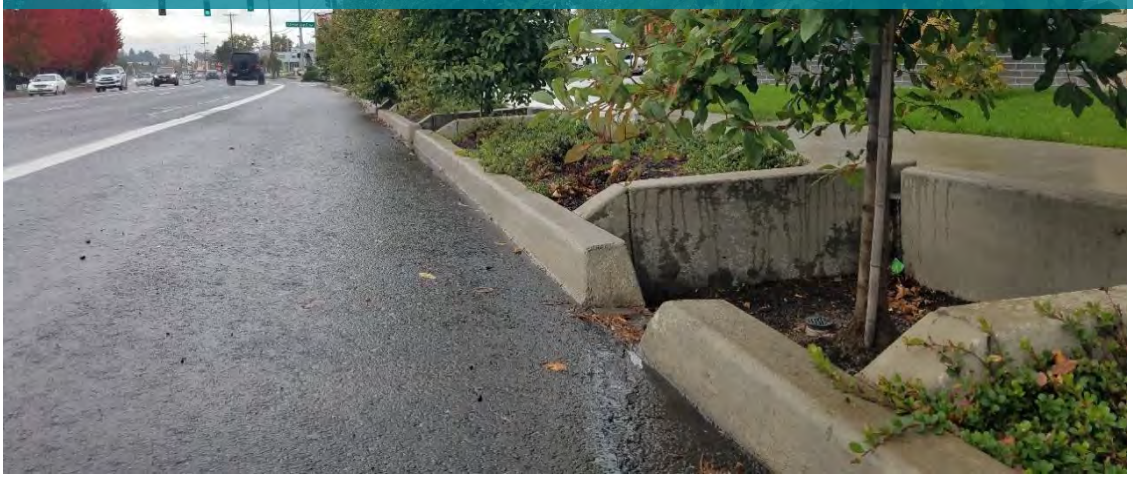
Top photo:
Material removed from City storm drains during routine cleaning

Middle photo:
Gresham youth learns to ID damsel and dragonflies at stormwater pond

Bottom photo:
Stormwater tree wells installed as part of a public-private development agreement

STORMWATER MANAGEMENT PLAN

June 2022 (Draft to DEQ)



CITY OF GRESHAM

1333 NW Eastman Parkway
Gresham, OR 97030

503-618-2525
Keri.Handaly@GreshamOregon.gov
GreshamOregon.gov

TABLE OF CONTENTS

City of Gresham Stormwater Management Plan (SWMP)

Figures -

A. City of Gresham UIC Management Plan Overview 2022 – 2032[1]

Background

In 1974, Congress enacted Underground Injection Control (UIC) rules under the federal Safe Drinking Water Act (SDWA). These rules are administered by the U.S. Environmental Protection Agency (EPA) under 40 CFR 144-148. EPA delegated UIC rule primacy to the Oregon Department of Environmental Quality (DEQ) in 1984. The federal UIC rules were modified in 1999. In response to the new federal rules, delegated states were required to update their state UIC rules within 270 days. DEQ released revised UIC rules (Oregon Administrative Rules (OAR) 340-044) in September 2001. OAR 340-044 includes specific requirements for municipalities with more than 50 UICs.

As a result of these requirements, the City of Gresham (City) conducted an inventory and system assessment and determined that most City Underground Injection Controls (UICs) qualified for rule authorization, but a small number would require a permit. The City applied for rule authorization in 2001 and submitted a Water Pollution Control Facility (WPCF) permit application for seven UICs in 2002.

In 2006, the City obtained approximately 350 UICs from Multnomah County, when responsibility for all formerly County-owned roads within Gresham was transferred to City ownership. Upon review of the new UICs, many of which were paved over, the City determined the new UICs would require permit coverage. In consultation with DEQ, in 2008, the City updated its permit application to include all City UICs—including those eligible for rule authorization.

In addition to the 2008 permit application update, the City submitted reports in December of 2009 and 2010 that detailed changes to the number, location, and status of its UICs. On June 30, 2011, the City submitted an additional permit application update that reflected discussions with DEQ regarding the anticipated permit.

An applicant review draft of a WPCF permit was presented to the City by DEQ in September 2011 (DEQ File Number 112110). Gresham updated the System-wide Assessment and Monitoring Plan originally submitted in November, 2011 to meet the new permit requirements and reflect the fact that one year of UIC monitoring consistent with both permit drafts was collected in fiscal year 2011/2012.

The City received its first permit in January 2013, which approved the 2012 system-wide assessment. This permit required that the assessment be updated at the end of the fifth year. At that time, the City's current active inventory was 1,014 and an associated inventory map was submitted to DEQ. As part of the City's 2022 Permit Renewal Submittal, an updated inventory map has been created with a review of the City's data related to active UICs, and those that no longer exist because they have been decommissioned or converted into a different type of stormwater asset such as a sedimentation manhole. The City's total number of vertical UICs has decreased because of these changes, but the City has also added 18 horizontal UICs[2] since the 2017 map was completed. This brings the City's total active UICs to 1,123.

Adaptive Management

As described in the WPCF permit in Schedule D 6. Adaptive Management, the City follows an annual

[1] Dates are those anticipated to be the duration of the WPCF permit term. The City's proposed Stormwater Management Plan, Monitoring, and Decommissioning Process are submitted for review but will be updated, if needed to comply with the forthcoming WPCF permit.

[2] Horizontal UICs are shallow perforated pipe that typically connect a series of UICs to one another or connect a sedimentation manhole to a UIC.

adaptive management process to assess and modify, as necessary, program elements to achieve reductions in stormwater pollutants. This includes consideration of available technologies and practices; review of monitoring data generated by the implementation of the monitoring plan and corresponding analysis of the data; review of goals and tracking measures; and evaluation of City resources available to implement the technologies and practices.

Current Permit Requirements

Schedule D.5. of the WPCF permit for City of Gresham UICs requires submittal of a UIC Management Plan (UICMP) for DEQ approval. Once approved, the plan must be implemented.

> *"…The management plan must include a description of how the elements listed below will be implemented in order to protect groundwater quality:*
>
> *a. Stormwater monitoring, including how you will use stormwater monitoring results to ensure compliance with the action levels in Schedule A, Table 1;*
> *b. Injection system decommissioning;*
> *c. Employee education and public outreach;*
> *d. Injection system operation and maintenance;*
> *e. Protecting injection systems from accidental spills or illicit disposal of wastes or contaminants; Preventing injection of stormwater from loading docks, refueling areas, areas of hazardous and toxic material storage or handling, materials storage or handling areas, or other discharges that may contain pollutants above levels of concern;*
> *f. Housekeeping practices to protect groundwater quality;*
> *g. Facility designs or practices that allow you to block discharge into any underground injection systems in the event of an accident, spill, or emergency fire-fighting activity."*

Overview of City Commitments

Required Element a:

> *Stormwater monitoring, including how you will use stormwater monitoring results to ensure compliance with the action levels in Schedule A, Table 1;*

Reference: The Stormwater Monitoring Plan is included with this Permit Renewal and can be updated as needed for permit compliance. This document is located on the City's website at GreshamOregon.gov "Stormwater Documents"

Required Element b:

> *Injection system decommissioning;*

Reference: The City's decommissioning plan is provided in Appendix A.

Required Elements c, d, e, f, and g:

- *Employee education and public outreach;*
- *Injection system operation and maintenance;*

- *Protecting injection systems from accidental spills or illicit disposal of wastes or contaminants; Preventing injection of stormwater from loading docks, refueling areas, areas of hazardous and toxic material storage or handling, materials storage or handling areas, or other discharges that may contain pollutants above levels of concern;*
- *Housekeeping practices to protect groundwater quality;*
- *Facility designs or practices that allow you to block discharge into any underground injection systems in the event of an accident, spill, or emergency fire-fighting activity.*

Reference: These compliance elements are described in Table 2. of the City's Stormwater Management Plan submitted for review with this Permit Renewal Submittal.

CITY OF GRESHAM STORMWATER MANAGEMENT PLAN (SWMP)

1.0 EXECUTIVE SUMMARY

Under the federal Clean Water Act and Oregon Revised Statute 468B.050, DEQ has issued the City of Gresham a National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Discharge Permit. The City of Gresham is required to develop a Stormwater Management Plan (SWMP) as described in the Clean Water Act (CWA) 40 CFR 122.26 (d) (2) (iv) (A) through (D) and in Schedule A of the 2021 NPDES MS4 Permit #101315. The primary component of the SWMP is a management program comprised of Best Management Practices (BMPs) and other management activities developed to address the elements as detailed in the CWA and in Schedules A. thru D. of the permit. These are actions Gresham will take to minimize pollutant discharge into surface waters to the maximum extent practicable (MEP) in order to protect water quality and satisfy requirements of the NPDES MS4 Permit and the CWA.

The contents of this Stormwater Management Plan reflect the requirements as described in the permit issued by the Oregon Department of Environmental Quality (DEQ) dated October 1, 2021. **This SWMP is intended to carry the City through the September 30, 2026 permit cycle.**

Introduction

Section 2.0 describes the history of the City's permit.
A SWMP was first developed by Gresham to meet the first NPDES MS4 permit issued by DEQ in 1995 in order to reduce pollution in stormwater to the maximum extent practicable. Ongoing implementation of the SWMP was conducted during the five-year permit period from 1995 to 2000. The City's next SWMP was submitted and approved in December 2001 as part of its adaptive management process.

The City's next permit was released in March 2004 but reconsidered by DEQ based upon legal challenges and reissued in July 2005. As required, the City conducted an overall evaluation of all of its programs and resources for the SWMP and Environmental Monitoring Plan in a report called the Interim Evaluation Report (May 2006). The City's Plans were approved by DEQ on July, 31, 2006.

The City's next updated SWMP and Environmental Monitoring Plan were submitted in August 2008 and approved by DEQ in April 2011. The city submitted its next permit renewal application in December 2015 with minor changes for DEQ approval. In 2019, DEQ began updating the permit that was issued in September of 2021.

Description of the Permit Area and Coordination with Co-Permittees

Section 3.0 provides a description of Gresham's portion of the permit area, watershed boundaries within the permit area, and co-permittees. The permit area for Gresham includes the incorporated areas (the city limits) of the City of Gresham.

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 Plan (SWMP) are applied throughout the entire City's urban services boundary.

The City of Gresham area *excluding* Pleasant Valley and Springwater is about 15,142 acres or approximately 23.5. square miles. The area *including* the urban growth boundary of Pleasant Valley, Kelley Creek Headwaters and Springwater represents approximately 17,000 acres or approximately 26.5 square miles. Gresham is comprised of four watersheds: Fairview Creek, Johnson Creek, Kelly Creek, and the Columbia Slough. All of these watersheds cross multiple jurisdictions. **Figure 1.0** illustrates the total area and the representative watersheds within the City of Gresham as well as surrounding jurisdictions.

With respect to NPDES MS4 co-permittees, the City of Gresham functioned as the lead permit applicant for the Gresham NPDES MS4 submittal in 1993, 1995, 2000, 2006, 2008 and 2015. A complete overview of the permit history is included in **Section 1.0.**

Gresham's Stormwater Management Program Organization

Section 4.0 describes the City's organization structure and responsible groups relative to the SWMP implementation and includes organization charts as **Figures 2.0 and 3.0**. Figures will be updated if staffing for stormwater programs change.

Maximum Extent Practicable Determination

Section 5.0 details the City's process for determining that its stormwater management program will reduce discharge of pollutants to the maximum extent practicable (MEP). The City has reviewed available data regarding the impact of urban runoff and performed the required reviews of its practices and benchmark evaluation. The proposed updates and changes are designed to improve water quality protection, while still meeting other important legal mandates and City goals such as flood control and groundwater protection. Detailed descriptions of the best management practices and their implementation schedule are listed in **Section 7.0. and Table 2.0.**

SWMP Revisions and Rationale for those Revisions

Section 6.0 contains the purpose of the proposed revisions, a concise description in **Table 1.0** of the proposed BMP revisions and the rationale for those changes, and the focus of the SWMP. The majority of the proposed changes are insignificant in that their purpose is for clarity in language, grammar, formatting, etc., or the changes are deletion of information that is no longer accurate or were formerly listed as program goals and have now been incorporated into the Implementation Activity description.

Because Gresham's stormwater program is mature, has an adequate budget and reflects industry best practices, current science and best professional judgement, no major enhancements are deemed necessary to continue achieving water quality improvements over time.

During the next permit cycle, the City plans to continue requiring and/or incentivizing low impact development (i.e., surface infiltration techniques) where appropriate soils exist because of its regional and national recognition as a sustainable approach to stormwater management and benefits to flow/volume reduction that leads to less stream modification.

The City will continue to focus on the importance of trees and riparian buffers as a stormwater management tool in conjunction with its next stormwater manual update. Finally, the City will

continue ensuring the proper function of both public and private water quality facilities that treat stormwater.

Gresham's Proposed SWMP
Section 7.0 includes the detail of the SWMP as narrative that mirrors the permit's organization and headers. **Table 2.0** follows and contains a brief description of each BMP, the purpose, program commitment (measurable goals) and reporting elements.

Gresham Stormwater staff taking samples of rain runoff from a manhole on the street.

2.0 INTRODUCTION

Under the federal Clean Water Act and Oregon Revised Statute 468B.050, DEQ has issued the City of Gresham a National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Discharge Permit #101315. (Effective October 1, 2021). The City of Gresham is required to develop a Stormwater Management Plan (SWMP) as described in the Clean Water Act (CWA) 40 CFR 122.26 (d) (2) (iv) (A) through (D) and in Schedule A of the permit.

The SWMP and Environmental Monitoring Plan detail the actions (best management practices -BMPs) Gresham will take to minimize pollutant discharge into surface waters to the maximum extent practicable (MEP) in order to protect water quality and satisfy requirements of the NPDES MS4 Permit and the CWA.

This SWMP and Environmental Monitoring Plan have been updated to ensure compliance with the permit elements. The Plans and associated documents required for public comment were released from May 5 to June 5, 2022 in the *Gresham Outlook* and the *Oregonian* for public comment. The City did not receive any comments from the public.

The Plans factor in the program resources anticipated to be available for this permit cycle based upon the City's approved stormwater rate package by Resolution 3467 that was approved by Gresham City Council on September 21, 2021. The Plans and associated documents were approved by Gresham City Council on June 21, 2022 in Resolution 3506 and has made a maximum extent practicable finding.

I. Stormwater Management Plan History

A SWMP was developed by Gresham to meet NPDES MS4 permit requirements in 1995. Ongoing implementation of the SWMP was conducted during the five-year permit period from 1995 to 2000.

In February 2000, the City submitted a renewal package to DEQ as required. However, DEQ postponed issuance of the second 5-year permit until 2005. During this time, the City was legally operating under the 1995-2000 permit, but submitted a more detailed SWMP dated December 2001, as part of its adaptive management process.

In March 2004, DEQ issued the renewed NPDES MS4 permit, which was later reconsidered, modified, and reissued in July 2005 and was set to expire on January 31, 2009. The permit required the City to prepare

> *…an evaluation of, and proposed revisions to, the SWMP that address the requirements of Schedules D(2)(b) and B(1)(b), including the rationale supporting the proposed revisions.*

Schedules D(2)(b) and B(1)(b) include details related to conducting a SWMP evaluation and preparation of a Monitoring Plan, respectively. This update was referred to as the Interim Evaluation Report (IER) and was submitted to DEQ on May 1, 2006. The IER documents, including the updated SWMP and Monitoring Plan, were approved on July 31, 2006, per City Council Resolution No. 2829. The City will continue to implement the 2006 SWMP until DEQ has issued the next permit and approved the associated updated SWMP submitted with the Permit Renewal Submittal on August 1, 2008, with Council Resolution No. 2948. DEQ approved a final updated SWMP in April 2011 and the plan was written for the length of the City's updated permit set to expire in December 2015.

The city submitted its next permit renewal application in December 2015 with minor changes for DEQ approval and DEQ administratively extended the existing permit. No City Council resolution was made because only minor changes to the SWMP were made. In 2019, DEQ began updating the permit that was issued in September of 2021.

II. 2022 Update

Staff began reviewing its Plans, program areas and standard operating procedures in fall 2021. Staff also worked collaboratively with the other Phase I permitted agencies to examine the new permit requirements and share approaches, analysis, and expertise. The Stormwater and Natural Resources programs held a retreat in January 2022 to examine the projected operating budget increases by year based on the City's Council's approved rate package as Resolution 3467.

Areas noted for additional support primarily include adding staffing to the stormwater operations crew to create a year-round vegetation maintenance crew to keep up with the increasing inventory of stormwater management facilities that are publicly maintained as development and redevelopment occurs. Other staffing include a stormwater engineer, a CAD technician shared with Wastewater, and an engineering technician that does shared asset management rating and planning work. Additional equipment for the operations crew is also planned for purchase.

The City held a three-hour presentation and conversation with Johnson Creek and Columbia Slough leadership and staff and discussed future visions for collaborative work within Gresham. The City also released the Plans and associated documents for public comment for thirty days and no comments were received.

3.0 DESCRIPTION OF THE PERMIT AREA, CO-PERMITTEES, AND SERVICE AREA EXPANSION

This section provides a description of Gresham's portion of the permit area and changes that have 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

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 Plan (SWMP) 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 area 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 B. 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.

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 this SWMP are specific to the City of Gresham and do not apply to its co-permittee, City of Fairview and vice versa.

Gresham is comprised of four watersheds: Fairview Creek, Johnson Creek, Kelly Creek, and the Columbia Slough. All of these watersheds cross multiple jurisdictions. **Figure 1.0** illustrates the total area and the representative watersheds within the City of Gresham as well as surrounding jurisdictions. In addition to these surface waterbodies, Gresham has groundwater that varies in depth ratio to the surface across the city. Gresham implements a groundwater protection program to ensure its underground sources used for drinking water are protected. This program is implemented in tandem with the surface water protection program.

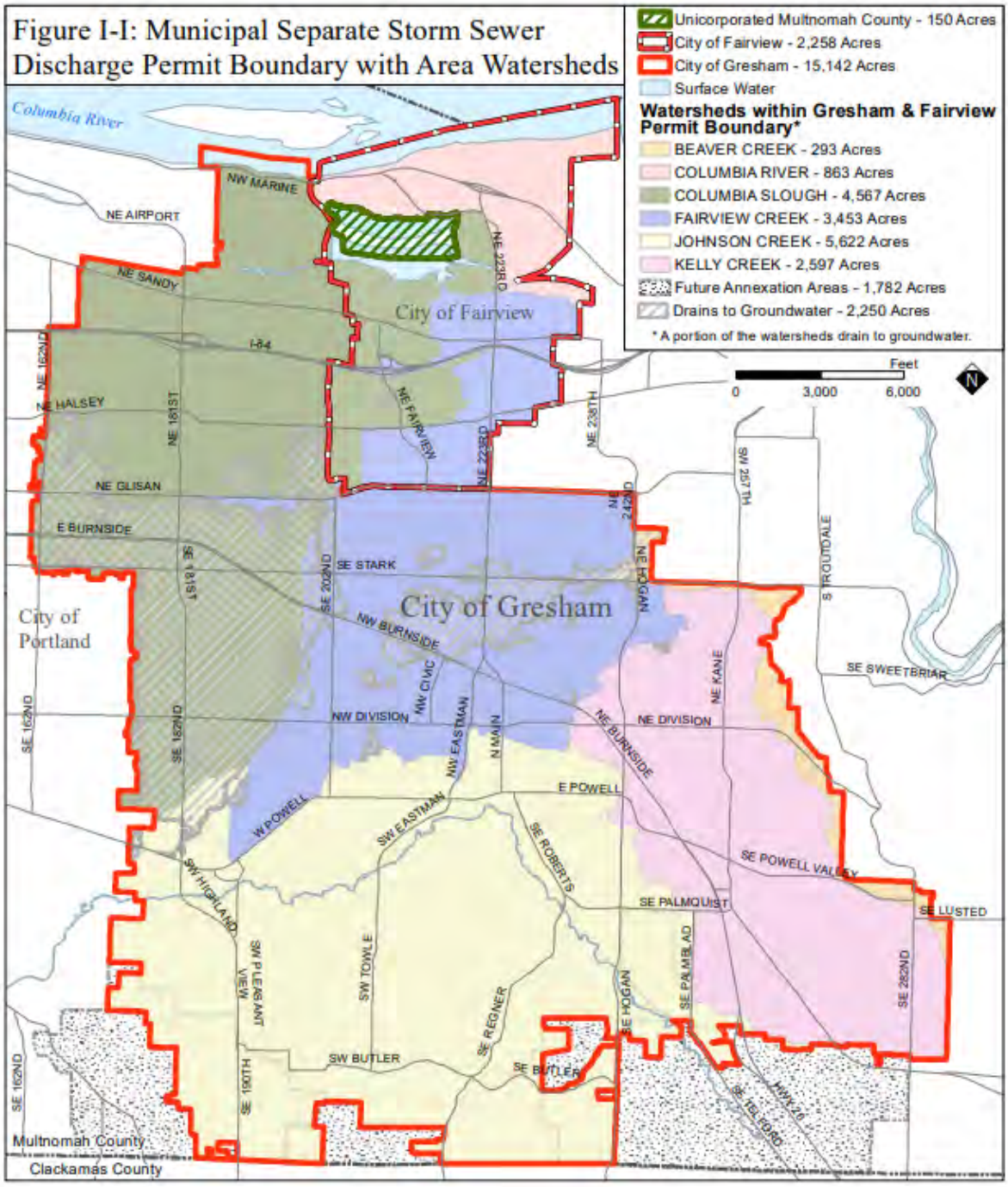
<u>Kelly Creek & Beaver Creek</u>

The Kelly Creek watershed within Gresham encompasses about 2,597 acres (4.1 square miles) and is tributary to the Beaver Creek watershed and ultimately to the Sandy River. The Beaver Creek watershed comprises about 293 acres (0.5 square miles) within Gresham. 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. Kelly Creek originates east of Gresham and enters the city limits east of SE 282 Avenue and north of SE Dodge Park Boulevard. It flows in a northwesterly direction until its confluence with Burlingame Creek; its main tributary which lies just 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.

<u>Johnson Creek</u>

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 upper reaches of the creek flow through the City of Gresham. Presently, Johnson Creek enters the Gresham city limits at SE 252 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 174 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 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 located in the Johnson Creek watershed.

Figure 1.0. 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 will be subject to the requirements of a WPCF Permit. The city runs its programs and services consistently across both areas to ensure environmental protection goals are met.



Fairview Creek

The entire Fairview Creek watershed encompasses approximately 3,453 acres (5.4 square miles) and is a tributary to Fairview Lake. About 4.3 sq. 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 182 Avenue. The creek flows in a northeasterly direction though Gresham and enters Fairview just west of 223rd 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 sq. miles are within Gresham's permit area and is located within 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 BMPs described within the SWMP at the time of this submittal have historically been applied in the same manner 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. The City's approach to BMP implementation did not change as a result of the permit issuance, as the City continues to administer the SWMP and Stormwater Monitoring Plan throughout the city boundary to meet the pollutant reduction and protection goals of each permit.

II. Description of Co-permittee Coordination Efforts

With respect to NPDES MS4 permit co-permittees, the City of Gresham acted as 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.** 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 may be shared to meet watershed science objectives with Multnomah County and the City of Fairview using intergovernmental agreements (IGAs).

III. Service Area Expansion

A. Background

As acknowledged by the 2010 renewal of the City's original 1995 stormwater permit #101315, the urban service boundary expanded from the City's original historic 14,290 acres to become a future fully annexed area of 16,700 acres, including the area within the urban growth boundary (UGB)[1]. The UGB includes three planned areas known as Pleasant Valley, Springwater, and Kelley Creek Headwaters. Only a small fraction of this total acreage (~850 acres of ~2,400 acres) have been annexed and only ~66 of 850 have developed* with housing, as of this SWMP update. *Development acres do not include streets or farm homes/structures that were built prior to annexation.

The City's permit states the following:

> SOURCES COVERED BY THIS PERMIT:
> *This permit covers all existing and new discharges of stormwater from the Municipal Separate Storm Sewer System (MS4) within the incorporated areas of the City of Gresham and City of Fairview including, upon annexation into the City of Gresham, the Pleasant Valley Plan District, Springwater Plan District, and the Kelley Creek Headwaters Plan Area, which are located south and east of current city limits of the City of Gresham and within the approved Metro Urban Growth Boundary.*

In 2008, the Oregon Department of Environmental Quality (DEQ) requested a Land Use Compatibility Statement from the City because of the physical expansion of the City's Urban Service Boundary to include the three planned areas (See Appendix A). Based upon the LUCS, DEQ found that the City of Gresham has acknowledged Comprehensive Plan provisions and land use regulations that are compatible with the 2010 permit provisions.

The Land Conservation and Development Commission (LCDC) has concluded that a determination of compliance with the statewide planning goals and compatibility with acknowledged comprehensive plans is not needed for the renewal of an existing permit except in certain circumstances. A LUCS is required for the *renewal* or *modification* of a permit if DEQ "determines the permit involves a substantial modification or intensification of the permitted activity." OAR 660-031-0040

OAR 340-018-0050(2)(b)(B) sets out three relevant circumstances in which "[m]odification permits" require a LUCS: where the activity (1) relates to use of additional property or a physical expansion on the existing property, (2) involves a significant increase in discharge to state waters or into the ground, or (3) involves the relocation of an outfall outside of the source property.

Because the prior permit included consideration of the area within the urban growth boundary, Gresham's MS4 permit renewal application does not constitute a substantial modification or intensification of currently permitted activity. Therefore, a LUCS is not required.

In addition to its Comprehensive Plan the City has other adopted code, manuals and plans that govern the management of stormwater impacts from development or redevelopment within the existing city boundary and the future development of planned areas within the UGB. These documents are also available on the City's website at GreshamOregon.gov and include:

[1] City of Gresham and City of Fairview National Pollutant Discharge Elimination System Permit Municipal Separate Storm Sewer System Proposed Permit Evaluation Report and Fact Sheet December 30, 2010.

- Basin Master Plans
- New Community Master Plans
- Stormwater Management Manual
- Public Works Standards

B. Findings

During the years of 2006 to 2008, approximately 718 acres of the UGB area were annexed. Since the issuance of the 2010 permit, the City has annexed an additional 140 acres. It is important to note that even when acres are permitted for development, these new neighborhoods can take many years to fully build out, so it is not possible to predict what portion of the undeveloped total will build out during this next permit cycle. However, the development permit applications received for the UGB annexed area are reported in the City's Annual Reports to DEQ and the stormwater facilities and impervious acres treated are also tracked and reported.

As such, this permit renewal package and updated Stormwater Management Plan and above referenced City code, manuals and plans will continue to limit the impacts of stormwater intensity and its associated pollutant loads on local streams. Furthermore, the permit renewal package includes a summary of the Total Maximum Daily Load (TMDL) Pollutant Load Benchmarks that set forth projections of the City's combined work to result in a net decrease in stormwater pollution discharges during the next permit cycle.

4.0 GRESHAM'S STORMWATER MANAGEMENT PROGRAM ORGANIZATION

As shown in **Figure 2.0 and 3.0**, Gresham's Department of Environmental Services' (DES) formed the Water Resources Division which houses the Drinking Water Program, the Stormwater Program, and the Wastewater Program. The Stormwater Program, formerly known as the Watershed Division, undertakes a majority of the responsibilities for development and implementation of the City's SWMP. There are, however, required components of the program where implementation and tracking must occur in other City divisions, departments, and groups. The divisions within Gresham that are responsible for implementation of the NPDES program are described below. DES is comprised of the city utilities, providing services such as delivery of drinking water, collection and treatment of wastewater, recycling & solid waste disposal, maintenance of streets, stormwater management, and parks and recreation activities.

- The **Water Resources Division's Stormwater Program** works to improve flood protection and water quality through the construction and maintenance of the public stormwater system and protection of local waterways. This division is responsible for management of Gresham's programs that address all stormwater water quality regulatory requirements listed above, monitoring of storm and surface water; erosion control inspection and enforcement; stormwater capital improvements; stormwater operations and maintenance, engineering and flood control, and stormwater public involvement and education of staff and the general public. The Water Resources Division (WRD) is also tasked with supporting and providing guidance to other divisions within the city regarding the NPDES MS4 permit. There are groups within WRD that play specific roles in implementation of the NPDES MS4 program and implementing the SWMP. The Water Resource Division's Stormwater & Natural Resource staff are grouped as follows:
    - **Stormwater Operations and Maintenance Group (O&M)** is responsible for maintaining all public conveyance and water quality components (green and grey) of

Gresham's stormwater drainage system including surface water quality facilities and the structural conveyance system, identifying illicit connections, responding to accidental spills, and assisting in mapping updates.

- **Stormwater Engineering Group** is responsible for planning, designing, and constructing capital improvement projects within the Water Resources Division.
- **Water Sciences Group** is responsible for meeting regulatory requirements including NPDES Stormwater MS4, UIC, Oregon Planning Goal 5, and TMDL programs. Th group handles **Public Involvement and Education, Water Quality Monitoring, TMDL and UIC Compliance, Private Water Quality Facility Program, Illicit Connection, Business Inspection and Spill Enforcement, Erosion Prevention and Sediment Control and, Stormwater Manual and Code, and Program science and data analysis.**
- **Natural Resources Group** is responsible for meeting regulatory requirements including **Endangered Species Act, Temperature TMDL compliance, among others.** This group handles natural land management (non-recreational, non-parks), land acquisition, natural resource capital projects.
- **Water Resources Business Inspection Group** is responsible for assisting with the business compliance and inspection program for wastewater and stormwater.

Other DES groups include:

- The **Transportation Division** is responsible for street improvements, maintenance, and repair, street cleaning, street lighting, and some signs and signals within city limits. NPDES Stormwater MS4 components that include the Transportation Division are road maintenance, street sweeping, limiting, and tracking the Division's use of pesticides and herbicides, and de-icing material management.
- The Development Services Division assist with the implementation of the Stormwater Program and is comprised of two main groups.
    - **Development Engineering Group** is responsible for the review and permit approval of development and re-development including implementation of the Stormwater Manual requirements.
    - **Public Works Inspection Group** implements the commercial/industrial erosion prevention and sediment control inspections during construction.
- The Drinking **Water Group** provides planning, design, construction, operation, and maintenance of the public drinking water systems. The flushing of water lines, emergency system repairs and limiting and tracking of the Division's use of pesticides and herbicides are activities the Water Division undertakes that fall within the NPDES MS4 permit.
- The **Parks and Recreation Division** operates, maintains, plans, and acquires Gresham's parks. Of the parks within Gresham, eight are directly adjacent to open waterways. The Parks Division is responsible for limiting and tracking of the Division's use of pesticides and herbicides, maintenance of litter receptacles, using native vegetation where appropriate, reporting dumpsites, and reporting unusual discharges in the waterways.
- The **Wastewater Group** is responsible for sanitary sewer master planning, design, review, and contract administration of new infrastructure projects; compliance with the City's wastewater NPDES permit; maintaining the public system to help prevent sanitary leaks or infiltration into the stormwater system; limiting and tracking of their Division's use of pesticides and herbicides; and implementing the Pre-Treatment Industrial Inspection program to monitor industrial point source discharges to the sanitary system and, where applicable, impacts to the stormwater system. Wastewater Services also manages the 1200Z stormwater permit for the wastewater treatment plant.

- **The Solid Waste and Sustainability Division** is responsible for managing curbside garbage, yard debris, used oil, & recycling collection and implements programs that foster waste prevention and all public education efforts related to these activities for businesses and residents. This group also assists Metro Regional Services with delivery of household hazardous waste collection events.

Other city offices having a role in the stormwater NPDES-Stormwater MS4 program include:

- **The GIS Program** is responsible for supporting various program monitoring efforts such as mapping the public infrastructure, mapping streams, watersheds, maintenance schedules, etc.
- **Code Compliance** is responsible for enforcement of city code and ordinance violations.
- **Facilities Maintenance** is responsible for maintaining various city-owned properties and utilizing stormwater best management practices to limit pollutant sources.
- **Community Development Department** assists with short- and long-range planning for city development that is codified in the Community Development Plan (Vol 1-3).
- **City Attorney's Office** assists with review of the Legal Authority element of the NPDES permit as well as regular updates to city code.
- **Fire & Emergency Services** assists with spill response (HAZMAT team)

Figures 2.0 and 3.0 that follow are organization charts for the City of Gresham and the Department of Environmental Services, respectively.

Figure 2.0 City of Gresham Organization Chart

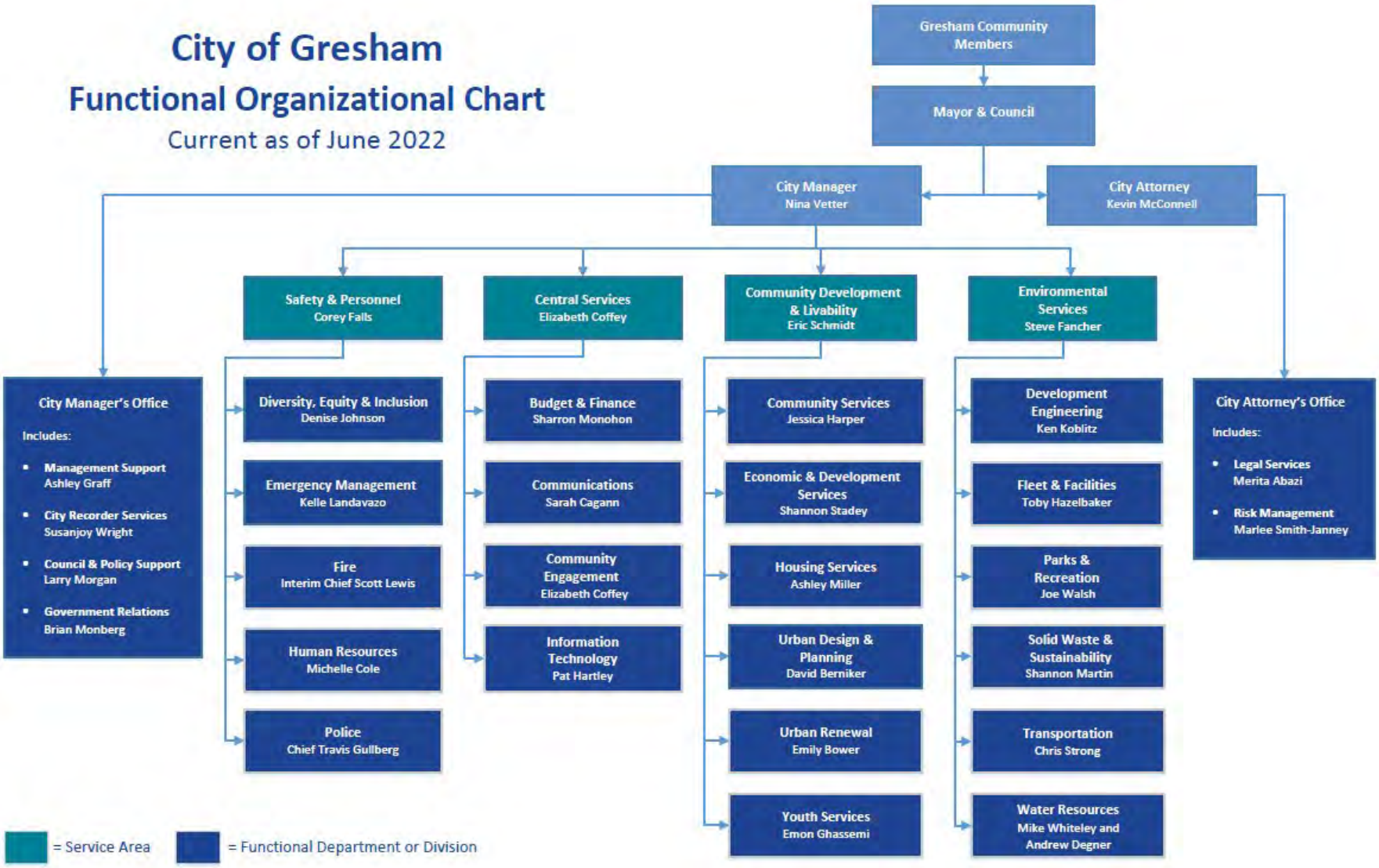
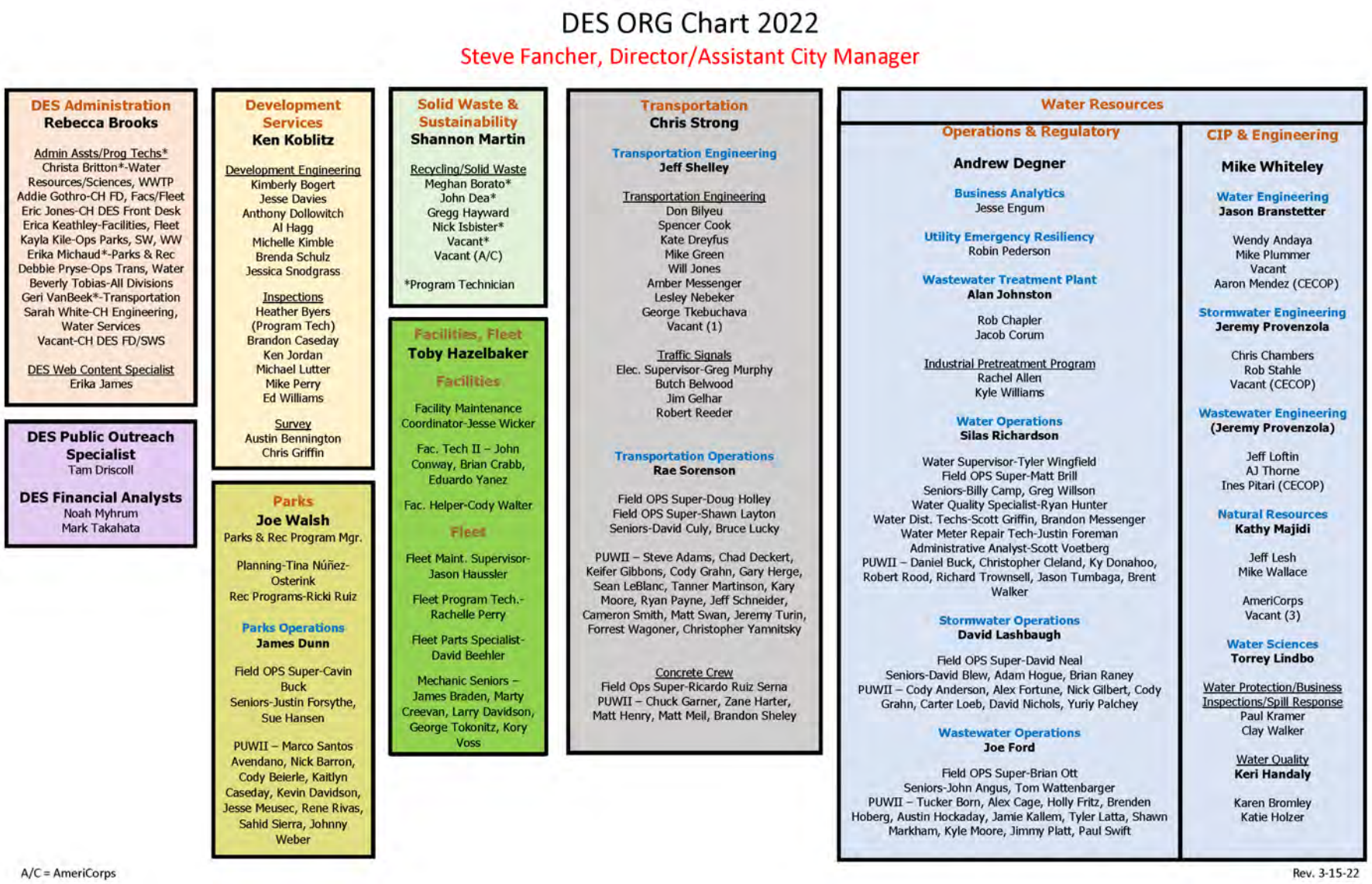


Figure 3.0 DEPARTMENT OF ENVIRONMENTAL SERVICES ORGANIZATION CHART



5.0 Maximum Extent Practicable Determination

NPDES MS4 permittees must develop and implement a stormwater management program to reduce the discharge of pollutants to the maximum extent practicable (MEP). This program is designed and implemented to comply with City's NPDES MS4 (Stormwater) Permit No: 101315. The program elements and implementation goals are described in the Stormwater Management Plan (SWMP), and other procedures and policies are described within a variety of city documents and plans as referenced within the SWMP, where applicable. These program elements vary by permitted municipality because they take into consideration site-specific conditions and the City Council's and public approved budgets for City Divisions and programs that support this work amongst many other competing City needs such as Police and Fire services.

The City of Gresham developed and established the program that met MEP as part of their original 1993 permit application, which has become the foundation of the City's program since the Phase 1 NPDES MS4 permit was issued in 1995. The overall program has been continuously evaluated and adaptively managed based upon new data, technology, and/or program evaluation of individual best management practices with on-going oversight and approval from the Oregon Department of Environmental Quality. As such, this updated SWMP reflects the City's best professional judgment regarding resource allocation and optimization to reduce or eliminate the discharge of stormwater pollutants from the MS4 system based upon site-specific conditions and other factors as described further below.

The City of Gresham has used the following sequential processes to ensure its SWMP meets the MEP standard:

I. The original development of the SWMP submitted with the 1993 permit application.
II. The continual adaptive management process reported in annual reports and the following updates to the SWMP:
   a. The SWMP review conducted for the 2000 permit renewal application.
   b. The SWMP review conducted for the 2006 Interim Evaluation Report.
   c. The SWMP review conducted for the 2008 permit renewal application.
   d. The SWMP review conducted for the 2015 permit renewal application.
   e. The SWMP review conducted in 2022 to comply with the October 2021 permit reissuance.

These processes are described below.

I. PERMIT APPLICATION (1993)

To comply with requirements set forth by the 1987 amendments to the Clean Water Act, the City of Gresham, and its co-permittees (City of Fairview, Multnomah County, and the Oregon Department of Transportation) submitted Part 1 of the NPDES MS4 permit application in May 1992, which contained a brief description of existing management programs implemented by the co-applicants. No comments were received from DEQ on this section of the Part 1 application; therefore, no adjustments were made.

The Part 2 application contained a SWMP that was designed to address the most critical existing storm water quality problems, as identified within the permit area. Gresham and co-permittees

participated in workshops to define the problems and develop strategies to address them. Pollutants of concern were identified using a national literature search and from data collected locally by the City of Portland.

A public process was held to elicit the public's concerns, understanding, priorities and willingness to support a stormwater management program that included stormwater consultants, watershed committee representatives, developers, and a neighborhood association representative. One hundred and twenty candidate BMPs were identified, and selection criteria were developed in order to prioritize the BMPs based upon available and future projected resources to support their implementation. The factors included:

a. Lifecycle costs
b. Meets a regulatory requirement
c. Addresses a pollutant of concern
d. Ability to implement (included public acceptability and willingness to pay)
e. Reliability/Sustainability

Based upon scoring criteria applied by committee representatives, the BMPs were narrowed to 45. Using professional feedback, detailed BMP fact sheets and another complete review by City staff and its co-permittees, the BMPs were narrowed to the 35 that were submitted and accepted in 1993.

II. ADAPTIVE MANAGEMENT

As described in the NPDES MS4 permit in Schedule B 2. b. and Schedule D 4. Adaptive Management, the City follows an annual adaptive management process to assess and modify, as necessary, program elements to achieve reductions in stormwater pollutants to the maximum extent practicable. This includes consideration of available technologies and practices; review of monitoring data generated by the implementation of this Plan and corresponding analysis of the data; review of SWMP measurable goals and tracking measures; and evaluation of City resources available to implement the technologies and practices.

To ensure the on-going effectiveness of the City's SWMP, the BMPs are evaluated annually during the preparation of the NPDES Annual Report to DEQ. The Annual Reports include the following:

a. The status of implementing the components of the SWMP.
b. Proposed changes to the SWMP components and/or newly proposed BMPs.

III. PERMIT RENEWAL SUBMITTAL (2000)

The City's NPDES MS4 Permit requires a permit renewal submittal to be completed 180 days prior to the permit's expiration. As such, the City's renewal submittal consisted of an updated SWMP with the rationale for the proposed changes. At this time, the Oregon Department of Transportation was removed as a co-permittee in order to receive its own permit.

During the permit renewal process, third party environmental groups expressed concern that the DEQ permit was not protective enough to ensure that creeks, streams, and rivers would eventually meet water quality standards. As a result, DEQ convened an advisory group to help determine what water quality goals would be included in the new permits; a process that lasted over three years. In March 2004, the City's new permit was issued and later reconsidered as a result of a

third-party appeal. The permit was reissued in 2005 and contained more specific requirements relating to the SWMP including:

a. The establishment of performance measures aimed at assisting with SWMP evaluation,
b. Estimates of pollutant load reductions based upon what is known about BMP effectiveness,
c. The evaluation of progress towards meeting those estimates,
d. The application of an adaptive management process until the estimates are projected to be achieved, and
e. An overall evaluation of the SWMP.

IV. INTERIM EVALUATION REPORT (2006)

Because of the five-year delay between the 2000 permit renewal submittal and the reissuance of the next permit, DEQ required that the City and its co-permittees prepare an "Interim Evaluation Report" that included:

a. A review of the City's estimated progress towards meeting the established Total Maximum Daily Loads for permitted streams,
b. An analysis of the SWMPs ability to help reduce pollutants on the 303(d) List for permitted streams,
c. A review of sources of non-stormwater discharges, and
d. A review of the previously submitted SWMP and Monitoring Plan with proposed updates.

Related to this effort, the City hired a consultant team with a national reputation for expertise in stormwater to assist in the review of its programs and the preparation of some of the documents listed above. Additionally, the City prepared BMP fact sheets and related cost and staffing estimates in order to conduct a formal review process. The City convened a SWMP advisory subcommittee to the standing Environmental Services Council Advisory Committee (ESCAC). Known as the "SWMP Working Group," this committee was comprised of a variety of stakeholders including citizens, developers, local Watershed Councils, and business owners that met eight times, including a half-day workshop that resulted in the final recommended package of potential BMP enhancements. Two package options were provided to City Council for consideration, both required additional resources, but one was significantly more costly than the other.

In order to assist City Council in the decision-making process, the City conducted a statistically representative survey of Gresham utility rate payers to assess willingness to pay for the proposed enhancements. The results were interpreted by the City's survey consultant to mean that if the stormwater fee increase necessary to pay for the more costly package were put to a vote, the measure would fail. Thus, while City Council did consider the merits of the full package enhancements, they determined that the lower cost option was the appropriate level of effort, given the many demands on City resources. A complete description of the MEP determination process may be found in Section 2.4 of the 2006 SWMP.

V. PERMIT RENEWAL SUBMITTAL (2008)

As with the 2000 Permit Renewal Submittal, the City's 2008 submittal package was due 180 days prior (August 1, 2008) to the expiration of the NPDES MS4 permit (January 31, 2009). Prior to this renewal submittal, the City worked with DEQ and other Phase I NPDES municipalities to

develop a standardized template for a process to make an MEP determination that included the following three factors:

a. **Program Effectiveness**: Describe how your program continues to address pollutants of concern in MS4 discharges to local receiving waters.
b. **Local Applicability**: Describe how your program continues to be appropriate for local conditions (climate, geology, hydrology, MS4 size, etc.).
c. **Program Resources:** Describe how you continue to allocate program resources appropriately (e.g., current ability to finance the program, capacity to perform operation and maintenance, tax base, public acceptability).

The City's overall process to arrive at the proposed SWMP and Monitoring Plan is as follows:

a. Internal reviews to optimize BMPs
b. Review of technical information from external sources and monitoring data, including a formal literature search
c. Review data collected by staff and knowledge of program effectiveness
d. Discussion with other jurisdictions concerning best practices
e. Consideration of fiscal constraints
f. Input from the general public
g. Deliberation by Council

Steps that led up to revising the SWMP submitted to City Council included:

a. Discussion with other Phase I permitted municipalities regarding commonalities and technical issues. The group also asked about what issues DEQ would like to see addressed in the next updated SWMP.
b. A review of the following technical documents: *MS4 Program Evaluation Guidance*, US EPA, January 2007; *Protocol for Conducting Environmental Compliance Audits under the*
    a. *Stormwater Program*, US EPA, January 2005; *Measurable Goals Guidance for Phase II Small MS4s*, US EPA, http://cfpub.epa.gov/npdes/stormwater/measurablegoals/index.cfm; and *Stormwater Solutions*, Oregon Environmental Council, December 2007.
c. A review of the 2008 permit renewal submittal documents including:
    a. Stormwater Pollutant Load Estimates and Benchmarks for TMDL Parameters,
    b. 303(d) Listed Pollutant Evaluation,
    c. Trend Analysis/Overall Program Effectiveness Evaluation
    d. non-stormwater discharge evaluation.
d. An internal review of BMPs administered by the Watershed Division using an evaluation process that included the factors listed above, as well as additional factors such as:
    a. Base Program (Possible to remove the BMP if deemed less useful)
    b. Ability to address other regulatory goals/mandates (ESA, Goal 5, UIC, public safety, asset management, etc.)
    c. Flood Control
    d. Flow Reduction (Infiltration)
    e. Cost consideration
    f. Universality (application treats only a small portion of pollutant sources or has a broad effect)
e. A public comment period that included:

- Advertising before the public comment period to solicit names for the City's interested person's list (*Oregonian* and the *Outlook—total of five ads)*
- Release of the draft documents to the general public via the City's website, a press release to the local newspapers, and ads in the *Oregonian* and the *Outlook* (notices ran on ten days total)
- Direct mail and email to persons who are on the City's interested person's list

VI. PERMIT RENEWAL SUBMITTAL (2015)

The following process was conducted for the 2015 SWMP update:

a. Internal reviews to optimize BMPs
b. Review of technical information from external sources and monitoring data and a literature search
c. Review data collected by staff and knowledge of program effectiveness
d. Discussion with other jurisdictions concerning best practices
e. Consideration of fiscal constraints
f. Input from the general public and specific stakeholders such as Watershed Councils and the City's Natural Resource Sustainability Committee

The 2015 SWMP draft proposed only minor changes to the one previously adopted in 2011 and was released for public comment. In anticipation of an updated permit, the City limited the changes and plans to update the SWMP at a future date. The City considers this an administrative extension of the SWMP and Council Resolution 2829 of MEP.

VII. 2022 SWMP UPDATE

The process for the plan presented here for public comment included:

a. Interviews with various Divisions regarding best available technology, process, strategy and plans for the future given what is known via rate and budget forecasting
b. Review and updates to Standard Operating Procedures
c. Professional management and scientific discussions with other Phase I permitted agencies regarding best practices and scientific knowledge and approaches
d. Stormwater Division retreat to evaluate the future operating income generated by the City Council's approved rate package
e. Meetings with Stakeholder advocates including watershed councils and the City's Urban Forestry Committee
f. Consideration of the City's ongoing Climate Action Plan Assessment
g. Evolution of Water Quality Science & Policy staff's understanding with regard to the effectiveness and cost/benefit of specific activities proposed
h. The City posted the documents for public comment from May 5 to June 5, 2022 on its Stormwater webpage, included a notice in its E-newsletter, social media, and advertised in the *Gresham Outlook (four print, plus daily digital)* and the *Oregonian (two print, plus daily digital).* (No public comments were received).

6.0 SWMP REVISIONS AND RATIONALE FOR THOSE REVISIONS

I. Purpose

The purpose of this section is to summarize the 2022 updated SWMP and explain the rationale for the proposed changes.
The review and consideration of each of the BMPs effectiveness at the current rate of implementation consisted of the process described in **Section 5.0**.

II. Focus of the SWMP

The BMPs within the proposed draft SWMP are running smoothly and are considered current technology, scientifically relevant, industry accepted, and reflect best professional judgement as to what level of effort is a priority for making the biggest contribution towards water quality protection and enhancement. The changes proposed are based on creating more transparency related to specific permit requirements, a review of programs and processes, discussions and comparisons of various approaches utilized by other Phase I MS4 communities via the Association of Oregon Clean Water Agencies, as well as conversations with other community organizations that implement nature and water related programming. Therefore, the primary elements of the City's monitoring plan, and other BMPs outlined in this document will be continued, with updated milestones, as applicable.

Science data continues to reinforce that green infrastructure such as rain gardens are highly effective at removing many pollutants of concern including mercury, pesticides, bacteria, and other heavy metals. Thus, the stormwater program's continued focus remains on infiltrating water into or thru a soil matrix whenever feasible. Water Sciences staff will continue to work with private developers and the Natural Resource staff to ensure that new development in the urban growth boundary utilizes best practices that will protect and enhance the stream condition and function.

III. Proposed SWMP Revisions

General changes to the SWMP include the following:

a. BMP descriptions, measurable goals and reporting metrics were reviewed and updated. Reporting metrics were calibrated to the most useful and available data from staff and program areas.

b. Language has been clarified to reflect basic administrative changes within the City and over time as programs have evolved.

c. Some historic BMPs reported historically are proposed to be removed because of the program's maturity, they are simply built into our everyday actions and reporting does not represent any meaningful data for the public or DEQ.

Table 1.0 Rationale for Changes to Gresham's Stormwater Management Plan

BMP or Task Name	Explanation of the Proposed Change
Pipe Cleaning	Over time, the City has noticed a reduced need to clean pipes, as most of what is inspected does not meet minimum cleaning thresholds in the SOP, i.e., the pipes are usually clean. As such cleaning levels proposed reflect predicted realities based upon data. This does not prevent the City from exceeding the goal whenever the system merits cleaning.
Storm drain Cleaning	Overtime, Ops maintenance staff have noticed that many of its 8,000+ stormdrains are relatively clean with regard to the sumped area's overall capacity below the outlet. The new ranges stated reflect updated accuracy of how many units can be physically inspected and how many may need to be cleaned in a given year.
Green and Grey Infrastructure	Activities by type of facility were updated to reflect historic cleaning rates, and assessment of water quality benefit. Collapsed previous BMPs separated out into these overarching program area descriptions.
Construction Inspection and Plan Review	BMP not previously reflected and is an important part of the O&M program hours and compliance assurance with Stormwater Manual Compliance
Good Housekeeping O&M Yard	Previously hours were reported in combination with System Repair and Maintenance. BMP was separated to be consistent with emphasis within the permit language.
Spills & Illicit Discharges	Updated the name from "Facilitate Reporting & Respond to Citizen Concerns"
Stormwater Management Manual (SWMM)	Updated the name from "Water Quality Manual"
Promote Low Impact Development	Removed this BMP as "completed." This City's SWMM prioritizes and requires LID/green infrastructure. All development projects with required stormwater controls will be summarized within the BMP Private Stormwater Facilities Tracking
Litter/Hazardous Waste Control	Replaces former BMP Facilitate Proper Management & Disposal of Used Oil and Toxics
Maintain Public Vehicles & Hazardous Waste City Management	Deleted these BMPs to streamline reporting as they are preventative and ongoing and are documented in the SWMP narrative

*Use of the word "accuracy" does not mean the previous BMP description was incorrect; rather the procedures for BMPs may change slightly over time because of technology or other procedural policies.

7.0 GRESHAM'S SWMP

I. SWMP Narrative

This section of the SWMP mirrors the organization and nomenclature of the permit and documents the program foundations and how they are designed to comply. Best Management Practices with commitments and timeframes will be included as **Table 2.0.**

BMPs are listed in Table 2.0 contains the following information:
Description
Measurable Goals***
Timeframe* Permit year of commitment, if applicable
Reporting Metrics
*The timeline for which the BMP will be initiated, implemented, or completed. "Ongoing" refers to an annual commitment to continue the BMP for the duration of the permit term.
***Measurable Goals include the reportable outcome that will be tracked, recorded, and reported in the annual report, such as street miles swept, debris removed, number of trees planted, number of persons reached, etc. Location is city-wide, unless otherwise noted.

II. Schedule A. 1. Authorized Discharges

The City's programs and services are designed based upon efficient use of available resources and scientific studies and empirical data regarding the effectiveness of pollutant removal. This process review constitutes the City's Maximum Extent Practicable (MEP) determination as described in **Section 5.0**.

A. Water Quality Standards

The permit requires the City to notify *DEQ if a stormwater discharge is causing or contributing* to a water quality exceedance, based on *site specific* credible evidence. The City's Environmental Monitoring Plan includes instream data that are compared to the State's water quality standards. The instream monitoring data collection, analysis and response procedures are described in the City's Environmental Monitoring Plan **Sections 3.8.3 and 6.8.2.**

1. Compliance Description

Analysis of stormwater data show higher levels of heavy metals on major arterial roads compared to lower traffic streets. Arterial roads also occur in commercial and industrial zoned areas, and sources of the heavy metals include atmospheric deposition, building materials, outdoor storage, and vehicles. As such, these pollutants are ubiquitous in the environment and not specific to a point source that can be easily controlled. Programs that assist with the reduction of these pollutants include DEQ's 1200Z permits for Industry, the City's Business Inspection Program, the Operation & Maintenance (O&M) programs to remove sediment from streets, catch basins and pipes. Related to instream monitoring, if the monitoring staff become aware that a sampling site has an unusually high amount of a specific pollutant, staff will conduct an upstream investigation and can partner with the Business Inspection Program staff, as applicable to look for specific sources in the upstream drainage area and will report findings to DEQ.

Temporal or ongoing point source causes of stormwater pollution that the City considers illegal discharges include:

A. Accidental spills
B. Illicit connections to the stormwater system
C. Illegal Dumping
D. Construction run off of sediment laden water
E. Certain "allowable" non-stormwater discharges that require BMPs to be legal per city policy/programs

The City maintains programs to address each of these illegal discharge concerns and a summary of these activities are included in the Annual Report to DEQ, as stated within the permit and are *not* subject to intermittent reporting.

A. Accidental Spills: Historic point sources include spills at commercial or industrial sites or on the roadway from accidents or illegal dumping, as well as inadequate control of sediment laden runoff from agricultural or development sites upstream or within the city. The City maintains a cross-departmental and multi-agency spill response protocol to aid with cleanup and enforcement, as applicable.

B. Illicit connections: occur typically by accident when a contractor doing work at an existing home or business connects to the stormwater pipe when they are intending to connect to wastewater. The city remedies this concern by conducting closed-circuit television (CCTV) video of its stormwater pipes. This activity is done to inspect, clean and repair pipes, and also whenever new development occurs during the final building sign off process.

C. Illegal dumping: examples include improper disposal of human or animal waste (bacteria), or improper handling and disposal of commercial or industrial wastewater, etc. The City maintains a dry weather season screening program that randomly inspects portions of the City's system each year to look for water flowing in the stormwater pipes and find sources illegal discharge. Also, City staff respond to public reports of concern regarding suspected unusual releases that might harm local waterways.

D. Construction site runoff: sediment laden runoff is prohibited by City code, and methods and requirements for controlling and preventing sediment from entering stormwater are defined in the City's Erosion Prevention and Sediment Control (EPSC) Manual which is available on the City's website GreshamOregon.gov. Sediment carries attached pollutants like pesticides and heavy metals to local waterways and have the potential to impact water quality. The City maintains an EPSC program consisting of inspectors who inspect sites and enforce until sediment laden water is kept on site.

E. *Prohibited non-stormwater discharges

Per Gresham Revised Code Article 3.23.010, non-stormwater discharges are not comprised entirely of stormwater and must use best management practices to control or remove pollutants, as applicable in order to occur, which includes the following types of activities for BMPs have been establish and are included in **Table 2.0**:

1. Water line/reservoir flushing
2. Fire fighter training

3. Pool & hot tub draining

*Prohibited means these activities are addressed with BMPs and outreach, and are not part of the City's enforcement

III. Schedule A. 2. Permittee's responsibilities

A. Co-permittee coordination

The city maintains IGAs with Fairview and Multnomah County and periodically meets to ensure its maps and procedures and systems of support are meeting each other's needs. The interjurisdictional map that illustrates inlets, pipe, and other asset ownership so that agencies can cross collaboration for spills is housed as an ARC GIS tool on the Multnomah County website: Urban Drainage System Map of Multnomah County (arcgis.com)

B. Adequate Legal Authority

The City has maintained its authority to comply with the elements of the permit. A summary of its Code Compliance will be included in the Annual Report.

IV. Schedule A. 3. Stormwater Management Plan Control Measures

A. a & b. Public Education and Outreach/Public Involvement

1. City of Gresham's Education Strategy

The City's E&O strategy is supported with the following cross departmental staff:
Water Sciences – 4 staff—schools, events, plantings, regional outreach committees, workshops, contractor outreach, private facility owner outreach
Natural Resources – 1 staff—schools, events, plantings, workshops
Solid Waste & Sustainability – 2 staff–schools and Green Business, workshops
Water Staff – 1 staff–Liaison to Regional Water Providers Consortium, events

The Water Resources Division is comprised of the three water utilities: drinking water, stormwater, and wastewater. A mixture of approaches that communicate with the public regarding the importance of water conservation and protection are utilized including print, digital ads, television, social media, events, workshops, webinars and neighborhood or business community meetings.

The stormwater budget for the E&O program including contracts, materials/supplies, translation, printing, advertising, interns, or temporary workers is approximately $60K to $90K per year. The Natural Resource budget supporting portion is approximately $20K-30K per year.

Key messages in the community include:

a) Stormwater goes to streams untreated, unlike wastewater which is treated and released into the Columbia River
b) Nothing but rain should go into a storm drain and even dirt is a pollutant
c) Individuals contribute to pollution by littering, property maintenance, and using a vehicle

d) Even though wastewater is treated, some types of household and business products are not removed by the processes at the wastewater treatment plant (WWTP), so we must use caution related to what we buy and what goes down the indoor drains
e) Avoid and reduce the use of pesticides/quick release fertilizer to prevent runoff from lawns/landscaping
f) Best practices for the disposal of hazardous and non-hazardous waste
g) Methods to manage stormwater on your property and create wildlife habitat
h) Reporting erosion and illegal dumping
i) Local events to learn and get involved in public land management, stream clean ups, and DIY stormwater management and backyard wildlife habitat

The city partners with community organizations to deliver events and workshops including but not limited to:

a) Watershed Councils/Soil & Water Conservation District
b) Audubon & Columbia Land Trust
c) Friends of Trees
d) Solve

The city partners with other agencies in the region, in the media shed, and statewide, including but not limited to:

a) Regional Coalition for Clean Rivers and Streams (since 1995)
b) Public Service Announcements on TV (formerly KOIN, now KPTV)
c) Clean Rivers Coalition –forthcoming statewide cultural "voice of water" campaign and lawn care pesticide reduction campaign
d) Regional Water Providers Consortium (outdoor lawn watering to prevent runoff)

Key audiences include but are not limited to:

a) K-12 youth and MHCC in partnership with Watershed Councils or upon request by teachers
b) Homeowners (lawn care/pesticide reduction) (managing stormwater on site)
c) Apartments (proper disposal of cigarettes, DIY oil change fluids, recycling outreach)
d) HOAs (maintenance of private stormwater facilities)
e) Neighborhood Associations (promotion of programs and events, meeting educational presentations)
f) Apartment Complexes and Homes (Backyard Habitat Certification Program) (Pool & Hot Tub Best practices)
g) Businesses/Auto related (Green Biz certification, EcoBiz certification)
h) Carpet Cleaning Businesses (Disposal best practices)
i) Dog owners (Doggie bags at public parks)
j) Charity Car Washes (Fish Friendly Car Wash Kit)
k) Car owners (car care best practices-via regional and KPTV)
l) New development (importance of green infrastructure, community science)
m) Private stormwater facility owners (facility management expectations/oversight)
n) Construction site operators (Training notifications and wet weather best practices outreach)
o) Businesses (business licensing assists with communication of stormwater pollutant controls expected for businesses with a high potential to pollute, including the prohibition of outdoor washing or vehicle engine repair)

p) Historically excluded or marginalized residents-- especially BIPOC youth, Spanish & Russian speakers (field trips to the WWTP and Regional Stormwater facility, plantings, hiking, community gardening, support of wildlife and pollinators)

Information channels including but not limited to:

a) City printed newsletter (direct mail) and e-newsletter (opt in)
b) Green Business newsletter (opt in)
c) Watershed council newsletters and social media
d) City social media (Next Door, Instagram, Facebook, Twitter, YouTube)
e) City website: GreshamOregon.gov with manuals, reports, education, code, maps, permits, complaint/spill/illegal dumping reporting, business licensing, staff contacts, etc.)

B. Schedule A. 3. c. Illicit Discharge Detection & Elimination

The City coordinated with its boundary partners to create and maintain an online GIS map which includes the locations of outfalls with unique identifiers, conveyance system, stormwater facility types, locations, and watersheds. This allows for effective spill or illegal dumping response coordination across jurisdictions whose infrastructure may also be impacted.

1. Illicit Discharge Dry Weather Screening Map

Dry weather screening locations for the illicit discharge detection & elimination program are shown in Figure 2. within the City's Monitoring Plan. Figure 3. in the Monitoring Plan shows locations where groundwater has been historically detected at outfalls and the locations where samples reveal pollutant levels that recur above the program's action levels but the repeated investigations can only hypothesize a specific cause and has now been classified per the DEQ permit requirements as "chronic discharges."

2. Illicit Discharge Public Reporting & Investigation

As noted above in Schedule A. 1. Non-stormwater discharges are prohibited by Gresham Revised Code Chapter 3 Stormwater. Illicit discharges originating from a business follow the enforcement procedures described in **Appendix A.** Business Inspection Program Standard Operating Procedure (SOP).

Complaints from the public may be sent through the City's website and phone app called "My Gresham" or by phone call. Both systems allow for 24-hour recording and messages are checked Monday to Friday 8am to 5pm. The city's website features a direct line to the Operations & Maintenance office for spill reporting as well as an after-hours non-emergency line which is staffed by the Police Department and will contact the on-call utility staff for significant concerns after hours or on the weekend. Occasionally, concerns that come directly DEQ are passed along to staff via phone or email and asked for a follow up. Occasionally reports about incidents occurring in Portland come to Gresham or vice versa or locations that are in Unincorporated Multnomah County. As soon as staff begin investigating and determine the issue is outside the authority or jurisdiction of the City, staff phone and/or email the other entity(ies) to respond.

Serious threats of pollutant with potential to or knowledge of entering the stormwater system or a stream are investigated as soon as possible either by Operations staff or the Water Sciences staff, almost always within the workday when the report was provided to staff.

The City has a Spill Response SOP that includes taking the details of a verbal or written concern and notifying the City's cross-coordinated department contacts via a Spill Response contact list email group. This initiates an investigation of applicable department staff and includes the goal of estimating reportable quantities that necessitate notifying the Oregon Emergency Response System (OERS). Staff will also contact other agencies/neighboring jurisdiction spill control staff in order to loop them into the communication about investigation and/or cleanup, especially when there is a stream discoloration that may be seen and reported multiple times.

The City uses a proprietary database to record the location, estimated quantities, entities notified, contact information for the responsible party (if identified) and enforcement and/or cleanup actions taken. This allows for documenting the number of events per year and the associated outcomes and this BMP reporting is included in **Table 2.0**.

Training is provided for use of the software tracking and reporting system by IT or other Program Tech staff. These systems are overseen by Program Techs who review data at least once per year to ensure quality and completeness and data extraction for reporting.

C. Schedule A. 3. d. Construction Site Runoff and Control

The Gresham Revised Code (GRC) Chapter 3 prohibits erosion, sediment, and waste materials from leaving private property or entering the public system. This code applies to all construction sites that disturb 1,000 sq. ft. or more and is also enforced for any residential or business landscaping or other small unpermitted projects that staff become aware are causing a violation, such as those reported by the public or by other staff working throughout the city.

The City's Erosion Prevention and Sediment Control Manual outlines minimum plan requirements for sites, the proper installation and maintenance of BMPs, and prohibits sediment laden water from discharging from a construction site. Construction sites disturbing more than one acre or are part of a common plan of development that will disturb one or more acres, are required to obtain a DEQ 1200-C permit.

For large sites, the operator must submit an EPSC plan to indicate where they will store building materials, waste materials, provide a washout station, construction entrance, and the types of BMPs to be utilized. For small sites, the City provides a checklist of elements that must be evaluated, signed, and controlled by the operator. The checklist is utilized by the City's inspector to ensure compliance. At any time, the City's plan or minimum checklist is not providing sufficient controls, the Inspector will require additional controls to be added until compliance is achieved. The inspection reports become the record of the modified checklist.

The City uses an electronic system for plan filing or are assisted by Permit Counter staff. Plans are filed and must be approved for compliance with the EPSC Manual prior to beginning construction. City staff consider potential impacts to water quality from a site's proposed activities and use their training and experience to approve onsite BMPs. However, EPSC controls do not always succeed as anticipated, and plans are updated with additional control requirements to attain compliance.

The Operator, EPSC contractors and Inspector have online access to the plan at any time and plans may be updated if additional changes are needed. Once the plan is approved, the City inspects prior to clearing or grading of large sites. For single family home sites, BMPs are inspected and approved prior to foundation installation. Interim site inspection frequency varies by weather and activity and are outlined in the EPSC Manual and a final inspection that requires stabilization of all bare soil with permanent vegetation or mulch before a certificate of occupancy will be issued.

1. Inspection Documentation & Enforcement Procedures

The City's Revised Code Chapter 3 describes its inspection & enforcement authority. The escalating enforcement procedure is documented in the Standard Operating Procedure.

2. Construction Site Inspection Training and Education

City of Gresham construction site inspectors are trained upon new hire by other inspectors on electronic processes and procedures, and also will attend an official training led by a CECSL professional company or agency to obtain their certification as defined by DEQ. CECSL requirements must be renewed every three years.

The City's EPSC Manual, Standard Operating Procedure, and Code can be found at: GreshamOregon.gov/watershed

Table 2.0 contains the EPSC Program reporting metrics and timeframes to be included in the City's Annual Stormwater Report.

D. Schedule A. 3. e. Post-Construction Site Runoff for New Development and Redevelopment

This section summarizes the main elements of the manual that comply with i. – vi. of the Post-Construction requirement in the permit.

1. Ordinance and/or Other Regulatory Mechanism

In 2018, Gresham City Council approved amendments to the Development Code and adopted the Stormwater Management Manual (SWMM) as part of order no. 681 (CPA-18-190). The most recent updates become effective in January 2022. The document is available at GreshamOregon.gov/watershed (Stormwater documents)

2. Qualifying sites & Site-Specific Approach

a. Section 1 of the SWMM contains the details summarized here and are consistent with permit. a. All sites that will add or replace more than 1,000 square feet of impervious area must infiltrate stormwater as close to the impervious surface being treated, (roof, driveway, street, etc.) whenever feasible.
b. The SWMM prioritizes the use of green infrastructure and using methods of flow control to mimic pre-development hydrology and sizing standards to manage quantity and quality
c. The SWMM requires the maintenance of all privately owned stormwater facilities.

3. Prioritization of Low Impact Development & Green Infrastructure

The permit requires the City to update its strategy and standards to require the use of LID/GI design, planning, and engineering to minimize impervious surfaces and reduce the volume of runoff and discharge of pollutants in runoff caused by development. The City's SWMM document effective January 2022 meets this requirement.

4. Numeric Stormwater Retention Requirement

The numeric retention standard that must be met for development projects managing stormwater on-site is infiltration of the 10-year storm event.

Sites that are located on fill, with slopes >20% slope, with groundwater within 3 feet of ground surface, and on contaminated soils are not required to infiltrate, but instead must maximize filtration using vegetated facilities. The SWMM does allow "other facilities" to be proposed if site constraints, such as steep slopes or grade required to get flow in/out of a surface vegetated facility would make a green facility infeasible. When a filtration facility is allowed, the pollutant reduction requirement for stormwater treatment is 80 percent of the average annual runoff. The stormwater quality design storm is 1.2 inches during a 24-hour period, which is equivalent to 80% of the average annual rainfall in Gresham.

For facilities that cannot retain the 10-year storm event on-site, flow control is required to prevent stream channel erosion (also called hydromodification). The flow control thresholds set to prevent hydromodification are to have post-development peak runoff match or be lower than the pre-development flow rate targets – in Gresham that means matching the 5, 10, and 25-year storm peaks, with the 2-year post-development peak matching 50% of the pre-development 2-year, 24-hour flow rate peak. This lower threshold was found to be protective of stream channels during the hydromodification assessment conducted by the City.

In case any future development project can demonstrate that on-site or off-site management of the water quality or detention requirement cannot be met, the City developed a payment-in-lieu fee that can be presented as an option. Any funds collected in this manner would be applied to a city-led retrofit project(s) as close to the development site as feasible.

5. Water Quality Benefit Offset Programs

Fee-In-Lieu Policy (Reviewed October 29, 2019):
City of Gresham Development Code Section 9.0522 "Sites Where it is Infeasible to Install On-Site Stormwater Management Facilities," states the following:

> "On-site stormwater management is required for all development applications, unless it can be demonstrated that on-site control is not feasible based on limiting physical site constraints. If on-site management is not feasible, the Manager may allow for an off-site stormwater facility to be constructed. If an off-site stormwater facility is infeasible, then the Manager may establish payment of in-lieu-of fees that would be used by the City to fund retrofit projects to improve stormwater treatment within the city. In-lieu-of fees shall be based on estimated capital cost for typical on-site systems, as well as assuming the typical lifecycle cost of the public stormwater facility likely to be constructed."

In such development situations that on-site stormwater quality facilities are required by City Codes or the City of Gresham's Stormwater Management Manual, and that the Watershed Manager has concluded that both on-site and off-site control are infeasible, the in-lieu fee amount shall be $4 per unmanaged square foot of impervious surface. In cases where water quality or detention can be met on-site, but the other cannot, the in-lieu fee shall be $2 per unmanaged square foot for water quality, and $2 per unmanaged square foot for detention.

6. Post-Construction Site Runoff Plan Review

The section summarizes the City's Plan Review process. Much of the procedure is detailed in the Stormwater Management Manual. Additional Plan Review Checklists for staff are included in **Appendix B**.

A. Plan Submittal

Plans for all development projects are submitted to the City through an online platform that allows electronic plan and document submittal. The software routes plan sets to all departments for review and sign off. Stormwater compliance is a required review step for erosion control plans for any site proposing disturbance of more than 1,000 square feet, and for permanent stormwater management controls/facilities on any development (which include both new and redevelopment project) of more than 1,000 square feet.

City plan review and approval will consider whether the following goals were considered in the proposed development:

a) Ensure that the existing topography, tree canopy, riparian buffers and drainage conditions are considered before streets, parking lots, buildings, and other fabricated structures are constructed;
b) Optimize site design and reduce or eliminate potential conflicts between planned development and required stormwater management systems;
c) Reduce new impervious surfaces to minimize stormwater requirements;
d) Integrate site attributes to mimic natural hydrology and preserve natural resources;
e) Optimize multifunctional uses such as neighborhood greenways and wildlife habitat.

B. Review of Projects with Public Improvements

Development proposals that include public improvements such as sidewalks, street trees, connections to the City's stormwater pipes, etc., must go through the Development Engineering (DE) review process to ensure the Public Works standards are met and must submit a Stormwater Report to DE for review and approval. The DE group then takes the lead on reviewing the submittal to determine if it meets the requirements outlined in the SWMM.

Components required in the Stormwater Report are detailed in Section 2 of the SWMM and include a site plan showing the proposed stormwater facility(ies) and the calculations demonstrating that the sizing requirements in the SWMM are met. Any project proposing to manage stormwater with a facility that does not infiltrate using one of the facilities detailed in the SWMM must also submit a geotechnical report or other evidence demonstrating infeasibility. An Example Construction Plan Review Process and Associated Plan Review Checklists and Required Submittal Documents List are included in **Appendix B**. These documents are "living" as they are updated to reflect everchanging process needs, as such they represent a point in time for purposes of the permit compliance.

In addition to the review done by DE, construction plans are also routed to Stormwater staff who review the proposed structures to ensure access for maintenance of pipe and grey infrastructure components, as well as to review planting plans and access for vegetation maintaining vegetated portions of green stormwater infrastructure. Within the electronic routing system, each required

review has 2 weeks from time of submittal to review and approve or send back to the developer with comments they need to address before re-submitting.

C. Review of Projects without Public Improvements

Smaller development projects that are not required to install public improvements (e.g., single-family residential projects that are not altering the street frontage, adding sidewalks, etc.) are able to obtain permits and submit their plans electronically to the Permit Center/Building Department. These permits trigger requirements in the SWMM include grading, erosion control and construction.

Development proposals that are incomplete (don't submit all of the required submittals) or are not deemed appropriate based on the facility design criteria listed in SWMM section 3.0 or the typical details in Appendix H of the SWMM are not approved and comments are provided to the applicant in EnerGov.

7. Long-Term Operations and Maintenance (O&M)

Gresham Revised Code Section 3.20 and Section 6.0 of the SWMM are the legal authority for this requirement. Gresham's development intake process tracks the types of facilities being installed (both public and private) and are mapped by the City's GIS Department. This data entry is ongoing and QA/QC'd for use in the City's required TMDL pollutant reduction benchmarks. Staff managing the Private Water Quality Facility Program maintain an SOP that describes the maintenance and inspection criteria, rationale, frequency, procedures, and inspection schedule, which includes the oversight of both grey and green infrastructure. Staff tracks facility maintenance and documents compliance and enforcement, as applicable which ensures that facilities are functional and do not represent negative impacts to the City's stormwater system or streams.

Staff training includes the following approaches:

a. reading the City's manuals and codes and being oriented by senior staff
b. attending professional conferences with topics about stormwater facility maintenance and design.
c. training by IT or Program tech training in use of software to record private facility inventory, inspections, and outcomes
d. professional erosion prevention and sediment control training
e. job shadowing of facility inspections with senior staff

Once staff are trained, additional training is infrequent unless new software systems, policies or technologies are implemented.

The City's Stormwater Manual is available at: GreshamOregon.gov/watershed
Table 2.0 contains the Development program tracking metrics and timeframes that will be included in the City's Annual Stormwater Report.

E. Schedule A. 3. f. Pollution Prevention and Good Housekeeping for Municipal Operations

1. **The City's Operations & Maintenance (O&M) Strategy** for publicly owned facilities is to map, photograph, and continuously evaluate data, processes, research, and technology as we become aware in order to adaptively manage the approach to ensuring the long-term performance and overall pollutant removal effectiveness of diverse types of stormwater assets.
2. **Inspection, Maintenance and Cleaning of the MS4** efforts are described in **Table 2.0.**
3. **The City's O&M program includes proper disposal of materials.** All underground (grey) and above ground (green & grey) facilities are inspected and cleaned according to SOP thresholds to remove sediment or other debris and associated pollutants on a schedule intended to benefit the pollutant removal performance. Debris quantities are estimated by activity and materials are disposed and records are kept documenting these processes.

4. **Pollution Prevention in Facilities and Operations** (city properties and city assets)
Required permit elements are included in the City's Good Housekeeping program.

A. & B. Operation and maintenance of public streets, roads, highways, bridges, and associated stormwater controls, ditches, and pipes. The City's operation and maintenance program related to these appurtenances are described in **Table 2.0**.

C. Control and minimization of the use of pesticides and fertilizers on City-owned/managed public land. The City's approach includes an Integrated Pest Management Plan that is described in **Table 2.0**.

D. Control or minimization of stormwater runoff from municipal facilities that treat, store or transport municipal waste, including yard waste, which are not covered under an NPDES permit. The only debris storage facilities managed by the City are for debris managed as part of the stormwater program, so this is covered under this NPDES permit.

E. Control measures to limit or eliminate infiltration of seepage from municipal sanitary sewer system to the stormwater system. The City's sanitary operation & maintenance program is described in **Table 2.0**.

F. Management practices that prevent or control the release of materials related to fire-fighting training activities. The City's Fire Department maintains standard operating procedures that describe the expectations for use of best management practices to control impacts the stormwater system.

5. **Industrial Stormwater Permit Facilities** (City-owned)
The City of Gresham's Wastewater Treatment Plant has a DEQ issued 1200Z permit to control impacts to runoff from its outdoor activities. As required by Schedule A. 3. F. viii Material Disposal, all collected materials are managed and disposed in a manner that helps prevent entry into stormwater and waters of the state. The City's 1200Z reporting goes to DEQ 1200Z staff and are not included in the City's Annual SWMP Report.

6. **Winter Operations and Maintenance Program**

A. Winter Management Materials

The materials used for the City's winter road management program are stored at the operation's yard on NE Hogan road and per the Good Housekeeping program described above, best practices are used to ensure safe storage, cleanup of any drips or spills, and inspection, repair, and calibration of operating equipment.

B. Winter Maintenance Strategy

The City's Winter Operations & Management Plan is overseen by the Transportation Division. A map of roads that are prioritized for plowing, deicing, sanding, etc. to maintain public safety and a synopsis of the road strategy is on the City's Severe Weather page of the website. The Winter Plan is linked on the page with the SWMP (stormwater documents).

C. Winter Maintenance Tracking and Reporting

Table 2.0 contains the Winter Road O&M metrics and timeframes for inclusion in the City's Annual Stormwater Report.

7. **Requirements for Pesticide and Fertilizer Applications**

The City's pesticides and fertilizers are stored at the Operations facility on NE Hogan Rd and are checked annually to ensure their packaging is not leaking or stored or labeled improperly. City staff using chemicals are given training that enables comprehension of instructions with regard to weather, personal protection, environmental risks, application guidelines, and proper rinsing and disposal of rinsate. Leftover chemicals no longer in use are disposed as hazardous waste, as required by law. **Table 2.0** contains the Integrated Pest Management Plan metrics and timeframes for inclusion in the City's Annual Stormwater Report.

8. **Litter Control**

The City's Solid Waste & Sustainability Division oversees a portion of the City's efforts to control litter by providing support services to permitted outdoor events occurring within the city. The Transportation Division conducts city-wide street sweeping and the Stormwater Division cleans publicly owned stormdrains, which results in litter removal from the curb line and drains. The City's Stormwater & Natural Resource Program partner with community organizations such as SOLVE, scouts, and watershed councils to offer public events that result in litter being removed from public land. **Table 2.0** Education & Outreach program describes activities and metrics that will be included in the City's Annual Stormwater Report.

9. **Materials Disposal**

Table 2.0 describes the City's management of materials collected via its O&M program activities and lists the metrics for inclusion in the City's Annual Stormwater Report.

10. **Flood Control, Transportation, and Other Infrastructure**

The City's Stormwater Management Manual describes the application of stormwater design standards for the City's projects. Since the 2011 SWMP's implementation, the City has evaluated its flood control projects for the ability to also reduce stormwater pollution and will continue to do so.

11. Operations & Maintenance Staff Training

The stormwater O&M and Water Quality (WQ) staff are trained in a variety of ways. Knowledge is shared from long term staff to new staff regarding standard operating procedures for determining how to determine when specific stormwater facilities need to be maintained is one example. Staff also attend conferences and short schools with sessions that aid their knowledge and networking across agencies at these trainings to compare experiences and lessons learned is another method. The Water Quality & Natural Resource (NR) staff have diverse types of science degrees that support the ongoing evaluation of facility planting performance and management, tracking and documentation of data that assists with additional evaluation and feedback loops, as well as periodic review of scientific literature on green infrastructure maintenance and pollutant removal effectiveness. Lastly, data and research are shared at quarterly staff meetings for the benefit of ongoing learning by the entire staff (O&M, NR, WQ). **Table 2.0** contains the metrics and timeframes for training efforts that will be included in the City's Annual Stormwater Report.

12. Tracking and Assessment

Table 2.0 contains the metrics and time frames for municipal operations pollution prevention efforts that will be included in the City's Annual Stormwater Report.

F. Schedule A. 3. g. Industrial and Commercial Facilities
if. Screening for Industrial Stormwater Permitting

The City has a business license requirement for firms located within or doing business within Gresham. The exception is commercial and residential contractors and landscapers who are regionally licensed by Metro and are regulated by the City's erosion control program. The City's permit staff who intake applications for business licenses, refer the applications to the Water Quality and Wastewater staff for review and inclusion in either program's business inspection program, or if the business may need to be referred to DEQ for 1200Z Industrial permit evaluation. Once a year, a complete business list will be exported and evaluated as part of QA/QC procedure for the City's ongoing Business Inspection Program database. This QA/QC will act as another opportunity to review the 1200Z permitted industries (whose permits may have been issued for the first time within that year or have been reissued) and determine if any potential DEQ referrals may be needed based on updated inspection information.

ii. and iv. Strategy to Reduce Pollutants from Industrial and Commercial Facilities/Tracking & Assessment

The City's Business Inspection Program Standard Operating Procedure (Strategy) is included in **Appendix A**. **Table 2.0** includes the Business Inspection metrics and timeframes that will be included in the City's Stormwater Annual Report

iii. Commercial & Industrial Facility Inspection Staff Training
The Business Inspection Program staff have extensive backgrounds from their work history in construction and stormwater and wastewater systems, as well as training in stormwater controls. Staff attend conferences and relevant trainings that aid their knowledge and networking with other agencies to compare experiences and lessons learned.

G. Schedule A. 3. h. Infrastructure Retrofit and Hydromodification Assessment Update
Table 2.0 includes the metrics and timeframe for complying with Schedule A. h. i. (A)–(E) and will be included in the City's Stormwater Annual Report.

V. Schedule B -Monitoring and Reporting Requirements

The City of Gresham has an Environmental Monitoring Plan (EMP) that is complimentary to this Stormwater Management Plan. The EMP has been updated to meet the permit requirements included in Schedule B 1. **Table 2.0** describes the EMP compliance evaluation and elements that will be described in the City's Stormwater Annual Report, as well as the future required documents and analyses for the next Permit Renewal Submittal.

VI. Schedule D. -Special Conditions

1. Maintain **Legal Authority** to implement and enforce provisions of this permit.
2. **303 (d) Listed Pollutants** from the 2018/2020 DEQ Integrated Stream Assessment Report will be evaluated as required for the City's Permit Renewal Application which is due 180 days prior to the permit's expiration date.

3. Total Maximum Daily Loads (TMDLs)
The City has established a mature stormwater program that has been adaptively managed since its 1998 development. BMPs have been evaluated related to their ability to reduce TMDL pollutants and other pollutants of concern related to both those dissolved in water or those that move thru soil or attach to sediment particles. The level of activities selected have been optimized within the City's staffing and financial resources to achieve the best outcomes related to reducing these pollutants to the maximum extent practicable. **Table 2.0**. includes the BMP descriptions and reporting metrics and includes activities to achieve compliance with the Willamette Basin mercury TMDL issued in Feb 2021.

A. Schedule D. 3. b. Mercury Minimization Assessment

1. Permit Requirement:
Schedule D.3.b. Willamette Basin Mercury TMDL
Each co-permittee is responsible for the applicable WLAs included in the Total Maximum Daily Load (TMDL) for Mercury in the Willamette Basin and the implementation requirements associated Water Quality Management Plan issued by EPA on December 30, 2019 and reissued with modification on February 4, 2021. These requirements include:

i. Develop and submit a mercury minimization assessment with the annual report due November 1, 2022, that documents the current actions, such as BMPs implemented,

that reduce the amount of solids discharged into and from the permitted MS4 system (similar to the actions currently required in Schedule A). If the assessment indicates that mercury and sediment reducing BMPs are fully incorporated into the SWMP Document, a report documenting the results as such is sufficient.

ii. *Continued implementation of the BMPs and other actions described in the mercury minimization assessment that are effective for mercury reduction, along with documentation of implementation in each subsequent annual report.*

2. Sources and Risk

Mercury in the aquatic food chain is a significant risk to humans because it magnifies in fish tissue as it moves up the food chain and is a widely distributed problem throughout North America. In the Willamette basin, a TMDL was developed for mercury in order to develop fish consumption advisories.

According to the U.S. Environmental Protection Agency, the primary source of mercury in our waterways is atmospheric deposition from the burning of fossil fuels. Other significant sources include volcanic eruptions, wildfires, mining, industrial metal, and concrete production. The City's stormwater monitoring measures total mercury which acts as a proxy for Hg^{2+} which can react with organic compounds in the water and/or historically deposited sediment that is holding mercury and then potentially converted to methylmercury (MeHg) by organisms and sunlight. Lower oxygen levels in freshwater contribute to the conversion.

3. Stormwater Transport and Treatment

Stormwater runoff is the primary pathway by which aerially deposited mercury in the urban environment reaches aquatic systems via public and private pipes and overland flows. The City's BMPs within its SWMP such as, soil stabilization projects, erosion control program, sediment removal activities, and use of green infrastructure, lowers levels of total mercury in stormwater, which reduces the potential mercury that could be conversed to MeHg.

The goal of stormwater BMPs is to reduce the load of mercury to receiving waters. BMPs that infiltrate and prevent sediment movement reduce the mercury load in absolute terms, thereby reducing the potential for methylation in the environment (streams and wetlands). Mercury binds strongly to sulfur-containing organic ligands such as weathered plant material so that mercury that reaches biologically active soils tends to be well-sequestered (i.e., less bioavailable for methylation). Therefore, other than infiltration devices, sediment trapping BMPs are most effective for reducing mercury loads.

4. SWMP Strategies

The City's SWMP focuses on preventing the movement of sediment and the removal of accumulated sediment prior to entering streams. In particular, stormwater facilities will help sequester mercury in upland soil or subsurface environments. Structural stormwater BMPs that are most effective at reducing mercury loads include the following characteristics:

a. Prioritize retention. When retention is not feasible, prioritize extended detention to maximize the contact time for dissolved mercury to adsorb to particulates.
b. Trap sediment (particularly fine sediment) for alternative disposal.

c. Reduce flow volumes to allow mercury to incorporate into the soil matrix
d. Aerobic conditions that limit methylation.
e. Design avoids the remobilization of sediment and mercury.

In addition, non-structural BMPs (Education & Outreach & Waste Disposal Oversight) is also important to reduce hazards to humans from mercury vapor and to water from releases to the air or ground from breaks and spills.

Examples of programs already in use include amalgam collection requirements for dentists, proper recycling, or disposal of mercury switches in automobiles, home thermostats, fluorescent lights, thermometers, and pharmaceuticals.

5. Removal Evaluation

Effectiveness of stormwater BMPs in reducing mercury loads has not been quantified adequately to calculate pollutant load reduction benchmarks. Therefore, Gresham's revised monitoring plan has included mercury in the suite of parameters for analysis to inform future local knowledge regarding the levels and sources of mercury in stormwater and the removal efficiency by structural stormwater controls. The results of this monitoring, as well as evaluations of non-structural BMPs, will be used to re-evaluate the SWMP with respect to mercury for the next permit term. BMPs that Gresham currently implements that can be effective at reducing mercury loads include:

a. Conduct public education & outreach regarding public/business mercury contributions
b. Encourage LID practices
c. Illicit discharge detection and elimination
d. Maintain public streets by sweeping, other activities
e. Business inspection program
f. Reduce/limit sanitary sewer discharges and/or infiltration into the storm system
g. Maintain the MS4 system
h. Promote construction-phase erosion and sediment control
i. Implement public education programs to promote improved stormwater quality
j. Require stormwater treatment for new and redeveloped areas
k. Implement stormwater retrofit projects that target areas with highest pollutant loads (e.g., arterial streets)
l. Inspect and maintain stormwater facilities to remove accumulated sediment and vegetation

6. Conclusion

The overall SWMP Plan and BMP activities research and review regarding the prevention and control of mercury did not reveal any innovative technologies or programs to add to the SWMP at this time. The City's Environmental Monitoring Plan has been updated to comply with mercury monitoring requirements.

Stormwater Assets Maintenance Program (SMP) A-J. **BMP Owner: Stormwater Operations & Maintenance Group, supported by GIS and Stormwater Science & Policy & Engineering**				
Activity Name	**Description**	**Measurable Goal**	**Timeframe**	**Reporting Metrics**
A. Pipe Cleaning	The City's stormwater system currently consists of approximately 231 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 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	Debris removal estimate
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.	CCTV 100% of new pipe	annually/ongoing	Number of hours Miles of all pipe inspected
C. Storm Drain Cleaning	The City's stormwater system currently consists of approximately 8,100 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. 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	Number of hours Number of units inspected/cleaned Debris removal estimate
D. 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 just over 50 smaller neighborhood ponds that 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 must be 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 forebay sediment. 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	Number of hours/activity Number of facilities by type Debris removal estimate
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	Number of hours/activity Number of facilities by type Debris removal estimate

Stormwater Assets Maintenance Program (SMP) A-J.
BMP Owner: Stormwater Operations & Maintenance Group, supported by GIS and Stormwater Science & Policy & Engineering

Activity Name	Description	Measurable Goal	Timeframe	Reporting Metrics
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	Number of hours Number of facilities Debris removal estimate Cartridges replaced
G. System Repair & Maintenance	Maintain and repair pipes, ditches, culverts, inlets, off road systems, etc. to ensure proper function and limit impacts to water resources, which includes underground injection control devices and appurtenance that drain to groundwater.	Maintain and repair based upon SOP criteria.	annually/ongoing	Number of hours Type of work conducted
H. 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	Number of hours Spill and Illicit Discharge Outcomes Report Spill Response Trainings
I. Construction Inspections and Plan Review, Resident Concerns (O&M)	O&M staff plan review and construction site inspections	Conduct reviews and inspections to ensure compliance with Code	annually/ongoing	Number of hours
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	Number of hours
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 Track activities by unique id for location Report maintenance & cleaning metrics to DEQ per permit requirements
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.	Follow City best practices for handling, storing, and disposing of O&M generated debris. Retain debris testing results per file retention standards	annually/ongoing	Hauling services used Disposal site locations

Public Land Management (PLM A-E)
BMP Owner: Water Resources Division

Activity Name	Description	Measurable Goal	Timeframe	Reporting Metrics
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	CIP description, timeframe Annual expenditure

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.	Implement Stormwater Manual requirements.	annually/ongoing	List of projects completed and the benefits to water quality, area treated, watershed, and funding sources.
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	Types and quantities of chemicals used on public land by dept. Licensed staff by dept.

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	UFC projects Number of trees planted Outcomes from tree violation fund Public engagement (events/tree assistance)
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	NR CIP project description, timeframe Annual CIP expenditure Acres under restoration by location/watershed Community partners/volunteers
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	Residential rd. sweeps conducted Arterial rd. sweeps conducted Estimated debris removed Disposal facility Number of hours
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	Number of weather events List of materials used Estimated quantities of materials used Number of hours
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	Report changes in status or special projects
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 stormdrains because of flushing.	Use of dechlorination	annually/ongoing	Quantity of water dechlorinated
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	Lineal feet of pipe repaired/replaced

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, stormdrain protection procedures for outdoor work and management of the Operations yard within six months of hire.	annually/ongoing	Number of staff trained by Dept/program area & type of training received Number of new staff by Dept
Public Reporting, Engagement, Outreach & Behavior Change (PREOB A-F) **BMP Owner: Multiple (As listed in each Activity Description)**				
A. Spills & Illicit Discharges	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, My Gresham App, or email. Staff on or off duty may 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 in City's database.	Document spill and illicit discharge reports and investigations and outcomes.	annually/ongoing	Number of contacts Number of issues resulting in no threat/nothing to resolve Number of issues resulting in Educational Outreach Number of Issues resulting in City or Responsible Party Cleanup/Enforcement Number of issues resulting in releases to the stream system
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.	Document events offered and supported. Track residential used oil collected by haulers	annually/ongoing	Types of materials collected Number of events supported Estimated volume of materials collected
C. Business Outreach	The Solid Waste & Sustainability Division offers outreach to businesses and apartments with services that help reduce litter and illegal dumping (includes stormdrain 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	Number of businesses served Number of apartment complexes served Key audience/number mailed/delivered

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	List of classes, events, field trips, etc. and partners, if applicable Estimate youth and adults attending

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-$70Kannual 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	Summary of campaign deliverables and messages. Estimate audience reached Summarize evaluations
F. City outreach	The City uses a variety of communication channels to reach its residents. 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	Comm channels used Estimated audience Message delivered
Control Impacts from Development and Business Activities (CIDBA A-F) **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	Summarize findings and updates in subsequent annual report
B. Private Stormwater Facilities Tracking & Inspection	The Stormwater group ensures tracking and GIS mapping of 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.	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	Total of stormwater facilities installed by type Total of acres treated by the facilities Inspection & Compliance summary
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	Summarize findings and updates in the subsequent annual report

D. EPSC Inspection Program	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.	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	Total number of active sites Total of planned disturbed area Summary of enforcement actions

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.	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	Total number of businesses inspected Total number of stormwater compliance issues Total number of enforcements
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 Stormdrain 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	Number of SCAP participants Number of drains cleaned Estimate of debris removed Number of additional drains cleaned Estimate of debris removed.
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)	Submit report as Appendix to Annual Report.

Stormwater Management Plan Appendix A:

City of Gresham Department of Environmental Services (DES) Stormwater and Groundwater (S&G) Business Inspection Program Standard Operating Procedure

I. Overview

City of Gresham's Business Inspection program staff are responsible for various activities in addition to this program such as building plan review and approval to meet stormwater, wellfield, or wastewater compliance requirements, response to spills and investigations, permit review and approval contractor meetings, and assistance with project management. As such, this Standard Operating Procedure (SOP) is written to provide flexibility within a work year to accommodate competing project workloads.

The City of Gresham has approximately 1,500 businesses within its city limits that are reviewed at least annually to screen for inclusion in the DES S&G Business Inspection Program. Businesses selected for inclusion include those whose site and/or business has the potential to contribute stormwater pollution or threats to groundwater beyond *de minimus* contributions that are ubiquitous such as typical vehicle traffic (dirt or minor drips). This program is separate from the City's Fire Department inspections and Rental Housing inspections and is complimentary to the Industrial Pretreatment Program conducted by Wastewater staff.

DES staff screen for businesses that meet one or more of these criteria:

1. A DEQ 1200-Z industrial stormwater permit[1]
2. An Industrial Pretreatment Program (IPP) permit[2] for their wastewater discharges to the treatment plant. Wastewater IPP staff have their own tracking, inspection, and reporting system that is not represented in this document. Their work is complimentary to the S&G Business Inspection Program because any concerns identified will be passed to other inspection staff and inspection work is coordinated, as much as possible, to ensure an efficient process for businesses.
3. Activities include use and storage of chemicals and/or high potential for spills or leaching of hazardous materials, heavy metals, or other pollutants of concern.

Business Sectors Included in the DES S&G Business Inspection Program

1. Industrial and manufacturing businesses that:
   a) Transport, store, load, or unload, or use hazardous chemicals, halogenated solvents, or petroleum products
   b) Store or generate hazardous waste
   c) Manufacture or generate retail products, byproducts, waste, or recycling exposed to the outdoors

[1] 1200-Z Permitted Industry are included. Those suspected of qualifying are forwarded to DEQ for review.
[2] IPP permitted industries typically require stormwater or wellfield inspections, which are coordinated between IPP and S&G inspection staff

These businesses are subject to both the wellfield (WF) protection program's regulatory requirements[3] to protect groundwater and stormwater regulatory requirements to reduce pollution in stormwater runoff.

2. Food Service Establishments (FSE)
   FSEs are subject to wastewater pretreatment regulations and stormwater regulations for mitigating runoff pollution.
3. Automotive-related businesses (ARB) that:
   a) Store or use hazardous chemicals
   b) Conduct repairs, bodywork, detailing, washing, or painting
   c) Store or recycle waste products such as metals, auto fluids, oil filters, tires, etc.

   ARBs are subject to stormwater regulatory requirements to reduce pollutants in stormwater runoff. ARBs located within wellfield boundaries are also subject to the requirements of the wellfield protection program.

II. Business Inspection Procedures

A. Environmental Screening

At least annually, the DES S&G business inspection list will be compared and reconciled with the City's business license database. New businesses are evaluated for risk and assigned an initial inspection frequency based on business type and stored in a subscription proprietary software (currently SwiftComply (SC)). Businesses that have closed or changed are updated in SC annually or as staff become aware. See attached table of business types that are evaluated for inclusion in the City's inspection program.

B. Inspection Frequency

Businesses are assigned a risk rating of 1- 5 (see explanation of risk categories below). Inspection frequency is associated with risk categories, with the target frequency being listed as a range, but subject to staff discretion based on risk and competing priorities. Businesses with frequent or significant violations may be assigned an increased inspection frequency at the discretion of the inspector or manager. Conversely, businesses that are initially assigned a higher risk but have minor[4] or no inspection violations and/or obtain Green Biz certification may be assigned a lower risk number.

When a business's risk rating is changed in SwiftComply, the person making the change will add a note specifying the reason for the change.

C. SwiftComply (SC) database maintenance

1. Program Tech (PT) checks business license data for new businesses quarterly.
2. PT notifies inspectors of new businesses.

---

[3]Where the boundary applies. Additional requirements for regulated businesses within wellfield boundaries may be found at GreshamOregon.gov/Well-Field-Protection-Program

[4] Minor violations include risks noted but not resulting in pollution (e.g., unmarked containers, lids ajar, garbage dumpster lid open, etc.)

3. Inspector or PT contact new businesses within 90 days of opening[5] to check processes and deliver relevant educational materials (in person or electronically). Inspector records contact in SwiftComply (SC).
4. Annually, PT obtains a full list of businesses from business license database and reconciles with SC database, adding new businesses and closing those that are out of business.
5. When the inspector learns in the field that a business has closed or changed, the profile is updated in SC.
   i. Closed businesses are marked as closed in SC, even if a new business has opened at the same location.
   ii. If a new business has opened at the same location, inspector creates a new profile in SC and notifies PT. PT completes profile and confirms that they have a City business license.

D. Inspection Scheduling

1. PT generates monthly list of inspections due, sends to inspector for scheduling.
2. When a revisit inspection is needed to confirm corrections, the inspector schedules the revisit using the "schedule inspection" button in SC or otherwise places it on their calendar, if button is not applicable near the compliance deadline, using best professional judgement.

E. Inspections

Inspector completes the applicable inspection form in SC. An example of the site elements that are inspected for compliance with the City's code is included as **Figure 1.0.**

1. Regular inspections include review of the site's stormwater system for pollutant contributions or pollution risk. Revisit inspections to verify regulatory compliance do not include stormwater system inspections if no previous stormwater corrections were required unless the inspector observes something of concern during the return visit.
2. Wellfield (WF) inspections of ARBs include ARB inspection items in addition to WF-specific items.
3. Needed corrections are documented with photos uploaded to SC.
4. If inspector notices stormwater issues or other items during an unrelated inspection, those items will be noted in SC and referred to water quality or other appropriate staff for follow-up.
5. Inspector emails inspection report to business as soon as possible after inspection, typically while onsite, but within no more than three working days. Report may be mailed if the business does not use email.
6. Inspection report includes a list of any needed corrections with deadlines (see deadline criteria).
7. If corrections are needed, inspector uses the "schedule next inspection" button in SC to schedule revisit inspection near the compliance deadline using best professional judgement[6].
   a. If catch basin cleaning is the only needed correction, inspector notes it in the report and notifies PT. PT follows up with the business to provide options for catch basin cleaning

[5] Some businesses do not physically open for business because of remodeling or other. Based upon City contact, a future inspection will be set with SC based upon opening planned timeframe.

[6] Best professional judgement is used to determine daily priorities. For example, potentially hazardous violations will be prioritized for return compliance inspection, over a less threatening issue when time is limited. Other factors include dry versus wet forecasts.

and obtain documentation of correction. The inspector does not reinspect to verify correction.

b. Deadline extensions included under F. Revisit Inspections.

F. Revisit Inspections

In SC, re-inspections to confirm compliance use a simplified inspection form under the heading "revisit inspection". All contacts with an establishment, including follow-up, technical assistance, and compliance inspections, are recorded in SC.

1. Revisit inspections follow above inspection procedures.
    a. Completed corrections are documented, including photos as appropriate.
        i. Photos should be included when verbal descriptions may be unclear and to create a photo record for future inspections to compare something that was "dirty" versus something that has been "cleaned up" for compliance.
    b. Deadline extensions are granted only when extenuating circumstances exist, such as inability to schedule a contractor within the timeframe due to availability or when risk to stormwater is low/moderate. When an extension is granted, the reason is documented in SC and corresponding revisit inspection is scheduled in SC using "schedule next inspection".
    c. Uncorrected violations will be referred for enforcement, following procedures outlined in H. Enforcement.

G. Complaints

If a complaint about a business's practice(s) concerning risk to the stormwater system comes to the City for a business that falls within the S&G program, the business inspector will conduct an inspection, generally the same day or the next business day, but may be longer if the reported activity is considered low risk. Such inspections follow the procedures described in E. Inspections.

If a complaint is received about a business NOT in the S&G program, the City may send other staff to verify and photograph the issue. Examples include reports of a plugged catch basin or litter-filled catch basin, a leaking garbage container at a retailer, etc. These types of issues are tracked in the City's Illicit Discharge & Spill Response database.

H. Enforcement

Inspector refers significant or ongoing stormwater violations to water quality (WQ) staff for enforcement action. WQ staff follows established enforcement procedures.

1. Violations that pose a water quality risk and remain uncorrected after the established deadline are referred for enforcement.
    a. Water quality staff follow established enforcement procedures with an initial inspection report functioning as a Notice to Correct (NTC)
    b. The second notice is a Notice of Violation (NOV), which is a civil penalty warning with opportunity to correct.
    c. The third notice is the issuance of a civil penalty.

2. Repeat violations and violations posing extreme risk to water quality (e.g., because it is raining, rain is predicted, or the pollution is already occurring) will be referred for enforcement at the time of the initial inspection.
3. Inspector notes enforcement referral in SC, selects "referred for enforcement" compliance status, and copies PT on inspection report delivery.
    a. PT records any enforcement action in the establishment's SC record.

III. Violation Categories and Correction Deadline Criteria

Correction deadlines are set based on risk to water quality and complexity of the required remedy.

1. Imminent risk: release to stormwater system is occurring or will occur (rain is predicted within <48 hours), if not corrected promptly. Violations involving imminent risk typically are assigned a same-day deadline to correct.
    a. Up to 48 hours may be allowed if rain is not predicted within that timeframe and immediate harm to the stormwater system is not anticipated or can be temporarily mitigated.
    b. If the violation cannot be corrected within 48 hours, the inspector confers with the manager to determine the next steps and set reasonable deadlines. Additional stormwater controls will be required, when appropriate. If the business needs to hire a contractor to complete the correction, the typical deadline is 10 working days.
    c. Depending on the potential harm caused by a particular pollutant release, the City may also intervene by declaring an emergency and cleaning or mitigating the spill in part, or completely, with their own staff and equipment, or by using an on-call contractor. This work is then billed back to the business.
    d. Per the City's Stormwater Permit: if the discharge from the business is ongoing and cannot be remedied within 15 working days due to technical, logistical, or other issues, the Business Inspector must notify the Enforcement staff or Manager who will notify DEQ (Department of Environmental Quality) and propose an action plan for DEQ approval. This DEQ notification must be made within 20 days of the inspection date.
2. Low/moderate risk: release to stormwater system is not occurring and is unlikely to occur in the near future. Standard correction deadline for low and moderate risk[7] violations is 30 days.
    a. If the violation is low risk and cannot be corrected within 30 days, inspector may assign an extended deadline, and require additional controls to mitigate risk, when appropriate. Inspector documents the reason for the extended deadline in SC.
    b. If the violation is moderate risk and cannot be corrected in 30 days and extending the deadline would increase risk to stormwater system, inspector confers with manager to determine next steps and set reasonable deadlines.
3. Illicit Connections Deadline: Per the City's Stormwater Permit, if the business inspector or other city staff become aware of an illicit connection from a waste pipe to the public or private

[7]Examples include dry weather season or moving equipment or materials to create lower risk for potential spills, etc.

stormwater system, the illicit connection shall be removed within six months unless otherwise approved by DEQ.

IV. Risk Levels

The Wellfield Protection Program (WPP) establishes minimum chemical storage thresholds for requiring annual reporting and implementation of operation and structural best practices to protect groundwater. Businesses are included in the WPP program if they have the following minimum quantities:

a. 10 gallons of halogenated solvent
b. 50 gallons of fuel, petroleum, or hazardous substances (may include soaps or cleaning supplies)
c. 30 gallons of hazardous waste

These quantities are used for evaluating all businesses to determine when they have a larger quantity that might pose a greater risk to surface or groundwater. Wellfield program businesses with chemicals below these thresholds are monitored and categorized as a Risk Level 2.

A. Risk Level 5 (inspected every 11-14 months or more frequently, if needed for compliance)

Risk level 5 businesses typically store and use large volumes of chemicals or petroleum products in indoor and outdoor conditions where spill containment is difficult to control. A category 5 risk level business has one or more of the following characteristics:

1. Performs indoor vehicle maintenance and repairs over a basement working bay or pit
2. High potential for spills or leaks of hazardous chemicals or wastes due to the nature of work performed
3. Dismantling vehicles and/or sale of used vehicle parts and components as a primary business either indoors or outdoors
4. Has poor housekeeping practices and evidence of spills and excess staining, especially outdoors
5. Chronic or repeated non-compliance

Examples include auto wrecking yards, transmission repair shops, oil change facilities, and any establishment with chronic or repeated non-compliance. Because Category 5 businesses often have stormwater violations, inspectors may be on site more than once per year.

B. Risk Level 4 (inspected every 12 to 16 months)

Risk level 4 businesses typically store and use large volumes of chemicals or petroleum products and pose a moderate level of risk for impacting water. A category 4 risk level business typically has one or more of the following characteristics:

1. Performs indoor and outdoor vehicle repairs that include engine or transmission work
2. Performs suspension or brake work, or other vehicle repairs involving liquid chemicals
3. Moderate risk of spills or leaks of hazardous chemicals or wastes due to the nature of the work performed
4. Failure to submit grease removal device service records regularly or on time
5. Chronic or repeated stormwater issues such as trash enclosure clean up and catch basin cleaning

Examples include general auto repair shops, full-service auto sales shop with repairs, car rental facilities and FSEs (Food Service Establishments) that have evidence of poor outdoor housekeeping practices and/or reporting issues.

C. Risk Level 3 (inspected every 24 to 28 months)

Risk level 3 businesses store quantities of chemicals above the wellfield manual thresholds but have operational and structural BMPs in place that make them lower risk for impacting water. A category 3 risk level business typically has one or more of the following characteristics:

1. Infrequent minor spills or leaks of hazardous chemicals, waste, wash water, or wet sanding and other auto body work process residues during normal working operations that do not impact groundwater or stormwater
2. Submit required compliance reports on time
3. Any required devices (e.g., grease interceptors) serviced regularly
4. FSE with regular to large volume business and large structure footprint

Examples include auto body repair shops that are clean and have a verified history of good housekeeping and spill control, and FSEs with a full-service kitchen, seating area, and a large capacity grease interceptor such as a full sit-down restaurant or fast-food location

D. Risk Level 2 (inspected every 36 to 40 months)

Risk level 2 businesses typically store quantities of chemicals below regulated wellfield program thresholds and/or have relatively low risk for impacting water and are likely to fall within the DEQ conditionally exempt hazardous waste generator (less than 220 lbs. annually). These businesses are "monitored" with infrequent inspections so the City continues to verify the amount of chemicals stored and activities conducted. A category 2 risk level business typically has one or more of the following characteristics:

1. Little or no evidence of spills or leaks of chemicals or wash water
2. Submit any required compliance reports on time
3. Currently certified as Green Biz or EcoBiz
4. No ongoing compliance issues

Examples include low-volume FSEs, small used car sales facilities, car wash facilities, auto detailing facilities and other miscellaneous vehicle upgrades and minor repair facilities.

E. Risk Level 1 (not regularly inspected)

Risk level 1 businesses are typically offices or retail-only establishments with little or no chemical storage or significant risk of causing an impact to water. A category 1 risk level business typically has one or more of the following characteristics:

1. Minor quantities of commonly used cleaning chemicals, soaps, or hazardous compounds stored on site (less than 80% of the Wellfield storage thresholds and would qualify as a DEQ conditionally exempt hazardous waste generator (less than 220 lbs. annually)).
2. Business practices do not create any risk of spills or leaks other than parked cars and garbage containers

Examples include vehicle upgrade shops such as sound system and auto upholstery shops and other similar businesses. FSEs like convenience stores, coffee kiosks, and other small mobile food services that

have no food prep or pretreatment device and little/no production of putrescible waste are typically in this category.

V. Staff Training

Gresham's approach to training includes at least two or more the following based on the experience of a new hire:

a. tutorials on how to use tracking software
b. professional conferences pertaining to Industrial & Commercial stormwater controls
c. new employee orientation and review of manuals and applicable code, as well as how to find and use as-builts, plats, and GIS to understand stormwater and wastewater infrastructure on both the public and private side
d. erosion prevention and sediment control certification
e. new staff job shadowing senior staff to conduct inspections, completed inspections forms, and practice following the standard operating procedure

The manager and program technician oversee data review and software queries to ensure overall objectives for inspections and corrections are met. Generally, once staff are trained, ongoing training is not needed.

Table 1.0 Business Categories of Interest to Business Inspection Program

Businesses in these categories should be screened for inclusion in the business inspection program. This list is not necessarily exhaustive.

Business Type (NAICS description)	Default Risk Category	SwiftComply Type
All Other Automotive Repair and Maintenance	4	ARB
All Other Miscellaneous Fabricated Metal Product Manufacturing	3	WF
All Other Miscellaneous Manufacturing	3	WF
All Other Plastics Product Manufacturing	3	WF
All Other Professional, Scientific, and Technical Services	2	WF
All Other Specialty Trade Contractors	3	WF
Ambulance Services	3	ARB
Automotive Body, Paint, and Interior Repair and Maintenance	3	ARB
Automotive Exhaust System Repair	4	ARB
Automotive Glass Replacement Shops	2	ARB
Automotive Oil Change and Lubrication Shops	5	ARB
Automotive Parts and Accessories Stores	2	ARB
Bowling Centers	3	FSE
Breweries	3	WF
Car Washes	2	ARB
Caterers	3	FSE
Coin-Operated Laundries and Drycleaners	2	WF
Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	3	WF
Commercial Bakeries	3	WF
Commercial Printing (except Screen and Books)	3	WF
Confectionery Merchant Wholesalers	2	WF
Construction and Mining (except Oil Well) Machinery and Equipment Merchant Wholesalers	3	WF
Construction Machinery Manufacturing	3	WF
Construction Sand and Gravel Mining	3	WF
Convenience Stores	1	FSE
Dairy Product (except Dried or Canned) Merchant Wholesalers	2	WF
Data Processing, Hosting, and Related Services	3	WF
Drinking Places (Alcoholic Beverages)	3	FSE
Drycleaning and Laundry Services (except Coin-Operated)	3	WF
Drywall and Insulation Contractors	2	WF
Electrical Contractors and Other Wiring Installation Contractors	2	WF
Exterminating and Pest Control Services	3	WF
Farm and Garden Machinery and Equipment Merchant Wholesalers	3	ARB
Finish Carpentry Contractors	2	WF
Fitness and Recreational Sports Centers	2	WF

Floor Covering Stores	2	WF
Freestanding Ambulatory Surgical and Emergency Centers	2	WF
Fuel Dealers	4	ARB
Full-Service Restaurants	3	FSE
Funeral Homes and Funeral Services	2	WF
Gasoline Stations with Convenience Stores	4	ARB
General Automotive Repair	4	ARB
General Freight Trucking, Local	3	ARB
General Line Grocery Merchant Wholesalers	3	FSE
General Medical and Surgical Hospitals	2	WF
General Rental Centers	3	ARB
General Warehousing and Storage	3	WF
Golf Courses and Country Clubs	2	WF
Highway, Street, and Bridge Construction	3	WF
Industrial Machinery and Equipment Merchant Wholesalers	3	WF
Industrial Supplies Merchant Wholesalers	3	WF
Janitorial Services	2	WF
Landscaping Services	2	WF
Limited-Service Restaurants	2	FSE
Linen Supply	2	WF
Lumber, Plywood, Millwork, and Wood Panel Merchant Wholesalers	3	WF
Machine Shops	3	WF
Materials Recovery Facilities	2	WF
Medical Laboratories	3	WF
Medical, Dental, and Hospital Equipment and Supplies Merchant Wholesalers	3	WF
Mobile Food Services	2	FSE
Motion Picture Theaters (except Drive-Ins)	2	FSE
Motor Vehicle Supplies and New Parts Merchant Wholesalers	2	ARB
Motor Vehicle Towing	3	ARB
New Car Dealers	4	ARB
Nonferrous Metal (except Aluminum) Smelting and Refining	3	WF
Nursery, Garden Center, and Farm Supply Stores	2	WF
Other Automotive Mechanical and Electrical Repair and Maintenance	4	ARB
Other Building Equipment Contractors	3	WF
Other Building Material Dealers	3	WF
Other Commercial and Industrial Machinery and Equipment Rental and Leasing	3	WF
Other Electronic and Precision Equipment Repair and Maintenance	2	WF
Other Electronic Component Manufacturing	3	WF
Other Foundation, Structure, and Building Exterior Contractors	2	WF
Other Gasoline Stations	4	ARB
Other Miscellaneous Nondurable Goods Merchant Wholesalers	2	WF

Other Snack Food Manufacturing	2	WF
Outdoor Power Equipment Stores	4	ARB
Passenger Car Rental	4	ARB
Plumbing and Heating Equipment and Supplies (Hydronics) Merchant Wholesalers	3	WF
Plumbing, Heating, and Air-Conditioning Contractors	2	WF
Poured Concrete Foundation and Structure Contractors	3	WF
Process, Physical Distribution, and Logistics Consulting Services	2	WF
Roofing Contractors	3	WF
School and Employee Bus Transportation	4	ARB
Semiconductor and Related Device Manufacturing	3	WF
Service Establishment Equipment and Supplies Merchant Wholesalers	3	WF
Sign Manufacturing	2	WF
Site Preparation Contractors	3	WF
Snack and Nonalcoholic Beverage Bars	2	FSE
Solid Waste Collection	3	ARB
Specialized Freight (except Used Goods) Trucking, Local	3	ARB
Sporting and Athletic Goods Manufacturing	2	WF
Sporting and Recreational Goods and Supplies Merchant Wholesalers	2	WF
Stationery and Office Supplies Merchant Wholesalers	3	WF
Supermarkets and Other Grocery (except Convenience) Stores	3	FSE
Surgical Appliance and Supplies Manufacturing	3	WF
Taxi Service	4	ARB
Testing Laboratories	2	WF
Tire Dealers	3	ARB
Used Car Dealers	4	ARB
Used Household and Office Goods Moving	2	WF
Water and Sewer Line and Related Structures Construction	3	WF

CITY OF GRESHAM

Construction Plan Review Checklist

Project Name:	Date:
Project #:	DE/Tech:
Location:	Engineer:

Code sections refer to Public Works Standards (PWS) except as noted otherwise.
GCDC = Gresham Community Development Code / SWMM = Stormwater Management Manual

STANDARD	Code	Complete	Needs Revision	Missing	N/A
SUPPORTING DOCUMENT SUBMITTALS					
Developer's Information Form submitted *(DE provide to Program Tech)* .	Link				
Authority to sign submitted if owner is not an individual *(example: operating agreement or letter of authority)*					
Engineer's Estimate Template submitted.	Link				
Impervious and Pervious Surface Site Drawing submitted.	Link				
Final storm report submitted that includes the infiltration test, graphically shows expected impervious area of each lot (should be at least 2,500 square feet per lot).					
Stormwater Facility Tracking Form submitted and includes the required attachment.	Link				
Water Meter Sizing Chart submitted.	Link				
Any necessary design modifications submitted on correct form with supporting documents included.	Link				
If right-of-way by separate instrument is required (including long chord at intersection per 6.02.05), a site plan and a legal description of dedication submitted.					
Right-of-way permit submitted. *Proof of insurance and traffic control plan may be deferred until just before Notice to Proceed.*	Link				
If a Stormwater Agreement Maintenance agreement is needed, cross section of raingardens, over flow elevations and any other applicable pertinent stormwater features were provided.					
If an encroachment license is needed, a site plan showing type, location of encroachment, and height, width and depth of encroachment. A legal description of the site (not encroachment) is also needed.					
If a reimbursement district is requested, all required submittal items were submitted as outlined on the application form.					
If site is located along a bus line, documentation from TriMet submitted with needed transit related frontage improvements or that none are needed.					
All other required plan review submittal documents are supplied.					

STANDARD	Code	Complete	Needs Revision	Missing	N/A
GENERAL					
Conditions of Approval related to public facilities construction met.					
Construction plans include Engineer of Record stamp and signature.	CAD Manual				
Standard City of Gresham layers and layer naming convention are used within CAD.	CAD Manual				
Vicinity map on cover sheet. Must be at a scale and clarity that is useful. (Recommended scale 1"=1000')	CAD Manual				
Site map on cover sheet. (Recommended scale 1"=100')	CAD Manual				
All sheets include a 2" x 2" blank square in the upper right-hand corner for City use.	CAD Manual				
Index of sheets.	CAD Manual				
Complete legend of symbols, line types and abbreviations used.	CAD Manual				
General and construction notes pertinent to project. Check for standard notes.	Link				
Project Number (07 number) in Title Block.					
Title block includes development name and location by section, township and range.					
Title block includes date of drawing, sheet title, sheet number and total number of sheets.					
At least two temporary and/or permanent benchmarks used, along with descriptions, coordinates, elevations of benchmarks and datum. National Geodetic Vertical Datum of 1929, 1947 adjustment.	CAD Manual				
Must reference a City of Gresham Benchmark, and be verified by Austin Bennington (City Surveyor) or via Gresham Control Points Map on City Website.	Link				
Engineer's name, address, phone number and seal.	CAD Manual				
Developer's/owner's name, address and phone number.	CAD Manual				
Provide contact phone number for all affected utility companies, including City utilities and Transportation.	Link				
Cover sheet includes a statement referencing City of Gresham Public Works Standards.	CAD Manual				
Show tax lot numbers and address provided by Addressing Technician. Use existing address for land divisions.	CAD Manual				
22" x 34" Standard sheet size with City frames.	CAD Manual				
Plat sheet included and consistent with plat under review, preliminary land use plans and, if applicable, prior subdivision phases, such as lot and parcel numbers, easement types, easement ownership, and rights-of-way dedications.					
Where profiles are drawn on the same sheet as the plan view, the profile shall be immediately below the plan view (aligned) with the same horizontal scale as the plan sheet.	CAD Manual				
Sheets to have match line for adjoining sheets.	CAD Manual				
Correct City street name shown and classification.					
North arrow, bar scale, and narrative scale on each sheet.					

STANDARD	Code	Complete	Needs Revision	Missing	N/A
Public Utility Easements, shall be 20' minimum (depending on depth and size of utility). Backyard public storm drainage easements may be a minimum of 10' wide. Utilities greater than 8' 8" in depth and/or 8" in diameter may need wider easements.	2.07.02				
Show all existing and proposed easements on the site and identify easements as public or private.	CAD Manual				
Site composite utility plan of entire project with street right-of-way and/or subdivision layout is at a scale that is easy to read.	CAD Manual				
Location of all underground utilities within 100 feet of project (if they are affected by the project), existing utility poles and guy anchors, valves, manholes, catch basins, fire hydrants, meter boxes and vaults, signs, etc.	CAD Manual				
Show all franchise utility crossings at intersections. Conduit to be provided, if actual utility not installed prior to paving.					
All non-City franchise utilities should be located in a GUE where available unless approved by Transportation as a design modification.	Detail 601				
Single family only: verify street tree spacing, and number of trees. *Single family attached: One tree per frontage.* *All other uses: One tree per 30'. (at least 20' separation)*	6.02.18				
Verify that street trees are not within 15 feet of streetlights and catch basins, within 5 feet of driveway cuts or underground public utilities or 12 feet of nearside of a crosswalk or vehicular approach side of an intersection.	Table 6.02.18 Notes 2 and 3				
Verify that street trees are a minimum of 1.75" caliper.	6.02.18				
Review plans for any trees that qualify as a Major Tree and possible design modifications that could be approved to protect/retain them.	Internal Hyperlink				
For single family residential development the plans must include a note that the street trees and sidewalks are to be installed with home construction.					
Verify street tree type is on the approved list and appropriate for the planter strip width.	Link				
Trees in rain gardens must be on the approved street tree list as well as the Stormwater Plant List.	Link				
Verify tree protection/fencing is shown on plans.					
Verify environmental overlay zones are shown on plans.					
Grading plan with back lot drainage swales and private storm lines shown on plans.					
Erosion control plan shown.	CAD Manual				
Erosion Control Plan notes included.	Link				
Erosion Control Plan details Included from Stormwater Management Manual.	EPSC-2 - EPSC-21				
Applicable sheets include the following note: *"Contractor is required to provide a copy of the traffic control plan and project schedule to all impacted emergency service providers, school bus services, the US Postal Service, garbage haulers and TriMet (if lane closure is on a bus route) a minimum of 5-days prior to scheduled construction."*					
GENERAL STANDARD DETAILS	Detail #				

STANDARD	Code	Complete	Needs Revision	Missing	N/A
Will centerline monument box be required as part of this project? Only include this detail for new street or adjusted centerline on collector streets and higher. Note: 5/8" iron rod required for local streets.	634				
Does the project include placement of utilities in the public right-of-way?	601				
TRANSPORTATION					
Street, sidewalk, and right-of-way width to City standards (see staff report).	6.02.02 6.04.01				
Long chord dedication at intersection, to be dedicated by separate document or plat, is shown.	6.02.05				
Pavement width illustrated (curb to curb) on each plan view sheet.					
Each roadway shall indicate its functional classification on the plan sheet associated with its construction.					
Verify no encroachments in rights-of-way unless approved by Senior Transportation Engineer. This includes building overhangs and appurtenances for 'zero lot line' buildings. Any approved encroachments must be shown on the construction plans and as-builted. *See Right-of-way Encroachment Permit Review Type document for guidance.*	Internal Link				
To reduce damage by parking cars, no above ground infrastructure, trees and signs should be proposed within 5 feet of curb where cars back toward bump outs.					
Sidewalks fronting greenways and other public owned areas to be installed by developer.					
Sidewalks shall have unobstructed passage width of 5 feet. 48" minimum clear sidewalk width with manager's approval.	6.04.01				
Include handrails or fences where there is a vertical drop of 30" or greater at back of sidewalk.	6.04.01				
Check for ADA sidewalk ramps and conflicts with catch basins and raingardens.					
Show spot elevations at all four corners of ADA curb ramp and landing for a total of 6.					
Two ADA ramps required for each corner of intersection.	6.04.02				
If there is a sidewalk and no existing ramp at corners opposite the development site, an ADA ramp is required.	6.04.02				
Show curb profile in cul-de-sacs.					
Curb return data shall be on the same sheet the return is shown.					
Show gutter elevations at ¼ points around curb returns if no ADA ramps are provided.					
Check minimum curb return radius is 30' for standard and major arterials, 25' for minor arterials and collectors, 20' for local streets except for minor access and alley which are 15'.	Table 6.02.14				
Profile both tops of curbs when street is warped.					
For new streets and street realignments, verify design speed and horizontal curve radii.	6.02.08 & 6.02.09				

STANDARD	Code	Complete	Needs Revision	Missing	N/A
Street Barricades (#630) or End of Road Markers (#628) at all dead-end streets. Use End of Road markers except where a drop off hazard exists (slopes steeper than 3:1 for at least 18").	Detail 628 & 630				
If an existing street is being extended, add note: Contractor is to call the City for barricade removal.					
Profile with existing ground or street shown.	CAD Manual				
Vertical curves: Specify beginning, end, points of intersection, low points, high points, and length. Profile of existing centerline grade shall extend at least 250 feet beyond end of the improvement.	CAD Manual				
Street grades shown. Minimum 0.5%. Maximum 6% for major and standard arterials, 8% for minor arterials, 10% for collectors, 12% for local street classifications unless approved by manager using criteria in PWS.	6.02.11				
Grade tie-in to existing streets and future extension of streets accurate.					
No saw cuts in the wheel paths are proposed.					
Streetlights:	6.02.17				
a. Check streetlight proposal for water meter and other conflicts.					
b. Shows all existing poles and lighting on both sides of street(s).					
c. For the following standards, proposal complies with Table 6.02.17 of the PWS:	Table 6.02.17				
*Frontage Spacing					
*Staggering					
*Height					
*Luminaire Style					
d. Verify location from curb & trees.					
e. Transformer locations shown.					
f. Streetlight conduit shown. Required along entire site's frontage.					
g. Proposed detail provided for streetlights in raingarden. *Note: no streetlights permitted in raingardens unless there is no alternative.*					
Streetlight plans with 4 or more streetlights include a table with circuit number, number of lights per circuit, total load per circuit (in Watts), and total circuit length (in feet).					
Streetlight plan shows location of CUP-4111 (for streetlight plans with 4 or more streetlights) or 17x30 junction box (for streetlight plans with fewer than 4 streetlights) as point of disconnect between City and PGE lighting system.	6.02.17				
If project includes 190th from SE 30th to Cheldelin, Transportation Engineering has reviewed and approved the elevations.					
Transportation Engineering Review:					
Existing signal conduits and detector loops are shown.					
Proposed new signal interconnect conduit and junction boxes are shown.					
Determine if installation of underground signal interconnect conduit is appropriate for frontage(s).					
Striping plan submitted and meets criteria.	6.02.20 & Cad Manual				

STANDARD	Code	Complete	Needs Revision	Missing	N/A
Signage plan submitted and meets criteria.	6.02.19 & Cad Manual				
For streetlight plans with 4 or more streetlights, verify that voltage drop is not more than 3% by multiplying the total load per circuit by the total circuit length. The total should be less than 1,105,750.					
If bus stop along frontage, check for conflicts and determine if concrete pads are needed across planter strip for front and back door bus access.					
Review median design.					
Verify median detail included	Detail 636				
TRANSPORTATION STANDARD DETAILS	Detail #				
Does the project include the construction of public street?	603-613				
Rain drain connections not made to a curb core follow this preferred hierarchy: 1. Rain garden or planter wall connection 2. Connection to the back of a catch basin 3. Connection to the main line at a manhole 4. Connection to the main line with a blind tee 5. Connection to a beehive					
Does the project include a rain garden in the public right-of-way?	GS-101 - GS-111				
Does the project include the need to trench through concrete?	640				
Does the project include grind and inlay of pavement?	637				
Does the project include installation of curb?	620-622				
Does the new street section include a cul-de-sac?	615				
Does the new street section include a branch turnaround?	616				
Does the development include a dead end street?	628 or 630				
Will the project include new driveway approaches?	618 or 619				
Will the project include construction of sidewalk?	623				
Will the project include the installation of sidewalk ramps?	624				
Will an end of sidewalk marker be required?	629				
Will the project require any street signage?	631				
Does the project include the installation of speed bumps?	635				
Does the project include a public facility access road?	602A or B				
Does the project include a public pedestrian or bicycle accessway?	626 & 627				
Does the project include the construction of a multi-use path (including on street paths)?	626 & 627				
Does the project include the installation of street trees?	641 or 642				
Does the proposal include the installation of a fiberglass pole for streetlighting?	643				
Does the proposal include the installation of an aluminum pole for streetlighting?	644				
Does the proposal include the installation of a decorative acorn streetlight?	645				

STANDARD	Code	Complete	Needs Revision	Missing	N/A
Does the proposal include the installation of a decorative pendant streetlight?	646				
Does the proposal include the installation of a streetlight on a wood pole mast arm?	647				
Verify junction box detail included when needed. Verify that the proposal complies with detail.	648				
Verify signal communications conduit detail included when needed.	651				
Verify streetlight disconnect detail (649) included when new public streetlights installed and Streetlight Electrical Service Pedestal Detail (650) if CUP-4111 installed. If 17x30 junction box installed instead of CUP-4111, the installation is in a junction box per PGE's specs.	649 & 650				
STORMWATER					
Is stormwater addressed for every lot?					
Are backyard storm drains needed to protect lots from adjacent drainage? Private storm drains shall meet UPC.	4.13 & 4.14				
Is the public backyard storm drain pipe centered in a minimum 10 foot wide public stormwater easement and is that easement located on just one property within that 10 foot width?					
The public backyard storm drain pipe is at least 8" in diameter and otherwise meets the Public Works Standards.					
Note on plans that laterals and appurtenances connecting from the public backyard storm drain pipe, including any portion in the public easement, are private, privately maintained, and shall meet plumbing code.					
All public storm pipes and structures must be within 500 feet (uninterrupted by change in grade or alignment) of a truck accessible manhole structure.					
Explicitly note all WQ facilities outside of the ROW as "public" or "private" as applicable.					
Arrows showing direction of flow in street if profile not provided.	CAD Manual				
Standard corridor location 5 feet south or east of street centerline.	4.03.01				
Check composite sheet for horizontal and vertical alignment conflicts. All vertical separation of less than 1-foot must be specifically dimensioned on plans.					
Public storm pipe shall be reinforced concrete, HDPE solid wall, 3034 PVC, or polypropylene smooth interior corrugated exterior pipe. Specific pipe material must be called out on plans.	401.02 or 4.04				
Pipe cover minimum 30" in paved areas, 36" in unpaved areas.	4.03.02				
Max pipe bury 20' for ASTM D3034 SDR-35 PVC. Max pipe bury 20' for Polypropylene (dual-wall). See 2.08 for all other pipe types.	2.08				
For pipe size changes at a manhole, match crowns instead of inverts.	4.05.02				
No negative slopes, including transitions between public and private.					
Note included for new connections to existing manholes to rotate manhole cone/flat top and realign steps.					
Manhole spacing 500' maximum and at all changes in slope, alignment, size, and type, and at grade breaks and intersections.	4.05.02				

STANDARD	Code	Complete	Needs Revision	Missing	N/A
Flat top manholes shall be used when rim to crown is less than 4 ft.	Detail 203				
Blind 'T"s only permitted for 4-inch and 6-inch stormwater laterals. All others, connection at a manhole, not a cleanout.	4.05.02				
All stormwater mains terminate in a manhole. The main may be permitted to terminate in a temporary cleanout if the main is expected to be extended with future development. The Engineer shows that they proposed main is the proper grade for extension and the pipe upstream from the last manhole is not proposed to convey runoff until it is extended.					
Access structures (manholes, cleanouts) located within an easement are within 12 feet of edge of vehicular access, measured from center of structure lid, when designed to be accessed perpendicularly by the maintenance vehicle and within 6 feet when designed to be accessed from the front of the maintenance vehicle. Structures may be farther from the edge of the roadway if a gravel public access road is provided that extends all the way to the structure, or at a minimum allows for maintenance trucks to get within the appropriate distances specified above.	4.05.01 SWMM 3.2.5				
Inlet manhole required if two or more pipes discharge to structure or pipe is larger than 6" or design peak flow from onsite system exceeds 0.5 cfs.	4.05.03B				
150' max MH spacing for detention pipes when off-line from stormwater line.	Detail 406				
72" manhole normally required for detention structures. MH shall be shown on detention pipe profile.					
Minimum 4.5-foot vertical inside clearance between cartridge and top of water quality manhole or vault.					
WQ manhole: 48" min for 1- and 2-cartridge; 60" min for 3-cartidge. More than 3 cartridges requires a vault.					
Maximum detention pipe size of 36".	4.04				
Catch basin maximum spacing 400-feet	4.05.03				
Catch basin leads: minimum 12-inch diameter.	4.04				
Catch basin required on upstream side of intersection.	4.05.03				
Catch basin required at end of dead end street with descending grade.	4.05.03				
Catch basin required at upstream or downstream end of street improvement abutting unimproved roads or property.	4.05.03				
Double catch basins required at low point (sag) of vertical curves.	4.05.03A Detail 401D				
Stationing included for all services and structures.					
Is upstream drainage inlet provided?					
Is outfall protection noted and adequate (rip-rap, energy dissipater, flared ends, etc.)?	4.05.04				
Do rip-rap dimensions meet PWS?	4.05.04				
Downstream property or pipe not adversely affected by concentration, point of discharge, volume or pollutants.	4.08				

STANDARD	Code	Complete	Needs Revision	Missing	N/A
Stormwater not to be discharged onto other property without easement.	4.01				
Ensure necessary source controls provided (solid waste enclosures covered and have drains to wastewater, etc).	SWMM 5.3 - 5.11				
If in a wellhead protection area, a paved area shall be placed underneath and around any area where hazardous material loading and unloading will be conducted. *To be verified by Wellfield staff; Development Engineering to alert.*	Wellfield Reference Manuals: 3.4.2				
If in a wellhead protection area and if drainage from a loading or unloading area can enter a stormwater conveyance system, drain covers, absorbent booms, diking material sufficient to isolate spilled material, or a quick-closing valve and proper signage shall be provided. *To be verified by Wellfield staff; Development Engineering to alert.*	Wellfield Reference Manuals: 3.4.2				
If a proprietary vault is being used for public WQ treatment, verify with City staff the make and model are on the approved list.					
City maintained stormwater ponds meet fencing requirements of Stormwater Management Manual.	SWMM 3.2				
Edge of stormwater pond(s) are at least 5-feet from property lines or an easement was provided by adjacent property owner to ensure the full five feet of width.	SWMM 3.2.5				
Preapproval received for stormwater pond(s) with walls or slopes steeper than 3:1. Note: no more than 1/3 of the perimeter is permitted to exceed 3:1.	SWMM 3.2.5				
Stormwater pond's surrounding slopes do not exceed 10 percent or a geotechnical report is submitted and approved by City.	SWMM 3.2.5				
Stormwater pond(s) are at least 200 feet from slopes greater than 15% or a geotechnical report is submitted and approved by City.	SWMM 3.2.5				
Stormwater pond(s) have at least 1 foot of freeboard to top of berm.	SWMM 3.2.5				
Permanent pool depth of wet stormwater pond(s) are no more than 2.5 feet and will not exceed 8 feet during 25-year event.	SWMM 3.2.5				
STORMWATER STANDARD DETAILS	Detail #				
Does the project include the installation of stormwater manholes? *Manhole - 27" diameter or less: Standard: 201, Shallow: 203 / 30" or greater diameter: Standard 202, Cast in place: 204* *Frame - Standard: 205; Suburban: 206; Water/tamper proof: 207; Hinge: 208; Pin: 209* *Cover - Standard: 410, Tamperproof: 411; Hinge: 412; Pin: 413* *Step - 210 or Hanging Ladder: 409*	Multiple				
Does the project include installation of new public stormwater pipe? *Pipe Bedding and Backfill - 214* *AC Pavement Restoration - 639; PCC Pavement Restoration - 640* *Joints (only for large diameter pipes) - 310-312*	Multiple				
Does the project include installation of catch basins? *Standard - 401A-C, Double - 401C-D, Non-grated - 402*	Multiple				
Does the project include the installation of a ditch inlet? *Ditch Inlet - 403A-C* *Inlet Manhole - Standard: 404A&B, Alt Top: 404C, Non-grated: 404D*	Multiple				

STANDARD	Code	Complete	Needs Revision	Missing	N/A
Does the project include detention pipe?	405A & B and 406				
Are the invert, orifice, and overflow elevations shown on flow control MH detail 405A?	405A				
Does the project include a storm sump (drywell) system? *Standard - 407, Retrofit - 408*	407 & 408				
Does the project require that the height of a manhole be adjusted following changes to the adjacent pavement height?	638				
WASTEWATER					
Standard corridor location 5 feet north or west of street centerline.	3.03.01				
Future line extension provided. Show topography for at least 100 feet beyond site boundary.	CAD Manual				
Pipe depth shall be minimum to provide for future extension.	3.01				
Max pipe bury 20' for ASTM D3034 SDR-35 PVC. See 2.08 for all other pipe types.	2.08				
Check composite sheet for horizontal and vertical alignment conflicts. All vertical separation of less than 1-foot must be specifically dimensioned on plans.					
Minimum clear distance from water mains 5-foot horizontal, 18-inch vertical (sewer beneath water main).	Detail 510 & 5.02.04				
DI pipe required where vertical separation is less than 18", or horizontal separation is less than 5-foot, or when cover is less than 3' from subgrade.	Detail 510				
If waterline crosses under the sewer line, center standard length of sewer pipe at crossing.	Detail 510				
No curved sewers allowed.	3.03				
4" Maximum hole for 8" Main taps unless otherwise approved by Wastewater Senior Engineer.	Detail 308				
Is a wastewater lateral provided for every lot?					
Stationing included for all laterals and structures.					
Minimum pipe diameter 4-inch for laterals.	3.06				
Laterals shall be placed at 90 degrees to the main.	3.06				
Keep laterals 10' min from P/L to avoid water meters and utility vaults.	3.06				
Existing houses and vacant lots, which are a part of the development, shall be provided with laterals.	GCDC A5.102				
Minimum pipe diameter 8-inch for mains.	3.04				
Drop Elevation:	3.05.02				
a. Min 0.2-foot drop through MH for horizontal deflection over 45 degrees; 0.1-foot drop for 0 - 45 degrees. If sewers in and out are equal size *and* pass straight through MH, no added elevation change is required.					
b. Shallow inside drop MH required for drop less than 2' to provide smooth flow lines unless the drop is less than 0.1 foot or 0.2 foot as specified in last checklist requirement.	Detail 302				
c. Drop connection required when vertical distance between flow lines exceeds 2' at MH.	Detail 301				

STANDARD	Code	Complete	Needs Revision	Missing	N/A
MH finish grade minimum of 1' above existing ground in unimproved area; at grade in existing street; and at future grade in proposed street. In unpaved vehicular accessways, a 5' x 5' x 4" AC pad shall be placed to finished grade centered around frame.	302.03.06				
Shallow MH with slab top shall be used in lieu of cone top when less than 4' between MH shelf and top of lid.	3.05.02 & Detail 203				
Manhole spacing 500' maximum and at all changes in slope, alignment, size, type, and at grade breaks and intersections.	3.05.02				
Insert note for all new connections to existing manholes to rotate manhole cone/flat top and realign steps to meet requirements of MH details.	Details 201, 203, & 204				
The following note is included on all plan sheets that show wastewater service laterals: "All lots can be served by gravity sewer without pumps unless otherwise noted on this sheet."					
Cleanouts are permitted at the end of non-extendable sewer mains which do not exceed 250' in length or serve more than 8 lots.	3.05.03				
Access structures (manholes, cleanouts) located within an easement are within 12 feet of edge of vehicular access, measured from center of structure lid, when designed to be accessed perpendicularly by the maintenance vehicle and within 6 feet when designed to be accessed from the front of the maintenance vehicle. Structures may be farther from the edge of the roadway if a gravel public access road is provided that allows for maintenance trucks to get within the appropriate distances specified above.	3.05.01				
WASTEWATER STANDARD DETAILS	Detail #				
Does the project include the installation of wastewater manholes? *Manhole - 27" diameter or less: Standard: 201, Shallow: 203 / 30" or greater diameter: Standard 202, Inside Drop: 301, Cast in place: 204* *Frame - Standard: 205, Suburban: 206, Water/tamper proof: 207, Hinge: 208, Pin: 209* *Cover - Standard: 303, Tamperproof: 304, Hinge: 305; Pin: 306* *Step - 210*	Multiple				
Does the project include the installation of new public wastewater pipe? *Pipe Bedding and Backfill - 214* *AC Pavement Restoration - 639; PCC Pavement Restoration - 640* *Joint - 310-312*	Multiple				
Is a cleanout required?	211				
Are anchor walls required (pipes with slopes 20% or greater)?	212				
Is concrete encasement required (pipe in waterway that cannot meet coverage requirements of 3.03.06)?	213				
Does the project include the installation of laterals? *Lateral - 307, Tap in Existing Main - 308, Cleanout - 211; Siamese not permitted.*	Multiple				
Does the project require that the height of a manhole be adjusted following changes to the adjacent pavement height?	638				
WATER					

STANDARD	Code	Complete	Needs Revision	Missing	N/A
Located in typical corridor: 12 feet south or east of centerline.	5.02.01				
Service level pressure zone identified.					
Are internal mains looped?	5.01 & 5.03				
Pipe size requirements: - 4-inch pipe shall be used in residential zones, on dead end streets, only when approved by the Engineer. The maximum length may not exceed 250 feet. Not more than 12 services may be connected. - 6-inch pipe shall be the minimum standard size of distribution mains and shall only be used on looped systems larger than 6-inches. No hydrants are permitted on 6-inch lines. - 8-inch pipe shall be used for mains supplying hydrants requiring a flow rate of 1,000 GPM. - 10-inch or larger pipe shall be required as specified in the Master Plan and as required by the Engineer to meet Commercial and Industrial usage or fire flow demands exceeding 1,000 GPM.	5.03				
One water sampling station required for every 20 lots in subdivisions (none required if less than 20 lots).	5.08 Detail 504				
3' minimum horizontal clearance between water mains/services and other utility lines, including licensed utilities (see Wastewater section for wastewater clearances).	5.02.05				
All water infrastructure located at least 12" above all other utility lines, including licensed utilities (see Wastewater section for wastewater clearances). *Less than 12" permitted to accommodate for future side connections of water infrastructure and to avoid conflicts with parallel utilities but absolute minimum clearance for water services is 6".*	5.02.05				
All vertical separation of less than 1-foot must be specifically dimensioned on plans.					
Minimum cover 36" from existing or future street grade; 48" minimum in unpaved areas.	5.02.02				
Temporary and permanent dead-end mains shall terminate with a properly sized blow-off assembly.	5.03 Details 506 A & B				
Minimum water tap spacing of 18 inches along main.	501.03.04				
Water service provided for every lot.					
Proper pipe class noted.	501.02.02				
Identify the type of material used for water service (copper or PEX).					
Stationing included for all services and structures.					
Fire hydrant spacing 300' max in commercial & industrials areas; 400' max in residential areas.	5.04.03				
Where no sidewalk exists around hydrant, place 6' x 6' x 6" concrete pad around hydrant. Place adjacent sidewalk panel(s) at time hydrant pad is poured.	502.03.01 Detail 501C				
Storz adapters required on existing hydrants along frontage.	5.04.03 502.02.01 Detail 501A				

STANDARD	Code	Complete	Needs Revision	Missing	N/A
Blue markers required in street to mark all hydrant locations.	5.04.03 502.02.01 Detail 501B				
Air release valve required at main highpoints without hydrants.	5.04.04				
Valves located at intersections.	5.04.01				
Butterfly valves required on 12" and larger main.	501.02.13				
Intersection detail for valves and fittings required when scale is smaller than 1"=20'.	CAD Manual				
Fittings identified (MJ x MJ, FLJ x MJ, etc.)	CAD Manual				
Install only minimum number of valves necessary to effect a shutdown of no more than one block out of service. 2 valves at "T" intersection and 3 valves at cross.	5.04.01				
Maximum length of shutdown 500' in commercial/industrial areas, and 800' in other areas.	5.04.01				
Backflow prevention required all new commercial construction, irrigation and fire sprinklers systems.	5.05				
Permanent irrigation systems for public stormwater facilities have a stand-alone water meter and backflow device.	SWMM 3.2.5				
Rockwood, Portland, Lusted, Butler Creek waterlines shown on plans. (DE to send copy of plans to affected City/District).					
WATER STANDARD DETAILS	Detail #				
Does the project include the installation of a fire hydrant?	501A- C				
Does the project include installation of new public water pipe?	214				
Does the project require the installation of an air valve unit?	505A & B				
Does the project require the installation of a blow-off?	506A & B				
Is thrust blocking required to deal with abrupt changes in horizontal (#507) or vertical (#508) alignment?	507 & 508				
Does the project require the installation of a straddle block?	509				
Will the water pipe be installed in proximity to gravity sanitary sewer pipe?	510				
Is a valve box required (4-6" blow off - 512; everything else - 511)?	511 or 512				
Does the project include the installation of water services and meters? *1" Service (w/ 3/4" - 1" Meter Box) - 502 & 515A, 2" Domestic (w/ 1.5"-2" Meter Box) - 503 & 515B, Larger than 2" - per plan (tap to main w/ stub out to site typically performed by City at developer's expense),* *3" and Larger Meter Vault - 513A-D*	Multiple				
Is a backflow prevention assembly (of appropriate size based on the meter or service installation) required to be installed? *3" or Larger DCVA or DDCVA Installation - 514A-B (& 514 C if DDCVA for a dedicated fire service line)* *3/4" - 2" DCVA installation - 514D*	Multiple				
Is a reduced pressure principal backflow assembly required to be installed? (Typically industrial/manufacturing development or on domestic or irrigation services for properties with existing wells in use for irrigation.) *3" or larger RPBA - 514G, 2.5" or smaller RPBA - 514F*	514F, 514G				

STANDARD	Code	Complete	Needs Revision	Missing	N/A
Does the project include the installation of a sampling station?	504				

CITY OF GRESHAM

Construction Plan Review Checklist

Project Name:	Date:
Project #:	DE/Tech:
Location:	Engineer:

Code sections refer to Public Works Standards (PWS) except as noted otherwise.
GCDC = Gresham Community Development Code / SWMM = Stormwater Management Manual

STANDARD	Code	Complete	Needs Revision	Missing	N/A
SUPPORTING DOCUMENT SUBMITTALS					
Developer's Information Form submitted *(DE provide to Program Tech)* .	Link				
Authority to sign submitted if owner is not an individual *(example: operating agreement or letter of authority)*					
Engineer's Estimate Template submitted.	Link				
Impervious and Pervious Surface Site Drawing submitted.	Link				
Final storm report submitted that includes the infiltration test, graphically shows expected impervious area of each lot (should be at least 2,500 square feet per lot).					
Stormwater Facility Tracking Form submitted and includes the required attachment.	Link				
Water Meter Sizing Chart submitted.	Link				
Any necessary design modifications submitted on correct form with supporting documents included.	Link				
If right-of-way by separate instrument is required (including long chord at intersection per 6.02.05), a site plan and a legal description of dedication submitted.					
Right-of-way permit submitted. *Proof of insurance and traffic control plan may be deferred until just before Notice to Proceed.*	Link				
If a Stormwater Agreement Maintenance agreement is needed, cross section of raingardens, over flow elevations and any other applicable pertinent stormwater features were provided.					
If an encroachment license is needed, a site plan showing type, location of encroachment, and height, width and depth of encroachment. A legal description of the site (not encroachment) is also needed.					
If a reimbursement district is requested, all required submittal items were submitted as outlined on the application form.					
If site is located along a bus line, documentation from TriMet submitted with needed transit related frontage improvements or that none are needed.					
All other required plan review submittal documents are supplied.					

STANDARD	Code	Complete	Needs Revision	Missing	N/A
GENERAL					
Conditions of Approval related to public facilities construction met.					
Construction plans include Engineer of Record stamp and signature.	CAD Manual				
Standard City of Gresham layers and layer naming convention are used within CAD.	CAD Manual				
Vicinity map on cover sheet. Must be at a scale and clarity that is useful. (Recommended scale 1"=1000')	CAD Manual				
Site map on cover sheet. (Recommended scale 1"=100')	CAD Manual				
All sheets include a 2" x 2" blank square in the upper right-hand corner for City use.	CAD Manual				
Index of sheets.	CAD Manual				
Complete legend of symbols, line types and abbreviations used.	CAD Manual				
General and construction notes pertinent to project. Check for standard notes.	Link				
Project Number (07 number) in Title Block.					
Title block includes development name and location by section, township and range.					
Title block includes date of drawing, sheet title, sheet number and total number of sheets.					
At least two temporary and/or permanent benchmarks used, along with descriptions, coordinates, elevations of benchmarks and datum. National Geodetic Vertical Datum of 1929, 1947 adjustment.	CAD Manual				
Must reference a City of Gresham Benchmark, and be verified by Austin Bennington (City Surveyor) or via Gresham Control Points Map on City Website.	Link				
Engineer's name, address, phone number and seal.	CAD Manual				
Developer's/owner's name, address and phone number.	CAD Manual				
Provide contact phone number for all affected utility companies, including City utilities and Transportation.	Link				
Cover sheet includes a statement referencing City of Gresham Public Works Standards.	CAD Manual				
Show tax lot numbers and address provided by Addressing Technician. Use existing address for land divisions.	CAD Manual				
22" x 34" Standard sheet size with City frames.	CAD Manual				
Plat sheet included and consistent with plat under review, preliminary land use plans and, if applicable, prior subdivision phases, such as lot and parcel numbers, easement types, easement ownership, and rights-of-way dedications.					
Where profiles are drawn on the same sheet as the plan view, the profile shall be immediately below the plan view (aligned) with the same horizontal scale as the plan sheet.	CAD Manual				
Sheets to have match line for adjoining sheets.	CAD Manual				
Correct City street name shown and classification.					
North arrow, bar scale, and narrative scale on each sheet.					

STANDARD	Code	Complete	Needs Revision	Missing	N/A
Public Utility Easements, shall be 20' minimum (depending on depth and size of utility). Backyard public storm drainage easements may be a minimum of 10' wide. Utilities greater than 8' 8" in depth and/or 8" in diameter may need wider easements.	2.07.02				
Show all existing and proposed easements on the site and identify easements as public or private.	CAD Manual				
Site composite utility plan of entire project with street right-of-way and/or subdivision layout is at a scale that is easy to read.	CAD Manual				
Location of all underground utilities within 100 feet of project (if they are affected by the project), existing utility poles and guy anchors, valves, manholes, catch basins, fire hydrants, meter boxes and vaults, signs, etc.	CAD Manual				
Show all franchise utility crossings at intersections. Conduit to be provided, if actual utility not installed prior to paving.					
All non-City franchise utilities should be located in a GUE where available unless approved by Transportation as a design modification.	Detail 601				
Single family only: verify street tree spacing, and number of trees. *Single family attached: One tree per frontage.* *All other uses: One tree per 30'. (at least 20' separation)*	6.02.18				
Verify that street trees are not within 15 feet of streetlights and catch basins, within 5 feet of driveway cuts or underground public utilities or 12 feet of nearside of a crosswalk or vehicular approach side of an intersection.	Table 6.02.18 Notes 2 and 3				
Verify that street trees are a minimum of 1.75" caliper.	6.02.18				
Review plans for any trees that qualify as a Major Tree and possible design modifications that could be approved to protect/retain them.	Internal Hyperlink				
For single family residential development the plans must include a note that the street trees and sidewalks are to be installed with home construction.					
Verify street tree type is on the approved list and appropriate for the planter strip width.	Link				
Trees in rain gardens must be on the approved street tree list as well as the Stormwater Plant List.	Link				
Verify tree protection/fencing is shown on plans.					
Verify environmental overlay zones are shown on plans.					
Grading plan with back lot drainage swales and private storm lines shown on plans.					
Erosion control plan shown.	CAD Manual				
Erosion Control Plan notes included.	Link				
Erosion Control Plan details Included from Stormwater Management Manual.	EPSC-2 - EPSC-21				
Applicable sheets include the following note: *"Contractor is required to provide a copy of the traffic control plan and project schedule to all impacted emergency service providers, school bus services, the US Postal Service, garbage haulers and TriMet (if lane closure is on a bus route) a minimum of 5-days prior to scheduled construction."*					
GENERAL STANDARD DETAILS	Detail #				

STANDARD	Code	Complete	Needs Revision	Missing	N/A
Will centerline monument box be required as part of this project? Only include this detail for new street or adjusted centerline on collector streets and higher. Note: 5/8" iron rod required for local streets.	634				
Does the project include placement of utilities in the public right-of-way?	601				
TRANSPORTATION					
Street, sidewalk, and right-of-way width to City standards (see staff report).	6.02.02 6.04.01				
Long chord dedication at intersection, to be dedicated by separate document or plat, is shown.	6.02.05				
Pavement width illustrated (curb to curb) on each plan view sheet.					
Each roadway shall indicate its functional classification on the plan sheet associated with its construction.					
Verify no encroachments in rights-of-way unless approved by Senior Transportation Engineer. This includes building overhangs and appurtenances for 'zero lot line' buildings. Any approved encroachments must be shown on the construction plans and as-builted. *See Right-of-way Encroachment Permit Review Type document for guidance.*	Internal Link				
To reduce damage by parking cars, no above ground infrastructure, trees and signs should be proposed within 5 feet of curb where cars back toward bump outs.					
Sidewalks fronting greenways and other public owned areas to be installed by developer.					
Sidewalks shall have unobstructed passage width of 5 feet. 48" minimum clear sidewalk width with manager's approval.	6.04.01				
Include handrails or fences where there is a vertical drop of 30" or greater at back of sidewalk.	6.04.01				
Check for ADA sidewalk ramps and conflicts with catch basins and raingardens.					
Show spot elevations at all four corners of ADA curb ramp and landing for a total of 6.					
Two ADA ramps required for each corner of intersection.	6.04.02				
If there is a sidewalk and no existing ramp at corners opposite the development site, an ADA ramp is required.	6.04.02				
Show curb profile in cul-de-sacs.					
Curb return data shall be on the same sheet the return is shown.					
Show gutter elevations at ¼ points around curb returns if no ADA ramps are provided.					
Check minimum curb return radius is 30' for standard and major arterials, 25' for minor arterials and collectors, 20' for local streets except for minor access and alley which are 15'.	Table 6.02.14				
Profile both tops of curbs when street is warped.					
For new streets and street realignments, verify design speed and horizontal curve radii.	6.02.08 & 6.02.09				

STANDARD	Code	Complete	Needs Revision	Missing	N/A
Street Barricades (#630) or End of Road Markers (#628) at all dead-end streets. Use End of Road markers except where a drop off hazard exists (slopes steeper than 3:1 for at least 18").	Detail 628 & 630				
If an existing street is being extended, add note: Contractor is to call the City for barricade removal.					
Profile with existing ground or street shown.	CAD Manual				
Vertical curves: Specify beginning, end, points of intersection, low points, high points, and length. Profile of existing centerline grade shall extend at least 250 feet beyond end of the improvement.	CAD Manual				
Street grades shown. Minimum 0.5%. Maximum 6% for major and standard arterials, 8% for minor arterials, 10% for collectors, 12% for local street classifications unless approved by manager using criteria in PWS.	6.02.11				
Grade tie-in to existing streets and future extension of streets accurate.					
No saw cuts in the wheel paths are proposed.					
Streetlights:	6.02.17				
a. Check streetlight proposal for water meter and other conflicts.					
b. Shows all existing poles and lighting on both sides of street(s).					
c. For the following standards, proposal complies with Table 6.02.17 of the PWS:	Table 6.02.17				
*Frontage Spacing					
*Staggering					
*Height					
*Luminaire Style					
d. Verify location from curb & trees.					
e. Transformer locations shown.					
f. Streetlight conduit shown. Required along entire site's frontage.					
g. Proposed detail provided for streetlights in raingarden. *Note: no streetlights permitted in raingardens unless there is no alternative.*					
Streetlight plans with 4 or more streetlights include a table with circuit number, number of lights per circuit, total load per circuit (in Watts), and total circuit length (in feet).					
Streetlight plan shows location of CUP-4111 (for streetlight plans with 4 or more streetlights) or 17x30 junction box (for streetlight plans with fewer than 4 streetlights) as point of disconnect between City and PGE lighting system.	6.02.17				
If project includes 190th from SE 30th to Cheldelin, Transportation Engineering has reviewed and approved the elevations.					
Transportation Engineering Review:					
Existing signal conduits and detector loops are shown.					
Proposed new signal interconnect conduit and junction boxes are shown.					
Determine if installation of underground signal interconnect conduit is appropriate for frontage(s).					
Striping plan submitted and meets criteria.	6.02.20 & Cad Manual				

STANDARD	Code	Complete	Needs Revision	Missing	N/A
Signage plan submitted and meets criteria.	6.02.19 & Cad Manual				
For streetlight plans with 4 or more streetlights, verify that voltage drop is not more than 3% by multiplying the total load per circuit by the total circuit length. The total should be less than 1,105,750.					
If bus stop along frontage, check for conflicts and determine if concrete pads are needed across planter strip for front and back door bus access.					
Review median design.					
Verify median detail included	Detail 636				
TRANSPORTATION STANDARD DETAILS	Detail #				
Does the project include the construction of public street?	603-613				
Rain drain connections not made to a curb core follow this preferred hierarchy: 1. Rain garden or planter wall connection 2. Connection to the back of a catch basin 3. Connection to the main line at a manhole 4. Connection to the main line with a blind tee 5. Connection to a beehive					
Does the project include a rain garden in the public right-of-way?	GS-101 - GS-111				
Does the project include the need to trench through concrete?	640				
Does the project include grind and inlay of pavement?	637				
Does the project include installation of curb?	620-622				
Does the new street section include a cul-de-sac?	615				
Does the new street section include a branch turnaround?	616				
Does the development include a dead end street?	628 or 630				
Will the project include new driveway approaches?	618 or 619				
Will the project include construction of sidewalk?	623				
Will the project include the installation of sidewalk ramps?	624				
Will an end of sidewalk marker be required?	629				
Will the project require any street signage?	631				
Does the project include the installation of speed bumps?	635				
Does the project include a public facility access road?	602A or B				
Does the project include a public pedestrian or bicycle accessway?	626 & 627				
Does the project include the construction of a multi-use path (including on street paths)?	626 & 627				
Does the project include the installation of street trees?	641 or 642				
Does the proposal include the installation of a fiberglass pole for streetlighting?	643				
Does the proposal include the installation of an aluminum pole for streetlighting?	644				
Does the proposal include the installation of a decorative acorn streetlight?	645				

STANDARD	Code	Complete	Needs Revision	Missing	N/A
Does the proposal include the installation of a decorative pendant streetlight?	646				
Does the proposal include the installation of a streetlight on a wood pole mast arm?	647				
Verify junction box detail included when needed. Verify that the proposal complies with detail.	648				
Verify signal communications conduit detail included when needed.	651				
Verify streetlight disconnect detail (649) included when new public streetlights installed and Streetlight Electrical Service Pedestal Detail (650) if CUP-4111 installed. If 17x30 junction box installed instead of CUP-4111, the installation is in a junction box per PGE's specs.	649 & 650				
STORMWATER					
Is stormwater addressed for every lot?					
Are backyard storm drains needed to protect lots from adjacent drainage? Private storm drains shall meet UPC.	4.13 & 4.14				
Is the public backyard storm drain pipe centered in a minimum 10 foot wide public stormwater easement and is that easement located on just one property within that 10 foot width?					
The public backyard storm drain pipe is at least 8" in diameter and otherwise meets the Public Works Standards.					
Note on plans that laterals and appurtenances connecting from the public backyard storm drain pipe, including any portion in the public easement, are private, privately maintained, and shall meet plumbing code.					
All public storm pipes and structures must be within 500 feet (uninterrupted by change in grade or alignment) of a truck accessible manhole structure.					
Explicitly note all WQ facilities outside of the ROW as "public" or "private" as applicable.					
Arrows showing direction of flow in street if profile not provided.	CAD Manual				
Standard corridor location 5 feet south or east of street centerline.	4.03.01				
Check composite sheet for horizontal and vertical alignment conflicts. All vertical separation of less than 1-foot must be specifically dimensioned on plans.					
Public storm pipe shall be reinforced concrete, HDPE solid wall, 3034 PVC, or polypropylene smooth interior corrugated exterior pipe. Specific pipe material must be called out on plans.	401.02 or 4.04				
Pipe cover minimum 30" in paved areas, 36" in unpaved areas.	4.03.02				
Max pipe bury 20' for ASTM D3034 SDR-35 PVC. Max pipe bury 20' for Polypropylene (dual-wall). See 2.08 for all other pipe types.	2.08				
For pipe size changes at a manhole, match crowns instead of inverts.	4.05.02				
No negative slopes, including transitions between public and private.					
Note included for new connections to existing manholes to rotate manhole cone/flat top and realign steps.					
Manhole spacing 500' maximum and at all changes in slope, alignment, size, and type, and at grade breaks and intersections.	4.05.02				

STANDARD	Code	Complete	Needs Revision	Missing	N/A
Flat top manholes shall be used when rim to crown is less than 4 ft.	Detail 203				
Blind 'T"s only permitted for 4-inch and 6-inch stormwater laterals. All others, connection at a manhole, not a cleanout.	4.05.02				
All stormwater mains terminate in a manhole. The main may be permitted to terminate in a temporary cleanout if the main is expected to be extended with future development. The Engineer shows that they proposed main is the proper grade for extension and the pipe upstream from the last manhole is not proposed to convey runoff until it is extended.					
Access structures (manholes, cleanouts) located within an easement are within 12 feet of edge of vehicular access, measured from center of structure lid, when designed to be accessed perpendicularly by the maintenance vehicle and within 6 feet when designed to be accessed from the front of the maintenance vehicle. Structures may be farther from the edge of the roadway if a gravel public access road is provided that extends all the way to the structure, or at a minimum allows for maintenance trucks to get within the appropriate distances specified above.	4.05.01 SWMM 3.2.5				
Inlet manhole required if two or more pipes discharge to structure or pipe is larger than 6" or design peak flow from onsite system exceeds 0.5 cfs.	4.05.03B				
150' max MH spacing for detention pipes when off-line from stormwater line.	Detail 406				
72" manhole normally required for detention structures. MH shall be shown on detention pipe profile.					
Minimum 4.5-foot vertical inside clearance between cartridge and top of water quality manhole or vault.					
WQ manhole: 48" min for 1- and 2-cartridge; 60" min for 3-cartidge. More than 3 cartridges requires a vault.					
Maximum detention pipe size of 36".	4.04				
Catch basin maximum spacing 400-feet	4.05.03				
Catch basin leads: minimum 12-inch diameter.	4.04				
Catch basin required on upstream side of intersection.	4.05.03				
Catch basin required at end of dead end street with descending grade.	4.05.03				
Catch basin required at upstream or downstream end of street improvement abutting unimproved roads or property.	4.05.03				
Double catch basins required at low point (sag) of vertical curves.	4.05.03A Detail 401D				
Stationing included for all services and structures.					
Is upstream drainage inlet provided?					
Is outfall protection noted and adequate (rip-rap, energy dissipater, flared ends, etc.)?	4.05.04				
Do rip-rap dimensions meet PWS?	4.05.04				
Downstream property or pipe not adversely affected by concentration, point of discharge, volume or pollutants.	4.08				

STANDARD	Code	Complete	Needs Revision	Missing	N/A
Stormwater not to be discharged onto other property without easement.	4.01				
Ensure necessary source controls provided (solid waste enclosures covered and have drains to wastewater, etc).	SWMM 5.3 - 5.11				
If in a wellhead protection area, a paved area shall be placed underneath and around any area where hazardous material loading and unloading will be conducted. *To be verified by Wellfield staff; Development Engineering to alert.*	Wellfield Reference Manuals: 3.4.2				
If in a wellhead protection area and if drainage from a loading or unloading area can enter a stormwater conveyance system, drain covers, absorbent booms, diking material sufficient to isolate spilled material, or a quick-closing valve and proper signage shall be provided. *To be verified by Wellfield staff; Development Engineering to alert.*	Wellfield Reference Manuals: 3.4.2				
If a proprietary vault is being used for public WQ treatment, verify with City staff the make and model are on the approved list.					
City maintained stormwater ponds meet fencing requirements of Stormwater Management Manual.	SWMM 3.2				
Edge of stormwater pond(s) are at least 5-feet from property lines or an easement was provided by adjacent property owner to ensure the full five feet of width.	SWMM 3.2.5				
Preapproval received for stormwater pond(s) with walls or slopes steeper than 3:1. Note: no more than 1/3 of the perimeter is permitted to exceed 3:1.	SWMM 3.2.5				
Stormwater pond's surrounding slopes do not exceed 10 percent or a geotechnical report is submitted and approved by City.	SWMM 3.2.5				
Stormwater pond(s) are at least 200 feet from slopes greater than 15% or a geotechnical report is submitted and approved by City.	SWMM 3.2.5				
Stormwater pond(s) have at least 1 foot of freeboard to top of berm.	SWMM 3.2.5				
Permanent pool depth of wet stormwater pond(s) are no more than 2.5 feet and will not exceed 8 feet during 25-year event.	SWMM 3.2.5				
STORMWATER STANDARD DETAILS	Detail #				
Does the project include the installation of stormwater manholes? *Manhole - 27" diameter or less: Standard: 201, Shallow: 203 / 30" or greater diameter: Standard 202, Cast in place: 204* *Frame - Standard: 205; Suburban: 206; Water/tamper proof: 207; Hinge: 208; Pin: 209* *Cover - Standard: 410, Tamperproof: 411; Hinge: 412; Pin: 413* *Step - 210 or Hanging Ladder: 409*	Multiple				
Does the project include installation of new public stormwater pipe? *Pipe Bedding and Backfill - 214* *AC Pavement Restoration - 639; PCC Pavement Restoration - 640* *Joints (only for large diameter pipes) - 310-312*	Multiple				
Does the project include installation of catch basins? *Standard - 401A-C, Double - 401C-D, Non-grated - 402*	Multiple				
Does the project include the installation of a ditch inlet? *Ditch Inlet - 403A-C* *Inlet Manhole - Standard: 404A&B, Alt Top: 404C, Non-grated: 404D*	Multiple				

STANDARD	Code	Complete	Needs Revision	Missing	N/A
Does the project include detention pipe?	405A & B and 406				
Are the invert, orifice, and overflow elevations shown on flow control MH detail 405A?	405A				
Does the project include a storm sump (drywell) system? *Standard - 407, Retrofit - 408*	407 & 408				
Does the project require that the height of a manhole be adjusted following changes to the adjacent pavement height?	638				
WASTEWATER					
Standard corridor location 5 feet north or west of street centerline.	3.03.01				
Future line extension provided. Show topography for at least 100 feet beyond site boundary.	CAD Manual				
Pipe depth shall be minimum to provide for future extension.	3.01				
Max pipe bury 20' for ASTM D3034 SDR-35 PVC. See 2.08 for all other pipe types.	2.08				
Check composite sheet for horizontal and vertical alignment conflicts. All vertical separation of less than 1-foot must be specifically dimensioned on plans.					
Minimum clear distance from water mains 5-foot horizontal, 18-inch vertical (sewer beneath water main).	Detail 510 & 5.02.04				
DI pipe required where vertical separation is less than 18", or horizontal separation is less than 5-foot, or when cover is less than 3' from subgrade.	Detail 510				
If waterline crosses under the sewer line, center standard length of sewer pipe at crossing.	Detail 510				
No curved sewers allowed.	3.03				
4" Maximum hole for 8" Main taps unless otherwise approved by Wastewater Senior Engineer.	Detail 308				
Is a wastewater lateral provided for every lot?					
Stationing included for all laterals and structures.					
Minimum pipe diameter 4-inch for laterals.	3.06				
Laterals shall be placed at 90 degrees to the main.	3.06				
Keep laterals 10' min from P/L to avoid water meters and utility vaults.	3.06				
Existing houses and vacant lots, which are a part of the development, shall be provided with laterals.	GCDC A5.102				
Minimum pipe diameter 8-inch for mains.	3.04				
Drop Elevation:	3.05.02				
a. Min 0.2-foot drop through MH for horizontal deflection over 45 degrees; 0.1-foot drop for 0 - 45 degrees. If sewers in and out are equal size *and* pass straight through MH, no added elevation change is required.					
b. Shallow inside drop MH required for drop less than 2' to provide smooth flow lines unless the drop is less than 0.1 foot or 0.2 foot as specified in last checklist requirement.	Detail 302				
c. Drop connection required when vertical distance between flow lines exceeds 2' at MH.	Detail 301				

STANDARD	Code	Complete	Needs Revision	Missing	N/A
MH finish grade minimum of 1' above existing ground in unimproved area; at grade in existing street; and at future grade in proposed street. In unpaved vehicular accessways, a 5' x 5' x 4" AC pad shall be placed to finished grade centered around frame.	302.03.06				
Shallow MH with slab top shall be used in lieu of cone top when less than 4' between MH shelf and top of lid.	3.05.02 & Detail 203				
Manhole spacing 500' maximum and at all changes in slope, alignment, size, type, and at grade breaks and intersections.	3.05.02				
Insert note for all new connections to existing manholes to rotate manhole cone/flat top and realign steps to meet requirements of MH details.	Details 201, 203, & 204				
The following note is included on all plan sheets that show wastewater service laterals: "All lots can be served by gravity sewer without pumps unless otherwise noted on this sheet."					
Cleanouts are permitted at the end of non-extendable sewer mains which do not exceed 250' in length or serve more than 8 lots.	3.05.03				
Access structures (manholes, cleanouts) located within an easement are within 12 feet of edge of vehicular access, measured from center of structure lid, when designed to be accessed perpendicularly by the maintenance vehicle and within 6 feet when designed to be accessed from the front of the maintenance vehicle. Structures may be farther from the edge of the roadway if a gravel public access road is provided that allows for maintenance trucks to get within the appropriate distances specified above.	3.05.01				
WASTEWATER STANDARD DETAILS	Detail #				
Does the project include the installation of wastewater manholes? *Manhole - 27" diameter or less: Standard: 201, Shallow: 203 / 30" or greater diameter: Standard 202, Inside Drop: 301, Cast in place: 204* *Frame - Standard: 205, Suburban: 206, Water/tamper proof: 207, Hinge: 208, Pin: 209* *Cover - Standard: 303, Tamperproof: 304, Hinge: 305; Pin: 306* *Step - 210*	Multiple				
Does the project include the installation of new public wastewater pipe? *Pipe Bedding and Backfill - 214* *AC Pavement Restoration - 639; PCC Pavement Restoration - 640* *Joint - 310-312*	Multiple				
Is a cleanout required?	211				
Are anchor walls required (pipes with slopes 20% or greater)?	212				
Is concrete encasement required (pipe in waterway that cannot meet coverage requirements of 3.03.06)?	213				
Does the project include the installation of laterals? *Lateral - 307, Tap in Existing Main - 308, Cleanout - 211; Siamese not permitted.*	Multiple				
Does the project require that the height of a manhole be adjusted following changes to the adjacent pavement height?	638				
WATER					

STANDARD	Code	Complete	Needs Revision	Missing	N/A
Located in typical corridor: 12 feet south or east of centerline.	5.02.01				
Service level pressure zone identified.					
Are internal mains looped?	5.01 & 5.03				
Pipe size requirements: - 4-inch pipe shall be used in residential zones, on dead end streets, only when approved by the Engineer. The maximum length may not exceed 250 feet. Not more than 12 services may be connected. - 6-inch pipe shall be the minimum standard size of distribution mains and shall only be used on looped systems larger than 6-inches. No hydrants are permitted on 6-inch lines. - 8-inch pipe shall be used for mains supplying hydrants requiring a flow rate of 1,000 GPM. - 10-inch or larger pipe shall be required as specified in the Master Plan and as required by the Engineer to meet Commercial and Industrial usage or fire flow demands exceeding 1,000 GPM.	5.03				
One water sampling station required for every 20 lots in subdivisions (none required if less than 20 lots).	5.08 Detail 504				
3' minimum horizontal clearance between water mains/services and other utility lines, including licensed utilities (see Wastewater section for wastewater clearances).	5.02.05				
All water infrastructure located at least 12" above all other utility lines, including licensed utilities (see Wastewater section for wastewater clearances). *Less than 12" permitted to accommodate for future side connections of water infrastructure and to avoid conflicts with parallel utilities but absolute minimum clearance for water services is 6".*	5.02.05				
All vertical separation of less than 1-foot must be specifically dimensioned on plans.					
Minimum cover 36" from existing or future street grade; 48" minimum in unpaved areas.	5.02.02				
Temporary and permanent dead-end mains shall terminate with a properly sized blow-off assembly.	5.03 Details 506 A & B				
Minimum water tap spacing of 18 inches along main.	501.03.04				
Water service provided for every lot.					
Proper pipe class noted.	501.02.02				
Identify the type of material used for water service (copper or PEX).					
Stationing included for all services and structures.					
Fire hydrant spacing 300' max in commercial & industrials areas; 400' max in residential areas.	5.04.03				
Where no sidewalk exists around hydrant, place 6' x 6' x 6" concrete pad around hydrant. Place adjacent sidewalk panel(s) at time hydrant pad is poured.	502.03.01 Detail 501C				
Storz adapters required on existing hydrants along frontage.	5.04.03 502.02.01 Detail 501A				

STANDARD	Code	Complete	Needs Revision	Missing	N/A
Blue markers required in street to mark all hydrant locations.	5.04.03 502.02.01 Detail 501B				
Air release valve required at main highpoints without hydrants.	5.04.04				
Valves located at intersections.	5.04.01				
Butterfly valves required on 12" and larger main.	501.02.13				
Intersection detail for valves and fittings required when scale is smaller than 1"=20'.	CAD Manual				
Fittings identified (MJ x MJ, FLJ x MJ, etc.)	CAD Manual				
Install only minimum number of valves necessary to effect a shutdown of no more than one block out of service. 2 valves at "T" intersection and 3 valves at cross.	5.04.01				
Maximum length of shutdown 500' in commercial/industrial areas, and 800' in other areas.	5.04.01				
Backflow prevention required all new commercial construction, irrigation and fire sprinklers systems.	5.05				
Permanent irrigation systems for public stormwater facilities have a stand-alone water meter and backflow device.	SWMM 3.2.5				
Rockwood, Portland, Lusted, Butler Creek waterlines shown on plans. (DE to send copy of plans to affected City/District).					
WATER STANDARD DETAILS	Detail #				
Does the project include the installation of a fire hydrant?	501A- C				
Does the project include installation of new public water pipe?	214				
Does the project require the installation of an air valve unit?	505A & B				
Does the project require the installation of a blow-off?	506A & B				
Is thrust blocking required to deal with abrupt changes in horizontal (#507) or vertical (#508) alignment?	507 & 508				
Does the project require the installation of a straddle block?	509				
Will the water pipe be installed in proximity to gravity sanitary sewer pipe?	510				
Is a valve box required (4-6" blow off - 512; everything else - 511)?	511 or 512				
Does the project include the installation of water services and meters? *1" Service (w/ 3/4" - 1" Meter Box) - 502 & 515A, 2" Domestic (w/ 1.5"-2" Meter Box) - 503 & 515B, Larger than 2" - per plan (tap to main w/ stub out to site typically performed by City at developer's expense),* *3" and Larger Meter Vault - 513A-D*	Multiple				
Is a backflow prevention assembly (of appropriate size based on the meter or service installation) required to be installed? *3" or Larger DCVA or DDCVA Installation - 514A-B (& 514 C if DDCVA for a dedicated fire service line)* *3/4" - 2" DCVA installation - 514D*	Multiple				
Is a reduced pressure principal backflow assembly required to be installed? (Typically industrial/manufacturing development or on domestic or irrigation services for properties with existing wells in use for irrigation.) *3" or larger RPBA - 514G, 2.5" or smaller RPBA - 514F*	514F, 514G				

STANDARD	Code	Complete	Needs Revision	Missing	N/A
Does the project include the installation of a sampling station?	504				

DOCUMENT SUBMITTAL LIST FOR CONSTRUCTION PLAN REVIEW

Project Name: _____ Project Number: _____ **1st Plan Review Due:** _____

DE/Tech: _____ Project Location: _____

#	Submittal Item	Timing		Review Date	Notes
		First Review	Final Approval		
1	Plan set	X	X *		*Second reviewer is not optional
2	Plan Review Checklist	X	X		
3	Construction Plan Review Routing Sheet	X			
4	Conditions of Approval (official staff report)	X			
5	Conditions of Approval Review Checklist	X	X		
8	Stormwater Report	X			
9	Deposit Received email from Brenda & Approved Engineer's Estimate		X *		* Needed prior to submittal of 2nd review
10	Fees & Charges Worksheet		X		
11	Grading Permit (Residential project only)		X		
12	H T E/Energov screen-print of grading permit issuance		X		
13	HTE/Energov screen-print of plumbing permit issuance (Residential projec		X *		*Verify permit specifies needed work (water service switch, stormwater work, well abandonment/RPBD installation, etc)
14	Permits/fees paid to connect existing home to water/sewer		X		
15	NPDES 1200-C Permit when required by DEQ		X		
16	UIC Permit		X		
17	Performance Guarantee & screen shot of 18 month reminder#		X *		*include a copy in electronic file
18	Right-of-Way Permit, including separate long term encroachment, if applicable.		X *		*Proof of insurance and traffic control plan may be deferred until just before Notice to Proceed.
19	Design Modifications		X		
20	Other Approvals (e.g. Cash-in-lieu, Agreement to Participate)		X		
21	Water Work Order		X		
22	Draft of Stormwater Facility Tracking Form		X		
23	Stormwater Maintenance Agreement		X		
24	Easements, R/W by Separate Instrument		X		* Make sure backyard stormwater easements note that laterals and appurtenaces in easement are privately owned/mainta
25	PGE Plan		X		
26	Multnomah County Drainage District Letter of Approval		X		
27	Rockwood Water Availability Form		X		
28	Email verification from RW Water that our plans match their plans		X		

29	Final Verification from Kathy Majidi on Natural Resources Mitigation		X		

Gresham UIC Decommissioning Plan/Procedures

1. DEQ Requirements

The following DEQ documents were referenced in the development of this UIC Decommissioning Plan:

- OAR 340-044-0040 (Decommissioning and Conversion Requirements for Underground Injection Systems)
- WPCF permit # WPDF-DOM-UIC-103043 (File 112110)

As the governing document, OAR 340-044-0040 is copied below:

> ***OAR 340-044-0040***
>
> ***"Decommissioning and Conversion Requirements for Underground Injection Systems***
>
> *(1) When an underground injection system is no longer in use for injection or is abandoned, the owner or operator shall decommission the system or convert the system to another type of well in a manner that will prevent the movement of contaminants into groundwater.*
>
> *(2) The owner or operator shall notify the Director of the owner's or operator's intent to decommission or convert the injection system 30 days prior to closure or conversion.*
>
> *(3) The owner or operator shall comply with all reporting, licensing and design requirements of all applicable state and local laws when decommissioning or converting an injection system. These include OAR 340-071 for on-site sewage disposal systems, 690-200 and 690-220 for water supply wells, 690-240-030 for other holes and 632-020 for geothermal wells.*
>
> *(a) Any soil, gravel, sludge, biosolids, liquids or other material removed from or adjacent to the injection system shall be characterized and disposed in a manner consistent with all applicable local, state and federal laws.*
>
> *(b) Except for on-site sewage disposal systems decommissioned according to OAR 340-071 and injection systems for storm water runoff from rooftops, proper decommissioning of an injection system shall be certified by a professional geologist, engineering geologist, or professional engineer registered in the State of Oregon.*
>
> *(c) The following decommissioning requirements apply to drilled wells, boreholes and sewage drain holes or sewage drill holes unless waived in writing by the Director:*
>
> *(A) The owner or operator shall immediately render the system to be completely inoperable by plugging and sealing to prevent the vertical movement of fluids.*

(B) All portions of the well that are surrounded by "solid wall" formation shall be plugged and filled with cement grout or concrete; or

(C) The top portion of the well must be effectively sealed with cement grout or concrete to a depth of at least 18 feet below the surface of the ground, or wherever this method of sealing is not practical, effective sealing must be accomplished in a manner approved in writing by the Director.

(4) If the Director determines that the injection system is high risk or potentially contaminated, the Director may require submission of a closure plan for review and approval prior to decommissioning. The owner or operator shall perform any sampling requested by the Director. The results of such sampling shall be reported to the Director. Detection of soil or groundwater contamination from the injection system shall be reported to the Director within 14 days of observation or receipt of sampling results."

The permit allows for a convenient way of meeting the notification requirement. It states[1]:

"Schedule B.5. Closing an Underground Injection System. You must provide prior notice of converting or closing any underground injection system you own or operate. Either you may notify us in advance by listing future decommissioning plans in your annual report as in Condition 4 above, or you may notify us 30 days prior to closure as specified in OAR 340-044-0040."

2. Gresham UIC Closure/Decommissioning

A. Situations in which decommissioning may occur

There are at least three situations in which the City may decide to decommission a UIC. They include:

1. The UIC is no longer functioning properly or serving a useful purpose
2. The UIC is being replaced by a new, nearby UIC; in which case the City generally seeks to convert the original UIC to a sedimentation manhole by sealing the bottom and blocking the perforations in order to provide pretreatment for the new UIC
3. The UIC creates an unacceptable risk to groundwater that can't be addressed through additions or modifications to the UIC

B. Assessment and sampling

When a UIC has been identified for closure, the existing structure shall be assessed, and if needed, sampled prior to closure:

1. Assess bottom of UIC to be decommissioned to determine if water or sediment are present
2. Sampling of water or sediment within a single UIC will only occur if UIC meets one of the following criteria:
    a. Visible evidence of contamination is observed within UIC;

[1] The City will at all times comply with the rule, including when notification occurs via the annual report.

   b. The UIC is located within 500 feet, or the two year time of travel, to a water supply well; or
   c. The UIC catchment area encompasses a cleanup site with a confirmed release.
3. If water or sediment are present in a UIC meeting above criteria, collect sample of water and sediment within the UIC.[2] Sediment and water not meeting above criteria will be collectively characterized, along with other debris from stormwater infrastructure maintenance, to ensure proper disposal occurs. Current analytes include:
   a. Total Petroleum Hydrocarbons for gasoline (TPH-Gx)
   b. Total Petroleum Hydrocarbons for diesel (TPH-Dx), and
   c. RCRA-8 metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium and silver) using Toxicity Characteristic Leaching Procedure (TCLP) method.
4. Compare results to applicable standards, which may include any or all of the following:
   a. Table 1 action levels from WPCF permit,
   b. Drinking water maximum contaminant levels (MCLs)
   c. DEQ Risk-based concentrations for individual chemicals

C. UIC closure process

1. Properly dispose of any water and/or sediment from bottom of UIC based on sampling results
2. Remove the top 4 to 8 feet of the UIC system (typically cone and first perforated segment)
3. Place fill material (typically 1" – 0" clean aggregate) in UIC to fill all voids
4. Add at least 24" of controlled density fill on top of aggregate (and below any asphalt lifts or other surface cover).

D. Reporting to DEQ

All UIC closures will be reported to DEQ.

[2] Debris from all stormwater devices owned and operated by the City (catch basins, sedimentation manholes, swales, etc.) is dewatered; the solids are tested; and the liquid and solids are disposed of in conformance with state and federal requirements.