EAST BAY MUNICIPAL UTILITY DISTRICT

WASTEWATER DEPARTMENT

Sewer System Management Plan

Effective Date:

April 9, 2025

Approved by:

EBMUD Board of Directors

at April 8, 2025 Board Meeting

Last Updated: April 29, 2025

EBMUD

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ACRONYMS

CIP	Capital Improvement Program
CIWQS	California Integrated Water Quality System
CMMS	computerized maintenance management system program
CSTAC	Collection Systems Technical Advisory Committee
DCS	Distributed Control System
EBMUD	East Bay Municipal Utility District
ESD	Environmental Services Division
FOG	fats, oil, or grease
FSE	food service establishment
GCD	grease control device
GIS	Geographic Information System
GPS	Global Positioning System
I&I or I/I	inflow and infiltration
IDAP	Interceptor Damage Assessment Project
LRO	Legally Responsible Official
LSD	Laboratory Services Division
MGD	million gallons per day
MWWTP	Main Wastewater Treatment Plant
MUD Act	Municipal Utility District Act of the State of California
NPDES	National Pollutant Discharge Elimination System
PM	Preventive Maintenance
RCO	Regulatory Compliance Office
RWQCB	Regional Water Quality Control Board
SD-1	Special District No. 1
SMART	specific, measurable, achievable, relevant, and time-bounded

ACRONYMS (con't)

SO	Stipulated Order
SOP	standard operating procedure
SSMP	Sewer System Management Plan
SSO	sanitary sewer overflow
SWRCB	State Water Resources Control Board
WDR	Waste Discharge Requirements
WHS	Workplace Health and Safety
WED	Wastewater Engineering Division
WTD	Wastewater Treatment Division
WWF	wet weather facility

Introduction

East Bay Municipal Utility District (EBMUD) manages, operates and maintains a sanitary sewer system along the east shore of San Franciso Bay and is required to develop a Sewer System Management Plan (SSMP) pursuant to the Statewide Waste Discharge Requirements (WDR) General Order for Sanitary Sewer Systems, set forth by the State Water Resources Control Board (SWRCB) Order 2022-0103-DWQ.

Table 1.1 below identifies the elements of the SSMP that are included in this version of the SSMP. Implementation of the SSMP is managed by the SSMP Coordinator, designated as the Wastewater Treatment Superintendent for Remote Operations, under the direction of the Wastewater Treatment Division (WTD) Manager.

Table 1.1 – Elements of the SSMP

Element No.	Element Name
1	SSMP Goal and Introduction
2	Organization
3	Legal Authority
4	Operation and Maintenance Program
4.1	Updated Map of Sanitary Sewer System
4.2	Preventive Operation and Maintenance Activities
4.3	Training
4.4	Equipment Inventory
5	Design and Performance Provisions
6	Spill Emergency Response Plan
7	Sewer Pipe Blockage Control Program
8	System Evaluation, Capacity Assurance, and Capital Improvements
9	Monitoring, Measurement, and Program Modifications
10	Internal Audits
11	Communication Program

Goals

EBMUD's goals for the SSMP are to:

1. Properly manage, operate, and maintain all parts of the sanitary sewer system.

2. Provide adequate capacity to convey flows to the Main Wastewater Treatment Plant (MWWTP).
3. Minimize frequency of spills from EBMUD's sanitary sewer system.
4. Mitigate impact of spills from EBMUD's sanitary sewer system.

EBMUD develops specific SSMP goals that follow the SMART criteria (i.e., specific, measurable, achievable, relevant, and time-bounded) and considers the following:

- EBMUD Strategic Plan;
- Previous year's SSMP program performance and areas identified for improvements;
- Legal and other applicable requirements;
- Best management practices; and
- Financial and operational requirements.

The goals are reviewed and updated as needed.

Sewer System Asset Overview

EBMUD Wastewater Treatment System

Special District No. 1 (SD-1), a separate district within EBMUD governed by the same Board of Directors, was established in 1944 and is administered by the EBMUD Wastewater Department. The MWWTP treats the domestic, commercial, and industrial wastewater for an 83-square mile area which includes the cities of Alameda, Albany, Berkeley, Emeryville, Oakland, Piedmont, and Stege Sanitary District, which includes El Cerrito, Kensington, and part of Richmond. The service area encompasses portions of Alameda and Contra Costa counties. The community collection systems, also referred to as satellites, are individually owned and operated, and only through community sewer connections are discharges allowed to EBMUD's collection system. As such, all sewer laterals (upper and lower) are generally the responsibility of the respective property owner and connections to community collections systems are managed by the appropriate satellite agency. Approximately 1,600 miles of community-owned sewers discharge to EBMUD's collection system. The population presently served by the Wastewater Department is approximately 740,000.

EBMUD's sanitary sewer system is a "separate system" and does not divert storm water to the system. EBMUD does accept approximately 0.5 million gallons per day (MGD) of dry weather flows of urban runoff at the Ettie Street Pump station in West Oakland, managed by Alameda County Public Works Agency for the purpose of

treating this water at the MWWTP. Diversion of dry weather flows is stopped during storm events since storm water is not accepted. Diversion of the urban flows from the Ettie Street Pump Station during dry weather is outlined in Section XVII of the 2014 Consent Decree "Urban Runoff Diversion Project."

Collection System

EBMUD's collection system includes approximately 29 miles of interceptor sewer pipeline, 8 miles of force mains, 5 siphons, 14 low headroom structures (pipes with reduced height to avoid obstructions that can act as a siphon in high flows), and 15 pump stations. The interceptors, ranging in size from 12 inches to 9 feet in diameter, parallel the Bay shoreline and extend into portions of Albany, Berkeley, Emeryville, Oakland and Alameda. The 15 pump stations, ranging in capacity from 1.3 MGD to 60 MGD, lift wastewater throughout the collection system as it travels to the MWWTP. Figure 1.1 below illustrates EBMUD's service area and the facilities that it owns and operates. Up-to-date maps of the sanitary sewer system showing gravity line segments and manholes, pumping facilities, force mains and valves are described in SSMP Element 4.1.

Wastewater Treatment Facilities

The MWWTP, located near the foot of West Grand Avenue in Oakland (adjacent to the San Francisco-Oakland Bay Bridge approach), is designed to provide primary treatment for a flow of up to 320 MGD and secondary treatment for a maximum flow of 168 MGD. Average daily wastewater influent flow is 55 MGD on an annual basis; however, this value fluctuates based on the amount of rain and inflow and infiltration (I&I or I/I) occurring each year. Treatment processes include prechlorination, screening, grit removal, scum separation, primary sedimentation, secondary treatment using high purity oxygen activated sludge, final clarification, sludge digestion, and power cogeneration utilizing digester gas. The treated effluent is disinfected and dechlorinated before being discharged into San Francisco Bay, approximately one mile off the East Bay shore.

The Wastewater Department also operates three wet weather facilities (WWFs) that are currently used to store and manage elevated flows during wet weather events. Due to the unique nature of SD-1's collection system which receives flows from community collections systems managed by other agencies, an ongoing challenge is conveying and treating large amounts of I&I during storm events. The WWFs are used when I&I exceeds the ability of the MWWTP to handle the incoming flows. I&I reduction is largely under the purview of the satellite agencies and is currently being managed under the 2014 Consent Decree.

Data on the collection system levels and flows and MWWTP and WWF unit processes are displayed and monitored in the Distributed Control System (DCS). This data is stored in data historians for later retrieval.

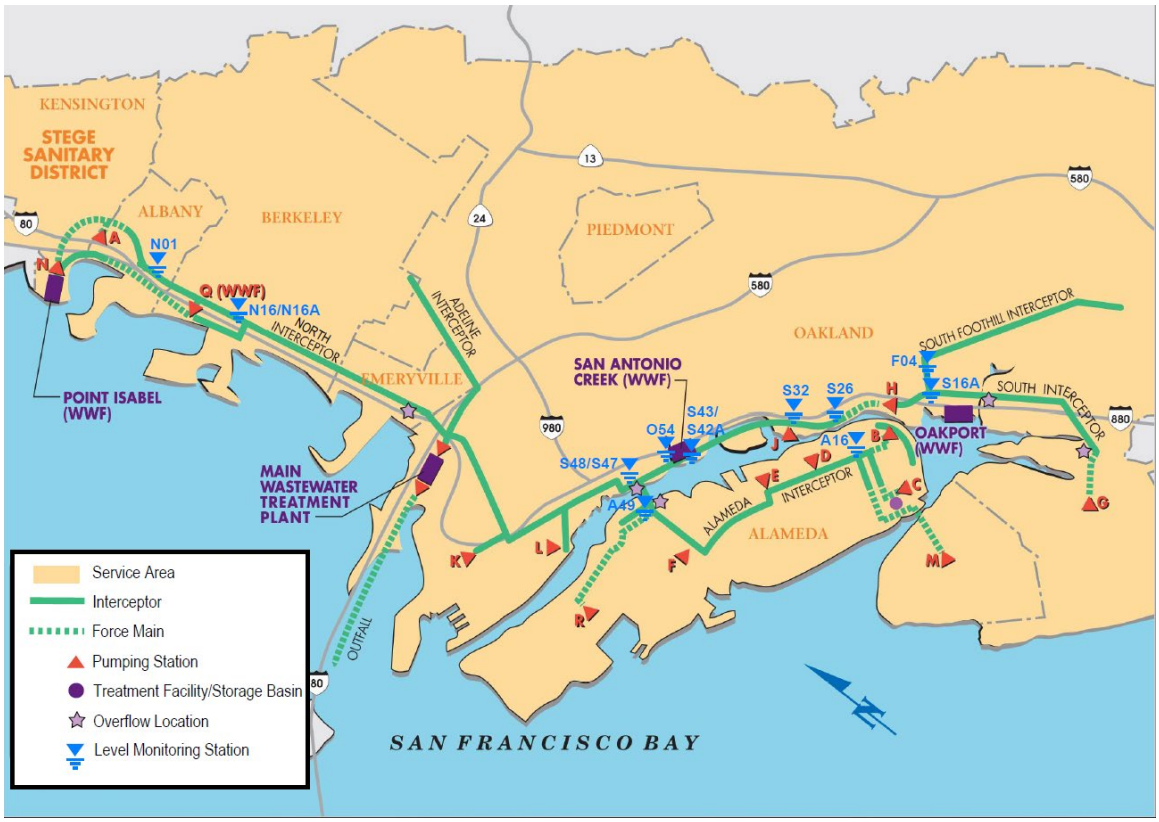

Figure 1.1 - EBMUD Wastewater Service Area and Interceptor System

SSMP Update Schedule

The SSMP is updated every six years after the date of the last Plan Update, or more frequently as needed. Individual elements within the SSMP, or documents referenced by the SSMP, are also updated based on audit findings or in the event of a spill or sanitary sewer overflow (SSO) or other event that triggers a review of the SSMP or referenced documents (e.g., Spill Emergency Response Plan).

Internal audits are performed by the SSMP Coordinator and team on an annual basis to determine relevance and effectiveness of each element of the SSMP. Audits include a review of progress on deficiencies identified in the previous year audit report. Annual audits are compiled for submittal to the Regional Water Quality Control Board

(RWQCB) through the California Integrated Water Quality System (CIWQS) every three years.

Whenever a significant milestone or action item is identified to address prevention of sewer spills and it requires a revision of the SSMP, the update will be made to the SSMP no later than one year of the determination. The implementation of the milestone or action item will begin sooner and will be tracked through audit corrective actions and/or corrective actions resulting from incidents like an SSO. SSMP coordination meetings are conducted a minimum of four times per year to review progress on SSMP goals and track progress on identified corrective actions.

Authorized Representative

The Director of Wastewater is the Legally Responsible Official (LRO) responsible for managing the sanitary sewer system and is authorized to make managerial decisions regarding the operation of the system. Additionally, the LRO has the duty of making major capital improvement recommendations to ensure long-term environmental compliance related to the sanitary sewer system. The LRO is also responsible for designating the SSMP Coordinator and assigning staff from the Environmental Services Division (ESD), the Laboratory Services Division (LSD), the Wastewater Engineering Division (WED), and the WTD to implement the SSMP. The name, phone number and email address for the LRO is reported in Table 2.2 below.

Responsibilities within the SSMP

The SSMP Coordinator is responsible for the overall implementation, management, and updating of the SSMP. Staff who are responsible for implementing specific requirements within each SSMP Element are summarized in Table 2.1. See also the organizational chart in Figure 2.1. A listing of the names and phone numbers of each person on the organizational chart is included in Table 2.2.

Chain of Communication

The chain of communication for responding to and reporting SSOs is contained in EBMUD's Spill Emergency Response Plan which is Appendix H of the Wastewater Emergency Preparedness Program Plan and Element 6 of the SSMP. The person responsible for reporting spills to the State and Regional Water Boards is the Regulatory Compliance Office (RCO) Environmental Compliance Specialist.

Table 2.1 – SSMP Organization Responsibilities

Element		Division and Position
1	SSMP Goal and Introduction	WTD – SSMP Coordinator
2	Organization	WTD – SSMP Coordinator
3	Legal Authority	Wastewater Department Director
4	Operation and Maintenance Program	
	4.1 Updated Map of Sanitary Sewer System	WED – Wastewater Planning Senior Civil Engineer
	4.2 Preventive Operation and Maintenance Activities	WTD – Maintenance Superintendent
	4.3 Training	WED – SSMP Coordinator
	4.4 Equipment Inventory	WTD – Maintenance Superintendent
5	Design and Performance Provisions	WED – Wastewater Design Senior Civil Engineer
6	Spill Emergency Response Plan	WTD – Division Manager
7	Sewer Pipe Blockage Control Program	ESD – Supervising Wastewater Control Representative
8	System Evaluation, Capacity Assurance, and Capital Improvements	Wastewater I/I Control Program Senior Civil Engineer
9	Monitoring, Measurement, and Program Modifications	WTD – SSMP Coordinator
10	Internal Audits	WTD – SSMP Coordinator
11	Communication Program	WTD – SSMP Coordinator

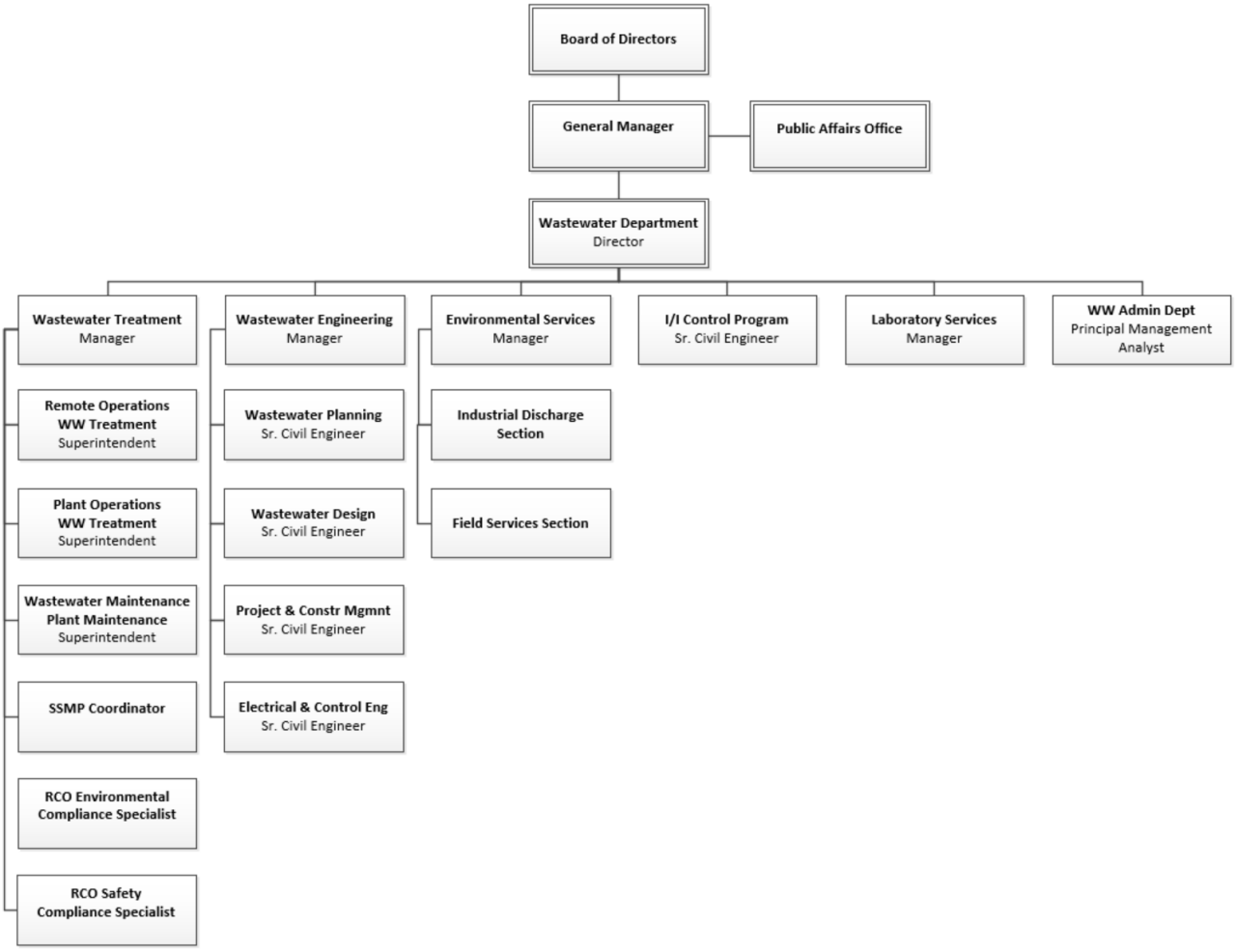

Figure 2.1 – SSMP Organizational Chart

Table 2.2 – SSMP Organization Contact Information

Name	Title	Desk Phone	Cell Phone	Email
Amit Mutsuddy	Wastewater Department Director / Legally Responsible Official	510-287-1149	510-449-7139	amit.mutsuddy@ebmud.com
Vacant – Superintendent Acting	Wastewater Treatment Division Manager	510-287-1407		
John Kyser	Wastewater Maintenance Superintendent	510-287-1450	510-377-1959	john.kyser@ebmud.com
Eric Fukuda	Remote Operations Superintendent/SSMP Coordinator	510-287-7213	510-774-6121	eric.fukuda@ebmud.com
Robert Starke	Shift Supervisor (Remote)	510-287-1498	510-821-1687	robert.starke@ebmud.com
Kevin Dickison	Plant Operations Superintendent	510-287-1502	510-453-7377	kevin.dickison@ebmud.com
Chris Aman	Shift Supervisor (Day)	510-287-1457	510-774-6246	christopher.aman@ebmud.com
Mark Schmitz	Shift Supervisor (Swing)	510-287-2043	510-385-6146	mark.schmitz@ebmud.com
Robert Spencer	Shift Supervisor (Grave)	510-287-1522	510-774-5972	robert.spencer@ebmud.com
Rebecca Overacre	Asset Management Program Manager	510-287-1251		rebecca.overacre@ebmud.com
Chris Dembiczak	RCO Environmental Compliance Specialist	510-287-0509	925-640-4738	chris.dembiczak@ebmud.com
Alexander Neuhaus	RCO Workplace Health & Safety Specialist	510-287-0189	510-867-7679	alexander.neuhaus@ebmud.com
Gary Warren	Wastewater Engineering Division Manager	510-287-1980		garin.warren@ebmud.com
Matt Hoeft	Wastewater Planning Senior Civil Engineer	510-287-0214		matthew.hoeft@ebmud.com
Deborah Russell	Wastewater Design Senior Civil Engineer	510-287-1529		deborah.russell@ebmud.com
Brian Dunstan	Project & Construction Management Senior Civil Engineer	510-287-7037	510-609-5353	brian.dunstan@ebmud.com
Angela El-Telbany	Project & Construction Management Senior Civil Engineer	510-287-1685	510-714-9500	angela.el-telbany@ebmud.com
Chris Dinsmore	I/I Control Program Senior Civil Engineer	510-287-0522	510-918-8353	christopher.dinsmore@ebmud.com
Alicia Chakrabarti	Environmental Services Division Manager	510-287-2059	510-912-8240	alicia.chakrabarti@ebmud.com
Adam Kern	Industrial Dischargers Supervising Wastewater Control Representative	510-287-1622	510-847-9773	adam.kern@ebmud.com
Angelee Strawder	Field Services Supervisor	510-287-1621	510-715-6019	angelee.strawder@ebmud.com
Yuyun Shang	Manager of Laboratory and Technical Services	510-287-1435	510-821-5758	yun.shang@ebmud.com

Legal Authority

EBMUD's Wastewater System, known as SD-1, was authorized by East Bay voters in 1944. As a Special District formed under Chapter 2 of the Municipal Utility District Act of the State of California (MUD Act), the EBMUD Board may make and enforce such regulations to operate and maintain the sanitary sewer system and to the control of quantity, quality, and flow of wastewater within the boundaries of the SD-1 service area. The MUD Act may be accessed at the link below for reference:

MUD Act
https://www.ebmud.com/download_file/force/6815/839?MUD-Act-2020-web.pdf

The three documents below comprise the basis for legal authority to EBMUD for managing the sanitary sewer system.

EBMUD Wastewater Control Ordinance
https://www.ebmud.com/download_file/force/2279/655?Wastewater_Control_Ordinance_2024.pdf

Consent Decree (United States District Court, Northern District of California, Consolidated Case Nos. C 09-00186-RS and C 09-0684-RS)
https://www.epa.gov/sites/default/files/2017-10/documents/ebmud-cd14.pdf

Regional Private Sewer Lateral Ordinance
https://www.eastbaypsl.com/doc/RegionalPSLOrdinance.pdf

The Wastewater Control Ordinance is the foundational document providing legal authority to EBMUD to prevent illicit discharges into its sanitary sewer system, set standards for permissible discharges, prevent cross-connections, ensure EBMUD access to the system is maintained, and provide enforcement authority for violations.

The Consent Decree is a unique legal directive issued to EBMUD and its seven upstream satellite agencies that maintain laterals and city systems discharging into EBMUD's sanitary sewer system. Article VII of the Consent Decree describes EBMUD's authority to establish a regional sewer lateral program to eliminate improper inflow connections at private connections within the service area. Other parts of Article VII establish technical programs related to inflow reduction and the associated monitoring.

The Regional Private Sewer Lateral Ordinance contains the specific regulations and authority for the inspection, testing, repair, replacement, and ongoing maintenance of sewer laterals within EBMUD's service area to reduce I&I.

All EBMUD's collection system facilities are located within EBMUD-owned property, public right-of-ways, or easements that allow EBMUD access for maintenance, inspections, and repairs.

Sanitary Sewer System Maps

EBMUD relies on two types of sanitary sewer system maps for its interceptor collection system and related facilities:

- A Geographic Information System (GIS) database map
- Facility drawings of the interceptors and related facilities

GIS Database Map

EBMUD has developed a sanitary sewer system map using a GIS database. The GIS database map contains information on the gravity line segments and manholes, pressure pipelines, valves, pump stations, and WWFs. Also included for reference in the database is an aerial photo of the wastewater service area and a map of streets and property boundaries.

The GIS database was built from the following information sources:

- Global Positioning System (GPS) data – The GPS locations of the manholes were collected by the EBMUD Survey Section.
- Interceptor Damage Assessment Project (IDAP) – The IDAP was completed in 1997. The IDAP created a database of all the pressure and gravity lines in the collection system. This database contains information on the size, length, and material type of the pipe.
- As-built drawings – The rim and invert elevations of the manholes were added from as-built drawings to the IDAP database.
- Aerial photo – Locations of the pump stations and WWFs were established based on an aerial photo of the wastewater service area.

Figure 4.1 below contains a screenshot of the EBMUD collection system in the GIS database. The small red circles in the image represent maintenance holes in the collection system and indicate the location of the interceptors EBMUD owns.

Figure 4.1 - GIS Database Image

This GIS database information is maintained by Wastewater Planning staff. Staff update GIS data on an ad hoc basis – typically following completion of record drawings for rehabilitation or modification of interceptor infrastructure. Broadly available mapping interface is updated annually or biannually (every 2 years), as needed through coordination with GIS staff. Specific-need maps are generated by Wastewater Planning staff where needed.

The GIS database containing the detailed sanitary sewer system map can be accessed at this hyperlink:

https://gis.ebmud.com/portal/home/webmap/viewer.html?webmap=52e2c6381c18404889d7f67e9643a350

If a copy of the GIS map is requested by the SWRCB, the database allows staff provide two files in shapefile (.shp) format that encompasses the entire system. One file contains all the pipelines. The other file contains the manholes, pump stations and WWFs.

Separate from the Sanitary Sewer System Map noted above, Section 5.14 of Order 2022-0103-DWQ requires the submittal of an up-to-date electronic spatial map of the sanitary sewer system boundary, including the location of the wastewater treatment facility(ies) that treat the sewer waste. The boundary map must be submitted to the SWRCB per current State guidance. The boundary map is provided in a shapefile (.shp) format.

Facility Drawings

The Wastewater Design Drafting Section maintains current facility drawings of the Interceptor System facilities on the EBMUD network at the following location:

W:\nab\In-house design\5. Library and Ref Materials\1B As-Built Drawings\Interceptor Maps and As-Builts

W:\nab\In-house design\5. Library and Ref Materials\1B As-Built Drawings\Interceptor Maps and As-Builts

Introduction

EBMUD conducts routine maintenance and preventive maintenance (PM) activities by dedicated multi-skilled Operations and Maintenance staff for its sanitary sewer system.

Computerized Maintenance Management System (CMMS)

A computerized maintenance management system program (CMMS) (Maximo; http://wastewater/maximo/) is used by Operations and Maintenance to:

- Assign and document preventative maintenance activities for Operations and Maintenance staff. Assignments are specific to trades/work groups and are scheduled based on equipment manufacturer recommendations or industry best practices.
- Request maintenance services and manage both planned and unplanned maintenance activities.
- Track equipment.
- Plan and prioritize maintenance work.
- Maintain timely and accurate activity records which can be easily accessible and used for appropriate analysis and reporting.

The CMMS covers EBMUD's entire wastewater collection and treatment system. Components specific to the sewer collection system included in the CMMS are:

- Pump Stations
- Level Monitor Stations
- Maintenance Holes
- Interceptor (pipe) Segments
- Overflow Structure Monitors
- Cathodic Protection Systems
- WWFs

PM Inspections and Activities

Remote Operations performs routine inspections, cleaning, and other PM activities for all pump stations using Station Daily Report Forms. The procedures are documented in the Operations Readings and Rounds Procedures. Remote Operations also performs inspections of portions of the EBMUD interceptor system to measure for accumulated grit and debris. Any findings that are considered abnormal are noted and tracked until appropriate cleaning can be scheduled.

Closed circuit television inspection for interceptor condition and debris accumulation is performed as needed when planning capital improvements and to troubleshoot issues if flow appears to be impacted. EBMUD is currently updating its Interceptor Master Plan which will provide further refinement to EBMUD's inspection program. The updated Interceptor Master Plan is expected to be completed in summer 2025.

EBMUD performs interceptor cleaning based on inspection results and known hot-spot issues. Some cleaning is done in-house on smaller (<18 inch diameter) pipe and contractors are used to clean larger pipes due to the specialized equipment needed. Cleaning has been undertaken on the flattest portions of the system where debris levels have either inhibited inspection efforts or there was a concern that the levels may impact capacity. Cleaning of interceptor segments is also performed during capital improvement work to support interceptor upgrade or rehabilitation work. One hot spot in the interceptor system that is cleaned annually is along Marina Drive in Alameda. Approximately 2,600 feet of 12- to 15-inch pipe is cleared of grease and debris annually to prevent SSOs. This job is an example of one that may be done with in-house staff.

EBMUD's collection system does not experience root intrusion that causes system back-up due to the large diameter pipes. Most the pipes are several feet in diameter and the smallest pipe in the 29-mile collection system is 12 inches.

Records of interceptor cleaning are kept by the Remote Operations Superintendent. Operational cleaning is coordinated through the Operations group as needed based on interceptor conditions. Some cleaning is performed in support of capital projects and those records are shared with the Remote Operations Superintendent, but are ultimately kept in the capital project files.

General

Staff is trained on the requirements of the WDR in various ways, specific to the duties they perform. All WTD staff is provided a high-level review of SSO reporting and collection system issues annually in environmental compliance refresher training. However, additional training relevant to performing work on the sanitary sewer system is provided in several formats described below.

The WTD conducts a minimum of four SSMP coordination meetings each year with all the Department sections present. These meetings offer an opportunity for each section to provide updates on progress on Interceptor System improvements, to review progress on SSMP goals and corrective action items, and to provide training on SSMP and WDR requirements.

WTD also conducts four to six tabletop exercises each year simulating an overflow or SSO event. These meetings provide an opportunity to practice coordination between MWWTP Operations, Remote Operations, ESD and RCO staff in responding to a SSO. The exercises typically include a review of Spill Emergency Response Plan procedures as well. ESD conducts an annual training prior to the wet weather season to review overflow structure access, inspections and field monitoring needs, and the pre-planned routes for potential SSOs along interceptor alignments in Berkeley and Alameda. On an annual basis, WTD conducts a workshop to review methods and tools available to estimate and document spill volumes and CIWQS reporting procedures.

Maintenance Training

EBMUD retains a dedicated multi-skilled Maintenance staff and provides ongoing training programs which cover skill-based and site-specific training. Prior to journey-level employment, an individual must meet basic defined requirements by job classification. A probationary employment period is used to assess skill and competency levels.

There are several platforms on which training is conducted. The platforms include on-the-job training, independent study, meetings, classroom lectures, vendor presentations, and orientations on new equipment/facilities.

Operations Training

The collection system is operated by a core team of Remote Operators and supported by additional Wastewater Plant Operators during the wet weather season. In 2011,

EBMUD started a program to supplement the core team throughout the year by rotating staff of Wastewater Operators and Operator Trainees on the remote routes. This rotating staff is assigned to 3-month rotations. In addition to the general training mentioned above, those who rotate into the Remote Operations staff receive enhanced training using a training manual developed for them as well as hands on experience under the supervision of the core team. Training materials are posted on the WTD WIKI page https://wiki.ebmud.com/applications/index.php5/Interceptor_Pump_Stations.

Remote Operator Training

In addition to the training for the rotating staff as noted above, training is provided each month for all staff assigned to Remote Operations in conjunction with the Tailgate Program. At each meeting, time is dedicated to refresher training on standard operating procedures (SOPs) and unusual operating conditions that may be encountered. Also included are debriefs on abnormal conditions handled by Operators over the previous month. Remote Operators also are trained in emergency pump station bypass procedures. Four to six times per year, emergency response equipment is brought to various pump stations and a full bypass pumping drill is performed. With each bypass drill, the pump station bypass SOP is reviewed and updated, and equipment deficiencies are corrected via work requests inputted into EBMUD's CMMS, Maximo.

Wet Weather Support Operator Training

Since the WWFs are infrequently operated, Operators are given a core refresher course in the operation of the WWFs, pump stations, and general collection system operations. This training includes hands-on operation of the WWFs exclusive of discharge and an assessment at the end of the training to ensure key concepts were retained. Then Operators are provided monthly refresher sessions throughout the year on the operation of the WWFs. The Remote Operations Supervisor maintains the training material and records in the WTD WIKI pages under http://wiki/applications/index.php5/Remote_Operations_Training.

Safety Training

EBMUD's Workplace Health and Safety (WHS) Section conducts safety training covering confined space entry, lock-out/tag-out, electrical safety, competent person training and other safety related training, and ensures that the Operations and Maintenance staff are kept current with annual refresher training. Training records are maintained by WHS.

Contractor Training

Contractors are not used frequently for work on the sanitary sewer system except for large capital improvements and cleaning. When Contractors are used for capital projects, contract specifications require appropriate skills and qualifications to perform work. EBMUD has a contractor orientation program, requires written submittals of work practices and other construction items, and provides extensive oversight of the contract work. Contractor training is verified during the orientation and contractor onboarding process.

Equipment Inventory

An inventory of sewer system equipment is maintained in the CMMS, Maximo. The list of equipment contains about 2,000 collection system assets. The list is too long to insert here for the15 pump stations, collection system piping, and all of the appurtenances in the system. To generate a current list of this equipment in Maximo, a licensed user would need to search all assets by area and select each area that pertains to the greater collection system. An example would be to query for assets at Pump Station A, which would then list all results for the tracked assets at the pump station (please see below). The CMMS system is updated regularly and new assets from capital improvement projects are included.

Asset	Description	Area	Location
W-1A-INS-INT-01	INTRUSION DETECTION SYSTEM	W-1A	W1A-BLDG
W-1A-INS-LEL-01	GAS DETECTION SYSTEM	W-1A	W1A-SFTY
W-1A-INS-MIP-01	MAIN INST. PANEL STA. A	W-1A	W1A-PUMP
W-1A-INS-PLC-01	PROGRAMABLE LEVEL CONTROLS	W-1A	W1A-PUMP
W-1A-INS-TEL-01	TELEPHONE SYSTEM	W-1A	W1A-COM
W-1A-MCC-001-01	MOTOR CONTROL CENTER	W-1A	W1A-ELEC
W-1A-MSL-BFP-00	NO.1 WATER BACKFLOW PREVENTER	W-1A	W1A-W1
W-1A-MSL-HTR-01	HOT WATER HEATER	W-1A	W1A-W1
W-1A-MTR-001-01	#1 MAIN PUMP MOTOR	W-1A	W1A-PUMP
W-1A-MTR-002-01	#2 MAIN PUMP MOTOR	W-1A	W1A-PUMP
W-1A-MTR-003-01	#3 MAIN PUMP MOTOR	W-1A	W1A-PUMP
W-1A-MTR-004-01	#4 MAIN PUMP MOTOR	W-1A	W1A-PUMP
W-1A-PMP-001-01	#1 MAIN PUMP	W-1A	W1A-PUMP
W-1A-PMP-001-02	PROTECTED WATER PUMP	W-1A	W1A-W1
W-1A-PMP-001-06	FLOOR DRAIN PUMP	W-1A	W1A-SUMPS
W-1A-ACP-001-01	#1 AIR COMPRESSOR	W-1A	W1A-PLNTAIR
W-1A-ACP-002-01	#2 AIR COMPRESSOR	W-1A	W1A-PLNTAIR
W-1A-FAN-001-01	WETWELL EXHAUST FAN	W-1A	W1A-BLDG
W-1A-FAN-002-01	PUMP ROOM EXHAUST FAN	W-1A	W1A-BLDG
W-1A-FAN-003-01	WET WELL SUPPLY FAN	W-1A	W1A-BLDG
W-1A-FAN-004-01	GENERATOR ROOM SUPPLY FAN	W-1A	W1A-BLDG
W-1A-INS-000-00	MISC. INSTRUMENTS STA. A	W-1A	W1A-BLDG
W-1A-INS-BLB-01	STATION A BUBBLER	W-1A	W1A-PUMP
W-1A-INS-DLR-01	AUTOMATIC DIALER, PUMP STATION A	W-1A	W1A-COM
W-1A-INS-FEL-00	RAW SEWAGE FLOW METER	W-1A	W1A-PUMP

Asset	Description	Area	Location
W-1A-ISD-DCS-000	DCS PUMP STATION A	W-1A	W1A-COM
W-1A-RS-HV-003-AF01	MANUAL AIR VALVE @ MANHOLE AF01	W-1A	W1A-DISCH
W-1A-RS-ETS-010	CATHODIC PROTECTION TEST STATION	W-1A	W1A-DISCH
W-1A-RS-HV-001	PLUG VALVE	W-1A	W1A-DISCH
AF02	MANHOLE AF02	W-1A	W1A-DISCH
W-1A-RS-HV-002-BY	EMERGENCY BYPASS CONNECTION	W-1A	W1A-DISCH
AF01	MANHOLE AF01	W-1A	W1A-DISCH
W-1A-RS-HV-004-AF02	MANUAL AIR VALVE @ MANHOLE AF02	W-1A	W1A-DISCH
W-1A-CAT-001-01	UNIT 233 - LEDGER 87.09.15.01	W-1A	W-01
W-1A-CAT-001-02	UNIT 233 - LEDGER 87.09.15.02	W-1A	W-01
W-1A-CAT-001-03	UNIT 233 - LEDGER 87.09.15.03	W-1A	W-01
W-1A-CAT-001-04	UNIT 233 - LEDGER 87.09.15.04	W-1A	W-01
W-1A-CAT-001-05	UNIT 233 - LEDGER 87.09.15.05	W-1A	W-01
W-1A-CAT-001-06	UNIT 233 - LEDGER 87.09.15.06	W-1A	W-01
W-1A-CAT-001-07	UNIT 233 - LEDGER 87.09.15.07	W-1A	W-01
W-1A-CAT-001-08	UNIT 233 - LEDGER 87.09.15.08	W-1A	W-01
W-1A-CAT-001-09	UNIT 233 - LEDGER 87.09.15.09	W-1A	W-01
W-1A-CAT-001-10	UNIT 233 - LEDGER 87.09.15.10	W-1A	W-01
W-1A-CAT-001-11	UNIT 233 - LEDGER 87.09.15.11	W-1A	W-01
W-1A-CAT-001-12	UNIT 233 - LEDGER 87.09.15.12	W-1A	W-01
W-1A-CAT-001-13	UNIT 233 - LEDGER 87.09.15.13	W-1A	W-01
W-1A-CAT-001-14	UNIT 233 - LEDGER 87.09.15.14	W-1A	W-01
W-1A-CAT-001-15	UNIT 233 - LEDGER 87.09.15.15	W-1A	W-01
W-1A-CAT-001-16	UNIT 233 - LEDGER 87.09.15.16	W-1A	W-01
W-1A-CAT-001-17	UNIT 233 - LEDGER 87.09.15.17	W-1A	W-01
W-1A-CAT-001-18	UNIT 233 - LEDGER 87.09.15.18	W-1A	W-01
W-1A-CAT-001-19	UNIT 233 - LEDGER 87.09.15.19	W-1A	W-01
W-1A-CAT-001-20	UNIT 233 - LEDGER 87.09.15.20	W-1A	W-01
W-1A-CAT-001-21	UNIT 233 - LEDGER 87.09.15.21	W-1A	W-01
W-1A-CAT-001-22	UNIT 233 - LEDGER 87.09.15.22	W-1A	W-01
W-1A-CAT-001-23	UNIT 233 - LEDGER 87.09.15.23	W-1A	W-01
W-1A-CAT-001-24	UNIT 233 - LEDGER 87.09.15.24	W-1A	W-01
W-1A-PMP-002-01	#2 MAIN PUMP	W-1A	W1A-PUMP
W-1A-PMP-002-06	METER VAULT DRAIN PUMP	W-1A	W1A-SUMPS
W-1A-PMP-003-01	#3 MAIN PUMP	W-1A	W1A-PUMP

Asset	Description	Area	Location
W-1A-PMP-004-01	#4 MAIN PUMP	W-1A	W1A-PUMP
W-1A-SAF-AID-01	FIRST AID KIT	W-1A	W1A-SFTY
W-1A-SAF-EML-01	EMERGENCY LIGHTING	W-1A	W1A-SFTY
W-1A-SAF-FEX-01	FIRE EXTINGUISHER, CONTROL RM	W-1A	W1A-SFTY
W-1A-SAF-HPE-01	HEARING PROTECTION EQUIPMENT	W-1A	W1A-SFTY
W-1A-SEE-ATS-01	AUTOMATIC TRANSFER SWITCH	W-1A	W1A-ELEC
W-1A-SGT-A01-01	WET WELL INLET GATE	W-1A	W1A-PUMP
W-1A-TKS-001-01	AIR GAP TANK	W-1A	W1A-W1
W-1A-MISC-000-00	Misc Infrastructure (INS, ELEC, MECH, ST)	W-1A	
W-1A-CAT-001-25	UNIT 233 - LEDGER 87.09.15.25	W-1A	W-01
W-1A-CAT-001-26	UNIT 233 - LEDGER 87.09.15.26	W-1A	W-01
W-1A-CAT-001-27	UNIT 233 - LEDGER 87.09.15.27	W-1A	W-01
W-1A-CAT-001-28	UNIT 234 - LEDGER 87.09.15.28	W-1A	W-01
W-1A-LDR-6-01	Ladder Pump Station A 6 foot	W-1A	
W-1A-LDR-8-02	Ladder Pump Station A 8 foot	W-1A	
W-1A-LDR-10-03	Ladder Pump Station A 10 foot	W-1A	

All critical replacement equipment, parts, tools, materials etc., are tracked in a separate warehouse cataloging system, Elsie. All critical parts, including motors, pumps, valves, etc., are stored at the MWWTP at 2020 Wake Avenue in Oakland, California. Elsie tracks and reorders parts automatically or alerts warehouse staff when inventory is low. EBMUD maintains spare pumps for all critical EBMUD pump stations, and ensures spare pumps are purchased during capital improvement projects. Warehouse staff routinely audit the inventories listed in Elsie to ensure proper accounting of spare parts.

Emergency Response Equipment

EBMUD owns and maintains a limited supply of emergency response equipment, such as pumps, generators, pipe/hose, fittings, etc. Operations staff are trained on the use of this equipment (See SSMP Element 4.3). EBMUD budgets for new equipment through the capital budget process. EBMUD's emergency response equipment is stored at the MWWTP and can be dispatched as needed to anywhere within EBMUD's service area.

Current emergency response equipment includes:

EQUIPMENT	QUANTITY		DESCRIPTION
	QTY	UNIT	
6” diameter at 25’ lengths	6		PVC Kanaline SR hoses
6” rigid	1,000	LF	aluminum
6” collapsible hose	2,000	LF	desert storm hose
6” pumps	2		6” suction and 6” discharge pumps
6" fittings			elbows, tees and victaulic couplings
road crossings	2		polyurethane modular design
8” pumps	2		8” suction and 8” discharge
8” diameter at 25’ lengths	4		PVC Kanaline SR hoses
8” x 6” reducers fittings, etc.	4		concentric and eccentric reducers
hose reel system 8”	1		3,900 feet of hose
road crossing ramps	2		changed to fiberglass type
trailer mounted generator (100 kw silent)	4		silent type
pipe trailers	2		pipe carrying trailers for towing behind trucks
traffic control equipment (misc)	n/a		traffic cones, flashers, PVC curbs, etc.
emergency generators (small)	1		Honda type, can be in pick-up truck

In addition, EBMUD maintains contracts with local vendors to provide emergency equipment to supplement EBMUD’s inventory on an as-needed basis.

Replacement Inventories

EBMUD maintains a spare parts inventory for the sanitary sewer system as described above. Spare parts are selected based on manufacturers' recommendations and EBMUD's own experience with the parts that are likely to fail. The spare parts inventory items are kept in EBMUD's online financial and/or inventory management systems and can be retrieved by Operations and Maintenance staff.

EBMUD has purchased several spare main unit pumps for additional redundancy at key pump stations and WWFs. Several of these spare pumps have already been installed, which allows for the removed pumps to be completely rebuilt with no loss of redundancy. EBMUD plans to continue this practice with the goal to have a fully rebuilt spare pump for every critical station.

Design Criteria and Construction Standards and Specifications

EBMUD's Wastewater Design Section maintains a library of standards and guidelines for the design and construction of its wastewater facilities, which contains information on resources that EBMUD uses in the wastewater design, construction, testing, and inspection process. These standards and guidelines are applicable to both new installations and rehabilitation of existing facilities and are regularly used in the implementation of EBMUD wastewater projects.

EBMUD's Wastewater Ordinance can be found in SSMP Element 3. The library for standards and guidelines for design and construction includes the following:

- Industrywide Standard Codes, Specifications and Practices
  - file://win.ebmud/district/sites/waste water/nab/In-house design/5. Library and Ref Materials/2A Codes and StandardsW:\nab\In-house design\5. Library and Ref Materials\2A Codes and Standards
  - file://win.ebmud/district/sites/waste water/nab/In-house design/5. Library and Ref Materials/3A Master SpecificationsW:\nab\In-house design\5. Library and Ref Materials\3A Master Specifications

- Design Criteria
  - file://win.ebmud/district/sites/waste water/nab/In-house design/5. Library and Ref Materials/3B WW Engr Std Practices and Design CriteriaW:\nab\In-house design\5. Library and Ref Materials\3B WW Engr Std Practices and Design Criteria

- Standard Drawings and Typical Details
  - W:\nab\In-house design\5. Library and Ref Materials\3C Standard Drawings and Details

- Data on Collection System Rehabilitation Methods
  - Master Technical Specifications Division 33 – Utilities file://win.ebmud/district/sites/waste water/nab/In-house design/5. Library and Ref Materials/3A Master Specifications/Division 33 - UtilitiesW:\nab\In-house design\5. Library and Ref Materials\3C Standard Drawings and Details

- Construction Control and Procedure Requirements

  - Master Specifications Division 01 – General Requirements https://eastbaymud.sharepoint.com/:f:/r/sites/SpecsEngSupportSite/MasterSpecs/Masterspecs/Division%2001%20-%20General%20Requirements?csf=1&web=1&e=2arJbg

- Inspection and Testing Standards
  - See Procedures and Standards section below.

- Contract Documents for EBMUD's existing wastewater facilities
  - Master drawings
    - Adobe Acrobat PDFs file://win.ebmud/district/sites/waste water/nab/In-house design/5. Library and Ref Materials/1B As-Built DrawingsW:\nab\In-house design\5. Library and Ref Materials\1B As-Built Drawings\Interceptor Maps and As-Builts
    - Source files (MicroStation and AutoCAD) \\win.ebmud\district\sites\AB\drafters\.W Area
  - Contract documents (including drawings and specifications) for active construction projects
    - W:\nab\In-house design\2. Active SD Projects
  - Contract documents (including drawings and specifications) for archived construction projects
    - file://win.ebmud/district/sites/waste water/nab/In-house design/4. Archived ProjectsW:\nab\In-house design\4. Archived Projects

Procedures and Standards

Procedures and standards for the inspection and testing of newly constructed, newly installed, repaired, and rehabilitated system pipelines, pumps, and other equipment are found under EBMUD's Specification Section 01 45 00 – Quality Control, located here:https://eastbaymud.sharepoint.com/:f:/r/sites/SpecsEngSupportSite/MasterSpecs/Masterspecs/Division%2001%20-%20General%20Requirements?csf=1&web=1&e=2arJbg

EBMUD inspection staff are responsible for providing lead and/or quality assurance inspection of construction projects executed by contractors, to ensure compliance with the contract plans and specifications and all applicable codes, standards and safety requirements. Duties of inspection staff include, but are not limited to:

- Reviews of plans and specifications for constructability

- Performs daily inspections of project construction
- Ensures compliance of the plans and specifications by the construction contractor regarding construction methods, quality of materials, workmanship, related codes, noted standards and safety requirements
- Ensures overall project quality and contract compliance
- Performs some special inspections such as mechanical systems, medium voltage and general electrical systems, process controls, structural steel, welding, special coatings, and complex structural concrete
- Coordinates construction-related outages with Operations and Maintenance staff
- Confers with Contractor noting deficient work and ensures corrective measures are completed
- Prepares inspection reports and daily logs
- Keeps detailed records of construction progress, changed conditions, and as-built drawings

Special inspections for items such as compaction testing, batching of concrete cylinders, rebar dowel/thread anchor pull testing, concrete resurfacing pull testing, coatings pull testing, welding dye penetrant testing, etc., are performed by independent special inspectors, as required by the California Building Code.

SSO Notification

A spill emergency response chain of communication has been developed for proper and timely notification of an SSO to primary responders and regulatory agencies, and the responsible individuals have participated in its development and training. Remote monitoring, inspections, and the EBMUD call center are the backbone for receiving initial reports of a potential SSO.

SSO Response Mobilization, Public Agency Notification, Abatement and Mitigation

EBMUD's Spill Emergency Response Plan documents the procedures for responding to reported SSOs, including the mobilization of EBMUD forces, regulatory and public notifications, and implementation of best practices for abatement and mitigation. The Spill Emergency Response Plan is Appendix H of the Wastewater Emergency Preparedness Program Plan. The procedures can be found on the Wastewater Department's Splashpad https://splashpad.ebmud.com/work-center/departments/wastewater/wastewater-emergency-preparedness-program and WIKI under the category "Emergency Preparedness" https://wiki/applications/index.php5/Wastewater_Department_Emergency_Preparedness_Program.

Background

The EBMUD system consists of large diameter pipe, has no private lateral connections, and has not had any fats, oil, or grease (FOG) related SSOs. Work within the seven satellite agencies to control the discharge of FOG, wipes, and other debris reduces the potential for obstructions within EBMUD's large diameter pipes and pump stations.

EBMUD does outreach and education to reduce the disposal of trash, including wipes, diapers, cooking grease, and other refuse that may lead to blockages. During onsite tours of the MWWTP, tour guides include messaging on proper waste disposal. These tours typically reach over 1,000 people every year. EBMUD also participates in community events where staff share tips to reduce pollution. Additionally, EBMUD places messaging in online and hard copy communications with its customers. EBMUD also supports research, regulations, and legislation to reduce pollution at the source.

Since 2008, EBMUD has provided a service for the wastewater collection system agencies in its wastewater service area and established a regional FOG control program to respond to and reduce grease discharges from restaurants/food service establishments (FSEs), food manufacturing establishments, and residences. At present, the regional program consists of FOG hotspot investigations, FSE and gravity grease interceptor inspections, enforcement support, hotspot reporting, database management, and residential and commercial outreach. These components are summarized below. The program is funded by the individual agencies that comprise the Collection System Technical Advisory Committee (CSTAC): cities of Alameda, Albany, Berkeley, Emeryville, Piedmont, and Stege Sanitary District.

Regional FOG Control Program

Source Identification: Targeted Hotspot Investigation

Discharges from FSEs, residential sites, and food manufacturing facilities are potential sources for causing grease-related SSOs and blockages in the satellite agencies' sewer collection systems. The collection system agencies report locations of grease-related SSOs or blockages and areas of increased maintenance due to grease build up, known as hotspots, to EBMUD. In response, EBMUD performs hotspot investigations to identify the sewer drainage basin contributing to the location of the reported blockage/SSO or increased sewer maintenance and inspect grease generating FSEs that discharge to the sewer drainage basin. Those FSEs that generate grease and are found to cause or contribute to grease-related blockages or

SSOs are required to install grease control devices (GCDs) approved by the regulating collection system agency.

Gravity Grease Interceptor Inspections

EBMUD performs gravity grease interceptor inspections for FSEs in hotspots as well as for FSEs that are not in hotspots. FSEs with gravity grease interceptors are inspected to determine their operating condition and the adequacy of their pumping schedule or maintenance. More frequent servicing/maintenance and repairs may be required if necessary.

FOG Control Database

EBMUD maintains a FOG control database to manage the information about FSEs and their grease generating capability, inspections, FOG hotspots, GCDs, requirements and agency enforcement status information for FSEs, as well as residential outreach distributed.

Outreach

Public education and outreach that promote proper handling and disposal of FOG is an ongoing effort through various methods and media. EBMUD provides education and outreach materials for FSEs in multiple languages as a component of the overall program.

EBMUD also provides information to residents on how to properly dispose of household cooking oil. This outreach effort includes partnerships with other organizations such as regional non-governmental organizations, and local retail outlets. Residential hotspot response includes targeted outreach materials in multiple languages. Additional outreach information for businesses and residents, including residential grease drop off locations, is available on EBMUD's website: http://www.ebmud.com/fog.

Residential Cooking Oil Collection Sites

EBMUD maintains a residential cooking oil collection site outside the front gate of its Main Wastewater Treatment Plant. EBMUD also continues to promote the El Cerrito Recycling Center, Richmond's West County Resource Recovery facility, and Central Contra Costa Sanitary District's household hazardous waste facility as additional collection sites for residential cooking oil. Collected residential cooking oil is used by third parties to make biofuel.

EBMUD Interceptor System

The EBMUD interceptor system is described in SSMP Element 1. Parts of the system date back to the 1940s and periodic system evaluations and condition assessments have been done over the last several decades. Capacity assurance for the EBMUD collection system is a unique issue since wet weather flows are diverted to WWFs when interceptor levels rise and could spill out of designated overflow points. More detail on these programs is provided below.

System Evaluation and Condition Assessment

Interceptor condition is routinely addressed through Master Planning efforts and annual inspections utilizing best industry practices and technologies available such as visual observations, video surveillance, and robotic inspection techniques. A goal of inspecting 3,000 linear feet of the system each year has been established.

Beginning in January 2021, a series of failed interceptor segments were identified and subsequently rehabilitated, highlighting the need to update and refine the condition assessment process.

In 2024, an update to the Interceptor Master Plan began and, in combination with the annual condition assessments, will be used to prioritize capital improvement projects and/or operational tasks. The current Master Planning effort combines numerous spot inspections of maintenance holes across the interceptor system with CCTV of priority segments to identify asset condition. A triple-bottom line methodology incorporating financial, social, and environmental criteria is used to identify a monetized value for each interceptor segment, rather than a points-based system, to enable comparison across the infrastructure system assets.

Condition assessments will prioritize areas noted below, although most of the EBMUD interceptor system can impact surface waters during significant releases and is considered high priority.

- Areas with a high level of environmental consequences if vulnerable to collapse, failure, capacity issues, or other system deficiencies
- Areas located in or within the vicinity of surface waters, steep terrain, high groundwater elevations, and environmentally sensitive areas (e.g., siphons crossing Oakland estuary)

- Areas within the vicinity of a receiving water with bacterial-related impairment on the most current Clean Water Act section 303(d) list:
    - In 2024, a review of receiving waters in the vicinity of the EBMUD collection system determined that a portion of the Oakland Inner Harbor (near Jack London Square) is listed for pathogens due to elevated enterococcus measurements. No other areas are listed.
    - The list of impaired receiving waters can be accessed at this website and will be updated if changes occur. https://www.waterboards.ca.gov/water_issues/programs/water_quality_assessment/

The outcome of the Interceptor Master Plan and annual condition assessments will help determine a prioritized series of capital improvement projects and/or operational tasks to address this critical infrastructure.

Condition assessment reports are kept in broadly accessible record folders. Associated condition evaluation results are updated in GIS for visualization. Relevant condition inspections between Interceptor Master Plans are rolled into the next Interceptor Master Plan as part of providing a holistic view of system conditions. Condition assessment information also feeds into the capital planning cycle - where in worst-case scenarios a project will be created or modified to accommodate the poor condition asset's rehabilitation or replacement.

Climate Change Activities

In 2020, EBMUD prepared a Wastewater Climate Change Plan that looked at the vulnerability of EBMUD's wastewater facilities to climate change impacts. The Plan determined which facilities were at risk for flooding from sea level rise and extreme storm events for the years 2050 and 2100. A number of the pump stations located near the shoreline or in low-lying areas are vulnerable to future flooding but only when taking more extreme conditions into account such as 100-year storm surge coupled with more extreme sea level rise predictions. No flooding impacts are expected through 2050 in the current assessment. As part of the Wastewater Climate Change Plan, Planning and Design Guidelines for Sea Level Rise were developed. The Guidelines described a process and checklist which project managers should undertake to determine if and how their project should be designed to address sea level rise and flooding. These Guidelines will help address how future changes to vulnerable facilities can be handled to minimize the impacts of climate change.

Another EBMUD strategy for adapting to the effects of climate change is through regional collaboration. EBMUD is an active participant with the Oakland Alameda Adaptation Committee, led by the City of Alameda. The Committee's current focus is mitigating the effect of sea level rise on Bay Farm Island by raising sea walls and levees. EBMUD is also actively collaborating with the East Bay Crescent Partners, a regional working group led by the San Francisco Estuary Partnership and includes Caltrans, local agencies, and cities in the area. They are exploring sea level rise adaptation projects, such as horizontal levees to protect critical infrastructure such as the Bay Bridge approach and the MWWTP. EBMUD also participates in the Bay Area Climate Adaptation Network, a region-wide information sharing and policy group as well as the climate change-related activities within Bay Area Clean Water Agencies, the regional wastewater coalition.

Capacity Assessment and Design Criteria

EBMUD does not own and operate a typical sewer system, traditionally consisting of smaller diameter sewer mains, maintenance holes for access, and a significant number of private sewer lateral connections.

Capacity for the EBMUD system is provided by (1) the interceptor system, (2) pump stations and (3) WWFs. Capacity assessments were completed as part of the East Bay Wet Weather Program, which was developed out of a comprehensive EBMUD planning process between 1975 and 1987. This program combined the results from previous I/I studies and facilities planning efforts to develop an integrated approach to reducing SSOs in the East Bay through infrastructure construction by EBMUD and the satellite communities to manage wet weather flows. As a result of this program, EBMUD implemented its component of the East Bay Wet Weather Program in 1987 and completed it in 1998. EBMUD spent over $310 million in capital funds and $3 million per year in operating funds on the program. Facilities constructed include the three wet weather storage and treatment facilities, two relief interceptors, and additional system storage and pumping facilities.

Since the completion of the 1980s studies, EBMUD has conducted additional flow monitoring and capacity assessments. Between 2005 and 2007, extensive flow monitoring was conducted as part of the Wet Weather Infrastructure Improvement Studies. Based on the flow monitoring data collected, a refined hydraulic model of the EBMUD interceptor system was developed and capacity assessment was undertaken. Capacity constraints under design storm conditions were analyzed.

On January 14, 2009, the RWQCB issued an order prohibiting discharges from EBMUD's WWFs with an accompanying Cease and Desist Order that includes requirements for actions to be taken if discharges occur. On July 22, 2009, a Stipulated Order (SO) issued by EPA, SWRCB, and RWQCB became effective. The SO required EBMUD to perform a variety of work, including additional flow monitoring and modeling by 2012, to lay the groundwork for future efforts to eliminate discharges from the wet weather facilities. On September 22, 2014, a Consent Decree became effective, mandating work activities for EBMUD and the satellite agencies to reduce I&I to a level that, by 2036, the WWFs would not be utilized for storm events less than specified conditions. Although the model to determine these specified conditions is complex, it includes input from a December 5, 1952 storm returning 1.57 inches of rain at Oakland Airport in a 7-hour period.

Current capacity requirements for the sanitary sewer system are based on the East Bay design storm event combined with additional assumptions, such as seasonally-elevated groundwater levels and having the peak diurnal flow coincide with the maximum impact from the storm event, thereby creating a significant flow event.

Prioritization of Corrective Action

Findings of the condition assessments and capacity assessments are used to prioritize corrective actions based on the severity of the potential consequences. Past actions have included emergency repairs to an interceptor that experienced a crown collapse (but no spill of wastewater) to scheduling routine upgrades to aging infrastructure. Depending on the scope of the corrective action, it may be handled through the capital improvement process or by in-house operation and maintenance procedures.

Capital Improvement Program

EBMUD has a comprehensive capital improvement process including planning, design, and construction of new, upgraded, or rehabilitated infrastructure within the sewer system. The Wastewater Department's current Capital Improvement Program (CIP) can be found here:

- https://www.ebmud.com/download_file/force/18908/377?Biennial_Budget_Book_-_Volume_1_-_FY_2024__FY_2025_-_Adopted_PDF_WEB.pdf
- https://www.ebmud.com/download_file/force/18909/377?Biennial_Budget_Book_-_Volume_2_-_FY_2024__FY_2025_-_Adopted_PDF.pdf

The CIP includes, at a minimum, the following:

- Recommended capital improvement projects developed based on the results of the Interceptor Master Plan, infrastructure condition assessments and inspections, and input provided by operations and maintenance staff.
- Project schedules including completion dates.
- Internal and external project funding sources.

The CIP is executed via coordination between operation and maintenance staff, and engineering staff/consultants during planning, design, and construction as well as interagency coordination when work impacts other agencies.

Performance Measures and Reporting

The effectiveness of each element of the SSMP is tracked through internal audits and reported in the audit summary report (See SSMP Element 10).

General monitoring of SSMP compliance and issues is accomplished through periodic SSMP coordination meetings. The SSMP team meets a minimum of four times per year to share information among groups, review outstanding action items from audits or other programs, and to prioritize appropriate SSMP activities. Action items from audits and past Workgroup meetings are maintained in meeting minutes and/or agendas. Quarterly monitoring of SSMP issues, audits, and action items may be done by the SSMP Coordinator if it is not covered in an SSMP team meeting or a meeting is cancelled for unforeseen circumstances.

Preventative Maintenance Program

The effectiveness of the PM program is tracked by reviewing scheduled and completed PM work and breakdown and corrective maintenance work orders. The root cause of any SSO that occurred in the past year is determined and if PM could have prevented the occurrence, the PM program is modified accordingly.

SSMP Program Updates

Individual elements within the SSMP or documents referenced by the SSMP are updated as needed based on the findings of the annual audit or in the event of an SSO or other event that triggers a review of the SSMP or referenced documents (e.g., Spill Emergency Response Plan).

Reporting SSO Trends for EBMUD

SSO events are reported through CIWQS. The frequency, volume, location, and trends are tracked by EBMUD and assessed on an annual basis.

Internal Audit Process

Internal audits are performed by the SSMP Coordinator and team on an annual basis to determine relevance and effectiveness of each element of the SSMP. Audits include a review of progress on deficiencies identified in the previous year audit report. Every three years, the annual audits will be compiled into a single report to submit into the online CIWQS Sanitary Sewer System Database. The audit reports are due to be uploaded into CIWQS within six months after the end of the required 3-year audit period. For the EBMUD sanitary sewer system, the table below summarizes the end of each audit period and the due date to upload the audit report to CIWQS.

End of Required 3-Year Audit Period	Audit Report Due Date in CIWQS
5/2/2024	11/2/2024
5/2/2027	11/2/2027
5/2/2030	11/2/2030
5/2/2033	11/2/2033

Internal audits are appropriately scaled to the size of the system and spill history. If SSOs have occurred as a result of equipment malfunction or operator error in the past year, extra focus on those areas occurs. Sewer system operators (Remote Operations staff) must be involved in completing the audit. The audit will:

- Evaluate the implementation and effectiveness of the enrollee's SSMP in preventing spills;
- Evaluate the enrollee's compliance with the SSS WDR;
- Identify SSMP deficiencies in addressing ongoing spills and discharges to waters of the State; and
- Identify necessary modifications to the SSMP to correct deficiencies.

Completed audit reports shall include:

- Audit findings and recommended corrective actions.
- A statement that sewer system operators' input on the audit findings has been considered.
- A proposed schedule to address the identified deficiencies.

Correcting Deficiencies

If deficiencies or modifications are identified as part of the annual audit, the SSMP shall be updated accordingly, or items shall be cataloged and assigned a lead

individual and a proposed schedule for implementation. Items identified for correction will be reviewed in SSMP workgroup meetings for progress and to track closure status of the items.

Recordkeeping

The annual audit reports will be kept internally within the EBMUD electronic file system (network drive and/or SharePoint). Every three years, an audit report for submittal to the State will be prepared and also kept internally within the EBMUD electronic file system as well as uploaded to CIWQS according to the schedule above.

Public Communications and Outreach

EBMUD maintains active public outreach and communications efforts with its customers and the public-at-large to provide timely information on EBMUD projects, improvements, and emergency situations.

Communications outlets range from participating in community groups to time-critical posting of signage in emergency situations, and updates to EBMUD's public website and 24-hour telephone reporting systems. For large capital projects having a community impact, EBMUD holds community meetings and conducts targeted outreach in the impacted community. Flyers are often included with customer bills to update the rate payers on EBMUD projects and programs. Further, EBMUD public affairs representatives maintain routine contacts with news outlets and publications to transmit news briefs in a timely manner. If an SSO occurs that impacts surface waters, EBMUD has a prescribed response procedure within the Spill Emergency Response Plan (SSMP Element 6) that outlines public notification, signage posting standards, regulatory notification, and other communications.

SSMP related Communication Program

Communication efforts which support SSMP requirements include:

- Posting of the SSMP on EBMUD's website with contact information to facilitate questions and comments.
- Emergency response posting in the field backed up by web posting of advisories. EBMUD also has a 24-hour Emergency Dispatch phone number posted on its website that the public can call for urgent issues like spills or to be directed to a subject matter expert if specific questions about an emergency condition arise.
- Participation in the CSTAC, which includes all the collection system agencies that are tributary to EBMUD's collection system excluding the City of Oakland. The CSTAC meets regularly to discuss and coordinate system issues such as flow monitoring, wet weather flow management, SSMP issues, and system improvements. EBMUD meets separately to coordinate with the City of Oakland.

Communication with Connected Sanitary Sewer Systems

EBMUD maintains contacts with each of the owners of the upstream collection systems that discharge into the EBMUD interceptor system. The Remote Operations Superintendent has primary responsibility for communicating about system operation,

maintenance, or capital improvement-related activities that may impact the upstream satellite systems. In addition to routine communications, the Spill Emergency Response Plan, contains provisions to notify upstream satellites (and for them to notify EBMUD) of emergency conditions observed within each other's systems. For example, if a pump station in a satellite system is pumping into a downstream spill or problem, the satellite system owner will be contacted to manage the situation to minimize spill impacts. The Spill Emergency Response Plan also lists current contacts and phone numbers for each satellite system owner as well as other city/county and community resources to facilitate communications.

EBMUD	***SEWER SYSTEM MANAGEMENT PLAN***
Effective Date: 4/29/2025	Document Name: Record of Changes
Supersedes: 4/9/2025	Document ID: Record of Changes
Version 2	Approved by: Director of Wastewater

Revision Date	Description of Changes
4/9/2025	Comprehensive update and reorganization of all elements to align with Order WQ 2022-0103-DWQ, Board approved this version.
4/29/2025	Added information about participation in climate change committees to Element 8 per Board member request.