of 2020 and will be providing $7,500 per year to each. The Backyard Habitat Certification Program worked on 47 sites with a total of 495,173 sq. ft./11.37 acres. % properties reached certification levels within the program. Johnson Creek Watershed Council had an environmental consulting firm install 6 log jams in Johnson Creek between 17 Avenue and HWY 224 in Milwaukie to provide shade and resting areas for salmonid species. Johnson Creek Watershed Council worked on 7 tax lots with plant establishment, weed control and infill planting. They are also working with ODOT on an ODOT property within the City of Milwaukie along Johnson Creek. North Clackamas Watershed Council worked on 12 sites, totaling 19 acres and 5,119 linear feet of streambank, and planted 570 trees and shrubs.

		Research incentive options (including a funding source) for riparian habitat restoration efforts on private property.	• As applicable, track efforts to develop incentives to improve riparian habitat on private property.	The City of Milwaukie continues to explore efforts for possible options for riparian habitat restoration on private property utilizing existing programs through JCWS Creek Care, NCUWC Streamside Stewards and Backyard Habitat Certification Program for restoration efforts on private property through agreements funded by the City of Milwaukie.
Kellogg Creek Dam Removal	Continue efforts to remove Kellogg Creek Dam, return Kellogg Lake to a stream condition, and revegetate the affected area.	Continue coordinating with partners in pursuit of the Kellogg Creek Dam Removal project	• Annually track progress on the project.	The City signed a grant to assist North Clackamas Watershed Council with funding for a Kellogg Dam removal and impoundment restoration project focusing on alternative designs.
Implement Stormwater Design Standards	Continue implementation and refinement of the City's stormwater design standards, which include provisions to prioritize use of infiltration-based stormwater treatment.	By November 1, 2014, review and update stormwater design standards to include additional guidance for stormwater treatment using infiltration practices.	• As applicable, document changes to stormwater design standards.	The City of Portland's updated Stormwater Management Manual took effect in October 2020. Milwaukie has adopted the City of Portland's stormwater manual and references the latest version of the manual for development review. In addition, the City of Milwaukie adopted its Climate Action Plan on October 2, 2018. This plan discusses updating code and standards for stormwater benefits. Including updating the Stormwater Master Plan (2023), stormwater storage and filtration needs for future conditions and de-paving areas where possible.
Public Education for Temperature Management	Continue to provide articles regarding temperature related issues and shade preservation efforts in the City newsletter and direct mailings.	Distribute one article annually on temperature issues and management approaches. Promote regional programs targeted at improving habitat on private property. Continually distribute information regarding regional programs in City outlets.	• Annually track the number and content of temperature – related articles, commercials/ advertisements, or notices distributed to City residents.	The City has designated a space for stormwater-related articles in the City newsletter, which is mailed to all residents monthly. City staff contribute two articles per year covering temperature and non-point source pollution issues. The City posted its Water Quality Report for 2020 and 2021 with tips to help conserve water. The City's Urban Forest Management Plan is available to the public and addresses many benefits of trees, including shade for helping cool stream temperatures. Residents can see the plan at the City's outreach table at the local Farmer's Market. Due to COVID-19 restrictions, the City did not have a table during the 2021 season but should return when conditions allow.
Environmental Monitoring	Monitor temperature in surface waters to document status and evaluate trends with respect to water quality standards.	In conjunction with NPDES MS4 requirements, conduct time-weighted composite and grab sampling for temperature at required instream monitoring locations. To the extent that an intergovernmental agreement is maintained by all parties, continue participation with USGS on continuous monitoring efforts on Johnson Creek.	• As applicable, annually report any modification to existing temperature monitoring activities. • As applicable, annually confirm existing agreements and track new efforts to coordinate with other Clackamas co-permittees, existing cost-share partners, and the USGS to maintain the Johnson Creek USGS stream gauge.	There were no modifications to the existing temperature monitoring activities for reporting year 2020/2021; temperature monitoring was conducted according to the City's MS4 Stormwater Monitoring Plan. The City of Milwaukie renewed the Joint Funding Agreement with USGS (OCT. 2020) for continuous water quality monitoring on Johnson Creek for reporting year 2020/2021.

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Appendix D

Regional Coalition of Clean Rivers and Streams Annual Report

REGIONAL COALITION FOR CLEAN RIVERS AND STREAMS

FISCAL YEAR 2020-2021 ANNUAL REPORT

SEPTEMBER 20, 2021

PREPARED BY:

enviroissues

FY 2020-21 Overview

The Regional Coalition for Clean Rivers and Streams (Coalition) continued its work – initiated in the mid-1990s – of providing coordinated messaging about behaviors linked to stormwater pollution from residential sources across the Portland metropolitan region in Washington, Multnomah and Clackamas counties. According to 2020 Census data, Washington County has a population of 600,372. Multnomah County has a population of 815, 428 and the Clackamas County population is 421,401. The Coalition continues its brand recognition efforts by consistently using the previously developed *The River Starts Here* creative concept in its various materials. Other Coalition activities in the 2020-21 fiscal year included sponsoring and promoting the Coalition and its messages at community events.

Coalition participants include:

- Clackamas Water Environment Services
- Clean Water Services
- City of Gladstone
- City of Gresham
- City of Lake Oswego
- City of Milwaukie
- City of Oregon City
- City of Portland, Bureau of Environmental Services
- City of Troutdale
- City of West Linn
- City of Wilsonville
- Oak Lodge Water Services
- Multnomah County

This report covers July 1, 2020 - June 30, 2021.

Background

As identified in the 2013 Strategic Plan, the Coalition continues its mission of collaborating across the Portland metropolitan region to improve watershed health by changing household behaviors, reducing polluted runoff and connecting people with their local waterways. Coalition members leverage their collective resources to conduct outreach to communities across the region with common stormwater information and messages. Coalition activities complement individual agency efforts to raise awareness of stormwater runoff and affect behavior change to prevent pollution and protect regional surface water quality. Coalition activities support commitments relative to state permits under the federal Clean Water Act (administered by the Oregon Department of Environmental Quality), including Total Maximum Daily Load and National Pollution Discharge Elimination System Municipal Separate Storm Sewer System (MS4) programs, as well as compliance with the federal Endangered Species Act.

Participants in the Coalition represent agencies that serve diverse population sizes from very small (Troutdale) to very large (Clean Water Services). As such the ability to run programs specific to their community is limited by funding and staffing. The Coalition represents an efficient, effective method to

combine stormwater outreach funds. Coalition members continue to provide funding for the collaborative work each fiscal year based on the size of the respective community. The group shares funds with Multnomah County acting as the fiscal agent to purchase associated consulting services, advertising, materials and event sponsorships. By sharing resources, the group reaches many thousands of people in the region compared to what entities can typically achieve on their own.

The Coalition focuses on changing behaviors from residential sources linked to stormwater pollution prevention. Information and messages used by the Coalition are intended to reach those making purchasing and management decisions about yard care, pets and auto maintenance activities – some of the most likely sources of stormwater pollution from residents. Coalition activities address a range of surface water contaminants, including nutrients and toxics from fast-releasing synthetic fertilizers and pesticides applied to yards and lawns, pollutant loads from car washing soaps, metals and other toxics from vehicle maintenance (and unmaintained vehicles), *E. coli* from pet waste, turbidity from eroded soils and other contaminants from illicit discharges.

Key Messages

The Coalition's key messages focus on raising awareness about pollution from stormwater runoff and motivating actions to protect surface water quality through action at the household level. The key messages are:

- Stormwater runoff is now our number one source of water pollution. When it rains, pollutants from your home, car, and garden wash into our rivers and streams.
- Bacteria from uncollected dog waste washes into our rivers and streams. You can protect our water by picking up after your pets.
- Yard and garden products wash into our rivers and streams. You can protect our water by eliminating these products or using compost and slow-release fertilizer.
- Motor oil, solvents, and soaps wash into our rivers and streams. You can protect our water by keeping car-care chemicals out of storm drains, diverting wash water onto your landscaping, and going to a car wash.

FY 2020-21 Activities and Results

Activities during the reporting period focused on continuing to implement the Coalition's strategic plan with messaging and outreach using *The River Starts Here* creative concept, developed in FY 2014-15. This concept was informed by the research summary about stormwater behavior (DHM Research, Feb. 2014) used by Coalition members in partial fulfillment of the FY 2014-2015 MS4 permit requirement to evaluate the effectiveness of permittee's education and outreach program.

Strategic Plan Implementation

A strategic plan, adopted in 2013, continued to guide Coalition efforts during the fiscal year. The Coalition acted on strategic plan goals as summarized below:

Goal 1: Maintain a functioning Coalition

Each year, Coalition members prepare an updated cost-sharing approach and budget, which was implemented in 2020-21. Members of the Coalition share their knowledge with the broader regulated communities in Oregon via the Association of Clean Water Agencies (ACWA). Members have presented

on prioritizing public behaviors to maximize pollutant reduction success and on a water pollutant risk assessment database at the past two spring ACWA conferences.

Goal 2: Develop and adapt creative products to fulfill the Coalition's mission

The Coalition continued to use collateral materials developed with *The River Starts Here* creative concept through social media outreach and digital advertising, including messaging and news for the 2020 and 2021 Student Video Contests. Partners continued to message on individual social media channels as well as the Regional Coalition for Clean Rivers and Streams.

Goal 3: Practice adaptive management

The Coalition is committed to leveraging available resources to maximize impact while setting the stage for a future collaboration among agencies. Total member representation in the Coalition has increased in the past few years, bringing in more regional partners. During the 2020-2021 fiscal year, the Coalition relied more on ongoing social media outreach as most in-person outreach opportunities were cancelled or delayed due to the COVID-19 pandemic.

In spring 2020, the Coalition discussed the importance of acknowledging the intersectionality of the environmental and social justice movements. Independently, partner agencies had been in various stages of educating staff on the topics of diversity, equity and inclusion. Partners committed together to think about practices that could be implemented that would result in more inclusivity for historically marginalized and underserved populations. The partners agreed to broaden the content of their messages to include environmentally related social justice information, as well as to utilize its platform to amplify the voices of the Black, Indigenous, and People of Color (BIPOC) communities. Further, this resulted in the partners adding a specific category to the Student Video contest that recognized BIPOC filmmakers and ensure their voices are represented and heard.

Figure 1: Screenshot from Facebook post promoting donations for the Water for Warm Springs Fund.

The River Starts Here Messaging and Outreach

Community Events and Agency Collaboration

Representatives of member agencies promoted Coalition messages throughout the fiscal year using Facebook, Instagram, YouTube and Twitter. The Coalition continued to adapt to in-person event restrictions caused by COVID-19 by increasing social media posts and digital events. The primary focus of digital outreach was for the first and second annual Student Video Contests.

Student Video Contest

Students were honored at the fall 2020 Ecofilm Festival held at the Hollywood Theatre in Portland via a RSH sponsorship of the festival. The Ecofilm festival director launched a special day-of programming that focused solely on films made by young artists.

The contest videos were featured as part of the day's programming and the River Starts Here Partners created a segment interviewing the students about how they made their videos, got story ideas, etc., for the audience to virtually "meet and greet" the students after the show. As part of the sponsorship, the RSH social media links were included in the film festival e-newsletters that went out to 73,000 subscribers. The contest winners were also highlighted in social media posts from KPTV FOX 12 Oregon that reached 26,000 people.

2020 Student Video Contest Winners:

- **25-second Video Award:** Water Pollution From Cars by Ava Behunin, Art and Communication Magnet Academy, Beaverton
- **55-second Video Award:** Everyday Water Pollution Prevention by Liza Wadell and Serena Rothman, Lake Oswego High School, Lake Oswego
- **People's Choice Award:** Hazardous Materials and Recycling by Ekansh Gupta, ACCESS Academy, Portland

Figure 2: Screenshot from 2020 Student Video Contest winner in the 55-second video category

Figure 3: Screenshot of social media post by KPTV Fox 12 Oregon that reached 26,000 people.

Honorable Mentions:

- Stormwater Pollution Stop-motion by Charlie Johnson, Alliance Charter School, Oregon City
- Fishy by Jaden Winn, Wilson High School, Portland
- Walking with Trash by Charlie Abrams, Cleveland High School, Portland

Figure 4: Screenshot of 2020 Portland Ecofilm Festival Twitter posts

The second annual Student Video Contest was launched in Spring of 2021 with a deadline for video submission of June 6, 2021. 2021 Student Video Contest categories included people's choice, best BIPOC filmmaker, best community storytelling video and best clean water action in the following topics: Leave no Trace, Climate Change, Rivers are Also Drinking Water and Active Transportation. The team created factsheets to support student learning and video content accuracy on each topic.

The community storytelling topic area was new for 2021. The category was intended to highlight the work of community organizations – including watershed councils, Environmental Justice organizations, and environmental organizations – working for clean rivers and streams. Also new for 2021 was the best BIPOC filmmaker category. This prize category is intended to recognize the crucial perspectives and contributions of our Black, Indigenous, and People of Color (BIPOC) students in creating a more equitable and sustainable future. The Coalition also worked in fall and winter of 2020 to broaden the student video contest to include the Vancouver-Clark County area by sharing the model and materials with the SW Washington Stormwater Partners.

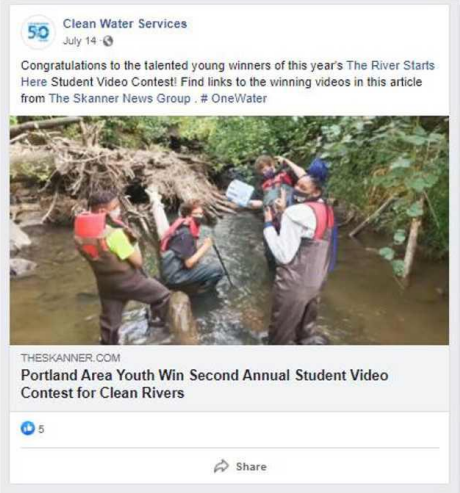

Figure 5: Screenshot of Clean Water Services Facebook post congratulating 2021 Student Video Contest winners

Changes to online learning in 2021 presented a challenge for spreading the word of the video contest. Overall, the Coalition received five entries in 2021, all entries were uploaded to the Coalition's YouTube site. Coalition partners such as Clean Water Services shared on their individual social media accounts and The Skanner picked up the press release announcing the winners. Over 1,754 community members watched student videos, which were viewed over 1,553 times. Viewers submitted over 254 likes and added hundreds of comments. Commenters shared their enthusiasm for these creative videos, and winners were announced in July 2021.

"Excellent video and program! Hoping this video inspires others across the globe as it has me; to help save our planet." – Anya Berube

"What a nice way to remind us of a way to easily make a difference. Good job!" – Anne MacDonald

2021 winners of the Student Video Contest will be reported in the 2021-2022 annual report.

WEBSITE: THERIVERSTARTSHERE.ORG

TheRiverStartsHere.org launched in June 2015 featuring *The River Starts Here* creative assets. It features

an image slider highlighting Coalition messages and includes links to member websites and additional web resources.

Summary website analytics for the fiscal year are shown below. Statistics in parenthesis are the difference between last year's and this year's data. Positive changes are shown in green, negative changes are shown in red, and inconsequential changes are shown in lavender. New data points are presented in black.

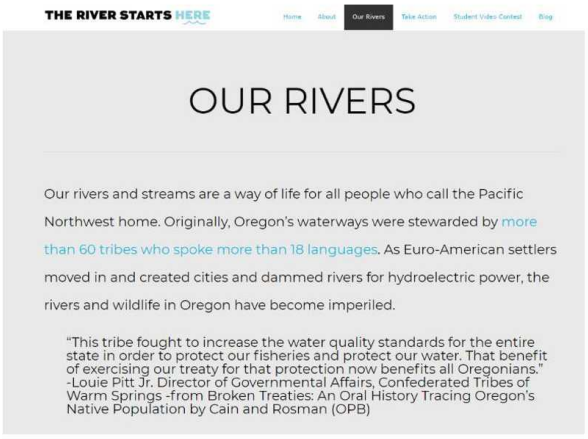

Figure 6: Screenshot from The River Starts Here website

Total sessions: 7,856 (▲214 %)

- **Users:** 5,855 (▲244%)
- **Traffic type**
  - Direct: 41% (▼21%)
  - Social: 20% (▼39%)
  - Organic (search engine): 25% (▲78%)
  - Referral: 13% (▲1200%)
- **Bounce rate:** 57% (▼25%)
- **Time on site:** 1:42 (▲2%)

During this fiscal year, web traffic has increased rapidly. In particular, total sessions and the number of users both increased by over 200%. This change is due in part to the hosting Student Video Contest content on the website.

The River Starts Here Blog

In May 2020, the Coalition began refreshing the website and added a blog. The blog created new opportunities for agency collaboration, event cross-promotion and driving traffic to partner resources.

During the fiscal year blog posts announced the winners of the 2020 Student Video contest and provided information on potential 2021 video topics. Blog posts also covered how to remove roof moss without harming rivers and streams, and announced the 2019-2020 annual report.

Social Media

The Coalition continued posting to its social media channels with an increase in frequency compared to previous years. As in past years, the Coalition concentrated social media activity in spring and summer when residents have an increased interest in yard and garden activities relevant to surface water quality. Social media messages build on existing conversations and connect with organizations around the region. While spring and summer are also times for promoting events, this year presented a different challenge with the COVID-19 pandemic which resulted in no public events. The Coalition focused on promoting educational webinars and online events as opposed to in person events such as restorations and river cleanups. The Partners also collaborated with all regional watershed councils on how to encourage people to get outside and stay healthy, sane, and away from crowds using nature to find respite and joy. This group of watershed councils decided to create a Facebook group called "Together for Watersheds" where partners would take turns creating content, especially videos, to begin teaching the public about a variety of nature arts and crafts, scavenger hunt hikes with kids, creating a wildlife friendly outdoor space, identifying, and removing aggressive weeds and much more. The Coalition amplified these messages and also included some on the YouTube page.

Statistics in parenthesis are the difference between last year's and this year's data. Positive changes are shown in green, negative changes are shown in red, and inconsequential changes are shown in lavender.

Facebook page, The River Starts Here

A summary of Coalition Facebook account use during the fiscal and as of July 1, 2021, is as follows:

- **Followers ("likes"):** 1,676 (▲2)
- **Weekly organic reach:** 140 (▼153)
- **Posts:** 123 (▲34)

Facebook follower demographics breakdown:

Age	Female	Male	Total by Age
18-24	1%	1%	2%
25-34	10%	6%	16%
35-44	19%	8%	27%
45-54	17%	9%	26%
55-64	10%	4%	14%
65+	9%	4%	13%

Total by Gender	66%	32%	-

Table 1: Facebook followers by age range and gender. A large portion of the Coalition's Facebook audience is made up of women from age 35-54.

The Coalition's social media following is dominated by women. In particular, the Coalition Facebook mostly reaches women who are 35-54. The Coalition's Facebook following has also increased its reach to older people while reaching fewer young people.

Facebook ads, The River Starts Here

The Coalition continued to use low-cost social media advertising as part of its campaign in FY 2020-21. Continuing to focus on defined target audiences for messages (male v. female, age level for behavior, etc.) as well as targeting by ZIP code is a primary strategy. Most advertising was on Facebook.

A summary of Facebook ad engagement during the fiscal year is as follows:

- **Advertisements and boosted posts:** 10
- **Reach:** 141,189
- **Post engagements**: 2,477

Ads or Boosts during FY 20-21

Topic	Engagement	Reach
EPA Columbia River Basin Restoration Program	389	14,044
Gresham Tree Team	238	10,088
Website Visitors	N/A	14,376
Student Video Contest	501	2,938
Student Video Contest	308	3,739
Student Video Contest	0	63,013
Student Video Contest	287	1,882
The Chuush Fund: Water for Warm Springs	277	3,886
Backyard Habitat Certification Program	38	17,376
Car Washing Tips	439	9,847

Engagement is an interaction such as a like, comment, or click thru. **Reach** is the number of individuals who saw or interacted with the post.

*Some ads also ran on Instagram.

Twitter, @riverstartshere

A summary of use during the fiscal year is as follows:

- **Followers:** 1,441 (▲3)
- **Tweets:** 61 (▲8)

Instagram, @theriverstartshere

A summary of Coalition Instagram account use during the fiscal year is as follows:

- **Followers:** 364 (▲200)
- **Posts:** 31 (▲5)

Instagram follower demographics breakdown:

Age	Female	Male	Total by Age
13-17	0%	3%	3%
18-24	7%	6%	13%
25-34	30%	25%	55%
35-44	32%	31%	63%
45-54	24%	19%	43%
55-64	5%	5%	10%
65+	3%	12%	15%
Total by Gender	61%	40%	-

The Coalition's move in 2020-2021 to consolidate Instagram handles and grow its audience has had noticeable effects on the diversity of people reached. The Instagram audience is dominated by people ages 35-44. The Coalition can continue to build a following from youth by promoting YouTube and Instagram content while reaching older people through Facebook.

YouTube, The River Starts Here

A summary of the Coalition YouTube account during the fiscal year is as follows:

- **Subscribers:** 168 (▲159)
- **Videos added:** 42 (▲37)
- **Watch time (hours):** 132 (▲124)
- **Views:** 16.8K (▲+15K)

In 2019, the River Starts Here created a YouTube account for the Student Video Contest. The 2020-2021 annual report captures the large increase in viewers from the Student Video Contests.

Figure 7: Screenshot of YouTube video from The River Starts Here channel

FY 2020-21 EXPENDITURES

Category	Services	Investment
2020 Student Video Contest		
Participant awards		$1,650
Hollywood Theater	Honored Student Videos placement in the Portland EcoFilm Festival	$500
Hollywood Theater	Discounted tickets (15) for the EcoKids Film Showcase Show for student film-makers	$135
Advertisements		
Facebook	Facebook digital advertisements	$3,189.20
Coordination support		
EnviroIssues	Meeting support and member coordination, website maintenance, social media authoring	$18,000
	TOTAL	**$23,474.20**

OBSERVATIONS

The following observations are based on the results of FY 2020-21 activities and suggest future direction the Coalition may take in its mission of educating the public about the impact of stormwater runoff pollution on the health of our rivers and streams.

The FY 2020-21 efforts consisted of the Coalition continuing to use digital advertising, contracting with EnviroIssues to assist with continued social media posts, meeting coordination and data analytics, and maintaining a YouTube page and blog.

While the Coalition's online audience and its engagement continued to grow during the fiscal year due to the strategic investments into those types of content, the Student Video Contest outreach through schools continued to be challenging. The community capacity of schools, teachers and students to become involved during the ongoing COVID-19 pandemic, with disruption and uncertainty for our education system, was severely impacted.

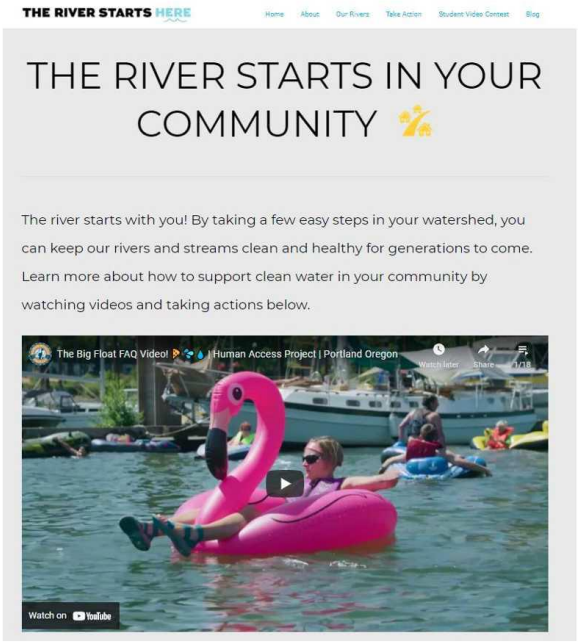

Figure 8: Screenshot from the River Starts Here website

As the 2021-22 school year begins with students in Oregon largely back in classrooms, the Coalition will again attempt an outreach strategy through school mailers, social media ads and through other community-based organizations, especially those serving marginalized populations and BIPOC youth, in an effort to achieve more diversity, equity and inclusion.

The Coalition plans to consult with new staff at Clean Water Services and Oak Lodge Sanitary District who have more specialized social media backgrounds for ideas on social media innovations in posting or purchased ads. The Coalition will also edit the student videos with applicable calls to action and branding and begin running them as advertising with a strategy to build culture and followers across the platforms.