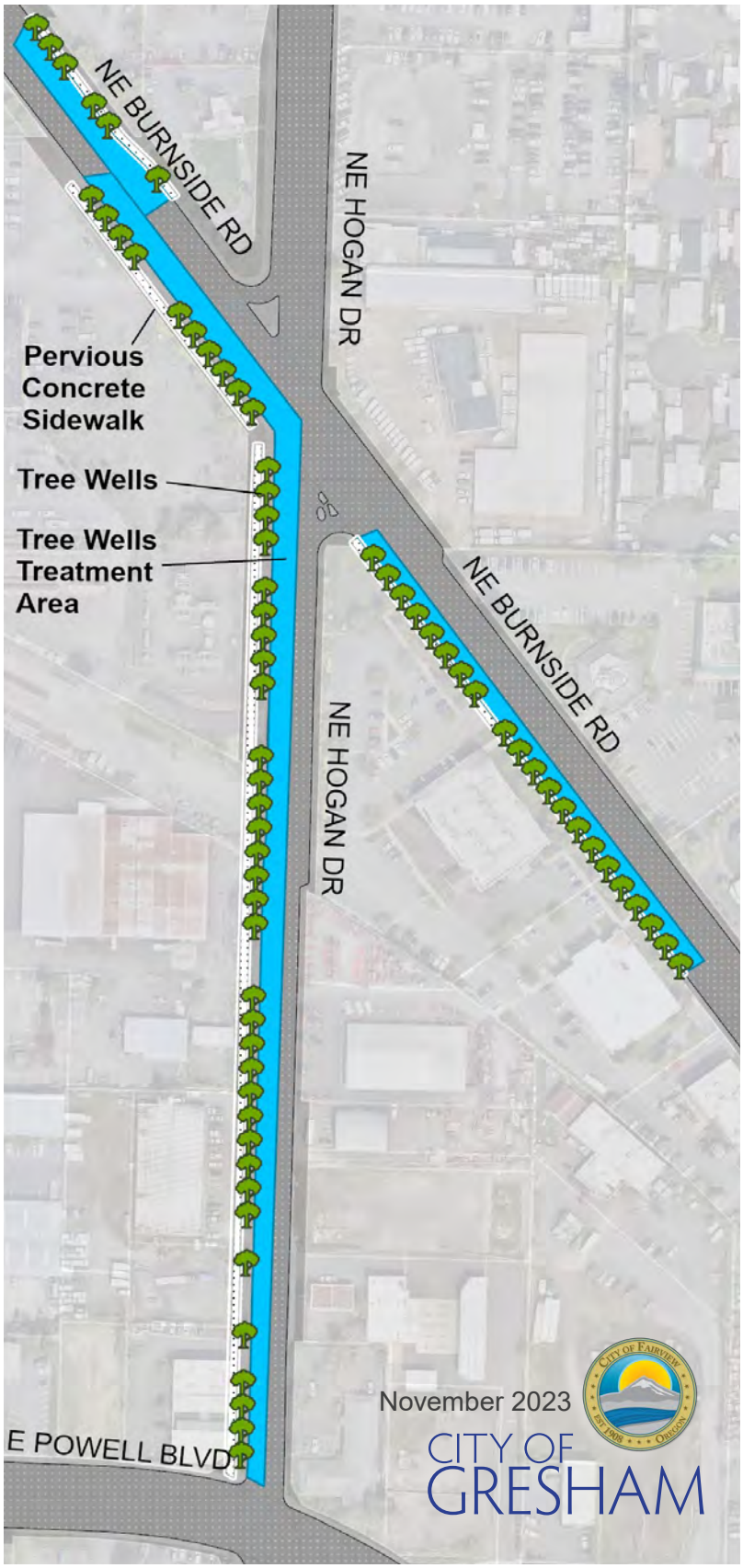


Gresham installed 52 stormwater tree wells as part of improvements along two arterial streets in 2023. The project includes pervious concrete sidewalks, and the tree wells use structural soil to provide additional stormwater storage and space for tree roots.

GRESHAM AND FAIRVIEW NPDES ANNUAL REPORT 2023 - PERMIT YEAR 28

MS4 DISCHARGE PERMIT NO. 101315 EPA REF. NO. ORS 108013

CITY OF GRESHAM 1333 N.W. Eastman Parkway | Gresham, OR 97030 | 503-618-2525

November 1, 2023

Pablo Martos, Municipal Stormwater Permit Coordinator
Environmental Solutions Division
Oregon Department of Environmental Quality
700 NE Multnomah St., Suite 600
Portland, Oregon 97232

RE: Gresham/Fairview NPDES Stormwater Permit #101315
Permit Year 28, 2023 Annual Report

Dear Pablo Martos:

I am pleased to submit a copy of the twenty eighth National Pollutant Discharge Elimination System (NPDES) Stormwater Annual Report for the City of Gresham, and the City of Fairview, under Permit No. 101315, File No. 108013, reissued on September 15, 2021, effective on October 1, 2021 and expiring on September 30, 2026.

The goals of the annual report are to: 1) document progress on the implementation of best management practices for pollution prevention, reduction and removal; 2) evaluate program results for continuous improvement; and 3) share this information with municipal decision makers and the public. The EMP summary and the Gresham and Fairview SWMP Reports will be posted on their respective websites.

Because DEQ requested that the monitoring raw data be submitted to the new Aquatic Water Quality Management System (AWQMS) template, the Gresham, Fairview, and Multnomah County raw data (collected with an IGA for the two partner agencies) is no longer included. However, the Environmental Monitoring Program (EMP) summary and conclusions along with maps of the locations sampled are included in Section 2. Section 3 describes the Best Management Practices Program Summary and reporting metrics for Gresham and Section 4 is Fairview's report. Please also note that Fairview's report includes an Appendix A which precedes Gresham's Appendix A for Education & Outreach Examples. This year's report also includes an Appendix B which is the Hydromodification & Retrofit Assessment Update, as required by the permit.

If you have any questions regarding this report or would like an additional copy, please contact Keri Handaly at (503) 618-2657. For questions specific to the City of Fairview's activities, please contact Allan Berry at (503) 674-6235.

Sincerely,

Keri M. Handaly
NPDES MS4 Permit Coordinator
Department of Environmental Services

cc: Allan Berry, City of Fairview
Torrey Lindbo, Water Science & Policy Program Manager
Steve Fancher, Department of Environmental Services Director

Enclosures: (1) hard copy
(1) flash drive

National Pollutant Discharge Elimination System
Permit No. 101315
EPA Reference No. ORS108013
Permit Year 28 Annual Report
City of Gresham and City of Fairview

"We the undersigned, certify under penalty of law that this document and all attachments were prepared under our direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on inquiry of the persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of our knowledge and belief, true, accurate and complete. We are aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment from knowing violations."

Steve Fancher
Director, Department of Environmental Services
City of Gresham

Allan Berry
Director, Public Works
City of Fairview

For additional information regarding this report, please contact:

Torrey Lindbo
Manager, Water Sciences Program
City of Gresham
1333 NW Eastman Parkway
Gresham, OR 97030
(503) 618-2405
www.greshamoregon.gov

CONTENTS

PREFACE

This Stormwater Management Program report contains a summary of the City's activities to comply with NPDES (National Pollutant Discharge Elimination System) MS4 Permit #101315 renewed on October 1, 2021, and has four major sections. Section 1, Overview, provides the historical background, location of required elements within the report, and a description of Gresham and Co-permittee's watersheds. Section 2, Environmental Monitoring Program, is the summary of the City of Gresham's data collection efforts conducted on behalf of the Co-permittees and includes corresponding Tables and Figures and Sections 3 through 4 consist of the Stormwater Management Plan document (SWMP) implementation status reports for the City of Gresham and the City of Fairview, respectively.

SECTION 1: OVERVIEW

This section describes Gresham's portion of the permit area and changes that occurred since the first NPDES MS4 permit was issued in 1995, watershed boundaries within the permit area, and the history of the co-permittees.

I. Gresham Permit Area & Watersheds

Permit & Reporting History

In accordance with Clean Water Act (CWA) requirements, the Oregon Department of Environmental Quality (DEQ) issued a National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer (MS4) Permit on September 7, 1995, to the City of Gresham and co-permittees: the City of Fairview, Multnomah County, and the Oregon Department of Transportation. This permit (101315) expired on August 31, 2000. The Oregon Department of Transportation (ODOT) sought separation from their multiple joint NPDES MS4 permits and obtained approval from DEQ to implement their own statewide permit.

In 2010, Multnomah County separated as a co-permittee and Gresham and Fairview's Stormwater Management Plan/Programs were approved as co-permittees. The 2010 permit expired on December 29, 2015, but was administratively extended until the renewal in October 2021. In July 2022, Gresham submitted its updated Stormwater Management Program document approved by DEQ and implemented as of November 1, 2022. This annual report represents the third annual report under this permit but represents the first full year of reporting under the August 2022 approved SWMP document. SMP

Permit Boundary

The NPDES MS4 permit area for Gresham includes the incorporated areas (the city limits) of the City of Gresham except the portions of the City's stormwater system that drain to Underground Injection Control (UIC) systems. UICs drain to groundwater and are subject to a Water Pollution Control Facility (WPCF) permit. The Best Management Practices (BMPs) described within this Stormwater Management Program document (SMP) are applied throughout the entire city urban services boundary, including the areas draining to groundwater.

Metro's urban growth boundary in the Gresham area was adjusted in 1998 and 2002 to include the areas known as Pleasant Valley, Kelley Creek Headwaters and Springwater Plan Areas. Gresham's city limits were adjusted in 2003 to exclude area that was de-annexed to the City of Troutdale within the Beaver Creek watershed. As acres are annexed into the city and develop, the City's Stormwater Management Manual standards are applied that require all new impervious areas created greater than 1,000 square feet to be treated by stormwater facilities. All

new UGB permitted development is reported in the City's Annual Report Appendix A. Much of the almost 2,000 UGB acres are farmland and heavily degraded riparian buffers, so the restoration of buffers, the halting of broad use of pesticides on farmland, and the treatment of stormwater runoff is likely to improve overall stream condition over the next twenty years.

Another change occurred related to jurisdiction of roads within the permit boundary. Effective January 1, 2006, the jurisdiction of Multnomah County's arterial roads within Gresham were transferred to Gresham, along with the UICs that manage the street runoff.

The City of Gresham area *excluding* Pleasant Valley and Springwater is about 15,142 acres or about 23.4 square miles. The area *including* the urban growth boundary of Pleasant Valley and Springwater represents almost 17,000 acres or approximately 26.5 square miles. As described in Schedule A 1. a. of the permit, "The *co-permittees are responsible for compliance within their respective jurisdictions as identified in this permit and are not responsible for compliance outside of its jurisdiction."* Therefore, the contents of the SMP are specific to the City of Gresham and do not apply to its co-permittee, City of Fairview and vice versa. The City assists Fairview with some compliance elements such as monitoring and education & outreach, per an Intergovernmental agreement.

II. Water Protection Areas

Gresham has four watersheds: Fairview Creek, Johnson Creek, Kelly Creek, and the Columbia Slough. All these watersheds cross multiple jurisdictions, such as Fairview, Wood Village, Troutdale, Portland, and the management area of the Multnomah County Drainage District. Gresham communicates with its neighbors and the local watershed councils to ensure efficient outcomes and activities regarding water protection. The City's streams drain to either the Willamette River, the Columbia Slough (which drains to the Willamette) or the Sandy River. All these waterbodies are within the Columbia River basin.

Kelly Creek & Beaver Creek

The Kelly Creek watershed within Gresham encompasses about 2,597 acres (4.1 square miles) and is tributary to the Beaver Creek watershed and to the Sandy River. In addition to the Kelly Creek watershed, there is an additional 293 acres (0.5 square miles) of Gresham that flows directly into Beaver Creek. As described above, the urban service boundary was adjusted in 2003 to exclude a 48-acre parcel of protected Metro open space within the Beaver Creek canyon area at Mount Hood Community College. Notably, juvenile salmon have been found in this reach of Beaver Creek. Kelly Creek originates east of Gresham and enters the city limits east of SE 282nd Avenue and north of SE Dodge Park Boulevard. It flows northwest until its confluence with Burlingame Creek; its main

tributary lies northwest of NE Kane Road and NE 18th Court. The confluence of Kelly Creek and Beaver Creek is on the Mount Hood Community College campus. Most of east Gresham drains to Kelly Creek.

Johnson Creek

The entire Johnson Creek watershed encompasses 54 square miles and is a tributary of the Willamette River in the Milwaukie/Portland area. About 5,622 acres (8.6 square miles) lie within Gresham's permit area. Although Johnson Creek does not originate in Gresham, some of the creek's upper reaches flow through the City of Gresham. Presently, Johnson Creek enters the Gresham city limits at SE 252nd Avenue and SE Telford Road, flows in a northwesterly direction to Powell Boulevard and Main Avenue, then generally westward until it leaves the city limits near its intersection with SE 174th Avenue. Butler Creek, a significant tributary of Johnson Creek in Gresham, enters Johnson Creek a few hundred yards east of SW Pleasant View Drive. The largest tributary to Johnson Creek that is within Gresham is Kelley Creek. Kelley begins on the buttes in south-central Gresham and flows west through Pleasant Valley to join Johnson Creek just downstream of where it leaves Gresham. Much of south Gresham, including the downtown area, is in the Johnson Creek watershed. Notably, Johnson Creek is the longest free flowing urban stream in Multnomah County that still hosts returning oceanic salmon.

Figure 1-1. Note: This map includes both the portions of the City of Gresham that drain to surface waters subject to the NPDES MS4 permit (~15,142 acres) and the Underground Injection Control Facility areas draining to groundwater (~2,258 acres) that are covered under the City's WPCF Permit. The city runs its programs and services consistently across both areas to ensure environmental protection goals are met. The City and surrounding agencies also collaborate to create and update an interjurisdictional map that illustrates inlets, pipe, and other asset ownership so that agencies can coordinate cleanup management for spills. This map is housed as an ARC GIS (Geographic Information Systems) tool on the Multnomah County website: Urban Drainage System Map of Multnomah County (arcgis.com) (hyperlink inserted).

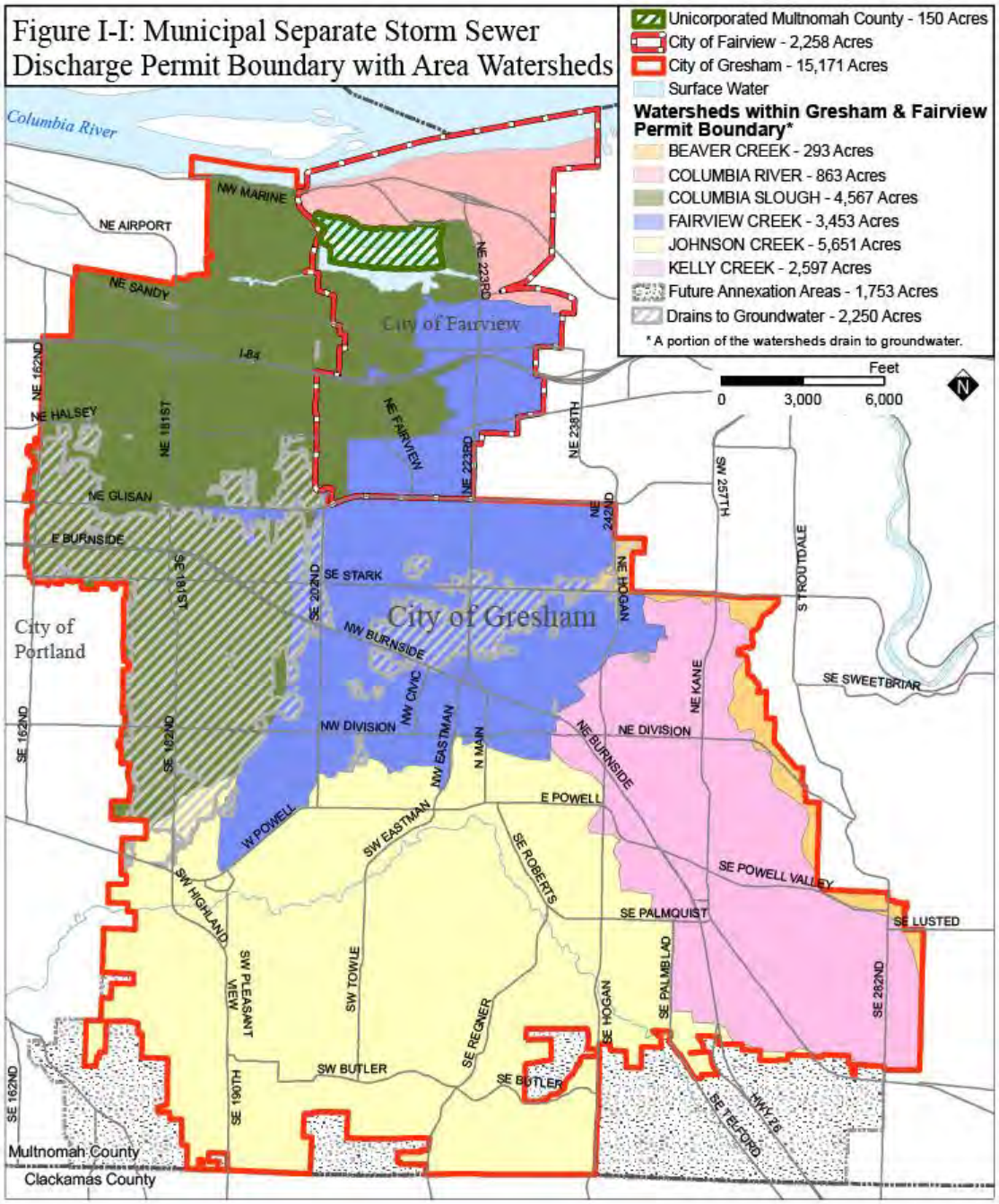


Figure I-I: Municipal Separate Storm Sewer Discharge Permit Boundary with Area Watersheds
Unicorporated Multnomah County - 150 Acres
City of Fairview - 2,258 Acres
City of Gresham - 15,171 Acres
Surface Water
Watersheds within Gresham & Fairview Permit Boundary*
BEAVER CREEK - 293 Acres
COLUMBIA RIVER - 863 Acres
COLUMBIA SLOUGH - 4,567 Acres
FAIRVIEW CREEK - 3,453 Acres
JOHNSON CREEK - 5,651 Acres
KELLY CREEK - 2,597 Acres
Future Annexation Areas - 1,753 Acres
Drains to Groundwater - 2,250 Acres
* A portion of the watersheds drain to groundwater.
Feet
0
3,000
6,000
N
Columbia River
City of Fairview
City of Gresham
City of Portland
Multnomah County
Clackamas County
NW MARINE
NE AIRPORT
NE SANDY
I-84
NE HALSEY
NE GLISAN
E BURNSIDE
SE STARK
NW BURNSIDE
NW DIVISION
NE DIVISION
E POWELL
W POWELL
SW EASTMAN
SE POWELL VALLEY
SE PALMQUIST
SE LUSTED
SW BUTLER
SE BUTLER
SE TELFORD
HWY 26
SE SWEETBRIAR
S TROUTDALE
NE 223RD
NE 238TH
SW 257TH
NE 242ND
NE HOGAN
NE KANE
NE BURNSIDE
NE FAIRVIEW
NE 181ST
SE 181ST
SE 202ND
NW CIVIC
NW EASTMAN
N MAIN
SE ROBERTS
SW HIGHLAND
SW PLEASANT VIEW
SW TOWLE
SE REGNER
SE 190TH
SE PALMBLAD
SE 282ND
SE 162ND
NE 162ND

Fairview Creek

The Fairview Creek watershed encompasses about 3,453 acres (5.4 square miles) and is a tributary to Fairview Lake. About 4.3 square miles lie within Gresham's permit areas. Fairview Creek is also recognized as the headwaters of the Columbia Slough. The creek originates within Gresham city limits near West Powell Boulevard and SE 182nd Avenue. The creek flows in a northeasterly direction though Gresham and enters Fairview just west of 223rd Avenue at NE Glisan Street and remains within the City of Fairview's jurisdiction for its remaining length. The Fairview Creek watershed encompasses roughly half of the City of Fairview and the north-central part of Gresham.

Columbia Slough

The entire Columbia Slough watershed encompasses approximately 62 square miles, of which about 4,567 acres lie within the Cities of Gresham and Fairview. About 6 square miles are within Gresham's permit area and is in northwest Gresham. The headwaters of the slough begin with Fairview Creek in the City of Gresham, flowing north to Fairview Lake in the City of Fairview, then paralleling the Columbia River west from the lake to its confluence with the Willamette River. While there are several major piped stormwater outfalls within west Gresham that drain and discharge directly to the slough, most of west Gresham's drainage is served by drywells, also known as underground injection controls, that drain to groundwater.

Groundwater

Discharges to groundwater are not subject to the requirements of the NPDES MS4 permit. As shown on **Figure 1.0.,** there are approximately 2,250 acres within the city that drain to groundwater. The City implements a groundwater protection program for industrial and commercial businesses that use and/or store hazardous chemicals, which includes the Business Inspection Program in the SMP document. All the BMPs described within the SMP document are applied across the city, irrespective of the above or below-ground nature of the receiving water body. The City's Water Pollution Control Facilities (WPCF) Permit was issued on December 10, 2012, and is expected to be renewed soon. Adjustments will be made to the SWMP document and Environmental Monitoring Program, as needed for compliance.

III. Total Maximum Daily Loads (TMDLs)

The City of Gresham is subject to TMDL requirements that set Wasteload Allocations (WLAs) for certain pollutants that are found in area waterbodies. Sources are evaluated for each TMDL pollutant, and the WLA is

set so that each contributing source knows the reduction needed to bring the stream back into compliance with water quality standards set to protect humans, fish, or both. The Willamette River basin has TMDLs that apply to Gresham and Fairview for mercury, E. coli, DDT (legacy pesticide in Johnson Creek for Gresham only). The Columbia Slough has TMDLs that apply to Gresham and Fairview for E. Coli, DDT, dieldrin, polychlorinated biphenyls (PCB), dioxin, lead, dissolved oxygen, chlorophyll a/pH. Parameters also measured as a proxy for these pollutants include total suspended solids, biochemical oxygen demand, and total phosphorus. The Sandy River basin has a TMDL for E. Coli that applies to Gresham.

The SMP document outlines the Best Management Practices (BMPs) that are conducted to help the city meet its TMDL pollutant reduction requirements. Although, DEQ and the regulated communities acknowledge that it will take years or even decades to reduce pollutant levels to desired levels. This is primarily due to decades of cities developing without regard for how to best protect our waterways and not developing stormwater regulatory programs until the late 90s. Further, investments to add/upgrade pollution control facilities across an entire city could cost 100s of millions of dollars, so must be planned and spread-out to be affordable when considering all a community's needs.

IV. Description of Co-permittee Coordination Efforts

Regarding NPDES MS4 permit co-permittees, the City of Gresham was the lead permit applicant for the Gresham NPDES MS4 submittal in 1993, 1995, 2000, 2006, 2008, and 2015. However, as of the 2010 NPDES MS4 permit reissuance, Multnomah County was issued its own permit and is no longer a co-permittee of the City of Gresham or the City of Fairview. A complete overview of the permit history may be found in **Section 1.0 of the City's SMP document.** Although Gresham is the lead permit applicant, the co-permittees are responsible for development, implementation, and tracking of their jurisdictions' BMPs as well as submitting their respective annual reports to be collated with Gresham's annual compliance report and then submitted to DEQ. Gresham's responsibility is coordination of the program, communication with DEQ, and submittal of the annual report from each co-permittee. Costs associated with the implementation of the Environmental Monitoring Plan are shared to meet watershed science & outreach objectives with Multnomah County and the City of Fairview using intergovernmental agreements (IGAs).

V. Table 1.1 Reporting Requirements Summary

1. Submit an annual report for July 1 to June 30 of the previous year's activities in paper and electronic format. When DEQ Online submission becomes available, paper will be eliminated as a requirement.
2. Post the annual reports to the City's website.
    a. Available at GreshamOregon.gov/Watershed-Documents-and-Forms
3. Implementation summary for the SMP document metrics, tracking, and assessment of the required elements in Schedule A.3 (Public Outreach, Public Involvement, Illicit Discharge Detection & Elimination, Erosion Control, Development Stormwater Controls, Pollution Prevention/Good Housekeeping, Business Inspection, Hydromodification & Retrofit Strategy, Mercury Minimization Assessment)
4. Summary of Adaptive Management
5. Summary of proposed changes designed to reduce TMDL pollutants
6. Summary of Education & Outreach & Public Involvement activities
7. Summary of Illicit Discharge screening, inspections, enforcement, and outreach
8. A list of entities referred to DEQ for possible 1200-Z NPDES coverage, list of facilities inspected, an overview of the results
9. A summary of stormwater program expenditures, funding sources for the reporting year, and those projected for the next fiscal year
10. A summary of monitoring program results, including submission of data into the DEQ template and any evaluations of the data conducted by the permittee or consultant.
11. Proposed modifications to the monitoring plan
12. An overview of concept planning, land use changes, and new development that occurred in the Urban Growth Boundary (UGB) expansion area
13. The details of corrective actions in Schedule A. 1. B. iii (Water Quality Standards)

VI. Legal Authority

The City has maintained its authority to implement the permit requirements since the earliest years of its program. It has adequate legal authority to implement the requirements of the October 2021 renewed permit.

SECTION 2: Cities of Gresham & Fairview Environmental Monitoring Program Summary

I. History

The City of Gresham has continued to adaptively manage its Environmental Monitoring Program (EMP) document every few years based upon the addition of parameters and scientific inquires to answer questions about green infrastructure pollution reduction performance. The City of Gresham submitted a revised EMP document to DEQ in July 2022, approved in August 2022. This report reflects the first year of monitoring under that document.

II. Table 2.1 Program Commitments[1] (Fiscal Year 21-22, Permit Year 27)

Monitoring Type	Monitoring Location(s)	Monitoring Frequency	Pollutant Parameter Analyte(s)	Notes
Instream Monitoring	**Three (3) sites in the Columbia Slough basin:** 1. Fairview Lake @ Lake Shore Park (FVL1) 2. Fairview Creek @ mobile estates (FCI0) 3. Fairview Creek @ Stark (FCI1)	Four (4) events/year	*DO, pH, temperature, conductivity, turbidity, E. coli, hardness, BOD, TSS, Chlorophyll-a (May-Oct); nutrients (nitrate, ammonia, Total P, ortho-phosporus); Total recoverable and dissolved metals (copper, lead and zinc); total mercury; legacy pesticides (JC only)*	The City of Portland collects data on the entire Columbia Slough, but based on their probabilistic sampling design, locations monitored any permit year will be reported to DEQ by Portland. Fairview Lake and lower Fairview Creek (FCI0) sites are monitored via IGA with City of Fairview.
Instream Monitoring	***At least two (2) sites in the Sandy River basin:*** 1. Kelly Creek @ Mt. Hood Community College Pond (KCI1) 2. Kelly Creek downstream of Detention Pond (KCI3) 3. Kelly Creek upstream of Detention Pond (KCI4) 4. Beaver Creek at canyon footbridge (BCI1) 5. Beaver Creek at Division St. triangle (BCI2)	Four (4) events/year	*DO, pH, temperature, conductivity, turbidity, E. coli, hardness, BOD, TSS, Chlorophyll-a (May-Oct); nutrients (nitrate, ammonia, Total P, ortho-phosporus); Total recoverable and dissolved metals (copper, lead and zinc); total mercury; legacy pesticides (JC only)*	Beaver Creek sites are monitored via IGA with Multnomah County to meet their permit requirements.

[1] This table will be replaced with new requirements and commitments in the next Annual Report.

Monitoring Type	Monitoring Location(s)	Monitoring Frequency	Pollutant Parameter Analyte(s)	Notes
Instream Monitoring	***Four (4) sites in the Johnson Creek subbasin:*** 1. Johnson Creek @ Jenne Rd (JCI1) 2. Johnson Creek @ Palmblad (JCI2) 3. Kelley Creek @ Pleasant Valley Grange (KI1) 4. Kelley Creek @ Rodlun Rd (KI2)	Four (4) events/year	*DO, pH, temperature, conductivity, turbidity, E. coli, hardness, BOD, TSS, Chlorophyll-a (May-Oct); nutrients (nitrate, ammonia, Total P, ortho-phosporus); Total recoverable and dissolved metals (copper, lead and zinc); total mercury; legacy pesticides (JC only)*	
Continuous Instream Monitoring	*Two (2) continuous monitoring stations:* 1. Johnson Creek @ Regner 2. Fairview Creek @ Glisan*	*Ongoing* 15-minute interval	*Temperature and flow*	Flow data collected by USGS through Joint Funding Agreement #3225. *Fairview gage does not collect temperature. Gresham periodically collects summer temperatures at Glisan location and other locations throughout the city.
Stormwater Monitoring - Storm Event	*Ten (10) sites.* Monitored 10 random and spatially balanced stormwater locations.	*One (1) event/year* Monitored 1 event at each location (totaling 10)	*DO, pH, temperature, conductivity, turbidity, E. coli, hardness, BOD, TSS; nutrients (nitrate, ammonia, Total P, ortho-phosphorus); Total recoverable and dissolved copper, lead and zinc; total mercury, pesticides*	

Monitoring Type	Monitoring Location(s)	Monitoring Frequency	Pollutant Parameter Analyte(s)	Notes
Macro-Invertebrate Monitoring	*One (1) site in the Columbia Slough basin:* 1. Fairview Creek @ mobile estates (FCI0) 2. Fairview Creek @ Stark (FCI1)	One (1) event/year during summer/low flow conditions	*Macroinvertebrates*	Collected during the same week as the summer instream water quality data collection. Beaver Creek sites are collected through an IGA with Multnomah County to meet their permit requirements. Additional sites are collected as part of the Johnson Creek Inter-Jurisdictional Committee and the Beaver Creek Conservation Partnership.
	One (1) site in the Sandy River basin: 1. Kelly Creek @ Mt. Hood Community College Pond (KCI1) 2. Kelly Creek @ Detention Pond (KCI4)			
	Two (2) sites in the Johnson Creek subbasin: 1. Johnson Creek @ Jenne Rd (JCI1) 2. Johnson Creek @ Palmblad (JCI2) 3. Kelley Creek @ Pleasant Valley Grange (KI1) 4. Kelley Creek @ Rodlun Rd (KI2)			
Structural BMP Monitoring	*Two (2) sites - inlet and outlet:* 1. Brookside Constructed Wetland 2. Panza Constructed Wetland	*One (1) event/year* Monitored 1 event at 2 facilities	*DO, pH, temperature, conductivity, turbidity, E. coli, hardness, BOD, TSS; nutrients (nitrate, ammonia, Total P, ortho-phosphorus); Total recoverable and dissolved metals (copper, lead and zinc); total mercury*	

Monitoring Type	Monitoring Location(s)	Monitoring Frequency	Pollutant Parameter Analyte(s)	Notes
Special Projects	*Two (2) sites:* 1. Kane Road pervious pavement 2. Turf sports field	*One (1) event/year*	*Depends on the project. Measured 6PPD-quinone in PY28.*	

III. Monitoring Program Summary

The raw data collected from July 1, 2022 thru June 30, 2023 (Permit Year 28) are summarized below and have been submitted through the AWQMS database. The instream data have been compared to the relevant DEQ water quality criteria, and values that do not meet the water quality standards are discussed below. Data from Stormwater (wet weather sampling) and Structural BMP (green infrastructure) Monitoring have not been compared to water quality standards because of the mixing that occurs in-stream. Sampling locations are shown in **Figures 2-1 through 2-6.**

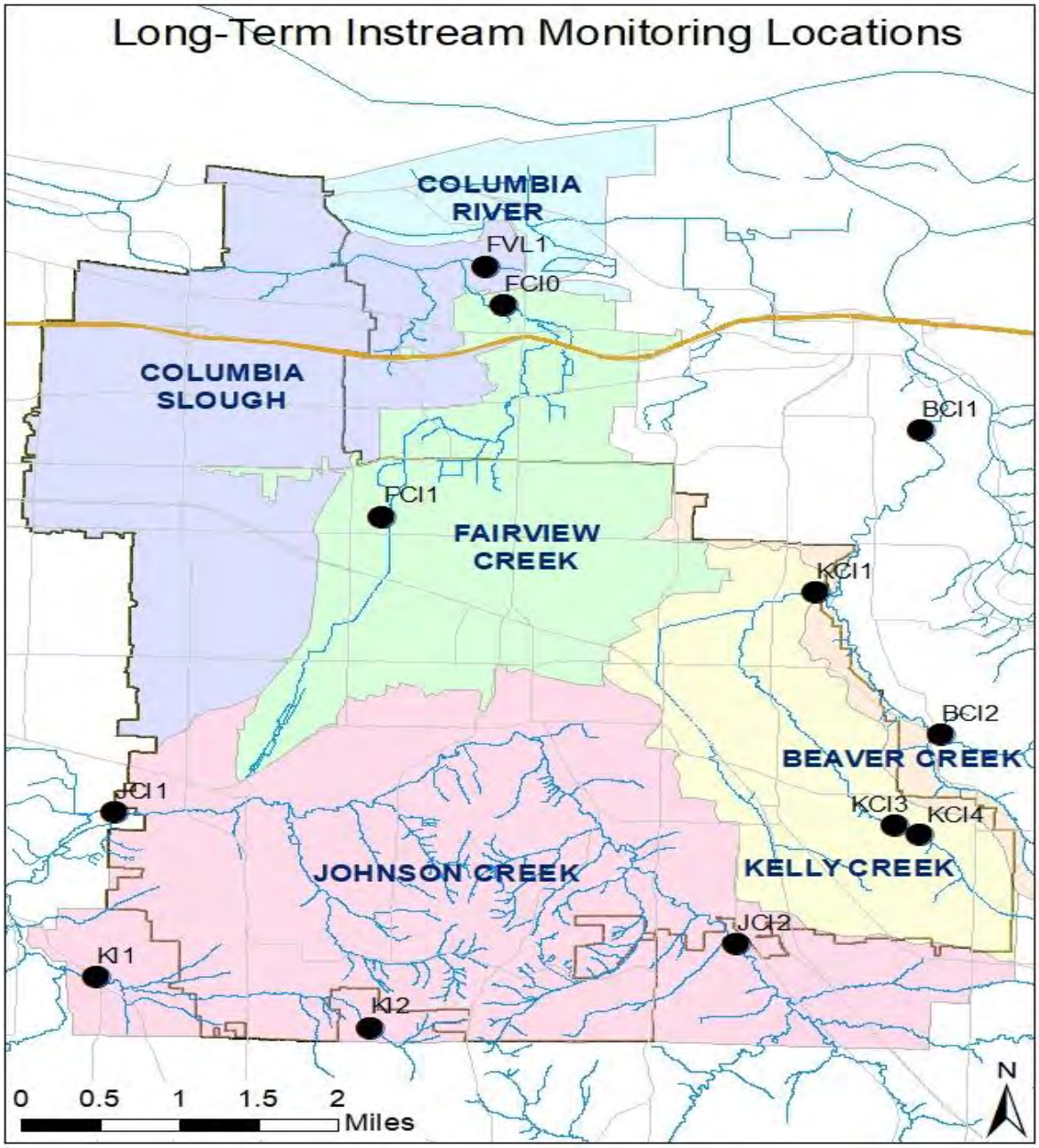
A. Instream Monitoring

Twelve long-term instream monitoring sites were sampled in August, November, February, and April during the reporting term. The November sampling event occurred at the end of a rain event producing ~1" of rainfall in 24 hours.

Instream monitoring results were typically within expected ranges. There were some exceedances of water quality standards for temperature, pH, total phosphorous, chlorophyll-a, mercury, *E.* coli, and DDT, which are discussed below. Several related water quality standards were exceeded in Fairview Lake, and they are discussed separately. The rest of the sites are in flowing streams, and exceedances are discussed together and listed by water quality parameter.

Figure 2.1 Long-Term Instream Monitoring Locations

Note: BCI1 and BCI2 are monitoring for Multnomah County via IGA.



Fairview Lake

During the August sampling event, Fairview Lake exceeded water quality standards for pH (9.72), temperature (30.2°C), chlorophyll-a (60.1 mg/m^3), and total phosphorus (679 ug/L). This large, shallow lake is ringed by houses with lawns and has little shade. These conditions lead to the lake being warm in the summer with high nutrient levels, leading to algal blooms and high pH values. Gresham and Fairview participate in the Regional

River Starts Here campaign which serves Multnomah County residents with lawn care tips for healthy water. During the November sampling event Fairview Lake exceeded the water quality standard for *E. coli* at 510 MPN/100 mL. Primary suspected sources of *E. coli* for the lake include dogs, coyote, deer and waterfowl, and *E. coli* in this case would be a proxy for the presence of Salmonella or small parasites that cause "Swimmers Itch" and are shed in fecal matter by these animals. However, Salmonella only poses a risk if ingested, so lake users should use care and always wash their hands before eating and shower after swimming to care for their skin. Elevated levels were not detected during subsequent sampling.

Stream temperature

Nine out of eleven stream sites exceeded the water quality standard of 18°C for fish rearing during the August sampling event, with temperatures ranging from 19.3-23.9°C. The only sites which did not exceed the standard were FCI1 on Fairview Creek which is mostly groundwater fed and KI2 in Kelley Creek which is a forested headwater stream section. There is further discussion of temperature exceedances in the continuous monitoring section below. The City continues to concentrate efforts on reducing stream temperatures including riparian restoration, evaluation of in-channel ponds, and protection of riparian buffers and of wetlands adjacent to streams.

Stream pH and Dissolved Oxygen

Grab samples during instream sampling are not typically compared to the water quality standard for dissolved oxygen because the standard is developed for average values over time. However, of note, our field meter was not giving consistent readings for dissolved oxygen or pH during a subset of the sampling events. After evaluation by a professional calibration service, it was determined that the readings from the preceding events were unreliable and should not be reported. Therefore, those values are not included in the data submission. None of the stream samples for which the pH meter was functioning accurately were outside of the pH water quality standard of 6.5-8.5. Of note, the lack of pH values means that the copper biotic ligand model could not be run for those samples because pH is a required value for the model. The samples for which the model could be run were all below the instantaneous water quality standard. The use of a new reliable probe was delayed due to disruptions in the supply chain. A reliable and functional probe was obtained and calibrated prior to the July 2023 instream sampling event, and a full dataset is expected for the next annual report.

Mercury (Hg) inorganic form

All samples exceeded the instream water quality target established by the 2019 TMDL of 0.14 ng/L for total mercury with values ranging 0.57-2.66 ng/L. The major sources of Hg in general are atmospheric sources from natural sources (ocean and volcanoes) and anthropogenic sources like industrial emissions, coal combustion and mining. The primary contribution of mercury in Gresham streams is understood to be atmospheric deposition carried to the streams in runoff. Mercury is highly correlated with total suspended solids due to its affinity with organic matter. The City continues to prioritize stormwater treatment BMPs which remove suspended sediment and to implement our erosion control program.

Total Copper & Zinc

There were no zinc exceedances in any samples taken.

Four copper exceedances samples were assessed using the Biotic Ligand Model software version 2.2.3 from HydroQual Inc. Some samples were not able to be run because they did not have accurate pH values associated with them, as discussed above under the pH section. Of the samples with sufficient input values, no samples exceeded the instantaneous water quality criterion.

E. Coli

All eleven sites exceeded the *E. coli* water quality standard of 406 MPN/100 mL during the November sampling event, and two sites exceeded it during the August sampling event (KI1 and BCI2). All exceedances were within typical ranges (480-3,400 MPN/100 mL), and past follow-up monitoring indicates that they are likely due to wildlife use and/or biofilms. We note that elevated levels in fall after the dry period likely stem from the many species of wildlife contributing waste into the environment and that not all *E. coli* strains are sources of threats to human illness, making this an imprecise predictor of risk. Also, the size of the waterbody and the weather make it highly unlikely that much, if any, human contact with the water is occurring.

DDT Pesticide

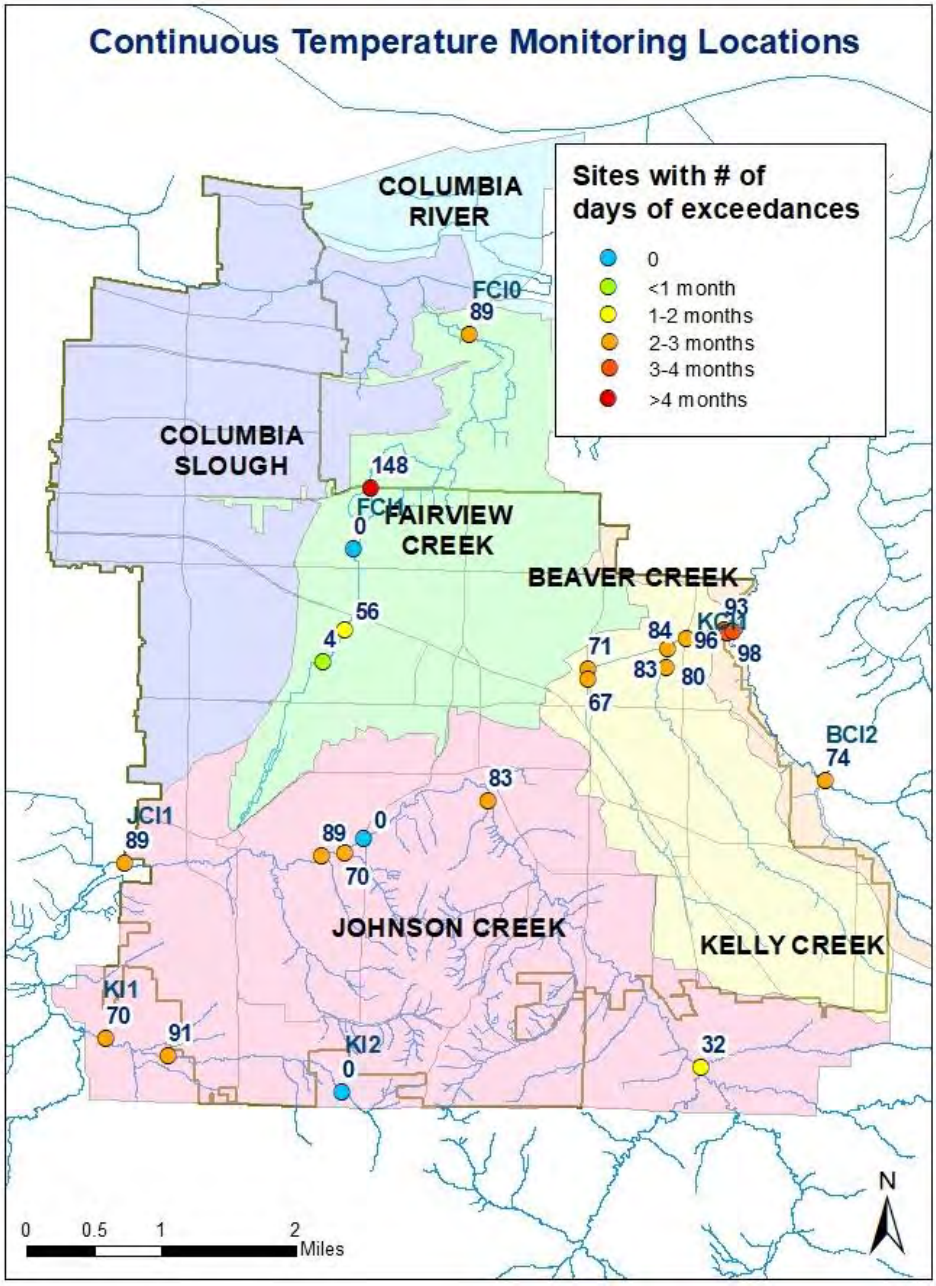
The two sites on Johnson Creek were sampled for DDT and its degradates with no sample exceeding the acute water quality criterion of 1.1 ug/L. However, the method detection limits of 1.0-10 ng/L were often above the chronic water quality criterion of 1.0 ng/L. The November sampling event did have detections above the chronic

criterion with combined concentrations of DDT and its degradates of 16.4 and 7.2 ng/L. The higher value was at JCI2 which is upstream of Gresham and is mostly agricultural fields, as such, DDT and its degradates attached to soil particles likely mobilized during the preceding rain event. The City continues to prioritize stormwater treatment BMPs which remove suspended sediment and to implement our erosion control program.

B. Continuous Temperature Instream Monitoring

The City of Gresham collected continuous instream temperature data at long-term monitoring sites and several additional sites within the city. In collaboration with other jurisdictions, data was collected at several sites upstream and downstream of the city. Continuous hourly temperature was measured at 24 sites from May 2022 – October 2022. Table 2.2 and Figure 2-2 show summaries of the number of days that the 7-Day Average of the Daily Maximum (7DADM) at each site exceeded the salmon rearing temperature standard of 18°C, as well as the highest 7DADM temperature reached at each site. There is no data for long-term site JCI2 because a new beaver dam submerged the logger beneath several feet of water, and it was not able to be recovered.

Figure 2.2 Continuous Instream Monitoring Site Locations



Like past years, most sites exceeded the temperature standard of 18°C for the 7DADM at some point during the summer. Many of the sites had slightly fewer days of exceedances as compared to summer 2021.

Only three sites never exceeded the standard: the forested headwaters of Kelley Creek at Rodlun Road (KI2), the outfall of a piped section of Chastain Creek, and a groundwater-fed section of Fairview Creek (FCI1), which are blue dots on the map and in blue text in Table 2.2. Several sites exceeded the temperature standard for more than three months: Fairview Creek at Glisan Ave. after travelling through Fujitsu Ponds, Beaver Creek before and after the confluence with Kelly Creek, and Kelly Creek downstream of the pond on Mt. Hood Community College campus. The hottest sites are commonly downstream of large inline ponds. The City is aware of the impact in-line ponds can have on temperature – Fujitsu Pond is a highly ranked Natural Resource CIP (Capital Improvement Program) project, and the City is also studying ways to reduce temperature loading from public and private ponds on Butler and Hogan Creeks.

Table 2.2 Summary of Temperature Exceedances by Location

Sites with no exceedances are shown in blue text and those with more than three months of exceedances are shown in red text.

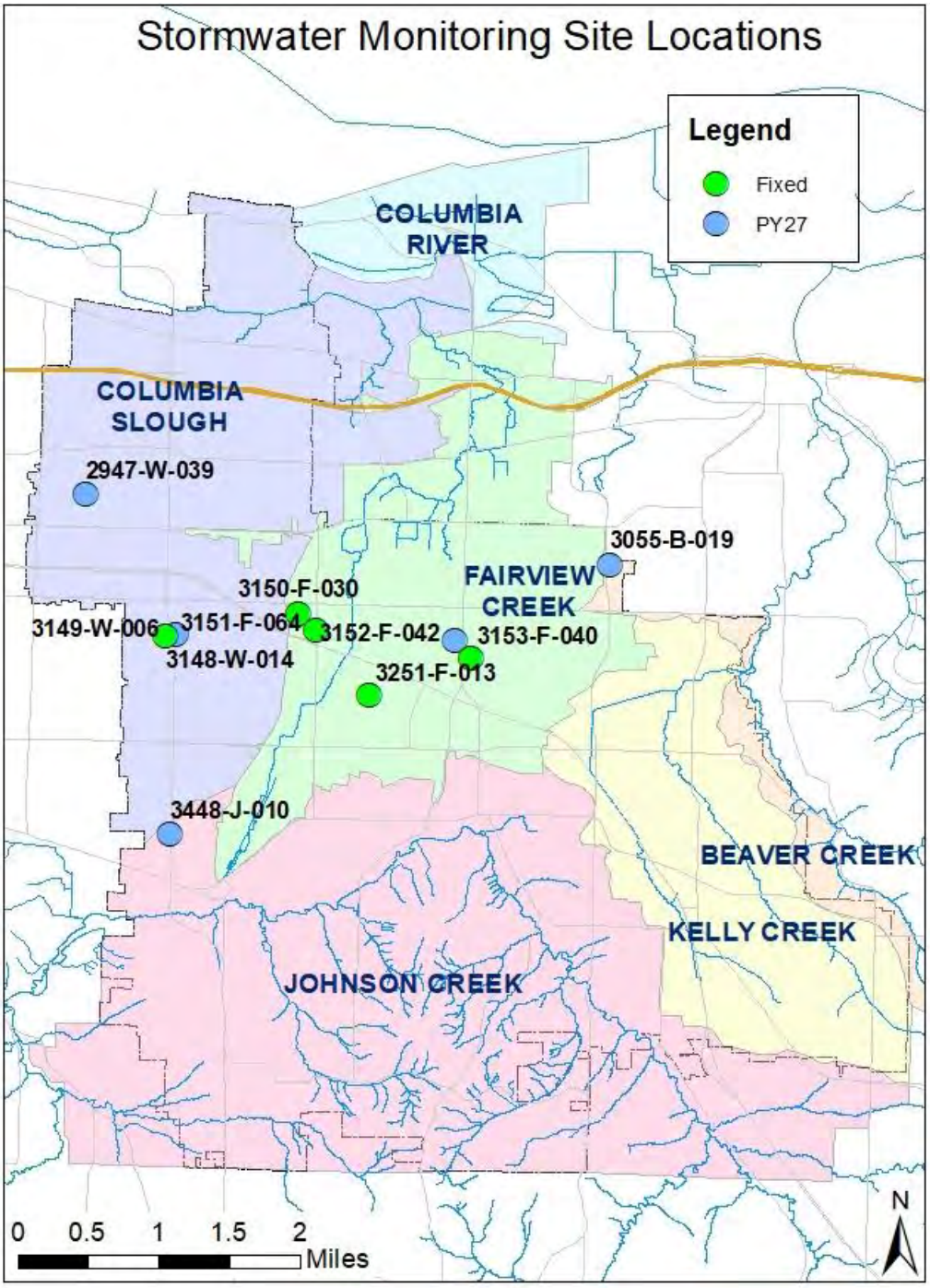
Watershed	Creek	Location	Max 7DADM temp (*C)	Exceedances (# of days)
Johnson Creek	Johnson Creek	Park Ave	24.4	83
Johnson Creek	Johnson Creek	Heiney Creek	26.1	89
Johnson Creek	Johnson Creek	Jenne Road (JCI1)	26.6	89
Johnson Creek	Kelley Creek	Rodlun Road (KI2)	17.5	0
Johnson Creek	Kelley Creek	Richey Road	26.2	91
Johnson Creek	Kelley Creek	Foster Road (KI1)	22.4	70
Johnson Creek	Chastain Creek	Mouth	23.4	70
Johnson Creek	Chastain Creek	Piped outfall	17.2	0
Johnson Creek	North Fork	Mouth	19.3	32
Fairview Creek	Fairview Creek	Birdsdale Road	18.2	4
Fairview Creek	Fairview Creek	Burnside Road	20.1	56
Fairview Creek	Fairview Creek	Stark Street (FCI1)	15.5	0
Fairview Creek	Fairview Creek	Glisan Ave	29.1	148
Fairview Creek	Fairview Creek	223rd Ave (FCI0)	24.5	89
Beaver Creek	Beaver Creek	Division Street	22.7	74
Beaver Creek	Beaver Creek	Upstream Kelly	25.7	98
Beaver Creek	Beaver Creek	Downstream Kelly	27.1	96
Beaver Creek	Beaver Creek	Glen Otto	24.4	88
Beaver Creek	Kelly Creek	Upstream golf course	23.4	80
Beaver Creek	Kelly Creek	Upstream MHCC pond	24.4	84

Beaver Creek	Kelly Creek	Downstream MHCC pond	26.4	93
Beaver Creek	Burlingame Creek	Outfall of culvert	19.3	67
Beaver Creek	Burlingame Creek	Hogan Drive	20.9	71
Beaver Creek	Burlingame Creek	Mouth at golf course	23.6	83

C. Stormwater Monitoring

Wet Weather Stormwater sampling was conducted at ten sites with small drainages to assess land use. Five of these sites are long-terms sites (Fixed) which are sampled every year and five are rotating sites (Panel 1) which are selected based on watershed and stratified for traffic volume such that half of the samples drain roads with >1,000 vehicle trips per day. The storm event sampled was the first flush of the season on October 21, 2022, which delivered 0.62" of rain after three weeks with 0.00" of recorded rainfall and over three months with <0.25" of rain. Therefore, these values should represent some of the highest pollutant levels washed through the stormwater system at any time.

Figure 2-3 Stormwater Monitoring Site Locations



Like previous years, stormwater monitoring data revealed that higher traffic sites (>1,000 vehicle trips per day) have higher pollutant concentrations for many pollutants in comparison to residential streets (<1,000 vehicle trips per day). This was especially true for heavy metals, PAHs (polycyclic aromatic hydrocarbons), and 6PPD-quinone. Also, like previous years, elevated levels of several heavy metals, including lead and zinc, were found at

some high-traffic sites. Cars are known to be major sources of these metals. The tire chemical 6PPD-quinone was detected at all ten sites with values ranging 0.0271-0.697 ug/L. These values are consistent with published studies of urban roads.

In addition to typical parameters, several pesticides were monitored during Wet Weather Stormwater sampling, including 13 pesticides of concern listed in the permit: bifenthrin, chlorpyrifos, imidacloprid, fipronil, atrazine, simazine, diuron, 2,4-D, glyphosate and degradate AMPA, triclopyr, trifluralin, and pentachlorophenol. Several of these pesticides were most efficiently analyzed in panels which included many other pesticides which provided a wide screening of over 300 potential pesticides. Most parameters were below detection limits, ranging from 0.060-0.12 ug/L. Twelve pesticides were detected. Table 2.3 lists the pesticides detected along with the number of sites at which they were detected, and the highest level reported.

Table 2.3 Pesticide detections during wet weather stormwater sampling

Pesticide	**Use**	**# of sites detected (out of 10)**	**Highest level detected (ug/L)**
2,4-D	Weed and feed for lawns, broad leaf weed killer	10	21.2
Pentachlorophenol	Utility pole preservative	10	3.72
Triclopyr	blackberry & ivy killer (combined also with 2,4-D)	9	1.40
MCPP	weed killer (combined also with 2,4-D & dicamba)	4	6.50
2,4,5-T	Legacy, banned for use in the US	4	0.11
Diuron	Nonselective weed killer used for rights of way, paths, railways, etc.	3	0.12
Dicamba	Extended control weed killers (also combined with 2,4-D)	2	2.80
a-BHC	Legacy degradate of banned insecticide Lindane formerly prescribed for head lice and agricultural crops	1	2.00
EPTC	Weed killer, often a preemergent	1	0.73
Quinclorac	Weed killer (combined also with 2,4-D & dicamba)	1	0.17
Metolachlor	Weed control in agricultural crops	1	0.16
Carbendazim	Fungicide, golf course turf, fruit trees	1	0.71

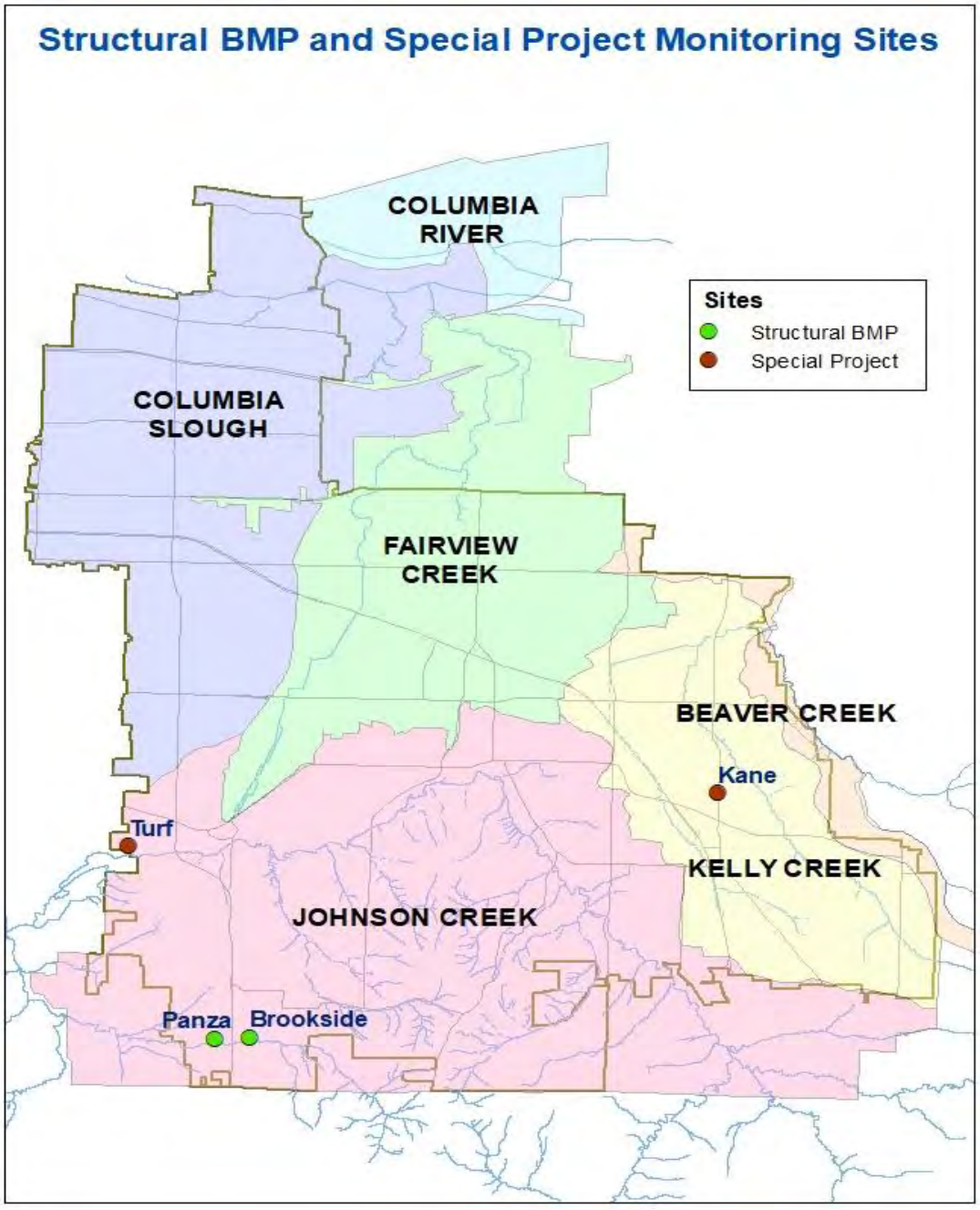
The most common pesticides were 2,4-D, pentachlorophenol, and triclopyr. 2,4-D is a common herbicide present in weed-and-feed type lawn products, and the higher concentrations were generally seen in drainages with more manicured lawns. Triclopyr is a broadleaf herbicide which is also used in lawn applications to control spurge, clover, and ivy commonly. The City participates in an effort through the Clean River Coalition (CRC) who launched a statewide "WhatsYourLawnStyle.org" digital campaign last year and The River Starts Here Metro Regional Campaign to address safe use of lawn care products and to reduce levels of pesticide in runoff through outreach and education.

Pentachlorophenol (Penta) is an historic preservative used on wood power poles which is being phased out for use by EPA (Environmental Protection Agency) as of 2027 due to carcinogenic/mutagenic exposure concerns to workers and replaced with DCOI or other wood preservatives. Further investigation by Federal and State agencies is needed to determine if DCOI is a threat to water quality, as it is known to be toxic to fish, algae, and aquatic invertebrates at levels lower than Penta.

D. Structural Stormwater Facility Monitoring

Storm samples were collected at structural stormwater BMP facilities in addition to special project sampling described below.

Figure 2-4 Stormwater Structural Facility Monitoring Sites



Structural Stormwater Facilities

Storm samples were collected at the inlets and outlets of two water quality facilities (Panza and Brookside) shown on Figure 2.4. These facilities are constructed wetlands in new developments and the monitoring aimed to inform stormwater management requirements for upcoming developments. The facilities are in the fast-growing Pleasant Valley area. Both wetlands are medium-sized neighborhood detention ponds with water quality aspects which receive runoff from several dozen homes and the corresponding neighborhood streets. The Brookside pond was constructed in 2014 and provides a low-flow vegetated channel. The Panza pond was constructed in 2022 as a trial of a submerged gravel wetland where there is a layer of gravel with an underdrain beneath the vegetated surface. The gravel layer is designed to always be inundated. Samples were collected at both facilities during the same storm event.

The Brookside pond provided moderate pollutant removal for most pollutants of concern, like previous years. The Panza pond provided moderate removal of several pollutants, especially total suspended solids, total phase metals, and pyrene, but it also exported several pollutants of concern including nitrogen, phosphorus, and *E. coli*. Additionally, maintenance issues regarding clogging were noted at the Panza pond due to the nature of the underground perforated pipes.

Special Projects

The Monitoring Plan adopted in August 2022 allowed for monitoring up to two events for special projects instead of structural BMPs. The sampling for Special Projects in PY28 was focused on the tire chemical 6PPD-quinone, which is derived from tire wear particles, in collaboration with the City of Milwaukie and the City of Portland. Samples were taken during storms at two pervious pavement installations in Gresham and Milwaukie and one turf soccer field on the edge of Gresham with a shredded tire base.

The first pervious installation was on Kane Road in Gresham which was constructed in 2008 on a major arterial road with two types of pervious asphalt on different sections: full depth with an underdrain and a top layer of pervious friction course over standard asphalt. The second installation was on Lake Road in Milwaukie, built in 2022 on a minor arterial road as a pervious friction course on top of standard asphalt. The sampling on Lake Road was not conducted to fulfill any permit requirements, but it was a collaborative effort between the Cities of Gresham, Milwaukie, and Portland to better understand the ability of new installations to remove pollutants.

The pervious pavement results were encouraging with ~80% removal of 6PPD-quinone at all sites, regardless of traffic volume, pervious type, or pavement age. All samples from the standard asphalt exceeded the LC_{50} for coho salmon of 0.095 ug/L, while 78% of the samples from pervious sections were below that level. These results are consistent with samples from the previous year and with a new study in review from the University of Washington regarding treatment of this chemical with pervious pavement. This data adds to the growing body of knowledge of the water quality benefits of pervious pavement.

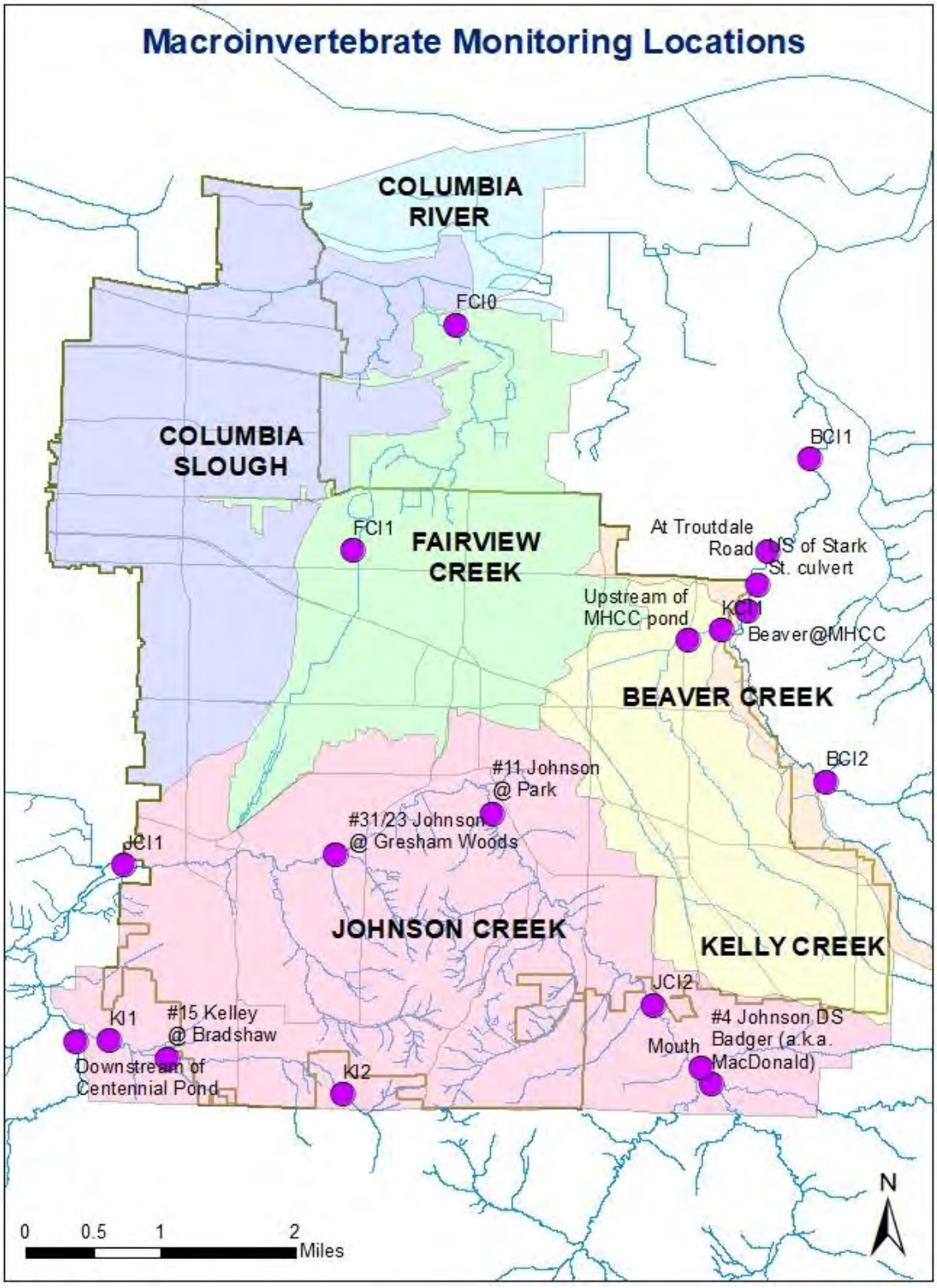
The sample at the crumb rubber turf field were collected at the outlet of an underdrain during a storm. All samples had measurable 6PPD-quinone, but they were generally lower than in runoff from a typical road and below the LC_{50} (samples were 0.0065-0.0168 ug/L). This points to the importance of treatment of runoff from crumb rubber turf fields while continuing to focus on large roads as the priority for 6PPD-quinone reduction.

E. Macroinvertebrate Sampling

Macroinvertebrate samples were collected in July and August at long-term stream monitoring sites as well as several locations of interest throughout the Johnson Creek and Beaver Creek watersheds in conjunction with the Johnson Creek Inter-Jurisdictional Committee and the Beaver Creek Conservation Partnership (Figure 2-5).

Previously, macroinvertebrate results were compared across sites and years using a Benthic-Index of Biotic Integrity (B-IBI). Since 2020, data has been received in a format compatible for upload to the AWQMS and not easily indexed with the B-IBI being used. Therefore, Gresham plans to contract with a professional aquatic entomologist in PY29 to categorize and assess macroinvertebrate data across sites and years. Previous assessments have shown slow improvement at some sites in the macroinvertebrate diversity over time.

Figure 2-5 Macroinvertebrate Monitoring Locations



IV. Illicit Discharge Detection & Elimination program

A. Dry Weather Screening Summary

A total of 30 outfalls were assessed during dry weather screening monitoring: 8 long-term high priority sites and 22 rotating sites. Flow was present at 15 sites. Figure 2-6 is a map of locations, and the screening parameters and results are presented below in Table 2.3. The only parameters which exceeded action levels were pH (two sites) and turbidity (five sites). These measures are both supplemental measures which can help identify the source of an illicit discharge when other parameters are exceeded but do not indicate one on their own. The turbidity levels of >15 mg/L were generally associated with stirring up settled muck on the bottom of the pipe when attempting to sample very low flow. Investigations of the drainage areas did not reveal any illicit discharges.

The City's illicit discharge enforcement response procedures are described in Section 7 of the Environmental Monitoring Plan on the City's website at: www.greshamoregon.gov/watershed

Figure 2-6 Dry Weather Screening Monitoring Locations

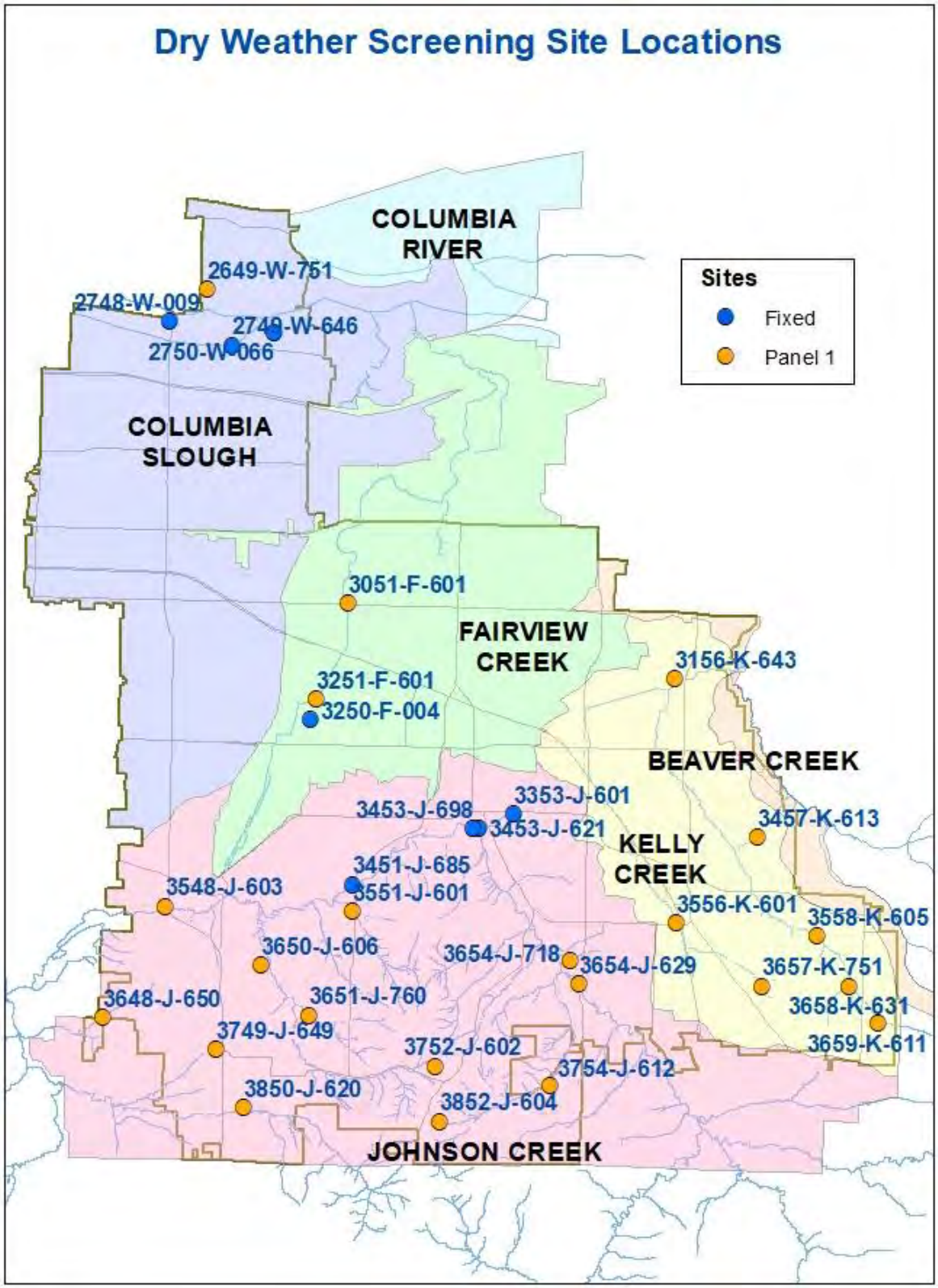


Table 2.3 Dry Weather Screening Flow Sampling Results

Note: Action level exceedances are shown in red text.

Site Code	Date	Chlorine (mg/L)	Ammonia (mg/L)	pH	Temp (*C)	Conductivity (uS/cm^3)	Turbidity (NTU)
2649-W-751	8/8/2022	0	0	7.27	21.9	268.3	55.6
3051-F-601	8/8/2022	0.4	0	7.92	20.2	215.6	15.7
3457-K-613	7/22/2022	0	0	6.34	20.6	129.5	9.78
3558-K-605	7/22/2022	0	0	6.85	18.4	113.0	7.98
3657-K-751	7/22/2022	0	0	6.37	18.5	88.0	5.03
3659-K-611	7/22/2022	0	0.25	6.73	17.0	82.7	4.48
3754-J-612	8/8/2022	0	0	7.60	21.9	108.5	11.4
3850-J-620	8/8/2022	0	0	7.54	22.3	114.6	3.39
2748-W-009	8/8/2022	0	0	7.40	18.3	122.0	13.7
2749-W-646	8/8/2022	0	0	7.97	18.4	147.5	2.24
2750-W-066	8/8/2022	0	0	7.78	17.4	139.4	2.26
3353-J-601	8/8/2022	0	0	7.50	18.3	148.9	4.47
3451-J-685	8/8/2022	0	0.5	7.99	19.6	137.1	43.6
3453-J-621	8/8/2022	0	0.25	7.43	20.6	158.3	21.6
3453-J-698	8/8/2022	0	0.25	7.29	19.5	225.7	18.2

B. Environmental Monitoring Plan Adaptive Management

Related to our Structural BMP Monitoring, historically, particle size distribution has been collected for all BMP events starting in 2007. Use of this parameter when analyzing BMP effectiveness has not proven relevant and is proposed to be removed from the Environmental Monitoring Plan. It will still be collected during events of interest for that BMP.

SECTION 3: Stormwater Best Management Practices Summary

I. Overview

A. Requirement to Reduce Discharge of Pollutants

The pollutants described in Section 2 are addressed by the overall Stormwater Management Program and the Best Management Practices outlined in the narrative and the Tables in this section. Pollution reduction actions in the program fall into six categories: 1) Prevention 2) Absorption/Adsorption processes 3) Infiltration 4) Phytoremediation (uptake from plants) 5) flow reduction and 6) restoration, stabilization & shading of streams.

City code and inspection procedures prevent pollution that might otherwise occur like businesses washing or repairing vehicles outside of bays that drain to the wastewater treatment plant or offering public collection events for products that might get dumped on the ground or in the stormwater system. Some processes such as removing sediment and leaves from streets and stormwater facilities will remove pollutants that adsorb to soil particles and changing cartridges inside proprietary devices capture pollutants absorbed and adsorbed.

Having a Stormwater Management Manual for development is preventative and requires stormwater facilities to capture and infiltrate water using low impact development approaches and vegetated facilities to replicate the natural hydrologic cycle to the maximum extent practicable. This infiltration prevents dissolved pollutants from reaching streams, and the vegetation provides uptake of pollutants (phytoremediation) in plant matter and the evapotranspiration of water. By capturing, infiltrating, and slowly releasing stormwater to streams (flow reduction) helps prevent erosion and downcutting, also called hydromodification. Further, reducing high velocity flows helps keep from stirring up pollutants attached and resting in the stream bed, such as legacy pesticides like DDT and bacteria. The City's Natural Resource Program and Education & Outreach Program conducts restoration on public land and encourages the enhancement of private land that collectively works to restore, stabilize, and shade streams.

B. Water Quality Standards

In accordance with the goal of Schedule A 1.b., the City outlined its investigative procedure in the Environmental Monitoring Plan if there is a water quality exceedance caused or contributed to by stormwater. Historically, the City has maintained an illegal discharge and spills investigation procedure that often addresses this permit section. However, it is possible, as outlined in the procedure, that if a laboratory result is unusually high for a stream sample that there may be a pollutant source from upstream activities that are identifiable but would not have

otherwise come to our attention. The procedure is being utilized as of Fiscal Year 22-23. Investigations will be recorded in the City's Spill Response database and reported in the Instream Monitoring narrative.

C. Allowable Non-Stormwater Discharges

Gresham Revised Code 3.23.010 (2) complies with Schedule A. 1. d. Best management practices are described in Table 3.2 for the city's activities such as water line flushing and firefighting training that are taken to protect the stormwater system. The City's Education & Outreach program directs the public to drain pools and hot tubs to sanitary sewer clean outs at their home or their landscape to prevent spa chemicals from entering the stormwater system. See Table 3.1 for examples of Outreach.

D. Stormwater Management Program Control Measures

Public Education and Outreach

The City directly implements and/or partners with watershed councils and other agencies & nonprofits to deliver a wide variety of focus areas which include but are not limited to: K-12 youth, single family home outdoor maintenance practices, dog owners, DIY (Do It Yourself) auto maintainers, businesses (green certification), general community education with workshops, community science, restoration/storm drain marking volunteering, etc. Whenever possible, information is translated into Spanish and Russian. The City also offers translation services which are available via phone for real-time conversations. Recently, the City hired a diversity, equity, and inclusion program coordinator and a committee has been formed to examine internal culture, hiring, and external facing programs for its residents. The committee's work will include an examination of external facing programs, documents, and language needs related to the City's ability to serve those people living with disabilities, low incomes, and the historically excluded or marginalized populations.

The City maintains residential and business program information related to stormwater on its website. Examples of information the City provides includes a Downspout Disconnection Manual and Rain Garden Installation Manual, as well as cross links to Metro's Yard and Garden pages which are comprehensive and do not need duplication. The City's staffing is small, therefore, its strategy is to provide grants to watershed councils to assist with outreach, as well as recurring use of interns and temporary project-based staff. Additionally, the City participates in three collaborations at the state and regional levels to conduct advertising to residents in a variety of communication channels that can vary over time depending on the campaign. Watershed staff sit on both The Regional Coalition for Clean Rivers and Streams and The Clean Rivers Coalition steering committees. These committees have committed to building relationships with Native American Tribes and other historically excluded or marginalized groups to amplify their voices related to natural resource outdoor activities, protection and

enhancement and are committed to sharing their cultural values and celebrations. Outreach examples provided in Table 3.1.

Stewardship Opportunities & Restoration

The City's stewardship efforts related to restoration on public land are overseen by staff in the Natural Resources Program which also has a small staff, and as such, partners with local watershed councils to help deliver community events. Stormwater staff have historically worked with private property owners on a variety of former streamside projects but are currently contracting to deliver the Backyard Habitat Certification Program, which is cost-shared with Natural Resources. See also Table 3.4 for details of the Stewardship Opportunities provided.

Table 3.1 Stormwater Program Education & Outreach Examples[2]

Program/Event and Partners	Watershed of Focus	Number of Contacts	Educational Focus
For Residents			
Backyard Wildlife Habitat home visits	All	**31 site visits in Gresham and 2 in Fairview** **14 Total Multifamily Sites** **3 Total School Sites** **350 Total Single-Family Sites** E-news: 11,000 gardeners Facebook: 9.9K gardeners	Consultation visits with homeowners regarding qualifying for "Backyard Wildlife Habitat" status thru a partnership with Audubon/Columbia Land Trust Includes stormwater management, pesticide reduction, and tree education elements among others and ongoing education with E-news and social media
Johnson Creek Watershed Council Partnership	Johnson	Supports outreach: JCWC e-list to over 700 Gresham contacts; list goes to over 6,000 residents Social media: ~3,400 followers City supported 14 events that involved **180 adults and ~250 youth and 300 planting volunteers**	Assisted city with 7 acres, 6,300 linear feet of stream restored, >14,000 trees and shrub planted and almost 3 acres of invasive plant removal Nature science events included Dragonfly Days, Wildlife in Gresham talk, and Amphibian egg mass surveys.

[2] This table includes a summary of major activities but is not necessarily comprehensive. E&O Program questions: contact Keri.Handaly@GreshamOregon.gov or 503-618-2657.

Columbia Slough Watershed Council--Gresham and Fairview support of Slough School program	Fairview & Columbia Slough	176 programs were delivered to **~2,800 student contacts (Grades 2-5)** in the Reynolds School Districts serving Gresham and Fairview students.	General education of watershed protection, native plants, ecosystems, wildlife, water quality sampling for science, and stormwater pollutant treatment with vegetated facilities.
Regional Coalition for Clean Rivers and Streams Metro area water health campaign	All	Digital marketing campaign: **924K Metro region adults and youth** (student video contest) reached via Facebook and Instagram Facebook: 2600 followers Instagram: 1000 Student Video Contest: promoted the Honoring Our River Anthology relaunch by Clearing Magazine (no contest held) Campaign expenditure: $32K	This year, reach grew significantly (from 200K to 900K) because of our intentional branded student advertising campaign featuring a different video monthly with more than 76K video views. Overall, our work is primarily digital advertising and organic posts that promote the work of local watershed councils and community volunteer events, as well as tips and news articles that inform the public about actions, they can take to reduce pollution. The River Starts Here purchased "What's Your Lawn Style" Lawn Care How to Video ads for the Metro Region adult population and achieved 920 video views and engagement of ~65,000 people.

City of Gresham and Regional partners with KPTV--"It's Our Water" campaign	All	Clean Water Partners Campaign: https://www.kptv.com/water/Page was visited ~2,800 times 12 months of residential water protection messages that aired ~50 times/mo., resulting in the **engagement of ~43Kadults in the Metro region** (video views, click thru, social	Topics: variety of lawn care messages, car washing, fall leaf disposal, pressure washing, safe deicing at home, plant a tree
Follow the Water – Connect the Drops and *What's Your Lawn Style (WYLS)*- a statewide collaboration campaign for building water protection culture and encouraging water safe behaviors	All	Follow the Water stats: Website visits 55K Social media reach 509K River Connection video views 1.4K (54 hours) WYLS stats: Commercial views: 21.3K Lawn How To views: 158K (6,800 hours) OSU Ext website: 3K visits Campaign expenditures $182K, including ~$120K for year two of the Columbia River Basin Toxic Reduction Grant from EPA	FY 22-23 was the first full year of campaign work for Follow the Water (cultural connection) and WhatsYourLawnStyle.org. Social platforms began from nothing and now have close to 1,000 followers. The River Connection video series was created in partnership with the Columbia River Intertribal Fish Commission and was featured in Portland's Ecofilm festival and won an award for best Oregon documentary. The Lawn Care Campaign tool kit was released to over 300 water stakeholders for use.

Play Grow Learn (PGL), People of Color Outdoors (POCO), and Columbia Slough Watershed Council	Columbia Slough/Johnson Creek (some years)	2 youth canoe paddles and bird watching trips supported by POCO and Slough School 2 Ivy pulling and trail maintenance days at Nadaka Nature Park 12-18 youth and adults engaged per event (many youths have been engaged with us for four years as they grow up and begin mentoring younger students joining PGL programs)	Watershed Outreach budget supports youth in nature outings.
Public Involvement: City Website & Stormwater pages	All	Entire city website: ~100,000 annually Dept of Environmental Services Resources page: ~ 1,000 annually, Water Resources: ~600 (drinking water, stormwater, wastewater landing page) Watershed/Stormwater page: 400+	Most popular Water Resources webpages: Stormwater documents: ~1,100 Stormwater residential program ~200 Backyard Habitat Page: ~300, Stormdrain Cleaning Program: ~700 Reporting Spills/Illegal Dumping: ~200 Natural Resources: ~200 Groundwater Protection ~300

Doggie Bag Distribution	All	Unknown	Social science survey data reveals that it is a social norm to pick up after your pet. The number one reason for not doing so is forgetting a bag. To overcome this barrier, the City has installed doggie bag dispensers broadly across parks where trash service is available. We have found that without a trashcan, people will leave doggie bags on the ground as litter.
Gresham Arts Festival	All	~100 Adults and Youth	Featured information about Gresham's streams, wildlife, Backyard Habitat Program, and Lawn Care Videos
For Businesses			
City of Gresham Green Business E-Newsletter		9 issues/yr**. ~1200 subscribers**	Stormdrain Cleaning Assistance Program, General Best Practices, Haz Waste Training, Sustainability
City of Gresham Stormdrain Cleaning Assistance Program (SCAP)--offered to City of Fairview businesses as well (spring and fall)	All	**393 Businesses** participated~2150 drains cleaned	Business Outreach was direct mailed to ~1,800 and emailed to ~1,000. Notices were also promoted in City's E-news, Print News, Green Biz E-news, and Economic Development. Pollution prevention via removal of sediment and debris.

Green Biz Technical Assistance	All	**540 total assisted** 140+ Climate 155+ Food Waste 5 Recertifications	70+ businesses were assisted with pollution prevention, stormwater protection, grease, green cleaners
EcoBiz program partnership	All	**Provided outreach to 32 Automotive businesses**. 9 will recertify. Others were provided example guidance materials and will be recontacted. 3 were not interested.	Technical assistance in recycling, energy, waste reduction, and stormwater management for landscaping, automotive, and manufacturing businesses.
Mobile Carpet Cleaner Business Letter	All	**100+ firms in the Metro Region**	Gresham staff led an effort to create a regional letter with area cities to inform firms that no dumping of wash water may occur. Legal options for waste are outlined. See Appendix A.

Urban Growth Boundary Permits and Forecasting

In FY 22-23:

- The Springwater annexation (7505 & 7519 SE Hogan Road - Springwater) started in FY 21-22 and went into effect on 10/17/22.
- The Pleasant Valley annexation (16900/17036/17112/17116/17320 SE McKinley Rd) was approved and went into effect (6/8/23).
- Sunset Village Subdivision (SE Richey Rd and SE 190th Ave – Pleasant Valley) was approved in 2018 and home construction continued in FY 22-23.
- Telford Estates Subdivision (SE Telford Rd – Springwater) was approved in 2020 and constructed in FY21-22 and home construction started in FY 22-23.
- Brookside North (SE 190th Ave and SE Butler Rd) was approved in 2018 and constructed over FY 20-21 and 21-22, with home construction starting in FY 21-22 and continuing in FY 22-23.
- Terrace @ Giese Subdivision (18440 SE Giese Rd - Pleasant Valley) was approved.
- Butler Creek Subdivision (w/2789 SW Butler Rd – Pleasant Valley adjacent) was approved.
- Started a review of the Pleasant Valley Concept Plan.

In FY 23-24 (all Pleasant Valley, except as noted):

- We have been processing (since the end of 2020) on SE 190th Ave (across from SE Richey Rd) a 180-lot (the number has varied) subdivision (Veranda) in Pleasant Valley and expect that to be decided upon during this fiscal year.
- The Sycamore Vista Subdivision (SE 182nd Ave, north of SE Giese Rd – recorded as Highlands @ Pleasant Valley) was approved in 2018 and is expected to be constructed during this fiscal year (now slated for Middle Housing, but not yet under construction and start date is still quite uncertain).
- Brookside Townhomes (SE 190th Ave) was approved and constructed FY 21-22 and has been constructed – the homes are under construction.
- Construction of the last phase of Sunset Village.
- Review and construction of homes in Sunset Village and Brookside North continue.
- Construction of homes in the Telford Estates Subdivision (Springwater) continues.
- Construction of Terrace @ Pleasant Valley (Giese Rd), maybe beginning of home construction.
- Construction of Butler Creek Subdivision (Pleasant Valley adjacent – Middle Housing).
- Completion of the Pleasant Valley Concept Plan "relook", with expected Code Revisions.
- Potential start to take a "relook" at the Springwater Concept Plan.
- Starting Phase 2 of the Environmental Overlay Project, with likely impacts on the environmental overlay intensive areas of both Pleasant Valley and Springwater.

F. Stormwater Program Adaptive Management

There are no proposed changes to adaptively manage best management practices outlined in the Stormwater Management Plan document.

G. Total Maximum Daily Load (TMDL) Plan Summary

In November 2022, the City updated its existing TMDL Plan to include an assessment of BMPs that might be needed to address mercury reduction goals. No additional BMPs were added. The City determined its SWMP document contained adequate tools, strategies, programs, and ordinances to address the movement of soil, which is the primary source of mercury movement related to stormwater.

This year, in lieu of an annual report, DEQ requested agencies to complete a 5-year survey assessment. Thus, Table 3.10 and 3.11 are omitted this year.

The City has two nonpoint source plans for bacteria and temperature. For bacteria, this illuminates a few things that the City addresses related to private property which may or may not drain directly to the stream (or groundwater). For example, private septic tanks, which are estimated to be less than 200 left in the City after mapping properties with a stormwater fee (indicating a structure) but no wastewater fee. Properties were

eliminated using GIS to identify non-habitable structures and other data indicating no bathroom is located on the property. In the next two years, staff plan to conduct outreach to the remaining properties regarding septic tank maintenance best practices.

For temperature, this is a plan to produce additional shading of stream corridors over time to meet temperature reduction goals. Stormwater is not connected to temperature issues as rain is cold and there is little to no rain during warm months.

Table 3.2 City of Gresham Stormwater Management Program Summary (2022-2026)

Stormwater Assets Maintenance Program (SMP) A-L. **BMP Owner: Stormwater Operations & Maintenance Group, supported by GIS and Stormwater Science & Policy & Engineering**				
Pollutants addressed	Actions from these BMPs remove sediment and total phase pollutants, but do little to address dissolved pollutants. Pollutants that attach to sediment include bacteria & other pathogens, nitrogen, phosphorus, organic compounds, legacy pesticides, polycyclic aromatic hydrocarbons, and total phase metals. While removal of total metals is important, since benthic organisms are found in stream sediments, dissolved metals can still impact aquatic organisms. Metals that are in dissolved form and known to be acutely toxic to fish include cadmium, copper, lead, mercury, silver and zinc. Control of sediment also reduces turbidity; clearer water creates better conditions for fish to hunt, breathe, and lay eggs. Controlling sediment also helps reduce nutrients, particularly phosphorus, which can cause excess algae growth impacting both dissolved oxygen, pH, and other water quality parameters.			
Activity Name	**Description**	**Measurable Goal**	**Timeframe**	**Reporting Metrics FY22-23**
A. Pipe Cleaning	The City's stormwater system currently consists of approximately 231 miles of pipes that drain to either surface or groundwater.* There is a smaller portion of city where drainage flows into underground injection wells that infiltrate into groundwater, but can overflow in large events to surface water outfalls that we refer to as a "combination" system. The City inspects a portion of its existing pipes each year for asset management that record the condition and repair needs in the near and long term. Pipes are cleaned to remove excessive buildup, if the SOP threshold for cleaning is met. *Best management practices are applied equally to protect surface and groundwater and therefore the pipesheds are treated as a contiguous system no matter where it drains.	Inspect 10 to 15 miles, clean if SOP threshold is met	Inspect: annually/ ongoing Cleaning projected to be an average of 1-5 miles over permit cycle	2 yds of debris removed. 19.5 miles inspected (some existing pipe and new development), 4.5 miles cleaned.
B. CCTV Pipes (new/existing)	Inspect new development pipe systems to ensure proper connections. CCTV inspect existing city pipes for repair, cleaning, asset management rating, resident concerns, illicit discharge investigation. This serves as part of the City's asset management program and also as a proactive measure to ensure there are no cross connections from new development, and also finds can find cross connections as efforts to inspect and clean pipes move about the city.	CCTV 100% of new pipe (reported metric also contains CCTV miles for existing pipe, as miles are not tracked separately)	annually/ ongoing	CCTV: 1,086 hours 19.5 miles (new development and existing pipes are not tracked separately)

Table 3.2 City of Gresham Stormwater Management Program Summary (2022-2026)

C. Storm Drain Cleaning	The City's stormwater system currently consists of approximately 8,100 storm drains that drain to both surface and groundwater. Arterial drains are priority due to higher pollutant loads than lower traffic streets and residential are also a priority due to potential for clogging and minor flooding. Inspection of all drains is a goal, but due to parked cars (even after notices are given) 100% is not attainable. Note that drain inventory has historically grown by 50-100/yr. Studies have shown that drains tend to remobilize trapped sediment once 2/3 or more full, and at this time is the City's SOP cleaning threshold. Typically, the City cleans all drains regardless of reaching the threshold, which is a higher performance standard. The range quoted allows flexibility in work load shifting to address other significant water quality facility rehabilitation activities in the future, as needed, while still meeting objectives over the permit cycle.	Inspect 90% of all drains, at a minimum clean if SOP threshold is met. Sediment removal from 5,000 to 8,000 drains/yr.	annually/ongoing	Residential 6,418 212 Yds debris removed. Arterial 1,432 72 yds debris removed.
D. Maintain Green Infrastructure	Inspect and maintain vegetated facilities. Staff inspects and maintains as needed publicly owned: ~50 detention ponds & swales, ~650 rain gardens, plus private multiple owner facilities: 30 detention ponds & swales. Maintenance activities include control of noxious weeds that are threats to public land and sediment removal. Plant removal over time is beneficial, as some plants uptake pollutants in their roots and leaves (phytoremediation). The smaller neighborhood ponds require sediment removal based on capacity for accumulation (varies from 5-12 year lifecycle). Staff maintains larger regional facilities designed with forebays to capture large amounts of sediment annually. There are ~650 rain gardens/swales and 15 miles of ditches. All ditches were reshaped for conveyance during the last permit cycle. The staff can now use the Vactor truck to remove sediment build up and prevent fill in. The inventory of rain gardens has grown significantly and represent the highest work load because they are managed three times/year (vegetation, overflow drain & scupper cleaning). Lastly, a smaller portion of annual hours are utilized for misc. stream vegetation/woody debris support work, off road system management, culvert checks/maintenance after storms is important for street safety and flood prevention.	Inspect pond facilities, rehab/remove sediment based on facility capacity. Maintain regional facilities and remove sediment from forebays. Inspect 100% rain gardens/swales/ditches. Maintain vegetation and control weeds using Integrated Pest Management techniques. Remove sediment build up per SOP.	Sediment removal projected to be annually for rain gardens, and most swales and ditches. Annually/ongoing Sediment removal from approx. 2-5 ponds annually	Inspected all ditches and collected 57 cu yds from ditch cleaning 290 cu yds of sediment from stormwater ponds Inspected 700 rain gardens and 70 detention ponds and swales and removed 5.5 cu yds of sediment/debris from 4 facilities. Routine vegetation maintenance was conducted at 65 facilities. Repairs/Maint: 4,635 hours (staff) Repairs/Maint: 4,885 hours (contractors)

Table 3.2 City of Gresham Stormwater Management Program Summary (2022-2026)

E. Maintain Grey Infrastructure	Inspect and maintain underground structures. There are 500+ sedimentation manholes which are very cost effective for capture and removal of sediment. The inventory for these structures has grown significantly. There are 212 Flow Control Manholes (FCMH) inspected annually. There are 231 detention lines that vary from 30' to 96' long. All were cleaned during this past permit cycle and most will not require cleaning for many years. There are 204 detention manholes, which have minimal sumped areas and are of less water quality benefit. Follow SOP thresholds for determining sediment removal.	Inspect 100% of sedimentation/inlet MH Clean per SOP criteria Inspect 100% FCMH Clean per SOP criteria Inspect 50% Detention lines Clean per SOP criteria Inspect 50% Detention MH Clean per SOP criteria	Annual inspection; cleaning typically results in: Sediment removal from approx. 50-60 Sedimentation MH 25-35 FCMH over permit cycle Detention lines, if meets threshold 1-5 Detention MH annually	5233 hours Sedimentation manholes 51 cu yds of debris from 57/500 structures Inspected 504/504 Flow control manholes 57.5 cu yds of debris from 65/216 structures Detention line cleaning 1 cu yd of debris removed from 5/237 structures Detention manholes 3 cu yds of debris from 3/204 structures
Stormwater Assets Maintenance Program (SMP) A-L. BMP Owner: Stormwater Operations & Maintenance Group, supported by GIS and Stormwater Science & Policy & Engineering				
Activity Name	**Description**	**Measurable Goal**	**Timeframe**	**Reporting Metrics 21-22**
F. Proprietary Devices (grey)	There are 133 Proprietary Devices with multiple filter cartridges (varies 1-12 per device) which are maintained at the frequency recommended by the manufacturer.	Inspect 100% of Proprietary Devices Clean based on Manufacturers threshold rec. (about 150-300 cartridges replaced/yr.)	Annual inspection, cleaning typically includes sediment removal from about 50-60 proprietary devices annually	A portion of the 5,233 hours for grey infrastructure 313 cartridges replaced from 136/136 Incidental debris not captured in the cartridges is estimated to be ~26 cu yds
G. System Repair & Maintenance	Maintain and repair pipes, ditches, culverts, inlets, off road systems, etc. to ensure proper function and limit impacts to surface water, as well as underground injection control devices and appurtenances that drain to groundwater.	Maintain and repair based upon SOP criteria.	annually/ ongoing	Inspection of new construction/customer concern calls: 1086 hours Mapping Updates: 120 hours Trouble Loop: 731 hours Repairs & Maintenance: 1,729 hours Utility Locates: 1,805 hours

Table 3.2 City of Gresham Stormwater Management Program Summary (2022-2026)

H. Spills, Illicit Discharge Investigation, Emergency Response	Respond to community reports of spills or illegal dumping & emergency flood concerns. Investigate and/or assist with spill response, illicit discharge concerns, emergency stormwater controls for other department assistance, natural disaster response (flooding, downed trees, etc.)	Follow City Spill Response and Illicit Discharge Investigation procedures Conduct Spill Response all Department training and procedure review twice during the permit cycle	annually/ ongoing	Emergency Response: 457 hours Every time staff CCTV a pipe this includes an opportunity to identify cross connections. * Conducted O&M Managers and Seniors training on Spill Response * Conducted a program overview presentation at Dept of Environmental Services all personnel meeting
I. Construction Inspections and Plan Review, Resident Concerns (O&M)	O&M staff plan review and construction site inspections of connections to the public system.	Conduct reviews and inspections to ensure compliance with Code	annually/ ongoing	General administration time includes staff time spent reviewing construction plan reviews and conducting new facility inspections 68 MyGresham online reports of drainage, flooding, vegetation, irrigation, and stormwater facility concerns were addressed in addition to spill/dumping response. 5,955 hours* *Also includes staff meetings, supervisory duties, and budgeting. Does not include assistance from Outreach, Enforcement, Parks, Water, or Transportation staff who also support some investigations.
J. Good Housekeeping: O&M Yard	Manage the Operation yard, shop, and equipment in cooperation with other city departments to clean up spills, keep sediment from entering drains. The yard has a covered decant station and equipment wash area to prevent pollutants from entering the stormwater system. Runoff from the yard also enters a stormwater facility prior to release to the stream.	Follow City best practices for storage, repair, dumping, washing, etc.	annually/ ongoing	Shop duties: 450 hours

Table 3.2 City of Gresham Stormwater Management Program Summary (2022-2026)

K. Underground Injection Controls (UICs) Maintenance & Cleaning	Maintain the City's active UICs to ensure function and comply with the WPCF permit requirements.	Document and report maintenance and cleaning.	annually/ ongoing	Number of hours for UIC maintenance or cleaning: 209 hrs 11 UICs inspected, 10/1005 cleaned 24 cu yds of debris removed
L. Proper Waste Disposal (O&M)	Ensure the debris collected from City O&M activities are handled and disposed of in a safe and responsible manner. The City has three locations that it can stockpile facility maintenance debris: Powell Loop, Hogan Building (Operations yard), and the Wastewater Treatment Plant. All debris is stored in a manner to prevent erosion and to dry out the debris to make the hauling more cost effective. Composite samples of debris from all types of activities are tested and are classified as "special waste" but not "hazardous." There are two facilities in the region approved to take special waste: Waste Management in Hillsboro and the Wasco County landfill in The Dalles. The City is currently contracted with Dietrich trucking to haul its debris to these facilities.	Follow City best practices for handling, storing, and disposing of O&M generated debris. Retain debris testing results per file retention standards	annually/ ongoing	Debris is tested annually Dietrich trucking hauls to Wasco disposal facility Quantities disposed are reported per maintenance activity

Table 3.2 City of Gresham Stormwater Management Program Summary (2022-2026)

Public Land Management (PLM A-E) **BMP Owner: Water Resources Division**				
Pollutants addressed	The BMPs within this section address both sediment control via soil stabilization restoration and also dissolved pollutants of concern via aiding infiltration, uptake, and evapotranspiration. These aid pollutant removal such as CO2 and sulfur compounds generated by vehicles and dissolving in water that can change pH. Pollutants of concern improved by infiltration include E.coli, mercury, copper and zinc. Some current use pesticides widely available for residential use such as glyphosate, dicamba, MCPP and 2,4-D readily dissolve in water and also benefit from landscape buffers and infiltration.			
Activity Name	**Description**	**Measurable Goal**	**Timeframe**	**Reporting Metrics FY 22-23**
A. Master Plan Update	In 2022, the City completed a City-wide Stormwater Master Plan that focused on pipe capacity limitations. The projects identified will become CIP expenditures over this permit cycle. It is unlikely that smaller basin Master Plans will be updated during this permit cycle.	Plan, design, and build CIPs.	annually/ongoing	Council approved the citywide Stormwater System Master Plan. In the next 2-3 years the city will begin working on more detailed basin master plans to compliment the citywide plan. During FY 22-23, the city brought on a new Watershed Division manager who was also able to hire a new senior engineer to run the CIP program.
B. Water Quality Projects	Stormwater infiltration or treatment is a component of City funded projects are required by the Stormwater Manual. Occasionally, the City also conducts projects in partnership with private development and/or grant funding. This BMP reports retrofit projects.	Implement Stormwater Manual requirements.	annually/ongoing	The MHCC "Salmon Safe Campus" project began in 2017. A significant partner includes East Multnomah Soil & Water Conservation District who provides $150K in funding annually. Designs were developed and a contractor hired who removed a center strip of asphalt in 4 parking lots and installed a tree trench. Construction of retrofits in these 4 lots, as well as planting of 50 new trees will be completed in the fall. There are still numerous opportunities on site and this effort is planned to continue in the future as long as partners are able to support the effort.

Table 3.2 City of Gresham Stormwater Management Program Summary (2022-2026)

C. Integrated Pest Management	Limit the number of pesticides and fertilizers from city operations by implementing an Integrated Pest Management Plan to manage public land.	Update the Plan at least once during the permit cycle. At least biennially discuss land management strategies with staff. Applicators are licensed and complete licensure renewal schedule.	Update goal: FY23-24	Facilities contracts with Relay Resources to manage City Building Properties Transportation has 2 applicators Wastewater has no applicators Stormwater has 4 applicators Parks has 4 applicators Natural Resources has 2 applicators, but generally contracts these services See Table 3.5
Public Land Management (PLM A-E) **BMP Owner: Multiple (As included in the Activity Description)**				
Activity Name	**Description**	**Measurable Goal**	**Timeframe**	**Reporting Metrics**
D. Urban Canopy Program	This BMP is supported by Parks Planning staff and coordinated with other departments as needed. Enhance the urban canopy relative to Parks properties and street trees to support the City's Climate Action Plan.	Code enforcement of tree removal violations Annual replacement of dead/dying street trees Urban Forestry Committee (public participation)	annually/ongoing	Events: Green Gresham/Healthy Gresham grant in partnership with Mult Co, EMSWCD, Friends of Tree support, Arbor Day, Hogan Butte, Lilac Run, Columbia View Park events: 85 trees planted Code Enf: 24 Tree violations, 3 fines were issued. 14 violations resulted in the replacement of 60 trees. Outreach: Urban Forestry Committee supported neighborhood tree walks, neighborhood tree plan discussion, Hiroshima Peace Tree Garden at Ebetsu Plaza, and Arbor Day Information about neighborhood tree plans and the new tree canopy map at: greshamoregon.gov/Neighborhood-Tree-Plan/#WhatisTreeCanopy Street Trees: the City contracted services for tree planting and watering for large ball and burlap trees to replace trees hit by a car or that was injured during ice events, or other death. 46 trees, $55K

Table 3.2 City of Gresham Stormwater Management Program Summary (2022-2026)

E. Natural Resource Program	The Water Resource Division's Natural Resource Program focuses on enhancing & preserving the health of public lands which are undeveloped (not Parks) totaling just over 800 acres, this includes implementing projects identified in the NR Master Plan and ongoing restoration, monitoring of flora and fauna health, and community engagement.	Implement NR CIPs Actively manage and restore on average ~100 acres/yr. Track volunteers and community organizations engaged.	annually/ongoing	See Table 3.3 for CIPs See Table 3.4 Stewardship Activities
Pollution Prevention from City Activities (PPCA A-F) **BMP Owner: Multiple as described in each Activity Description**				
Activity Name	**Description**	**Measurable Goal**	**Timeframe**	**Reporting Metrics**
A. O&M for Public Roads, bridges: sweeping	The City's Transportation Division oversees street sweeping and winter road safety measures and manages some of the vegetated right of ways following the Integrated Pest Management Plan. For road maintenance, staff follow ODOT's Standard Operating Procedure for Road Maintenance to limit impacts to stormwater and buffers.	Prioritize sweeping of arterial roads Conduct 8-10 sweeps/yr.	annually/ongoing	9.5 residential sweeps 12 arterial sweeps 5,870 miles swept City additional routine/emergency sweeps and leafy season included 1535 hours 1053 tons of debris collected & disposed at Wasco landfill (city/contractor combined)
B. O&M for Public Roads, bridges: deicing	The Transportation Division oversees the application of winter road safety chemicals follows the City's Winter Road Plan to minimize risk to the environment while achieving safe driving conditions. The Winter Road Operating Plan is available on the City's website GreshamOregon.gov Transportation page	Remove winter road traction materials, as soon as practical post storm	annually/ongoing	~22,350 gallons of Magnesium Chloride used for anti/deicing on priority roads 275 cy of 1/4-10 sanding rock used Two weather events (Dec, Feb) with precipitation and freezing temps. Adaptive Management: City is currently planning to install a GPS system (estimated FY 24-25) that will track vehicle miles and locations of materials, beyond the general system map which is available at GreshamOregon.gov

Table 3.2 City of Gresham Stormwater Management Program Summary (2022-2026)

C. Limit Releases from Fire Training Activities	The Fire Department Training Center follows a procedure to implement storm drain protection during training activities that may result in runoff. The Stormwater staff support ongoing informational check-ins to update Fire on stormwater technology and research, as applicable.	Deploy storm drain protection techniques during training that cause runoff	annually/ongoing	Fire follows SOPs related to protecting the stormwater system. In FY 22-23, Stormwater purchased and installed Biochar filter media inserts for the drains at 4 fire stations and the training center to remove pollutants associated with training activities and apparatus washing during the dry season.
D. Water Line Flushing	The Water Operations Division is responsible for minimizing impacts to the stormwater system by implementing an SOP for water line flushing, which involves using a dechlorination injector and applicable treatment chemicals. Staff deploy sweeping or drain protection to limit debris from entering the nearest storm drains because of flushing.	Use of dechlorination	annually/ongoing	Staff conducted hydrant flushing of 4.5M gallons of water using the dechlorination SOP.
E. Limit Wastewater Pipe Seepage	The Wastewater Group is responsible for overseeing the system maintenance. This includes ongoing asset management with a CIP that repairs aging pipes that are more prone to seepage.	Implement wastewater pipe repairs as approved by the City budget.	annually/ongoing	Main line pipe replaced ~600 lineal feet Laterals replaced ~410 lineal feet Manhole grouting 241 units

Table 3.2 City of Gresham Stormwater Management Program Summary (2022-2026)

Pollution Prevention from City Activities (PPCA A-F) **BMP Owner: Multiple Departments (O&M Yard Housekeeping overseen by Operations & Maintenance Department Managers)**				
Activity Name	**Description**	**Measurable Goal**	**Timeframe**	**Reporting Metrics**
F. Staff Training	DEQ requests to understand how staff are trained or continue ongoing training as needed to oversee and/or conduct the work of their program areas. The City of Gresham provides a variety of professional development and industry specific training opportunities for staff to ensure safe and effective delivery of programs and services for the public's benefit. This includes internal and external trainings, as well as new staff orientation of programs, policies, and procedures. In many cases, staff are trained on equipment and procedures by senior staff where specific professional trainings are not readily available, such as business inspections.	Document staff trainings in required program areas for permit compliance. Train new staff on all good housekeeping procedures, chemical storage, storm drain protection procedures for outdoor work and management of the Operations yard within six months of hire.	annually/ ongoing	Operations Safety Officer inspects the pesticide storage room with crews to ensure proper labeling and containment of chemicals. Transportation staff attended a 6 hr. APWA online winter weather operation and materials course. Watershed staff worked with the Water Flushing and Emergency response crew to review the historic SOP and improve catch basin protection. An updated SOP is planned for finalization during FY 23-24. Training of new staff on Housekeeping by Dept: Parks: 3 Transportation: 3 Stormwater: 2 Water: 1 Wastewater: 1

Table 3.2 City of Gresham Stormwater Management Program Summary (2022-2026)

Public Reporting, Engagement, Outreach & Behavior Change (PREOB A-F) **BMP Owner: Multiple (As listed in each Activity Description)**				
A. Spills & Illicit Discharges & Public Reporting	Coordination and oversight for this BMP is conducted by the Stormwater Science & Policy group. The City typically receives information about spills or unusual discharges in the following ways: phone calls to City Hall or Operations Dept, Code Enforcement voicemail hotline, email, or the My Gresham App (~7,000 concerns per year reported across all departments). Staff on or off duty may also report observations. Calls to Police Non-Emergency line are connected to the On-call after hours O&M staff, as applicable. For concerns that constitute threats to human health, welfare, or the environment, staff must respond within 24 hours or as soon as possible upon becoming aware (if delayed because of voicemail, weekend report, etc.) For all other types or concerns, respond within 1-4 days (average 2).	Document spill and illicit discharge reports and investigations and outcomes in City's database.	annually/ ongoing	28 Incidences reported, 11 were residential or traffic related incidents. 5 incidences resulted in no threat/nothing to resolve 3 incidences included educational instructions to the RP regarding future expectations 9 incidences were cleaned up by the City with no RP or assisted the RP 11 incidents were taken care of by the RP or billed to the Responsible Party by the City for its cleanup work 5 incidences resulted in releases to the stream. The Operations staff uses booms to absorb pollutants from streams or stormwater facilities to the maximum extent practicable. ~60 other concerns were reported thru MyGresham that were primarily concerns about street drainage or blockage of inlets addressed by Operations staff or assisted by Outreach staff if related to a private property investigation and communication. See also Table 3.1 for outreach examples as follow up.
B. Litter/Hazardous Waste Control (Residents)	The City's Solid Waste & Sustainability Division offers special collections events that vary by type and quantity over the permit cycle. The Division also oversees residential garbage, recycling, and yard debris hauling and used oil is collected at curbside and reported to the City. Examples include bulky waste, Styrofoam, or hazardous materials. The program also support permitted events occurring related to recycling collection such as the Farmer's Market and City Festivals.	Document events offered and supported. Track residential used oil collected by haulers	annually/ ongoing	20,000 lbs. of electronic waste collected at Spring event. Free Geek repair, reuse, recycle nonprofit oversees best use and final disposal, as needed. Bulky waste was collected for six months for all 5 unit or larger apartments in Gresham. 150 tons collected. All TVs and Refrigerators recycled. Other misc. items too, but not tracked. Haulers reported collecting about 30 tons of used oil.

Table 3.2 City of Gresham Stormwater Management Program Summary (2022-2026)

C. Business Outreach	The Solid Waste & Sustainability Division offers outreach to businesses and apartments with services that help reduce litter and illegal dumping (includes storm drain marking) and increase the recycling of materials and composting of food waste. The City also collaborates with EcoBiz to offer technical assistance to the Automotive sector to implement more sustainable and environmentally protective actions. Staff also conduct direct outreach via fact sheets, posters, and direct mail to specific key sectors periodically.	Document businesses and apartments served.	annually/ ongoing	Green Biz Program provided technical assistance to over 500 businesses which included about 70 that involved outreach regarding stormwater pollution reduction. The food waste outreach program conducted about 175 tech assists to 140 restaurants who are participating in food waste diversion to composting.
D. Schools and youth outreach	The Stormwater & Natural Resource programs do not have enough staff to offer formal (planned/ongoing) curriculum to classrooms. However, staff occasionally teach classrooms or lead field trips, support camps or events, etc. and also partner with local watershed councils to deliver some services to Gresham youth. Staff believe that exposing youth to natural systems, science, local water resources and wildlife has the potential to have a lasting impact on their perception of the importance of pollution reduction actions they can take within their lives.	Document staff and partner activities to deliver water protection, nature & wildlife education & experiences to youth.	annually/ ongoing	See Table 3.1

Table 3.2 City of Gresham Stormwater Management Program Summary (2022-2026)

Public Reporting, Engagement, Outreach & Behavior Change (PREOB A-F) **BMP Owner: Stormwater Science & Policy Group & City Communications Department**				
Activity Name	**Description**	**Measurable Goal**	**Timeframe**	**Reporting Metrics**
E. Regional adult outreach	Because outreach is very labor intensive and advertising is so financially expensive, the Stormwater Program's approach is to invest a large portion of the budget and effort to leverage dollars and staffing using collaborative approaches to deliver stormwater pollutant reduction and water protection messaging to adults. Examples include a $60K-$70K annual Public Service Announcement campaign on television cost shared by 15+ agencies. Other campaign work includes the Metro area Regional Coalition for Clean Rivers and Streams, the Statewide Clean Rivers Coalition's "Follow the Water" and directed support of watershed council work to engage the public.	Educate key adult audiences as described in the E&O strategy with key pollutant reduction messages and positive actions they can take within their lives. Prioritize behavior change methods. Measure and evaluation, when possible.	annually/ongoing	See Table 3.1.
F. Public Involvement & Participation: City outreach	The City uses a variety of communication channels to reach its residents which includes notification of public comment opportunities for City Plans, Budgets, Rates, Capital Projects, Events, etc. Examples include its website, print and electronic newsletter, social media, earned media etc. Staff also conduct outreach via direct mail to specific key audiences periodically (e.g., dog waste, RV dumping letters).	Utilize City channels to deliver 3-5 messages to residents	annually/ongoing	Facebook: 13,000 followers Instagram 5,800 followers Twitter: 3,153 followers YouTube: 1,400 followers E-news (digital): 1,400 subscribers (12X/yr.) Gresham News (print): 51,000 homes and businesses quarterly Next Door: 29,000 members See also Table 3.1
Control Impacts from Development and Business Activities (CIDBA A-G) **BMP Owner: Stormwater Science & Policy Group**				
A. Stormwater Management Manual (SWMM)	This manual contains the regulatory development thresholds that necessitate stormwater controls, the prioritization of green infrastructure, the design standards, plan review process, and long term maintenance requirements.	Review SWMM at least once within the permit cycle. Update, if necessary	Goal for review FY23-24	Staff have created draft edits and will begin stakeholder discussions during FY 23-24 with a goal for new SWMM adoption by late 2024.

Table 3.2 City of Gresham Stormwater Management Program Summary (2022-2026)

B. Private Stormwater Facilities Tracking & Inspection	The Stormwater group ensures proper installation, planting, and GIS mapping of private stormwater facilities required by the SWMM. The types of facilities installed and the catchment areas that drain to them are recorded for future pollutant reduction modeling and also to ensure the long-term maintenance and function as required by Gresham Code. Private facility owners are recorded in the City's database and property owners are made aware of their ownership and maintenance requirements. The City has a Private Stormwater Facility Handbook which is available on its website and is utilized to support private maintenance technical assistance. Staff have inspected all private facilities and required maintenance, as needed, historically. In the past few years, staff have categorized and prioritized the private inspection program based on available staffing time and overall potential impact to the public stormwater system from the facility based on adaptive management feedback loops on how long a facility's lifecycle has been observed over time. Facilities that treat stormwater prior to draining to groundwater or that infiltrate and don't flow the to the City's public system are not part of the inspection program. Additionally, one Gresham neighborhood was built with on lot rain gardens with single family homes. These rain gardens are not inspected, but residents are given direct mail outreach on rain garden maintenance, at least once per permit cycle.	Document and inspect new private stormwater facilities and associated treatment areas. Conduct QA/QC of GIS recording of these facilities at least once per year Inspect major structural controls Oversee proprietary device maintenance	annually/ongoing	23 sites with proprietary underground vaults provided maintenance documentation. The remainder will be asked to submit during FY 23-24. No additional private facility inspections occurred during this fiscal year.

Table 3.2 City of Gresham Stormwater Management Program Summary (2022-2026)

B. Private Stormwater Facilities Tracking & Inspection	Therefore, after the facility determination the criteria for inclusion is as follows: larger detention ponds are a higher priority (annual inspection) and other smaller facilities that have moderate potential for negative impacts will be inspected at least once every five years. The current inventory is one larger private facility inspected annually (not including the 30 multiowner facilities already included in the City's public maintenance annual program) and 33 smaller ponds & smaller vegetated facilities and 60 proprietary device locations. Proprietary device owners must submit documentation that their devices are maintained or still clean every two years on a 50% inventory rotating basis.			
C. Erosion Prevention & Sediment Control (EPSC) Plan	The City's EPSC Manual was reviewed as part of the process for the updated SWMP. The Manual functions well for the EPSC Plan Review and Inspection Program needs. Staff attend industry specific trainings and stay attune to new technology developments that may provide additional program requirement updates or further the pollution reduction efficacy.	Review EPSC Manual at least once within the permit cycle. Update, if necessary	Goal for review FY 25-26	No updates to the EPSC manual.

Table 3.2 City of Gresham Stormwater Management Program Summary (2022-2026)

D. EPSC Inspection Program & New (Post Construction) Stormwater Facility Inspections	Stormwater Science & Policy staff coordinate with the City's Permit & Business Licensing Department staff for this BMP. Ensure development permitted within the City obtains a DEQ's 1200-C permit, when applicable and apply the City's EPSC Manual requirements to sites to ensure sediment laden runoff is not entering the City's stormwater system or waterways. The EPSC manual is provided to contractors during the permitting process. Contractors provide information to the City about which EPSC bmps will be utilized and the specific site locations for BMPs, as required. This information is available at all times to Public Works Inspectors and the Stormwater Science & Policy oversight group via a digital software permit system. At construction project final, staff inspect the site to ensure that all vegetated facilities are properly planted or hydroseeded, per SWMM requirements. Sites are checked to ensure underground facilities do not contain construction sediment and that bare soil is covered before protective storm drain filters can be removed.	Conduct active site inspections and QA/QC oversight as described in the SOP. Ensure large sites obtain a DEQ 1200-C permit Assist DEQ with inspections if requested	annually/ongoing	7 active commercial construction projects 187 single family active sites 5 grading sites 5 multifamily sites Each site received a minimum of 3 inspections per city protocol, some projects have daily oversight public works oversight visits 52 of the minimum pre, interim, and final inspections/site required corrections such as perimeter control, covering exposed soil, covering stockpiles, improving construction entrances and sweeping streets. Final inspections required the majority of corrections (36/52) 52 acres of disturbed land ~35 acres of impervious are treated by stormwater facilities See Table 3.6 for facilities installed and inspected. A wet weather notice is provided at active fall construction sites as a reminder to prepare their site for fall rains. See Appendix A.

Table 3.2 City of Gresham Stormwater Management Program Summary (2022-2026)

Control Impacts from Development and Business Activities (CIDBA A-F) **BMP Owner: Stormwater Science & Policy Group**				
Activity Name	**Description**	**Measurable Goal**	**Timeframe**	**Reporting Metrics**
E. Business Screening & Inspection Program	Implement the Business Inspection Program to address sectors that have high potential to contribute to stormwater pollution in runoff from their site. This program also includes the implementation of the Wellfield Protection Program and the Wastewater Fats, Oils, Grease (FOG) program. The City's Business Inspection program focuses on businesses with hazardous waste, manufacturing, outdoor storage that can cause stormwater pollution. Issue Notice of Violation if time frames for corrections are not met and enforce as needed to gain compliance.	Conduct routine and follow up inspections as described in the SOP, typically projected to be 100-200/year Conduct screen of City's businesses for DEQ 1200Z permit evaluation, based upon industry types included by that permit Review the City's new business list to determine additions to the program	Screen all businesses for potential 1200-Z permit referral at least annually Screen new businesses at least quarterly	This was the first full year under the new permit. Gresham inspectors are still practicing the SOP implementation. The City's use of the SwiftComply software program for both the wastewater fats, oils, and grease (FOG) and the stormwater and groundwater protection program inspection tracking has created challenges given certain limitations with the software programming and its queries, rescheduling inspection function, etc. Another issue is that inspections can be non-compliant for program regulatory elements related to FOG or groundwater protection, but there is no risk to stormwater. Staff are still evaluating how to create an optimal system within imperfect software. That aside, we have seen very good outcomes from our program advancements over time. The City understands the threats to stormwater and groundwater (drinking water) and we have provided a variety of spill response materials and technical assistance, best practices and outreach on our expectations. Table 3.8 includes new businesses referred to DEQ who might need a 1200Z permit.

Table 3.2 City of Gresham Stormwater Management Program Summary (2022-2026)

E. Business Screening & Inspection Program (cont.)	Implement the Business Inspection Program to address sectors that have high potential to contribute to stormwater pollution in runoff from their site. This program also includes the implementation of the Wellfield Protection Program and the Wastewater Fats, Oils, Grease (FOG) program. The City's Business Inspection program focuses on businesses with hazardous waste, manufacturing, outdoor storage that can cause stormwater pollution. Issue Notice of Violation if time frames for corrections are not met and enforce as needed to gain compliance.	Conduct routine and follow up inspections as described in the SOP, typically projected to be 100-200/year Conduct screen of City's businesses for DEQ 1200Z permit evaluation, based upon industry types included by that permit Review the City's new business list to determine additions to the program.	Screen all businesses for potential 1200-Z permit referral at least annually Screen new businesses at least quarterly	This was also the first year for voluntary checks of businesses within the groundwater protection expansion area. This area was expanded to include the full city limits because they City is drilling additional drinking water wells. As such, many more "mini" inspections or screenings were conducted than in a typical year. *Total inspections/screenings: 684, including 45 removed from the data because they were home based or had permanently closed. *373 Auto, manuf, industrial, and food related businesses were visited at least once. *13 were removed from the ongoing program because of closure. *106 follow-up inspections were conducted to ensure compliance (not all presented a stormwater risk). *14 were inspected based upon spill concerns or reports, include one at Boeing which was ultimately turned over to DEQ for oversight. Another serious case was Valvoline Oil Change that crossed over the fiscal year for illegal dumping of oil laden waste water into the storm drain. They had to clean the entire system and were issued a civil penalty.
F. Private Storm Drain Maintenance Program	The City created and has managed and reported efforts related to this program since 2004. Drain cleaning is an effective way to control stormwater pollution. Originally, it was strictly a voluntary outreach program called the storm drain Cleaning Assistance Program (SCAP), which resulted in cleaning 200-400 drains per year. During the last permit cycle, the Water Science staff began a focused effort with summer interns to update the City's private storm drain inventory in the GIS system. Drain conditions and levels of sediment were also recorded. This effort led to staff launching a mandatory drain cleaning notice for the drains full of debris as noted by the interns. This effort will continue during this permit cycle. Due to limited staffing levels related to this effort, staff will methodically select small portions of the city each year to request drain cleaning compliance documentation, in addition to continuing the SCAP program, which functions to lower the cost for cleaning to affordable rates for small businesses to participate.	Implement the SCAP program Select additive portions of the City's business areas to request drain cleaning documentation.	Offer SCAP annually Document drain cleaning for 10-20 non-SCAP participating businesses annually	398 businesses participated in SCAP ~1400 drains cleaned Two vendors estimated 179K lbs. of debris removed See Appendix A for Outreach example. We selected 60 businesses without drain cleaning records or SCAP participation to send requests for drain cleaning information. From this 25 enrolled in the Spring 23 SCAP cleaning. We will continue to follow up during FY 23-24 for those who were unresponsive.

Table 3.2 City of Gresham Stormwater Management Program Summary (2022-2026)

G. Retrofit/Hydromodification Assessment Update	City will provide an assessment of how the reports previously provided have been considered, updated, or implemented, remaining gaps of knowledge, if applicable, new goals, tools, priorities for future improvement.	Provide DEQ an assessment with outcomes related to the creation of the original reports.	Third year of the permit term (FY 22-23)	Submitted as Appendix B.

Table 3-3 Examples of City of Gresham Watershed/Natural Resource Program Projects with Water Quality Benefits

Project Name/Watershed	Watershed	Project Status	Stormwater Mitigation Measures/Area Treated	Funding Mechanism
The City's Capital Projects Plan is located at: https://greshamoregon.gov/Capital-Improvement-Program/				
Mt. Hood Community College Salmon Safe Campus	Kelly and Beaver Creek (Sandy River Watershed)	Since 2017, rain gardens have been built in 8 parking lots capturing water from about 9 acres of pavement. In FY 22/23, the City contributed $75,000 for construction, and in-kind contribution of project design (Estimated value $20,000).	The city partnered with EMSWCD ($150K total annual contribution), former Sandy River Watershed Council, and Metro to 'green' the college campus by improving water quality and improving habitat by the reduction of impervious surfaces and the installation of rain gardens, tree trenches, and native plants.	Watershed Operating Fund
McKinley Wastewater Trunk Line Construction Project	Jenne Creek (Willamette River Watershed)	Construction was completed in Fall 2019. Site is in year 4 of 5 for vegetation management that includes wetland restoration, riparian buffer shade enhancement, and forest revegetation. Total expense in 2022/2023 was 12K. Expenditures include plant purchase and installation and spot spraying herbicide treatment.	Reduces possibility of overflow discharge of sewage to Jenne Creek headwater wetland and associated stream. Restore riparian, wetland, and upland forested area within the project area.	Wastewater CIP

Palmquist Road Culvert Replacement Project	Burlingame Creek (Sandy River Watershed)	Construction was completed in Fall 2020. Site is in 3 of 5 for vegetation management targeting stream side shading of the riparian buffer. Total expense in 2022/2023 was $9K. Expenditures include plant purchase and installation and spot spraying herbicide treatment for invasive weeds.	Replaced road and 4' wide non-fish passable culvert with a 12' wide fish passable culvert and natural stream bed. Introduced treatment to .35 acres of previously untreated arterial roadway surface. Restore riparian area adjacent to creek in the project area.	Watershed CIP fund
Kane Road Culvert Replacement Project	Kelly Creek (Sandy River Watershed)	Construction was completed in Fall 2018. Site is in year 5 of 5 for vegetation management targeting streamside shading of the riparian buffer. Total expense in 2022/2023 was $3K. Expenditures include plant purchase and installation and spot spraying herbicide treatment for invasive weeds.	Replaced road and 12' wide non-fish passable culvert with a 34' wide fish passable culvert and natural stream bed. Introduced treatment to .86 acres of previously untreated arterial roadway surface. Restore riparian area next to the creek in the project area.	Watershed CIP fund and FHWA emergency grant
Headwater System Riparian/Upland Forest Restoration Program	**Willamette River Watershed:** Meadow Creek, Chastain Creek, and Miller Creek.	Restoration of riparian and upland areas adjacent to ephemeral and seasonal headwater creek systems that contribute to larger basins in the city. Annual budget of $30K.	Improve headwater stream conditions and butte slope stability.	Tree Fund (generated by City approved Development Permits)

Riparian and Upland planting	**Willamette River Watershed:** Johnson Creek, Butler Creek, Jenne Creek, and Kelley Creek: **Sandy River Watershed:** Kelly Creek and Burlingame Creek; **Columbia River Watershed:** Fairview Creek and Columbia Slough	Restoration of the riparian, wetland and upland areas adjacent to city creeks, floodplains, and wetlands. City is currently working in all 3 of its watershed basins (Willamette River, Sandy River, and Columbia River). Willamette River Watershed: Johnson Creek (5 sites), Jenne Creek (1 site), Kelly Creek (3 site), Butler Creek (3 site). Sandy River Watershed: Kelly Creek (3 sites) and Burlingame Creek (1 site). Columbia River Watershed: Fairview Creek (2 sites) and Columbia Slough (1 site). Yearly budget for this program is $135K.	Water quality, stream shade, invasive control, forest health, stream function, wetland function, and habitat improvements.	Watershed Operating Funds
Invasive Weed Survey & Control	Willamette River Watershed: Johnson Creek and Jenne Butte	Active, ongoing invasive control. Early detection rapid response (EDRR) categorized or other invasive weeds are addressed as they are reported or discovered that could harm our infrastructure or customers. Annual Budget of $62.5K.	Spot treatment for controlling aggressive invasive plant species that lead to bank failures, loss of native vegetation, reduce water quality and/or put our public at risk. Species including Japanese knotweed, Himalayan blackberry, purple loosestrife, English holly, English ivy, garlic mustard, hogweed, and yellow flag iris are some of the species addressed. See Gresham Invasive Species list for more information.	Operating Funds from multiple dept (Parks, Transportation, Stormwater, Wastewater, and Water) for control of invasive weeds.

In-stream and near-stream slope stabilization projects	All depending on year	**Johnson Creek Watershed**: (1) staff efforts lead to court proceedings against landowner who placed 400 cubic yards of illegal fill in the city-owned Chastain Creek riparian area. A similar illegal fill of an estimated 600 cubic yards was placed on public and private property above Johnson Creek. Fill removal and slope stabilization plans have been completed and will be implemented in 2024. Total cost for restoration of both sites: $300K (2) A felled tree was removed and a wastewater pipe reinforced to reduce risk of raw sewage contamination to Johnson Creek mainstem. Mitigation work to commence 2024 and continue through 2029 at approximate total cost of $50K (3) Emergency repair on West Fork Hogan Creek was completed, resulting in renewal of 1/4 acre of floodplain bench/riparian wetland renewal. Planting and maintenance implementation 2023-2028 with total floodplain/wetland improvement costs at approximately $24K. Kelly Watershed: (1) In response to a landslide in June 2022, 180' of emergency stream stabilization construction was implemented, including a timber lagging wall and bioengineering measures to prevent further mass failure. Project implementation to date is $700K, with ongoing planting and maintenance over the 2023-2028 timeframe projected at an additional $50K.	Water quality, riparian function, erosion control/preventing hydromodification	Watershed CIP funding for illegal fill resolutions, SE 23rd culvert replacement, and Kelly Creek landslide response. Wastewater CIP funding for Emergency stabilization at Club Paesano.

Local Roads Repair	All	The Transportation Division has embarked upon a deferred maintenance repair project that will last several years. The Utility Departments are collaborating to ensure pipes are inspected and repaired, if needed, prior to repaving work. This is protection of the rate payer's investment in infrastructure. This past year our work included: 615 lineal feet of stormwater pipe replaced 3,840 lineal feet of pipe was cured in place 19 storm drains were replaced $747,000	Stormwater conveyance system updated	Watershed Repair and Rehab CIP
Hogan Rd Transportation Enhancement Project	Kelly	Road enhancements for pedestrian safety and vehicle capacity that included pervious concrete sidewalks and 52 stormwater tree planters $4.5M	Water Quality, infiltration, tree canopy	Transportation CIP
Sandy Blvd Enhancement Transportation Project	Columbia Slough	Added 18 stormwater planters and 124 trees to treat 4.2 ac of impervious area expansion and some redevelopment to add sidewalks. $3.4M	ter Quality, infiltration, tree can	Transportation CIP
Bull Run Condos Field Inlet	Kelly Creek	Installed a field inlet to capture stormwater runoff $49,400	Capture roadway runoff before it flows onto the Bull Run condos property.	Watershed Localized Drainage Improvements CIP
Bull Run Condos Line Cleaning	Kelly Creek	Cleaned approximately 1,185 linear ft. of storm line $26,900	Improved pipe capacity	Watershed Localized Drainage Improvements CIP

23rd Court Culvert Replacement	Johnson Creek Basin	Replaced a failed culvert on West Fork Hogan Creek $149,772	Improved pipe capacity	Watershed Rehab and Repair of Pipe System CIP
UIC Related: Retrofit Modified Drywell Pilot Project	Groundwater recharge area and Columbia Slough watershed	Converted existing failed UIC (flooding main arterial) to Sedimentation Manhole and installed new UIC. (SE 182nd Ave) $74,000 Installed a modified drywell to infiltrate water previously conveyed through MS4 to Columbia Slough $241,175	Improve downstream capacity and reduce overall volume and pollutant load going to Columbia Slough	Watershed West Gresham Water Quality and Infiltration Facilities CIP

Table 3-4: Restoration Activities

Project Site	Creek Name	NRMP Reach	Project Partners	Volunteer Hours	Invasive Removal Acreage	Planting Acreage	Linear Stream (feet)	Plants Installed	Notes
Willamette River Basin									
Ochioto Site	Johnson Creek	CIP 913900; NRMP - JC14/15	Professional contractor and city staff	0	15	3.2	1,720	3,005	Site is in year 8 of a multi-year and multi-unit restoration. Site has several restoration units in different phases of restoration. This past years work focused on riparian and forest area plantings; removal of 1 acre of Himalayan blackberry monoculture by mechanical means; and herbicide treatments of invasive weeds.
Wisteria Site	Johnson Creek	CIP 913400; NRMP JC12/13	Professional contractor and city staff	0	1.2	0	370	0	Site is in 6th year restoration site along Johnson Creek. Site was previously a wisteria and Himalayan blackberry monoculture. Work done this past year included maintenance spraying of a broad list of invasive plant species.
7th Street Bridge Site	Johnson Creek	CIP 913200; NRMP JC08/JC09	Professional contractor, city staff, and volunteers from JCWC and community	144	12.5	6.7	2,095	12,950	Site is in year 4 of a multi-year and multi-unit restoration. Site has several restoration units in different phases of restoration. Site conditions prior to restoration was predominantly a monoculture of Himalayan blackberry. This past year work included removal and herbicide treatment of 2.9 acres of blackberry monoculture; herbicide treatment of a broad list of invasive weeds over the 12.5 acres; and planting of native shrubs and trees over 6.7 acres. Volunteer work was done in partnership with JCWC. A total of 3 events were held this past year at the site. It included a planting event and 2 mulching events. A total of 48 volunteers worked 144 hours.

Project Site	Creek Name	NRMP Reach	Project Partners	Volunteer Hours	Invasive Removal Acreage	Planting Acreage	Linear Stream (feet)	Plants Installed	Notes
Main City Park Site	Johnson Creek	CIP 9JC009; NRMP JC09	Professional contractor and City staff	0	3.2	1.2	3,125	800	Site is in its 3rd year of a multi-unit and multi-year restoration. Site has several restoration units in different phases of restoration. Baseline conditions was a mixture of degraded riparian area and monocultures of Himalayan blackberry and English ivy. Work this past year included removal and herbicide treatment of 1.7 acres of blackberry and English ivy; herbicide treatment of a broad list of invasives over the 3.6 acres; and native plantings, over 1.2 acres, of trees and shrubs and emergent wetland species.
Miller Creek Site	Miller Creek	NRMP - MIL01	Professional contractor and city staff	0	5	5	2,150	300	Site is in 4th year of restoration. Baseline conditions prior to restoration was a good overstory of big leaf maple with spots of Himalayan blackberry, English holly, and reed canary grass. This past years work included maintenance herbicide treatments for a broad list of invasive species and native planting of trees. Native plantings were concentrated next to Miller Creek.
7th Street Bridge Site (Grant Funded)	Johnson Creek	CIP 913200; NRMP JC08/JC09	Professional contractors, city staff , volunteers and JCWC staff	24	2.6	2.6	1,152	1,500	JCWC in partnership with City of Gresham started work on this site in 2021. They used a grant from EPA and a City match (10K) to complete the work on the site (year 2).Site conditions prior to restoration was a monoculture of Himalayan blackberry and reed canary grass. This past years work focused on herbicide treatments of a broad list of invasive weeds and native plants of trees and shrubs. A single volunteer/education event was done through JCWC where they installed live stakes of willow species along the creek.
Butler Creek Corridor Site	Butler Creek	NRMP - BC01, BC02, BC03	Professional contractor and city staff	0	20.1	1	3,550	250	Site is in its first year of a multi-year and multi-unit restoration. Site has several restoration units in different phases of restoration along the entirety of Butler Creek. This past years work focused on riparian and forest area plantings at a small area around Marpol Pond and herbicide treatments for a broad list of invasive weeds through the 20.1 acres.

Project Site	Creek Name	NRMP Reach	Project Partners	Volunteer Hours	Invasive Removal Acreage	Planting Acreage	Linear Stream (feet)	Plants Installed	Notes
Jenne Butte (Johnson Creek) Site	Johnson Creek	NRMP - JC01	Professional contractor and city staff	0	31	0	0	0	Site is in year 2 of a multi-year treatment of garlic mustard. This past year the site had herbicide treatment to control garlic mustard over the 31 acres.
Jenne Butte (Johnson Creek) Site	Johnson Creek	NRMAP - JC01	Mount Hood Community College Ecology students and city staff	60	3	3	0	0	City provide outreach to students at Mount Hood Community College, Ecology class. Activities included a nature walk on Jenne Butte and removal of garlic mustard by hand. A total of 40 students spent 2 days learning about plants and more specially about the invasive weed garlic mustard. As part of this outreach students hand pulled garlic mustard around the butte.
Gresham Woods Site	Johnson Creek	NRMP - JC04	Professional contractor and city staff	0	41	41	3,450	2,000	Site is in year 2 of a multi-year and multi-unit restoration. Site has several restoration units in different phases of restoration. Gresham Woods (38 acres on north bank over 3 parcels) is a series of large parcels along the north bank of Johnson Creek. Site was initially restored 20+ years ago. Site conditions require additional restoration efforts. Baseline conditions include several large areas of red alder die off; extremely dense evergreen forest stands; large patches of dense English holly, English ivy, Himalayan blackberry and reed canary grass. This past years effort included removal and herbicide treatment of 4 acres of English holly; herbicide treatment of a 3 acre patch of English ivy; removal and herbicide treatment of 1 acre of Himalayan blackberry; and herbicide treatments for a broad list of invasive weeds over the 41 acres. Along with invasive herbicide treatments the city planted 2000 bare root trees spread out across 41 acres and completed stand enhancement in 4 dense units of evergreen trees.

Project Site	Creek Name	NRMP Reach	Project Partners	Volunteer Hours	Invasive Removal Acreage	Planting Acreage	Linear Stream (feet)	Plants Installed	Notes
McKinley Trunk Project Site; Jenne Creek headwaters	Jenne Creek	CIP PVJE01; NRMP - JE01	Professional contractor and city staff	0	12	4	1,170	2,300	Site underwent infrastructure development in 2018-2019 with a wastewater pipeline being installed within the area. A new wastewater pipe was installed that resulted in the impact of 4.0 acres of riparian and upland forest and emergent and scrub/shrub wetland area. Site is in the 4th year of a 5 year restoration plan. This past years work included herbicide treatments for a broad list of invasive species and planting native wetland, riparian and upland trees and shrubs. An additional 8 acres of wetland adjacent to the wastewater pipeline alignment is in long-term invasive weed species maintenance and utilizes NR operating funds.
Brookside Development Site	Kelley Creek	CIP KCHKE07; NRMP - KE07	Professional contractor and city staff	0	8	8	1,150	7,750	Site is in its 6th year of a multi-unit and multi-year restoration. Funding for this project is supported by Development Permit fees for mitigation of Natural Resource Overlay impact area. Two separate units are under restoration. The first unit is in year 6 and has entered the maintenance phase for invasive weed species and small scale pocket planting. The second unit is in its 2nd year of restoration. Work in this unit included herbicide treatments for a broad list of invasive weeds and planting of native shrubs and trees.
Meadow Creek Headwater Area	Meadow Creek	NRMP - CH05, CH03, GB-01	Professional contractor and city staff	0	4.2	4.2	725	3,500	Using funds provided by the City Tree Fund the city is in year 2 of a multi-year restoration in the Meadow Creek headwater area. This area had a large die-off of red alder that resulted in the formation of a monoculture of Himalayan blackberry. Work completed at this site included a 2 acre cut of blackberry, herbicide treatments for a broad list of invasive weeds and planting of native shrubs and trees.

Project Site	Creek Name	NRMP Reach	Project Partners	Volunteer Hours	Invasive Removal Acreage	Planting Acreage	Linear Stream (feet)	Plants Installed	Notes
Chastain Creek Headwater Area	Chastain Creek	NRMP - CH05, CH03, GB-01	Professional contractor and city staff	0	2.8	2.8	620	3,500	Using funds provided by the City Tree Fund the city is in year 2 of a multi-year restoration in the Chastain Creek headwater area. This area had a large die-off of red alder that resulted in the formation of a monoculture of Himalayan blackberry. Work completed at this site included a 0.5 acre cut of blackberry, herbicide treatments for a broad list of invasive weeds and planting of native shrubs and trees.
Hogan Butte Nature Park - Volunteer Events	NA	NA	City staff and student volunteers	588	1	1	0	250	School outreach this past year included Powell Valley Elementary and Springwater Trail High School. The city hosted 2 days of outdoor classroom activities for a 5th grade classroom's (46 students; 9 adults) from Powell Valley. Activities at the park included an nature education walk around the butte, cutting and planting live stakes, stormwater facility education, weeding, and laying mulch. Springwater Trail High School (127 students; 14 staff members) have been doing an annual volunteer day with the city for 5 years. This year's event was held at Hogan Butte Nature Park. Activities included a nature education walk, planting of native plants, and weeding and mulching.
Columbia Slough Basin									
Columbia Slough Water Quality Facility	Columbia Slough	NRMP - CS08	Professional contractor and city staff	0	14.8	0	155	0	Site is a regional water quality facility. Site maintenance is ongoing for invasive weeds. Invasive weed control in facility will help water quality treatment and overall site conditions.

Project Site	Creek Name	NRMP Reach	Project Partners	Volunteer Hours	Invasive Removal Acreage	Planting Acreage	Linear Stream (feet)	Plants Installed	Notes
Columbia Slough Wastewater Parcel	Columbia Slough	NRMP - CS06	Professional crew, CSWC, PGE Project Zero Interns		12.5	1.8	1,090	2,200	Site is in its 2nd year of a multi-year restoration. Baseline condition was a mowed agriculture area along the south bank of the Columbia Slough. City is restoring a 50-foot corridor next to the Columbia Slough. Work this past year included herbicide treatments for a broad list of invasive species and native planting of shrubs and trees. Additional spraying was completed on the north side of the Columbia slough to control Himalayan blackberry. This area will not be planted.
Fairview Creek Regional Water Quality Facility	Fairview Creek	NRMP - FC05	Professional contractor and city staff	0	9	0	0	0	Site is a regional water quality facility. Site maintenance is ongoing for invasive weeds. Invasive weed control in facility will help water quality treatment and overall site conditions.
Fairview Creek Wetland Mitigation on Birdsdale/202nd	Fairview Creek	NRMP - FC05	Professional contractor and city staff	0	8.5	0	1,470	0	Site maintenance of invasive weeds on a compensatory wetland mitigation site. Species sprayed for include reed canary grass, Himalayan blackberry, Japanese knotweed, ivy, thistle species, teasel, and poison hemlock.
Fairview Creek Headwater Wetlands	Fairview Creek	CIP 9FC006; NRMP FC06	Professional contractors, city staff, RLA students	585	7.5	1	1,050	1,500	Site is part of an ongoing restoration of a 40 acre wetland complex. Restoration maintenance has been ongoing since 2006 following a $750K floodplain wetland improvement project. Site work consists of spreading clean leaf mulch and live staking through it to reduce reed canary grass growth. Follow treatments using herbicide to control reed canary grass and Himalayan blackberry. Site work also includes spot spraying of an area called the turtle moat to promote nesting of Western painted turtle. Large portion of work is done with partnership with Reynold's Learning Academy which provides a work program for high school students. Work they did included mulching, planting of live stakes, cutting blackberry and reed canary grass, and placement of tree protection.

Project Site	Creek Name	NRMP Reach	Project Partners	Volunteer Hours	Invasive Removal Acreage	Planting Acreage	Linear Stream (feet)	Plants Installed	Notes
Clear Creek Middle School	Clear Creek	NRMP CC1	Natural Resource staff, student and teacher volunteers, PGE volunteers and CSWC	150	3	1	620	200	Clear Creek Middle School in partnership with the City of Gresham, PGE, and Columbia Slough Watershed council is restoring a compensatory wetland mitigation site on it campus. Work this past year included nature education for students, planting of native shrubs and trees, mulching, and invasive species removal using hand tools.
Sandy River Basin									
Ironwood/Salquist Site	Kelly Creek	NRMP - KC15	Professional contractor and city staff	0	7.5	3.5	1,825	4,250	Site is in its 3rd year of a multi-year restoration of 7.5 acres of riparian and upland forest and emergent wetland. Site has several restoration units in different phases of restoration. This past years work focused on riparian and forest area plantings of native shrubs and trees; removal of 1.2 acre of Himalayan blackberry by mechanical means; and herbicide treatments of invasive weeds.
Kane Road Site	Kelly Creek	NRMP - KC01	Professional contractor and city staff	0	1.5	0.5	640	350	Restoration activity at this location resulted from a CIP transportation/stormwater project to completed the repair & restoration from an emergency road washout in 2015. Site is in its 5th and final year of restoration. Site was planted with shrubs and trees and live stakes. Invasive weeds included reed canary grass, Himalayan blackberry, English ivy, and Scotch broom. Site planting and herbicide treatment completed by contractor.

Project Site	Creek Name	NRMP Reach	Project Partners	Volunteer Hours	Invasive Removal Acreage	Planting Acreage	Linear Stream (feet)	Plants Installed	Notes
Palmquist Culvert Site	Burlingame Creek	NRMP-BUR04	Professional contractor and city staff	0	1	1	685	500	Restoration activity at this location resulted from a CIP transportation/stormwater project to replace existing culvert in 2020. Site is in its 3rd year of restoration. Work this past year included herbicide treatment for a broad list of invasive plant species and native planting of shrubs and trees.
Kelly Creek Water Quality Facility	Kelly Creek	NRMP - KC12	Professional contractor and city staff	0	9	0	750	0	Site maintenance is ongoing on invasive weeds at this regional water quality facility. Invasive weed control in facility will help water quality treatment and overall site conditions.
Gresham Meadowlands Wetland Preserve	Burlingame Creek	adjacent to NRMP-BUR04	Professional contractor and city staff	0	2	0	0	0	Site done in partnership with The Wetland Conservancy to restore wetland area. Site is in its 4th and final year of restoration. Site work this past year included herbicide treatment for a broad list of invasive species.
Total				**1,551**	**238.9**	**92.5**	**29,562**	**45,605**	

CIP =	Capital Improvement Program
CSWC =	Columbia Slough Watershed Council
EMSWCD =	East Multnomah Soil & Water Conservation District
RLA =	Reynold's Learning Academy
JCWC =	Johnson Creek Watershed Council

**All spraying was completed by a hired (licensed) City contractor and not included in volunteer hours.

Table 3-5 City of Gresham Integrated Pest Management Program Pesticide/Fertilizer Applications

Department	Product Utilized	Quantity	
Facilities Maintenance			
	Ranger Pro (isopropylamine salt of glyphosate)	42	oz.
	Spray-Rite (water safe adjuvant)	2	oz.
	Spray-Wet (nonionic adjuvant)	19	oz.
	Weed Zap (clove oil, cinnamon oil)	345	oz.
	Scythe (pelargonic acid)	111	oz.
	Crew (dithiopyr, isoxaben)	27	lbs.
	Spray Fast (water safe adjuvant)	2	oz.
	T-Zone (dicamba, sulfentrazone, triclopyr and 2,4-D)	1.5	oz.
	Spray 007 (nonionic surfactant adjuvant)	40	oz.
	SpeedZone (carfentrazone-ethyl, mecoprop-p, dicamba, 2,4-D)	23.4	oz.
	Barricade DG Pro pre-emergent (prodiamine)	150	lbs.
Transportation	Gallery (isoxaben)	310.4	oz.
	Round up Pro (glyphosate)	17.5	oz.
	Vista XRT (fluroxypyr-meptyl)	0.8	oz.
	Dimension (dithiopyr, tolulene, cyclohexanone)	28.5	oz.
Wastewater	none	NA	oz.
Natural Resource Program	Capstone (Aminopyralid and Triclopyr [Triethylamine salt])	144	oz.
	Aquaneat (Glyphosate [isopropylamine salt] [aquatic])	545.5	oz.
	Transline (Clopyralid [monoethanolamine salt])	4	oz.
	Rodeo (Glyphosate [isopropylamine salt])	659	oz.
	GlyStar Plus (Glyphosate [isopropylamine salt])	77.5	oz.
	Bronc Max -adjuvant (ammonium sulfate, citric acid)	1	oz.
	Imitator Aquatic (Glyphosate [isopropylamine salt])	139.2	oz.
	Milestone (Aminopyralid)	20.4	oz.
	Element 3A (Triclopyr [triethylamine salt])	1873	oz.
	Vastlan (Triclopyr [choline salt])	2874	oz.
	Garlon 3A (Triclopyr [triethylamine salt])	1653	oz.
	Agridex -surfactant (petroleum distillates/hydrotreated light paraffinic	1785	oz.
	Competitor (surfactant)	1552	oz.
	Super Spread MSO (surfactant)	20	oz.
	Hi-Light (blue dye)	1644	oz.
Water	Crossbow (2,4-D/Triclopyr, Kerosene)	44	oz.
	Roundup pro (isopropylamine salt of glyphosate and ethoxylated tallowamine)	2	oz.
	SureGuard (flumioxazin) mixed with Roundup 1:8	56:7	oz.
Parks	Roundup Power Max (glyphosate)	474	oz.
	Crossbow (2,4-D/Triclopyr, Kerosene)	168	oz.
	Site Pro Weed and Feed with Surge (2,4-D, mecoprop-p, dicamba, sulfentrazone)	700	lbs.
	liquid totals	**14,858 oz. (111.8 gallons)**	
		(wo adjuvants or dye)	
	dry totals	**897 lbs.**	

Table 3-6: Total New and Redevelopment Acreage

Project Name	Land Use Type	Development Type	Location	WQ Treatment	Facility Ownership*	Watershed	Facility size/area treated (acres)	Construction Disturbance (acres)	Percent Impervious
Beacon Medical Office	Corridor Mixed Use	Commercial	23331 SE Stark St	2 Infiltration Planters and Drywell	Private	Fairview Creek	0.83	0.83	100%
Eco Car Wash	Community Commercial	Commercial	18128 NE Glisan St	2 Rain Gardens and Drywell	Private	Columbia Slough	0.38	0.48	79%
Microchip Admin Area Renovation	General Industrial	Commercial	21015 SE Stark St	2 Rain Gardens	Private	Fairview Creek	0.05	0.14	33%
Regner Heights	Low Density Residential	Single Family Residential	SE Regner Rd	2 Detention Ponds and 2 Water Quality Vaults	Public	Johnson Creek	3.71	6.68	56%
RWPUD Halsey Reservoir	General Industrial	Commercial	19601 NE Halsey St	1 Rain Garden and 1 Infiltration Basin	Private	Columbia Slough	2.25	5.06	44%
Skyliner Phase 3	Low Density Residential	Single Family Residential	SE 282nd Ave	1 Extended Dry Detention Pond	Public	Kelly Creek	11.16	18.69	60%
Telford Estates	Low Density Residential	Single Family Residential	SE Telford Rd	20 Streetside Stormwater Planters and 1 Detention Pond	Public	Johnson Creek	16.13	19.98	81%
Washman	Community Commercial	Commercial	18140 NE Halsey St	1 Rain Garden	Private	Columbia Slough	0.27	0.30	89%
Total Disturbed Acreage								**51.86**	

*Public ownership is City of Gresham only. Private refers to all projects owned by entities other than City of Gresham.

Table 3.7 List of Businesses Inspected by Type

Automotive Businesses	Industrial/Manufacturing	Food Service Businesses
181st Convenience Inc.	Accuprint	Abby's Pizza and Grill
181ST SHELL GAS CORPORATION	Arch Fitters	ACE TAVERN
76 of Gresham	Arnprior Aerospace Portland	Agave Azul Mexican Restaurant
76 Station Plaid Pantry	Ashby Machine & Hydraulics LLC	Arby's Restaurant
3C Automotive Repair	Bakemark	Bento Plus
A & M Auto Care	Boeing of Portland	Baskin Robbins #4365
A to Z Auto Wrecking	Britton Excavating LLC	Big Apple Pizzeria
AAD Van Transmission Inc	Bud Bellamy & Son Inc	Biscuits Cafe©
Advanced Transmission & Gear	CAG LOG - Colorcentric Corp - FUJI Film	Black Rock Coffee
Advance Auto Parts #3574	Calef Machine Tool	Burger King #1886
Alfa Auto Repair	Cardinal Health at Home	Burger King #6585
All About Automotive	Cascade Athletic Club	Busters Texas Style Barbecue
AMPM ARCO	Cascade Building Maintenance	Cabaret Lounge II
America's Tire Co.	Celestica	Carl's Jr
Auto Firm NW	Denton Plastics Inc	Carl's Jr #7339
Auto Nation LLC	Eclaire Health	Cedarville Inn
Auto Select LLC	Eclectic Institute Inc	Captain's Galley
Auto Repair Specialties	Enviro Clean Equipment Inc	Chipotle #1898
AutoZone #3755	Eoff Electric Supply Co Inc	Club Paesano
Belay's Auto Wholesale	Ferguson Fire & Fabrication	Dea's In and Out Inc
Bickmore Auto Sales	Frozen Food Express Transportation Services Inc.	Division Sports Pub
Bonney Property	Graphic Packaging Int'l Inc	Del Taco
Bridgestone Firestone	Gresham Outlook Publishing	Don Pedro
Caliber Collision Centers	Heritage Crystal Clean	Dutch Bros Gresham
Cascade Car Wash	Hood Center Cleaners	Donut World
Cascade German Parts	Imperial Yeast	Dragon Palace
Catra Auto Repair	Key Mechanical Co	Fred Meyer
CENTRAL AUTO BODY, LLC	Lineage Logistics	Hope's Cafe
Chance's ARCO	Migration Brewing	icandy
Chevron Food Mart #1143	No 1 Usa Dry Cleaners	Jack in the Box
Chevron Service Station	NORTH COAST ELECTRIC CO	Firehouse Subs
Chevron Station #1001	Operations Center - City of Gresham	Five Guys Burgers and Fries #1429
Classic Collision	Outside Van, LLC	Flying Pie Pizzeria
Cleveland Auto Repair	Portland Specialty Baking	Legal Addiction Espresso
Cliff's Classic Chevrolet Parts	Pro Met Machining	Heidi's of Gresham Restaurant
Custom Collision	Quality Harvest Foods Corporation	New Life Missionary Church
Daytona Transmission	Raymond Handling Concepts Corp	Jack in the Box #7116
Don's Machine Shop	Rockwood Water	Jack in the Box #7168
E & B Motors	Speedy Bright Dry Cleaners	Jimmy Johns
Eastco Automotive Machine	Staples Contract & Commercial	Joy Teriyaki, Inc.
Eco Car Wash Inc	Stone Depot LLC	Papa Johns Pizza
Ed's Exhaust & Automotive	Superior Offroad	Papa Murphy Pizza
Edy's Auto Shop	Trailblazer Food Products	Patti's
Enterprise Rent A Car	Wright Business Graphics	Kentucky Fried Chicken
Epic Auto Detailing		Killer Burger
EQUIPMENTSHARE		La Carreta of Gresham
Firestone		La Tapatia II
Fire Station 71		Lee's Garden Chinese Restaurant
Fleet Services		Powell Valley Assisted Living
Fred Meyer FM Fuel #127		Quick Shop Minit Mart #22
Full Send Motors		Real Time Coffee
Gateway Tire Center		Rounders
Gerber Collision & Glass		McDonalds
Gonyea's Automotive		McDonalds #02977
Gresham 4 Wheel Drive Inc		Sakura Express
Gresham AM/PM		McMenamins Highland Pub
Gresham Automotive Services LLC		Meeka Japanese Restaurant
Gresham B & P Auto		Mi Pueblo Taqueria
Gresham Collision Center Inc		Sidekicks
Gresham Powersports LLC		Sidekicks
Gresham Premier New & Used Tires		Sidekicks Deli
Gresham Transmission		Silk Espresso
Haus of Gloi		Mod Super Fast Pizza
Hertz Auto Sales		Mojave Grill & Cantina
Honest 1 Auto Care		Mt Hood Lanes Inc
Japanese Auto Repair		Natural Grocers
John's Affordable Auto Repair		Nicholas Restaurant
Juston Olesen's Competition Paint LLC		Panda Express
Kreasion Auto Detailing		Panera Bread #2158
Landers Motors LLC		Popeye's Chicken & Biscuits
Leathers Oil Co		Starbucks Coffee #14030

Automotive Businesses	Industrial/Manufacturing	Food Service Businesses
Leathers Shell #12		Pour Sports
Leathers Shell #18		Red Lobster
L E D Performance		Red Robin Restaurant
Leo Auto Services		Roadhouse Grill
Les Schwab Tires		Rockwood Tavern
Lewis Automotive Inc		Safeway Stores Inc #1070
Mackin's Gresham		Shari's of Gresham #122
Magic City Garage		Shari's of Halsey Crossing
Magos Auto Sales LLC		Shari's Restaurant #227
Master Tech Automotive Inc		Subway
Moen Machinery Co		Subway #14914
Nolan's Tire Service		Sweet Betty's Bistro
Nova Auto Care		Szechuan Open Kitchen
One Alignment		Taco Bell
One Fine Mechanic		Taco Bell #881
Orient Auto Service Inc		Thai Curry
Pape Machinery Inc		Starbucks Coffee #14043
Petrocard		Step In Market
Point S Tire		The Local Cow
Portland Food Mart LLC.		Tin Tin Buffet
Precision Body & Paint		Walmart Market #3178
Price is Right Auto Sales II		Walmart Market #5627
Purcell Tire NW Inc		Wendy's
Referral Automotive		Twin Perks Espresso
Restorations & Reproductions		Us Market #175 LLC
Revolucion Autobody LLC		Wendy's
Rob's Auto Repair LLC		Yami Sushi & Teriyaki
Rockwood Solid Waste Inc		Wingstop
		Mountain View Residential Assisted
RYAN'S AUTO REPAIR INC		Living Facility
Safeway Fuel Station #1070		
SANTANA AUTO REPAIR		
SCRUBBY'S Car Wash		
Signature Automotive		
SP Petroleum PDX LLC		
Space Age		
Space Age #9 (AKV Mart)		
Space Age Fuel #8		
Sunset Motorsports		
Superior Auto Body		
Tire & Wheel Mart Corporation		
Top Notch Machine Shop		
T O C		
Trans Medic Transmissions Inc		
Unique Auto Concepts Window Tinting, LLC		
Valvoline Instant Oil Change		
Vladimir Kolombet Hybrid Motors		
Vo's Auto Repair Inc		
Washman 3 Min Car Wash		
Washman Car Wash		
Zghoul AM PM		
Zuritas Small Engine Repair		

List of 1200Z Permitted Businesses within Gresham Bolded if Inspected by DEQ or Gresham	
Arnprior Aerospace	No exposure status attained
Portland Specialty Baking	No exposure status attained
Albertsons Distribution Center #8252	2023 DEQ enforcement for monitoring violation
Denton Plastics Inc	
Pella Vinyl Northwest Inc.	Monitoring waiver approved April 2023
McDonald and Wetle Inc	Monitoring waiver approved April 2023
Owens Corning Foam Insulation LLC	DEQ Enforcement Warning for monitoring violation
Cascade Corporation	
The Boeing Company	Monitoring waiver approved in 2021
Rolling Frito Lay	2023 DEQ enforcement for monitoring violation
International Paper Company	
Purcell Tire	2023 DEQ Enforcement for monitoring violation
First Student Inc.	Monitoring waiver approved Feb 2022
Columbia Brick/Mutual Materials	
Teeny Foods	Monitoring waiver approved Nov 22
Pioneer Sheet Metal	Jan 2023 NOV issued by DEQ for improper storage of materials outside
Trimet Maintenance Facility	
Gresham Wastewater Treatment Plant	
Cedarsource Manufacturing	Applied for a DEQ permit, status pending
HMF Express	No Exposure Coverage approve d by DEQ
Shamrock Foods	Asserts private drainage to groundwater without backup, status under DEQ enforcement
On Semi	Attained No Exposure Certification
Hawthorne Hydroponics, LLC	DEQ Enforcement Warning for monitoring violation

Table 3.8 List of Potential 1200Z Permit Businesses Referred to DEQ

Business Name	Address
Cascadia Nutrition	19217 NE SAN RAFAEL ST PORTLAND, OR 97230
Choi's Kimchi LLC	19510 NE SAN RAFAEL ST PORTLAND, OR 97230
Element Ergo, LLC	3077 NE 170TH PL PORTLAND, OR 97230
Bridgestone Firestone Distribution Center	18555 NE Riverside Parkway Portland OR 97230
Ideal Steel	4567 NE 190th Ln Portland OR 97230
Celestica	18870 NE Riverside Parkway Portland OR 97230
Triad Machinery	18200 NE Riverside Parkway Portland OR 97230
Imperial Yeast	19649 NE San Rafael St. Portland OR 97230
Coast Aluminum	17625 NE Sandy Blvd Portland OR 97230
Imperial Cabinets and Millwork, Inc.	4800 NE 185th Portland OR 97230
R2M2 Rebar & Stressing, Inc.	2255 NE 194th Ave Portland OR 97230
Performance Foodservice PNW	19606 NE San Rafael St, Portland OR 97230

Table 3-9: City of Gresham Water Resource Division--Stormwater Budget Allocation (including staff and operating)

Program Area	PY 28 FY 22-23 (actual)	PY 29 Budget FY 23-24 (projected)
Water Quality: **Policy Development** **Stormwater/Erosion Manual Oversight** **Permit Compliance** **Monitoring and Analysis** **Spill Response** **Public Education & Outreach** **Private Water Quality Facility Program** **Business Inspection & Enforcement** **Erosion Control Inspection & Enforcement** **TMDL Compliance** **Data QA/QC** **Training**	$ 1,089,642	$ 1,222,481
Natural Resources: **Restoration** **Encroachment Response** **Streambank Failure Response** **Capital Improvements** **Master Plan Updates** **Invasive Species Control** **TMDL Compliance** **Green Space Acquisition**	$ 654,679	$ 819,780
Engineering: **Capital Improvements** **Minor Drainage/Flood Control** **Public Works Standards** **Stormwater Manual Oversight** **Master Plan updates** **Mapping** **Stormwater Assets Management** **Training**	$356,491.36 ACTUAL CIP* $2.72M	$688,399 $9.47M CIP*
Operations & Maintenance: **Systems Maintenance & Repair** **Equipment Repair & Replacement** **Spill Response** **Inspection** **IMP implementation** **Mapping** **Training**	$ 3,732,263	$ 4,492,025
Infrastructure Development (Development Engineering, Surveying, Public Works Inspections, Commercial Erosion Control Inspections)	$ 399,800	$ 425,000
City Admin Support, GIS Support, Management, Overhead	$ 2,517,887	$ 2,886,230
Total	**$8.75M Operating/Salary** **CIP Actual: $8.99M**	**$10.53M Operating/Salary *Actual Planned CIP expenses will be less than approved budget due to staffing limitations.**

Section Four – City of Fairview Summary of Program Monitoring

Municipal National Pollutant Discharge Elimination System Annual Report for Permit Year 28, Permit #101315, November 1, 2023

Executive Summary

The City of Fairview (City) manages the stormwater system with the goal of reducing pollutants to the maximum extent practicable, preventing flooding and enhancing natural resources. The City is a co-permittee with the City of Gresham on the National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit (#101315).

DEQ reissued the Permit on October 1, 2021 requiring the City to modify the SWMP to reflect the new permit conditions. The City's 2022 SWMP incorporates the new Permit conditions and includes best management practices (BMPs) and other elements intended to reduce the introduction of pollutants to the maximum extent practicable (MEP). The Stormwater Management Plan (SWMP) was last modified on December 29, 2015 in accordance with Schedule B.4.a of the City's NPDES MS4 permit requirement for updates.

This Permit Year (PY) 28 Annual Report documents implementation activities from July 1, 2022 through June 30, 2023 within the city limits of Fairview. Activities include, but are not limited to, the Best Management Practices (BMP) contained within the Stormwater Management Plan (SWMP). The status of the BMPs and adaptive management are summarized in the table that follows. Table 4-2 (Prioritization Criteria) summarizes the time period July 1, 2022 to June 30, 2023 implementing the 2022 SWMP. Section 2 of this report summarizes the Environmental Monitoring Program that is conducted by the City of Gresham on behalf of the City of Fairview.

As part of the annual adaptive management process, data and feedback were collected from staff responsible for implementing/reporting on each BMP. Factors considered include but are not limited to: Was the BMP measurable goal attained? If not, describe circumstances why, and how progress will be made toward future attainment. For multi-year BMPs, were milestones or timelines met? Can we feasibly refine or improve the BMP to gain efficiency or effectiveness in removing stormwater pollutants? In addition to assessing the implementation of each BMP, staff weighed resource availability and needs related to the overall stormwater program, including consideration of budget/funding, training needs, new technology and available equipment. The annual adaptive management process will inform any alterations to the stormwater program or future modifications to the SWMP.

There are no Urban Growth Boundary expansion areas contiguous to the City of Fairview. Consequently there are no associated concept planning, significant land use changes or significant development activities to report for PY 28.

Stormwater Management Program Budget

City of Fairview Stormwater Management program costs for Permit Year 28 are primarily associated with the Department of Public Works.

Stormwater fund expenditures and anticipated budget allocations incorporate wages and benefits, operating materials, equipment repair/maintenance, water testing (NPDES compliance), storm water disposal (NPDES permitting), improvements, and general administration.

Street fund expenditures and anticipated budget allocations incorporate wages and benefits, operating materials, maintenance services (including IGA with Multnomah County), equipment repair/maintenance, improvements, traffic calming, footpaths and bike trails, and general administration.

The table below outlines fund expenditures for PY 28 and provides the anticipated budget for Permit Year 29.
The expenditures could not be obtained for this PY in time. The actual expenditures for PY27 is provided in the in this report see Attachment A. Please note PY27 actual expenditures is unaudited.

Table 4-1	2022-2023	2023-2024
Program Area	PY 28 Expenditures	PY 29 Anticipated Budget
Stormwater Fund	TBD	$992,396
Street Fund	TBD	$1,233,149

Stormwater Assets Maintenance Program (SMP) A-C.				
Activity Name	**Description**	**Measurable Goal**	**Tracking Measures**	**Reporting Metrics**
A. CC/TV/Pipe Cleaning	The City's stormwater system currently consists of approximately 13.6 miles of pipes that drain to both surface and groundwater. The City inspects a portion of its existing pipes each year for assets management that record the condition and repair needs in the near and long term. Pipes are cleaned to remove excessive buildup, if the SOP threshold for cleaning is met.	Inspect 1 - 2 miles, clean if SOP threshold is met	Inspect: annually/ongoing Cleaning projected to be an average of 1-2 miles over permit cycle	annually/ongoing
B. Storm Drain Cleaning	The City's stormwater system currently consists of approximately 490 stormdrains that drain to both surface and groundwater. Arterial drains are priority due to higher pollutant loads than lower traffic streets and residential are also a priority due to potential for clogging and minor flooding. Inspection of all drains is a goal, but due to parked cars (even after notices are given) 100% is not attainable. Studies have shown that drains tend to remobilize trapped sediment once 2/3 or more full, and at this time is the City's SOP cleaning threshold. Typically, the City cleans all drains regardless of reaching the threshold, which is a higher performance standard. The range quoted allows flexibility in work load shifting to address other significant water quality facility rehabilitation activities in the future, as needed, while still meeting objectives over the permit cycle. • Outfalls: 38 total (9 High Priority Outfalls) • Underground Injection Control Facilities (UICs) / Sumps and Sedimentation Manholes: 3 total • Flow Control Manholes: 4 total • Vortex Manholes: 3 total • Trash Racks: 3 total • Weir: 1 total • Oil Water Separator: 1 total • Storm Cartridges/Filters: 2 total • Detention Pipelines	Inspect 50 percent of outfalls. Clean catch basins and inspect adjacent pipes in one third of the City annually. Clean all water quality manholes (5). Update maps of City Structural Stormwater Facilities.	Track facilities inspected and maintained. Track number of catch basins cleaned. Estimate quantity of sediment removed from catch basins and water quality manholes.	Total tracking of facilities inspected and maintained the following: Catch Basins: 366 cleaned in Zone 1 for a total of 1,029 Cu.Ft. of sediment. • Underground Injection Control Facilities (UICs) / Sumps and Sedimentation Manholes: 3 total • Flow Control Manholes: 4 total • Vortex Manholes: 3 total • Trash Racks: 3 total • Weir: 1 total • Storm Cartridges/Filters: 2 total • Detention Pipelines Crestwood's Oil Water Separator is in need of maintenance. The City has had a hard time getting Contech (supplier) to respond. River City Environmental will be the second contact for maintenance and goal is to have maintenance before Winter of 2023. Updating GIS map of City Structurual Stormwater is Ongoing Annually.
C. Maintain Green Infrastructure	Inspect and maintain vegetated facilities. It is important to note that vegetated facilities require the control of noxious weeds as well as thinning, pruning, plant replacement, in addition to sediment removal. Plant removal over time is beneficial, as some plants uptake pollutants in their roots and leaves. There are 5 neighborhood ponds that require sediment removal based on capacity for accumulation (varies from 5-12 year lifecycle). Perform inspection and required maintenance as stated in the O&M Plan–clean stormwater detention basins in areas where sediment and/or debris tend to accumulate. Lastly, a smaller portion of annual hours are utilized for bio-filtration swales. stream vegetation/woody debris support work. • Rain Gardens: 4 total • Detention Ponds: 5 total • Natural Streams • Bio-filtration Swales	Inspect 50 percent of ponds, swales and ditches. Inspect natural stream channels from bridge and road crossing. Maintain vegetation and control weeds using Integrated Pest Management techniques. Update maps of City Structural Stormwater Facilities.	Track facilities inspected and maintained. Estimate quantity of sediment removed from pond, swales and ditches. Annually/ongoing	All facilities were maintained. All facilities were checked off on a form. Sediment was not captured in the form. Staff training will be performed in PY 28 to address this gap in documentation. GIS map updates on City structural stormwater facilities are ongoing.

Stormwater Assets Maintenance Program (SMP) A-I.				
Activity Name	**Description**	**Measurable Goal**	**Tracking Measures**	**Reporting Metrics**
A. Proprietary Devices (grey)	There are 1 Proprietary Devices with multiple filter cartridges (varies 1-12 per device) which are maintained at the frequency recommended by the manufacturer.	Inspect 100% of Proprietary Devices Clean based on Manufacturers threshold recommendation.	Annual inspection, cleaning typically includes Sediment removal from about 1 proprietary devices annually	Crestwood Shop is in progress
B. Spills, Illicit Discharge Investigation, Emergency Response	Investigate and/or assist with spill response, illicit discharge concerns, emergency stormwater controls for other department assistance, natural disaster response (flooding, downed trees, etc.)	Follow City Spill Response and Illicit Discharge Investigation procedures Conduct Spill Response all Department training and procedure review twice during the permit cycle	annually/ongoing	annually/ongoing
C. Illicit Discharge Enforcement	Implement City code sections 13.40.050 and 13.40.110: • City code section 13.40.050 prohibits constructing, using, maintaining, or continuing an illicit connection to the storm drain system. • City code section 13.40.110 discusses enforcement actions for failing to comply with control of non-stormwater discharge. The penalty for a first violation is $250. A penalty of $1,000 may be imposed for each subsequent failure to comply and each day of a continuing violation shall constitute a separate offense. The City may order compliance by written notice that includes performance of monitoring, analysis, and reporting; elimination of illicit connections or discharges; abatement or remediation; payment of fines; and implementation of source control or treatment BMPs. The public works director may also exercise authority to enforce a construction permit or NPDES permit through a stop work order if necessary.	For identified illicit discharges conduct appropriate enforcement actions.	Track number, location and resolution of enforcement actions.	No illicit discharges enforcements this permit year.
D. Illicit Discharge Field Screening Procedures	Conduct dry weather inspections of accessible outfalls following the procedure in the Stormwater Operation and Maintenance (O&M) Manual to search for, detect, and prevent illegal dumping of pollutants and illicit connections (including connections from sanitary sewers and commercial and/or industrial wastewater sewers) to the storm sewer system. Any dry weather flows identified will be reported to the public works department. Annually update maps as necessary to indicate field screening locations.	Inspect accessible outfalls annually. Maintain maps of outfall inspection locations.	Track number and percent of outfalls inspected.	The City of Fairview has reviewed its outfall inventory and identified a total of 38 outfalls; 8 of which are categorized as high priority outfalls. Inspected 4 out of 38 outfalls (11%) this PY 28. There was a focus on getting a dead tree in front of an outfall taken out. This tree cut-down occurred in PY 28 Records are maintained in paper and elctronic form. The City will continue to update its GIS map as needed.
E. Illicit Discharge Investigation Procedures	Implement follow-up actions on a prioritized basis when problems are reported to the public works department. Follow up actions may include sampling for pH, dissolved oxygen, temperature, conductivity, ammonia, and total chlorine. If elevated results or poor water quality are detected, additional samples could be collected for lab analysis. If screening results indicate a potential problem, staff will conduct upstream investigations. The City will revise and document standard operating procedures to address new permit requirements and to document and update the details of the illicit discharge field screening and investigation procedures by June 30, 2012.	Annually review and update Illicit Discharge and Investigation Procedures related to mapping, enforcement response and pollutant parameter action levels. Respond to illicit discharges within 5 days of source identification..	Track number and type of problems reported, and track problem resolutions. Track status of revisions to procedures.	1. 22165 NE Failing Street Tile cutting debris was found washing down from driveway and into catch basin. Homeowner was instructed to stop cutting tiles on driveway. He stopped and debris was cleaned off. No follow up was required 2. White foggy substance in Fairview Creek A concerened resident informed City of a white milky substance on surface of creek. Photos and samples were takenl Columbia Laboratory provided testing and results showed there was no danger found. This instance never occurred again.

Stormwater Assets Maintenance Program (SMP) A-I.

Activity Name	Description	Measurable Goal	Tracking Measures	Reporting Metrics
F. Spill Prevention	**Wellhead Protection Program.** The wellhead protection program serves to prevent spills and illegal dumping. The City will work to maintain its existing agreement with the City of Gresham for wellhead inspection in the Columbia South Shore Well Field Wellhead Protection Area and continue to implement wellhead protection throughout Fairview for the protection of groundwater. This program is included here because of its residual benefits to stormwater. **Wellhead Protection - Intergovernmental Agreement.** The City of Gresham and the City of Portland entered into an intergovernmental agreement for the Implementation of the Columbia South Shore Well Field Wellhead Protection Program in 2003 (City of Gresham contract number 1609). This agreement provides protection of the Columbia South Shore Well Field Wellhead Protection Area lying within Gresham and Fairview from contamination by hazardous substances generated at industrial and commercial facilities.	Coordinate with the City of Gresham to conduct inspections once during the permit term of all businesses with regulated quantities of hazardous materials in the well field.	Track the number of inspections conducted.	City of Fairview encompasses and area of 3.5 square miles and is located in the Columbia South Shore Wellfield Protection Area. City of Fairview maintains the existing Intergovernmental Agreement with the City of Gresham established in 2003 for inspection of the regulated and monitored industrial/commercial facilities in the Columbia South Shore Wellfield Protection Program, (Zone 1). Clay Walker inspected Fairview businesses this year. He has identified at least, 20 businesses to add to his list this permit year. "The Columbia South Shore Well Field Protection Program Committee meets quarterly to discuss any changes to code provisions and updates of the Wellhead Protection Program Reference Manual."
	Fairview has adopted Ordinance #12-2002 to protect the Columbia South Shore Well Field Wellhead Protection Area from contamination by hazardous substances by establishing an inspection and enforcement program governing the utilization, storage and transportation of hazardous materials in Fairview's portion of the Columbia South Shore Well Field Wellhead Protection Area. A wellhead inspection is performed at commercial and industrial facilities by the City of Gresham. The entire city, except for a residential area, high school and park, is included in the wellhead protection program. Fairview, Gresham and Portland Staff meet at least annually to discuss any changes to code provisions and any rules promulgated thereunder by either party. Wellhead Protection - City Code and Reference Manual.			
	Wellhead protection is discussed in City code chapter 16.10. A wellhead protection program reference manual has been developed that establishes the wellhead protection boundaries. The code also includes requirements for reporting, standards, and inspections related to the storage, handling, use and transportation of hazardous materials; penalties for violations and enforcement actions; compliance requirements; building and site permit review and approval requirements; and inspection fees.			
G. Spill Clean-up	Maintain agreement with the City of Gresham Fire Department for clean-up after structural fires and vehicular accidents to prevent pollutants and debris from being washed into the storm drain system. When there is a hazardous spill or a spill of any other substance that: • Is hazardous in any quantity • Is non-hazardous and greater than 42 gallons on the ground • Or is any quantity that has entered a waterway or a dry well. The City of Gresham Fire Department staff notifies the Oregon Emergency Response System (OERS). OERS then notifies the Oregon Department of Environmental Quality (DEQ) and other state and local agencies that may be affected. The responsible party, if identified, is required to contact an environmental clean-up company and pay for clean-up costs. Examples could include spillage of a 55-gallon-drum of restaurant grease or sanitary sewer overflows on private property, resulting in or having the risk of resulting in, discharges to the public stormwater system. DEQ remains the enforcement authority in these cases. DEQ may choose to enforce against the responsible party under the following conditions: 1) the party has acted maliciously; 2) the party is a repeat offender; or 3) the party has failed to report the incident to DEQ.	Maintain agreement with City of Gresham Fire Department. Investigate spills and provide emergency containment and clean-up as necessary.	Track spill locations, type of materials and response activities.	1. Chevron Gast Station: 1605 NE 223rd Ave Fairview, OR 97024 October 20, 2023: There was a minor fuel spill caused from a pump's nozzle in Chevron that had maintenance issues. Fairview was notified by Gresham and by then, Clay was already taking care of it. Clay sent an email the next day confirming the maintenance issue had been addressed and spill was cleaned up.
	Non-Hazardous Substances Public Works staff will investigate and provide emergency containment and clean-up as necessary. If the responsible party can be identified, he or she is directed to provide containment and site clean-up. If the spill is an imminent threat to waters of the state, the City reserves the right to provide clean-up and bill the responsible party for the work. The responsible party will be invoiced for any response and clean-up provided by the City. Examples include spills or dumping of paint, auto fluids, carpet cleaning wastes or concrete, etc. into catch basins or onto the street. In non-emergency situations, such as dumping of debris on private property near a stream bank, Public Works staff will notify the responsible party, verbally and in writing, and specify a timeframe for clean-up. Staff will refer the incident to Code Enforcement if the responsible party does not respond within the specified time frame. Code enforcement has the authority to issue Abatement Procedures, Violations or Civil Actions.			
	Releases from Traffic Accidents If there is a spill of automotive fluids resulting from a traffic accident, the Gresham Fire Department will spread an absorbent compound (usually clay) and specialized absorbent pads on automotive fluids. Buckets are placed underneath dripping fluids. The road is swept and cleaned and, when necessary, additional protection is placed around the catch basins. Large leaking spills from commercial vehicles or semi-trucks are captured using a children's plastic pool. From a legal standpoint, the generator of the spill is responsible; therefore the waste materials are bagged and placed inside the wrecked vehicle or given to the tow truck driver for disposal. The City will perform the clean-up or utilize private clean-up contractors in order to continue the spill response program, when no responsible party can be identified.			

Activity Name	Description	Measurable Goal	Tracking Measures	Reporting Metrics
H. Construction Site Inspections	The City currently reviews plans and inspects construction sites required to meet the City's erosion control standards using the following procedures: 1. Visit every site over 1 acre after the first significant rainfall event and periodically thereafter. If time is limited, the City prioritizes inspections by visiting problem sites first, then visiting facilities that would have the highest environmental effect if the erosion control failed.	Inspect all construction sites required to meet City erosion control standards. Make the Erosion Prevention & Sediment Control (EPSC) manual available online. Annually review code provisions.	Track the number of sites that were permitted and inspected. Report the number and type of enforcement actions.	A total of 19 sites were required to meet erosion control standards There were 14 enforcements made during the construction inspections out of +40 inspections. They include re-establishing downed sediment fence, sweeping dirt tracking, unclogging catch basins and covering bare soil surfaces. Sites with active 1200-C Permits were inspected following 1/2" of precipitation. The municipal code is reviewed for complaince with stormwater requrements on an annual/ongoing basis.
I. Good Housekeeping: O&M Yard	The City has one facility that includes the treatment, storage or transport of municipal waste. This facility is the Corporation Yard Dumpster. Collection of waste from municipal litter receptacles is collected and stored in a dumpster at this site until the City's garbage hauler collects the waste on a weekly basis. The dumpster has a cover on it and runoff from the site is treated by a structural stormwater filter. No additional stormwater management practices are deemed necessary for this site. Update SWPPPs for two municipal facilities and conduct annual inspections.	Annually inspect two municipal facilities (Crestwood and Public Works Shop)	annually/ongoing	annually/ongoing inspections of these two sites were performed this permit year.

Public Land Management (PLM A-E)

Activity Name	Description	Measurable Goal	Tracking Measures	Reporting Metrics
A. Consolidated Stormwater Master Plan (CSMP)	The Consolidated Stormwater Master Plan (CSMP) adopted in 2007 combines infrastructure improvements including retrofit opportunities with federal and state water quality requirements. Projects were developed to address water quantity and quality issues, utilizing hydrologic and hydraulic modeling as well as information from the TMDL regulatory program and the NPDES stormwater discharge permit.	Continue to make progress in the implementation of the CSMP. Update CSMP within one year of permit issuance.	Track the number, type and watershed location of projects that are completed.	The Consolidated Stormwater Master Plan (CSMP), CIP project list was updated by the City of Fairview and Brown and Caldwell in 2016. There were no projects related to the Consolidated SW Master Plan (CSMP) designed/constructed this PY 28
B. Integrated Pest Management	The City encourages use of the Portland Parks and Recreation Pest Management Guide. This guide emphasizes controlling pests that are harmful to the health or aesthetic value of park plantings in a manner that is cost-effective, safe, and environmentally responsible. It is an approach that uses multi-faceted strategies that minimize negative impacts on the environment and on human health. The controls used in this program include manual, mechanical, cultural, biological and chemical methods. Often a combination of methods is used. Examples of Integrated Pest Management include: • Timing of chemical applications to avoid runoff. • Mowing high grass and brush to reduce weed seed crops in rough areas. • Pruning of trees and shrubs to increase air circulation to reduce susceptibility to disease and insect problems. • Appropriate fertilizing to encourage plant health and resistance to pests (i.e., weeds, insects and disease). • Using plants with natural resistance to pests. • Combining turf aeration and over-seeding along with any application of broadleaf weed control to eliminate the cause of the problem, and therefore the need for repeated applications.		Track City planting projects that incorporate native plants.	There was no planting projects performed this year. Well 10 project coming down the pipe line (1 year) includes de-weeding Fairview creek's bank and planting scope of work.
C. Chemical Applicator Licensing	Maintain staff certification in public pesticide application and follow Oregon Department of Agriculture (ODA) requirements related to herbicide application.	All chemical applications will be supervised by an ODA Certified Applicator.	N/A	3 City employees have Chemical applicator licensing.
D. Native Vegetation	Encourage the use of native vegetation in riparian areas on private and public property to reduce the need for fertilizers, pesticides, and herbicides. Planting and landscape policies for riparian buffer areas encourage use of vegetation (indigenous or imported) that is self-sustainable without the need for pesticides or herbicides. Riparian buffer permits are issued for alterations to the landscape within 50 feet of Fairview Creek, Fairview Lake, the Columbia Slough and their tributaries (City code chapter 19.106).	Review planting plans associated with riparian buffer permits.	Track number of riparian buffer permits.	2 riparian buffer and 2 dock permits were reviewed in FY 2022-2023.
E. Design Standards for Public Projects	Follow the Standard Specifications for Public Works Construction which requires treatment of stormwater runoff through the use of BMPs. Maintain database of BMPs that are implemented.	Ensure that public works stormwater related projects address treatment of runoff as appropriate.	Number and type of public stormwater quality BMPs built.	No public stormwater quality facilities were built this permit year.

Pollution Prevention from City Activities (PPCA A-I)				
Activity Name	**Description**	**Measurable Goal**	**Tracking Measures**	**Reporting Metrics**
A. O&M for Public Roads, bridges: sweeping	The City contracts with Multnomah County for street sweeping (approximately 6 times per year). The frequency is based on weather conditions, road conditions and funding.	Maintain contract with Multnomah County.	Track frequency of sweepings.	Multnomah County conducted a total of 14 street sweepings this PY 28. Please see details above, Right of Way operation and maintenance. April: 2 January: 2 March: 3 October: 2 November: 2 August: 3
B. O&M for Public Roads, bridges: deicing	Sand and gravel are applied to roadway surfaces to assist with traction during inclement weather. The sand is removed and recycled as soon as possible after the snow or ice event. Yard debris is picked up from residents weekly by the City's solid waste provider. The Winter Road Operating Plan is available on the City's website.	As weather permits, remove gravel when it is no longer needed.	Track processes conducted for sand and gravel removal.	8-12 yards of sand/gravel was applied to 15 County/City intersections only. Only snow plows took place along streets. Once weather permitted, County sweepers cleared intersections free of sand/gravel
C. Right of Way – O&M	The City contracts with Multnomah County for road maintenance that includes roadside mowing, brushing and pavement maintenance. The maintenance program is substantially similar to, and at least as protective as, the ODOT Routine Road Maintenance program approved under the current 4(d) limit.	Maintain contract with Multnomah County for road maintenance.	N/A	City of Fairview maintains an IGA with Multnomah County for road maintenance activities. Road maintenance activities performed at county roads this PY 28, are as follows: • Catch basins cleaning - two times: September 17, 19, 24. • Roadside mowing - As needed • Route sweeping - 14 times • Misc. sweeping (snow gravel pick up) • Crack Sealing Pavement Preventive Maintenance - None this PY 28. County did repair some potholes in Fairview. • Pavement Marking Restoration - A 2 done this PY 28
D. Water Line Flushing	The City periodically flushes all public water lines to ensure the reliability and quality of the domestic water system. To minimize impacts to the storm system, discharges are dechlorinated with the use of ascorbic acid (vitamin C). The flushing crew periodically tests the chlorine levels of the discharge prior to entering the storm system.	Dechlorinate waterline flushing with vitamin C.	NA	All lines flushed according to procedures. No chlorine detected.
E. Sanitary Sewer System Program	Limit wastewater infiltration through the operation, maintenance and construction of the sanitary sewer infrastructure based on existing conditions and projected sanitary flows.	Respond to pump station failures. Perform cleaning of the problem areas of the City's sanitary sewer system. Construct pipe restoration projects to replace defective pipe and reduce inflow and infiltration.	Track identified sanitary problems and resolutions related to the storm system each year.	Blue Lake sewer pump station had 1 of 2 pumps fail but no spill/leaks occurred since 2nd backup sewer pump was working. The failing sewer pump was replaced with new pump.
F. Municipal vehicle monitoring and maintenance	Ensure that materials from municipal vehicles do not leak, spill, or otherwise release contaminants onto roadways or open spaces where they may be washed into storm drains or waterways. Municipal vehicles are inspected by the driver during loading and unloading. If any leaks are observed between the regular maintenance the vehicles are repaired immediately.	Maintain vehicles on a 6-month schedule.	Track status of municipal vehicle maintenance.	All City fleet vehicles (Public Works and Administration) were regularly miantained and serviced as scheduled (every 6 months) with auto service providers. Vehicles maintenace had no issues.
G. O&M Plan	Use the O&M Plan as a guide for designing and maintaining public storm facilities in order to maximize water quality benefits while maintaining flood capacity. The O&M Plan is intended to help locate and eliminate pollutants and provides a framework for maintaining field inspections records.	Implement the procedures in the O&M Plan. Review the O&M Plan by November 1, 2013, and update as necessary to maximize water quality benefits while maintaining flood capacity.	Track annual changes made to the O&M Plan	Changes to the O&M plan are ongoing.
H. Litter Receptacles	Provide, collect, and maintain litter receptacles in strategic public areas and during major public events to provide disposal of pet waste bags and prevent trash from entering the stormwater system.	Maintain at least one litter receptacle at all public parks greater than 1 acre. Provide collection a minimum of once per week.	Track number of litter receptacles.	40 receptacles are mantained/providedcollection at least one day of every week.
I. Staff Education and Training	Conduct training for new employees and contract employees on stormwater requirements and train existing employees when there is a significant update to the documents used by the City that regulates stormwater pollution control activities.	Provide annual training to personnel involved in stormwater management.	Track personnel receiving training annually and document the trainings received.	There was a training dated for month of June but due to scheduling conflict it was rescheduled a few times and ultimately landed in July. This means that there was no staff training for this permit year. In the future, staff training will occur right after new years as to avoid Winter workload and avoid inclement weather impact to staff training schedule.

Public Reporting, Engagement, Outreach & Behavior Change (PREOB A-E)				
Activity Name	**Description**	**Measurable Goal**	**Tracking Measures**	**Reporting Metrics**
A. Report Illegal Dumping and Illegal Connections	Continue to facilitate efforts by the public to report illegal dumping, illicit connections, and other incidents. Implement public reporting program as described in the Stormwater Operation and Maintenance (O&M) Manual.	Respond to reports and/or complaints from citizens regarding observed water quality problems within 24hrs or the next business day if report is made during the weekend.	Track the number of reports/complaints received, and the follow-up actions conducted (including the timing of the follow-up action).	No reports/complaints received this year.
B. Illegal Dumping and Illegal Connections, Public Education	Educate the public about the harmful effects of dumping oil, antifreeze, pesticides, paints, solvents, and other potentially harmful chemicals into storm sewers or drainage channels.	Support recycling and disposal programs; programs that provide convenient means to dispose of materials, existing solid waste management programs. Educate the public regarding the stormwater pollution that results from dumping and illegal connections.	Track the number of public recycling and disposal programs conducted annually.	The Fairview Point contains outreach articles educating the public about harmful effects of dumping hazardous materials and waste into storm sewers or drainage channels as well as public recycling and disposal information. The City's website posted contact information as well about reporting illegal dumping and illegal connections (BMP 4.3). Staff also track public complaints, reports, and inquiries regarding illegal dumping, connections. There is a Fairview website page that contains informational links in regards to proper electronics, hazardous material, and appropiate sorting disposal. There were 7 news letter articles published during PY 28 about educational outreach on healthy environment.
C. City outreach	The City uses a variety of communication channels to reach its residents. Examples include its website, print newsletter, social media, earned media etc. Current City public education programs that are related to stormwater include educational programs on stormwater quality and the use of nonpolluting alternative garden products, including low-volume uses of pesticides, herbicides, and fertilizers (e.g., household uses).	Publish stormwater related articles in the City newsletter. Support local education programs.	Track newsletter articles produced annually. Track activities conducted to support local education programs.	Educational Outreach Articles: The City of Fairview utilizes the local monthly newsletter "Fairview Point" to provide educational materials related to stormwater. Applicable articles are as follows: 1. Fairview on the Green 2. Prevent Clogging of Catch Basins Local Outreach Effort: City of Fairview Public Works staff maintained a booth at the "Fairview On The Green" event during the month of September. The booth displayed Groundwater/Aquifers, Rainfall/Water Cycle and Surface Water Models and distributed brochures on stormwater education, healthy streams, low impact development programs, use of pesticides, natural lawn care/gardening techniques, erosion control best management practices, water conservation kits and other stormwater related educational subjects. City of Fairview is currently participating in the Storm drain Cleaning Assistance Program (SCAP) (schools, apartments, industrial/commercial facilities) and the Backyard Habitat Program hosted by the Audubon Society through the City of Gresham. Other agencies that are affiliated with this program are: City of Wood Village and City of Troutdale Large scale public education campaigns: • City of Fairview participated in Public Service Announcement (Do the right thing campaign through an IGA with the City of Gresham) with KOIN 6 TV for broadcast to provide public education services on stormwater quality program.
D. Provide for Public Participation with the annual report, SWMP and Benchmark Submittals	Co-permittees must submit an annual report for the portion applicable to its jurisdiction by November 1 of each year. SWMP revisions and pollutant load reduction benchmarks are required for submittal to DEQ at the permit renewal submittal (180 days prior to permit expiration). Prior to submittal of these items, the City will provide the public with an opportunity to comment on the annual report, revisions to the SWMP and proposed pollutant load reduction benchmarks. The documents will be made available on the City's website or through web links. Comments on the documents will be collected and considered and a response to comments will be provided.	Provide for public participation with the annual report, SWMP and pollutant load reduction benchmarks prior to the permit renewal application deadline.	Annually by November 1	The City will post the report once the monitoring report is compiled with this matrix for 15 business days.

E. Participate in a Public Education Effectiveness Evaluation	By November 1, 2014, the City of Fairview will coordinate with other local, Phase I jurisdictions to provide information related to an effectiveness evaluation. The effectiveness evaluation information will focus on assessing changes in targeted behaviors and will allow for additional information that can be used in adaptive management of the City's education and outreach strategy. This is where effective evaluation reports will be found as they are submitted.	Coordinate with other local jurisdictions in providing/compiling information regarding a public education effectiveness evaluation by November 1, 2014.	Ongoing	City of Fairview submitted "Public Education Effectiveness Evaluation" report (Schedule A.4, NPDES Permit Term 2010-2015) to DEQ on November 1, 2015.

Control Impacts from Development and Business Activities (CIDBA A-I)				
Activity Name	**Description**	**Measurable Goal**	**Tracking Measures**	**Reporting Metrics**
A. Stormwater Management Manual (SWMM)	This manual contains the regulatory development thresholds that necessitate stormwater controls, the prioritization of green infrastructure, the design standards, plan review process, and long term maintenance requirements.	Review SWMM at least once within the permit cycle. Update, if necessary	Goal for review FY23-24	Ongoing review
B. Private Water Quality Facilities Inspection and Maintenance	Require plans conforming to the requirements of City of Fairview Standard Specifications for Public Works Construction and City of Portland Stormwater Management Manual at the time of permitting for stormwater facilities related to new private development and redevelopment/retrofitting. Include recording of operations and maintenance plans for stormwater quality facilities.	Ensure new private stormwater facility plans conform to City requirements. Inspect new facilities for conformance to approved O&M plans. Develop a private facility maintenance Standard Operating Procedure within one year of permit issuance.	Track number of inspections conducted and inspection results.	There were three site inspections performed with the following results below: **Amazon:** City had no way to get a hold of anyone working in this building. Ongoing internal investigation is taking place in order to obtain a contact for O&M inspections going forward. **All Storage:** Obtained document showing maintenance of the storm facility. **Oregon St. Duplex:** Final stormwater facility was accepted. She will be recording O&M documents with the County.
C. Erosion Control Activities	Ordinance 3-1993 adopts an erosion control plan. The ordinance includes an Erosion Control Technical Guidance Handbook (Technical Guidance) that describes regulations, standards and provisions for erosion control as well as fees and penalties for violation. The City enforces the erosion control requirements through a permitting process required for sites disturbing 500 ft^2 or more as discussed under the BMP, Development Review. The Technical Guidance prescribes the following four steps to consider in planning for erosion control: Step 1: Identify Site Characteristics Step 2: Lay Out Preconstruction Plan and Proposed Base Measure Step 3: Measures During Construction Step 4: Post Construction Measures The Technical Guidance also has requirements for single-family homes and duplexes on existing lots of record, private developments construction, private construction in public rights-of-way, public works construction, erosion control measures, inspections and enforcements, and penalties. Non-stormwater wastes on construction sites are also addressed through the City's nuisance ordinance in Chapter 8 of the municipal code.	Inform all construction site owners that have 1 acre or more of disturbed land that they are required to obtain a 1200-C permit from DEQ. Projects that disturb more than 500 ft^2 are required to obtain a City erosion control permit. Review development sites required to meet City erosion control requirements.	Track the number of erosion control permits issued annually.	A total of zero (0) 1200-C Construction General NPDES Stormwater permits were issued by DEQ during PY 28 for sites disturbing more than 1 acre. A toal of four (4) erosion and sediment control permits were issued for sites disturbing less than 1 acre or not qualifying for 1200C requirements.
D. Erosion Control Program Training	The Erosion Prevention & Sediment Control Technical Guidance describes regulations, standards and provisions for erosion control as well as fees and penalties for violation.	Provide a copy of the Technical Guidance to all developers and contractors.	N/A	Erosion Prevention and Sediment Control (EPSC) manuals are made available with the erosion control permit applications during the planning development review process.
E. Development Review for Private Projects	Implement and enforce regulations which give legal authority to: 1) require site-drainage designs and systems which address water quality; and/or 2) minimize the total volume of runoff and the peak rate of runoff, where local conditions permit. The City implements these regulations through its Community Development Department and Public Works Department. New development and redevelopment projects are reviewed for conformance to the following existing City regulations: • Fairview Comprehensive Plan, June 2004 – provides the guiding direction to protect the natural environment and ensure that long-term growth does not adversely affect the natural resources. • Community Development Department–Land Use and Building Permits; Land Use Code Enforcement. • Title 19, Development Code–requires accommodation and treatment of stormwater runoff and system installation conforming to standards and specifications adopted by the City. • City of Fairview Standard Specifications for Public Works Construction	Review development plans for conformance with standards. Maintain map of private water quality facilities	Track acreage of new and re-development activities requiring stormwater treatment annually. Track the number and type of private water quality BMPs built.	There were 2 development reviews for private stormwater management facilities and no development reviews for public stormwater management facilities in PY 28. Private Stormwater Managmenet Facilities: 1. Townsend Cold Storage (10.12 Acres): 5 Swales, 1 Undergrnd.Detention 2. Vista Villa- (2.88 Acres)-1 Stormwater Detention Facility

Control Impacts from Development and Business Activities (CIDBA A-I)				
Activity Name	**Description**	**Measurable Goal**	**Tracking Measures**	**Reporting Metrics**
F. Review Applicable Code and Development Standards related to Stormwater Management	Review and the City's current stormwater treatment standards for compliance with new MS4 NPDES permit language by January 1, 2014. Update the City's post-construction stormwater design standards and code language. Document the City's post-construction inspection and enforcement response procedures by January 1, 2014	Update the municipal code, design standards and enforcement procedures to eliminate barriers to LID and to implement stormwater management requirements.	Track progress related to the review of the City's code and development standards per provisions in the MS4 NPDES permit.	This requirement has been completed. The City continues to review and update its code and development standards as needed to meet the requirements of the permit.
G. Screen Industries/Busi-nesses and Track NPDES Stormwater Permits	Annually, the City will review their business license inventory to determine whether any new facilities would be subject to an industrial stormwater NPDES permit. This determination will occur based on a review of the applicable SIC codes related to the 1200-series NPDES permit. If a facility is identified that would be subject to an industrial stormwater NPDES permit, the facility and DEQ will be notified within 30 days. During industrial and commercial inspections staff will obtain a copy of the facility's permit or work with the facility to either obtain a permit, or eliminate the potential for contact of pollutants with stormwater, thereby eliminating the need for a permit. In cases where discharges appear contaminated, the City will send a copy of the inspection report to DEQ.	Annually notify DEQ of any existing or new industrial facilities within the City's jurisdiction that may potentially be subject to an industrial stormwater NPDES permit.	Track number and type of new facilities identified as needing permits.	Screening process of applicable Industrial/Commercial SIC codes reflecting the 1200-series NPDES permit is being conducted during pre-application review process of land use permit. There were no new developments requiring 1200-Z permits during this PY 28. Fairview will follow up with DEQ on few businesses on DEQ online showing no results for 1200z permit. Results will be in the next permit year.
H. Industrial and Commercial Facility Inspections	Implement the City's Industrial and Commercial Facility Inspection procedure that is included in the Stormwater Operation and Maintenance Manual to control the discharge of pollutants in stormwater from industrial and commercial facilities to the municipal separate storm sewer system.	Spend 40 hours implementing commercial and industrial inspection procedures. Review and/or inspect all applicable facilities once during the permit term.	Track number of facility inspections and follow-up.	The City inspected four (4) regulated industrial/commercial facilities during this PY 28. Inspection procedures were in conformance and compliance with the City of Fairview's Stormwater Operation and Maintenance Manual and the Columbia South Shore Wellfield Protection Program Reference Manual. A total of 21 inspection hours (pre-documentation, inspection / photos, final documentation and follow up) were spent this PY 28. The City will be looking more into finding a contact for Amazon, no one answered my call at the site.
I. Retrofit/Hydromodification Assessment Update	City will provide an assessment of how the reports previously provided have been considered, updated, or implemented, remaining gaps of knowledge, if applicable, new goals, tools, priorities for future improvement. Submit report as Appendix to Annual Report.	Provide DEQ an assessment with outcomes related to the creation of the original reports.	Third year of the permit term (FY 22-23)	Please see attached Appendix A.

City of Fairview

APPENDIX A

City of Fairview
1300 NE Village Street
Fairview, Oregon 97024

Oregon Department of Environmental Quality
Stormwater Program
700 NE Multnomah St., Suite 600
Portland, OR 97232

Please refer to the executive summary of the attached Final Report: Fairview Creek Stormwater Master Plan Addendum dated April 2019. The City of Fairview sees no need to update the report currently and abides to it.

Regards,

Miguel Sanchez | *Civil Engineering Technician*
City of Fairview
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C: 503-674-6324

Executive Summary

Understanding existing stormwater infrastructure and watershed hydrology is a critical component to stormwater master planning. Hydraulic-hydrologic models provide an effective way to quantify the performance of a watershed and storm system. As a planning tool, one-dimensional modeling provides information on sewer capacity, velocities, and the presence of flooding. This information can be used by the City to identify and prioritize stormwater improvements, anticipate future infrastructure improvement costs, and increase public safety.

This report presents the methodology used to create and calibrate hydraulic-hydrologic models within the City of Fairview's city limits. A 1D hydraulic model was created to represent Fairview and No-Name Creek watersheds.

Specifically, the 1D model will be used to identify capital improvement projects.

The project entails characterizing Fairview's watersheds, which include Fairview Creek and No-Name Creek. This was completed by delineating basins for all areas within the City of Fairview. A total area of 1,183 acres was delineated and incorporated into the model. Boundary conditions were also established that considered additional acreage upstream of Fairview's city limits. The boundary conditions contribute flow to the modeled area. Additionally, hydrologic infiltration parameters were determined.

An assessment of the City's stormwater GIS data was reviewed for completeness and used in the development of the model. 477 nodes and 463 links were used to represent the City of Fairview storm system. The hydraulic model was calibrated and verified using data collected from 1 storm event that occurred February 28th, 2018.

A lack of historical gauged stream data for Fairview Creek and No-Name Creek within the study area limited available calibration parameters for the system. These limitations restricted available calibration storm events to the timeframe between February and May 2018. A stream gauge managed by U.S. Geological Survey (USGS) on Fairview Creek at NE Glisan Street (USGS 14211814) with a record starting in May 1992, allowed for the capture of a 25-year equivalent gauged storm at the upstream boundary of the study area. A low-intensity storm measured on February 28, 2018 was used to evaluate hydraulic/hydrologic accuracy within the model, and the 25-year equivalent storm measured December 7, 2015 was used to calibrate the upstream boundary condition at NE Glisan Street.

This model was used to conduct a full master plan evaluation of the existing Fairview Creek and No-Name Creek storm system in order to identify required capital improvement projects to meet the public's needs, according to the City's design standards. Additionally, once the existing system deficiencies were defined, the model was expanded to represent future build-out within the City of Fairview.

This report is organized into five sections. Section 1 provides an overview of the purpose for the 1D modeling, area modeled, and general description of how a 1D model is developed. Section 2 provides a description of the variables and parameters used to develop the model. Section 3 provides a description of the model calibration process and model results. Section 4 describes the conveyance evaluation criteria, known problem areas, model results and deficiencies. Section 5 describes the capital improvement project (CIP) development, design, cost estimates, and table that describes and scores CIP projects, then lists those projects in order of prioritization and ranking.

ATTACHMENT A

City of Fairview

BUDGET REPORT - CITY MANAGER

Account Summary

For Fiscal: 2021-2022 Period Ending: 06/30/2022

		Original Total Budget	Current Total Budget	Period Activity	Fiscal Activity	Variance Favorable (Unfavorable)	Percent Used
Fund: 124 - STREET FUND							
Department: 00 - NONDEPARTMENTAL							
State LB: 01 - PERSONNEL SERVICES							
124-00-6110900	STAFF- STREET	214,361.00	214,361.00	11,627.67	147,275.97	67,085.03	68.70 %
124-00-6110905	ARPA BONUS	0.00	0.00	0.00	0.00	0.00	0.00 %
124-00-6120100	TEMPORARY HELP	16,062.00	16,062.00	1,268.40	11,966.82	4,095.18	74.50 %
124-00-6130100	OVERTIME HOURS	1,401.00	1,401.00	382.94	3,230.06	-1,829.06	230.55 %
124-00-6130200	ON CALL PAY	2,062.00	2,062.00	143.25	1,994.25	67.75	96.71 %
124-00-6200200	CELL PHONE ALLOWANCE	639.00	639.00	45.03	597.82	41.18	93.56 %
124-00-6200300	EMP ASSIST PROGRAM	451.00	451.00	7.68	109.67	341.33	24.32 %
124-00-6200400	LONGEVITY PAY	1,936.00	1,936.00	79.50	941.50	994.50	48.63 %
124-00-6210200	MEDICAL INSURANCE	38,710.00	38,710.00	2,715.32	35,443.69	3,266.31	91.56 %
124-00-6210300	LIFE / AD&D INSURANCE	255.00	255.00	12.54	167.07	87.93	65.52 %
124-00-6210400	LONG TERM DISAB. INS	630.00	630.00	27.72	399.82	230.18	63.46 %
124-00-6210500	WORKERS COMP INSURANCE	11,000.00	11,000.00	0.00	4,822.25	6,177.75	43.84 %
124-00-6220100	SOCIAL SECURITY (FICA)	13,612.00	13,612.00	1,008.81	12,671.09	940.91	93.09 %
124-00-6220200	TRI-MET TAX	1,387.00	1,387.00	104.64	1,305.41	81.59	94.12 %
124-00-6220300	WBF ASSESSMENT	76.00	76.00	4.31	51.63	24.37	67.93 %
124-00-6220500	PAID LEAVE OREGON	0.00	0.00	0.00	0.00	0.00	0.00 %
124-00-6230100	PERS/OPSRP- EMPR. PD	38,078.00	38,078.00	2,359.33	33,334.45	4,743.55	87.54 %
124-00-6230300	DEFERRED COMP-EMPR. PD	0.00	0.00	36.25	122.36	-122.36	0.00 %
124-00-6250100	UNEMP. INSURANCE	178.00	178.00	13.14	164.88	13.12	92.63 %
124-00-6290100	VACATION BUY-OUT	1,534.00	1,534.00	0.00	305.86	1,228.14	19.94 %
124-00-6290200	ACCRUED VACATION PD AT TERM	0.00	0.00	0.00	5,054.31	-5,054.31	0.00 %
124-00-6290300	ACCRUED COMP PD AT TERM	0.00	0.00	0.00	97.38	-97.38	0.00 %
124-00-6290400	ACCRUED FH PD AT TERM	0.00	0.00	0.00	14.13	-14.13	0.00 %
	State LB: 01 - PERSONNEL SERVICES Total:	**342,372.00**	**342,372.00**	**19,836.53**	**260,070.42**	**82,301.58**	**75.96 %**
State LB: 02 - MATERIALS AND SERVICES							
124-00-6295100	EMPLOYEE RECOGNITION	75.00	75.00	0.00	122.24	-47.24	162.99 %
124-00-6295300	UNIFORMS	800.00	800.00	0.00	790.60	9.40	98.83 %
124-00-6300100	CONTRACT SERVICES	16,500.00	16,500.00	5,501.15	7,582.03	8,917.97	45.95 %
124-00-6310100	HR ADMINISTRATION	1,000.00	1,000.00	27.40	93.16	906.84	9.32 %
124-00-6330100	AUDIT & ACCOUNTING	2,800.00	2,800.00	992.95	3,180.45	-380.45	113.59 %
124-00-6330200	LEGAL	4,800.00	4,800.00	1,603.17	6,669.87	-1,869.87	138.96 %
124-00-6330300	ARCHITECTUAL/DESIGN ENGINEERI...	25,000.00	25,000.00	10,638.75	31,548.75	-6,548.75	126.20 %
124-00-6330400	ENGINEERING AND MAPS	2,500.00	2,500.00	97.54	8,743.10	-6,243.10	349.72 %
124-00-6330500	PROPERTY ALARM MONITORING SE...	416.00	416.00	9.00	244.73	171.27	58.83 %
124-00-6340100	IT SERVICES	5,847.00	5,847.00	725.64	5,708.53	138.47	97.63 %
124-00-6340101	IT UPGRADES/HARDWARE	2,016.00	2,016.00	976.45	2,051.18	-35.18	101.75 %
124-00-6340200	WEBSITE MANAGEMENT	259.00	259.00	152.05	941.81	-682.81	363.63 %
124-00-6421100	REFUSE/SHREDDING	125.00	125.00	26.18	105.42	19.58	84.34 %
124-00-6423100	BLDG CLEANING SRVCS	1,915.00	1,915.00	200.28	2,126.07	-211.07	111.02 %
124-00-6430100	VEHICLE REP/MAINT	2,000.00	2,000.00	114.03	953.60	1,046.40	47.68 %
124-00-6430200	BLDG REP/MAINT	1,995.00	1,995.00	401.96	2,715.67	-720.67	136.12 %
124-00-6430300	OFFICE EQUIP REP/MAIN	100.00	100.00	0.00	0.00	100.00	0.00 %
124-00-6430400	EQUIP REPAIR/MAINT	1,200.00	1,200.00	478.42	3,223.86	-2,023.86	268.66 %
124-00-6441100	RENT EXPENSE-TO GF	11,053.00	11,053.00	0.00	11,053.00	0.00	100.00 %
124-00-6442100	EQUIP RENT	4,215.00	4,215.00	1,014.31	3,133.09	1,081.91	74.33 %
124-00-6520100	GENERAL LIAB/PROP INSURANCE	6,000.00	6,000.00	0.00	6,533.62	-533.62	108.89 %
124-00-6520200	CYBER INSURANCE	0.00	0.00	0.00	1,042.43	-1,042.43	0.00 %
124-00-6530200	POSTAGE	655.00	655.00	80.00	1,037.39	-382.39	158.38 %
124-00-6530300	TELEPHONE-CH	1,518.00	1,518.00	311.58	2,171.46	-653.46	143.05 %

		Original Total Budget	Current Total Budget	Period Activity	Fiscal Activity	Variance Favorable (Unfavorable)	Percent Used
124-00-6530301	TELEPHONE- CITY SHOPS	1,040.00	1,040.00	227.69	1,569.74	-529.74	150.94 %
124-00-6530302	ANSWERING SERVICE	0.00	0.00	0.00	0.00	0.00	0.00 %
124-00-6530400	WIRELESS TECHNOLOGY	945.00	945.00	154.28	856.04	88.96	90.59 %
124-00-6540100	PUBLICATIONS	325.00	325.00	0.00	2,598.00	-2,273.00	799.38 %
124-00-6550100	PRINTING	0.00	0.00	760.00	1,624.21	-1,624.21	0.00 %
124-00-6550101	NEWSLETTER	817.00	817.00	64.94	126.05	690.95	15.43 %
124-00-6580100	TRAVEL- MEETINGS/ERRANDS	75.00	75.00	0.00	0.00	75.00	0.00 %
124-00-6590100	BANK FEES	565.00	565.00	44.76	444.83	120.17	78.73 %
124-00-6590200	MERCHANT FEES	900.00	900.00	0.00	1,074.71	-174.71	119.41 %
124-00-6590300	CONVENIENCE FEES/CREDIT CARD	4,100.00	4,100.00	17.05	3,768.89	331.11	91.92 %
124-00-6610100	OFFICE SUPPLIES	800.00	800.00	255.09	933.80	-133.80	116.73 %
124-00-6610200	OPERATING MATERIALS & SUPPLES	25,000.00	25,000.00	4,392.26	10,872.72	14,127.28	43.49 %
124-00-6610300	BLDG SUPP- CITY HALL	550.00	550.00	165.13	567.40	-17.40	103.16 %
124-00-6610400	BLDG SUPP- CITY SHOPS	100.00	100.00	46.18	358.75	-258.75	358.75 %
124-00-6621100	GAS/HEAT- CH	250.00	250.00	25.11	328.05	-78.05	131.22 %
124-00-6621101	GAS/HEAT- CITY SHOPS	545.00	545.00	21.89	349.71	195.29	64.17 %
124-00-6622100	ELECTRICITY-CH	2,500.00	2,500.00	492.01	2,967.03	-467.03	118.68 %
124-00-6622101	ELECTRICITY- CITY SHOPS	600.00	600.00	92.81	549.85	50.15	91.64 %
124-00-6626101	FUEL	3,000.00	3,000.00	612.15	1,519.66	1,480.34	50.66 %
124-00-6630100	MEETING ATTENDANCE	75.00	75.00	0.00	0.00	75.00	0.00 %
124-00-6630200	CONF- MEALS/LODGING	1,000.00	1,000.00	0.00	0.00	1,000.00	0.00 %
124-00-6650100	DUES/SUB/MEMBRSHIP	250.00	250.00	0.00	1,301.72	-1,051.72	520.69 %
124-00-6650200	TRAINING & CONF.	1,000.00	1,000.00	125.00	289.08	710.92	28.91 %
124-00-6665100	SMALL TOOLS/MINOR EQUIP	2,000.00	2,000.00	102.33	363.33	1,636.67	18.17 %
124-00-6690401	STREET MAINT. SERVICES	35,000.00	35,000.00	5,414.60	50,577.03	-15,577.03	144.51 %
124-00-6690405	STREET LIGHT TAXES	0.00	0.00	0.00	2,114.48	-2,114.48	0.00 %
124-00-6690709	GRAFFITI REMOVAL	0.00	0.00	660.00	1,130.00	-1,130.00	0.00 %
	State LB: 02 - MATERIALS AND SERVICES Total:	**174,226.00**	**174,226.00**	**37,024.14**	**188,057.14**	**-13,831.14**	**107.94 %**
State LB: 03 - CAPITAL OUTLAY							
124-00-6730101	STREET IMPROVEMENTS	145,000.00	145,000.00	0.00	52,615.00	92,385.00	36.29 %
124-00-6730102	TRAFFIC CALMING	7,800.00	7,800.00	0.00	0.00	7,800.00	0.00 %
124-00-6730104	FOOT PATHS AND BIKE TRAILS	8,600.00	8,600.00	4,951.00	4,951.00	3,649.00	57.57 %
124-00-6730105	SIDEWALK REPAIR PROGRAM	106,250.00	106,250.00	75,494.55	135,872.80	-29,622.80	127.88 %
124-00-6740100	EQUIPMENT	12,500.00	12,500.00	0.00	0.00	12,500.00	0.00 %
124-00-6740200	BLDG EQUIPMENT- CH	0.00	0.00	0.00	0.00	0.00	0.00 %
124-00-6740400	BUILDING EQUIP FOR CITY SHOP	0.00	0.00	0.00	0.00	0.00	0.00 %
124-00-6740500	OFFICE EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00 %
	State LB: 03 - CAPITAL OUTLAY Total:	**280,150.00**	**280,150.00**	**80,445.55**	**193,438.80**	**86,711.20**	**69.05 %**
State LB: 04 - DEBT SERVICE							
124-00-6791000	ENDING FUND BALANCE	0.00	0.00	0.00	0.00	0.00	0.00 %
	State LB: 04 - DEBT SERVICE Total:	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00 %**
State LB: 05 - TRANSFERS							
124-00-6491123	TRANS TO GRANT FUND	25,000.00	25,000.00	0.00	0.00	25,000.00	0.00 %
124-00-6491608	ER CONTRIBUTION	7,376.00	7,376.00	0.00	7,376.00	0.00	100.00 %
124-00-6491708	TRANS TO FM FR STREET	30,000.00	30,000.00	0.00	30,000.00	0.00	100.00 %
	State LB: 05 - TRANSFERS Total:	**62,376.00**	**62,376.00**	**0.00**	**37,376.00**	**25,000.00**	**59.92 %**
State LB: 06 - CONTINGENCIES							
124-00-6910000	CONTINGENCY	1,318,202.00	1,318,202.00	0.00	0.00	1,318,202.00	0.00 %
	State LB: 06 - CONTINGENCIES Total:	**1,318,202.00**	**1,318,202.00**	**0.00**	**0.00**	**1,318,202.00**	**0.00 %**
State LB: 08 - BEGINNING FUND BALANCE							
124-00-4995000	BEGINNING FUND BALANCE	1,435,436.00	1,435,436.00	0.00	0.00	-1,435,436.00	0.00 %
	State LB: 08 - BEGINNING FUND BALANCE Total:	**1,435,436.00**	**1,435,436.00**	**0.00**	**0.00**	**-1,435,436.00**	**0.00 %**
State LB: 91 - RESOURCES EXCEPT PROPERTY TAXES							
124-00-4322100	RIGHT OF WAY PERMITS	1,300.00	1,300.00	0.00	5,675.00	4,375.00	436.54 %
124-00-4330105	COUNTY SHARED REVENUE	15,460.00	15,460.00	0.00	15,077.16	-382.84	97.52 %
124-00-4330106	STATE SHARED REVENUE-GAS	715,930.00	715,930.00	72,421.02	732,074.67	16,144.67	102.26 %

		Original Total Budget	Current Total Budget	Period Activity	Fiscal Activity	Variance Favorable (Unfavorable)	Percent Used
124-00-4331200	OPER GRT PROC- FED	0.00	0.00	0.00	0.00	0.00	0.00 %
124-00-4334100	GRANT PROCEEDS-STATE	0.00	0.00	0.00	0.00	0.00	0.00 %
124-00-4340100	GENERAL GOVT CHARGES	0.00	0.00	0.00	110.00	110.00	0.00 %
124-00-4361100	INTEREST- LGIP	9,000.00	9,000.00	862.92	9,221.89	221.89	102.47 %
124-00-4361200	INTEREST- INVESTMENTS	0.00	0.00	0.00	0.00	0.00	0.00 %
124-00-4390100	MISC. REVENUE	200.00	200.00	0.00	0.00	-200.00	0.00 %
State LB: 91 - RESOURCES EXCEPT PROPERTY TAXES Total:		**741,890.00**	**741,890.00**	**73,283.94**	**762,158.72**	**20,268.72**	**102.73 %**
Department: 00 - NONDEPARTMENTAL Surplus (Deficit):		**0.00**	**0.00**	**-64,022.28**	**83,216.36**	**83,216.36**	**0.00 %**
Fund: 124 - STREET FUND Surplus (Deficit):		**0.00**	**0.00**	**-64,022.28**	**83,216.36**	**83,216.36**	**0.00 %**
Fund: 213 - STORM WATER FUND							
Department: 00 - NONDEPARTMENTAL							
State LB: 01 - PERSONNEL SERVICES							
213-00-6110900	STAFF-STORM	242,550.00	242,550.00	17,879.01	217,833.80	24,716.20	89.81 %
213-00-6110905	ARPA BONUS	0.00	0.00	0.00	0.00	0.00	0.00 %
213-00-6120100	TEMPORARY HELP	6,687.00	6,687.00	0.00	3,239.94	3,447.06	48.45 %
213-00-6130100	OVERTIME HOURS	2,255.00	2,255.00	316.22	3,589.60	-1,334.60	159.18 %
213-00-6130200	ON CALL PAY	1,110.00	1,110.00	81.90	960.00	150.00	86.49 %
213-00-6200200	CELL PHONE ALLOWANCE	1,026.00	1,026.00	73.38	1,067.82	-41.82	104.08 %
213-00-6200300	EMP ASSIST PROGRAM	651.00	651.00	16.45	238.69	412.31	36.67 %
213-00-6200400	LONGEVITY PAY	2,207.00	2,207.00	118.00	1,546.50	660.50	70.07 %
213-00-6210200	MEDICAL INSURANCE	57,028.00	57,028.00	4,183.82	52,043.46	4,984.54	91.26 %
213-00-6210300	LIFE / AD&D INSURANCE	353.00	353.00	20.41	266.34	86.66	75.45 %
213-00-6210400	LONG TERM DISAB. INS	903.00	903.00	42.59	597.29	305.71	66.15 %
213-00-6210500	WORKERS COMP INSURANCE	3,500.00	3,500.00	0.00	1,406.80	2,093.20	40.19 %
213-00-6220100	SOCIAL SECURITY (FICA)	18,451.00	18,451.00	1,367.82	17,427.36	1,023.64	94.45 %
213-00-6220200	TRI-MET TAX	1,876.00	1,876.00	141.80	1,795.66	80.34	95.72 %
213-00-6220300	WBF ASSESSMENT	99.00	99.00	5.30	64.83	34.17	65.48 %
213-00-6220500	PAID LEAVE OREGON	0.00	0.00	0.00	0.00	0.00	0.00 %
213-00-6230100	PERS/OPSRP-EMPR. PD	53,456.00	53,456.00	3,376.14	47,638.28	5,817.72	89.12 %
213-00-6230300	DEFERRED COMP-EMPR. PD	0.00	0.00	72.49	244.64	-244.64	0.00 %
213-00-6250100	UNEMP. INSURANCE	241.00	241.00	17.94	228.18	12.82	94.68 %
213-00-6290100	VACATION BUY-OUT	2,556.00	2,556.00	0.00	495.18	2,060.82	19.37 %
213-00-6290200	ACCRUED VACATION PD AT TERM	0.00	0.00	0.00	6,505.71	-6,505.71	0.00 %
213-00-6290300	ACCRUED COMP PD AT TERM	0.00	0.00	0.00	326.00	-326.00	0.00 %
213-00-6290400	ACCRUED FH PD AT TERM	0.00	0.00	0.00	50.85	-50.85	0.00 %
State LB: 01 - PERSONNEL SERVICES Total:		**394,949.00**	**394,949.00**	**27,713.27**	**357,566.93**	**37,382.07**	**90.53 %**
State LB: 02 - MATERIALS AND SERVICES							
213-00-6295100	EMPLOYEE RECOGNITION	225.00	225.00	0.00	114.65	110.35	50.96 %
213-00-6295300	UNIFORMS	1,050.00	1,050.00	0.00	581.25	468.75	55.36 %
213-00-6300100	CONTRACT SERVICES	32,890.00	32,890.00	1,855.23	10,569.54	22,320.46	32.14 %
213-00-6300105	LEVEE RECERTIFICATION	21,462.00	21,462.00	0.00	21,461.08	0.92	100.00 %
213-00-6310100	HR ADMINISTRATION	1,000.00	1,000.00	6.85	100.00	900.00	10.00 %
213-00-6330100	AUDIT & ACCOUNTING	4,000.00	4,000.00	1,418.50	4,543.50	-543.50	113.59 %
213-00-6330200	LEGAL	4,500.00	4,500.00	1,019.10	3,125.89	1,374.11	69.46 %
213-00-6330300	ARCHITECTUAL/DESIGN ENGINEERI...	25,000.00	25,000.00	0.00	0.00	25,000.00	0.00 %
213-00-6330400	ENGINEERING AND MAPS	7,500.00	7,500.00	97.53	9,808.62	-2,308.62	130.78 %
213-00-6330500	PROPERTY ALARM MONITORING SE...	595.00	595.00	12.00	343.24	251.76	57.69 %
213-00-6340100	IT SERVICES	8,039.00	8,039.00	997.64	8,750.05	-711.05	108.85 %
213-00-6340101	IT UPGRADES/HARDWARE	2,489.00	2,489.00	1,255.38	2,649.33	-160.33	106.44 %
213-00-6340200	WEBSITE MANAGEMENT	622.00	622.00	152.03	1,264.23	-642.23	203.25 %
213-00-6421100	REFUSE/SHREDDING	125.00	125.00	26.18	105.39	19.61	84.31 %
213-00-6423100	BLDG CLEANING SRVCS	4,085.00	4,085.00	401.09	4,220.31	-135.31	103.31 %
213-00-6430100	VEHICLE REP/MAINT	4,000.00	4,000.00	143.86	807.00	3,193.00	20.18 %
213-00-6430200	BLDG REP/MAINT	4,390.00	4,390.00	756.88	5,175.64	-785.64	117.90 %
213-00-6430300	OFFICE EQUIP REP/MAIN	220.00	220.00	0.00	0.00	220.00	0.00 %
213-00-6430400	EQUIP REPAIR/MAINT	3,000.00	3,000.00	0.00	188.08	2,811.92	6.27 %
213-00-6441100	RENT EXPENSE-TO GF	11,053.00	11,053.00	0.00	11,053.00	0.00	100.00 %

		Original Total Budget	Current Total Budget	Period Activity	Fiscal Activity	Variance Favorable (Unfavorable)	Percent Used
213-00-6442100	EQUIP RENT	1,850.00	1,850.00	521.19	1,650.32	199.68	89.21 %
213-00-6520100	GENERAL LIAB/PROP INSURANCE	8,300.00	8,300.00	0.00	8,722.67	-422.67	105.09 %
213-00-6520200	CYBER INSURANCE	0.00	0.00	0.00	1,391.69	-1,391.69	0.00 %
213-00-6530200	POSTAGE	3,100.00	3,100.00	380.00	4,913.50	-1,813.50	158.50 %
213-00-6530300	TELEPHONE-CH	2,880.00	2,880.00	753.05	3,786.11	-906.11	131.46 %
213-00-6530301	TELEPHONE- CITY SHOPS	1,475.00	1,475.00	322.58	2,225.73	-750.73	150.90 %
213-00-6530302	ANSWERING SERVICE	0.00	0.00	0.00	0.00	0.00	0.00 %
213-00-6530400	WIRELESS TECHNOLOGY	1,335.00	1,335.00	218.58	1,212.69	122.31	90.84 %
213-00-6540100	PUBLICATIONS	200.00	200.00	0.00	0.00	200.00	0.00 %
213-00-6550100	PRINTING	200.00	200.00	0.00	0.00	200.00	0.00 %
213-00-6550101	NEWSLETTER	1,123.00	1,123.00	89.26	173.27	949.73	15.43 %
213-00-6580100	TRAVEL-MEETINGS/ERRANDS	100.00	100.00	0.00	0.00	100.00	0.00 %
213-00-6590100	BANK FEES	810.00	810.00	63.95	635.29	174.71	78.43 %
213-00-6590200	MERCHANT FEES	1,240.00	1,240.00	0.00	1,474.65	-234.65	118.92 %
213-00-6590300	CONVENIENCE FEES/CREDIT CARD	4,500.00	4,500.00	18.60	4,500.78	-0.78	100.02 %
213-00-6610100	OFFICE SUPPLIES	1,000.00	1,000.00	255.03	910.27	89.73	91.03 %
213-00-6610200	OPERATING MATERIALS & SUPPLES	7,250.00	7,250.00	610.44	3,111.11	4,138.89	42.91 %
213-00-6610201	UTIL. NOTIFICATION CTR.	167.00	167.00	0.00	166.66	0.34	99.80 %
213-00-6610300	BLDG SUPP- CITY HALL	925.00	925.00	277.16	1,084.98	-159.98	117.30 %
213-00-6610400	BLDG SUPP- CITY SHOPS	150.00	150.00	65.42	508.21	-358.21	338.81 %
213-00-6621100	GAS/HEAT- CH	405.00	405.00	40.81	533.10	-128.10	131.63 %
213-00-6621101	GAS/HEAT- CITY SHOPS	775.00	775.00	31.01	495.42	279.58	63.93 %
213-00-6622100	ELECTRICITY-CH	2,400.00	2,400.00	484.94	2,685.42	-285.42	111.89 %
213-00-6622101	ELECTRICITY- CITY SHOPS	800.00	800.00	131.49	778.93	21.07	97.37 %
213-00-6626101	FUEL	3,800.00	3,800.00	662.83	1,906.79	1,893.21	50.18 %
213-00-6630100	MEETING ATTENDANCE	100.00	100.00	0.00	0.00	100.00	0.00 %
213-00-6630200	CONF- MEALS/LODGING	1,700.00	1,700.00	0.00	806.64	893.36	47.45 %
213-00-6650100	DUES/SUB/MEMBRSHIP	5,500.00	5,500.00	0.00	1,684.48	3,815.52	30.63 %
213-00-6650200	TRAINING & CONF.	1,800.00	1,800.00	0.00	760.97	1,039.03	42.28 %
213-00-6660100	LICENSES AND PERMITS	2,500.00	2,500.00	2,192.85	2,192.85	307.15	87.71 %
213-00-6665100	SMALL TOOLS/MINOR EQUIP	3,200.00	3,200.00	56.56	56.56	3,143.44	1.77 %
213-00-6690104	WATER TESTING	10,000.00	10,000.00	5,242.11	5,242.11	4,757.89	52.42 %
213-00-6690109	PUBLIC EDUCATION	10,000.00	10,000.00	10,700.00	10,700.00	-700.00	107.00 %
213-00-6690198	INFRASTRUCTURE SYSTEM MAINTE...	55,000.00	55,000.00	3,557.00	16,534.16	38,465.84	30.06 %
213-00-6690199	FRANCHISE FEES	39,500.00	39,500.00	3,632.07	42,250.99	-2,750.99	106.96 %
213-00-6690200	BAD DEBT EXPENSE	250.00	250.00	2,126.51	2,126.51	-1,876.51	850.60 %
213-00-6690406	DRAINAGE DISTRICT TAXES	0.00	0.00	0.00	5,869.67	-5,869.67	0.00 %
	State LB: 02 - MATERIALS AND SERVICES Total:	**310,580.00**	**310,580.00**	**40,575.71**	**215,953.33**	**94,626.67**	**69.53 %**
State LB: 03 - CAPITAL OUTLAY							
213-00-6491607	ER CONTRIBUTION	0.00	0.00	0.00	0.00	0.00	0.00 %
213-00-6730200	STORM WATER SYSTEM IMPROV.	26,528.00	26,528.00	0.00	0.00	26,528.00	0.00 %
213-00-6740100	EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00 %
213-00-6740200	BLDG EQUIPMENT- CH	0.00	0.00	0.00	0.00	0.00	0.00 %
213-00-6740400	BUILDING EQUIP FOR CITY SHOP	0.00	0.00	0.00	0.00	0.00	0.00 %
213-00-6740500	OFFICE EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00 %
	State LB: 03 - CAPITAL OUTLAY Total:	**26,528.00**	**26,528.00**	**0.00**	**0.00**	**26,528.00**	**0.00 %**
State LB: 04 - DEBT SERVICE							
213-00-6470100	DEBT ISSUANCE EXP.	0.00	0.00	0.00	0.00	0.00	0.00 %
213-00-6791000	ENDING FUND BALANCE	0.00	0.00	0.00	0.00	0.00	0.00 %
213-00-6793100	LRC IFA LOAN RESERVE	64,850.00	64,850.00	0.00	0.00	64,850.00	0.00 %
	State LB: 04 - DEBT SERVICE Total:	**64,850.00**	**64,850.00**	**0.00**	**0.00**	**64,850.00**	**0.00 %**
State LB: 05 - TRANSFERS							
213-00-6491100	TRANS TO AEC FUND	0.00	0.00	0.00	0.00	0.00	0.00 %
213-00-6491123	TRANS TO GRANT FUND	50,000.00	50,000.00	0.00	0.00	50,000.00	0.00 %
213-00-6491133	TRANS TO STORMWATER SDC	0.00	0.00	0.00	0.00	0.00	0.00 %
213-00-6491623	TR TO ER FR STW	8,199.00	8,199.00	0.00	8,199.00	0.00	100.00 %

		Original Total Budget	Current Total Budget	Period Activity	Fiscal Activity	Variance Favorable (Unfavorable)	Percent Used
213-00-6491723	TRANS TO FM FR STW	30,000.00	30,000.00	0.00	30,000.00	0.00	100.00 %
	State LB: 05 - TRANSFERS Total:	**88,199.00**	**88,199.00**	**0.00**	**38,199.00**	**50,000.00**	**43.31 %**
State LB: 06 - CONTINGENCIES							
213-00-6910000	CONTINGENCY	96,159.00	96,159.00	0.00	0.00	96,159.00	0.00 %
	State LB: 06 - CONTINGENCIES Total:	**96,159.00**	**96,159.00**	**0.00**	**0.00**	**96,159.00**	**0.00 %**
State LB: 07 - RESERVES AND SPECIAL PAYMENTS							
213-00-6794000	CIP RESERVE	888,517.00	888,517.00	0.00	0.00	888,517.00	0.00 %
	State LB: 07 - RESERVES AND SPECIAL PAYMENTS Total:	**888,517.00**	**888,517.00**	**0.00**	**0.00**	**888,517.00**	**0.00 %**
State LB: 08 - BEGINNING FUND BALANCE							
213-00-4995000	BEGINNING FUND BALANCE	1,193,435.00	1,193,435.00	0.00	0.00	-1,193,435.00	0.00 %
	State LB: 08 - BEGINNING FUND BALANCE Total:	**1,193,435.00**	**1,193,435.00**	**0.00**	**0.00**	**-1,193,435.00**	**0.00 %**
State LB: 91 - RESOURCES EXCEPT PROPERTY TAXES							
213-00-4340100	GENERAL GOVT CHARGES	0.00	0.00	0.00	0.00	0.00	0.00 %
213-00-4342200	REIMB FROM URA	0.00	0.00	0.00	0.00	0.00	0.00 %
213-00-4344400	STORM WATER SERVICE USER FEES	645,547.00	645,547.00	60,534.49	704,183.27	58,636.27	109.08 %
213-00-4344500	EROSION CONTROL	15,000.00	15,000.00	0.00	15,331.80	331.80	102.21 %
213-00-4344600	PENALTIES - UB	5,800.00	5,800.00	254.20	6,230.24	430.24	107.42 %
213-00-4361100	INTEREST- LGIP	10,000.00	10,000.00	673.23	8,207.39	-1,792.61	82.07 %
213-00-4361200	INTEREST- INVESTMENTS	0.00	0.00	0.00	0.00	0.00	0.00 %
213-00-4390100	MISC. REVENUE	0.00	0.00	0.00	0.00	0.00	0.00 %
	State LB: 91 - RESOURCES EXCEPT PROPERTY TAXES Total:	**676,347.00**	**676,347.00**	**61,461.92**	**733,952.70**	**57,605.70**	**108.52 %**
	Department: 00 - NONDEPARTMENTAL Surplus (Deficit):	**0.00**	**0.00**	**-6,827.06**	**122,233.44**	**122,233.44**	**0.00 %**
	Fund: 213 - STORM WATER FUND Surplus (Deficit):	**0.00**	**0.00**	**-6,827.06**	**122,233.44**	**122,233.44**	**0.00 %**
	Report Surplus (Deficit):	**0.00**	**0.00**	**-70,849.34**	**205,449.80**	**205,449.80**	**0.00 %**

Group Summary

State L...	Original Total Budget	Current Total Budget	Period Activity	Fiscal Activity	Variance Favorable (Unfavorable)	Percent Used
Fund: 124 - STREET FUND						
Department: 00 - NONDEPARTMENTAL						
01 - PERSONNEL SERVICES	342,372.00	342,372.00	19,836.53	260,070.42	82,301.58	75.96 %
02 - MATERIALS AND SERVICES	174,226.00	174,226.00	37,024.14	188,057.14	-13,831.14	107.94 %
03 - CAPITAL OUTLAY	280,150.00	280,150.00	80,445.55	193,438.80	86,711.20	69.05 %
04 - DEBT SERVICE	0.00	0.00	0.00	0.00	0.00	0.00 %
05 - TRANSFERS	62,376.00	62,376.00	0.00	37,376.00	25,000.00	59.92 %
06 - CONTINGENCIES	1,318,202.00	1,318,202.00	0.00	0.00	1,318,202.00	0.00 %
08 - BEGINNING FUND BALANCE	1,435,436.00	1,435,436.00	0.00	0.00	-1,435,436.00	0.00 %
91 - RESOURCES EXCEPT PROPERTY TAXES	741,890.00	741,890.00	73,283.94	[illegible]	20,268.72	102.73 %
Department: 00 - NONDEPARTMENTAL Surplus (Deficit):	**0.00**	**0.00**	**-64,022.28**	**83,216.36**	**83,216.36**	**0.00 %**
Fund: 124 - STREET FUND Surplus (Deficit):	**0.00**	**0.00**	**-64,022.28**	**83,216.36**	**83,216.36**	**0.00 %**
Fund: 213 - STORM WATER FUND						
Department: 00 - NONDEPARTMENTAL						
01 - PERSONNEL SERVICES	394,949.00	394,949.00	27,713.27	357,566.93	37,382.07	90.53 %
02 - MATERIALS AND SERVICES	310,580.00	310,580.00	40,575.71	215,953.33	94,626.67	69.53 %
03 - CAPITAL OUTLAY	26,528.00	26,528.00	0.00	0.00	26,528.00	0.00 %
04 - DEBT SERVICE	64,850.00	64,850.00	0.00	0.00	64,850.00	0.00 %
05 - TRANSFERS	88,199.00	88,199.00	0.00	38,199.00	50,000.00	43.31 %
06 - CONTINGENCIES	96,159.00	96,159.00	0.00	0.00	96,159.00	0.00 %
07 - RESERVES AND SPECIAL PAYMENTS	888,517.00	888,517.00	0.00	0.00	888,517.00	0.00 %
08 - BEGINNING FUND BALANCE	1,193,435.00	1,193,435.00	0.00	0.00	-1,193,435.00	0.00 %
91 - RESOURCES EXCEPT PROPERTY TAXES	676,347.00	676,347.00	61,461.92	[illegible]	57,605.70	108.52 %
Department: 00 - NONDEPARTMENTAL Surplus (Deficit):	**0.00**	**0.00**	**-6,827.06**	**122,233.44**	**122,233.44**	**0.00 %**
Fund: 213 - STORM WATER FUND Surplus (Deficit):	**0.00**	**0.00**	**-6,827.06**	**122,233.44**	**122,233.44**	**0.00 %**
Report Surplus (Deficit):	**0.00**	**0.00**	**-70,849.34**	**205,449.80**	**205,449.80**	**0.00 %**

Fund Summary

Fund	Original Total Budget	Current Total Budget	Period Activity	Fiscal Activity	Variance Favorable (Unfavorable)
124 - STREET FUND	0.00	0.00	-64,022.28	83,216.36	83,216.36
213 - STORM WATER FUND	0.00	0.00	-6,827.06	122,233.44	122,233.44
Report Surplus (Deficit):	**0.00**	**0.00**	**-70,849.34**	**205,449.80**	**205,449.80**

APPENDIX A

City of Gresham Education and Outreach Examples

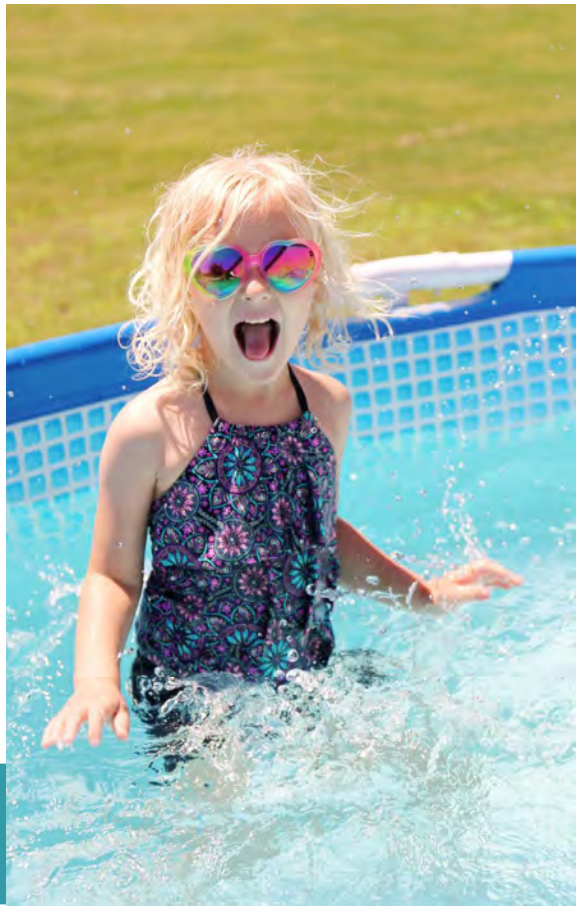
Manage pools safely to protect Gresham's streams

Never drain pool or hot tub water to storm drains. It's harmful to fish and it's against the law! Instead:

- Dechlorinate water, then drain it to your lawn or landscaping, letting the water soak into the ground, or
- Drain slowly to a sewer cleanout pipe or an indoor tub or sink, controlling the flow to avoid sewer overflows.

Learn more: GreshamOregon.gov/Watershed-Residential-Programs

CITY OF GRESHAM



DID YOU KNOW?

- Storm drains in Gresham drain to streams
- Chlorine, bromine, and salt are toxic to fish
- Pool water, even dechlorinated, may not be drained to storm drains or streets

¿SABÍA USTED?

- Los desagües pluviales de Gresham desembocan en los arroyos
- El cloro, el bromo y la sal son tóxicos para los peces
- El agua de la piscina, incluso la que no tiene cloro, no se puede verter a los desagües pluviales o a las calles

Questions? 503-618-2522 or WaterResources@GreshamOregon.gov

CITY OF GRESHAM 1333 NW Eastman Parkway, Gresham, OR 97030

POST THIS NOTICE: REGIONAL STORMWATER REGULATIONS FOR MOBILE CARPET CLEANERS

ALL EMPLOYEES MUST FOLLOW PROPER DISPOSAL PROCEDURES

It is against the law to allow anything other than rain water to enter the stormwater drainage system. Draining wash water to the street or an outdoor storm drain, are subject to enforcement action including clean up costs and **fines of up to $5,000**. *As an owner you are responsible* for the actions of your employees.

PROPER DISPOSAL OPTIONS:

1. Use **bathtubs or utility sinks** and a filter over the drain inside the homes that you are cleaning.
2. Use the **wastewater cleanout** at the home which you are cleaning. These are commonly located near the home's foundation.
3. Collect the wash water in a **tank on your vehicle** and pump it into a utility sink or wastewater cleanout at your home or place of business.
4. Check **sanidumps.com** for disposal locations.
5. Contact the City or County to **request permission** to use a sanitary system manhole. The sanitary system is a closed system that must be accessed by removal of a manhole lid.


Wastewater cleanout

DO NOT:

1. Pour chemical-laden water onto the ground or into an outdoor drain.
2. Discharge wash water with chemicals in a home with a septic system.

For questions or assistance, call 503-618-2525 or email WaterResources@GreshamOregon.gov.

These agencies and others enforce stormwater pollution laws:

Clackamas County
Clark County
City of Fairview
City of Gresham

City of Milwaukie
Multnomah County
Oak Lodge Water Services
Clean Water Services

City of Oregon City
City of Portland
City of Troutdale
City of Gladstone

City of Vancouver
City of Wilsonville
City of Wood Village
City of Lake Oswego

PUBLICAR ESTE AVISO:
REGULACIÓN REGIONAL DE AGUAS PLUVIALES PARA LIMPIADORES MÓVILES DE TAPETES
TODOS LOS EMPLEADOS DEBEN SEGUIR LOS PROCEDIMIENTOS DE DESECHO ADECUADOS

Es contra la ley permitir que cualquier otro tipo de líquidos que no sea agua de lluvia ingrese al sistema público de tormentas. El drenaje del agua de limpieza en la calle o en un desagüe pluvial está sujeto a medidas de cumplimiento, incluidas **multas de hasta $5,000**. *Como propietario, también es responsable* de las acciones de sus empleados.

OPCIONES DE ELIMINACIÓN ADECUADA:

1. Utilice **bañeras o lavaderos y un filtro** sobre el drenaje dentro de los hogares que usted esté limpiando.
2. Utilice **la limpieza de agua residual** en el hogar que usted esté limpiando. Por lo general, se encuentran al lado o en la parte trasera de los hogares.
3. También podrá recoger el agua de lavado, dentro de un **tanque de su vehículo** y bombearla hacia un lavadero o aguas residuales en su hogar o en su negocio.
4. Vea **sanidumps.com** para encontrar las ubicaciones de eliminación.
5. Usted también puede comunicarse con la ciudad o el condado para **solicitar permiso** para utilizar una boca de drenaje del sistema sanitario que le quede cerca. El sistema sanitario es un sistema cerrado, al que se debe acceder removiendo la tapa del drenaje o alcantarilla.


limpieza de agua residual

NO:

1. Vierta agua con sustancias químicas en el suelo o en un drenaje o desagüe al aire libre.
2. Descargue agua de lavado con sustancias químicas en un hogar que tenga sistema séptico.

¿Tiene preguntas? WaterResources@GreshamOregon.gov o en el 503-618-2525

Estas agencias y otras hacen cumplir las leyes de contaminación de aguas pluviales:

Clackamas County
Clark County
City of Fairview
City of Gresham

City of Milwaukie
Multnomah County
Oak Lodge Water Services
Clean Water Services

City of Oregon City
City of Portland
City of Troutdale
City of Gladstone

City of Vancouver
City of Wilsonville
City of Wood Village
City of Lake Oswego

https://www.theoutlookonline.com/lifestyle/gresham-library-where-the-wild-things-are/article_7c03ab3a-abdc-11ed-bff0-2bdf9e2aebfa.html

Gresham Library: Where the wild things are

Christopher Keizur
Feb 14, 2023

A beaver takes a branch to add to a dam along Johnson Creek in Gresham.
Courtesy photo: Caz Zyvatkauskas

One of the most popular videos shown during a wildlife showcase in Gresham last weekend was of a beaver rooting around in the soil.

It was digging with its front paws into the bank of Johnson Creek just east of Main City Park and downtown, and at the end of the clip it made a rude sound.

“It farted,” burst out one little boy in the front row with a giggle.

“That’s right,” called back Carol Zyvatkauskas, a local wildlife photographer who loves to share the images and videos she captures all across Gresham. “That beaver was marking its territory by leaving musk.”

The Gresham Library was filled with laughter, oohs and aahs, and interesting facts during the return of an event that showcases and celebrates the diverse array of wildlife that calls the fourth largest city in Oregon home.

After the presentation, attendees at Wild in Gresham got to explore all sorts of items.

Christopher Keizur

Wild in Gresham was held Saturday morning, Feb. 11, at the library, 385 N.W. Miller Ave., for the first time since the onset of the pandemic. The hour presentation, co-hosted by the Johnson Creek Watershed Council and city of Gresham, had photographs and videos of coyotes, deer, beavers, otters, eagles, birds of all shapes and sizes, fish, crawdads, salamanders and frogs, and everything in between.

“The amazing thing is all of this can be found less than half a mile from where we are sitting,” Zyvatkauskas said. “You don’t have to travel, there is wildlife all around us.”

“We are a city with a lot of streams, which Gresham kept on the surface while others moved them underground,” added Katie Holzer, Gresham biologist. “That has created these animal habitats.”

There was a video of a nursing racoon mother washing her hands in the creek; a merganser trying to juggle a pair of crawdads in its bill after a successful fishing attempt; fairy shrimp, aka sea monkeys, floating in a small pond along the Springwater trail; a band of coyotes hunting a deer across an abandoned beaver dam; a red-tailed hawk using the Forest Lawn Cemetery sprinkler to cool off during last summer’s historic heat wave; and another beaver video that got an uproarious laugh from the young audience, in which the furry star clumsily fell backwards while trying to groom itself.

After the talk children could investigate animal bones, bird nests, pelts and more.

“Gresham has so much wildlife, we just had to share all of this,” Zyvatkauskas said.

One of her favorite spots to find creatures is around Main City Park, 219 S. Main Ave. Her suggestion is to follow the “edge effect” — like where water meets land, or venturing out when day meets night.

“The hope is this presentation will inspire people to go out and explore,” Zyvatkauskas said. “There is so much to find throughout the year. Like in the winter some people might just be waiting for the first flowers of spring to see animals — but if you look down into the water there is a whole carnival going on of fish and amphibians.”

A red-legged frog at a pond near Main City Park.

Courtesy photo: Caz Zyvatkauskas

Part of the presentation was about the importance of protecting local habitats. The main thing residents can do is not flush toxins or pollutants down stormwater drains, as they all go directly into bodies of water like Johnson Creek.

That support would continue the wildlife success stories that continue to resonate throughout Gresham. In the past two decades a robust population of beavers, about 29 dams, have returned to East County after being driven completely away by hunting. Unique species of salamander and fish are being spotted, including the rediscovery of coho and chinook salmon in the Gresham portion of Johnson Creek.

“All of these animals appreciate us keeping our waters and forests clean,” Holzer said.

25th Watershed Wide

When: 8:45 a.m. to noon Saturday, March 4

What: Plant, weed, mulch, pick up litter

More: Lunch, snacks, tools provided

Register: jcwc.org/events/25th-annual-watershed-wide-event/

Christopher Keizur is a reporter based in Gresham, Ore.

Honoring Our Rivers: A Student Anthology

ATTENTION K-12 TEACHERS: Do your students draw, write poetry, essays, or stories? Do they love rivers, animals, and the environment? Are you looking for ways to bring the arts and sciences together and meet Common Core and NGS standards?

Honoring Our Rivers is a program that showcases student writing and artwork focused on rivers and watersheds.

Begun over 20 years ago by Willamette Partnership, it is being revived by CLEARING Magazine. This year, Oregon and SW Washington students are invited to submit their creative work to be included in the 2023 Honoring Our Rivers Anthology.

For more information and submission guidelines, visit **Honoring Our Rivers Anthology**

Questions? Email editor@clearingmagazine.org.

Submission deadline: April 28, 2023

Enter at clearingmagazine.org/anthology

CLEARING
Journal of Environmental Education in the Cascadian Bioregion

WILDWOOD MAHONIA

CleanWater Services

CITY OF GRESHAM

follow the water

LCNN Lower Columbia Nature Network

City of Gresham - Government
February 2 at 9:47 AM ·

Join our Youth Services Team this weekend as they partner with SOLVE for another neighborhood cleanup! Saturday, February 4th from 9 - 11:30am meet us at the Rockwood Hope Center at 740 SE 182nd Ave. For more information, please reach out to Emon.Ghassemi@GreshamOregon.gov.

6 3 shares

Like Comment Share

Write a comment...

City of Gresham - Government
October 23, 2022 ·

🎉 🎉 Great news! The Gresham-Fairview Trail project has been awarded $4.2M through Metro's Parks and Nature Bond. This project will improve safety and provide commuters an unbroken path through Gresham from Powell to Sandy boulevards!

You and 107 others 20 comments 6 shares

Like Comment Share

City of Gresham - Government
January 28 at 8:28 AM

Leaking automotive fluids are serious hazards for our water. If you are looking for repair assistance, check out the auto shops participating in our Green Business program and rest assured that you'll find an environmentally friendly choice!
https://greshamoregon.gov/GREAT-businesses/

Johnson Creek Watershed Council
January 5

This month we are focusing on amphibian egg masses as we gear up for our collaboration with the City of Gresham for egg mass surveys in late January through March.

The Northwestern Salamander (Ambystoma gracile) is identified by its broad head and small eyes and has pitted glandular areas that contain poison glands. Rocks, boards, and logs along streams offer habitat for the adults who can also stay in water year-round.

Whether they prefer to exist in or out of water, start... See more

You and 11 others 1 share

Love Comment Share

Write a comment...

City of Gresham - Government
January 14 ·

#DYK that many household products contain ingredients that can pass through our wastewater treatment plant and end up in the Columbia River? Make a New Year's resolution to learn about healthier alternatives to the products you use in your home. https://www.oregonmetro.gov/tools-living/healthy-home

11 1 comment

Like Comment Share

City of Gresham - Government
December 28, 2022 ·

#DYK, deicing chemicals can collect in storm drains and travel to our rivers and streams? Keep yourself safe and our water cleaner by using traction devices on your shoes and spreading sand or kitty litter on walkways instead. For more deicing tips, visit https://greshamoregon.gov/severe-weather/

15

Like Comment Share

Write a comment...

City of Gresham - Government
March 11 ·

Green up your lawn care! Did you know, lawn chemicals can runoff into storm drains, introducing pollutants to rivers and streams? Find alternatives and safer chemicals at https://www.oregonmetro.gov/.../make-sure-your-garden...

You and 4 others 2 shares

Like Comment Share

City of Gresham - Government
December 14, 2022 ·

Did you know, our Natural Resource Program welcomes schools, service groups, businesses, etc. to come help with restoration work on our public land? It's a great opportunity for those wanting to volunteer in their community. Learn more: https://greshamoregon.gov/Natural-Resources-Program/

You and 6 others 1 share

CITY OF GRESHAM

Storm Drain Cleaning Assistance Program is OPEN

The City of Gresham coordinates this program to offer a steep discount on cleaning of parking lot drains in Gresham, Troutdale, Fairview, and Wood Village.
This is a voluntary program to help area businesses prevent flooding and water pollution.
Please re-register each time you would like to participate.

Find more information or sign up at GreshamOregon.gov/SCAP

Register by October 31st for cleaning at $60 per drain.

SIGN UP HERE

Questions?
GreshamOregon.gov/SCAP or 503-618-2522

GreshamOregon.gov

Dragonfly Day

Come learn from local naturalists how to catch and identify the dragonflies that live in your neighborhood!

Wear sturdy shoes and bring your water bottle. Snacks provided.

Saturday, July 1, from 1 - 3 p.m.
Tegart Pond (entrance next to 4293 SW Brixton Ave)
FREE!

Learn more and register at:
jcwc.org/events/dragonfly-day

- **Arts & Crafts**
- **Activities**
- **Freebies**
- **FUN!**

These free events are sponsored by the City of Gresham in partnership with the Johnson Creek Watershed Council.

DID YOU KNOW?

Dragonflies ...
Existed long before dinosaurs.
Don't sting or bite.
Can fly backwards.
Can fly 30 mph.

To RSVP for the event scan the QR code below or go to:

jcwc.org/events/dragonfly-day

CITY OF GRESHAM 1333 NW Eastman Parkway, Gresham, OR 97030

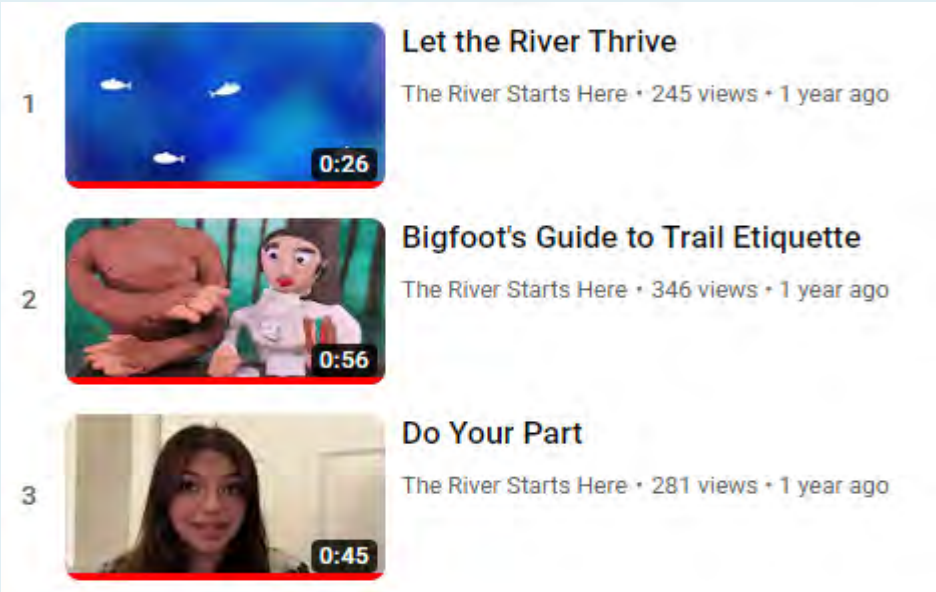
The River Starts Here Outreach: Student Video Contest

In July 2022, the group promoted the winners of the student video contest, which included youth in Clean Water Services, Portland, and Oak Lodge Water Services districts. Youth were given local recognition, as well as $500 for their achievement category. Their videos were viewed almost 900 times on the YouTube Channel.

The winning videos were placed in the January 14, 2023 Hollywood Theatre Ecofilm festival to honor the youth. The youth and their families were given complimentary tickets. The audience of almost 200 people were told about The River Starts Here social media channels and the Hollywood Theatre promoted the channels on its social media and in its newsletter which is seen by thousands of patrons.

PORTLAND ECOFILM FESTIVAL

Movie Theatre Screen Sponsor Graphic (Right)



2022 Student Video Contest Winners

1. **"Let the River Thrive" by Finnian Morgan Brewer-Best short format category.**
2. **"Bigfoot's Guide to Trail Etiquette" by Nathan Monroe-Ramberg-Best Long format video and People's Choice category**
3. **"Do Your Part" by Natalia Gates-Honoring Diverse Voices category**

02/11/2023	Wild Gresham! Wildlife Presentation		35	15	
03/04/2023	Watershed Wide Event at 7th St Bridge	36	36		131
03/04/2023	CANCELLED- Watershed Wide Event at Main City Park because of high water				
03/15/2023	Powell Valley Elementary Field Trip	29	29	23	73
03/16/2023	Powell Valley Elementary Field Trip	34	34	27	85
05/06/2023	Earth Day	10	10		30
06/17/2023	Dragonfly Survey Orientation	33	33		
Multiple	Weed control	crews			
11/8-9/22	Willow live staking--Wisdom of the Elders interns	6	6		70
March 2023	Planting	crews			
	TOTAL	**148**	**282**	**124**	**389**
	Totals from FY2122	**112**	**252**	**107**	**373**

Amphibian Egg Mass Surveys at a Stormwater Pond

Springwater Trail High School Students learn about the natural world

Watershed Wide Event Volunteers at 7th St, Gresham (photo by Carol Zyvatkauskas)

2. Social media

JCWC is active on several platforms: Facebook, Instagram and Youtube. We also send monthly eBulletins featuring stories on our work, calendar updates and a community calendar. We post daily on the main platforms (with the exception of Youtube). We use these platforms as outreach to attract volunteers to events and to post news from our Council and our partner organizations, including City Of Gresham. Currently our Facebook demographics are:


¡EVENTO DE RESTAURACIÓN!
Sábado 4 de Marzo
8:45 am- 12 pm
en el Parque de Main City
en la ciudad de Gresham
Ayudantes que hablen Español e Inglés
estarán disponibles
para ayudar y dar instrucciones
Regístrate @ jcwc.org
CITY OF GRESHAM OREGON
Johnson Creek Watershed Council

OUTDOOR WASHING
PROHIBITED

PROHIBIDO
LAVAR AL AIRE LIBRE

Washing grease or cleaning products into storm drains is **against the law.** Wash floor mats and garbage cans over an indoor drain. Questions? Call 503-618-2525.

CITY OF GRESHAM

APPENDIX B

City of Gresham Hydromodification & Retrofit Assessment Update

INFRASTRUCTURE RETROFIT AND HYDROMODIFICATION ASSESSMENT

Permit Requirement:
Schedule A.3.h. Infrastructure Retrofit and Hydromodification Assessment Update
The co-permittees must continue to consider the impacts of policy, capital improvements, and retrofit projects on MS4 discharges to receiving waters, considering the goals and proposed actions described in the previous permit's Hydromodification Assessment and Stormwater Retrofit Strategy reports.
i. Documentation
The co-permittees are required to include in the third Annual Report of this permit term, an assessment of any outcomes related to the Hydromodification Assessment and Stormwater Retrofit Strategy reports. This update may be an appendix or a subsection of the report, and must include, at a minimum:

A. *An assessment of how the Hydromodification Assessment and Stormwater Retrofit Strategy have been used, considered, or implemented since the time the reports were completed;*
B. *Progress toward or completion of projects identified in the Retrofit Strategy priority list, and a qualitative assessment of the benefits of those projects;*
C. *Description of any further actions taken as a result of the Hydromodification Assessment, and a rationale for those actions since the writing of the reports;*
D. *Narrative describing progress toward addressing gaps in hydromodification information or data related to waterbodies within the co-permittees' jurisdiction as identified in the Hydromodification Assessment; and,*
E. *New goals, tools, priorities, and planned or potential projects for addressing ongoing hydromodification and/or water quality impacts resulting from historical development/infrastructure, and for improving retrofit planning, considering information gathered in the time since the completion of the reports.*

The Hydromodification Assessment and Retrofit Strategy and Plan documents were submitted to DEQ in November 2014. This is a summary of what the City of Gresham has done to address these items in the 8 years since those reports were submitted. Our report is presented in two sections. Section 1 addresses updates related to our hydromodification assessment (as related to elements A, C, D, and E above), and Section 2 addresses our Stormwater Retrofit Strategy (elements A, B, and E).

Section 1: Hydromodification Assessment

Changes in the timing and volume of runoff from a site are known as "hydrograph modification" or "hydromodification." When a site is developed, much of the rainwater and snow melt can no longer infiltrate into the soil, so it flows offsite at faster rates and greater volumes. As a result, erosive flows can occur more frequently and for longer periods of time in creeks and channels downstream of the project.

Hydromodification impacts are degrading influences on the physical nature of a stream and/or its functions. In watersheds with large amounts of impervious surface, the larger volumes, faster rates, and extended durations of erosive flows often cause natural creeks or earthen channels to erode and become incised, as the channel enlarges or deepens in response to the increased flows. Problems from this additional erosion often include negative impacts to aquatic habitat, loss of critical floodplain functions as the incised stream loses connection with the immediate riparian area and floodplain capacity, loss of riparian habitat/functions, private property and public infrastructure damage from increased flooding, and degradation of water quality; these issues have not been fully addressed by traditional detention designs so a multi-strategy approach is necessary for meaningful mitigation.

In the 2010 MS4 permit, DEQ required permittees to assess hydromodification management (HM) techniques to protect streams and critical stream functions that are susceptible to hydromodification. These techniques focus on retaining, detaining or infiltrating runoff and matching post-project flows to specified pre-project targets for a range of smaller, more frequent rain events, to prevent increases in channel erosion downstream. Gresham's resulting Hydromodification Assessment was submitted to DEQ in 2014.

A. Summary of Key Items from Gresham's 2014 Submittal

The 2014 Hydromodification Assessment submitted to DEQ consisted of 1) background on hydromodification in Gresham, 2) existing city efforts, 3) strategies/tools/priorities for addressing hydromodification, and 4) next steps/proposed actions. This assessment discussed how these elements were considered in each of the four main watersheds within City limits along with areas anticipated to annex, including Johnson Creek, Beaver/Kelly/Burlingame Creeks, Fairview Creek, and the Columbia Slough.

Three key strategies identified in the report were related to 1) controlling hydrologic changes, 2) preserving coarse sediment supply, and 3) improving overall stream resiliency.

B. How Report Has Been Used

In the time since the key strategies were identified, our understanding of causes of hydromodification, along with how stream systems react to those factors, has evolved. With this increased understanding we have been able to assess the effectiveness of applying these key strategies to address hydromodification.

Our revised strategies for approaching hydromodification mitigation are described as follows:

1) Mitigation of Land Use Changes. This strategy consists of site design and hydrologic source control measures, which are generally distributed throughout a project site. These types of measures are generally implemented in upland areas and focus on minimizing hydrological changes caused by development beginning with the point where rainfall initially meets the ground. Examples include minimizing impervious area, disconnecting roof drainage, and providing localized detention. Stormwater

management requirements in Gresham must follow the Stormwater Management Manual, which requires managing stormwater 1) quantity/volume, 2) quality, and 3) conveyance. Infiltration is required whenever feasible, and when stormwater cannot be fully retained on-site, treatment using green development practices must be prioritized and flows must be detained and released at a rate that is below pre-development flow rates.

2) Flow control measures. These measures are used to manage excess runoff from the site after hydrologic source control measures are applied. Stormwater is temporarily detained, and then the runoff is gradually discharged at a rate calculated to avoid adverse effects. Examples of flow control facilities include extended detention basins, underground detention pipes, and oversized storm drain pipes. The discharge is controlled by outlet structures containing weirs and/or orifices designed to provide controlled outflow rates based on targeted predevelopment conditions. Flow controls must be designed to manage a wide range of flows to pre-project runoff conditions. Our analysis of stream sensitivity can help us to identify best practices for flow control, including current peak matching or potential future consideration for flow duration matching, taking into account location of facilities and immediate downstream impacts.

3) In-stream resiliency measures. In-stream resiliency measures are used to add stability to susceptible watercourses so that they can withstand projected increases in runoff flows and durations without increasing erosion or other impacts to adjacent or downstream resources. In-stream measures are more complicated to implement than other types of controls and are best suited for creeks or channels that have already experienced significant degradation, and that only have localized channel instability. Additional complexities stem from the impacts of channel restoration in isolation, as stabilization of one reach can result in channel adjustments within downstream reaches. Examples of stabilizing measures include bioengineering techniques using roots of live vegetation and localized bioengineered structural measures for bank stabilization such as log jams or woody debris, or bed stabilization measures such as in-stream grade controls made with materials suitable for sustaining aquatic habitat. These measures will not automatically provide HM protection for channel reaches farther downstream and may require longer planning timelines and coordination with downstream jurisdictions (Multnomah County, City of Portland, City of Troutdale, City of Fairview) compared to upland flow controls.

4) Preservation of natural hydrology features. This strategy aims to protect resources such as healthy riparian areas and wetlands that currently provide protection and resilience to stream corridors. The City has adopted buffers along every stream and creek corridor; these buffers serve to limit construction of structures and other infrastructure within proximity (50'-200') to a stream. A majority of these buffers also encompass currently mapped floodplain boundaries, which will provide space for the streams to function while lowering risk of flooding and damage to adjacent development. In addition to implementing buffers along these corridors, the is in compliance with state land use planning goals for protecting wetlands through buffers. The City recognizes that there are a multitude of benefits related to preservation of wetlands, particularly related to impacts from land use and climate change. Wetlands provide benefits to water quality, cool water inputs for aquatic species, storage of floodwaters, and maintenance of surface water flow during dry periods.

Upon reviewing these strategies and how our watersheds have changed during this time, we have decided to build upon the prior assessment with new tools that could be utilized for the purpose of multiple project goals. Specifically, we reevaluated our assessment of hydromodification susceptibility from stream assessments that were completed as part of the Natural Resources Master Plan and further developed a city-wide, preliminary reach-specific stream sensitivity risk desk top analysis, which is summarized in Appendices A and B.

In addition to this initial desktop data analysis, we implemented further monitoring within select waterways and will continue to build on those efforts moving forward. Specifically:

- Gresham worked collaboratively with the USGS and members of the Johnson Creek Interjurisdictional Committee to have rotating gaging stations moved to several key tributaries within the Johnson Creek watershed.
- We performed additional bedload sampling near the permanent USGS gages in Johnson and Fairview Creeks to better understand the critical flow at which bedload becomes more mobile. The City has contracted with geomorphologists and stream engineers to further refine any future bedload sampling efforts to ensure resulting data is ready to be integrated into hydromodification programming efforts in the future.

Understanding bed mobility with respect to flow rate within each reach can help us to determine how easily the channel responds to changes in adjacent land use, which generally contributes to higher flows if not mitigated properly. Once we understand how sensitive a reach is to increases in flow, we can better determine how effective mitigation efforts will be and whether the current standards for mitigation are sufficient.

Several of the items in the 2014 submittal listed under "existing city efforts" are code, master plans, and documents detailing development standards. Many of these documents were updated over the past 8 years in ways that strengthened requirements that would help limit hydromodification caused by development. These include:

- In 2018, the Stormwater Management Manual (SWMM) integrated the requirements that were contained in the 2003 Water Quality Manual, the 2007 Green Development Practices Manual, and the 2005 Erosion Prevention and Sediment Control Manual was also updated and integrated into the SWMM as an appendix. The primary changes that the updated SWMM provide for hydromodification are that development throughout the city is now required to 1) infiltrate on sites where it is feasible, 2) prioritize green infrastructure for treatment, and 3) in areas where water cannot be fully retained, limit the release of the post-developed 2-year event to half of the pre-developed 2-year 24-hour storm. Several minor revisions have been made each year to further clarify how development is required to adequately treat and control stormwater runoff from their sites during and post-construction. One example of a minor revision is adding clarification that flow control standards must be met during the construction phase.
- In 2018, the Public Works Standards (PWS) also had a major update in which the 2007 Green Street Standards were updated and integrated in the PWS. Staff ensured that requirements for public improvements were covered in either the PWS or the SWMM, trying to avoid having the same requirements in two separate documents.
- As part of the major revisions to the PWS and SWMM in 2018, city code was also updated to eliminate barriers to green infrastructure, as well as remove specific development requirements that were included in City code, and instead refer to either the PWS or SWMM for the exact requirements, as those documents are easier to update.
- A city-wide Stormwater Master Plan was developed in 2022, which replaced six basin-specific master plans that were all from 2003-2007. While the master plans primarily identify existing pipes with capacity deficiencies, the plan does prioritize projects that reduce or eliminate capacity issues by infiltrating upstream stormwater, or providing treatment using green infrastructure whenever feasible.
- A 6-year project to streamline and simplify the city's environmental overlays (including wetland and waterway buffers, floodplains, and hillside protections) was completed in 2020. This maintained existing levels of buffer protection (ranging from 50 to 200 feet from the resource), while introducing significantly reduced impact allowances in the areas closest (within 35-50') to the protected resources. It also significantly simplified the rules and maps, making the overlay

programs better understood by landowners, more easily administered, and easier to assess compliance levels.

C. Planning for the Future

Based on the data gathered and corresponding ranking of stream resiliency, the City will be able to use the information moving forward as an additional tool to inform the following:

- Evaluation of stream sensitivity to adjacent and future land use changes within its watershed.
- Prioritization of Temperature TMDL-related riparian tree planting so that stream resiliency benefit is assessed in concert with stream shade needs.
- Prioritization of Capital Improvement Projects identified in the Natural Resources Master Plan (NRMP) for in-stream and riparian projects, and integration of stream risk assessment-informed design goals into NRMP concept plans to maximize gains in stream resiliency.
- Integration into other City Capital Improvement Projects involving work either adjacent to or within a stream corridor in order to provide better resiliency within the waterway over time.
- Strategic land acquisitions in areas where resource protections, future enhancements, and management by the City will provide maximum benefit to the reach.

The City is currently in the process of implementing a major update to the PWS and the SWMM. Updates to the PWS are currently being reviewed and are scheduled to be adopted and go into effect on January 1, 2024. One of the topics being explored for the SWMM is, as previously mentioned, whether the current flow control standard is adequately controlling flows to protect stream channels against hydromodification. Even if the flow control standard is deemed adequate, one of the proposed revisions being considered is to evaluate the susceptibility of the receiving stream channel and banks and require development projects to do a downstream analysis for stream reaches that are more susceptible to altered flows. If this is shown to be true for a given project, we can then reevaluate and plan for additional flow control and/or stream resiliency projects to mitigate for those foreseen impacts. The City plans to continue reviewing and revising the PWS and SWMM in 2023-24 and propose updates for adoption in 2024. This will also include reviewing and implementing the key strategies previously identified as: 1) Mitigation of Land Use Changes, 2) Flow control measures, 3) In-stream resiliency measures, and 4) Preservation of natural hydrology features. Several other proposed revisions will require that the design of green infrastructure facilities maximizes retention and ensures that adequate water quality and flow control are achieved when complete on-site retention is not feasible.

The City also plans to review and pursue updates to the standards that further clarify limitations and allowances to disturbance within riparian areas (e.g. limiting length of pipe installation, etc.) We are also anticipating developing a study along the Kelley Creek corridor to support potential future master planning efforts that would aim to identify regional locations for flow control in anticipation of development.

Section 2: Retrofit Strategy and Plan

A. Summary of Key Items from Existing Report

The 2014 Retrofit Strategy identified 3 areas where the City would focus retrofit efforts:

a. Arterial streets wider than 48 feet
b. City-owned properties, such as parking lots, and
c. Opportunistic projects on smaller streets where other City capital improvement projects are taking place.

Areas of the city that currently have no treatment and don't fully infiltrate make the most sense to target for retrofits, and the report determined that green facilities that focus on infiltration are the highest priority.

B. How Report Has Been Used

Table 3 of the 2014 Retrofit Strategy identified several projects that were on a 5-year project list and had potential for opportunities to integrate stormwater retrofits into the project scope. Many of these projects were constructed over the past 8 years, and most of these did incorporate stormwater treatment as part of the project design. One of the best examples from this list is the Burnside and Hogan project, which was just recently completed and includes a porous concrete multi-use walk, as well as 30 stormwater tree wells that provide pollutant load reduction by infiltrating stormwater from the arterial streets through bioretention soil and structural soil under the sidewalk.

The stormwater tree well is a facility type that the City of Gresham piloted as a retrofit project along Burnside in partnership with a private redevelopment project. In that initial project, the city was able to have 8 stormwater tree wells installed along a stretch of Burnside, which provided insight into how well these facilities perform, as well as determining whether street trees would be able to handle inundation with stormwater – these trees are doing great after several years, and the city has since done 2 other opportunistic partnerships with private development projects to install these along arterial streets. The stormwater tree well has since been incorporated as a standard detail in the Public Works Standards and the facility type has been included in the Stormwater Management Manual. As Gresham updates our SWMM, we will be prioritizing the facility type for new and redevelopment projects.

The City has also piloted other innovative retrofit projects, including a modified drywell, which was installed as a way of diverting water currently flowing through the MS4 to the Columbia Slough into a deeper drywell. Much of the flow from the residential area where the modified drywell was installed used to discharge to the Slough but is now being infiltrated. This project was one that was evaluated using a retrofit analysis tool developed by the City in 2017, and since the project also helped alleviate a downstream pipe capacity issue identified in the Stormwater Master Plan, it was constructed in 2021 and is now being monitored to determine if similar projects would be a cost-effective means at decreasing existing stormwater volumes flowing to Gresham streams.

The retrofit analysis tool was developed as part of a Stormwater Retrofit Master Plan project conducted in 2017. A goal of this project was to expand on the effort that the 2014 Retrofit Strategy by not just focusing on other planned city projects where stormwater retrofits could be integrated, but to develop an initial list of standalone projects that the city could implement, as well as create a scoring matrix that would enable the city to evaluate and compare any potential project. Several projects identified in this

plan have been implemented over the past several years, including several phases of stormwater retrofit projects at Mt Hood Community College.

Retrofit projects completed over the past 5 years:

- Mount Hood Community College – 9 acres of parking lot treated using rain gardens, stormwater planters, and some drywells to maximize retention.
- Gresham Operations yard swale – 3.2 acres of city-owned maintenance year treated by high flow media in swale.
- Modified drywell – 29 acres of residential area that is part of MS4 is routed to a 68-foot drywell system after pre-treatment where it is now infiltrated.
- Clackamas County Bank – City partnered with this development project to include 8 stormwater tree wells to treat runoff from Burnside Avenue.
- Douglas Grove Apartments – City partnered with development to add arterial stormwater treatment using swale and tree wells along Glisan Street.
- Twelve Mile Apartments – City partnered with development project to install stormwater tree wells and a grassy swale to treat arterial runoff from Stark Street.
- Hogan/Burnside improvements – pervious concrete sidewalks and 52 stormwater tree wells were added as part of this arterial road widening project.

C. Planning for the Future

The City applied for a Clean Water State Revolving Fund loan that would aim to install stormwater tree wells along most of Powell Blvd, one of the primary arterial streets in Gresham, and one that mostly drains to Johnson Creek. This retrofit project will help address high pollutant loads from a major arterial street, including one of the key emerging pollutants of concern – 6PPD-quinone, which causes mortality in coho salmon. As coho salmon spawn in the Gresham reach of Johnson Creek, this is a project the city is hoping it can move forward with over the next several years.

The City also applied for and received a FEMA hazard mitigation grant which will be used to install stormwater tree wells in the Rockwood neighborhood. The City is just starting to plan for exact locations where this project will be implemented, but the goal is to provide trees in areas where they don't currently exist, and a modified version of the stormwater tree well (which will use metal tree grates to ensure ADA accessibility) was the proposed concept that the granting agency supported.

The City plans to build on the retrofit master plan, adding additional projects and ensuing that the capital improvement program is focused on allocating time and resources towards retrofit projects that will help reduce pollutant loads in portions of the city developed prior to current standards. The City currently has a Low Impact Development LID fund in the CIP that is used to fund retrofit projects, but there may also be larger standalone projects that get identified in the 5-year CIP for the Stormwater utility fund that will help meet the pollutant load reduction benchmarks that the city commits to for each MS4 permit cycle.

APPENDIX A: REACH-SPECIFIC STREAM SENSITIVITY RISK ANALYSIS

Gresham Geology Related to Stream Function

Fairview Creek and Columbia Slough Watershed

The Fairview Creek watershed (and a portion of the Columbia Slough Watershed) in the central and northern parts of Gresham are comprised of sedimentary geologic units. The Troutdale formation (Tth), exposed in a terrace north of Sandy Boulevard, was deposited by the ancestral Columbia River approximately 15 million years ago and is a cemented gravel-cobble conglomerate with lenses of sandstone. Grant Butte and the adjacent hill to the east are comprised of an unnamed conglomerate (Qtca) with a similar composition as the Troutdale formation. The Troutdale formation or unnamed conglomerate likely underlie most of the Fairview Creek and Columbia Slough watersheds in Gresham. Coarse-grained Missoula flood alluvium (Qfc) comprises most of the surficial geologic units in these watersheds in Gresham. The coarse-grained Missoula flood alluvium consists of poorly sorted sands, gravels, cobbles, and boulders deposited between approximately 18 and 16 thousand years ago when the high-energy Missoula floods exited the relatively narrow Columbia River Gorge and expanded across the Portland-Metro area. Modern alluvium (Qa) of Columbia River flood deposits comprises the northern-most part of Gresham in the Columbia Slough watershed.

These watersheds are generally low relief (little change in elevation) except for Grant Butte. A series of terraces through the Missoula alluvium may be relicts from the Missoula flood channels. These terraces are characterized by springs and seeps where the shallow water table intercepts the land surface. The sedimentary units are generally very permeable and support high groundwater infiltration rates. Prior to development, the hydrographs were likely to be stable with high groundwater baseflow year-round and little runoff generated from rainfall events.

The drainage density is low in these watersheds and the channels are formed in sediment deposited in higher-energy ancestral rivers. The low gradients and relatively coarse substrate in these channels likely supported a depositional sediment transport regime prior to development.

Kelly-Burlingame-Beaver Creek Watersheds

The Kelly and Burlingame Creek watersheds in the eastern part of Gresham are primarily underlain by loess (Ql) which is windblown silt and very fine sand deposited during the last glacial period approximately 12 thousand years ago. The lower parts of the watershed enter the fine-grained Missoula alluvium (Qf) which consists of clays, silts, sands, and minor gravels deposited in lower-velocity areas of the Missoula floods approximately 18 to 16 thousand years ago.

This watershed is low-relief, and the channels follow the southeast-northwest trends of the regional extensional faulting in the Portland basin. The fine sediments have low permeability and slower groundwater infiltration rates. Prior to development, the hydrographs likely had runoff rates and slow rising and falling limbs as the areas of saturation expanded. The falling limb of the hydrograph was likely

extended as the saturated areas drained slowly to the channels across the low-relief watershed. It's likely that these watersheds supported extensive wetlands prior to development.

Drainage density is low and heavily altered by modern drainage (especially in Burlingame Creek). The modern channels are likely reworking (eroding, transporting, and depositing) the very fine sediments they are formed in. Kelly Creek and Burlingame Creek are likely in an erosional sediment transport regime in response to base level changes in Beaver Creek. Kelly Creek enters Beaver Creek east of Gresham which flows north to the Sandy River. Beaver Creek traverses a series of terraces en route to the Sandy River and is likely downcutting (lowering its gradient) by eroding and transporting the fine sediments.

Johnson Creek Watershed

The Johnson Creek watershed geology is the most complex of the watersheds in Gresham. The northern part of the watershed is comprised of coarse-grained Missoula alluvium (Qfc) with similar characteristics as the Fairview Creek watershed (high infiltration rates, low drainage density, and a non-flashy hydrograph). The eastern portion of the watershed is in loess (Ql) with similar characteristics as the Kelly Creek and Burlingame Creek watersheds (low infiltration rates, low drainage density, a strong runoff response to rainfall with slow rising and falling limbs).

The southern portion of the Johnson Creek watershed is dominated by the Boring volcanics (Qtb) which intruded the older sedimentary units (Qtca) approximately 100,000 years ago and are mantled by glacially derived deposits (Qf, Ql, Qe). Johnson Creek follows the direction of the regional faults and flows along the base of the buttes. The boring volcanics are characterized by basalts and andesites and have hydrothermally altered (cemented) the sediments they intruded. These materials have low permeability rates and likely generated high volumes of surface water runoff rates in response to rainfall. A series of extensional faults (Damascus fault group) crosscut the buttes and several of the channels follow those alignments including Johnson Creek mainstem, Butler Creek, and Sunshine Creek.

The buttes have a very high drainage density, steep gradients, and are likely to deliver large quantities of sediment to Johnson Creek through downcutting and mass wasting (landslide) events. The channels on the buttes are most likely characterized by source (erosional) sediment transport regime. The mainstem channel of Johnson Creek has sufficient energy to transport the Missoula alluvium as observed by the development of side channels and floodplain terraces. Prior to development, Johnson Creek was likely in a transport (no net source or storage) or depositional sediment transport regime.

Figure 1 below shows areas underlain by the soils identified above in relation to the major creeks and streams that flow through the City of Gresham.

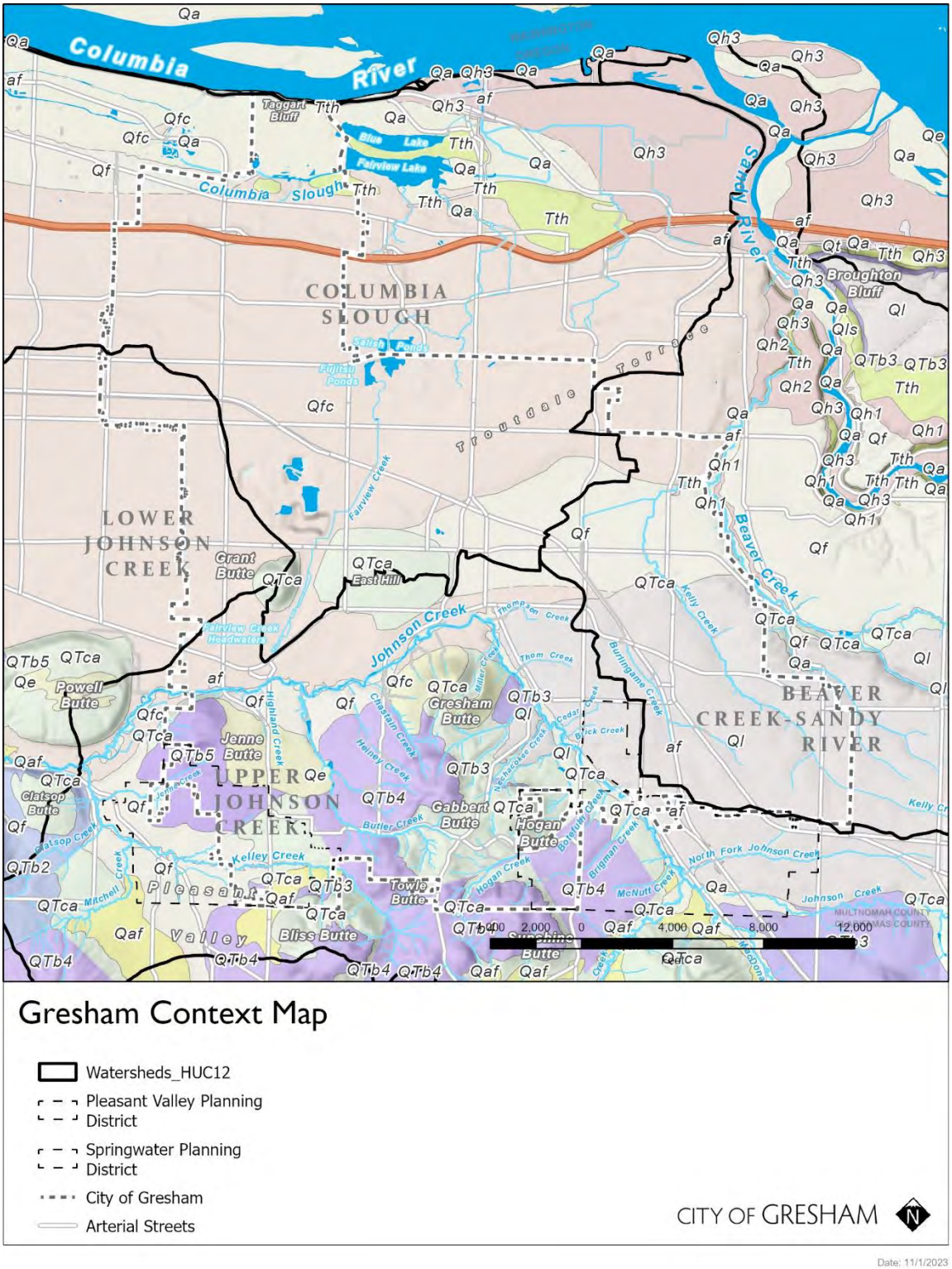


Figure 1: Gresham Soils Context Map

Floodplain Function Analysis

Overview of Stream Resiliency Index

In addition to reviewing how underlying soils contribute to stream sensitivity, we also further analyzed each of these streams and creeks through Relative Elevation Modeling using an initial desktop analysis to help us identify waterway and floodplain features by comparing baseline elevation data with adjacent topography elevations.

Some of the most pronounced impacts associated with conversion of a watershed from a natural to an urban setting (hydromodification) are the impacts to the stream environment. Those impacts may include, and are not limited to, channel incision, bank erosion, loss of floodplain connectivity, impacts to native riparian communities and shade, degraded water quality, channel sedimentation, and increased flood risk. The type and magnitude of impact associated with hydromodification will vary considerably across the landscape and watershed based on a variety of factors including the underlying geology, spatial position in a watershed (e.g. – headwater versus mainstem), channel slope, degree of natural valley confinement, relative magnitude of conversion to urban land uses, stormwater management methods, and the baseline condition of the reach or watershed prior to additional development. Some stream types are more prone to impacts associated with hydromodification while other streams are more resilient to hydromodification. Consequently, understanding which segments of stream are more likely to be at-risk and which ones are more resilient is important when considering development pressures at the sub-watershed or watershed scale or what measures should be implemented to mitigate the impacts of hydromodification.

The City of Gresham is undergoing a comprehensive effort to reduce hydromodification impacts on streams within the City that are having a detrimental impact on water quality, stream health, and existing infrastructure. As a first step, existing and remotely-sensed data is being used to create a preliminary Index of Stream Resiliency. Longer term, field-based evaluations, incorporation of additional data, and refinement of current methodology will be used to create a more robust Index that can be incorporated into the City's Stormwater Management and Natural Resources Programs to help limit future hydromodification impacts along the City's stream corridors.

The preliminary Index of Stream Resiliency considers stream gradient and the functioning of the adjacent floodplain to derive the Index. Future parameters may include the risk to adjacent infrastructure, the presence of natural bed-stabilizing features (e.g. – bedrock exposures, stable beaver dams, adequate supply of large wood), and other factors. These factors could refine the preliminary assessment of resilience either positively (stream less likely to be detrimentally impacted by hydromodification through the presence of bed-forming features) or negatively (adjacent infrastructure at risk from channel adjustment).

Floodplain Function

Intact, natural floodplains provide a variety of beneficial functions. A floodplain can be considered functional if it is well-connected to the stream channel, even at moderate flows, has a diverse and mature native riparian forest, and has limited impacts associated with human built environments, such as structures, crossings, or stormwater and sewer infrastructure. Not all streams have floodplains, such as in a narrow valley or gorge.

To evaluate the degree to which a floodplain is functional, the above factors were considered at the reach scale, and a rating of high, medium, and low was assigned to each channel segment based on the following criteria:

- ***High*** - Channel hydraulically connected to the floodplain at flows that occur at least once per year. The floodplain should be a minimum of three times the channel width (if channel is 10 feet then entire valley bottom width, including the channel, should be at least 30 feet). Floodplain is well vegetated (high roughness) and lacks structures including homes, levees, roads, etc. Access to fully or mostly fully functional floodplain provides better resiliency potential within a given reach.
- ***Medium*** - Channel hydraulically connected to the floodplain at flows that occur at least once per year. The floodplain should be a minimum of three times the channel width (if channel is 10 feet then entire valley bottom width, including the channel, should be at least 30 feet). Floodplain may lack continuous vegetation but floodplain access should not be blocked are impeded by roads, trails, homes, etc. Some floodplain access but low quality of floodplain provides a moderate level of resiliency potential within a given reach.
- ***Low*** - Channel lacks floodplain or the floodplain is completely disconnected due to incision or infrastructure. This lack of connection to a floodplain provides lower resiliency potential within a given reach.

The degree of floodplain connectivity was assessed using Relative Elevation Maps (REMs) of each of the 200+ stream reaches using LiDAR data. REMs utilize topographic data to create a map of the landscape that defines the height above a reference elevation, thereby normalizing the topographic data to a reference point. In the case of a stream REM, the reference elevation is the stream channel. Heights are identified cross-sectionally from the adjacent channel elevation creating a map that defines the height of channel or floodplain features, such as bars, banks, and terraces based on their height above the channel.

The City of Gresham stream centerline layer was developed off primarily 2007 LiDAR data and was used as the basis for our hydromodification analysis. First, we subdivided our stream data into hydromodification analysis reaches. These reaches reflect hydrologically similar stream conditions divided primarily by major road crossings and secondarily by significant stormwater inputs. Reaches were designed to be approximately ¼ mile in length. Reach data excluded piped sections and smaller tributaries < ¼ mile in length.

The resulting REMs provide a clear visualization of the complexity of a floodplain while also clearly defining human constructed features such as levees, areas of fill, or floodplain excavations such as quarries. Additional data was also overlain onto the REM maps, such as roads, existing structures, stormwater and sewer infrastructure, and areas of canopy vegetation, to assist in defining the existing floodplain function.

Channel Gradient

In addition to functional floodplain information, channel gradient can be an indicator of potential energy for erosion and transport of sediment. In general, higher gradients have more erosive potential with actual erosion and sediment transport rates being affected by the channel substrate and bank material (size, shape, and composition) and bed-forming features (large wood, bedrock or hardpan, and boulders). Gradients were calculated by dividing each reach into 50-foot segments and calculating the slope of each

segment based on the elevation change between the segment end points divided by the horizontal distance of the segments (typically 50 feet). The top three highest slope segments (with a length greater than 20 feet) for each reach were averaged to create the gradient risk score for a given reach. This methodology is consistent with Clean Water Services' hydromodification risk assessment methods. Gradients between 0 – 2% are considered low, between 2 – 4% are considered moderate, and >4% is considered high.

Stream Resiliency Index Calculation (Preliminary)

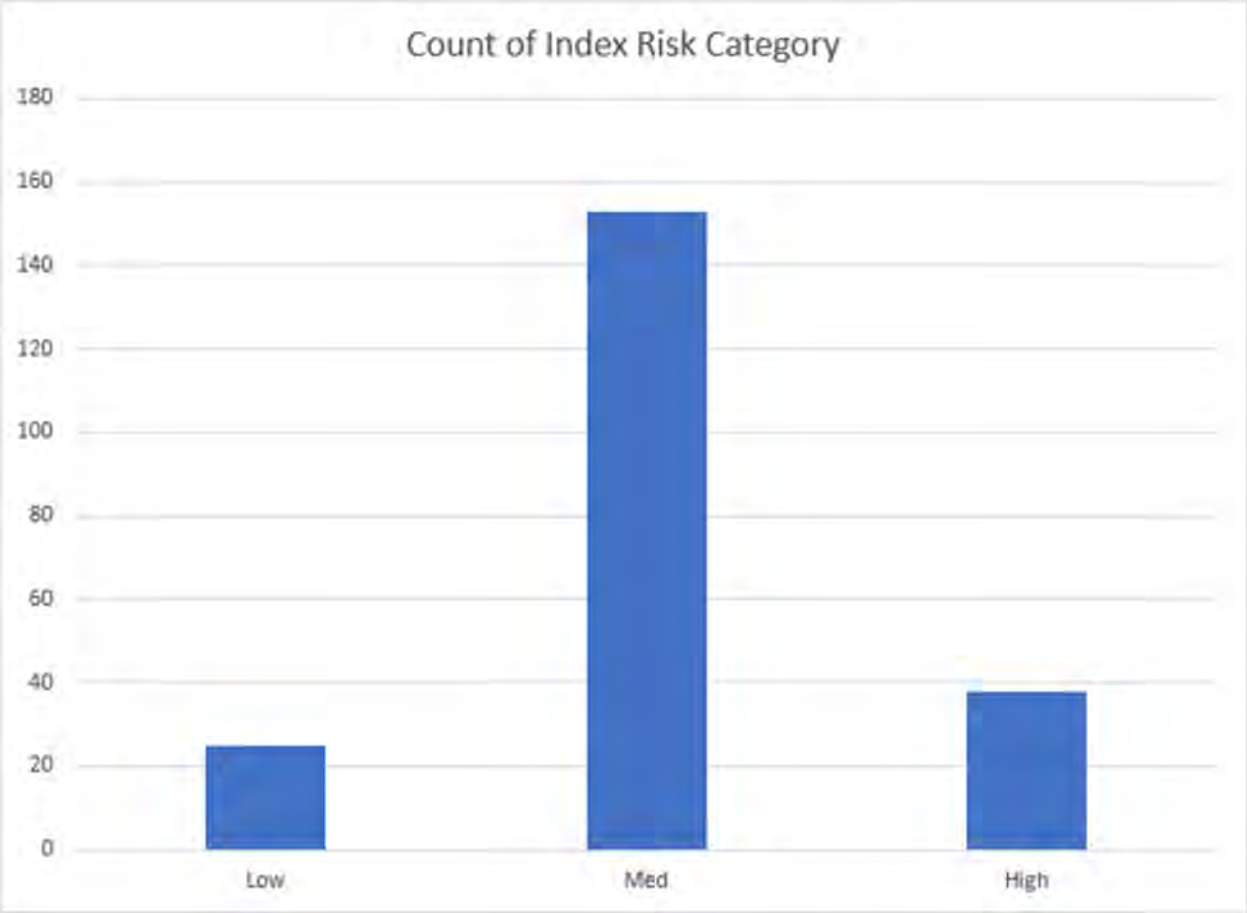
The Preliminary Stream Resiliency Index is calculated by applying equal weighting for the floodplain function and the channel gradient parameters. For the floodplain function parameter a rating of high is assigned a value of 5, a rating of medium is assigned a value of 3, and a rating of low is assigned a value of 1. For the Stream Gradient parameter, a low gradient channel is assigned a value of 5 (more resilient), a moderate gradient channel is assigned a value of 3, and a high gradient channel is assigned a value of 1. The two parameters are summed to produce the Stream Resiliency Index with a value =>8 being High, a value between 4 and 7 being Moderate, and a value <4 being Low indicating relatively high, moderate, and low resilience potential, respectively. A high value for Stream Resiliency implies that the stream reach may be less likely to be impacted (more resilient) by the effects of hydromodification. The initial ratings generated by this desktop analysis along with example map products are included in Appendix B. Recommendations for future exploration and refinements to this analysis include additional field verification, review of field reports, etc.

Creek	Location	Reach ID	Floodplain Score (5 high, 3 med, 1 low)	Floodplain Function (High to Low)	Gradient Score (5 high, 3 med, 1 low)	Gradient Risk Category	Index Score	Index Resilience Category
Hogan Creek	Hogan Creek upstream of SE Cleveland Rd	110	3	Med	1	High	4	Med
Unnamed Creek	Unnamed Creek confluence w/ Hogan Creek	111	3	Med	1	High	4	Med
Unnamed Creek	Unnamed Creek confluence w/ Jenne Creek	112	1	Low	1	High	2	Low
Botefuhr Creek	Botefuhr Creek confluence w/ Johnson Creek	114	3	Med	1	High	4	Med
Unnamed Creek	Unnamed Creek confluence w/ Hogan Creek	115	3	Med	1	High	4	Med
Jenne Creek	Jenne Creek upstream of SE Jenne Rd	116	3	Med	1	High	4	Med
Johnson Creek	Johnson Creek nr Botefuhr Creek	119	5	High	3	Med	8	High
Bear Creek	Bear Creek confluence w/ Butler Creek	123	3	Med	1	High	4	Med
Johnson Creek	Johnson Creek upstream of SE Hogan Ave	124	5	High	1	High	6	Med
Johnson Creek	Johnson Creek downstream of SE Hogan Ave	125	5	High	3	Med	8	High
Meadow Creek	Meadow Creek upstream	126	5	High	1	High	6	Med
Unnamed Creek	Unnamed Creek confluence w/ Meadow Creek	127	5	High	1	High	6	Med
Butler Creek	Butler Creek upstream of SW Binford Lake Pkwy	128	3	Med	3	Med	6	Med
Chastain Creek	Chastain Creek upstream	130	5	High	1	High	6	Med
Jenne Creek	Jenne Creek upstream of SE McKinley Rd	131	3	Med	1	High	4	Med
Johnson Creek	Johnson Creek nr Nechacokee and Hogan Creek	132	5	High	5	Low	10	High
Chastain Creek	Chastain Creek upstream	133	5	High	1	High	6	Med
Unnamed Creek	Unnamed Creek confluence w/ Chastain Creek	134	5	High	1	High	6	Med
Chastain Creek	0	135	5	High	1	High	6	Med
Heiney Creek	0	140	1	Low	1	High	2	Low
Johnson Creek	Johnson Creek upstream of SE Regner Rd	141	5	High	3	Med	8	High
Chastain Creek	Chastain Creek confluence w/ Johnson Creek	145	1	Low	1	High	2	Low
Johnson Creek	Johnson Creek downstream of SE Regner Rd	147	5	High	3	Med	8	High
Kelly Creek	Kelly Creek upstream of SE Powell Valley Blvd	148	3	Med	3	Med	6	Med
Johnson Creek	Johnson Creek nr Butler Creek	150	5	High	5	Low	10	High
Johnson Creek	Johnson Creek nr Chastain Creek	151	3	Med	5	Low	8	High
Johnson Creek	Johnson Creek upstream of SW Eastman Pkwy	153	3	Med	3	Med	6	Med
Johnson Creek	Johnson Creek nr Miller Creek	154	3	Med	5	Low	8	High
Johnson Creek	Johnson Creek nr 7th Street Natural Area	155	1	Low	3	Med	4	Med
Johnson Creek	Johnson Creek upstream of SW 7th St	156	3	Med	3	Med	6	Med
Johnson Creek	Johnson Creek upstream of SW Walters Dr	157	3	Med	5	Low	8	High
Johnson Creek	Johnson Creek upstream of S Main Ave	158	3	Med	3	Med	6	Med
Clear Creek	Clear Creek upstream of NE Glisan St	159	1	Low	1	High	2	Low
Unnamed Creek	Unnamed Creek confluence w/ Columbia Slough	160	1	Low	1	High	2	Low
Columbia Slough	Columbia Slough at NE 185th Dr	163	3	Med	3	Med	6	Med
Unnamed Creek	Unnamed Creek at Hwy 26 upstream of Burlingame Creek	168	1	Low	1	High	2	Low
Unnamed Creek	Unnamed Creek confluence w/ Burlingame Creek nr Hwy 26	169	1	Low	3	Med	4	Med
Burlingame Creek	Burlingame Creek nr Hwy 26	170	1	Low	3	Med	4	Med
Burlingame Creek	Burlingame Creek upstream of SE Salquist Rd	171	1	Low	1	High	2	Low
Burlingame Creek	Burlingame Creek upstream of Hwy 26	174	1	Low	1	High	2	Low
Burlingame Creek	Burlingame Creek downstream of SE Palmquist Rd	180	1	Low	3	Med	4	Med
Kelly Creek	Kelly Creek upstream of SE 282nd Ave	183	3	Med	3	Med	6	Med
Kelly Creek	Kelly Creek upstream of SE Salquist Rd	184	3	Med	3	Med	6	Med
Unnamed Creek	Unnamed Creek upstream of SE Chased Rd	185	3	Med	3	Med	6	Med
Unnamed Creek	Unnamed Creek downstream of SE Chased Rd	186	1	Low	1	High	2	Low
Kelly Creek	Kelly Creek downstream SE 16th Dr	188	5	High	3	Med	8	High
Kelly Creek	Kelly Creek at SE El Camino Dr	192	3	Med	5	Low	8	High
Kelly Creek	Kelly Creek downstream of SE El Camino Dr	193	3	Med	5	Low	8	High
Kelly Creek	Kelly Creek downstream of NE Division St	194	3	Med	3	Med	6	Med
Unnamed Creek	Unnamed Creek upstream of SE 182nd Ave nr Kelley Creek	198	1	Low	1	High	2	Low
Unnamed Creek	Unnamed Creek downstream of SE 182nd Ave nr Kelley Creek	199	5	High	1	High	6	Med
Unnamed Creek	Unnamed Creek at SE 182nd Ave nr Kelley Creek	200	1	Low	1	High	2	Low
Meadow Creek	Meadow Creek nr South Fork Meadow Creek confluence	201	5	High	1	High	6	Med
Heiney Creek	Heiney Creek upstream of SW 25th Ct	205	5	High	1	High	6	Med
Kelly Creek	Kelly Creek nr Mt Hood Community College	210	3	Med	3	Med	6	Med
Burlingame Creek	Burlingame Creek upstream of E Powell Blvd	214	1	Low	3	Med	4	Med
Burlingame Creek	Burlingame Creek at Gresham Golf and Country Club	216	1	Low	5	Low	6	Med
Kelly Creek	Kelly Creek downstream of SE Salquist Rd	221	3	Med	3	Med	6	Med
Kelly Creek	Kelly Creek downstream of NE 257th Dr	226	3	Med	3	Med	6	Med
Kelly Creek	Kelly Creek at NE Division St	227	1	Low	3	Med	4	Med
Brick Creek	Brick Creek at SE Hogan Ave	228	3	Med	1	High	4	Med
Brick Creek	Brick Creek confluence w/ Johnson Creek	229	3	Med	1	High	4	Med
North Fork Johnson Creek Trib	North Fork Johnson Creek Tributary confluence w/ NF Johnson Creek	232	3	Med	1	High	4	Med
Fairview Creek Headwaters	Fairview Creek Headwaters nr SW 2nd St	233	3	Med	5	Low	8	High
Fairview Creek	Fairview Creek at NW Division St.	234	1	Low	3	Med	4	Med
Unnamed Creek	0	235	5	High	1	High	6	Med
North Fork Johnson Creek	North Fork Johnson Creek confluence w/ Johnson Creek	238	5	High	3	Med	8	High
Fairview Creek	Fairview Creek upstream of railroad	241	3	Med	5	Low	8	High
Fairview Creek	Fairview Creek downstream of SE Stark St	242	1	Low	3	Med	4	Med
Fairview Creek	Fairview Creek upstream of NW Burnside Rd	243	1	Low	3	Med	4	Med
Fairview Creek	Fairview Creek downstream of NW Burnside Rd	244	1	Low	3	Med	4	Med
Unnamed Creek	Unnamed Creek along SE Jenne Rd	246	1	Low	1	High	2	Low
Johnson Creek	Johnson Creek downstream of Hwy 26	247	3	Med	3	Med	6	Med
Jenne Creek	Jenne Creek downstream of SE McKinley Rd	257	3	Med	1	High	4	Med
Nechacokee Creek	Nechacokee Creek at SE Elliot Dr	260	3	Med	1	High	4	Med
Sunshine Creek	Sunshine Creek upstream of SE Kane Rd	261	3	Med	5	Low	8	High
Johnson Creek	Johnson Creek upstream of 174th	262	1	Low	3	Med	4	Med
Johnson Creek	Johnson Creek at Highland Creek	263	3	Med	3	Med	6	Med
Nechacokee Creek	upstream Nechacokee Creek	265	5	High	1	High	6	Med
North Fork Johnson Creek	North Fork Johnson Creek downstream of Hwy 26	266	3	Med	3	Med	6	Med
Kelley Creek	Kelley Creek downstream of SE 190th Dr	267	3	Med	1	High	4	Med
Kelley Creek	Kelley Creek downstream of Richey Rd	268	3	Med	1	High	4	Med
Hogan Creek	Hogan Creek upstream of SE 26th Dr	275	1	Low	3	Med	4	Med
Unnamed Creek	0	276	5	High	1	High	6	Med
Meadow Creek	Meadow Creek upstream SE Meadow Ct	277	5	High	1	High	6	Med
South Fork Meadow Creek	South Fork Meadow Creek upstream SE Meadow Ct	278	5	High	1	High	6	Med
Brigman Creek	Brigman Creek downstream of SE McNutt Rd	279	5	High	1	High	6	Med
McNutt Creek	0	280	5	High	1	High	6	Med
Sunshine Creek	Sunshine Creek confluence w/ Johnson Creek	281	5	High	5	Low	10	High
Johnson Creek	Johnson Creek downstream of Stone Rd	282	3	Med	3	Med	6	Med

City of Gresham
Preliminary Stream Resiliency Index
November 1, 2023

Creek	Location	Reach ID	Floodplain Score (5 high, 3 med, 1 low)	Floodplain Function (High to Low)	Gradient Score (5 high, 3 med, 1 low)	Gradient Risk Category	Index Score	Index Resilience Category
Heiney Creek	Heiney Creek Upstream	1	3	Med	1	High	4	Med
Heiney Creek	Heiney Creek confluence w/ Johnson Creek	2	3	Med	1	High	4	Med
Miller Creek	Miller Creek Upstream	3	5	High	1	High	6	Med
Miller Creek	Miller Creek confluence w/ Johnson Creek	4	3	Med	1	High	4	Med
Butler Creek	Butler Creek SW Binford Lake Pkwy to SW 14th Dr	5	5	High	1	High	6	Med
Unnamed Creek	Unnamed Creek Confluence w/ Hogan Creek nr SE 46th Dr	11	1	Low	1	High	2	Low
Thompson Creek	Thompson Creek b/t SE 2nd St. and SE Spruce Ave	12	1	Low	1	High	2	Low
Nechacokee Creek	Nechacokee Creek confluence w/ Johnson Creek	14	5	High	1	High	6	Med
Butler Creek	Butler Creek confluence w/ Johnson Creek	16	3	Med	3	Med	6	Med
Chastain Creek	0	17	5	High	1	High	6	Med
Highland Creek	Highland Creek upstream	18	1	Low	1	High	2	Low
Highland Creek	Highland Creek confluence w/ Johnson Creek	19	5	High	1	High	6	Med
Unnamed Creek	Unnamed Creek downstream of SE Butler Rd	21	3	Med	1	High	4	Med
Meadow Creek	Meadow Creek confluence w/ Johnson Creek	22	3	Med	1	High	4	Med
Unnamed Creek	Unnamed Creek upstream of SW Towle Ave	23	5	High	1	High	6	Med
Cedar Creek	Cedar Creek upstream of SE Hogan Ave	24	1	Low	1	High	2	Low
Cedar Creek	Cedar Creek confluence w/ Johnson Creek	25	3	Med	1	High	4	Med
Thom Creek	Thom Creek upstream of SE Roberts Ave	26	5	High	1	High	6	Med
Thom Creek	Thom Creek confluence w/ Johnson Creek	27	5	High	3	Med	8	High
Nechacokee Creek	Nechacokee Creek downstream of SE 29th St	28	5	High	1	High	6	Med
Unnamed Creek	Unnamed Creek confluence w/ Butler Creek	29	3	Med	1	High	4	Med
West Fork Hogan Creek	West Fork Hogan Creek upstream of SE Cleveland Ave	33	3	Med	1	High	4	Med
West Fork Hogan Creek	West Fork Hogan Creek confluence w/ Hogan Creek	34	3	Med	1	High	4	Med
North Fork Butler Creek	North Fork Butler Creek upstream of SW Willow Pkwy	35	5	High	1	High	6	Med
South Fork Meadow Creek	South Fork Meadow Creek upstream	37	3	Med	1	High	4	Med
Hogan Creek	Hogan Creek confluence w/ Johnson Creek	41	5	High	3	Med	8	High
Botefuhr Creek	Botefuhr Creek upstream of SE Hogan Rd	43	3	Med	1	High	4	Med
Botefuhr Creek	Botefuhr Creek downstream of SE Hogan Rd	44	3	Med	1	High	4	Med
Brigman Creek	Brigman Creek upstream of SE Hogan Rd	45	3	Med	1	High	4	Med
Brigman Creek	Brigman Creek downstream of SE Hogan Rd	46	1	Low	1	High	2	Low
Brigman Creek	Brigman Creek confluence w/ Johnson Creek	47	5	High	1	High	6	Med
Brigman Creek	Brigman Creek upstream of SE Honors Dr	49	3	Med	1	High	4	Med
Unnamed Creek	Unnamed Creek upstream of SW Butler Rd	50	3	Med	1	High	4	Med
Unnamed Creek	0	52	5	High	1	High	6	Med
Unnamed Creek	Unnamed Creek confluence w/ Kelley Creek	54	1	Low	1	High	2	Low
MacDonald Creek	MacDonald Creek confluence w/ Johnson Creek	55	3	Med	3	Med	6	Med
Sunshine Creek	Sunshine Creek downstream of SE Kane Rd	56	5	High	3	Med	8	High
Johnson Creek	Johnson Creek upstream of Hwy 26	57	3	Med	3	Med	6	Med
Kelley Creek	Kelley Creek upstream	59	3	Med	1	High	4	Med
Hogan Creek	Hogan Creek upstream	60	5	High	1	High	6	Med
Unnamed Creek	Unnamed Creek confluence w/ Kelley Creek	61	3	Med	1	High	4	Med
Unnamed Creek	0	62	5	High	1	High	6	Med
Unnamed Creek	Unnamed Creek confluence w/ Kelley Creek	64	5	High	1	High	6	Med
Kelley Creek	Kelley Creek downstream of SE Alder Ridge Rd	65	3	Med	1	High	4	Med
Unnamed Creek	Unnamed Creek confluence w/ Hogan Creek	66	3	Med	1	High	4	Med
Unnamed Creek	Unnamed Creek confluence w/ Kelley Creek	67	5	High	1	High	6	Med
Johnson Creek	Johnson Creek b/t Sunshine and MacDonald Creek	70	5	High	3	Med	8	High
Unnamed Creek	0	71	3	Med	3	Med	6	Med
Hogan Creek	Hogan Creek upstream of SE 46th Dr	72	3	Med	1	High	4	Med
Unnamed Creek	0	73	5	High	1	High	6	Med
Unnamed Creek	Unnamed Creek confluence w/ Kelley Creek	74	5	High	1	High	6	Med
Kelley Creek	0	75	3	Med	1	High	4	Med
Kelley Creek	Kelley Creek upstream of SE 190th Dr	76	3	Med	1	High	4	Med
McNutt Creek	McNutt Creek confluence w/ Johnson Creek	77	3	Med	1	High	4	Med
Johnson Creek	Johnson Creek upstream of SE 252nd Ave	80	5	High	5	Low	10	High
Hogan Creek	Hogan Creek downstream of SE 46th Dr	81	3	Med	1	High	4	Med
Unnamed Creek	Unnamed Creek confluence w/ Kelley Creek	82	3	Med	3	Med	6	Med
Unnamed Creek	0	83	3	Med	1	High	4	Med
Unnamed Creek	Unnamed Creek confluence w/ Hogan Creek	84	3	Med	1	High	4	Med
Kelley Creek	0	86	3	Med	3	Med	6	Med
Kelley Creek	Kelley Creek upstream of SE Richey Rd	87	3	Med	3	Med	6	Med
Hogan Creek	Hogan Creek upstream of SE Butler Rd	88	1	Low	1	High	2	Low
Unnamed Creek	Unnamed Creek confluence w/ Butler Creek	89	5	High	1	High	6	Med
North Fork Johnson Creek	0	90	5	High	3	Med	8	High
Unnamed Creek	Unnamed Creek confluence w/ Kelley Creek	91	3	Med	1	High	4	Med
Johnson Creek	0	92	5	High	3	Med	8	High
Kelley Creek	0	93	3	Med	1	High	4	Med
Unnamed Creek	Unnamed Creek confluence w/ Butler Creek	94	5	High	1	High	6	Med
Unnamed Creek	Unnamed Creek confluence w/ Butler Creek	95	5	High	1	High	6	Med
Unnamed Creek	Unnamed Creek confluence w/ Butler Creek	96	3	Med	1	High	4	Med
Hogan Creek	Hogan Creek downstream of SE Butler Rd	97	5	High	1	High	6	Med
Hogan Creek	Hogan Creek downstream of SE Butler Rd	98	5	High	1	High	6	Med
Butler Creek	0	99	3	Med	1	High	4	Med
Butler Creek	Butler Creek upstream of SW Butler Rd	100	3	Med	1	High	4	Med
Butler Creek	0	101	3	Med	1	High	4	Med
Unnamed Creek	Unnamed Creek confluence w/ Botefuhr Creek	102	3	Med	1	High	4	Med
Unnamed Creek	Unnamed Creek confluence w/ Hogan Creek	103	3	Med	1	High	4	Med
North Fork Johnson Creek	North Fork Johnson Creek upstream of Hwy 26	104	3	Med	1	High	4	Med
Butler Creek	0	105	3	Med	1	High	4	Med
Butler Creek	Butler Creek downstream if SW Butler Rd	106	5	High	1	High	6	Med
Butler Creek	Butler Creek upstream of SE Willow Pkwy	107	5	High	1	High	6	Med
Unnamed Creek	Unnamed Creek confluence w/ Hogan Creek	109	3	Med	1	High	4	Med

Creek	Location	Reach ID	Floodplain Score (5 high, 3 med, 1 low)	Floodplain Function (High to Low)	Gradient Score (5 high, 3 med, 1 low)	Gradient Risk Category	Index Score	Index Resilience Category
North Fork Johnson Creek	North Fork Johnson Creek downstream of SE 282nd St	283	5	High	1	High	6	Med
North Fork Johnson Creek	North Fork Johnson Creek upstream of NF Johnson Creek Trib confluence	284	5	High	3	Med	8	High
Johnson Creek	Johnson Creek upstream of McNutt Creek confluence	285	5	High	3	Med	8	High
Johnson Creek	Johnson Creek downstream of McNutt Creek confluence	286	5	High	5	Low	10	High
Johnson Creek	Johnson Creek near Brigman Creek confluence	287	5	High	3	Med	8	High
Johnson Creek	Johnson Creek near Thom Creek confluence	288	3	Med	5	Low	8	High
Thom Creek	Thom Creek near Thom Park	289	3	Med	1	High	4	Med
Johnson Creek	Johnson Creek downstream of SW 7th St	290	3	Med	5	Low	8	High
Johnson Creek	Johnson Creek upstream of Heiney Creek confluence	291	5	High	5	Low	10	High
Johnson Creek	Johnson Creek downstream of Heiney Creek confluence	292	5	High	5	Low	10	High
Johnson Creek	Johnson Creek upstream of SW Pleasant Vie Dr	293	3	Med	3	Med	6	Med
Johnson Creek	Johnson Creek near Butler Creek confluence	294	3	Med	5	Low	8	High
Johnson Creek	Johnson Creek upstream of SW Highland Dr	295	3	Med	3	Med	6	Med
Nechacokee Creek	0	296	3	Med	1	High	4	Med
Kelley Creek	0	297	3	Med	1	High	4	Med
Unnamed Creek	Unnamed Creek nr Foster and Richey Rd	298	1	Low	3	Med	4	Med
Unnamed Creek	0	299	3	Med	3	Med	6	Med
Kelley Creek	Kelley Creek near Mitchell Creek	300	3	Med	5	Low	8	High
Kelley Creek	Kelley Creek near SE Foster Rd	301	5	High	1	High	6	Med
Johnson Creek	Johnson Creek at SW Highland	302	1	Low	3	Med	4	Med
Fairview Creek	Fairview Creek upstream of NW Division St	303	1	Low	5	Low	6	Med
Fairview Creek Headwaters	0	304	3	Med	5	Low	8	High
Fairview Creek Headwaters	Fairview Creek Headwaters downstream of Hwy 26	305	3	Med	5	Low	8	High
Fairview Creek	Fairview Creek upstream of SE 202nd Ave	306	1	Low	3	Med	4	Med
Unnamed Pond	Unnamed Pond upstream of Salish ponds	307	1	Low	3	Med	4	Med
Fairview Creek	Fairview Creek upstream of unnamed pond	309	3	Med	1	High	4	Med
Columbia Slough	Columbia Slough upstream of NE 185th Dr	311	1	Low	3	Med	4	Med
Fairview Creek	Fairview Creek downstream of Fairveiw Lake	326	1	Low	5	Low	6	Med
Columbia Slough	Columbia Slough downstream of Fairview Lake	328	1	Low	5	Low	6	Med
Unnamed Creek	Unnamed Creek confluence w/ Kelley Creek	332	5	High	1	High	6	Med
Unnamed Creek	Unnamed Creek upstream SE Foster Rd and Kelley Creek confluence	333	3	Med	3	Med	6	Med
Kelly Creek	0	335	5	High	3	Med	8	High
Kelly Creek	Kelly Creek downstream of E Powell Blvd	343	3	Med	3	Med	6	Med
Kelly Creek	Kelly Creek upstream of NE Kane Rd	345	5	High	5	Low	10	High
Kelly Creek	Kelly Creek confluence w/ Burlingame Creek	346	1	Low	1	High	2	Low
Burlingame Creek	Burlingame Creek upstream of NE Kane Dr	349	1	Low	3	Med	4	Med
Burlingame Creek	Burlingame Creek downstream of NE Hogan Rd	353	1	Low	3	Med	4	Med
North Fork Butler Creek	North Fork Butler Creek upstream of SW Willow Pkwy	365	3	Med	1	High	4	Med
North Fork Butler Creek	North Fork Butler Creek confluence w/ Butler Creek	370	3	Med	1	High	4	Med
Butler Creek	Butler Creek downstream of Butler Creek Park	371	3	Med	1	High	4	Med
Unnamed Creek	Unnamed Creek confluence w/ Meadow Creek	372	5	High	1	High	6	Med
South Fork Meadow Creek	0	375	5	High	1	High	6	Med
Unnamed Creek	Unnamed Creek confluence w/ Johnson Creek near SE McNutt Rd	379	3	Med	1	High	4	Med
Butler Creek	Butler Creek near Butler Creek Park	384	3	Med	3	Med	6	Med



Preliminary Resiliency Index Summary

Hydromodification Index Overview

2,500 1,300 0 2,500 5,000 7,500

Feet

N

CITY OF GRESHAM

Reach Relative Elevation Model

Meadow Creek

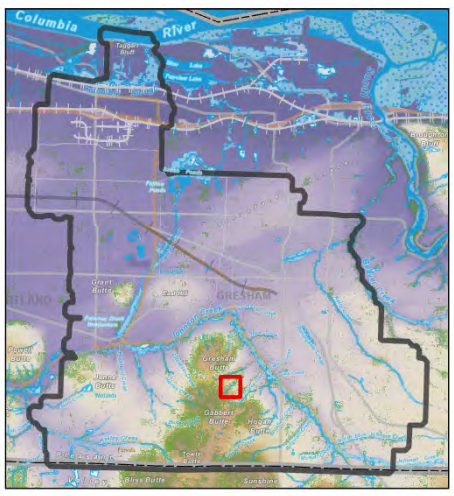
South Fork Meadow Creek

Nechacokee Creek

0 80 160 Feet

Building Footprints	-5 - -2
Building Footprints	-2 - 0
Stormwater Manhole	0 - 1
Storm Manhole	1 - 2
Stormwater Outlet	2 - 3
Storm outlet	3 - 4
Stormwater Lateral	4 - 5
Storm lateral	5 - 6
Stormwater Main	6 - 8
Storm main	8 - 10
Stormwater Culvert	10 - 12
Culvert	12 - 14
Pavement	14 - 16
Pavement	16 - 18
Wastewater Mains	18 - 20
Wastewater main	20 - 24
Forced Main	24 - 28
WW Manhole	28 - 32
Wastewater Manhole	32 - 35
REM	35 - 55
-17 - -5	55 - 999

Reach ID 37



Reach Relative Elevation Model

Sunshine Creek

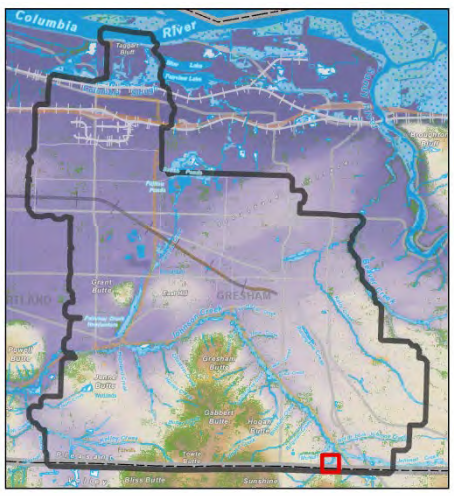
Sunshine Creek

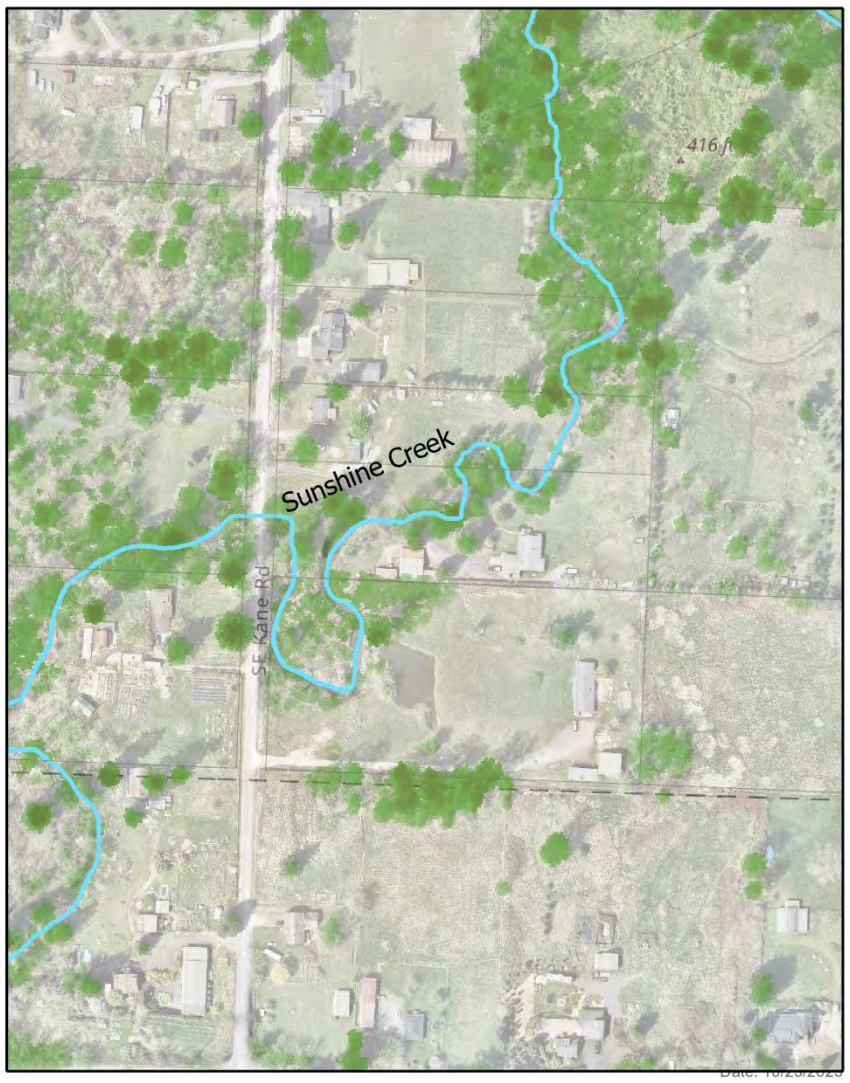
N

0 75 150
Feet

Building Footprints	-5 - -2
Building Footprints	-2 - 0
Stormwater Manhole	0 - 1
Storm Manhole	1 - 2
Stormwater Outlet	2 - 3
Storm outlet	3 - 4
Stormwater Lateral	4 - 5
Storm lateral	5 - 6
Stormwater Main	6 - 8
Storm main	8 - 10
Stormwater Culvert	10 - 12
Culvert	12 - 14
Pavement	14 - 16
Pavement	16 - 18
Wastewater Mains	18 - 20
Wastewater main	20 - 24
Forced Main	24 - 28
WW Manhole	28 - 32
Wastewater Manhole	32 - 35
REM	35 - 55
-17 - -5	55 - 999

Reach ID 56





Reach Relative Elevation Model

North Fork Johnson Creek

Johnson Creek

Johnson Creek

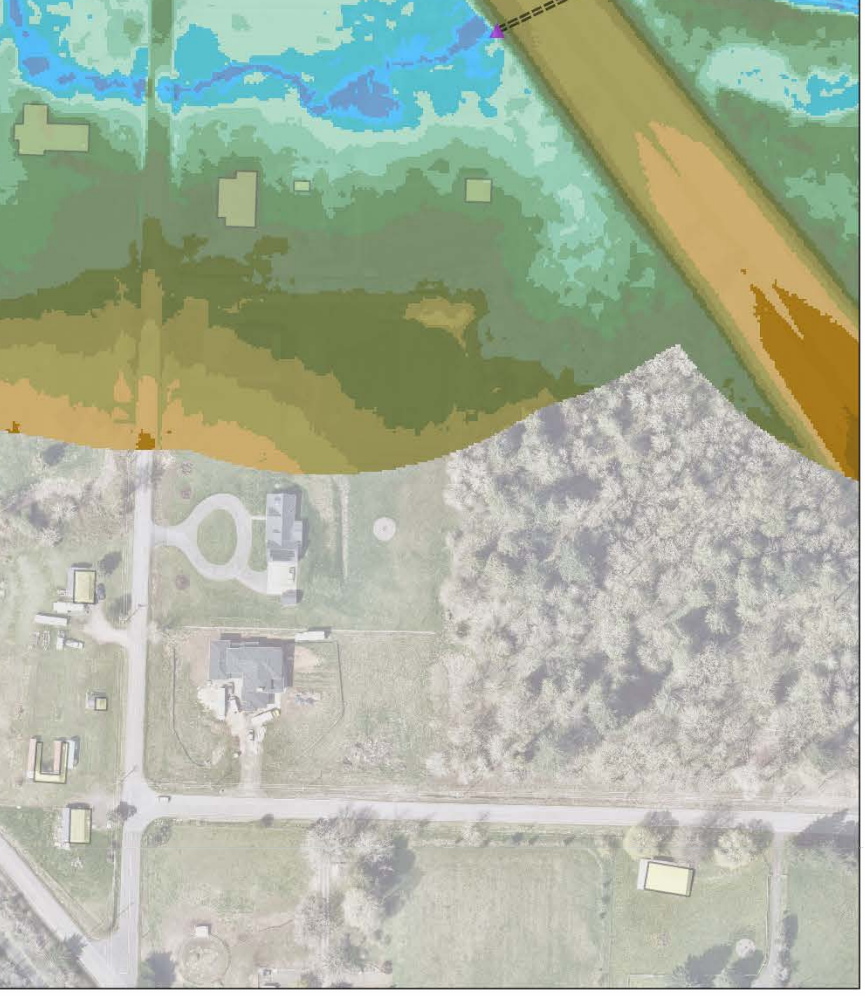
MacDonald Creek

N

0 130 260 Feet

Building Footprints	-5 - -2
Building Footprints	-2 - 0
Stormwater Manhole	0 - 1
Storm Manhole	1 - 2
Stormwater Outlet	2 - 3
Storm outlet	3 - 4
Stormwater Lateral	4 - 5
Storm lateral	5 - 6
Stormwater Main	6 - 8
Storm main	8 - 10
Stormwater Culvert	10 - 12
Culvert	12 - 14
Pavement	14 - 16
Pavement	16 - 18
Wastewater Mains	18 - 20
Wastewater main	20 - 24
Forced Main	24 - 28
WW Manhole	28 - 32
Wastewater Manhole	32 - 35
REM	35 - 55
-17 - -5	55 - 999

Reach ID 247

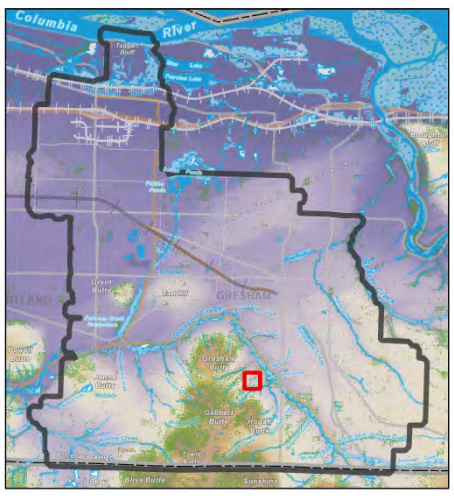


Reach Relative Elevation Model

Nechacokee Creek
Nechacokee Creek
Nechacokee Creek
West Fork Hogan Creek
0 60 120 Feet

Building Footprints	-5 - -2
Building Footprints	-2 - 0
Stormwater Manhole	0 - 1
Storm Manhole	1 - 2
Stormwater Outlet	2 - 3
Storm outlet	3 - 4
Stormwater Lateral	4 - 5
Storm lateral	5 - 6
Stormwater Main	6 - 8
Storm main	8 - 10
Stormwater Culvert	10 - 12
Culvert	12 - 14
Pavement	14 - 16
Pavement	16 - 18
Wastewater Mains	18 - 20
Wastewater main	20 - 24
Forced Main	24 - 28
WW Manhole	28 - 32
Wastewater Manhole	32 - 35
REM	35 - 55
-17 - -5	55 - 999

Reach ID 260



Reach Relative Elevation Model

Brigman Creek

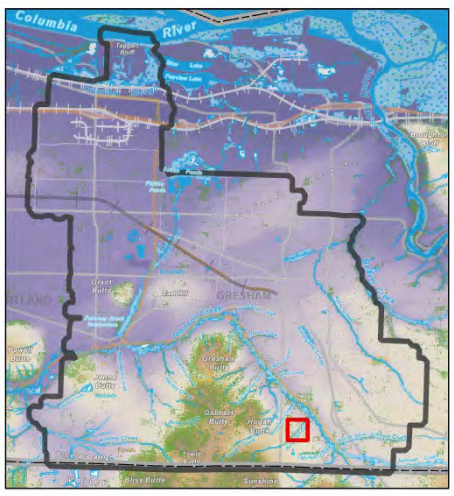
Brigman Creek

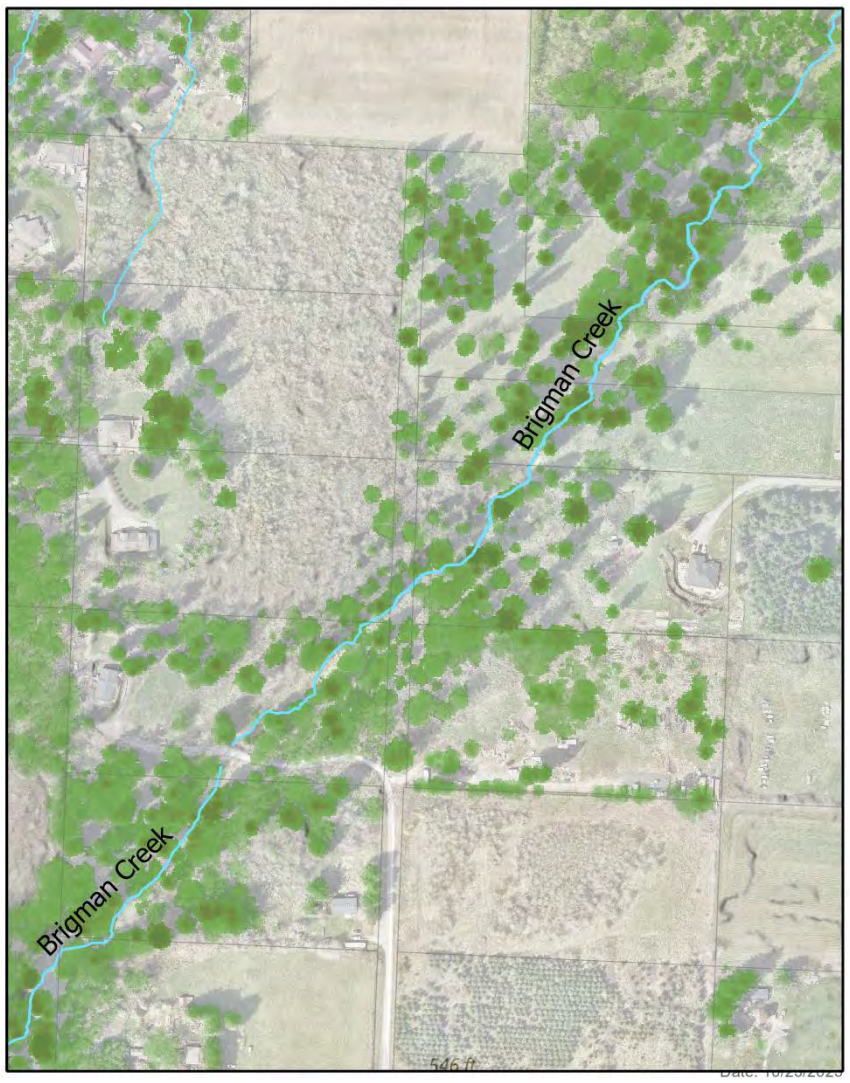
0 80 160 Feet

N

Building Footprints	-5 - -2
Building Footprints	-2 - 0
Stormwater Manhole	0 - 1
Storm Manhole	1 - 2
Stormwater Outlet	2 - 3
Storm outlet	3 - 4
Stormwater Lateral	4 - 5
Storm lateral	5 - 6
Stormwater Main	6 - 8
Storm main	8 - 10
Stormwater Culvert	10 - 12
Culvert	12 - 14
Pavement	14 - 16
Pavement	16 - 18
Wastewater Mains	18 - 20
Wastewater main	20 - 24
Forced Main	24 - 28
WW Manhole	28 - 32
Wastewater Manhole	32 - 35
REM	35 - 55
-17 - -5	55 - 999

Reach ID 279





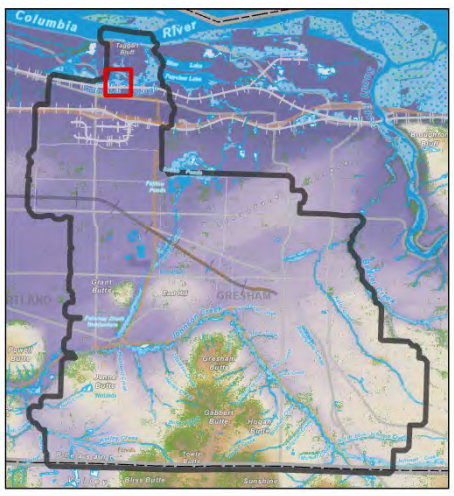
Reach Relative Elevation Model

Columbia Slough

0 110 220 Feet

Building Footprints	-5 - -2
Building Footprints	-2 - 0
Stormwater Manhole	0 - 1
Storm Manhole	1 - 2
Stormwater Outlet	2 - 3
Storm outlet	3 - 4
Stormwater Lateral	4 - 5
Storm lateral	5 - 6
Stormwater Main	6 - 8
Storm main	8 - 10
Stormwater Culvert	10 - 12
Culvert	12 - 14
Pavement	14 - 16
Pavement	16 - 18
Wastewater Mains	18 - 20
Wastewater main	20 - 24
Forced Main	24 - 28
WW Manhole	28 - 32
Wastewater Manhole	32 - 35
REM	35 - 55
-17 - -5	55 - 999

Reach ID 311



Reach Relative Elevation Model

Butler Creek
Bear Creek
North Fork Butler Creek
Butler Creek
Butler Creek
North Fork Butler Creek
Butler Creek
0 100 200 Feet

Building Footprints	-5 - -2
Building Footprints	-2 - 0
Stormwater Manhole	0 - 1
Storm Manhole	1 - 2
Stormwater Outlet	2 - 3
Storm outlet	3 - 4
Stormwater Lateral	4 - 5
Storm lateral	5 - 6
Stormwater Main	6 - 8
Storm main	8 - 10
Stormwater Culvert	10 - 12
Culvert	12 - 14
Pavement	14 - 16
Pavement	16 - 18
Wastewater Mains	18 - 20
Wastewater main	20 - 24
Forced Main	24 - 28
WW Manhole	28 - 32
Wastewater Manhole	32 - 35
REM	35 - 55
-17 - -5	55 - 999

Reach ID 384