

ENVIRONMENT COMMITTEE AGENDA

April 12, 2018 – North Conference Room

21630 11th Avenue South – Des Moines 98198

6:00P – 6:50 PM

1. Approval of the minutes of the 3.08.2018 meeting (Chair to call the meeting to order and start @ 6:00 pm)

2. Shoreline Master Program Periodic Review (Informational, 6:00–6:15 pm)
Staff will brief the Committee on the SMP periodic review process and share a proposed Scope of Work, Public Participation Plan, and draft Timeline.

3. Critical Areas Regulations – Minor Updates (Informational, 6:15-6:20 pm)
Staff will provide an overview of recommended amendments to the CAO for facilitate using and interpreting code requirements.

4. Midway Sewer District Comprehensive Sewer Plan (Informational, 6:20–6:40 pm)
District staff and their consultant from BHC will be providing a presentation on the 2018 Sewer Plan.

5. SCUBA Alliance (Informational, 6:40 – 6:50 pm)
Staff will provide the Committee with an update on the Redondo Artificial Reef Project.

DRAFT MINUTES - ENVIRONMENTAL COUNCIL COMMITTEE MEETING 3.08.2018

The meeting was called to order @ 6:00 PM, Thursday, March 8, 2018, in the North Conference room @ 21630 11th Avenue South, Des Moines with the following in attendance:

Council Members

Robert Back
Traci Buxton
Matt Pina

City Staff

Brandon Carver, PW Director
Loren Reinhold, SWM Utility Manager
Tim George, City Attorney
Tyler Beekley, Water Quality Specialist
Peggy Volin, Admin Asst II

AGENDA:

1. Selection of Committee Chair/Co-chair
2. Approve minutes of the 9.21.2017 meeting
3. 2018 SWM Work Plan
4. Poverty Bay Shellfish Update
5. Barnes Creek Culvert Agreement with WSDOT

MEETING:

1. Selection of Committee Chair/Co-chair: Traci Buxton – elected Chair and Rob Back elected Co-chair.
2. Approve the minutes of the September 21, 2017 meeting: Unanimously approved.
3. 2018 SWM Work Plan: SWM Utility Manager Loren Reinhold, reviewed the 2018 Work Plan with the Committee and briefly explained that topics can be added and/or removed as we progress through the year.
4. Poverty Bay Shellfish Update: Chief Operations Officer, Dan Brewer updated the Committee on the letter that was sent to the King County Health Department and also his meeting with Dave Upthegrove. He also explained that we are currently waiting on a response from the Health Department and that we will request a more formal response from them if we do not receive one soon.
5. Barnes Creek/Kent-Des Moines Road Culvert Replacement Agreement with WSDOT: SWM Utility Manager Loren Reinhold reported on a proposed Local Agency Agreement with WSDOT for sharing the cost of the replacement of the Barnes Creek Culvert.

Meeting adjourned at 6:55 pm

Minutes respectfully Submitted by: Peggy Volin, Admin Asst II

Memo

Date: April 3, 2018
To: Council Environment Committee
From: Jason Woycke – Planner II
RE: Shoreline Master Program Periodic Review

Purpose

The purpose of this agenda item is to:

1. Introduce the topic of the Shoreline Master Program (SMP) periodic review;
2. Share the draft Public Participation Plan (Attachment 1), and Timeline (Attachment 2); and
3. Obtain the Committee's feedback and recommendations on the public participation plan and schedule.

Background

A periodic review of the Shoreline Master Program (SMP) is required pursuant to Chapter 90.58 RCW and Chapter 173-26 WAC. The purpose of the SMP periodic review is:

- To assure that the master program complies with applicable State law and guidelines in effect at the time of the review,
- To assure consistency of the master program with the City's comprehensive plan and development regulations adopted under chapter 36.70A RCW,
- To consider amendments needed to address changes in City policy, and
- To facilitate review of projects by clarifying SMP content that it is not currently clear.

In addition, Staff proposes to include the amendment to allow Water Dependent and Water Enjoyment commercial uses in the Shoreline Conservancy Zone per Council direction on May 25, 2017 related to the Wasson House property. While staff had initially intended to process this work as a limited SMP amendment, Ecology has since revised their review process to remove the limited amendment. As such, this work will be folded into the SMP periodic review. The deadline to complete the review and associated amendments is June 30, 2019.

Why is a periodic review and amendment of the SMP important?

1. It's required to be completed by 2019 pursuant to Chapter 90.58 RCW and Chapter 173-26 WAC;
2. It provides an avenue to allow for additional uses for the Wasson House;
3. It provides Staff time to clarify unclear policy and make changes to policy as Council sees fit;
4. And by clarifying policy and other unclear language within the SMP:
 - a. Staff review of projects will become more efficient, saving the City time and money (the number of yearly shoreline reviews have increased dramatically since the last SMP amendment in 2011);
 - b. And our residents, developers, and applicants will be more satisfied with an increase in clarity and less uncertainty in regard to the shoreline permitting process.

Discussion

There are four primary tasks the City must take during the periodic review process that provides the framework for the City's work program:

- Project coordination and grant management.
- Implement a public participation plan.
- Review relevant plans and regulations and draft amendments.
- Take legislative action.

The bulk of the City's effort will be tied to the public participation, regulatory review and update tasks. To facilitate this work, Ecology is providing jurisdictions a \$25,000 non-competitive grant that can be used for staff time or consultant support. The City will need to apply for the grant by June 30, 2018.

The Public Participation Plan (Attachment 1) is a required component that will be ongoing throughout the project. Proposed methods for providing information and soliciting input include: a dedicated page on the City's website, open house/s, local media (Waterland Blog and City Currents), and Farmers Market booth, along with Council Committee briefings and a City Council Public Hearing.

A draft Timeline is provided as Attachment 2. Due to the complexity of the SMP review and amendment, the Timeline could change. Updates will be shared at subsequent Committee briefings. Our goal is to complete this work by the end of the first quarter in 2019.

Based on the overview of the project, Staff would like the Committee's direction on the following:

1. Does the Committee have feedback on the Public Participation Plan or Timeline?
2. How would the Committee like to be briefed on the periodic review progress?
3. How would the Committee like to make decisions on specific policy questions?

Attachment 1

City of Des Moines Shoreline Master Program

Periodic Review Public Participation Plan - DRAFT

Introduction

Des Moines is undertaking a periodic review of its Shoreline Master Program (SMP), as required by the Washington State Shoreline Management Act (SMA), RCW 90.58.080(4). The SMA requires each SMP be reviewed and revised, if needed, on an eight-year schedule established by the Legislature. The review ensures the SMP stays current with changes in laws and rules, remains consistent with other Des Moines plans and regulations, and is responsive to changed circumstances, new information and improved data.

A Public Participation Plan is required to describe how Des Moines will encourage early and continuous public participation throughout the process of reviewing the SMP.

This Public Participation Plan describes the steps that Des Moines will take to provide opportunities for public engagement and public comment, as well as Des Moines' contact information and web addresses. This plan is in addition to any other minimum requirements for public participation required by the Des Moines Municipal Code (DMMC). This plan is a working document and will be adjusted as needed to provide for the greatest and broadest public participation.

1.0 Public Participation Goals

- Provide interested parties with timely information, an understanding of the process, and multiple opportunities to review and comment on proposed amendments to the SMP.
- Actively solicit information from citizens, property owners and stakeholders about their concerns, questions and priorities for the Periodic Review process.
- Encourage interested parties to informally review and comment on proposed changes to the SMP throughout the process and provide those comments to decision makers.
- Provide forums for formal public input at project milestones prior to decision-making by the City Council.
- Consult and consider recommendations from neighboring jurisdictions, federal and state agencies, and Native American tribes.

2.0 Public Participation Opportunities

Des Moines is committed to providing multiple opportunities for public participation throughout the process. Des Moines will use a variety of communication tools to inform the public and encourage their participation, including the following:

2.1 Website

Des Moines' website will include a Periodic Review webpage where interested parties can access status updates, draft documents, official notices, minutes and other project information. The webpage will be the primary repository of all information related to the Periodic Review process. The page will include a Frequently Asked Questions section.

2.2 Open House(s)

Des Moines will initiate the Periodic Review with a community open house. Public comments received during the Open House(s) will be posted on the Periodic Review webpage. A second open house is planned mid-way through the process to provide the public an opportunity to review and comment on the draft regulations.

2.3 Notice mailing list

An email list of interested parties will be created and maintained by Des Moines. The list will be used to notify interested parties regarding the Periodic Review progress and participation opportunities. Interested parties will be added to the list by contacting the Development Services Division.

2.4 Comment

Interested parties will be encouraged to provide comments to Des Moines by letter or email. The Periodic Review webpage will be the central repository for information under consideration. Documents will be available for review at the Des Moines Development Services Division, and copies will be provided at the established copying cost.

2.5 News media

The local news media will be kept up-to-date on the Periodic Review process and receive copies of all official notices.

3.0 Public Participation Timeline

Des Moines will coordinate with the Department of Ecology throughout the process, and a detailed timeline will be posted on the Periodic Review webpage.

4.0 Public Comment Periods and Hearings

A public comment period to solicit input on the Periodic Review and a City Council public hearing will be provided before final adoption.

Des Moines will coordinate with the Department of Ecology on a joint public notice of comment periods and hearings to take advantage of Ecology's optional SMP amendment process that allows for a combined state-local comment period pursuant to WAC 173-26-104 and chapter 16.05 DMMC. Notice will be provided to the agencies and interest groups on the project distribution list (described in section 2.3, above) and the Department of Ecology.

ATTACHMENT 2 - SMP PERIODIC REVIEW DRAFT TIMELINE

TASK	Jan	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July
Task 1: Project Coordination		█																	
Task 2: Secure Consultant Services if Needed				█															
Task 3: Public Participation				█															
Open House							◆					◆							
City Council/Committee Briefings and Public Hearing				■	■	■		■	■	■				■	■		▲	Public Hearing	
Task 4: Review SMP and Draft Revisions				█															
Task 5: City SMP Adoption Process									█										
SEPA Review									*										
60-day Notice (SEPA, Commerce, Public Hearing, Ecology)									*	█									
Review Comments and Edit Draft SMP																			
Ecology Initial Determination (30-days)																			
Finalize Draft SMP for Council Review																			
Council Review and Approval																			
Submit adopted SMP to Ecology																			
30 days for Ecology to review and approve																			
If no revisions required, SMP is effective 14 days after approval																			
60-day appeal period after Ecology's publication of final adoption																			█

- * Project Deliverables
- ◆ Community Meetings
- Committee Briefings
- Council Staff Briefings
- ▲ Public Hearing

Memo

Date: April 3, 2018
To: Council Environment Committee
From: Denise Lathrop, AICP – Community Development Mgr.
RE: CAO Amendments

Purpose

The purpose of this agenda item is to provide the Council Environment Committee with an overview of staff-recommended amendments to Title 16 and discuss how these changes affect the application of Des Moines' Environmentally Critical Area regulations (CAO) that are codified in Chapter 16.10 DMMC and its interface with the City's Shoreline Master Program (SMP). We provided a similar briefing to the Committee in May 2017.

While we were unable to complete this work in 2017, the timing is more appropriate given we can address any issues that may come up in conjunction with the Shoreline Master Program periodic review.

Overview

In 2016, Des Moines completed a review and update of the CAO (Ordinance No. 1649, June 11, 2016). Amendments updated references to the state wetlands ratings manual and the wetlands delineation manual, habitat scores and wetland mitigation ratios to reflect changes in State Law and best available science.

Through recent CAO inquiries and project reviews, staff has identified several housekeeping amendments that will help clarify the CAO.

- Adding, the definition of "*intensity of land use*" that was inadvertently removed as part of the DMMC reorganization that was completed in 2013 (Ordinance No. 1583). This definition is important in the application of the CAO and in determining appropriate buffer reductions and mitigation which is based on land use intensity.
- Adding a reference to Appendix 8-C of *Wetlands in Washington State: Volume 2 – Protecting and Managing Wetlands* (Ecology Publication No. 05-06-008, October 2014) be added to DMMC 16.10.120 Wetlands – Development Standards. Appendix 8-C contains guidance on land use intensity, buffer widths, buffer reductions, compensatory mitigation and other measures for protecting wetlands that are linked to the *Washington State Wetland Rating System for Western Washington* (Ecology Publication No. 14-06-29, October 2014).
- Clarifying the use of the terms "Reasonable Use Exception", "Development Exception", "Buffer Reduction" and their relationship to the Shoreline Master Program, specifically the threshold for determining if a Shoreline Variance is necessary (SMP 6.1.4(4)).
- Correcting internal referencing to clarify application of development standards.

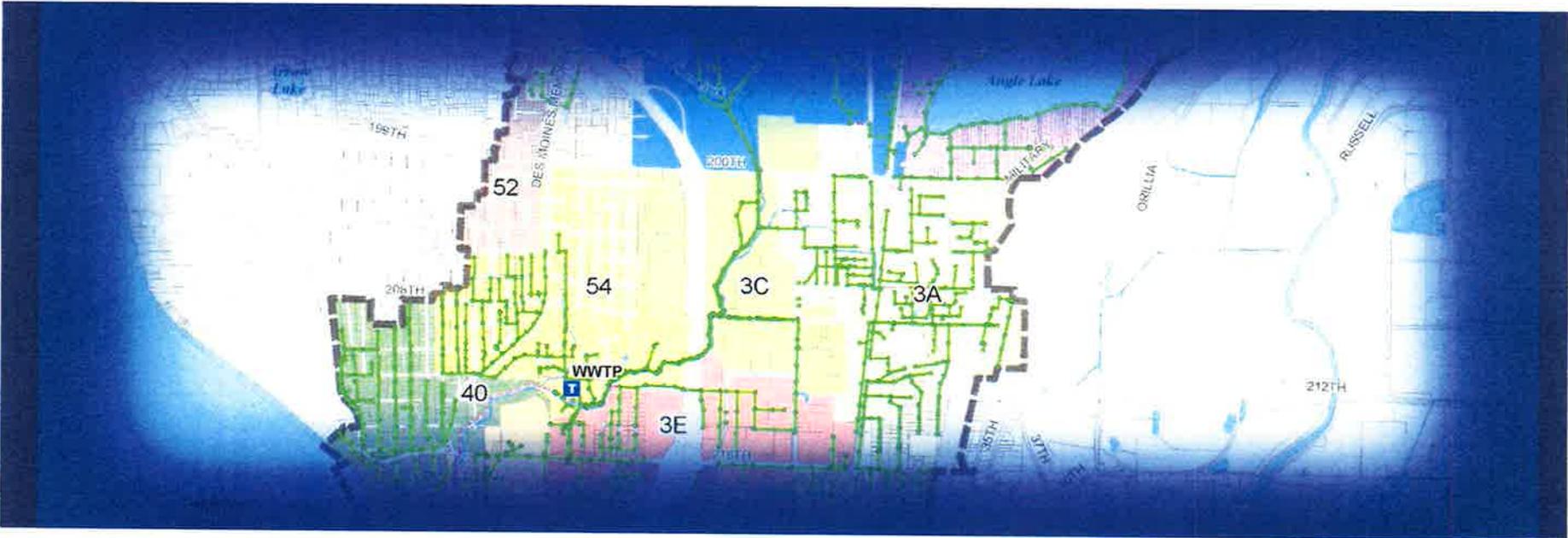
Additional clarification is needed between the CAO and SMP as it relates to the adjustment of standards and provisions for designated critical areas that are located within the shoreline jurisdiction. Specifically, the application of CAO provisions related to "Reasonable Use Exception", "Development Exception", "Buffer Reduction" and the threshold for determining if a Shoreline Variance is necessary. As the SMP review progresses, staff will have a better idea on the timing for bringing forward an ordinance for Council consideration.

GENERAL SEWER PLAN UPDATE

PRESENTATION TO THE PUBLIC WORKS DEPARTMENT OF THE CITY OF DES MOINES

MIDWAY SEWER DISTRICT

APRIL 12, 2018



OUTLINE

- Introductions and Roles
- Plan Purpose, Status, and Process
- Existing System
- Hydraulic Model
- CIP
- Questions



INTRODUCTIONS AND ROLES

- Midway Sewer District
 - Owner and Reviewer
- BHC Consultants (BHC)
 - Population and Growth Projections
 - New Hydraulic Model Development
 - CIP Development
- Brown & Caldwell (B&C)
 - WWTP Evaluation and CIP Development
- Katy Isaksen & Associates (KIA)
 - Financial Analysis



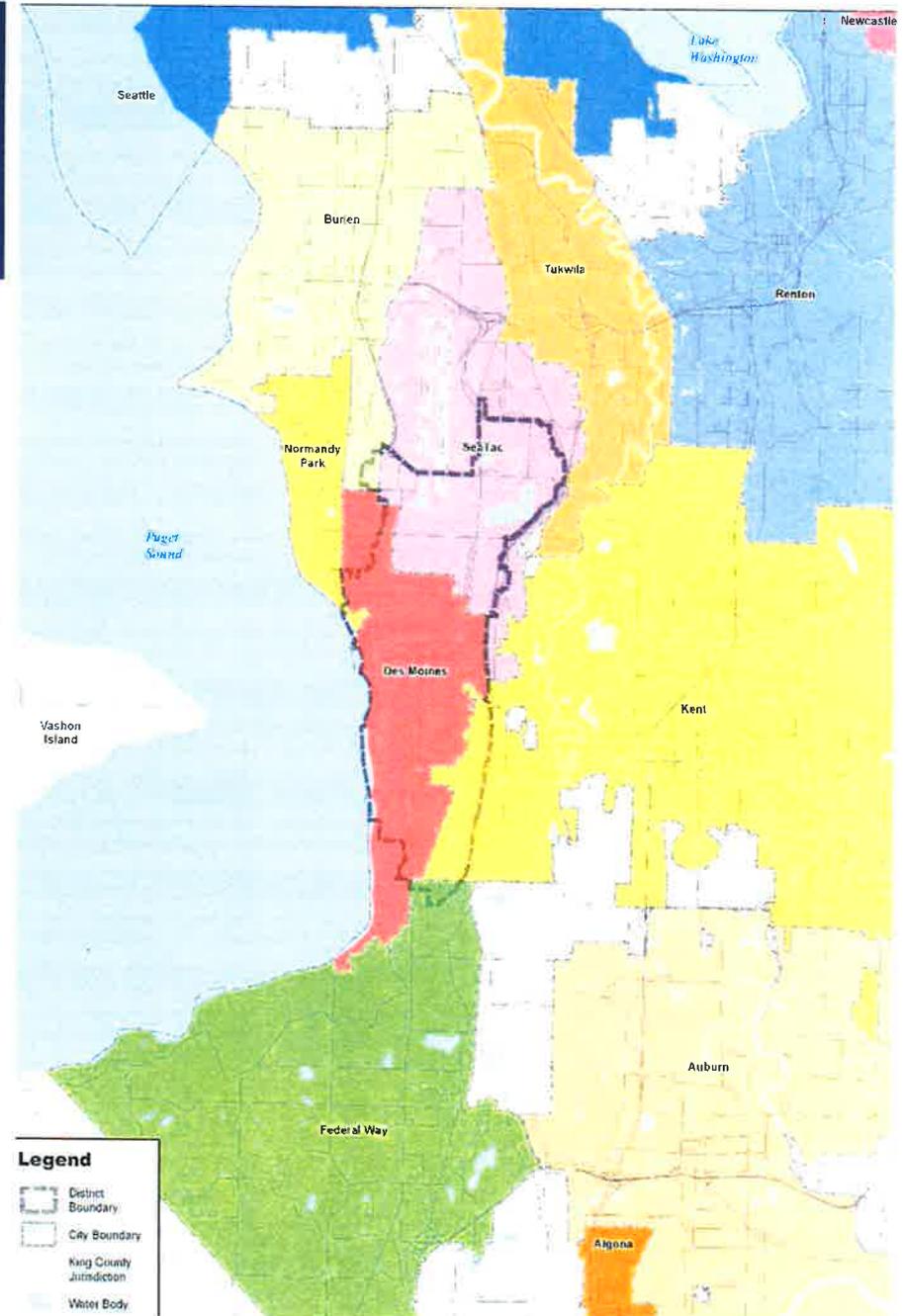
PLAN PURPOSE, STATUS, AND PROCESS

- Purpose
 - Chapter 173-240-050 of the Washington Administrative Code (WAC)
 - Chapter 90.48 of the Revised Code of Washington (RCW)
 - RCW 36.70A (Growth Management Act)
 - Produce accurate, feasible, defensible CIP
- Status
- Process
 - Review of Existing Facilities
 - Staff Interviews
 - Population and Growth Projections
 - Hydraulic Model Development and Calibration
 - Flow Projections and Identification of System Deficiencies
 - CIP Development
 - Financial Analysis



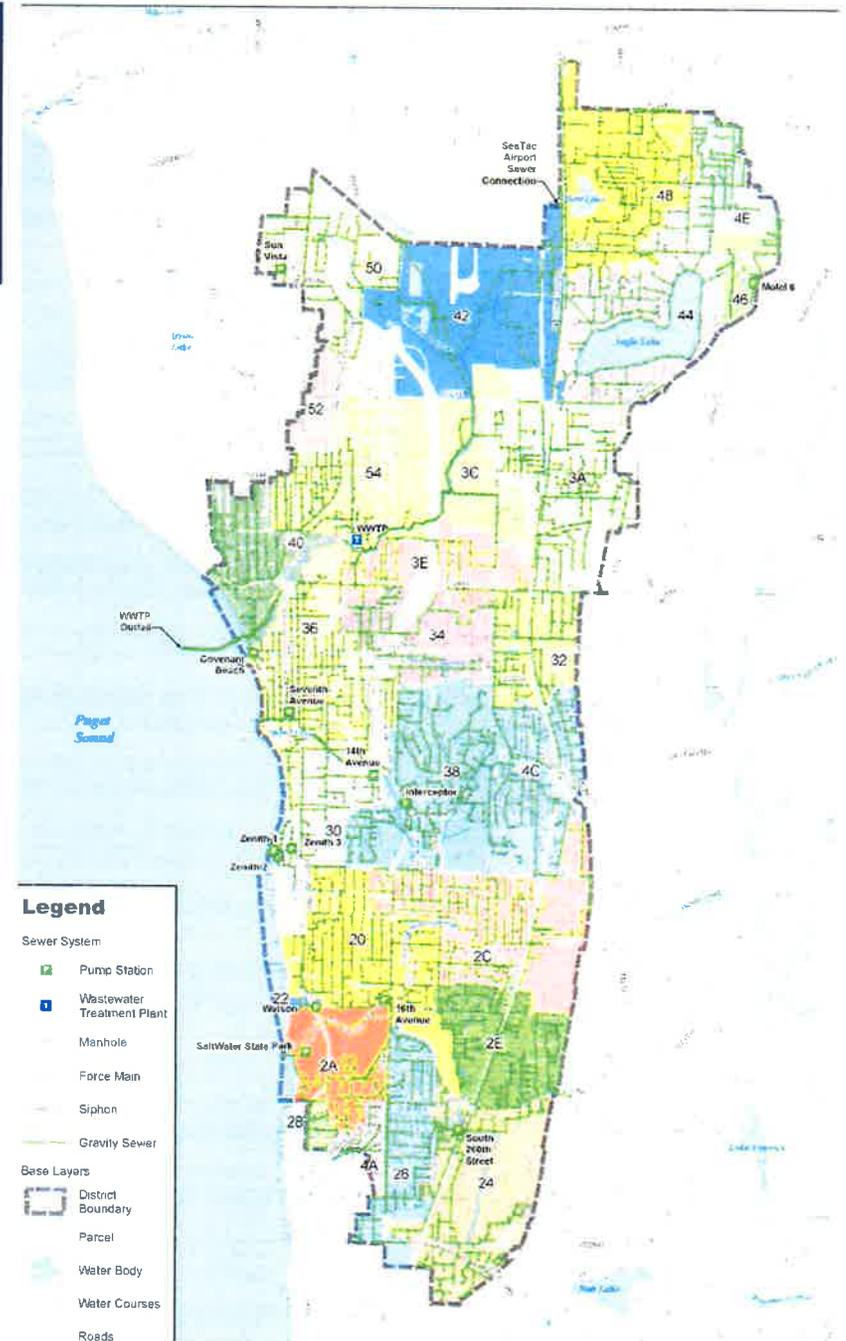
EXISTING SYSTEM

- Service Area
 - 10 square miles including - cities of Des Moines, SeaTac, Normandy Park, Burien, Federal Way, and Kent
 - 27 sewer basins
 - 2017 Population/Employment: 46,608 / 28,521
 - 2023 Population/Employment: 52,096 / 4,909
 - 2037 Population/Employment: 63,750 / 51,782



HYDRAULIC MODEL

- Hydraulics
- Population
- Flows
- Calibration
- Results
 - Gravity: $d/D > 1.0$
 - PS: largest pump out of service
 - FM: velocity > 8 fps



HYDRAULICS

- Pipes and Manholes
 - Truncated model, >8-inch pipe
 - All force mains
 - All gravity downstream of pump stations
- Pump Stations
 - Pump curves (capacity)
 - Storage volume
 - Controls



POPULATION

- Population Projections
 - Census blocks
 - Office of Financial Management
- Employment Projections
 - PSRC
- Enplaned Passengers
- Hotel Guests
 - King County Assessor



FLOWS

- Unit Flows
 - Residential
 - Employees
 - Hotels
 - Enplaned passengers
- Infiltration and Inflow
 - Per acre
 - Varies per basin
- Calibration



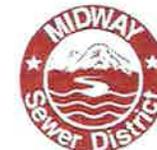
CAPITAL IMPROVEMENT PROGRAM

- Total 6-Year CIP: \$38.6M
 - Conveyance CIP: \$25M
 - WWTP CIP: \$13.6M
- Total 20-Year CIP: \$16.6M
 - Conveyance CIP: \$13.7M
 - WWTP CIP: \$2.9M



6-YEAR CIP

CIP No.	Project	Replacement	Upgrade	Expansion	Opinion of Probable Project Cost
W-1	Blower System and Diffuser Upgrades		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	\$1,200,000
W-2	Secondary Clarifier Installation		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	\$4,960,000
W-3	Gravity Thickener Upgrades and Rotary Drum Installation		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	\$1,510,000
W-4	Truck Scale Replacement		<input checked="" type="checkbox"/>		\$1,280,000
W-5	Headworks Building and Screen Replacement	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	\$1,760,000
W-6	Secondary Effluent Magmeter and Diversion Overflow Installation		<input checked="" type="checkbox"/>		\$140,000
W-7	UV Disinfection Installation			<input checked="" type="checkbox"/>	\$1,180,000
W-8	Odor Control System Replacement	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		\$1,610,000



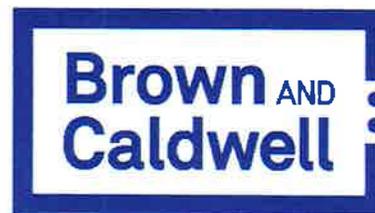
CIP No.	Project	Replacement	Upgrade	Expansion	Opinion of Probable Project Cost
C-1	12th Avenue S between S 220th Street and S 218th Street Gravity Sewer Upgrade			<input checked="" type="checkbox"/>	\$2,010,000
C-2	16th Avenue S and Kent-Des Moines Road Gravity Sewer Upgrade			<input checked="" type="checkbox"/>	\$560,000
C-3	16th Avenue S Gravity Sewer Upgrade			<input checked="" type="checkbox"/>	\$730,000
C-4	S 240th Street and 18th Avenue S Gravity Sewer Upgrade			<input checked="" type="checkbox"/>	\$450,000
C-5	18th Avenue S and S 241st Street Gravity Sewer Upgrade			<input checked="" type="checkbox"/>	\$810,000
C-6	S 251st Street and 11th Avenue S Gravity Sewer Upgrade			<input checked="" type="checkbox"/>	\$1,570,000
C-7	16th Avenue PS Gravity Sewer Upgrade			<input checked="" type="checkbox"/>	\$230,000
C-8	16th Avenue S and S 253rd Place Gravity Sewer Upgrade			<input checked="" type="checkbox"/>	\$120,000
C-9	16th Avenue S and S 257th Street Gravity Sewer Upgrade			<input checked="" type="checkbox"/>	\$160,000
C-10	16th Avenue S, S 258th, S 261st Street Gravity Sewer Upgrade			<input checked="" type="checkbox"/>	\$730,000
C-11	Driveway to WWTP Gravity Sewer Upgrade			<input checked="" type="checkbox"/>	\$1,050,000
C-12	Normandy Park Gravity Sewer Replacement	<input checked="" type="checkbox"/>			\$690,000
C-13	International Blvd. S. and S. 208th Street Sewer Upgrade	<input checked="" type="checkbox"/>			\$890,000
C-14	SR 509 Sewer Relocation	<input checked="" type="checkbox"/>			\$6,660,000
C-15	Saltwater Park Force Main Upgrade			<input checked="" type="checkbox"/>	\$650,000
C-16	14 th Avenue Pump Station Upgrades	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		\$70,000
C-17	Covenant Beach Pump Station Upgrades	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		\$260,000
C-18	Motel 6 Pump Station Upgrades	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		\$50,000
C-19	Saltwater Park Pump Station Upgrades	<input checked="" type="checkbox"/>			\$410,000
C-20	Watson Pump Station Upgrades	<input checked="" type="checkbox"/>			\$150,000
C-21	Zenith I Pump Station Upgrades		<input checked="" type="checkbox"/>		\$15,000
C-22	Zenith II Pump Station Upgrades	<input checked="" type="checkbox"/>			\$140,000
C-23	Zenith III Pump Station Upgrades	<input checked="" type="checkbox"/>			\$160,000
C-24	Interceptor Pump Station Replacement	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	\$4,150,000
C-25	16th Avenue Pump Station Replacement	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	\$2,240,000

QUESTIONS?

Thank you for your time!



1601 5th Ave, Suite 500
Seattle, WA 98101



701 Pike Street, Suite 1200
Seattle, WA 98101



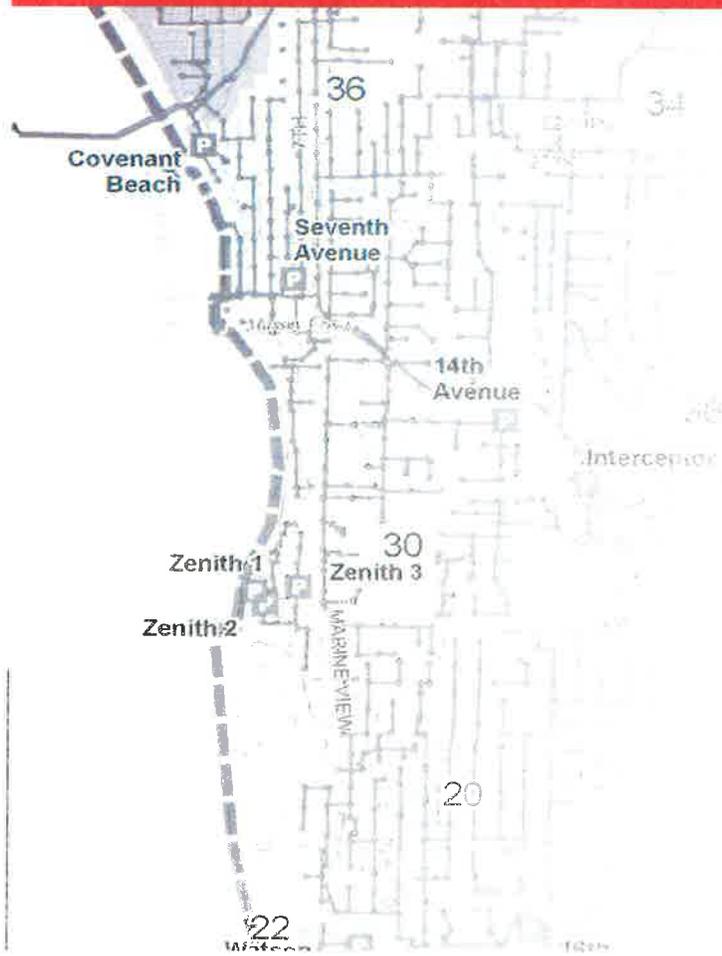
PO Box 30008
Seattle, WA 98113



MIDWAY SEWER DISTRICT

GENERAL SEWER PLAN

MARCH 2018



ES Executive Summary

ES.1 Introduction (Chapter 1)

The Midway Sewer District’s (District) General Sewer Plan Update (Plan) provides a summary of the District’s current sewage capacities; an analysis of the impact of projected growth on the District’s sewage collection, conveyance, and treatment systems; and a Capital Improvement Program (CIP) to alleviate system deficiencies. It also documents the District’s policies, operation and maintenance practices, and financial plan to implement the CIP.

The District is primarily residential with some commercial and industrial areas. The District’s service area is 10 square miles and includes portions of the cities of SeaTac, Des Moines, Normandy Park, Burien, Federal Way, and Kent. The District owns, operates, and manages all wastewater collection, conveyance, and treatment facilities within its service area. Wastewater collection facilities include gravity sewers, sewer force mains, siphons, and pump stations that convey wastewater to the District’s Des Moines Creek wastewater treatment plant (WWTP).

Over the next 20 years, the District’s population is expected to grow by over 17,100 people with employment growing by approximately 23,250. This Plan evaluates future collection and treatment facilities required to accommodate both existing and future wastewater collection and treatment needs.

This Plan complies with the Washington State Department of Ecology (DOE) requirements for General Sewer Plans (Washington Administrative Code [WAC] 173-240-050) as shown in Table E-1.

Table ES-1 General Sewer Plan Requirements per WAC 173-240-050		
WAC 173-240-050 Reference Paragraph	Description of Requirement	Location in Plan
3a	Purpose and need for proposed plan	Section 1.2
3b	Who owns, operates, and maintains system	Section 1.4
3c	Existing and proposed service boundaries	Chapter 5
3d	Layout map showing boundaries; existing sewer facilities; proposed sewers; topography and elevations; streams, lakes; and other water bodies; water systems	Figure 5-1
3e	Population trends	Chapter 3
3f	Existing domestic and/or industrial wastewater facilities within 20 miles	Figure 1-1
3g	Infiltration and inflow problems	Chapter 6
3h	Treatment systems and adequacy of such treatment	Chapter 8
3i	Identify industrial wastewater sources	Chapter 6
3j	Discussion of water systems	Chapter 2.3

Table ES-1 General Sewer Plan Requirements per WAC 173-240-050		
WAC 173-240-050 Reference Paragraph	Description of Requirement	Location in Plan
3k	Discussion of collection alternatives	Chapter 7
3l	Define construction cost and O&M costs	Chapters 10 and 11
3m	Compliance with water quality management plan	Chapter 2
3n	SEPA compliance	Appendix A

ES.2 Service Area Characteristics (Chapter 2)

The District is located approximately 1.5 miles east of the Puget Sound, 5 miles north of Federal Way, and 23 miles south of Seattle. The District provides service within the boundaries of six cities and is entirely within King County. The water resources in the District service area are the Puget Sound, Des Moines Creek and associated tributaries, Angle Lake, Massey Creek, Barnes Creek, McSorley Creek, Dalco Passage and Bow Lake. Due to the topography in and around the District’s service area, none of the District lies within the 100-year flood plain as defined by Federal Emergency Management Agency (FEMA). The District’s WWTP is located above the FEMA 100-year flood elevation.

Highline Water District (HWD) operates a potable water system for most of the District’s residents. Seattle Public Utilities (SPU) is the primary source of water. HWD also supplements its SPU water source with four local wells. These four wells (Des Moines Well, Angle Lake Well, Tyee Well, and McMicken Well) are located within the District’s service area.

ES.3 Population (Chapter 3)

The projected population for the District over the planning horizon is summarized in Table E-2. Population estimates were prepared for each of the District’s 27 sewer basins and can be divided into four categories: residential, employment, enplaned airline passenger, and hotel room. These estimates were used to generate the wastewater flows and loadings in each of the 27 sewer basins for the 6- and 20-year planning periods (see Chapters 6 and 7).

Table ES-2 District Sewer Service Area Forecasted Population Estimates				
Year	Population	Employment	Enplaned Airline Passengers	Hotel Rooms
2017	46,608	28,521	20,722,711	4,640
2023	52,096	34,909	25,234,964	5,390
2037	63,750	51,782	35,924,742	6,890

ES.4 Regulations and Policies (Chapter 4)

The District manages and operates their sewer system in accordance with state, local, and federal regulations and in accordance with the Midway Sewer District Code (MSDC), January 4, 2016 (see Appendix C). The policies and standards described in this Plan provide a framework for the planning, design, operation, and management of the sewer system to maintain the desired level of service to sewer utility customers. The policies herein are limited to the sewer system and its design and operation. The District's policies and criteria summarized in Chapter 4 include the following:

- Design and construction standards
- Pretreatment
- Sewer system extensions and connections
- Grinder pumps.

Chapter 4 also included a comprehensive review of the Midway Sewer District Code (MSDC).

ES.5 Existing Wastewater Facilities (Chapter 5)

The District owns and operates approximately 4.4 miles of force mains, 138.6 miles of gravity sewers, 1.3 miles of siphons, and 13 pump stations. The complete wastewater collection system is shown in Figure 5-1. Conveyance pipe materials vary from older installations consisting of asbestos cement, and concrete pipe to more recent installations being constructed primarily of high density polyethylene (HDPE) and polyvinyl chloride (PVC) pipe. Wastewater flows are collected and conveyed to the WWTP via a 36-inch gravity main from the east, a 24-inch gravity main from the south, and an 18-inch force main from the west. Wastewater is treated at the WWTP with primary screening, trickling filters, secondary clarifiers, and UV disinfection prior to discharge to the Puget Sound East Passage.

The District WWTP is a conventional extended aeration treatment plant. The WWTP is owned and operated by the District and is located at 1200 South 216th Street in Des Moines, WA. The WWTP is operated in accordance with the requirements of NPDES Waste Discharge Permit No. WA0020958 issued November 4, 2015 and effective December 1, 2015. The existing treatment facilities consist of a headworks with perforated-plate screens, grit removal, primary clarifiers, trickling filter/solids contact (TF/SC), secondary clarifiers, ultraviolet (UV) disinfection system, gravity thickening, anaerobic digesters, and sludge dewatering. Biosolids from the wastewater treatment process are disposed of at the Boulder Park Project (BPP) Beneficial Use Facility where the nutrient-rich organic product is land applied to agricultural lands.

ES.6 Wastewater Flow Characteristics (Chapter 6)

The unit and projected flows used to model the District's collection system are presented in Table E-3.

Table ES-3 Projected Wastewater Flows

Year	Sewered Residential Population⁽¹⁾	Employment Population	Hotel Rooms⁽²⁾	Daily Enplaned Passengers⁽³⁾	Average Annual Flow (MGD)	Maximum Month Flow (MGD)	Peak Day Flow (MGD)	Peak Hour Flow (MGD)
Existing (2016)	44,148	26,941	4,640	54,754	4.24	6.03	13.57	16.55
2023	52,096	34,909	5,390	69,137	5.15	7.31	16.81	20.17
2037	63,750	51,782	6,890	98,424	6.69	9.50	19.80	23.41

Notes:

- 1) Sewered residential population includes only the basins discharging to the WWTP, and assumes 205 septic tanks are in service in 2016 and decrease linearly until all septic tanks are decommissioned in 2037.
- 2) Hotel rooms are primarily present in Basins 3A, 42, 44, and 48.
- 3) Enplaned passengers are people boarding an airplane per day. This number does not include passengers getting off airplanes.
- 4) Sewered area is based on sewered parcels that discharged to the WWTP in 2016 and increases to the District service area in 2037 proportional to the sewered residential population. Basins that do not flow to the WWTP are not included.

ES.7 Wastewater Conveyance Analysis (Chapter 7)

Hydraulically modeling the District's wastewater conveyance system is a critical component in determining the ability of the existing infrastructure to accommodate future growth. The District's conveyance system was analyzed using a truncated model. In addition to pump stations, only trunk and interceptor gravity mains larger than 8-inches were modeled. This approach allowed for an accurate representation of the most critical components of the District's conveyance system while analyzing both gravity and pressure systems simultaneously. The system was analyzed for existing conditions (2016), a 6-year planning horizon (2023), and a 20-year planning horizon (2037).

InfoSWMM 12.0 by Innovyze was the hydraulic modeling software used to model the District's sewer system. InfoSWMM 12.0 is a dynamic hydraulic model that uses the EPA SWMM 5.0 computer program for hydraulic analysis calculations. The model is designed specifically for modeling urban sanitary and combined sewer systems. The current version operates within the ArcGIS (ArcMap) platform. Model files were imported from the District's GIS data and supplemented with record drawings and pump station data. The model can be expanded in the future, as needed.

For gravity sewers, manhole rim and invert elevations were obtained primarily from the GIS data. Record drawings were also used to add recently constructed piping into the model, and to add or confirm elevations as necessary. Pump station elevations, wet well dimensions, pump curves, and pump operating points were primarily imported from record drawings and data provided by the District. Manufacturer pump curves were used to simulate pump operation. Depth to volume relationships and pump on/off set points were also added. Modeled pumping rates were compared against factory pump curve data to ensure model accuracy and that the model outputs were within a range of reasonably expected values.

ES.8 Wastewater Treatment Plant (Chapter 8)

The WWTP capacity was evaluated at the 6-year and 20-year planning horizons to determine its ability to treat the incoming wastewater at the predicted loadings while meeting the effluent limitations. Flow projections from the InfoSWMM model were used as inputs in the WWTP capacity evaluation. Projected BOD and TSS loadings were developed based on the projected flows and historical BOD and TSS concentrations in data collected at the WWTP influent.

Between 2014 and 2016 the Des Moines Creek WWTP received an average daily flow that ranged from 3.55 million gallons per day (MGD) in July 2015 to 6.97 MGD recorded in December 2015. This range never exceeds 85 percent of the maximum month design flow (MMDF) of 9 MGD. Raw influent wastewater quality samples are collected three times per week at the WWTP headworks. Samples are collected during a 24-hour period and combined to produce a 24-hour composite sample representing all sources including residential, commercial, institutional, industrial, and infiltration and inflow.

The design criteria for BOD at the WWTP are expressed in terms of average annual and maximum month (MM) BOD loading in pounds per day (lbs/day). The WWTP permitted flows and waste loads must not exceed a MMDF of 9 MGD and a MM BOD and TSS of 18,770 lbs/day and 15,010 lbs/day, respectively. Annual average BOD loading is the average of the WWTP's monthly loadings during one calendar year.

The design criterion for TSS at the WWTP is expressed as MM TSS loading in lbs/day. The existing WWTP TSS average MM design criterion is limited to 15,010 lbs/day as reported in Section S4.A of the District NPDES Permit. The WWTP TSS effluent limits are set to an average monthly limit of 2,252 lbs/day and an average weekly limit of 3,378 lbs/day. Average annual TSS loading is an average of the monthly loading rates during one calendar year. Table E-4 summarizes the projected flows and loadings at the WWTP.

Table ES-4 Projected Influent Flows, BOD, and TSS Loads for Des Moines Creek WWTP				
2023				
Parameter	Average Annual	MM	Peak Day	Peak Hour
Flow ¹ (MGD)	5.15	7.31	16.81	20.17
BOD (lbs/day)	13,910	15,161	18,100	-
TSS (lbs/day)	10,990	12,420	14,660	-
2037				
Flow ¹ (MGD)	6.69	9.50	19.80	23.41
BOD (lbs/day)	18,360	20,040	23,910	-
TSS (lbs/day)	14,510	16,390	19,350	-
Notes:				
1) Flow projections as reported in Chapter 6.				

The values in Table E-4 were used to assess the process capacity and hydraulic capacity of the WWTP. The process capacity was assessed by comparing typical operating ranges for various treatment processes to determine if the facility operates within the typical range. The WWTP evaluation resulted in the identification of several improvements that were categorized either as being O&M, redundancy, or capacity related.

ES.9 Wastewater Reclamation and Reuse (Chapter 9)

This chapter discusses the possible production of reclaimed water for the District. The District has evaluated potential customers for reclaimed water produced at the Des Moines Creek WWTP and has not found substantial demand within the District collection system area. Furthermore, the Des Moines Creek WWTP is not configured to produce reclaimed water and would require costly upgrades to implement nutrient removal and tertiary filtration to produce reclaimed water. Therefore, unless future regulations change the treatment requirements for the Des Moines Creek WWTP, it has been determined that production and distribution of reclaimed water would not be cost feasible or cost effective over the course of the 20-year planning horizon of this Plan.

ES.10 Operations and Maintenance (Chapter 10)

The District has a staff of 25 full time equivalents (FTEs) managed by the General Manager. The General Manager implements the policies established by the Board of Commissioners (five Commissioners elected by residents within the District’s corporate boundary). District personnel maintain 4.4 miles of force mains, 138.6 miles of gravity sewers, 1.3 miles of siphons, 13 pump stations, a 48-inch diameter outfall and a 300-foot-long diffuser section to the Puget Sound East Passage.

The District's operations staff of 17, with seven dedicated to the collection system and 10 to the WWTP, operate and maintain the District's infrastructure to meet the needs of their customers and the requirements of State, Federal, and local regulations. Where critical operation and maintenance issues arise, the District has been proactive in taking steps to address these issues. The District is also continuously proactive in identifying improvements as they arise and incorporating them into their CIP in Chapter 11 of this Plan.

The operation and maintenance staffing assessment herein identified the potential need to increase the number of FTEs as flows increase at the WWTP. As the maximum month flows at the WWTP increase over the 20-year planning period, approximately three additional FTEs will be required. This increase in FTEs is subject to change shall there be significant changes in equipment and technology used at the WWTP. Whereas the collection system and pump station staffing assessment determined that the District's collection system staffing is slightly below average per 100,000 linear feet of pipe, it is adequate for the District's needs during the 20-year planning horizon of this Plan.

ES.11 Capital Improvements Program (Chapter 11)

The primary goal of this Plan is the preparation of the 6-year and 20-year CIP. The 6-year and 20-year CIPs are provided in Tables E-5 and E-6, respectively. Actual costs can and will differ from the opinions of probable costs. Volatility in the bidding climate, the number of contractors bidding on a project, and their approach to bidding and completing the work will all impact actual project costs.

Table ES-5 Opinion of Probable Project Costs, 6-Year CIP (2017-2023)

CIP No.	Project	Replacement	Upgrade	Expansion	Opinion of Probable Project Cost
C-1	12th Avenue S between S 220th Street and S 218th Street Gravity Sewer Upgrade			<input checked="" type="checkbox"/>	\$2,010,000
C-2	16th Avenue S and Kent-Des Moines Road Gravity Sewer Upgrade			<input checked="" type="checkbox"/>	\$560,000
C-3	16th Avenue S Gravity Sewer Upgrade			<input checked="" type="checkbox"/>	\$730,000
C-4	S 240th Street and 18th Avenue S Gravity Sewer Upgrade			<input checked="" type="checkbox"/>	\$450,000
C-5	18th Avenue S and S 241st Street Gravity Sewer Upgrade			<input checked="" type="checkbox"/>	\$810,000
C-6	S 251st Street and 11th Avenue S Gravity Sewer Upgrade			<input checked="" type="checkbox"/>	\$1,570,000
C-7	16th Avenue PS Gravity Sewer Upgrade			<input checked="" type="checkbox"/>	\$230,000
C-8	16th Avenue S and S 253rd Place Gravity Sewer Upgrade			<input checked="" type="checkbox"/>	\$120,000
C-9	16th Avenue S and S 257th Street Gravity Sewer Upgrade			<input checked="" type="checkbox"/>	\$160,000
C-10	16th Avenue S, S 258th, S 261st Street Gravity Sewer Upgrade			<input checked="" type="checkbox"/>	\$730,000
C-11	Driveway to WWTP Gravity Sewer Upgrade			<input checked="" type="checkbox"/>	\$1,050,000
C-12	Normandy Park Gravity Sewer Replacement	<input checked="" type="checkbox"/>			\$690,000
C-13	International Blvd. S. and S. 208th Street Sewer Upgrade	<input checked="" type="checkbox"/>			\$890,000
C-14	SR 509 Sewer Relocation	<input checked="" type="checkbox"/>			\$6,660,000
C-15	Saltwater Park Force Main Upgrade			<input checked="" type="checkbox"/>	\$650,000
C-16	14 th Avenue Pump Station Upgrades	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		\$70,000
C-17	Covenant Beach Pump Station Upgrades	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		\$260,000
C-18	Motel 6 Pump Station Upgrades	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		\$50,000
C-19	Saltwater Park Pump Station Upgrades	<input checked="" type="checkbox"/>			\$410,000
C-20	Watson Pump Station Upgrades	<input checked="" type="checkbox"/>			\$150,000

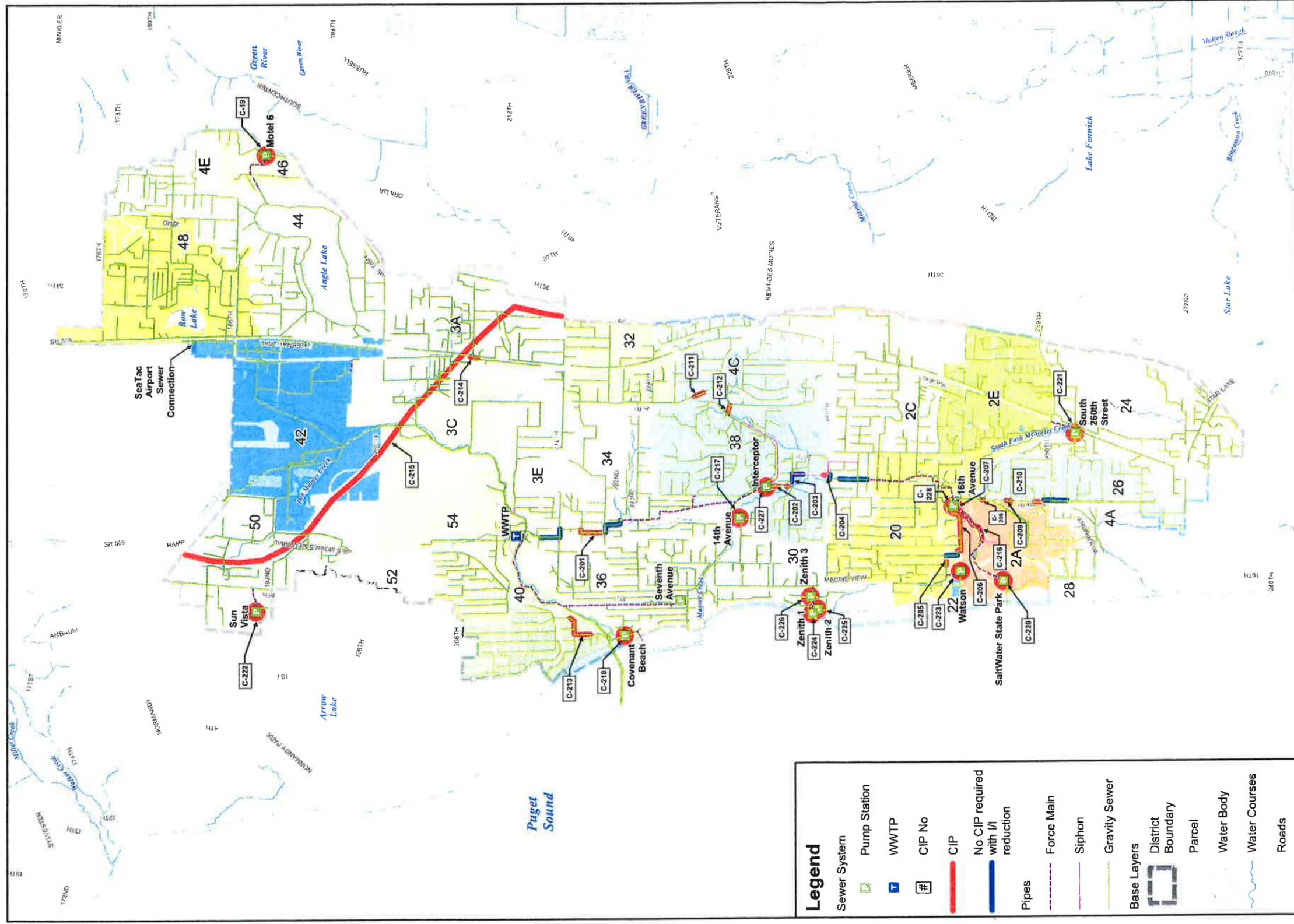
Table ES-5 Opinion of Probable Project Costs, 6-Year CIP (2017-2023)					
CIP No.	Project	Replacement	Upgrade	Expansion	Opinion of Probable Project Cost
C-21	Zenith I Pump Station Upgrades		<input checked="" type="checkbox"/>		\$15,000
C-22	Zenith II Pump Station Upgrades	<input checked="" type="checkbox"/>			\$140,000
C-23	Zenith III Pump Station Upgrades	<input checked="" type="checkbox"/>			\$160,000
C-24	Interceptor Pump Station Replacement	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	\$4,150,000
C-25	16th Avenue Pump Station Replacement	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	\$2,240,000
W-1	Blower System and Diffuser Upgrades		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	\$1,200,000
W-2	Secondary Clarifier Installation		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	\$4,960,000
W-3	Gravity Thickener Upgrades and Rotary Drum Installation		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	\$1,510,000
W-4	Truck Scale Replacement		<input checked="" type="checkbox"/>		\$1,280,000
W-5	Headworks Building and Screen Replacement	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	\$1,760,000
W-6	Secondary Effluent Magmeter and Diversion Overflow Installation		<input checked="" type="checkbox"/>		\$140,000
W-7	UV Disinfection Installation			<input checked="" type="checkbox"/>	\$1,180,000
W-8	Odor Control System Replacement	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		\$1,610,000
Total Opinion of Probable Project Cost					\$38,600,000

Table ES-6 Opinion of Probable Project Costs, 20-Year CIP (2023-2037)					
CIP No.	Project	Replacement	Upgrade	Expansion	Opinion of Probable Project Cost
C-101	24th Avenue S Gravity Sewer Upgrade			<input checked="" type="checkbox"/>	\$240,000
C-102	22nd Place S Gravity Sewer Upgrade			<input checked="" type="checkbox"/>	\$250,000
C-103	14th Avenue Pump Station Replacement	<input checked="" type="checkbox"/>			\$800,000
C-104	Covenant Beach Pump Station Replacement	<input checked="" type="checkbox"/>			\$1,450,000
C-105	Motel 6 Pump Station Replacement	<input checked="" type="checkbox"/>			\$1,660,000
C-106	Saltwater Park Pump Station Replacement	<input checked="" type="checkbox"/>			\$1,370,000
C-107	260th Street Pump Station Replacement	<input checked="" type="checkbox"/>			\$1,660,000
C-108	Sun Vista Pump Station Replacement	<input checked="" type="checkbox"/>			\$830,000
C-109	Watson Pump Station Replacement	<input checked="" type="checkbox"/>			\$1,110,000
C-110	Zenith I Pump Station Replacement	<input checked="" type="checkbox"/>			\$1,180,000
C-111	Zenith II Pump Station Replacement	<input checked="" type="checkbox"/>			\$1,110,000
C-112	Zenith III Pump Station Replacement	<input checked="" type="checkbox"/>			\$1,070,000
W-101	Grit System Upgrade		<input checked="" type="checkbox"/>		\$2,810,000
W-102	Trickling Filter Pump Installation		<input checked="" type="checkbox"/>		\$350,000
W-103	Concrete Influent Control Structure	<input checked="" type="checkbox"/>			\$410,000
Total Opinion of Probable Project Cost					\$16,600,000

Implementation of the projects identified in Tables E-5 and E-6 will allow the District to address the capacity, obsolescence, O&M, and redundancy limitations identified within the District's wastewater system based on the projected flows and loads over the 20-year planning horizon. The opinions of probable cost herein are based on our perception of current conditions at the project location. This opinion reflects our professional opinion of construction costs at this time and is subject to change as the project design matures.

ES.12 Financial Program (Chapter 12)

Chapter 12, prepared by Katy Isaksen & Associates, summarizes the financial program of the sewer utility including financial history, outstanding debt, capital funding sources and a financing plan for the capital improvements identified in Chapter 11. The District is in good financial health, and it is recommended that the annual rate increases continue, and the CIP costs be supplemented with reserves. The District could consider borrowing in 2020 and 2023 for upgrades and enhancements to the WWTP facilities. With this approach, the \$1.00 per month annual rate increase, supplemented by \$16.3 million in reserves to fund the CIP, will allow the District to have at the end of 2023 an ending balance of \$10.5 million available for system improvements in addition to cash flow and emergency reserves of \$7 million.



P:\Mapping\Maps_Generated\MidwaySewerDistrict\11-3 20-Year CIP with I/I Reduction 11x17.mxd 2/15/2018 10:48:00 AM

Sewer System & Basins: Midway Sewer District
 GIS Base data: King County
 Data sources supplied may not reflect current or actual conditions. This map is a geographic representation based on information available. It does not represent survey data. No warranty is made concerning the accuracy, currency, or completeness of data depicted on this map.
 BPC Consultants LLC, assumes no responsibility for the validity of any information presented herein, nor any responsibility for the use or misuse of the data.



20-Year CIP with I/I Reduction
 General Sewer Plan
 Midway Sewer District
 March 2018



Figure 11-3

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Timothy A. George, City Attorney
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Des Moines, WA 98198
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Memo

Date: April 12, 2018
To: Environment Committee
From: Tim George, City Attorney
Re: Redondo Artificial Reef Project Update

The Washington Scuba Alliance (501c3) was awarded \$500,000 by the state of Washington for the purposes of constructing an artificial reef project at Redondo Beach in Des Moines. The Alliance provided a presentation to the Des Moines City Council about the project and the feedback from the Council was positive. The Council then passed a motion directing staff to contact the Department of Natural Resources regarding the next steps for the City to obtain a lease of the DNR owned tidelands that would be home to the underwater project.

City staff spoke with DNR about the request by the Washington Scuba Alliance for the City to lease tidelands for a dive location and below are some details relayed from DNR:

1. Scuba Alliance had submitted a Joint Aquatic Resources Permit Application (JARPA) for the project which was rejected as incomplete by DNR.
2. DNR is now requiring City to be applicant. (Reasons given related to Scuba Alliance lack of insurance and Alliance not being permanent entity like the City).
3. Other permits will be needed in addition to JARPA.
4. DNR needs completed JARPA before they can prepare a draft tidelands lease.
5. City will need to be leaseholder per DNR. (same reasons why City needs to be applicant)
6. Lease may be cost free as tidelands will be for public use but DNR will have insurance requirements and many other provisions regarding maintenance/restoration etc. that are common to DNR leases.

It is anticipated that staff time and potentially outside consultant time will be necessary to prepare the required permit applications. In addition to the time and cost of staff time, there will also be permit fees. It is unknown at this point how many permits will be required and what the fees will be.

Staff has spoken with the Scuba Alliance and they are aware that they will be responsible for staff time and permitting costs related to this project. They are in the process of developing a detailed budget which will include staff time, permitting costs, and potential consulting fees. Staff will be meeting with representatives of the Alliance to discuss these issues further.

In order to receive funding from the state, the Alliance must provide the state with a detailed budget for the project and proof of "site control." This may be in the form of a "Management Agreement" or some other acknowledgment in the lease that the Alliance has the ability to make modifications to the lease area. These details will need to be worked out with DNR during the lease

In summary, this is a complicated project with a lot of moving parts. It is comparable to a capital project for the acquisition and construction of a new City park. The Committee will be updated frequently throughout this process.