

# STUDY SESSION

**REVISED**

**AGENDA  
MILWAUKIE CITY COUNCIL  
STUDY SESSION  
MAY 23, 2013**

**MILWAUKIE CITY HALL**

Conference Room  
10722 SE Main Street

A light dinner will be served

***STUDY SESSION – 5:00 p.m.***

**Discussion Items:**

	<u>Time</u>	<u>Topic</u>	<u>Presenter</u>
1.	5:00 p.m.	Stormwater Master Plan	Brad Albert/Alligood/ Brown & Caldwell/FCS Group
2.	5:30 p.m.	Swale and Median Maintenance	JoAnn Herrigel
3.	6:00 p.m.	Ballot Measure Discussion	Bill Monahan
4.	8:00 p.m.	Adjourn	

**Information**

Executive Session: The Milwaukie City Council may meet in executive session pursuant to ORS 192.660(2). All discussions are confidential and those present may disclose nothing from the Session. Representatives of the news media are allowed to attend Executive Sessions as provided by ORS 192.660(3) but must not disclose any information discussed. No Executive Session may be held for the purpose of taking any final action or making any final decision. Executive Sessions are closed to the public.

**Public Notice**

- The Council may vote in work session on non-legislative issues.
- The time listed for each discussion item is approximate. The actual time at which each item is considered may change due to the length of time devoted to the one previous to it.
- The Council requests that all pagers and cell phones be either set on silent mode or turned off during the meeting.
- The City of Milwaukie is committed to providing equal access to information and public meetings per the Americans with Disabilities Act (ADA). If you need special accommodations, please call 503.786.7502 or email [ocr@ci.milwaukie.or.us](mailto:ocr@ci.milwaukie.or.us) at least 48 hours prior to the meeting.



Agenda Item: SS 1  
Meeting Date: 05/23/13

## **COUNCIL AGENDA ITEM SUMMARY**

**Issue/Agenda Title:** Stormwater Master Plan – Comprehensive Plan Amendments

**Prepared By:** Brad Albert and Li Alligood

**Dept. Head Approval:** Steve Butler, Interim Community Development Director/Planning Director

**City Manager Approval:** Bill Monahan

**Reviewed by City Manager:** 5/14/13

### **ISSUES BEFORE THE COUNCIL**

None. This item is for discussion only.

### **STAFF RECOMMENDATION**

Continue to finalize the Stormwater Master Plan and start the formal adoption process.

### **KEY FACTS & INFORMATION SUMMARY**

The 2012 Stormwater Master Plan (SWMP) will come before the City Council as a Comprehensive Plan amendment. The amendments will include adopting the SWMP itself as an ancillary document to the Comprehensive Plan and amending text within the existing Comprehensive Plan so it is consistent with the SWMP.

### **OTHER ALTERNATIVES CONSIDERED**

1. Direct staff to revise the draft of the SWMP and bring back to Council for another worksession discussion.
2. Direct staff to discontinue work on the SWMP and continue to use the adopted 2004 SWMP.

### **CITY COUNCIL GOALS**

The financial plan and staffing analysis that were conducted as part of the Stormwater Master Plan would meet Council Goal #3. The financial plan and staffing analysis outlines the resources needed to meet this goal.

### **ATTACHMENT LIST**

1. SWMP Executive Summary
2. SWMP Chapter 1: Introduction
3. SWMP Table of Contents
4. Draft Comprehensive Plan Amendments
5. Financial Plan

**FISCAL NOTES**

Adoption of this document does not create fiscal impacts; project funding and or rate changes would require further council action. Staff would like to adopt the recommended stormwater rate and SDC that the CUAB recommended. The recommended rate and SDC is paramount to completing the recommended CIP project list.



**To:** Mayor and City Council

**Through:** Bill Monahan, City Manager  
Steve Butler, Interim Community Development Director/Planning Director

**From:** Brad Albert, P.E., Civil Engineer  
Li Alligood, Associate Planner

**Subject:** 2012 Stormwater Master Plan

**Date:** May 23, 2013

---

#### **ACTION REQUESTED**

None, as this item is for discussion purposes only.

#### **HISTORY OF PRIOR ACTIONS AND DISCUSSIONS**

- **March 20, 2012:** City Council passed Resolution #12-2012 authorizing a \$179,997 contract with Brown and Caldwell to produce a 2012 Stormwater Master Plan.
- **November 2011:** Staff briefed Council on the pending National Pollution Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) permit, a document that heavily influenced the creation of the new Stormwater Master Plan.
- **June 7, 2011:** City Council adopted the 2012-2016 Capital Improvement Plan and the 2011/2012 Budget, including the 2012 Stormwater System Master Plan

#### **BACKGROUND**

The City endeavors to adopt all long range plans like the SWMP as ancillary documents to the Comprehensive Plan. These plans establish goals and policies for how the City will manage its resources to provide basic services to its residents, businesses, and institutions. It is important that such plans to be incorporated into the document that guides how the City will manage future growth and development.

The most recent example of the master plan adoption process is the 2010 Water Master Plan (WMP). The WMP itself was adopted as an ancillary document and changes to the text of the Comprehensive Plan were adopted at the same time.

In addition to being important policy documents, master plans are also living documents that guide the ongoing activities performed by the City. For example, the adopted SWMP will be a key document in creating future Capital Improvement Plans that identify which projects are undertaken by the City on a yearly basis.

For legislative land use applications, such as a zoning text amendment or Comprehensive Plan amendment, the Planning Commission is required to hold a public hearing on the proposed amendments and make a recommendation to City Council. The City Council then holds an adoption hearing and makes the final decision.

Staff anticipates the 2012 Stormwater Master Plan (SWMP) will come before the City Council as a Comprehensive Plan amendment later this summer. The amendments will include adopting the SWMP itself as an ancillary document to the Comprehensive Plan, and amending text within the existing Comprehensive Plan so it is consistent with the SWMP.

## **STORMWATER MASTER PLAN**

### **A. Goals and Contents of the Stormwater Master Plan**

The goal for this project is to have a complete Stormwater Master Plan that provides a clear road map for the City to make smart and informed decisions as a sustainable and reliable stormwater service provider to the citizens and businesses of Milwaukie. One major element of the new Stormwater Master Plan is a new hydraulic model of the stormwater system that integrates the City's GIS mapping system. Other key elements include: stormwater flooding modeling; Underground Injection Control (UIC) analysis; stormwater retrofit analysis; DEQ permit compliance; stormwater system capital improvement plan; stormwater system development charge update; and a stormwater rate study.

Section 1 of the draft Stormwater Master Plan is included as Attachment 1. Section 1 is an introduction which outlines the need for the plan, plan objectives, the approach taken to develop the plan, and the organization of the plan. The table of contents of the draft Stormwater Master Plan is included as Attachment 2. A draft of the proposed Comprehensive Plan Amendments is included as Attachment 3.

### **B. Public Involvement**

The plan adoption process includes multiple opportunities for citizen input. The following meetings have been either held or are planned:

- One public open house –held December 5, 2012. Notices were provided on the City's web site, in The Pilot, and in the Oregonian. The community was invited to help staff identify flooding trouble spots and water quality issues within the neighborhoods, and to provide input on the stormwater projects that are being

proposed as part of the Stormwater Master Plan update process. There were three community members in attendance.

- Two meetings with the Citizen’s Utility Advisory Board (CUAB) – the CUAB is comprised of Milwaukie citizens and advises the City Council on utility rates and capital improvements. The stormwater CIP project list and stormwater rates were presented to and approved by the Board on March 6, 2013. Staff met with the CUAB again on May 1, 2013 to provide updated System Development Charges (SDC) rates. The Board forwarded a recommendation of approval to City Council for the updated SDC rates.
- Planning Commission Worksession– the draft amendments were presented to the Planning Commission at its April 9, 2013, Worksession. Staff has tentatively scheduled a Planning Commission public hearing for June 25, 2013. Staff has built the adoption schedule to allow for two Planning Commission hearings, if necessary, to make an adoption recommendation.
- City Council Worksessions and Hearings – the scope of work and schedule include an additional City Council Worksession, if needed or desired. Staff has tentatively scheduled a City Council adoption recommendation hearing for August 6, 2013. Staff has built the adoption schedule to allow for two Council hearings, if necessary, to adopt the draft amendments.

### **C. Adoption**

Staff anticipates adoption of the Stormwater Master Plan by October 2013. It is important that the Stormwater Master Plan be adopted by this date so that it can be used for the preparation of the 2014-2018 Capital Improvement Plan, which will begin in January 2014.

### **CONCURRENCE**

The Engineering Department, Operations Department, and Planning Department were involved with creating the SWMP and concur with the proposed plan. The Milwaukie Citizen’s Utility Advisory Board has been involved review of proposed rates and system development charges. The Milwaukie Planning Commission held a Worksession on April 9, 2013 and concurred with the proposed Comprehensive Plan amendments. The Finance Department has reviewed the portions of the plan related to fiscal issues and concurs with the recommendations in the plan.

### **FISCAL IMPACTS**

Adoption of this document does not create fiscal impacts; project funding and or rate changes would require further council action.

### **WORK LOAD IMPACTS**

No additional work load will be added as a result of adopting this document. The Stormwater Master Plan should aid the efficiency of the Engineering and Public Works Staff in the maintenance of the stormwater infrastructure and capital project planning.

### **ALTERNATIVES**

1. Direct staff to continue with finalizing the draft of the SWMP and start the formal adoption process.
2. Direct staff to revise the draft of the SWMP and bring back to Council for another worksession discussion.
3. Direct staff to discontinue work on the SWMP and continue to use the adopted 2004 SWMP..

### **ATTACHMENTS**

1. SWMP Executive Summary
2. SWMP Chapter 1: Introduction
3. SWMP Table of Contents
4. Draft Comprehensive Plan Amendments
5. Financial Plan

# Executive Summary

## Introduction

In 2012, the city of Milwaukie (City) began efforts to update its Stormwater Master Plan. The previous Stormwater Master Plan was developed in 2004. The need for the update was driven by (1) the changing regulations for underground injection controls (UICs) and the City's National Pollutant Discharge Elimination System (NPDES) municipal separate storm sewer (MS4) permit requirements, and (2) funding challenges preventing the City from implementing capital improvement projects (CIPs) as identified in the 2004 Master Plan.

This 2012 Milwaukie Stormwater Master Plan (Plan) is intended to help the City in the development, prioritization, and scheduling of a 10-year stormwater CIP. The Plan objectives include the following:

- Update the 2004 XP-SWMM hydrologic/hydraulic model to reflect infrastructure improvement projects since 2004 and updated system information from the City's Geographic Information System (GIS).
- Evaluate the City's UICs in light of the requirements of the water pollution control facility (WPCF) UIC Permit Draft (July 2012).
- Develop CIPs and associated cost estimates to address updated UIC and NPDES regulatory requirements.
- Develop CIPs and associated cost estimates to address identified system capacity deficiencies under existing and future development scenarios. Where feasible, flood control CIPs and water quality CIPs will be integrated into a single CIP to address multiple objectives.
- Evaluate the City's current methods of tracking system assets and assessing maintenance needs.
- Evaluate current staffing levels and future staffing needs in consideration of updated regulatory requirements and proposed CIP implementation.
- Review and update the City's stormwater utility rates and system development charges (SDCs) in consideration of updated staffing needs and proposed CIPs.

This Plan documents the methods and results of the storm system capacity evaluation and the stormwater quality/retrofit assessment conducted for the City. This Plan also identifies and prioritizes capital improvement projects (CIPs) to address identified system capacity deficiencies and water quality opportunity areas. Finally, this Plan identifies stormwater program implementation needs in the form of staffing and funding recommendations.

## Study Area Characteristics and Regulatory Drivers

### Study Area Characteristics

The City is approximately 4.8 square miles in area. Two major tributaries to the Willamette River flow through the city: Johnson Creek, along the northern city boundary, and Kellogg Creek, along the southern city boundary.

Topography in the city is influenced by the Johnson Creek and Kellogg Creek drainage systems. The eastern portion of the city (approximately one third of the total city area), between Johnson Creek and

Minthorn Creek, is topographically isolated from the major drainages and water bodies. This area includes a majority of the City's UICs (drywells).

The City is primarily developed, with only about 5 percent of the city area identified as vacant land. Vacant lands are located primarily along the southern and eastern city boundaries. Single-family residential land use is the primary land use within the city. Industrial development is located along the Highway 99E and Highway 224 corridors. Other land use categories include commercial, multifamily residential, multi-use commercial (which includes the City's town center), and public facilities (which includes parks and open space).

The City's storm drainage system is composed of approximately 50 miles of pipe and open-channel system, 800 manholes (nodes), five detention ponds, and 196 UICs.

## Regulatory Drivers

The City was reissued its Phase I NPDES MS4 permit on March 16, 2012, which requires implementation of stormwater strategies to reduce pollutants to the stormwater system. One requirement of the reissued permit is completion of a stormwater retrofit assessment by July 1, 2015, in order to identify areas in the city underserved or lacking structural stormwater facilities. This effort is included as part of this Plan, and was used to identify CIPs to address water quality.

The City, along with other Oregon jurisdictions, has been working with DEQ to establish conditions of a WPCF UIC Permit Draft to regulate the discharge of stormwater to UICs. The current WPCF UIC Permit Draft (dated July 2012) requires jurisdictions to conduct a system-wide assessment of their UICs and conduct analysis of UICs if the UICs are located near water wells. This effort is included as part of this Plan, in order to identify UICs requiring decommissioning. Decommissioning of UICs is documented in the CIP.

## Study Methods

Development of the 2012 Plan includes the evaluation of the capacity of the City's public stormwater drainage system, evaluation of the City's UICs, and evaluation of water quality retrofit opportunities. Each evaluation results in the identification of CIP opportunity areas that are subsequently refined, combined, and ranked to produce the final CIP list.

## System Capacity Evaluation

The City's public stormwater drainage system was evaluated using a computer model to simulate hydrologic and hydraulic conditions of the system. The stormwater drainage system evaluation was conducted as an update to the system evaluation effort conducted in 2004, in order to reflect changes to the City's drainage system and allow for the simulation of a future development condition. XP-SWMM was the modeling software used to evaluate the drainage system in 2004, and it was also used for this effort. The model version was updated to XP Software's XP-SWMM v2012.

The City's study area is divided into major drainage basins associated with Johnson Creek, the Willamette River, Lower Kellogg Creek, Middle Mt. Scott Creek, and City UICs. A total of 76 subbasins contributing to a piped or channelized conveyance system and 16 subbasins contributing to area served by UICs were included in the model. The subbasin delineation developed for the 2004 model was refined and used for the 2012 Plan.

Information on the City's stormwater drainage system (i.e., pipe locations, sizes, types, etc.) was originally included in the 2004 model. Since 2004, the City has been actively updating its GIS to reflect the addition of new and identified infrastructure. The City provided these updates in GIS, and such updates were incorporated into the model. Approximately 16 miles of pipe were modeled as part of this

Plan, consisting of 15-inch-diameter pipe and greater. A total of 15 system outfalls (five to Johnson Creek, one to the Willamette River, and nine to the Kellogg-Mt-Scott drainage system) were modeled.

The water quality, 2-year, 5-year, 10-year, 25-year, and 100-year design storms were simulated using XP-SWMM for current and future development conditions. Model results indicate a total of 12 flooding “problem areas” that were further evaluated as part of CIP development and included in the final CIP list.

## **UIC Evaluation**

In conjunction with the draft UIC WPCF permit template (dated July 2012), the City is required to conduct a system-wide assessment of its UICs and retrofit/decommission UICs not compliant with conditions of the permit.

The City conducted a preliminary UIC system-wide assessment using a summary of the UIC system developed in 2005. Based on the preliminary system-wide assessment, a total of 36 UICs are identified as “at-risk” due to insufficient setback and/ or separation distances from drinking water wells (setback and separation limits are defined in the draft UIC WPCF permit template). Additional information will be needed to complete the system-wide assessment prior to submittal to DEQ. Specifically, completion of the water well location inventory and verification of depth to groundwater for select (32) UICs is needed.

An unsaturated zone groundwater protectiveness demonstration (GWPD) model was developed for the City to simulate the vertical transport of pollutants in saturated soils. Development of a GWPD addresses the City’s draft permit requirements related to those “at-risk” UICs within a water well setback. Results from the GWPD include a minimum protective vertical separate distance to attenuate typical stormwater pollutants. Per the analysis, a minimum separation distance of 1 foot is recommended.

Results from the preliminary system-wide assessment and GWPD were used to determine whether retrofit or decommissioning of UICs is required. Of the 36 identified “at-risk” UICs, 33 of the UICs are determined to be compliant with permit requirements, per results of the GWPD. Three of the “at-risk” UICs are still categorized as “at-risk”. As part of this Plan development, two of the remaining “at-risk” UICs are identified for decommissioning due to their location within the Plan study area and ability to address water quality objectives in addition to decommissioning.

## **Water Quality Retrofit Evaluation**

As part of this Plan development, identification of water quality retrofit/ water quality project opportunity areas was conducted to address the City’s NPDES MS4 permit requirement. Such water quality projects would be combined with identified system capacity and UIC decommissioning projects to allow proposed CIPs to address multiple objectives.

The City’s water quality retrofit strategy is to target high pollutant generating areas where existing stormwater treatment is currently limited, in order to improve overall surface water quality conditions. Water quality retrofit measures will focus on the use of infiltration-based facilities (e.g., vegetated infiltration basins, rain gardens, planters) to provide runoff volume reduction in addition to conventional treatment.

Water quality opportunity areas were initially identified through a review of information from the City’s GIS system including aerial photos, the location of existing water quality facilities, existing vacant areas, publically owned lands, existing and future condition land uses, storm system layout, topography, and locations where flood control or UIC decommissioning is required.

An initial water quality retrofit opportunity list was developed and reviewed with City staff. Project feasibility and practicability was discussed, and additional water quality opportunity areas were identified. Based on City feedback and field reconnaissance, a total of nine water quality retrofit projects were identified for inclusion in the final CIP list

## Study Results

An integrated CIP development approach was used to develop the final CIP list. Integrated CIP development refers to the selection and design of CIPs to address multiple objectives including flood control, regulatory requirements, and water quality improvements.

The flood control, UIC decommissioning, and water quality CIP projects were consolidated to reflect consistent contributing areas. CIP design concepts and approaches were revisited during CIP integration to develop a formalized CIP design for each opportunity area. A total of 17 multi-objective CIPs are identified for prioritization and cost estimation as part of this Plan. Table ES-1 summarizes the identified CIPs. Figure ES-1 provides the general vicinity of each CIP location.

City maintenance and engineering staff scored and ranked CIPs using criteria that included historical/persistent problems, flooding/safety issues, regulatory compliance, ongoing maintenance, water quality improvement, project concurrence, and system sustainability. Each project was scored on a scale of 1 to 3, using general scoring conditions. Initial ranking results were adjusted to account for schedule or required project concurrence, resulting in the final CIP prioritization (Table ES-1).

Table ES-1. CIP Priority Ranking					
Priority ranking	Ranking by score	CIP no.	CIP name	Overall score	Estimated cost, \$
1	1	13-1	UIC Decommissioning on Lloyd	36	793,700
2	4	13-3	Railroad Avenue at Stanley <sup>a</sup>	29	357,300
3	7	13-4	Railroad Avenue Channel <sup>a</sup>	26	52,900
4	2	5-1	Meek Street	31	3,088,200
5	3	5-2	Harrison Street Outfall	30	619,400
6	5	14-1	Apple Storm Improvements	28	180,100
7	8	G2	36th near King Avenue	25	104,600
8	8	G3	55th near Monroe Avenue	25	23,000
8	8	13-2	Linwood Elementary	25	469,700
10	11	1-1	Willow Detention Pond Retrofit	23	68,600
10	11	G1	47th and Llewellyn	23	155,600
High-priority project cost:					5,913,100
12	13	1-2	Stanley-Willow UIC Decommissioning	21	100,200
12	13	6-1	Washington Street	21	1,804,100
12	6	6-2	Washington Green Streets <sup>b</sup>	27	511,300
15	15	15-1	Hemlock Street	18	560,600
16	16	4-1	Main Street at Milport Road	17	241,200
17	17	12-1	International Way and Wister	15	90,000
Total project cost:					9,220,500

<sup>a</sup>Due to project concurrence issues and project cost savings, these CIPs are recommended for construction in conjunction with CIP 13-1.

<sup>b</sup>Due to concurrence with anticipated construction of CIP 6-1, this project was prioritized in accordance with the priority schedule for CIP 6-1.



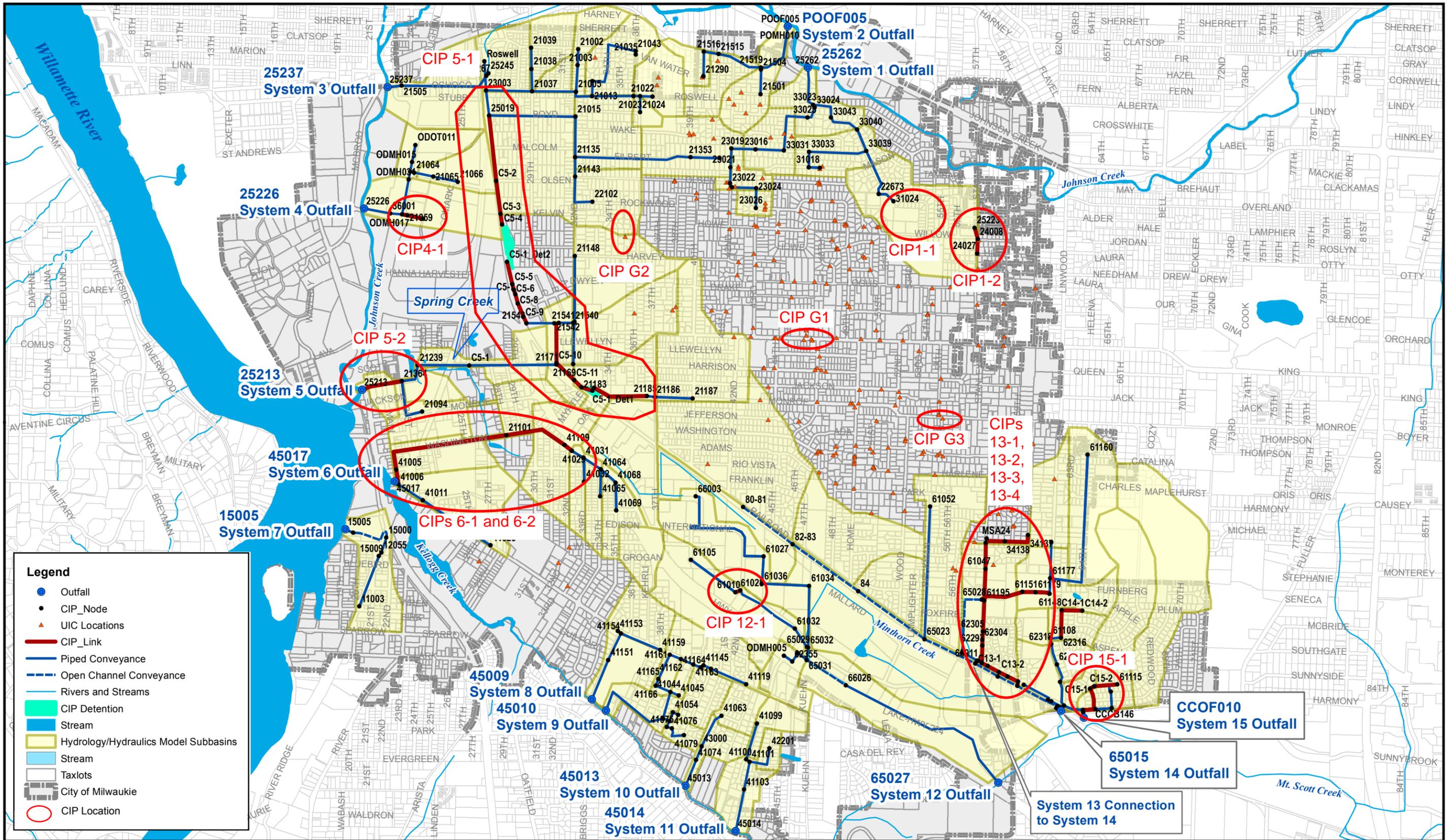
## Study Implementation

In conjunction with development of this Plan, staffing resources and stormwater funding were assessed to determine whether adjustments to staffing and/or funding is needed in order to implement new regulatory requirements (i.e., the City's reissued NPDES MS4 permit and pending UIC WPCF permit), long-term infrastructure management, and identified CIPs.

The stormwater staffing analysis assumes that existing City staff is able to implement the current stormwater program (pre-2012 conditions). Additional activities (regulatory and CIP focused) not previously conducted by the City under current staffing were used to create the estimates of additional staff resource needs. Based on the staffing analysis, it is estimated that over the next 5 years, between 1.4 and 2.1 additional FTE will be required for maintenance staff and approximately 0.7 additional FTE will be required for engineering staff.

Staffing needs, proposed capital expenditures, and ongoing operational costs were considered in the evaluation of the stormwater utility fee and SDCs. Four levels of service (LOS) categories were developed to establish funding schemes over the 10-year CIP program. LOS considered staffing, capital projects, maintenance, regulatory compliance, proactive system replacement, and vehicle replacement. Debt and cash funding scenarios were analyzed for each of the four LOS categories. Over the 10-year CIP planning period, stormwater utility rate increases ranged from \$3.30 (for the current LOS and cash funding scenario) to \$25.00 (for the proactive LOS and cash funding scenario). Changes to the calculation assessment methodologies resulted in a reduction in SDC from \$1,184/ESU to \$765/ESU. Selection of an approved funding strategy is in progress.





## Section 1

# Introduction

This 2012 Milwaukie Stormwater Master Plan (Plan) documents the methods and results of the storm system capacity evaluation and the stormwater quality/retrofit assessment conducted for the City of Milwaukie, Oregon (City). The Plan identifies and prioritizes capital improvement projects (CIPs) to address identified system capacity deficiencies and water quality opportunity areas. The Plan also identifies stormwater program implementation needs in the form of staffing and funding recommendations.

This Plan serves as an update to the City's 2004 Stormwater Master Plan (2004 Plan). The study area includes land within the city limits that drain to Johnson Creek, Kellogg Creek, Mt. Scott Creek, and the Willamette River. The study area excludes the eastern portion of the city that primarily discharges to underground injection control (UIC) facilities. The study area also excludes the area in the southwest portion of the City that directly discharges to receiving waters with very little public conveyance system.

This section provides a summary of the project need, the project objectives and approach, and a summary of how the Plan is organized.

## 1.1 Need for the Plan

In 2004, the City of Milwaukie updated its Stormwater Master Plan to address identified stormwater capacity deficiencies and water quality issues, driven by pending regulations associated with UICs and the City's National Pollutant Discharge Elimination System (NPDES) municipal separate storm sewer system (MS4) permit. CIPs developed for the 2004 Plan reflected the need to decommission a majority of City-owned UICs.

Since 2004, regulatory requirements for Milwaukie have changed. The City was reissued its NPDES MS4 permit in March 2012, which requires completion of a water quality retrofit assessment and identification of a water quality improvement project to be initiated during the permit term. In July 2012, the Oregon Department of Environmental Quality (DEQ) issued a draft *Water Pollution Control Facilities Permit for Class V Stormwater Underground Injection Control Systems* (WPCF UIC Permit Draft) that contains revised requirements for UICs (as compared to assumptions in the 2004 Plan).

In 2012, the City began efforts to update the 2004 Plan. The need for the update was driven by (1) the changing regulations for UICs and the City's NPDES MS4 permit requirements and (2) funding challenges preventing the City from implementing CIPs as identified in the 2004 Master Plan.

The City's overarching goal for the master plan update is to conduct a comprehensive evaluation of its stormwater program and stormwater system, focusing on opportunities to improve water quality and system performance, and prioritize CIPs that can be installed on a realistic implementation schedule.

## 1.2 Plan Objectives

This Plan is intended to help the City in the development, prioritization, and scheduling of a 10-year stormwater CIP. The Plan objectives include the following:

- Update the 2004 XP-SWMM hydrologic/hydraulic model to reflect infrastructure improvement projects since 2004 and updated system information from the City's Geographic Information System (GIS).

- Evaluate the City's UICs in light of the requirements of the WPCF UIC Permit Draft (July 2012).
- Develop CIPs and associated cost estimates to address updated UIC and NPDES regulatory requirements.
- Develop CIPs and associated cost estimates to address identified system capacity deficiencies under existing and future development scenarios. Where feasible, flood control CIPs and water quality CIPs will be integrated into a single CIP to address multiple objectives.
- Evaluate the City's current methods of tracking system assets and assessing maintenance needs.
- Evaluate current staffing levels and future staffing needs in consideration of updated regulatory requirements and proposed CIP implementation.
- Review and update the City's stormwater utility rates in consideration of updated staffing needs and proposed CIPs.

### 1.3 Approach

The approach for developing the City of Milwaukie's updated Stormwater Master Plan (2012 Plan) is summarized in Figure 1-1. This approach was developed to meet the City's objectives, described above, in consideration of the changing regulatory drivers during the project schedule (i.e., the NPDES MS4 permit reissuance in March 2012 and the WPCF UIC Permit Draft in July 2012).

As shown in Figure 1-1, tasks were conducted in parallel to minimize schedule implications associated with data collection and system assessment efforts. Highlights of the project approach include the following:

1. Data collection was initiated at the beginning of the project but continued throughout the project duration in order to continually refine the XP-SWMM hydrologic and hydraulic model and provide information to aid in the UIC risk evaluation, CIP development, and stormwater utility rate evaluation.
2. CIP locations are identified to collectively address flood control, water quality retrofit, and UIC decommissioning needs. Development of a comprehensive CIP includes a water quality retrofit list to meet NPDES MS4 permit requirements.
3. The staffing analysis was completed following CIP development and prioritization, to reflect the maintenance and engineering staff time needed to implement proposed projects.
4. The utility rate evaluation and system development charge (SDC) evaluation was initiated after CIP development and completion of the staffing analysis, to ensure that the financial levels of service (LOS) analyzed correspond to specific program and project objectives.

Coordination with City staff was ongoing throughout the project duration in order to validate and verify assumptions related to the system configuration (e.g., elevations, naming, and functionality) and stormwater program implementation issues and concerns.

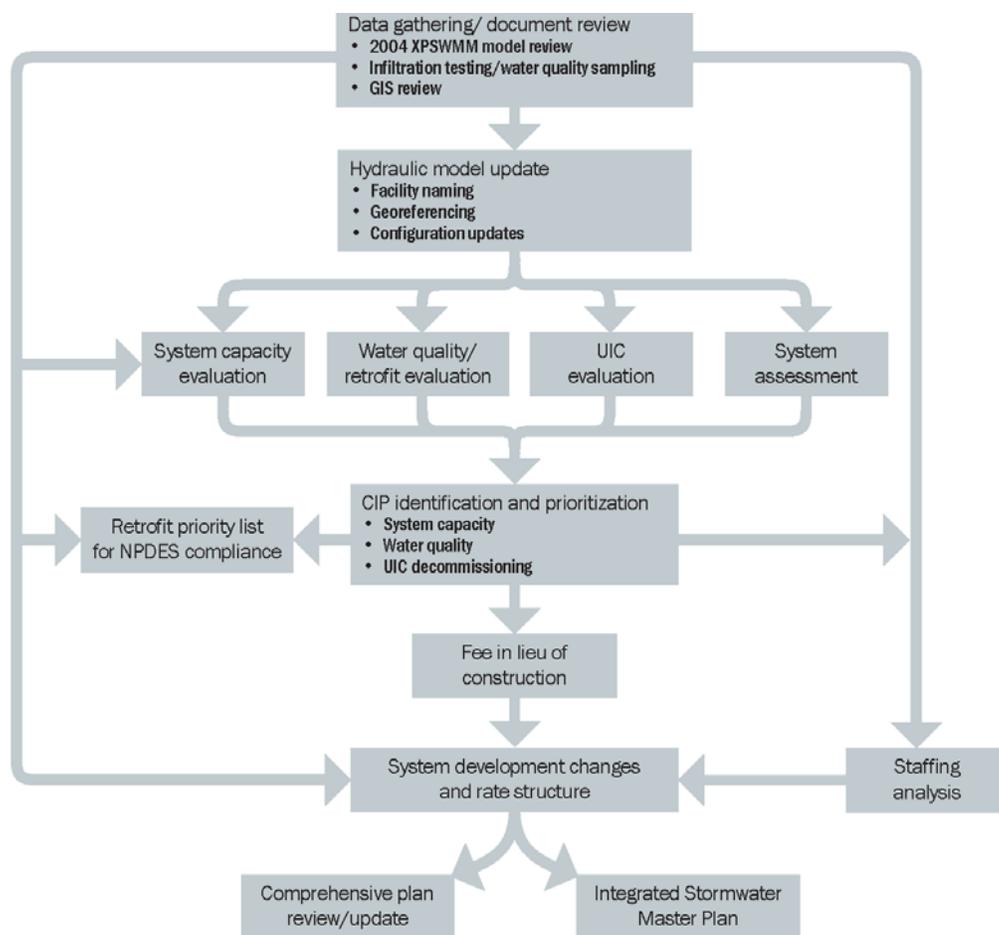


Figure 1-1. Stormwater Master Plan approach

### 1.4 Plan Organization

Following this introductory Section 1, the 2012 City of Milwaukee Stormwater Master Plan Update is organized as follows:

- Section 2 includes a description of the study area characteristics.
- Section 3 describes the modeling methods and results of the stormwater system capacity evaluation and includes identification of flood control CIP locations.
- Section 4 describes the water quality retrofit assessment and identification of water quality CIP locations.
- Section 5 describes the results of the UIC risk evaluation including identification of UICs to decommission as part of the CIPs.
- Section 6 summarizes the integrated CIP strategy to address system capacity deficiencies, water quality objectives, and UIC decommissioning needs.
- Section 7 describes the CIP prioritization approach.
- Section 8 describes the CIP implementation approach including results of the staffing analysis and stormwater utility rate evaluation.

Appendices A through G provide supporting information in conjunction with Sections 2 through 8.



# Table of Contents

List of Figures ..... iv

List of Tables..... iv

List of Abbreviations ..... v

Executive Summary ..... E-1

1. Introduction

    1.1 Need for the Plan.....1-1

    1.2 Plan Objectives .....1-1

    1.3 Approach .....1-2

    1.4 Plan Organization .....1-3

2. Study Area Characteristics

    2.1 Location.....2-1

    2.2 Topography .....2-2

    2.3 Soils .....2-2

    2.4 Climate and Rainfall .....2-2

    2.5 Land Use .....2-2

    2.6 Drainage System .....2-3

    2.7 Stormwater Quality .....2-3

    2.8 Regulatory Drivers .....2-4

        2.8.1 NPDES MS4 Permit .....2-4

        2.8.2 UIC WPCF Permit .....2-5

3. Storm System Capacity Evaluation

    3.1 City of Milwaukie Study Area.....3-1

    3.2 XP-SWMM Model Development.....3-1

        3.2.1 Meteorological Data .....3-2

        3.2.2 Hydrologic Data .....3-2

            3.2.2.1 Subbasin Delineation.....3-2

            3.2.2.2 Input Parameters.....3-3

        3.2.3 Hydraulic Data .....3-5

            3.2.3.1 Conveyance System (Conduit) Naming Convention .....3-6

            3.2.3.2 Input Parameters.....3-6

    3.3 Drainage Standards .....3-8

    3.4 Flood Control Model Results.....3-9

        3.4.1 Initial Identification of Flooding Problems ..... 3-10

        3.4.2 Flood Control CIP Locations..... 3-13



- 4. UIC Risk Evaluation
  - 4.1 Preliminary System-wide Assessment ..... 4-1
    - 4.1.1 Results ..... 4-1
    - 4.1.2 Additional Data Needs ..... 4-2
  - 4.2 GWPD Application ..... 4-2
  - 4.3 UIC Risk Evaluation Results ..... 4-2
- 5. Water Quality Retrofit Assessment
  - 5.1 Objectives ..... 5-1
  - 5.2 Methodology ..... 5-1
  - 5.3 Water Quality Retrofit Assessment Results ..... 5-2
    - 5.3.1 Initial Identification of Water Quality Opportunity Areas ..... 5-3
    - 5.3.2 Water Quality CIP Locations ..... 5-6
- 6. Capital Improvement Projects
  - 6.1 Integrated CIP Development ..... 6-1
  - 6.2 CIP Sizing and Design Assumptions ..... 6-1
    - 6.2.1 Pipe Installation ..... 6-2
    - 6.2.2 Detention Ponds ..... 6-2
    - 6.2.3 Rain Gardens and Planters ..... 6-2
    - 6.2.4 Underground Injection Controls ..... 6-2
  - 6.3 Unit Cost Estimates for CIP Development ..... 6-2
- 7. CIP Prioritization
  - 7.1 Prioritization Criteria and Scoring ..... 7-1
  - 7.2 Project Prioritization and Final CIP Priority Ranking ..... 7-3
- 8. CIP Implementation
  - 8.1 Staffing Analysis ..... 8-1
    - 8.1.1 Background ..... 8-1
    - 8.1.2 Assumptions ..... 8-1
    - 8.1.3 Analysis ..... 8-2
    - 8.1.4 Results ..... 8-2
  - 8.2 Utility Rate Study (*Section in progress*) ..... 8-3
    - 8.2.1 Level of Service Estimates ..... 8-3
    - 8.2.2 Rate Evaluation and Recommendation ..... 8-4

Appendix A: Hydrologic and Hydraulic Results Tables

Appendix B: UIC Risk Evaluation

Appendix C: CIP Fact Sheets

Appendix D: CIP Hydraulic Results Tables

Appendix E: CIP Detailed Cost Estimates

Appendix F: Staffing Analysis Tables

Appendix G: Financial Evaluation



## List of Figures

(\* indicates figure immediately follow page listed)

Figure 1-1. Stormwater Master Plan approach .....	1-3
Figure 2-1. Vicinity map.....	2-1
Figure 2-2. City of Milwaukie topography.....	2-5*
Figure 2-3. City of Milwaukie land use .....	2-5*
Figure 2-4. City of Milwaukie modeled system .....	2-5*
Figure 2-5. City of Milwaukie BMP coverage .....	2-5*
Figure 3-1. City of Milwaukie existing flooding .....	3-13*
Figure 3-2. City of Milwaukie future flooding.....	3-13*
Figure 6-1. CIP locations .....	6-5*

## List of Tables

Table 2-1. Summary of TMDL and 303(d) Listed Streams for Milwaukie.....	2-4
Table 3-1. Design Storm Depths.....	3-2
Table 3-2. Modifications to 2004 Milwaukie Subbasin Delineation .....	3-3
Table 3-3. Basin Names and Codes .....	3-4
Table 3-4. Impervious Percentage and Land Use Coverage .....	3-5
Table 3-5. Modifications to Model Node Names .....	3-7
Table 3-6. Manning Roughness Coefficients .....	3-8
Table 3-7. Drainage Standards and Design Criteria.....	3-9
Table 3-8. Initial Flood Control CIP Opportunity Areas .....	3-11
Table 4-1. UIC Decommissioning CIP Locations .....	4-3
Table 5-1. Initial Water Quality CIP Opportunity Areas .....	5-4
Table 6-1. Project Summary.....	6-3
Table 7-1. Multi-Objective CIP Prioritization Criteria and Scoring.....	7-1
Table 7-2. Raw CIP Scoring.....	7-2
Table 7-3. CIP Priority Ranking .....	7-4
Table 8-1. Maintenance and Engineering Time Summary.....	8-2
Table 8-5. Stormwater Utility Fee Evaluation (provided by FCS Group as part of the 2012 Plan development).....	8-4



## List of Abbreviations

---

2004 Plan	2004 Stormwater Master Plan
BMP	best management practice
CIP	capital improvement project
City	City of Milwaukie
CN	curve number
CUAB	Citizen Utility Advisory Board
CWA	Clean Water Act
DEQ	Oregon Department of Environmental Quality
ESU	effective stormwater unit
F	Fahrenheit
FTE	full-time employee
GIS	Geographic Information System
GWPD	Groundwater Protectiveness Demonstration
LIDAR	Light Detection and Ranging
LOS	level of service
MS4	municipal separate storm sewer system
NOAA	National Oceanographic and Atmosphere Administration
NPDES	National Pollutant Discharge Elimination System
NRCS	National Resource Conservation Service
OAR	Oregon Administrative Rules
Plan	2012 Stormwater Master Plan
ROW	right-of-way
SCS	Soil Conservation Service
SDC	service development charge
SDWA	Safe Drinking Water Act
SWMP	Stormwater Management Plan
TMDL	total maximum daily load
UIC	underground injection control
WPCF	Water Pollution Control Facility
WPCF UIC Permit	Water Pollution Control Facilities Permit for Class V Stormwater Underground Injection Control Systems



## DRAFT AMENDMENTS

### Milwaukie Comprehensive Plan

#### CHAPTER 5—TRANSPORTATION, PUBLIC FACILITIES AND ENERGY CONSERVATION

##### PUBLIC FACILITIES AND SERVICES ELEMENT

###### Drainage and Streets

The steady urbanization of the Milwaukie area has resulted in more and more of the land being covered by buildings and streets, creating a higher storm runoff and obstructing natural soil percolation processes. The result has been the prolonged ponding of water after storms and flooding of public streets and private yards. Street flooding causes erosion and damage to the pavement and presents a constant and expensive maintenance problem. Roadside ditches, now used to carry away excess runoff, present a traffic hazard and severely limit road improvements. Major street improvements throughout the Milwaukie area cannot proceed without adequate storm drainage facilities.

The City of Milwaukie ~~currently~~ has approximately 22.50 miles of storm ~~drains~~ drainage and collection systems within the City. In addition, many ~~of the~~ areas are served by sumps or drywells and do not have an established storm collection and conveyance system. With 65 miles of road compared to the 22.50 miles of storm drainage and collection systems, storm drainage continues to be a major issue within the City of Milwaukie.

In 1979, the City updated a drainage study identifying priority areas for storm drainage improvements. A master plan for storm drainage in the City was prepared. The plan acknowledged the impact of development to the east of Milwaukie on storm drainage capacity. Milwaukie is the terminus for several regional drainage basins - Johnson, Kellogg, Mt. Scott, and Phillips Creeks. Storm drainage is an area-wide concern requiring a local and regional planning process.

Subsequent updates to the storm drainage master plan were prepared in 1997 and 2004.

In 2013 the City adopted a Stormwater Master Plan (SWMP) as an ancillary document to the Comprehensive Plan. The SWMP deals with the portions of the storm drainage and collection system managed by the City of Milwaukie, including pipes and open channels. The SWMP addresses requirements of the City's National Pollutant Discharge Elimination System (NPDES) municipal separate storm sewer (MS4) permit to retrofit areas of the stormwater system for water quality improvement. In the SWMP, the City identified projects to alleviate system capacity deficiencies and improve water quality. Projects are prioritized in a stormwater capital improvement project list. As part of the development of the SWMP, review and update to the

## Proposed Code Amendment

---

City's existing stormwater utility rate and service development charge was completed, in order to estimate funding needs to implement the identified capital improvement projects.

~~On two occasions within the last 15 years, the City has attempted to pass a levy for construction of storm drains. A 1987 Utility District proposal to fund a storm drainage trunk system failed. The method for funding needed improvements has been and continues to be a major issue within Milwaukee.~~

### **OBJECTIVE #6 — DRAINAGE AND STREETS**

To improve the storm drainage and collection system within the City, in order to alleviate seasonal flooding problems and to allow for permanent street and sidewalk improvements.

#### Policies

1. The City will promote the construction of a storm drainage system, with highest priority given to the drainage basins suffering the most severe flooding problems as identified on an ongoing basis.
2. The City will promote the construction of street, curb, and sidewalk/bikepath improvements coordinated with the construction of a storm drainage system, with highest priority given to streets designated as arterials, collectors, bikeway streets, or streets serving public transportation.
3. New and redevelopment will be designed to limit storm drainage runoff outside project boundaries, ~~or~~ and will provide a storm drainage and collection system within the project area boundary.
4. The City will cooperate with other affected agencies in exploring regional solutions to the storm drainage problem.
5. The City will restrict development within drainageways to prevent erosion, regulate stormwater runoff, protect water quality, and protect and enhance the use of drainageways as wildlife corridors.
6. The City will require stormwater treatment for new and redevelopment in order to improve the water quality of receiving water bodies.

# STORMWATER FINANCIAL PLAN

## CITY OF MILWAUKIE

### Introduction

This technical memorandum provides a financial plan that will allow the City to implement its capital improvement program while meeting its other financial obligations, including policy objectives. The two main components of this plan (1) the computation of a system development charge (SDC) and (2) a revenue requirement analysis. However, since these components include analysis of multiple levels of service, we begin with defining each level of service used in this plan.

### Levels of Service

In collaboration with Brown and Caldwell and City staff, we developed four levels of service that represent different trade-offs between the service that a stormwater program can provide and the cost of that service. **Exhibit 1** summarizes the key features of each level of service:

DRAFT

Levels of Service

Exhibit 1

Level	Staffing	Capital Projects	Maintenance	TMDL/NPDES	System Replacement	Vehicle Replacement
<b>Current</b>	Meet historic programmatic needs.  No additional staff.	Implement capital projects 13-1 and 5-1 per new CIP.	Maintain conventional system components	Meet historic permit needs.	System replacement when failure occurs.	Replace existing vactor truck with dedicated funds.  Continue allocating \$50,000/ yr for vehicle replacement (assumes 12- year replacement cycle).
<b>Minimum</b>	Meet programmatic needs per newly issued permits.  Address capital projects 13-1, 13-3, 13-4 and 5-1 per new CIP.	Implement capital projects 13-1, 13-3, 13-4 and 5-1 per new CIP.	Maintain conventional and vegetated system components (i.e., raingardens)	Meet new permit requirements related to system evaluation and monitoring.  Conduct water quality retrofits in accordance with permit requirements.	System replacement when failure occurs.	Replace existing vactor truck with dedicated funds.  Continue allocating \$50,000/ yr for vehicle replacement (assumes 12- year replacement cycle).
<b>Recommended</b>	Meet new programmatic needs per newly issued permits.  Address higher priority capital projects.	Construct higher priority capital projects over a 10-year planning horizon. Construct all capital projects in the future.	Maintain conventional and vegetated system components (i.e., raingardens)	Meet new permit requirements related to system evaluation and monitoring.  Conduct water quality retrofits in accordance with permit requirements.	Replace 50% of the system over a 75-year period.  Assume \$390,000/ yr for replacement activities starting in FY 2017/18.	Replace existing vactor truck with dedicated funds.  Continue allocating \$50,000/ yr for vehicle replacement (assumes 12- year replacement cycle).
<b>Proactive</b>	Meet new programmatic needs per newly issued permits  Address all capital projects.	Construct all capital projects over a 10-year planning horizon.	Maintain conventional and vegetated system components (i.e., raingardens)	Meet new permit requirements related to system evaluation and monitoring.  Conduct water quality retrofits in accordance with permit requirements.	Replace 100% of the system over a 75-year period.  Assumes \$780,000/yr for replacement activities starting in FY 2017/ 18.	Replace existing vactor truck with dedicated funds.  Allocate \$85,714/yr for vehicle replacement (assumes 7-year rotating cycle).

Source: Brown and Caldwell

For three of the four levels of service, we present two scenarios. One scenario finances capital improvements with a combination of debt and rate revenues. The other scenario finances capital improvements with rate revenue alone. Rate increases are naturally higher for those scenarios that

rely exclusively on rate revenue. For the current level of service, we do not present a scenario that includes debt. SDCs differ for some levels of service, because some levels of service require a different set of capacity-increasing projects.

## System Development Charges

SDCs are one-time fees imposed on new and increased development to recover the cost of system facilities needed to serve that growth. This section provides the rationale and calculations for a proposed stormwater SDC.

### Method of Calculation

An SDC can include two components: a reimbursement fee and an improvement fee.

The reimbursement fee is the cost of available capacity per unit of growth that such available capacity will serve. In order for a reimbursement fee to be calculated, unused capacity must be available to serve future growth. For facility types that do not have available capacity, no reimbursement fee may be charged.

The improvement fee is the cost of capacity-increasing capital projects per unit of growth that those projects will serve. In reality, the capacity added by many projects serves a dual purpose of both meeting existing demand and serving future growth. To compute a compliant improvement fee, growth-related costs must be isolated, and costs related to current demand must be excluded.

We have used the “capacity approach” to allocate costs to the improvement fee basis. Under this approach, the cost of a given project is allocated to growth in proportion to the growth-related capacity that projects of a similar type will create.

Growth should be measured in units that most directly reflect the source of demand. For the City’s stormwater utility, growth is measured in equivalent service units (ESUs). One ESU represents the stormwater service needs of an average single-family residence.

ORS 223.307(5) authorizes the expenditure of SDCs on “the costs of complying with the provisions of ORS 223.297 to 223.314, including the costs of developing system development charge methodologies and providing an annual accounting of system development charge expenditures.” To avoid spending monies for compliance that might otherwise have been spent on growth-related projects, the City should include an estimate of compliance costs in its SDC rates.

### Growth

The City’s current stormwater customer base is 14,269 ESUs. Brown and Caldwell estimates that the amount of impervious area discharging to the City’s stormwater collection system will increase by 30 percent between the present and buildout. Half of the increase in discharge will be attributable to increased connectivity of the stormwater system from redevelopment. The other half of the increase in discharge will be attributable to new impervious area added as a result of new development. Only the latter half will result in an increase to the customer base. We therefore estimate that the City’s stormwater customer base will be 16,457 ESUs at buildout. This estimate implies growth of 2,188 ESUs between the present and buildout.

### Eligible Costs

Having determined the anticipated growth that constitutes the denominator of the SDC calculation, we turn to the eligible costs that constitute the numerator.

Because the City’s stormwater infrastructure has no excess capacity that is available to serve growth, the City cannot charge a reimbursement fee as part of its stormwater SDC.

Based on the capital improvement plan developed by Brown and Caldwell for the recommended and proactive levels of service, the City will construct the complete list of stormwater facilities with an estimated cost of \$9,220,500 between the present and buildout. However, none of these projects will serve growth of the City’s stormwater customer base exclusively. We have identified those projects that will serve development (increased impervious area). Of those, only the growth-related portion of each project can be collected as the improvement fee component of an SDC. **Exhibit 2** shows the growth-related portion of the planned stormwater projects for the recommended and proactive levels of service:

Improvement Fee		Exhibit 2		
Project	Total Cost	Development-Related Portion	Growth Portion of Development	Improvement Fee Cost Basis
1-1 Willow Detention Pond Retrofit	\$ 68,600	0.00%	50.00%	\$ -
1-2 Stanley-Willow UIC Decommissioning	100,200	0.00%	50.00%	-
4-1 Main Street at Milport Road	241,200	43.00%	50.00%	51,858
5-1A Meek Street Phase 1	593,900	56.00%	50.00%	166,292
5-1B Meek Street Phase 2	1,233,300	56.00%	50.00%	345,324
5-1C Meek Street Phase 3	1,261,000	56.00%	50.00%	353,080
5-2 Harrison Street Outfall	619,400	45.00%	50.00%	139,365
6-1A Washington Street Phase 1	225,500	17.00%	50.00%	19,168
6-2B Washington Street Phase 2	1,578,600	17.00%	50.00%	134,181
6-2 Washington Green Streets	511,300	0.00%	50.00%	-
12-1 International Way and Wister Street	90,000	74.00%	50.00%	33,300
13-1 UIC decommissioning on Lloyd	793,700	55.00%	50.00%	218,268
13-2 Linwood Avenue	469,700	23.00%	50.00%	54,016
13-3 Railroad Avenue at Stanley	357,300	33.00%	50.00%	58,955
13-4 Railroad Avenue Channel	52,900	0.00%	50.00%	-
14-1 Plum and Apple Street	180,100	43.00%	50.00%	38,722
15-1 Hemlock Street to Harmony Road	560,600	16.00%	50.00%	44,848
G1 47th and Llewelyn	155,600	0.00%	50.00%	-
G2 36th near King	104,600	0.00%	50.00%	-
G3 Flooding on 55th Ave between King Street and Monroe Street	23,000	0.00%	50.00%	-
	<u>\$ 9,220,500</u>			<u>\$ 1,657,375</u>
Growth in ESUs				2,188
<b>Improvement fee per ESU</b>				<b>\$ 758</b>

Source: Brown and Caldwell

When the SDC-eligible cost of \$1,657,375 is divided by the expected growth of 2,188 ESUs, the resulting improvement fee is \$758 per ESU.

### Adjustments

Based on our experience with cities of similar size, we estimate that recoverable costs of compliance will be 0.96 percent of the improvement cost basis. Including these costs in the SDC adds \$7 per ESU.

### SDC Components

**Exhibit 3** summarizes the components of the proposed stormwater SDC of \$765 per ESU for the recommended and proactive levels of service. The proposed SDC represents a decrease from the current SDC of \$1,184 per ESU.

SDC Components	Exhibit 3
Description	Amount
Reimbursement fee	\$ -
Improvement fee	758
Adjustment	7
<b>Total fee per ESU</b>	<b>765</b>

Source: Previous exhibits

## Other Levels of Service

Although the growth assumption of 2,188 new ESUs is valid for all levels of service, the current and minimum levels of service use shorter project lists than the recommended and proactive levels of service. Lower eligible costs result in lower SDCs. For the current level of service, the proposed SDC is \$502 per ESU. For the minimum level of service, the proposed SDC is \$529.

## Indexing

ORS 223.304 allows for the periodic indexing of system development charges for inflation, as long as the index used is:

- (A) A relevant measurement of the average change in prices or costs over an identified time period for materials, labor, real property or a combination of the three;
- (B) Published by a recognized organization or agency that produces the index or data source for reasons that are independent of the system development charge methodology; and
- (C) Incorporated as part of the established methodology or identified and adopted in a separate ordinance, resolution or order.

We recommend that the City index its charges to the *Engineering News Record Construction Cost Index* for the City of Seattle and adjust its charges annually. There is no comparable Oregon-specific index.

## Revenue Requirement Analysis

This section presents a financial analysis that reveals how much rate revenue would be required to meet operational and capital needs within contractual and policy constraints over the next ten years.

### Criteria

At least two separate conditions must be satisfied in order for rates to be sufficient. First, the stormwater utility must generate revenues adequate to meet cash needs. Second, revenues must satisfy bond coverage requirements (if any).

Revenues should be sufficient to satisfy both tests. If revenues are found to be deficient by one or more of the tests, then the greater deficiency drives the rate increase.

The cash flow test identifies all cash requirements as projected in each given year. Cash requirements include operations and maintenance expenses, debt service payments, policy-driven additions to working capital, and capital improvement costs. If the stormwater service collected replacement funding, it would also be included in the test as an expense. These expenses are compared to the total projected annual revenues, including interest on fund balances. Shortfalls are then used to estimate the necessary rate increases.

The bond coverage test measures the ability of rate revenues to meet contractual obligations. For those scenarios that include the issuance of debt, we have based the bond coverage test on the common requirement that net revenues must equal or exceed 125 percent of annual bond debt service over the life of the bonds.

### Projections

We created a spreadsheet model to forecast cash flows for the City's stormwater utility over a period of ten years. We used that model to determine the timing and magnitude of required rate increases under seven scenarios covering the four levels of service defined above:

- ◆ **Exhibit 4** summarizes the model's output for a ten-year period under the current level of service. Although this scenario represents the least ambitious level of service, the utility still requires six years of rate increase of four percent per year or more.
- ◆ **Exhibit 5** summarizes the model's output for a ten-year period under the minimum level of service with no debt. This scenario requires six years of rate increases at or near 7.7 percent per year.
- ◆ **Exhibit 6** also reflects the minimum level of service, but this scenario includes \$2.5 million in revenue bonds to be issued in fiscal year 2017-18. This change cuts the required rate increases nearly in half.
- ◆ **Exhibit 7** summarizes the model's output for a ten-year period under the recommended level of service with no debt. This scenario requires seven years of rate increases above ten percent per year.
- ◆ **Exhibit 8** also reflects the recommended level of service, but this scenario includes \$3.5 million in revenue bonds to be issued in fiscal year 2017-18. This debt does mitigate the required rate increases. However, more debt means higher coverage requirements. Therefore, the drop in required rate increases is not as dramatic as under the minimum level of service.
- ◆ **Exhibit 9** summarizes the model's output for a ten-year period under the proactive level of service with no debt. This scenario requires seven years of rate increases at or above 14 percent per year with additional double-digit increases after that.
- ◆ **Exhibit 10** also reflects the proactive level of service, but this scenario includes \$4.0 million in revenue bonds to be issued in fiscal year 2017-18. This debt does mitigate the required rate increases. However, more debt means higher coverage requirements. Therefore, the drop in required rate increases is not as dramatic as under the minimum level of service.

**Current Level of Service with No Debt**

**Exhibit 4**

Description	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
<b>Revenues:</b>										
Stormwater rates	\$ 1,970,000	\$ 2,057,091	\$ 2,148,033	\$ 2,242,995	\$ 2,339,911	\$ 2,441,016	\$ 2,539,164	\$ 2,539,672	\$ 2,540,180	\$ 2,540,688
Other revenues	323,454	717,829	15,102	13,500	13,676	13,823	13,975	13,982	14,304	14,479
Bond proceeds	-	-	-	-	-	-	-	-	-	-
<b>Total revenues</b>	<b>\$ 2,293,454</b>	<b>\$ 2,774,920</b>	<b>\$ 2,163,135</b>	<b>\$ 2,256,495</b>	<b>\$ 2,353,588</b>	<b>\$ 2,454,838</b>	<b>\$ 2,553,139</b>	<b>\$ 2,553,654</b>	<b>\$ 2,554,484</b>	<b>\$ 2,555,167</b>
<b>Expenditures:</b>										
Personnel services	\$ 433,000	\$ 471,000	\$ 488,000	\$ 520,000	\$ 539,000	\$ 558,000	\$ 587,295	\$ 618,128	\$ 650,580	\$ 684,735
Materials and services	129,000	183,000	188,000	194,000	200,000	206,000	212,180	218,545	225,102	231,855
Capital outlay	350,000	754,000	900,231	50,000	744,779	1,550,498	1,647,067	53,045	54,636	56,275
Transfers	770,000	790,000	822,000	855,000	889,000	925,000	952,750	981,333	1,010,772	1,041,096
Debt service	-	-	-	-	-	-	-	-	-	-
Franchise fee	157,600	164,567	171,843	179,440	187,193	195,281	203,133	203,174	203,214	203,255
<b>Total expenditures</b>	<b>\$ 1,839,600</b>	<b>\$ 2,362,567</b>	<b>\$ 2,570,074</b>	<b>\$ 1,798,440</b>	<b>\$ 2,559,972</b>	<b>\$ 3,434,779</b>	<b>\$ 3,602,425</b>	<b>\$ 2,074,225</b>	<b>\$ 2,144,305</b>	<b>\$ 2,217,216</b>
Increase (decrease) in fund balance	\$ 453,854	\$ 412,353	\$ (406,939)	\$ 458,055	\$ (206,384)	\$ (979,941)	\$ (1,049,286)	\$ 479,429	\$ 410,180	\$ 337,951
Stormwater rate	\$ 11.44	\$ 11.94	\$ 12.47	\$ 13.02	\$ 13.58	\$ 14.16	\$ 14.73	\$ 14.73	\$ 14.73	\$ 14.73
Annual change in stormwater rate	0.00%	4.40%	4.40%	4.40%	4.30%	4.30%	4.00%	0.00%	0.00%	0.00%
System development charge per ESU	\$ 502	\$ 502	\$ 502	\$ 502	\$ 502	\$ 502	\$ 502	\$ 502	\$ 502	\$ 502

Source: FCS GROUP

**Minimum Level of Service with No Debt**

**Exhibit 5**

Description	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
<b>Revenues:</b>										
Stormwater rates	\$ 1,970,000	\$ 2,122,114	\$ 2,285,974	\$ 2,462,487	\$ 2,652,629	\$ 2,857,452	\$ 3,075,234	\$ 3,075,849	\$ 3,076,464	\$ 3,077,079
Other revenues	323,454	717,829	15,102	13,984	14,185	14,358	14,539	14,591	14,929	15,136
Bond proceeds	-	-	-	-	-	-	-	-	-	-
<b>Total revenues</b>	<b>\$ 2,293,454</b>	<b>\$ 2,839,943</b>	<b>\$ 2,301,076</b>	<b>\$ 2,476,470</b>	<b>\$ 2,666,814</b>	<b>\$ 2,871,811</b>	<b>\$ 3,089,772</b>	<b>\$ 3,090,440</b>	<b>\$ 3,091,393</b>	<b>\$ 3,092,216</b>
<b>Expenditures:</b>										
Personnel services	\$ 433,000	\$ 471,000	\$ 684,121	\$ 726,417	\$ 756,254	\$ 786,660	\$ 827,959	\$ 871,427	\$ 917,177	\$ 965,329
Materials and services	129,000	183,000	188,000	194,000	200,000	206,000	212,180	218,545	225,102	231,855
Capital outlay	350,000	754,000	900,231	446,145	744,779	1,550,498	1,647,067	53,045	127,034	56,275
Transfers	770,000	790,000	822,000	855,000	889,000	925,000	952,750	981,333	1,010,772	1,041,096
Debt service	-	-	-	-	-	-	-	-	-	-
Franchise fee	157,600	169,769	182,878	196,999	212,210	228,596	246,019	246,068	246,117	246,166
<b>Total expenditures</b>	<b>\$ 1,839,600</b>	<b>\$ 2,367,769</b>	<b>\$ 2,777,230</b>	<b>\$ 2,418,561</b>	<b>\$ 2,802,243</b>	<b>\$ 3,696,754</b>	<b>\$ 3,885,975</b>	<b>\$ 2,370,418</b>	<b>\$ 2,526,202</b>	<b>\$ 2,540,721</b>
Increase (decrease) in fund balance	\$ 453,854	\$ 472,174	\$ (476,154)	\$ 57,910	\$ (135,430)	\$ (824,943)	\$ (796,203)	\$ 720,022	\$ 565,191	\$ 551,494
Stormwater rate	\$ 11.44	\$ 12.32	\$ 13.27	\$ 14.29	\$ 15.39	\$ 16.58	\$ 17.84	\$ 17.84	\$ 17.84	\$ 17.84
Annual change in stormwater rate	0.00%	7.70%	7.70%	7.70%	7.70%	7.70%	7.60%	0.00%	0.00%	0.00%
System development charge per ESU	\$ 529	\$ 529	\$ 529	\$ 529	\$ 529	\$ 529	\$ 529	\$ 529	\$ 529	\$ 529

Source: FCS GROUP

**Minimum Level of Service with Revenue Bonds**

**Exhibit 6**

Description	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
<b>Revenues:</b>										
Stormwater rates	\$ 1,970,000	\$ 2,047,239	\$ 2,127,507	\$ 2,210,922	\$ 2,297,607	\$ 2,387,692	\$ 2,474,143	\$ 2,561,250	\$ 2,651,424	\$ 2,744,773
Other revenues	323,454	717,829	15,102	13,984	14,185	14,358	16,568	16,759	16,958	17,166
Bond proceeds	-	-	-	-	-	2,500,000	-	-	-	-
<b>Total revenues</b>	<b>\$ 2,293,454</b>	<b>\$ 2,765,068</b>	<b>\$ 2,142,609</b>	<b>\$ 2,224,906</b>	<b>\$ 2,311,793</b>	<b>\$ 4,902,050</b>	<b>\$ 2,490,711</b>	<b>\$ 2,578,010</b>	<b>\$ 2,668,383</b>	<b>\$ 2,761,939</b>
<b>Expenditures:</b>										
Personnel services	\$ 433,000	\$ 471,000	\$ 684,121	\$ 726,417	\$ 756,254	\$ 786,660	\$ 827,959	\$ 871,427	\$ 917,177	\$ 965,329
Materials and services	129,000	183,000	188,000	194,000	200,000	206,000	212,180	218,545	225,102	231,855
Capital outlay	350,000	754,000	900,231	446,145	744,779	1,550,498	1,647,067	53,045	127,034	56,275
Transfers	770,000	790,000	822,000	855,000	889,000	925,000	952,750	981,333	1,010,772	1,041,096
Debt service	-	-	-	-	-	202,946	202,946	202,946	202,946	202,946
Franchise fee	157,600	163,779	170,201	176,874	183,809	174,780	181,696	188,664	195,878	203,346
<b>Total expenditures</b>	<b>\$ 1,839,600</b>	<b>\$ 2,361,779</b>	<b>\$ 2,764,553</b>	<b>\$ 2,398,436</b>	<b>\$ 2,773,842</b>	<b>\$ 3,845,884</b>	<b>\$ 4,024,599</b>	<b>\$ 2,515,961</b>	<b>\$ 2,678,910</b>	<b>\$ 2,700,848</b>
Increase (decrease) in fund balance	\$ 453,854	\$ 403,289	\$ (621,944)	\$ (173,530)	\$ (462,049)	\$ 1,056,166	\$ (1,533,888)	\$ 62,049	\$ (10,527)	\$ 61,091
Stormwater rate	\$ 11.44	\$ 11.89	\$ 12.35	\$ 12.83	\$ 13.33	\$ 13.85	\$ 14.35	\$ 14.85	\$ 15.37	\$ 15.91
Annual change in stormwater rate	0.00%	3.90%	3.90%	3.90%	3.90%	3.90%	3.60%	3.50%	3.50%	3.50%
System development charge per ESU	\$ 529	\$ 529	\$ 529	\$ 529	\$ 529	\$ 529	\$ 529	\$ 529	\$ 529	\$ 529

Source: FCS GROUP

**Recommended Level of Service with No Debt**

**Exhibit 7**

Description	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
<b>Revenues:</b>										
Stormwater rates	\$ 1,970,000	\$ 2,171,374	\$ 2,393,333	\$ 2,637,980	\$ 2,904,997	\$ 3,199,042	\$ 3,522,849	\$ 3,879,433	\$ 4,035,417	\$ 4,193,637
Other revenues	323,454	717,829	15,102	14,013	14,216	14,391	15,535	15,728	15,759	16,138
Bond proceeds	-	-	-	-	-	-	-	-	-	-
<b>Total revenues</b>	<b>\$ 2,293,454</b>	<b>\$ 2,889,203</b>	<b>\$ 2,408,435</b>	<b>\$ 2,651,994</b>	<b>\$ 2,919,213</b>	<b>\$ 3,213,433</b>	<b>\$ 3,538,384</b>	<b>\$ 3,895,161</b>	<b>\$ 4,051,176</b>	<b>\$ 4,209,775</b>
<b>Expenditures:</b>										
Personnel services	\$ 433,000	\$ 471,000	\$ 696,091	\$ 739,015	\$ 769,514	\$ 800,616	\$ 842,648	\$ 886,887	\$ 933,448	\$ 982,455
Materials and services	129,000	183,000	188,000	194,000	200,000	206,000	212,180	218,545	225,102	231,855
Capital outlay	350,000	754,000	900,231	446,145	744,779	1,940,498	2,037,067	1,495,132	517,034	1,615,526
Transfers	770,000	790,000	822,000	855,000	889,000	925,000	952,750	981,333	1,010,772	1,041,096
Debt service	-	-	-	-	-	-	-	-	-	-
Franchise fee	157,600	173,710	191,467	211,038	232,400	255,923	281,828	310,355	322,833	335,491
<b>Total expenditures</b>	<b>\$ 1,839,600</b>	<b>\$ 2,371,710</b>	<b>\$ 2,797,788</b>	<b>\$ 2,445,199</b>	<b>\$ 2,835,692</b>	<b>\$ 4,128,037</b>	<b>\$ 4,326,473</b>	<b>\$ 3,892,252</b>	<b>\$ 3,009,190</b>	<b>\$ 4,206,422</b>
Increase (decrease) in fund balance	\$ 453,854	\$ 517,493	\$ (389,354)	\$ 206,795	\$ 83,521	\$ (914,604)	\$ (788,089)	\$ 2,909	\$ 1,041,986	\$ 3,353
Stormwater rate	\$ 11.44	\$ 12.61	\$ 13.89	\$ 15.31	\$ 16.86	\$ 18.56	\$ 20.43	\$ 22.50	\$ 23.40	\$ 24.31
Annual change in stormwater rate	0.00%	10.20%	10.20%	10.20%	10.10%	10.10%	10.10%	10.10%	4.00%	3.90%
System development charge per ESU	\$ 765	\$ 765	\$ 765	\$ 765	\$ 765	\$ 765	\$ 765	\$ 765	\$ 765	\$ 765

Source: FCS GROUP

**Recommended Level of Service with Revenue Bonds**

**Exhibit 8**

Description	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
<b>Revenues:</b>										
Stormwater rates	\$ 1,970,000	\$ 2,133,937	\$ 2,311,516	\$ 2,501,560	\$ 2,707,229	\$ 2,929,808	\$ 3,015,375	\$ 3,103,442	\$ 3,194,080	\$ 3,287,366
Other revenues	323,454	717,829	15,102	14,013	14,216	14,391	18,002	18,569	18,770	18,979
Bond proceeds	-	-	-	-	-	3,500,000	-	-	-	-
<b>Total revenues</b>	<b>\$ 2,293,454</b>	<b>\$ 2,851,765</b>	<b>\$ 2,326,618</b>	<b>\$ 2,515,573</b>	<b>\$ 2,721,446</b>	<b>\$ 6,444,199</b>	<b>\$ 3,033,378</b>	<b>\$ 3,122,011</b>	<b>\$ 3,212,850</b>	<b>\$ 3,306,346</b>
<b>Expenditures:</b>										
Personnel services	\$ 433,000	\$ 471,000	\$ 696,091	\$ 739,015	\$ 769,514	\$ 800,616	\$ 842,648	\$ 886,887	\$ 933,448	\$ 982,455
Materials and services	129,000	183,000	188,000	194,000	200,000	206,000	212,180	218,545	225,102	231,855
Capital outlay	350,000	754,000	900,231	446,145	744,779	1,940,498	2,037,067	1,495,132	517,034	1,615,526
Transfers	770,000	790,000	822,000	855,000	889,000	925,000	952,750	981,333	1,010,772	1,041,096
Debt service	-	-	-	-	-	284,125	284,125	284,125	284,125	284,125
Franchise fee	157,600	170,715	184,921	200,125	216,578	211,655	218,500	225,545	232,796	240,259
<b>Total expenditures</b>	<b>\$ 1,839,600</b>	<b>\$ 2,368,715</b>	<b>\$ 2,791,243</b>	<b>\$ 2,434,285</b>	<b>\$ 2,819,871</b>	<b>\$ 4,367,893</b>	<b>\$ 4,547,270</b>	<b>\$ 4,091,568</b>	<b>\$ 3,203,278</b>	<b>\$ 4,395,315</b>
Increase (decrease) in fund balance	\$ 453,854	\$ 483,050	\$ (464,625)	\$ 81,288	\$ (98,425)	\$ 2,076,306	\$ (1,513,893)	\$ (969,557)	\$ 9,573	\$ (1,088,970)
Stormwater rate	\$ 11.44	\$ 12.39	\$ 13.42	\$ 14.52	\$ 15.71	\$ 17.00	\$ 17.49	\$ 18.00	\$ 18.52	\$ 19.06
Annual change in stormwater rate	0.00%	8.30%	8.30%	8.20%	8.20%	8.20%	2.90%	2.90%	2.90%	2.90%
System development charge per ESU	\$ 765	\$ 765	\$ 765	\$ 765	\$ 765	\$ 765	\$ 765	\$ 765	\$ 765	\$ 765

Source: FCS GROUP

**Proactive Level of Service with No Debt**

**Exhibit 9**

Description	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
<b>Revenues:</b>										
Stormwater rates	\$ 1,970,000	\$ 2,248,220	\$ 2,565,732	\$ 2,928,085	\$ 3,341,613	\$ 3,810,201	\$ 4,344,498	\$ 4,953,718	\$ 5,638,459	\$ 6,243,022
Other revenues	323,454	717,829	15,190	14,162	14,375	14,559	16,675	16,874	17,082	17,129
Bond proceeds	-	-	-	-	-	-	-	-	-	-
<b>Total revenues</b>	<b>\$ 2,293,454</b>	<b>\$ 2,966,048</b>	<b>\$ 2,580,922</b>	<b>\$ 2,942,247</b>	<b>\$ 3,355,988</b>	<b>\$ 3,824,760</b>	<b>\$ 4,361,173</b>	<b>\$ 4,970,593</b>	<b>\$ 5,655,541</b>	<b>\$ 6,260,151</b>
<b>Expenditures:</b>										
Personnel services	\$ 433,000	\$ 471,000	\$ 718,189	\$ 762,274	\$ 793,993	\$ 826,380	\$ 869,765	\$ 915,428	\$ 963,488	\$ 1,014,071
Materials and services	129,000	183,000	188,000	194,000	200,000	206,000	212,180	218,545	225,102	231,855
Capital outlay	350,000	789,714	938,517	487,079	788,441	2,376,970	2,474,934	2,904,013	3,118,238	3,469,756
Transfers	770,000	790,000	822,000	855,000	889,000	925,000	952,750	981,333	1,010,772	1,041,096
Debt service	-	-	-	-	-	-	-	-	-	-
Franchise fee	157,600	179,858	205,259	234,247	267,329	304,816	347,560	396,297	451,077	499,442
<b>Total expenditures</b>	<b>\$ 1,839,600</b>	<b>\$ 2,413,572</b>	<b>\$ 2,871,964</b>	<b>\$ 2,532,600</b>	<b>\$ 2,938,763</b>	<b>\$ 4,639,166</b>	<b>\$ 4,857,189</b>	<b>\$ 5,415,616</b>	<b>\$ 5,768,677</b>	<b>\$ 6,256,219</b>
Increase (decrease) in fund balance	\$ 453,854	\$ 552,476	\$ (291,043)	\$ 409,648	\$ 417,225	\$ (814,406)	\$ (496,016)	\$ (445,024)	\$ (113,135)	\$ 3,932
Stormwater rate	\$ 11.44	\$ 13.05	\$ 14.89	\$ 16.99	\$ 19.39	\$ 22.10	\$ 25.20	\$ 28.73	\$ 32.69	\$ 36.19
Annual change in stormwater rate	0.00%	14.10%	14.10%	14.10%	14.10%	14.00%	14.00%	14.00%	13.80%	10.70%
System development charge per ESU	\$ 765	\$ 765	\$ 765	\$ 765	\$ 765	\$ 765	\$ 765	\$ 765	\$ 765	\$ 765

Source: FCS GROUP

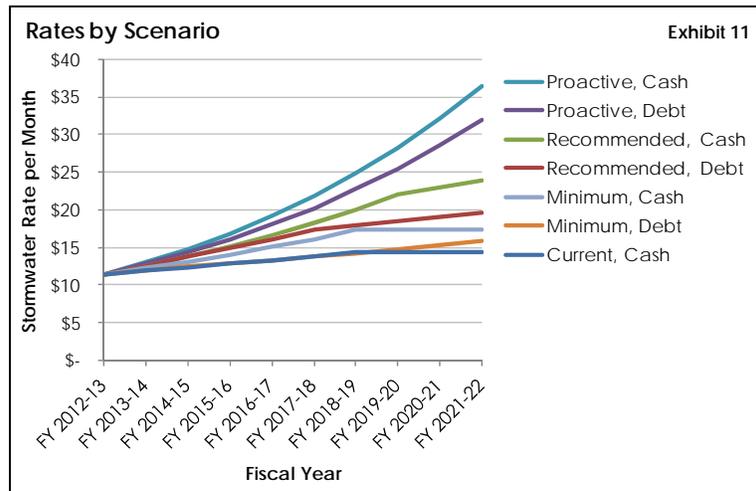
**Proactive Level of Service with Revenue Bonds**

**Exhibit 10**

Description	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
<b>Revenues:</b>										
Stormwater rates	\$ 1,970,000	\$ 2,208,812	\$ 2,474,364	\$ 2,771,842	\$ 3,105,084	\$ 3,478,389	\$ 3,886,138	\$ 4,341,684	\$ 4,846,289	\$ 5,409,540
Other revenues	323,454	717,829	15,190	14,162	14,375	14,559	18,629	20,121	20,329	20,546
Bond proceeds	-	-	-	-	-	4,000,000	-	-	-	-
<b>Total revenues</b>	<b>\$ 2,293,454</b>	<b>\$ 2,926,640</b>	<b>\$ 2,489,554</b>	<b>\$ 2,786,004</b>	<b>\$ 3,119,458</b>	<b>\$ 7,492,948</b>	<b>\$ 3,904,767</b>	<b>\$ 4,361,806</b>	<b>\$ 4,866,618</b>	<b>\$ 5,430,086</b>
<b>Expenditures:</b>										
Personnel services	\$ 433,000	\$ 471,000	\$ 718,189	\$ 762,274	\$ 793,993	\$ 826,380	\$ 869,765	\$ 915,428	\$ 963,488	\$ 1,014,071
Materials and services	129,000	183,000	188,000	194,000	200,000	206,000	212,180	218,545	225,102	231,855
Capital outlay	350,000	789,714	938,517	487,079	788,441	2,376,970	2,474,934	2,904,013	3,118,238	3,469,756
Transfers	770,000	790,000	822,000	855,000	889,000	925,000	952,750	981,333	1,010,772	1,041,096
Debt service	-	-	-	-	-	324,714	324,714	324,714	324,714	324,714
Franchise fee	157,600	176,705	197,949	221,747	248,407	252,294	284,914	321,358	361,726	406,786
<b>Total expenditures</b>	<b>\$ 1,839,600</b>	<b>\$ 2,410,419</b>	<b>\$ 2,864,655</b>	<b>\$ 2,520,100</b>	<b>\$ 2,919,841</b>	<b>\$ 4,911,359</b>	<b>\$ 5,119,257</b>	<b>\$ 5,665,391</b>	<b>\$ 6,004,040</b>	<b>\$ 6,488,278</b>
Increase (decrease) in fund balance	\$ 453,854	\$ 516,221	\$ (375,101)	\$ 265,904	\$ 199,617	\$ 2,581,590	\$ (1,214,490)	\$ (1,303,585)	\$ (1,137,422)	\$ (1,058,192)
Stormwater rate	\$ 11.44	\$ 12.82	\$ 14.36	\$ 16.09	\$ 18.02	\$ 20.18	\$ 22.54	\$ 25.18	\$ 28.10	\$ 31.36
Annual change in stormwater rate	0.00%	12.10%	12.00%	12.00%	12.00%	12.00%	11.70%	11.70%	11.60%	11.60%
System development charge per ESU	\$ 765	\$ 765	\$ 765	\$ 765	\$ 765	\$ 765	\$ 765	\$ 765	\$ 765	\$ 765

Source: FCS GROUP

**Exhibit 11** compares the rate impacts of the seven scenarios presented above:



### Conclusion

Of the four levels of service presented in this plan, the recommended level of service strikes a balance between affordability, regulatory compliance, and the asset management practices required by the City’s Capital Improvement Investment Policy 5. Whether this level of investment should be financed with debt or with rates alone is ultimately a policy decision that requires weighing the City’s Capital Investment Policies 7 and 8.

On March 6, 2013, the CUAB gave its support to the recommended level of service with no debt (summarized above in **Exhibit 7**). We find that this is a sound recommendation.