



City of Santa Barbara
Public Works Department

Memorandum

DATE: October 20, 2022
TO: Water Commission
VIA: Joshua Haggmark, Water Resources Manager
FROM: Amanda Flesse, Wastewater System Manager
SUBJECT: Wastewater System Annual Report for Fiscal Year 2022

Recommendation

That Water Commission receive a report on the status of the maintenance and management of the wastewater system for the Fiscal Year 2022 (FY22) from July 01, 2021 through June 30, 2022.

Discussion

The City of Santa Barbara's wastewater system is one of the most important pieces of City infrastructure, responsible for the protection of public health and the environment from the community's wastewater. The City's wastewater system consists of 256-miles of wastewater collection mains, two miles of force mains, seven lift stations, and the El Estero Water Resources Center (El Estero). Significant resources and planning go into maintaining this critical infrastructure. The attached report provides a summary of key data and activities taking place in the wastewater system over the last 12-months.

This report summarizes the following information:

- Wastewater Collections Operations: July 01, 2021 – June 30, 2022.
- Wastewater Treatment and Lift Station Operations: July 01, 2021 – June 30, 2022.
- Major capital projects that affect the City's ability to protect the environment and public health.

Attachment: Wastewater System Annual Report



City of Santa Barbara Annual Wastewater Operations Management Report

Fiscal Year 2022 (July 1, 2021 – June 30, 2022)

Water Resources Division, Public Works Department
October 20, 2022

INTRODUCTION

The City of Santa Barbara owns, operates and maintains a 256-mile wastewater collection system, seven lift stations, and the El Estero Water Resources Center (El Estero). The City expends significant resources to operate and maintain City-owned wastewater collection and treatment assets and has been successful in protecting the environment and supporting the community's public health.

This annual report summarizes the following information:

- Wastewater Collections Operations, Fiscal Year 22 (FY22), July 1, 2021 – June 30, 2022
- Wastewater Treatment and Lift Station Operations, Fiscal Year 22 July 1, 2021 – June 30, 2022
- Major capital projects that affect the City's ability to protect the environment and public health

WASTEWATER COLLECTIONS PROGRAM

The City of Santa Barbara operates and maintains a 256-mile wastewater collection system. The City expends significant resources to operate and maintain City-owned sewer infrastructure. The previous collection system report was submitted October of 2021 and presented to Water Commission November of 2021. The FY22 Annual Report reviews the efforts from July 1, 2021, through June 30, 2022, and includes the following information.

SSO Performance Reduction Standards

1. SSO During the Reporting Period
 2. Overflows by Cause
 3. Overflows by Volume
 4. Blockage History
- a. Operation and Maintenance Program
1. Cleaning Activity Summaries
 2. Condition Findings
 3. Cleaning Report
 4. Cleaning Program Modifications
 5. System Wide Cleaning Program

6. Accelerated Cleaning Program
7. Accelerated Root Cleaning Program
8. Chemical Root Program
9. Completed Condition Assessment Work
10. QA/QC Program
11. FOG Management Program

b. Program Projections for FY'23

1. Cleaning Mileage Projections
2. Planned Condition Assessment Work
3. Contract Cleaning

SSO Performance Reduction Standards

SSO Events FY22

During the reporting period the City's system experienced ten (10) Sanitary Sewer Overflows.

A listing of the ten SSO events including location, date and primary cause is provided in Table 1.

Table 1. SSO Event Listing			
	Location	SSO Date	Primary Cause
1	1329 Cacique St	07/01/2021	Roots & Debris
2	2110 Cliff Dr	07/10/2021	Roots
3	217 Sterns Wharf	09/16/2021	Other (Rags, Concrete Trowel)
4	2135 Chapala St	09/29/2021	Roots
5	1519 Veronica Pl	11/10/2021	Roots from Private Lateral & Wipes
6	3020 Hermosa St	11/21/2021	Roots from Private Lateral
7	1000 Block Garden St	12/18/2021	Roots
8	2110 Cliff Dr	02/05/2022	Roots
9	820 Moreno Rd	03/14/2022	Roots
10	401 Shoreline Dr (SB Harbor Parking Lot #2)	05/03/2022	Roots

An overview of the ten SSO locations are provided in Figure 1.

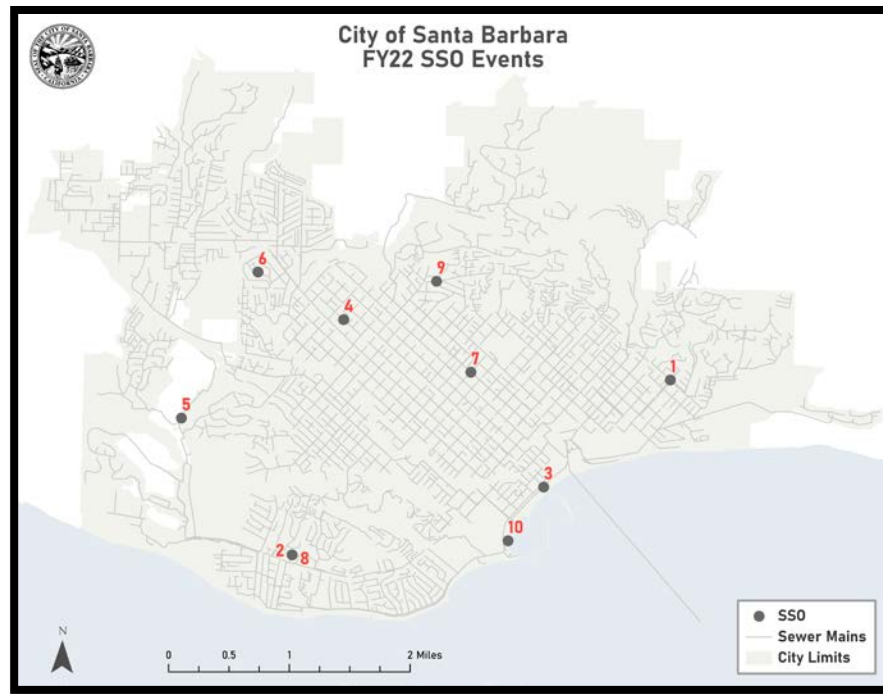


Figure 1. SSO Events Location Map

Overflows by Cause

Table 2 summarizes the ten SSOs by cause for the reporting period.

Table 2. SSO Event Summary by Primary Cause		
SSO Cause	Number of SSO Events	Percent of Total SSOs
Roots	9	90%
Debris/Wipes	0	00%
Grease	0	00%
Other	1	10%

Table 3 provides a condition finding-based summary of each of the ten SSO events. When possible, City staff perform a visual observation of the SSO main immediately after clearing the initial blockage is, but before the sewer main is cleaned aggressively. These visual observations have provided valuable information and insight into the exact cause of the spill, which may not have been determined from cleaning findings alone. Therefore, a visual finding column is included in Table 3 to provide this additional information.

Table 3. SSO Event Condition Finding Details							
	Asset ID	Grease	Roots	Debris	Other	Overall Finding	Visual Finding
1	K8-132	Clear	Light	Clear	Clear	Light	Roots
2	D12-72	Clear	Clear	Clear	Clear	Clear	Roots
3	H10-1	Clear	Clear	Clear	Heavy	Heavy	Rags/Concrete Trowel
4	E7-54	Clear	Clear	Clear	Clear	Clear	Roots

5	C9-58	Heavy	Clear	Clear	Clear	Heavy	Roots
6	D6-118	Clear	Clear	Clear	Clear	Clear	Roots
7	G8-74	Medium	Clear	Clear	Clear	Medium	Roots
8	D12-72	Light	Clear	Clear	Clear	Light	Roots
9	F6-164	Clear	Clear	Clear	Clear	Clear	Roots
10	G11-36	Medium	Clear	Clear	Clear	Medium	Roots

Overflows By Volume

Table 4 summarizes the ten SSO events by volume, showing total event volume, volume recovered, net volume released, and volume that reached public waters. Approximately 48.6% of the total SSO volume was recovered during emergency response events for the ten SSO events in FY22.

Table 4. SSO Event Summary by Volume in Gallons					
	Total Volume	Volume Recovered	Volume Not Recovered	Volume Reaching Public Waters	% Recovered
1	213	213	0	0	100%
2	191	0	191	0	0%
3	11	11	0	0	100%
4	3	3	0	0	100%
5	24	24	0	0	100%
6	127	2	125	27	1.6%
7	39	39	0	0	100%
8	34	0	34	0	0%
9	35	35	0	0	100%
10	4	4	0	0	100%

In FY22, one of the City SSOs reached public waters; SSO event #6. Approximately 27 gallons from this single SSO event was unrecoverable.

Blockage History

In FY22, no blockages were discovered.

Operation and Maintenance Program

Cleaning Activity Summaries

During FY22, through a combination of City and contracted efforts, approximately 330 miles of sewer main cleaning was completed. Sewer main cleaning activities resulted in 8,051 cleaning events applied to 5,130 individual sewer mains. The tables below describe in detail these sewer main cleaning activities.

Key analyses contained in this report have produced the following results:

- 8,051 sewer main cleaning events were completed in FY22. These cleaning events represent approximately 330 miles of sewer mains.
- 5,130 individual sewer mains were cleaned, many of them several times.
 - Cleaned approximately 208 geographic miles out of 256 system miles. Thus, in FY22, the City cleaned over 81% of its entire wastewater collection system.

Table 5 lists the monthly sewer main cleaning events and related cleaning mileages for FY22. In summary, the City averaged 671 cleaning events and 27.5 mile per month.

Table 5. Sewer Main Cleaning Monthly Summaries for 2021/2022		
Month	Monthly Cleaning Events	Monthly Cleaning Mileage
July 2021	705	28.3
August 2021	866	32.4
September 2021	467	19.3
October 2021	494	20.5
November 2021	702	30.5
December 2021	430	17.3
January 2022	360	14.8
February 2022	771	34.1
March 2022	725	31.2
April 2022	637	25.9
May 2022	935	38.5
June 2022	959	37.7
Totals:	8051	330.5
Monthly Averages:	671	27.5

Table 6 lists the number of times individual sewer mains received cleaning in FY22. Sewer mains being cleaned only one time over the reporting period represent 64 percent of the geographic sewer mains cleaned and 42 percent of all the cleaning events performed. Sewer mains being cleaned more than one time in FY22 represent the remaining 36 percent of geographic sewer mains and 58 percent of total cleaning events.

Table 6. Sewer Main Cleaning Event History			
Number of Times Cleaned	Number of Mains Cleaned	Cleaning Mileage	Geographic Mileage
1	3,410	133.7	133.7
2	1,170	99.1	49.6
3	337	45.4	15.1
4	76	13.7	3.4
5	45	9.4	1.9
6	40	12	2
7	8	2.5	0.4
8	7	2	0.2
9	18	5.2	0.6
10	2	0.7	0.1
11	4	2.2	0.2
12	8	3	0.3
13	4	1.1	0.08
14	1	0.4	0.03
Totals	5,130	330	208

Condition Findings

A detailed examination of condition findings can be made through a review of Table 7. It demonstrates that a small percentage of pipe cleaning events resulted in “heavy” or “medium” condition findings. Of these “heavy” and “medium” condition findings, roots and debris constitute the primary contributors of potential blockage-forming materials in sewer mains. Sewer mains indicating standard condition findings of Roots, Grease and Debris are presented in Figures 2, 3 and 4.

Table 7. Cleaning Event Condition Finding Summary				
Category	Roots	Grease	Debris	Other
Heavy:	36	3	8	5
Medium:	89	20	64	14
Light:	425	137	1,443	42
Clear:	4,213	4,603	3,248	4,702
Totals:	4,763	4,763	4,763	4,763

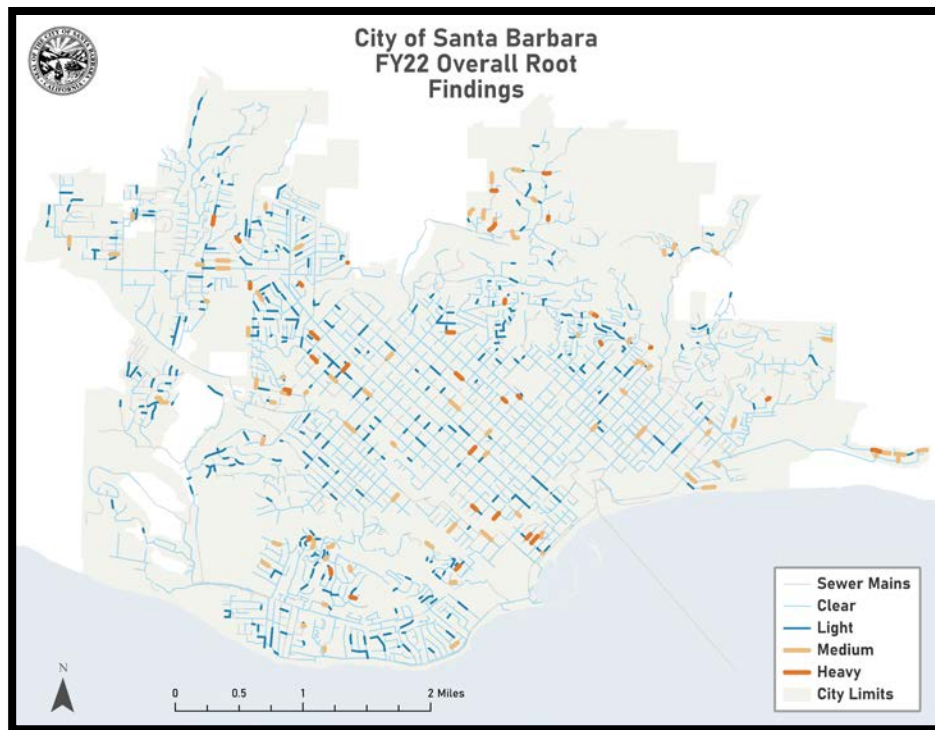


Figure 2. Roots Condition Findings

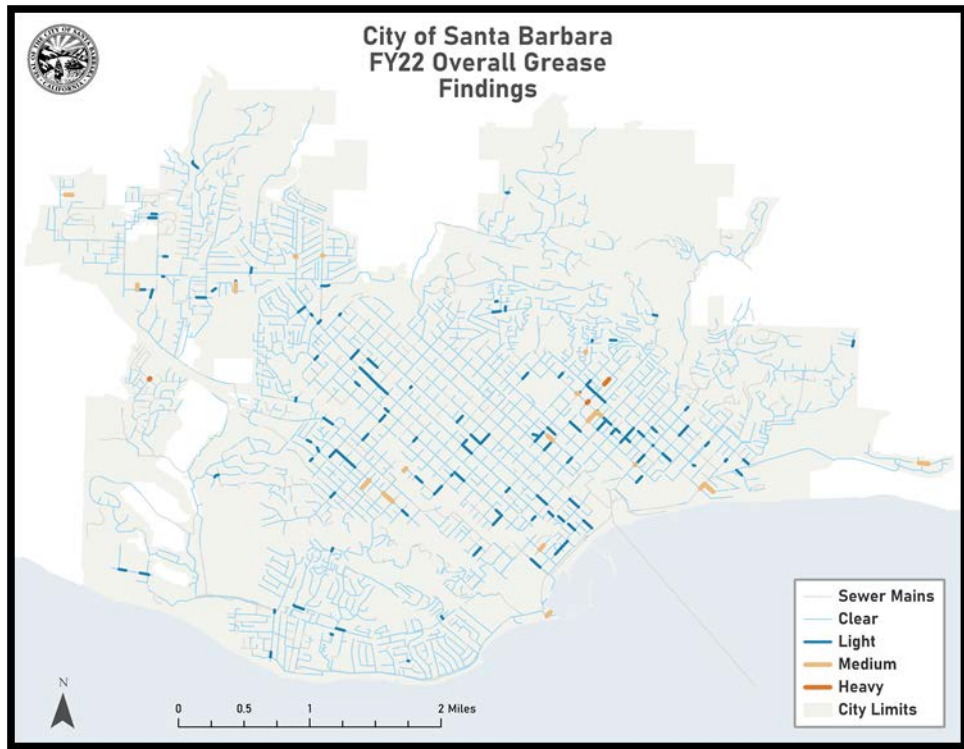


Figure 3. Grease Condition Findings

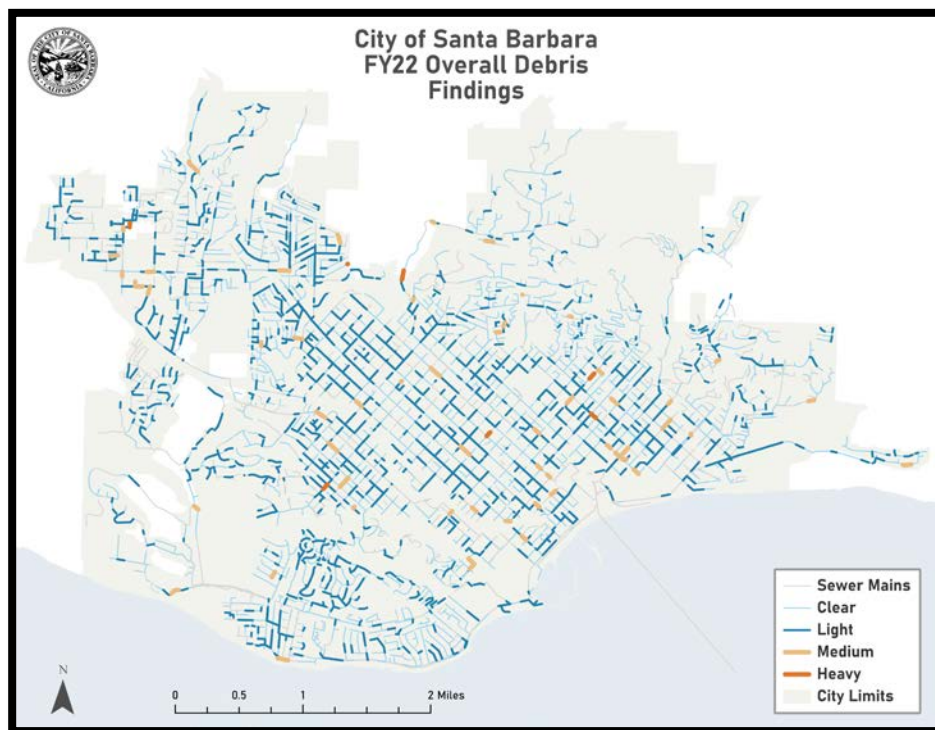


Figure 4. Debris Condition Findings

Cleaning Report

A report identifying all sewer mains cleaned in FY22 includes the sewer main segment ID, date cleaned, cleaning findings, sewer main diameter, size of proofer tool used, and the “known issues” field. If the proper sized proofing tool was not used, the reason why is documented in the known issues field. Outlined below are typical reasons a smaller proofer tool is used explaining some of the inconsistencies and anomalies in the data.

- For sewer mains larger than 12-inches in diameter, visual inspection is conducted in lieu of using a proofer tool, whenever possible. It is not practical to proof sewer mains larger than 12-inches in diameter in the City’s sewer system because it is difficult to maneuver larger sized proofers in the City’s smaller diameter manholes. Therefore, the City conducts a visual inspection of those sewer mains to confirm they were adequately cleaned. There are, however, times when visual inspection is not feasible, such as during peak flows and when visual inspection equipment is either being repaired or deployed elsewhere in the system. The City uses specialized cleaning nozzles for its large diameter sewer mains to clean debris from the bottom of the sewer main.
- Siphons and sewer mains in easements, under the freeway, and in difficult to access areas pose risks with using the correct sized proofer. Typically, a proofer tool one size smaller is used to reduce the risk of getting the proofer tool stuck in the sewer main and having to retrieve it through excavation.
- Additional reasons a smaller sized proofer tool may need to be used:
 - A sewer main is cleaned via access from an adjacent sewer main that requires a smaller sized proofer tool. This typically happens in easements where an access structure is difficult or unsafe to get to. If these two mains are cleaned together or separately there may be different sized proofer tools used at different times;
 - Rehabilitated sewer mains and sewer mains with internal spot line repairs may require a smaller proofer tool, especially if there are top hats installed or an offset is lined through; and
 - GIS errors; and
 - Contractor error. Staff has been working with contractors to document the reason the correct size proofer tool could not be used.

Cleaning Program Modifications

The City is constantly analyzing its cleaning program with the goal of reducing SSO events. During FY22, staff continued reviewing cleaning findings and using visual observations to ensure that each pipe is assigned to the correct cleaning program and on the correct frequency. If pipes were discovered to have roots either through visual confirmation or new cleaning findings, the cleaning program was adjusted so that the pipe was assigned to one of the two root control cleaning programs. Table 8 below summarizes the current percentage of pipes within each of the four cleaning programs.

Table 8. Sewer Main Cleaning Program Summary			
Cleaning Program	Number of Sewer Mains	Miles	Percent of System (by Number of Sewer Mains)
System Wide Cleaning	724	27.8	11.5%
Accelerated Cleaning	1,871	73.5	29.8%
Accelerated Root Cleaning	2,995	126.6	47.8%
Chemical Root Control	679	27	10.8%

System Wide Cleaning Program

The System Wide Cleaning Program is intended for those sewer mains without a history of heavy or medium findings. They are sewer mains that can be cleaned on a longer frequency and are currently cleaned on a 36-month or 60-month cleaning frequency, depending on the size. For sewer mains 8-inch in diameter or less, the City will continue to clean these sewer mains in this cleaning program at the 36-month cleaning frequency until data suggests that the frequency should be increased. The cleaning frequency for sewer mains larger than 8-inch in diameter will remain at 60-months.

Approximately 11.5% of the City's sanitary sewer system is on the System Wide Cleaning Program.

Accelerated Cleaning Program

The Accelerated Cleaning Program is for sewer mains with a history of debris or grease findings that require more frequent cleaning than the System Wide Program. Sewer mains in this program are cleaned at least every 24-months. Approximately 29.8% of the City's system is assigned to the Accelerated Cleaning Program.

Current cleaning frequencies for the Accelerated Cleaning Program are 24, 12, 6, 4, 2 and 1-month.

Accelerated Root Cleaning Program (ARCP)

Sewer mains in this program are cleaned at least every 12-months and are not removed from the program until the source of root intrusion is identified and eliminated. Alternatively, they may be placed in the Chemical Root Control program. Approximately 47.6% of the City's system is assigned to the Chemical Root Control Program (CRCP).

Chemical Root Control Program (CRCP)

Sewer mains in this program are treated with an herbicide to inhibit root growth in the sewer main. Approximately 10.8% of the City's system is assigned to the Chemical Root Control Program (CRCP).

Completed Condition Assessment Work

In FY22, through a combination of City and contracted efforts, over 26 miles of sewer main CCTV inspection was completed. The location of completed inspection tasks is captured in Figure 5.

A breakdown of production completed by City and contractor efforts is listed in Table 9. PACP scoring of completed CCTV inspections is summarized in Table 10. Collected CCTV data is uploaded into our ITPipes inspection management software for storage and condition assessment work. It should be noted that the City's CCTV contribution was limited due to the City's CCTV van not being operable and a delay in the delivery of the new CCTV truck.

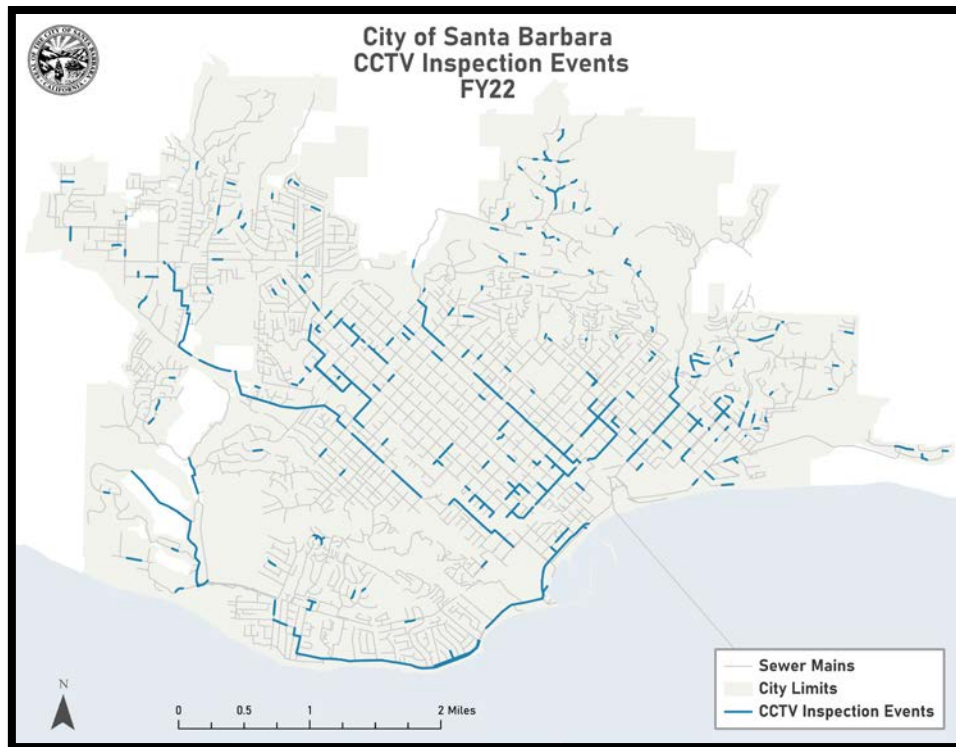


Figure 5. CCTV Inspection Events

Table 9. CCTV Events Mileage Summary	
CCTV Source	Total Mileage
City Staff	7.68
Contractor	19.03
Total	26.71

Table 10. CCTV Inspection Results	
PACP Score	Mileage Receiving Each Score
5	1.37
4	12.57
3	4.82
2	1.36
1	0
0	6.59
Total	26.71

QA/QC Program

In FY22, approximately 19 miles of CCTV assessment work was performed by contractors. This included CCTV inspections conducted through the annual capital and CCTV contracts.

The CCTV Planner/Scheduler is committed to ensuring the quality of the data entered into the CCTV database meets PACP standards. Staff recognizes that contractor data requires a significant amount of QA/QC, and in FY22, wastewater staff performed QA/QC on 54% of the 19 miles of contractor's inspections and entered the results into Cartegraph OMS.

FOG Management Program

The City has a dedicated Compliance Inspector responsible for inspection of the 600 food service establishments (FSE) that produce fats, oils and grease (FOG) in the City's service area. Our inspector provides public education and outreach to the Food Service Establishments. City staff inspected five hundred eighty-two (582) FSEs during the reporting period. FOG-related spills have trended down in recent years due to our successful FOG program. During this reporting period, the City experienced no SSO related incidents.

Program Projections for FY'23

Cleaning Mileage Projections

Cleaning mileage projections for the next fiscal year are presented in Table 11. For this analysis, and projection, the mileage is based on the current frequency.

Table 11 Projected Minimum Cleaning Mileage Requirements									
Year	1 month	2 month	4 month	6 month	12 month Basin Cleaning	24 month Basin Cleaning	36 month Basin Cleaning	60 month Basin Cleaning	Total
2023	23.6	16.8	37.7	61.7	105.8	12.5	8	2.8	268.9

Planned Condition Assessment Work

The City's Wastewater Collection team recently secured a new EnviroSight CCTV truck that works in conjunction with ITPipes inspection management software. City staff use this system to televise City sewer mains in response to: SSO events, system blockages, customer complaints and requests, SLIP support, QC review of sewer main cleaning and repair, and ad-hoc organizational needs.

City staff are currently working on a bid for future CCTV inspection services to assist staff with a comprehensive small diameter sewer main inspection project. Resulting CCTV inspection effort will be recorded in the City's work management system, Cartegraph, and inspection data will be uploaded into the City's inspection software, ITPipes. PACP certified staff will continue to apply QA/QC measures to verify the Contractor's inspection video and data is of appropriate quality and accuracy.

We estimate City and contractor inspection efforts in FY23 will result in approximately 50 miles of sewer main assessment. Planned sewer main inspection locations shown in Figure 6 below.

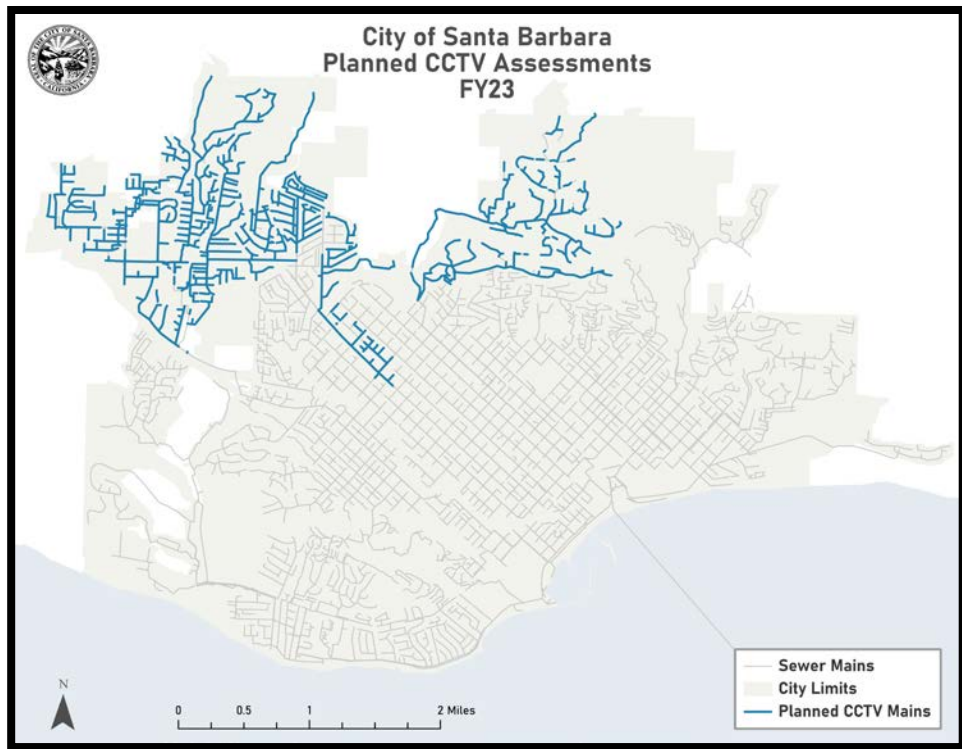


Figure 6. Planned CCTV Tasks

Chemical Root Control Program

Planned chemical root foaming will consist of mains 6"-8" in diameter and enrolled in the 12-month CRC treatment cleaning program. Approximately 100,000 linear feet of sewer main will be targeted for chemical foaming application. CRCP locations for FY23 shown in Figure 7 below.

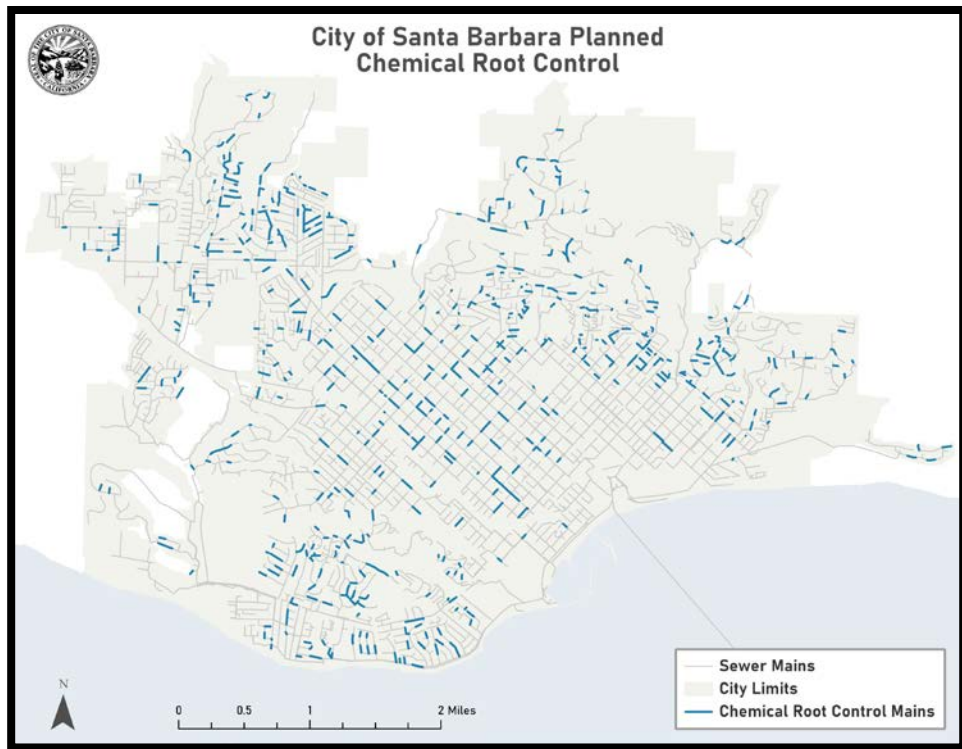


Figure 7. Chemical Root Control Program for FY23

WASTEWATER TREATMENT PROGRAM

The City of Santa Barbara operates and maintains the El Estero Water Resource Center (El Estero) to treat all wastewater conveyed through the Wastewater Collection System. El Estero was originally constructed in 1952, with a majority of the current infrastructure constructed in 1978 to meet 1972 Clean Water Act requirements. In its past 58 years of operation, many capital improvement projects have been completed; however, due to the nature of its operations, El Estero still requires periodic process evaluation and consistent maintenance improvements as equipment reaches its end-of-life usage. This Annual Report includes information for the reporting time period of July 1, 2021, to June 30, 2022. The following annual Report will include:

- a) Wastewater Treatment Plant
 - i) Introduction
 - ii) Treatment Plant Process Diagram
 - iii) Operation Certifications
 - iv) Operations and Maintenance Manual
 - v) Computerized Maintenance Management System
 - vi) Industrial Pretreatment
 - vii) Ocean Outfall Inspection
 - viii) Performance Objectives
 - ix) Novozymes BioSec Full Scale Trial
 - x) Maintenance Activities
- b) Wastewater Treatment Summary
 - i) Coronavirus Pandemic Impacts
 - ii) Wastewater Flows and Water Quality
 - iii) Discussion of Compliance Record and Corrective Actions
 - iv) Biosolids Operations Summary

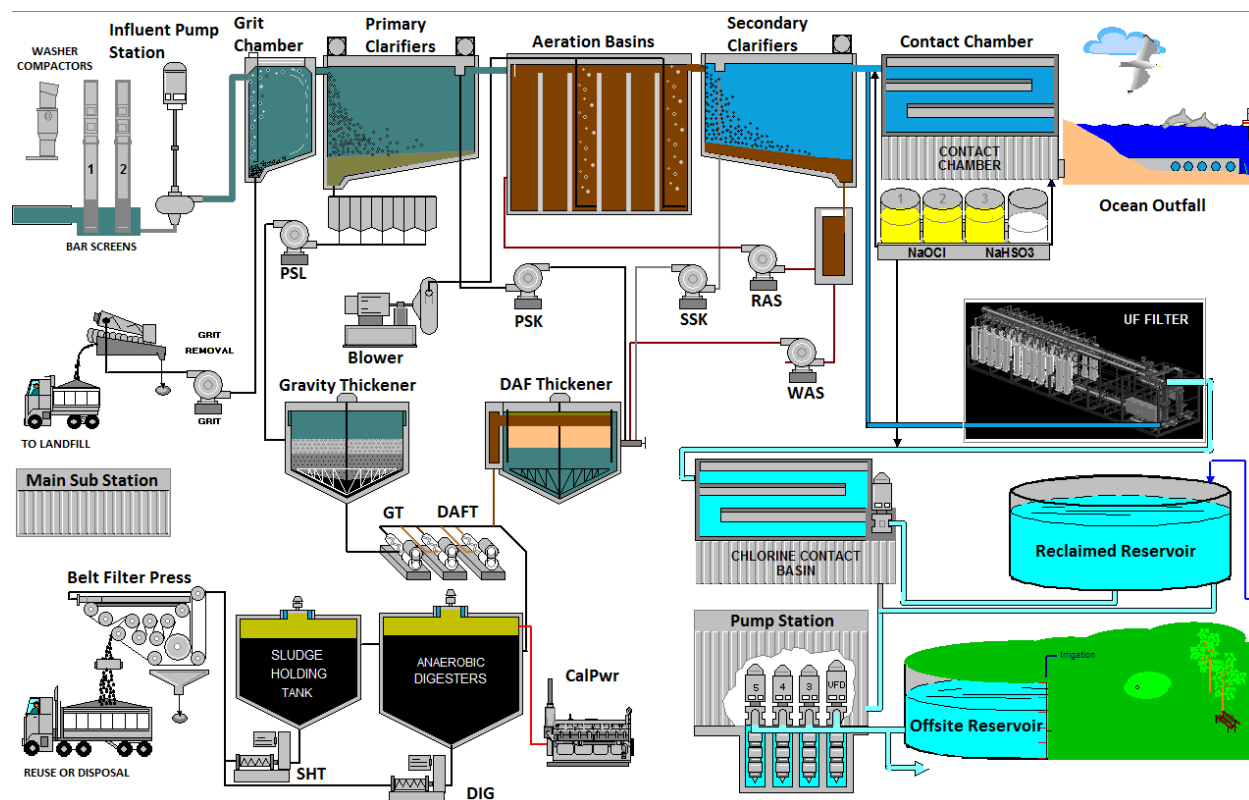
Wastewater Treatment Plant

Introduction

The City of Santa Barbara's first sewers were constructed in 1888. In 1925, a mechanically cleaned fine screen was installed on the sewer outfall to the Pacific Ocean. Construction of the first City of Santa Barbara Wastewater Treatment Plant began in 1951. The first treatment plant provided primary treatment to the wastewater. In 1978, the El Estero Wastewater Treatment Plant (El Estero) was put into service. In 2019 the El Estero Wastewater Treatment Plant was renamed to the El Estero Water Resource Center

El Estero serves the entire City of Santa Barbara except for areas around the airport. The plant is a secondary treatment plant that includes primary clarification, activated sludge, disinfection, recycled water, and biosolids handling processes. Biosolids are anaerobically digested and dewatered; they are ultimately composted and recycled. El Estero's Secondary Treatment system was upgraded in 2019 to a biological nutrient removal process that provides full nitrification and partial denitrification. The majority of the treated wastewater is discharged to the Pacific Ocean through an ocean outfall. The remaining flow is distributed through the City's Recycled Water Distribution System after Tertiary Treatment. El Estero's Tertiary system was upgraded in 2015 to an Ultrafiltration membrane process. The facility design dry weather flow of the plant is 11 million gallons per day. Actual flows average about 6 million gallons per day (MGD) except during wet winter months. Based on limited future growth, flows are not expected to reach the rated capacity. El Estero's operations are regulated by the California State Water Resources Control board through the NPDES program.

Treatment Plant Process Diagram



Operation Certifications

The Operations Staff is mandated by State Law to be certified by the State Water Resources Control Board (SWRCB). El Estero is classified as a Class IV plant by the SWRCB and operations at the plant must be directed by an operator of the same class as the plant operated. Therefore, the Plant Superintendent must possess a Grade IV or higher. Further, at least half of the operators must possess a Grade III certification or higher; the rest must possess at least a Grade I certification. To be eligible to take the certification examination, an employee must work in the field for at least a one-year. The State has a provision to allow operators to work under an OIT license while obtaining the experience necessary to sit for the licensing exam. During this reporting period, all Operations Staff at El Estero held at least a Grade III. Thomas Welche, Treatment Superintendent, held a Grade V Certification.

Operations and Maintenance Manual

The El Estero Water Resource Center's (El Estero) Electronic Operation and Maintenance Manual and Related Standard Job Operating Procedures (O&M manual) was launched in October 2015. The O&M manual is a living document which is periodically reviewed to capture changes made at El Estero. The O&M manual was reviewed in its' entirety as of December 2021. The O&M manual is complete and valid for the facility.

Computerized Maintenance Management System

El Estero staff use the Computerized Maintenance Management System (CMMS), Maintenance Connection to implement asset management program activities including maintaining the asset register, spare parts and equipment inventory and work order system. Maintenance Connection is continuously updated by staff and most recent edits to the asset register include incorporating new equipment installed as part of the secondary upgrades project.

Industrial Pretreatment

The City of Santa Barbara is required to implement an Industrial Pretreatment Program to be in compliance with the NPDES Permit. Following is a summary from the 2021 Pretreatment Annual Report for the period of January 1, 2021, to December 31, 2021.

Introduction

The source of wastewater received at the El Estero Water Resource Center is primarily domestic waste from homes. There is a commercial sector and a small light industrial sector that also contributes to the treatment plant. The commercial sector consists primarily of offices, restaurants, and retail shops. The permitted industrial sector is comprised of one small zero-discharging circuit board manufacturer, two industrial laundries, one portable toilet and septic waste hauler, one hospital, a marine boatyard, one micro-electronics fabricator with glass etching, two cannabis manufacturers, one artisan distiller, a desalination plant, and a groundwater treatment plant. The City also permits three groundwater remediation dischargers and six direct dischargers. In 2017, the Charles E. Meyer Desalination Facility was placed in service. The brine from the desalination plant reverse osmosis process is commingled with the plant final effluent prior to discharge through the ocean outfall. With the desalination commissioning, two sample stations were placed into service. One to sample the plant final effluent and one to sample the commingled effluent (plant final effluent and brine).

Treatment Plant Monitoring

Annual Treatment Plant Sampling

Annual plant sampling includes 24-hour composite sampling of plant processes for pollutants of concern identified under Section 306(1) of the Clean Water Act. The annual plant sampling was conducted on October 12-13, 2021. Flow-weighted composite samples were collected at each influent sampling location (Inf #1, Inf #2, Inf #3), plant final effluent (PFE), reclaimed distribution effluent (from the chlorine contact basin), comingled (plant effluent plus brine) and belt press cake (BP Cake). Grab samples were also collected from each influent line, and BP Cake was collected as a composited grab sample.

All samples were analyzed for metals, including arsenic, cadmium, chromium, copper, iron, lead, mercury, molybdenum, nickel, selenium, silver, and zinc, and oil and grease. Conventional pollutants (BOD, TSS, TDS, and CBOD) were analyzed for most treatment processes. The influent and BP Cake were also analyzed for organics, pesticides, and tributyltin.

Monthly and Quarterly Treatment Plant Sampling

The City conducts monthly sampling at the plant for influent, plant final effluent, and belt press cake. Each influent sampling location and plant final effluent are sampled and analyzed for BOD, TSS, and TDS monthly. The belt press cake is sampled and analyzed for metals monthly. The City conducts quarterly sampling and analysis for each influent sampling location and the plant final effluent for metals. All analytical results are reported in NPDES Self-Monitoring Reports to the Central Coast Regional Water Quality Control Board.

Interference or Pass-Through

There were no known incidents of interferences or evidence of pass-through involving or affecting the treatment plant during 2021.

List of Industrial Users

Categorical Industrial Users

Business Name & Address	Type of Operation
High Temperature Superconductors (Formerly Corning Technology Center) 320 and 323 N. Nopal Street Santa Barbara, CA 93101	Manufacturing of High Temperature superconductor wire. Manufacturing of silicone wafer-based MEMS devices 40 CFR Part 469.18
Spacek Labs 212 East Gutierrez Street Santa Barbara, CA 93101	Small circuit board manufacturing company 40 CFR Parts 413.14, 413.24 (zero discharger)

Non-Categorical Industrial Users

Business Name & Address	Type of Operation
Charles E. Meyer Desalination Plant 525 E. Yanonali Street Santa Barbara, CA 93101	Desalinates seawater for potable water use.
Charles E. Meyer Desalination Plant Pump Station and Chemical Area 420 Quinientos Street Santa Barbara, CA 93101	Pump station and chemical feed station for the Charles E. Meyer Desalination Plant.
City of Santa Barbara Ortega Groundwater Treatment Plant 220 E. Ortega Street Santa Barbara, CA 93101	Treats groundwater for potable water use.
Cottage Hospital 400 W. Pueblo Street Santa Barbara, CA 93102	Community hospital with emergency room services
Cutler's Artisan Spirits 137 Anacapa Street, Suite D Santa Barbara, CA 93103	Distiller that produces high quality liquors in small batches
Harbor Marineworks 122 Harbor Way Santa Barbara, CA 93109	Dry-dock boat repair and boat maintenance facility
MarBorg Industries 23 N. Quarantina Street Santa Barbara, CA 93103	Septage and portable toilet waste hauler
Mission Linen Supply (#1) 712 E. Montecito Street Santa Barbara, CA 93103	Industrial laundry laundering linens from hotels, restaurants, and healthcare facilities
Mission Linen Uniform (#4) 725 E. Montecito Street Santa Barbara, CA 93103	Industrial laundry laundering uniforms, shop towels, and floor mats
Coastal Manufacturing 819 Reddick St Santa Barbara, CA 93103	Industry is a cannabis manufacturer. Produces vape pens, edibles, and cannabis oil.

Business Name & Address	Type of Operation
Santa Barbara Manufacturing 400 E. Gutierrez St Santa Barbara, CA 93103	Industry is a cannabis manufacturer. Produces vape pens, edibles, and cannabis oil.

Groundwater Dischargers

Site Address	Type of Operation
14 W. Gutierrez St. Ablitt's Fine Cleaners 14 W. Gutierrez St. Santa Barbara, CA 93101	Discharges groundwater treated to remove chlorinated solvents.
4151 Foothill Blvd. ExxonMobil Oil Corporation 21 East Victoria St., Suite 200 Santa Barbara, CA 93101	Discharge from remediation of former gasoline station with leaks from underground tanks.
700 E. Anapamu St. Andrew Rhodes City of Santa Barbara Water Resources Division 735 Anacapa St. Santa Barbara, CA 93101	Raw potable groundwater treatment

Direct Dischargers

Business Name & Address	Type of Operation
Surface Management 1217 ½ Gillespie St Santa Barbara, CA 93101	Discharges wastewater from pressure washing and steam cleaning.
City of Santa Barbara Downtown Parking Program 1221 Anacapa St Santa Barbara, CA 93101	Hot and cold-water pressure washing of parking garages.
Santa Barbara Museum of Natural History 2559 Puesta del Sol Santa Barbara, CA 93105	Discharge from Backyard Creek water feature.
Santa Barbara Pressure Wash 620 Jacob Ln Santa Maria, CA 93455	Discharges wastewater from pressure washing and steam cleaning.
City of Santa Barbara Waterfront Department 132A Harbor Way Santa Barbara, CA 93109	Discharges wastewater generated from bilge pumping from boats, utilizes a water oil separator system.
Rich & Famous, Inc. (DBA Big Green Cleaning Company)	Discharges wastewater from pressure washing activities.

Business Name & Address	Type of Operation
5551 Ekwil St Santa Barbara, CA 93111	
Southern California Gas Company 630 E. Montecito St Santa Barbara, CA 93103	Discharges wastewater from vehicle washing activities.
Southern Coast Janitorial 133 E De la Guerra St #221 Santa Barbara, CA 93101	Discharges Wastewater from power washing activities.

Discontinued Permittees since Last Pretreatment Annual Report

Business Name & Address	Type of Operation
Pacific Coast Powerwash 1410 La Vereda Ln Santa Barbara, CA 93108	Discharges wastewater from pressure washing and steam cleaning.
Corning Technology Center 320 and 323 N. Nopal Street Santa Barbara, CA 93101 (This business was sold, as a result the permit was terminated, and a new permit was issued to the New company.)	Grinding, polishing, cleaning, and etching of glass and ceramic wafers during microfabrication/MicroElectroMechanical (MEMS) photostructurable glass/ceramics for off-site manufacturing 40 CFR Part 469.18

Inspection and Sampling

The planned frequency of sampling and inspection for permitted dischargers is a minimum of two times per year. There are two different types of inspections. The first is a comprehensive inspection which is performed once a year. This type of inspection consists of a meeting with the industrial official responsible for the quality of the wastewater. The industrial user file is reviewed at this inspection and persistent or unaddressed problems are discussed. Also discussed during the file review are permit conditions, reporting requirements, local limits, hazardous materials handling, recordkeeping, and any other concerns of the Pretreatment Program staff or industrial officials.

A thorough tour of the facility is made and all waste generating processes are inspected. Waste handling, storage procedures, and Best Management Practices are also inspected. After the walkthrough inspection, any deficiencies are noted and brought to the attention of the industrial user or facility representative. Because of the time required for this type of inspection, the industry is generally notified beforehand in order to schedule a time when the responsible official will be available.

The second type of inspection is informal. This type of inspection consists of checking pretreatment equipment for performance and calibration, and to make sure that any special procedures are being followed. It is not necessary to have the industrial official present at this inspection; however, any concerns identified through the inspection are brought to the attention of the designated industrial official at the earliest opportunity. This type of inspection and all sampling visits are unannounced.

Compliance and Enforcement

There were ten (10) Notices of Violations (NOVs) issued to Users during 2021:

- (1) MF Interiors – NOV for prohibited discharge.
- (2) Mission Linen Supply #1 – Oil and grease exceedance.
- (3) Mission Linen Supply #1 – Oil and grease exceedance.
- (4) MarBorg Industries – Insufficient Monitoring.
- (5) Santa Barbara Steam Cleaning – Oil and Grease exceedance.
- (6) MarBorg Industries – Insufficient reporting.
- (7) MarBorg Industries – pH exceedance.
- (8) MarBorg Industries – Daily flow limitation exceedance.
- (9) IDE Technologies – Violation of SBMC 16.04.120 Dilution prohibited.
- (10) MarBorg Industries – Daily Flow limitation exceedance.

Pretreatment Program Changes

The following documents were revised: the City's Sewer Use Ordinance (SUO), and the Pretreatment Program Documents. These updated documents were approved by City of Santa Barbara City Council and have been submitted to the Central Coast Regional Water Quality Control Board and are awaiting final approval.

Staffing consists of one Pretreatment Program Coordinator. As of the date of this report, the Pretreatment Program Coordinator has a certification of Laboratory Analyst Grade 2 and an Environmental Compliance Inspector Grade I from the California Water Environment Association (CWEA). The Pretreatment Coordinator regularly participates in several training opportunities including the annual CWEA P3S Conference, several local section CWEA training seminars and various leadership training opportunities.

Ocean Outfall Inspection

Secondary treated municipal wastewater is discharged to the Pacific Ocean through a 48-inch diameter land/ocean outfall pipeline, which extends 8,720 feet into the Santa Barbara Channel (34 deg 23' 31" N Latitude; 119 deg 40' 03"), to an ocean depth of 70- 80 feet. Treated wastewater is discharged through specially designed diffusers located along the last 720 feet of the outfall. There are a total of 60 diffuser ports along the last 720-foot section of outfall. The minimum initial dilution ratio is 120:1 (seawater: effluent, or part discharge, where no brine discharge occurs, and as low as 44:1, where brine discharges at the rate of 12.5 MGD. The hydraulic capacity of the outfall is 28 MGD.

The City is required to have the ocean outfall inspected annually as a requirement in El Estero's NPDES permit. The outfall inspection is performed on the 720-foot diffuser section and exposed pipeline until the pipeline becomes covered with protective rock. The annual outfall inspection was performed on July 23, 2021.

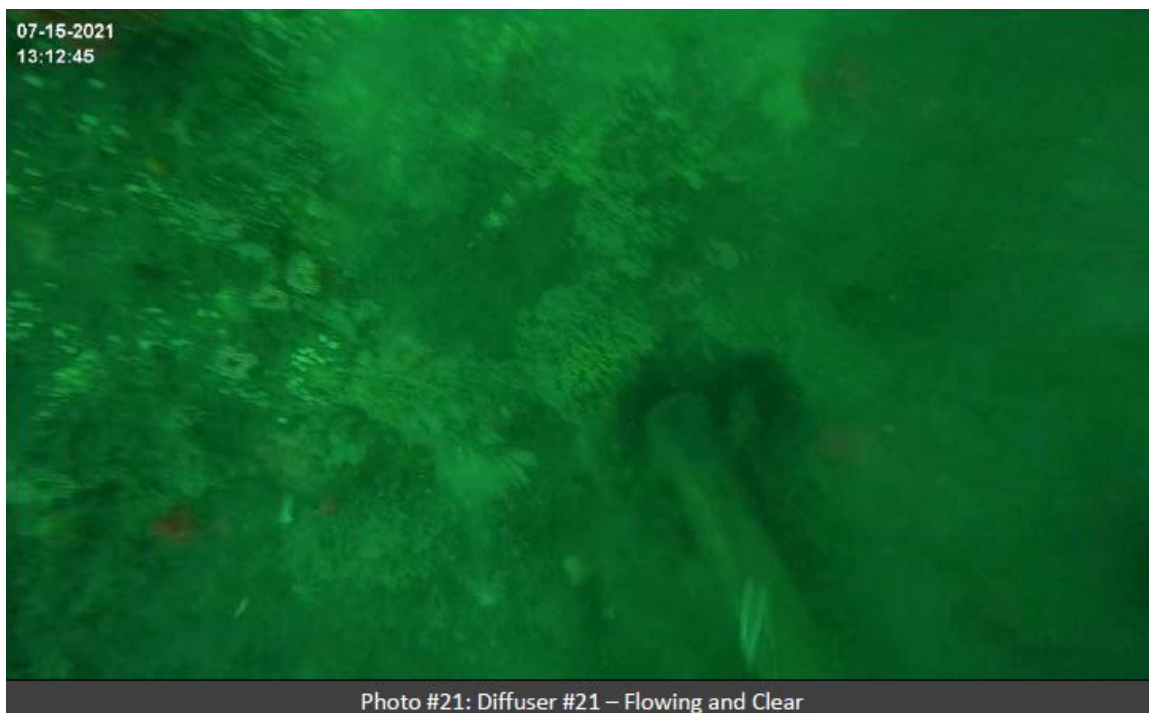
Harbor Offshore, the contractor who performed the inspections, reported as follows:

On July 23, 2021, HOI divers began the inspection at the offshore end and located the "end gate". The diver removed the heavy marine growth from the end of the gate, then inserted a 2" pipe through the 3" hole in the gate to be used as a toggle and a means to secure the gate in the open position. A 2,000-pound lift bag was rigged to the padeye on the top of the gate and inflated until the gate was opened (approx. 8 – 10 inches). As soon as the gate was lifted and secured, the inspection of the (60) diffuser ports commenced from the end cap to STA 80+00 as shown on the as-built drawing. The diffuser section was found to be in the same condition as last year, sound and lying solidly on the bottom without any deflection or scouring. All 60 diffuser ports were located and flowing clear of any obstructions.

After completing the diffuser inspection, the diver began the swim by video inspection of the outfall. The outfall was found to be lying on firm bottom at approximate spring line. No scour or unsuspended joints were detected during the inspections. After inspecting all joints of pipe, a diver was sent back to the offshore end to deflate the lift bag thus closing the end gate. The gate had

been open for just over 4 hours. Outfall continues to be in good overall condition with no damage or anomalies found.

Below are typical photos from the dive inspection of the ocean outfall.



07-15-2021
12:27:12



Photo #42: Diffuser #42 – Flowing and Clear

07-15-2021
11:29:04



Photo #56: Diffuser #56 – Flowing and Clear

Performance Objectives

The City of Santa Barbara P3 Program is used to develop and monitor performance metrics for all business units within the City. For FY 2022 the following program activities, project objectives, measurable objective and other performance measures were tracked:

Program Activities:

1. Operate the El Estero Water Resource Center to comply with discharge limitations as required by the Regional Water Quality Control Board (RWQCB).
2. Operate the El Estero Water Resource Center to assure air emission compliance with the Santa Barbara Air Pollution Control District Permit (SBAPCD).
3. Maintain the El Estero Wastewater Resource Center using predictive and preventive maintenance methods.
4. Continue public outreach and education to inform the public of environmental benefits of the El Estero Water Resource Center process.

Status Project Objectives

1. Maintain compliance with the NPDES and APCD permit limits during the Digester Cleaning & Dome Replacement Project. - Completed.
2. Develop a request for proposal (RFP) for a Process Control Data Management System. – Not Completed. Wastewater staff hired Aspect Engineering to complete an all-inclusive 2 phase SCADA system assessment and upgrade project. Inventory of current facility was completed in FY 2022 and an alternatives analysis is underway. Alternatives for a Data Management System will be included in the analysis and should be complete in Q1 of FY 2023.

Measurable Objectives

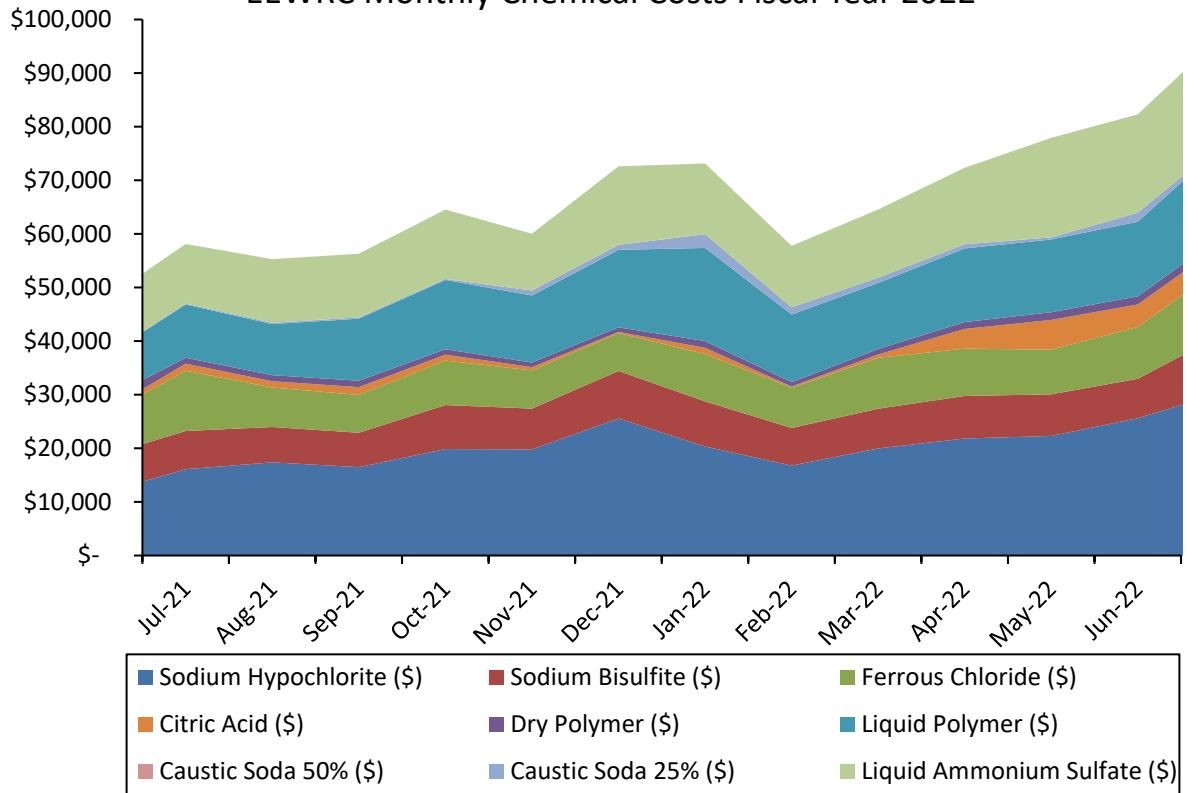
1. Achieve 99.9% compliance with wastewater discharge limits as listed in the NPDES permit issued by Regional Water Quality Control Board. – 100.0% compliance achieved.
2. Achieve 100% compliance with local air emissions standards as specified in the Santa Barbara Air Pollution Control District (SBAPCD) permit requirements. – 100% compliance achieved.
3. Achieve 99.9% compliance with discharge limits for recycled water as listed in the Water Reclamation Discharge permit issued by the Regional Water Quality Control Board. – n/a – Recycled water monitoring has been incorporated into NPDES permit.
4. Target 75% of completed wrench time hours as a percentage of total available craft hours for maintenance personnel. – 81% of hours completed as wrench time.
5. Target 80% of proactive maintenance work order hours as a percentage of all maintenance work order hours completed. – 91% of hours were allocated to proactive work orders.

Other Program Measures

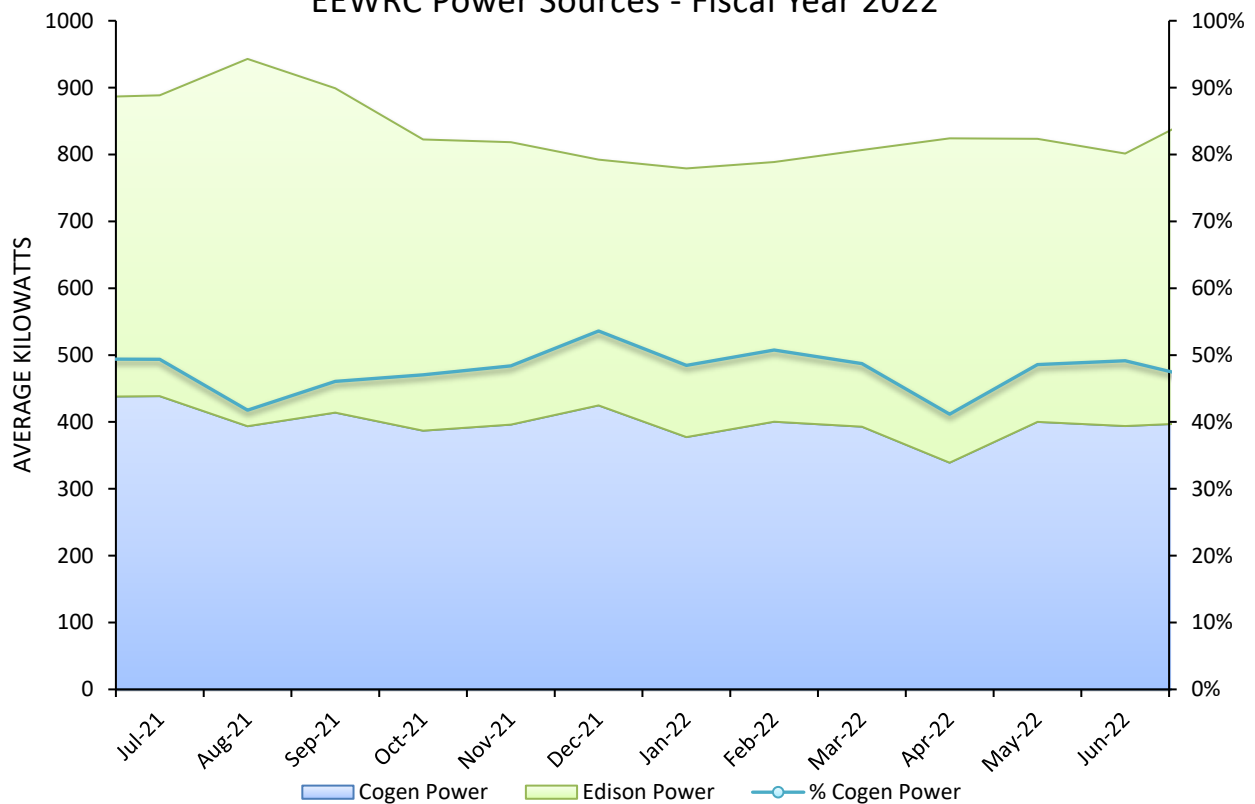
1. Millions of Gallons Wastewater treated – 2136.5 Million Gallons (MG)
2. Average cost per million gallons treated - \$4222 / MG
3. Chemical cost per million gallons treated (nonrecycled water) – \$403 / MG
4. Million gallons of recycle water distributed – 363 MG
5. Chemical cost per million gallons of recycle water distributed - \$219 / MG
6. Tons of Carbonaceous Biochemical Oxygen Demand (CBOD) treated – 2216 tons
7. Average cost per ton of CBOD treated – \$4098 / ton
8. Biosolids chemical, hauling, and composting cost per dry ton - \$404 / dry ton
9. Gallons of Fats, Oils and Grease (FOG) received at FOG Facility – 603004 gallons
10. Percent of power provided by cogeneration – 48%

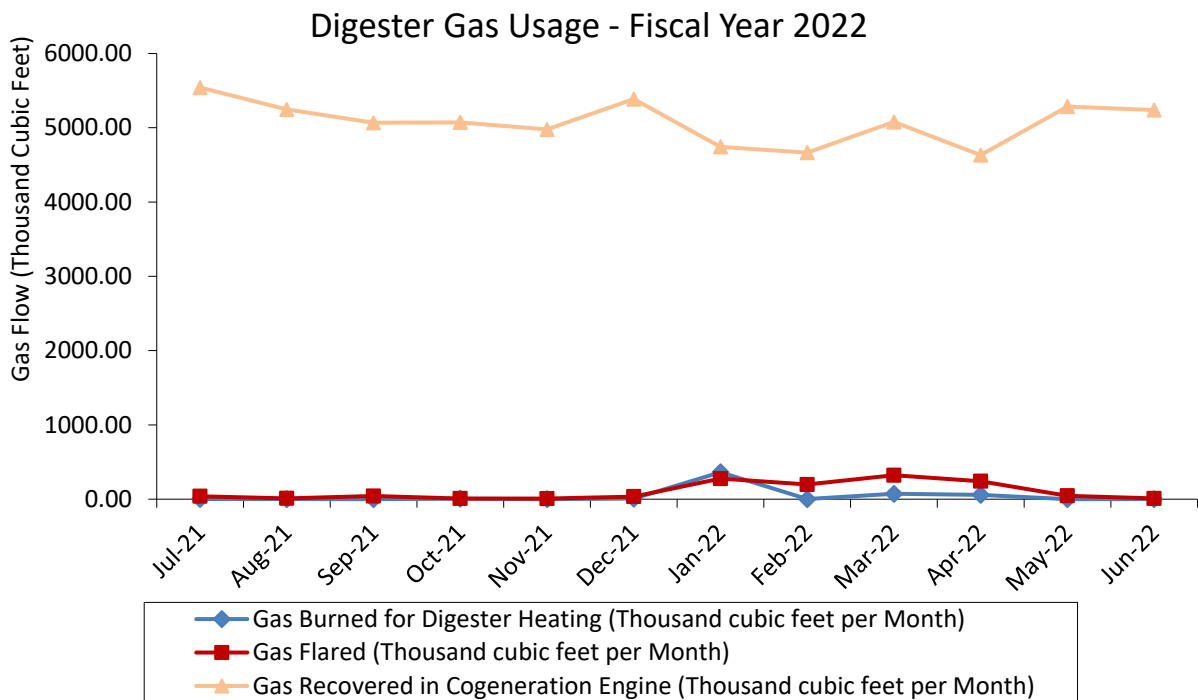
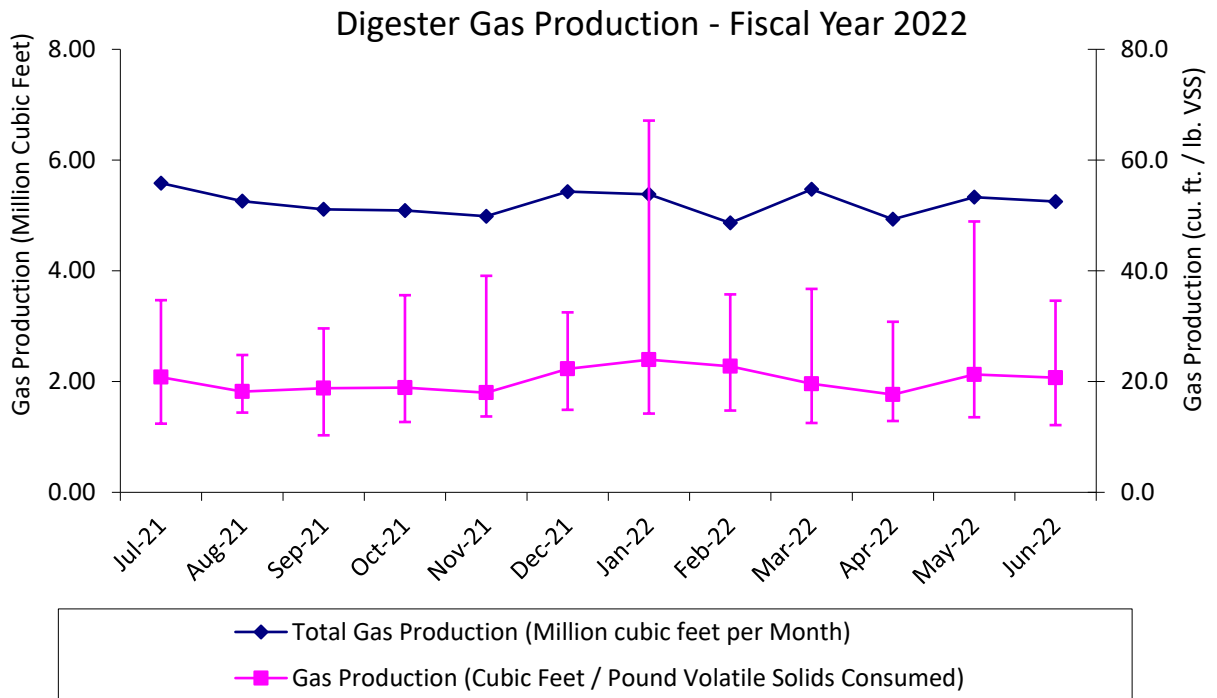
The following graphs summarized key performance objectives listed above.

EEWRC Monthly Chemical Costs Fiscal Year 2022

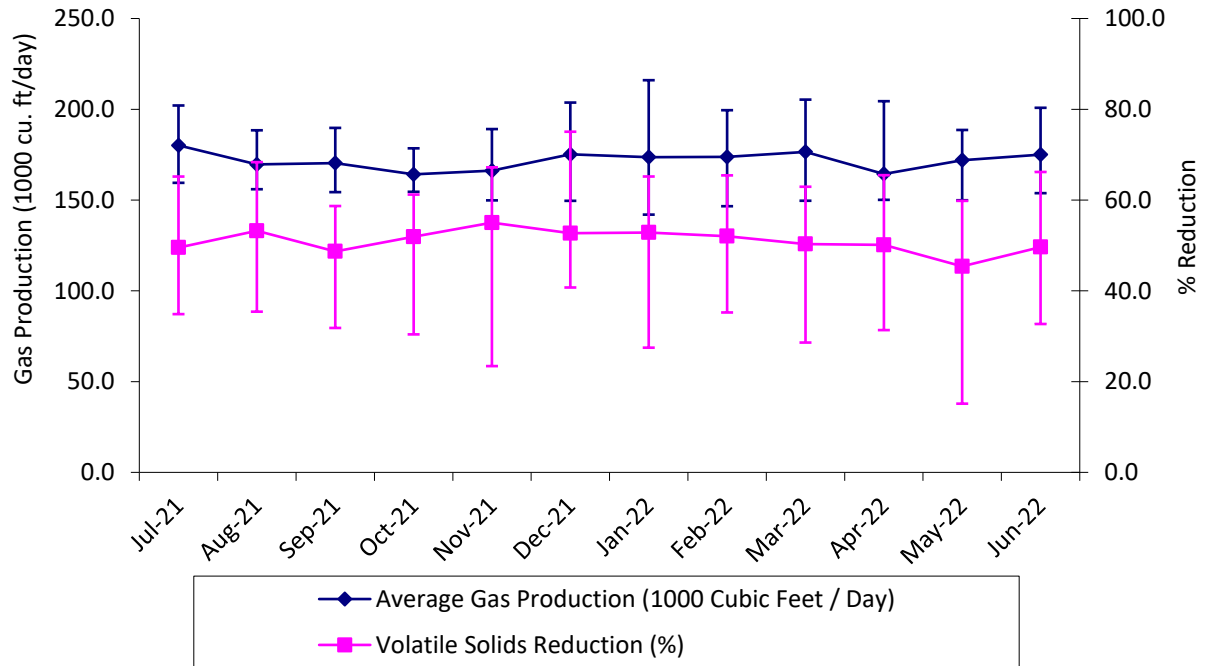


EEWRC Power Sources - Fiscal Year 2022

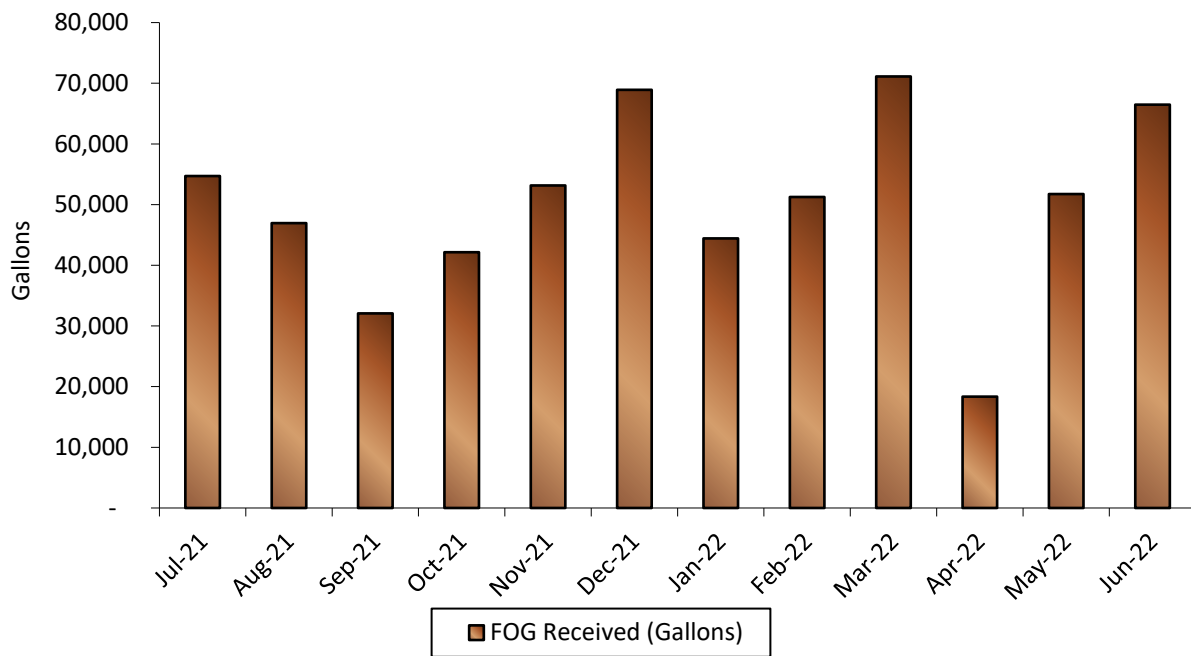


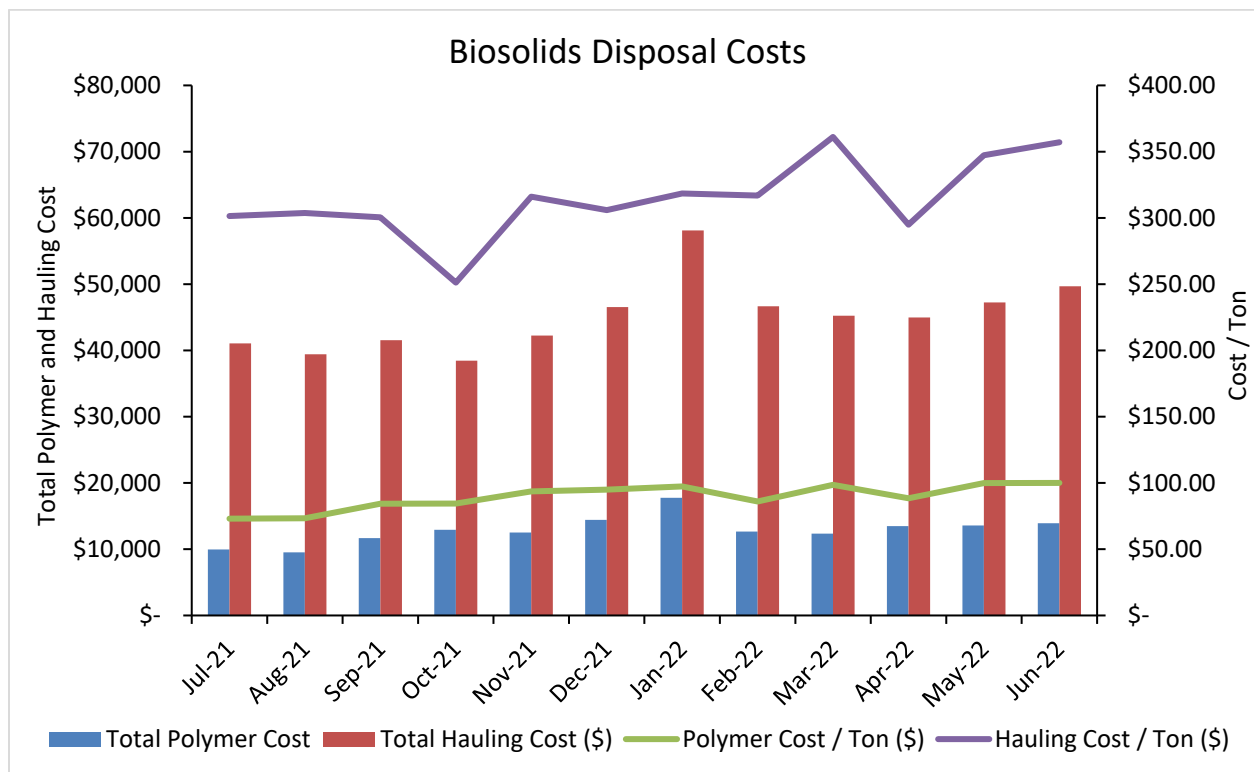
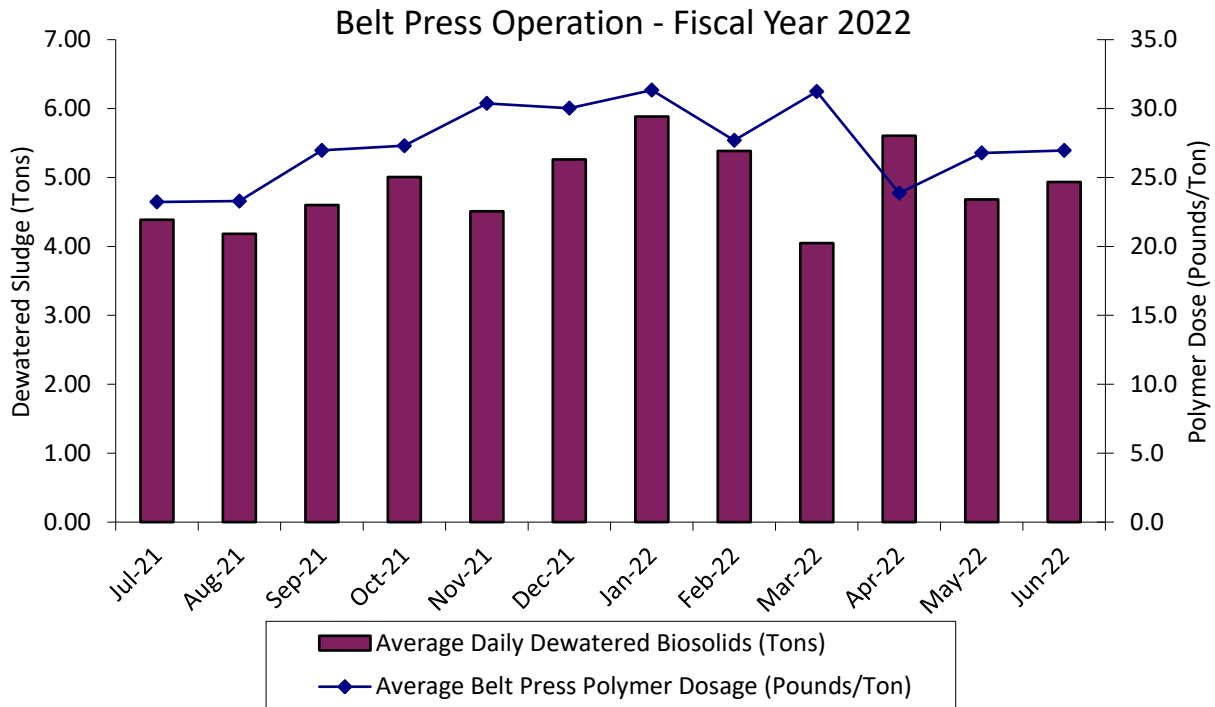


Digester Performance - Fiscal Year 2022



Fats, Oils, and Grease (FOG) Material Received - Fiscal Year 2022





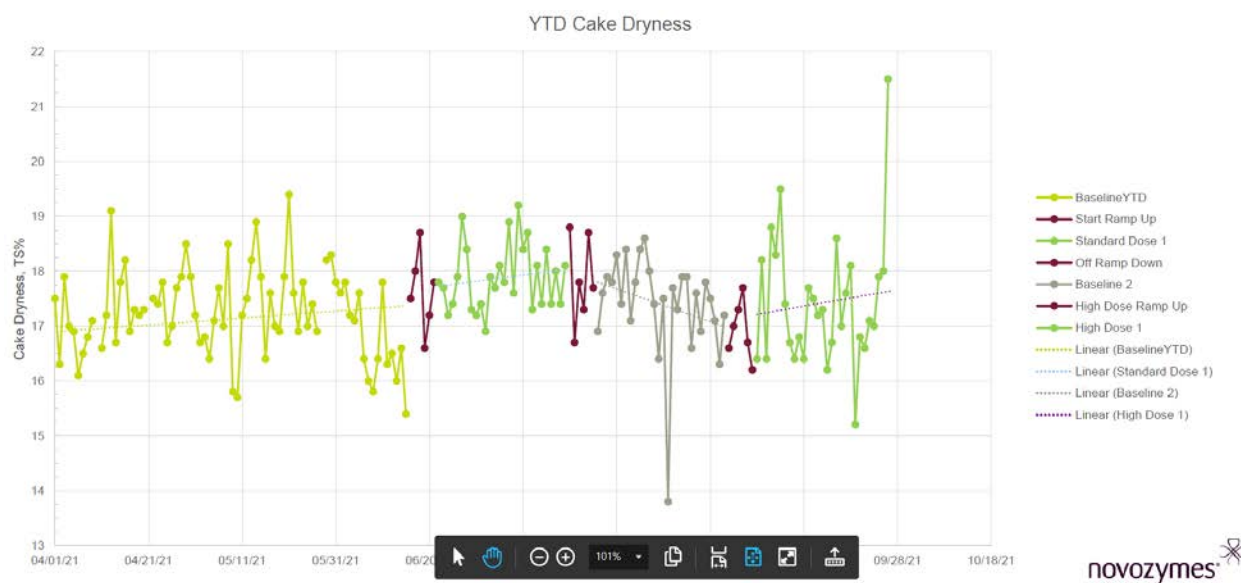
Novozymes BioSec Full Scale Trial

Wastewater staff participate in Isle Utilities Wastewater Technology Advisory Group (TAG) to receive presentations from manufacturers and providers of new technologies and products. Isle Utilities evaluates proposals from manufacturers and curates the proposals into quarterly presentations to Wastewater Utility partners including the City of Santa Barbara.

In the Spring of 2021, Wastewater staff engaged with Novozymes to evaluate the efficacy of BioSec, an enzyme product that could improve the dewaterability of biosolids. Improved dewaterability could result in lower polymer costs and dryer biosolids resulting in lower hauling and disposal costs.

Wastewater staff sent Novozymes samples of digester sludge that were evaluated in Novozyme's laboratory and showed promising results. In the lab, the sludge treated with enzymes displayed improved aggregation, free water drainage, clearer filtrate, and improved solids capture.

Based on the promising laboratory results, Novozymes provided pumping equipment and enzyme supplies to perform a full-scale trial of BioSec at El Estero. Novozymes started up their equipment and trained Operations staff on its Operation in June 2021. Full scale testing ran from June 2021 to October 2021. Operations staff and Laboratory staff performed their regular sampling and analysis and shared results with Novozymes. Initially staff saw a slight improvement in dewatering performance, but it was not sustained. It appeared that variability in the biosolids characteristics, namely percent volatile solids, affected the performance of the BioSec.



While the Trial results were inconclusive and the City did not opt to pursue further investment in this technology, the exercise was a positive experience for the Operations staff as it renewed operator attentiveness to dewatering operations and was a good training tool for new staff on dewatering system optimization.

Maintenance Activities

El Estero staff have developed and maintained an Asset Management Plan to provide structure for El Estero's maintenance program. The purpose of the Asset Management Plan (AMP) is to document the current state of the assets for the El Estero Water Resource Center (EEWRC). The AMP is a consolidation of information currently available regarding EEWRC's infrastructure assets and service delivery requirements. The AMP is a long-range planning document that will provide EEWRC with a framework for understanding its asset portfolio. The AMP can provide an understanding of what is needed to effectively manage the assets over the long term. The AMP was last updated in October of 2020.

The Wastewater Planner/Scheduler is responsible for planning complex work assignments, maintaining inventory, procurement of goods and services, and managing Maintenance Connection, El Estero's Computerized Maintenance Management System (CMMS). Complex work assignments managed by the Planner/Scheduler include major process equipment inspections, large preventative maintenance jobs, and large corrective maintenance work orders.

Examples of Complex Work Managed by the Planner Scheduler during this reporting period include:

- Clarifier and Aeration Basin Inspections
- Annual Outfall Inspection and Buoy Maintenance
- Lift Station Wet Well Cleaning
- Digester Gas System Equipment Preventative Maintenance
- Replacement of Sodium Hypochlorite Piping to the Chlorine Contact Basin
- Fats, Oils, and Grease (FOG) Receiving Tank Inspection
- Replacement of Dissolved Air Flotation Thickener Pumps

Management of the CMMS includes maintaining the asset register, inventory, preventative maintenance tasks, predictive maintenance tasks, and housekeeping tasks.

El Estero's maintenance team can be broken into two groups, the Mechanical Maintenance group and the Electrical and Control System Maintenance groups. These teams ensure El Estero's assets receive the appropriate preventative maintenance and repair equipment when it has failed. Operations staff also assist with light maintenance and inspections of equipment in order to support the maintenance team.

Some examples of work completed by the El Estero's Operations and Maintenance Team includes:

- Wet Well cleaning at Lift Stations
- Washer/Compactor Bearing Replacement
- Grit Chamber Air Diffuser Replacement
- Flight, chain, and sprocket replacements in Clarifiers
- Primary Clarifier Influent Gate Repairs
- Repaired Howden Blower oil leaks
- Breaker repair in Motor Control Center 8 (MCC 8)
- Repair of feed piping at the Ultrafiltration system

Wastewater Treatment Summary

Operations staff at El Estero strive to meet and exceed all permit requirements, protect public health and the environment, and operate the treatment plant in a cost-effective manner. Wastewater flows and constituents are variable based on the inputs from the community and infiltration and inflow into sanitary sewers.

Coronavirus Pandemic Impacts

During Fiscal Year 2022 there were continued direct and indirect impacts to treatment plant operations resulting from the coronavirus pandemic.

Direct impacts included continuation of Covid safety protocols for employees and decreased staffing due to Covid related leaves of absences.

El Estero's public outreach continued to be curtailed due to the outbreak as the facilities were closed to the public to reduce risk for Coronavirus transmission. Due to the inability to give tours staff have pivoted to producing virtual tours and online videos demonstrating the processes at El Estero. El Estero's online videos have been posted to the City's YouTube page and website.

Indirect impacts that began in Fiscal Year 2021 continued in Fiscal Year 2022 which included reduced flows and loadings to the plant due to reduced tourism and business in the City. While metrics like Transient Occupancy Tax and Sales Tax show significant rebound in tourism and business, wastewater flows and loadings to the treatment plant do not appear to have returned to pre-pandemic levels.

Logistical supply chains in all industries have been disrupted throughout the pandemic. El Estero staff have maintained increased inventory for most consumables to be prepared for supply interruptions. The goods and services El Estero staff use on a daily basis to operate the treatment plant have all seen price increases and longer lead times for procurement is prevalent. Construction projects have been acutely affected as extremely long lead times for equipment have caused unanticipated delays.

Bulk Chemical costs have continued to follow price increase trends that began in early 2021. In early 2021 the national availability of Sodium Hypochlorite was affected due to failures at Chlorine processing facilities nationwide. Unfortunately, there have been additional supply chain issues in the Chlorine product industry resulting in delivery delays and price increases. Sodium Hypochlorite is the primary disinfectant used at El Estero for ocean discharge and recycled water use.

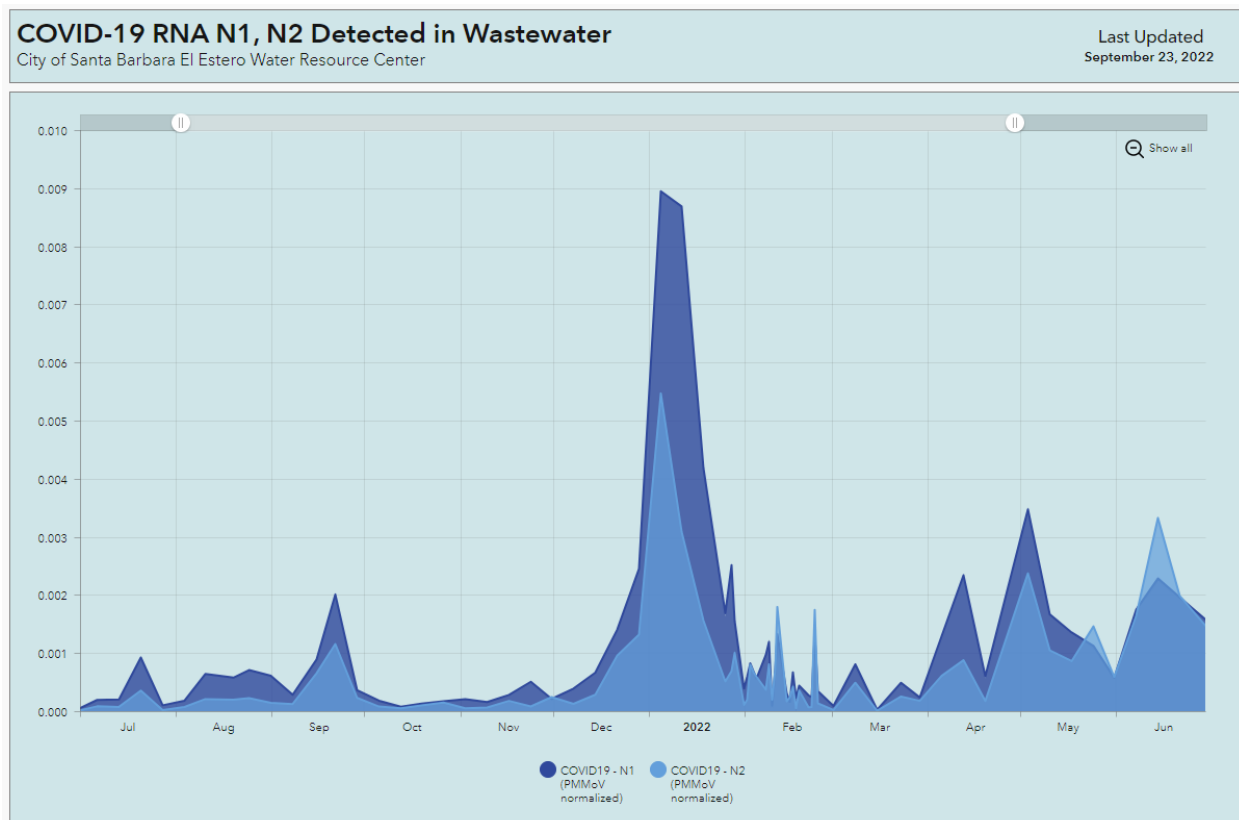
Ferrous Chloride, which is used for odor control and hydrogen sulfide mitigation, started to become in short supply in the Spring of 2021 due to decreases in iron and steel production worldwide. Ferrous Chloride is produced using waste products from iron and steel production so is dependent on that industry. Ferrous Chloride production is also dependent on the Chlorine industry and prices have increased as the Chlorine market has adjusted.

El Estero staff also had issues ordering Citric Acid at the end of Fiscal Year 2021 as port congestion and other industries have reduced the availability and increased the price of that chemical. Fortunately, in Fiscal Year 2022, Citric Acid has become more available, but costs continue to increase. Citric Acid is used in cleaning processes for the UltraFiltration recycled water system.

In addition to operating and maintaining the treatment plant, Wastewater Maintenance Staff also operate and maintain the sewer lift stations in the collection system that convey wastewater from low lying areas to high points where the wastewater can then flow by gravity through the sewers to El Estero. With the increased activity in homes through the pandemic there has been an increase in maintenance needs at the lift stations. So called "flushable" wipes used for cleaning and personal hygiene can cause plugging issues in the sewer and in the lift station's pumps. Deragging, or cleaning out the pumps, has become more labor intensive with increased community use of wipes.

Wastewater staff have continued to perform wastewater epidemiology sampling for Coronavirus. Wastewater and Water Resources Laboratory Staff started this testing in 2020 and in Fiscal Year 2022 County of Santa Barbara and Cottage Hospital staff began to recognize this valuable data and began partnering with City staff to share this data on their public portal. The graph is now developed and maintained by the Cottage Hospital via dashboard. The public can now access dashboard at this website [SBC Wastewater Dashboard](#).

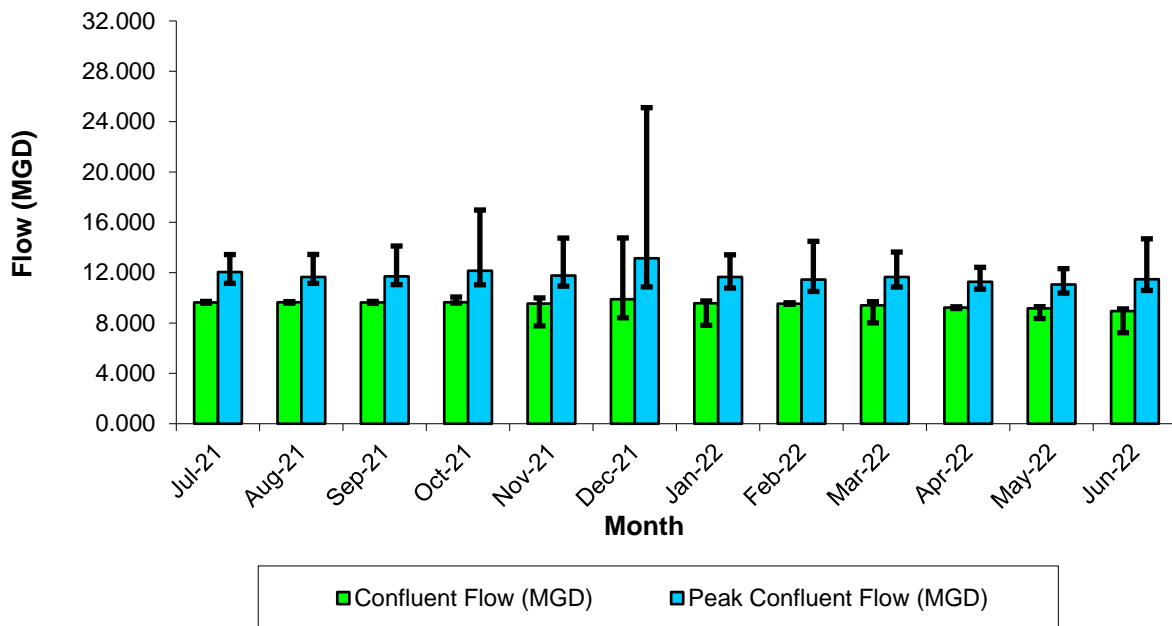
Below are the results from Source Molecular for the period of July 2021 to June 2022 as reported on the SBC Wastewater Dashboard



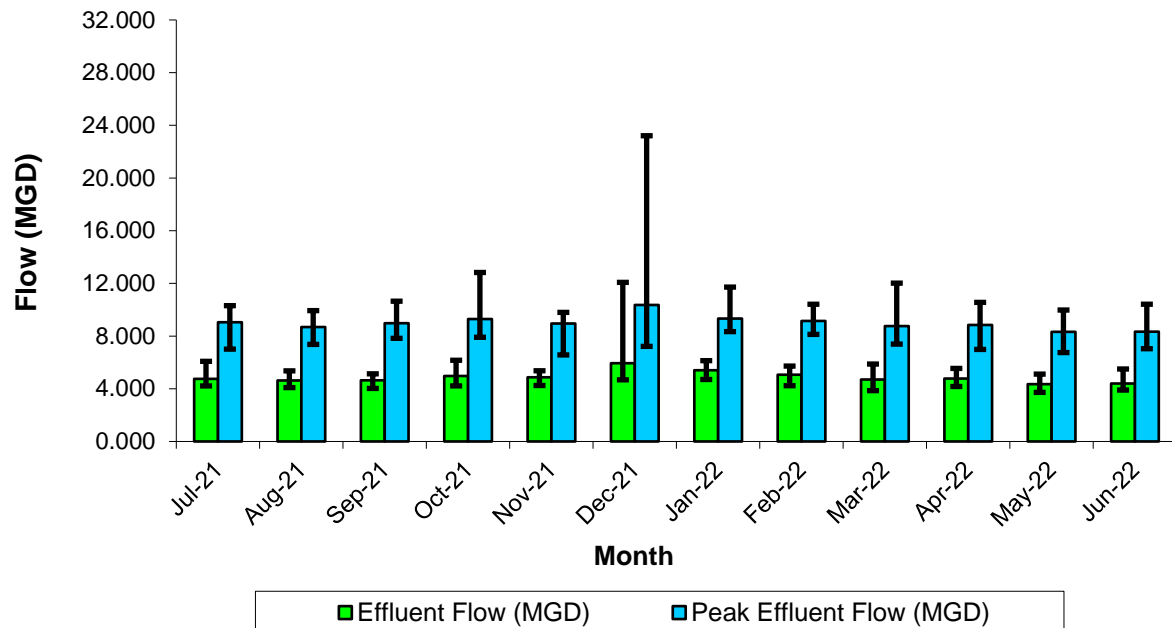
Wastewater Flows and Water Quality

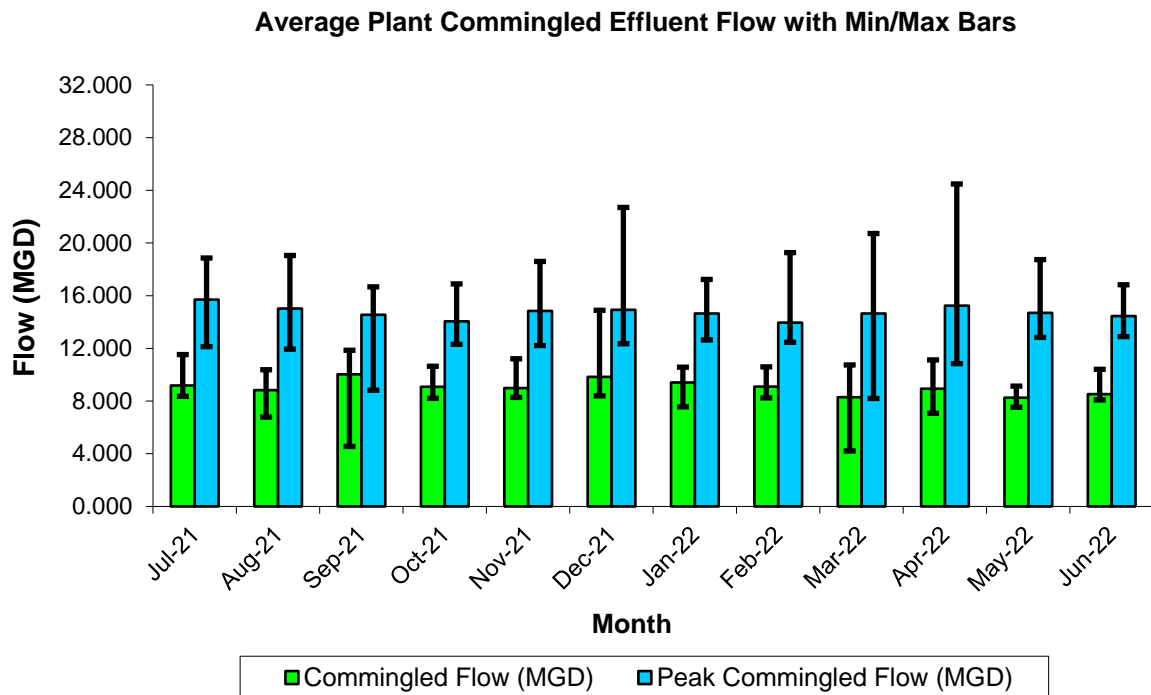
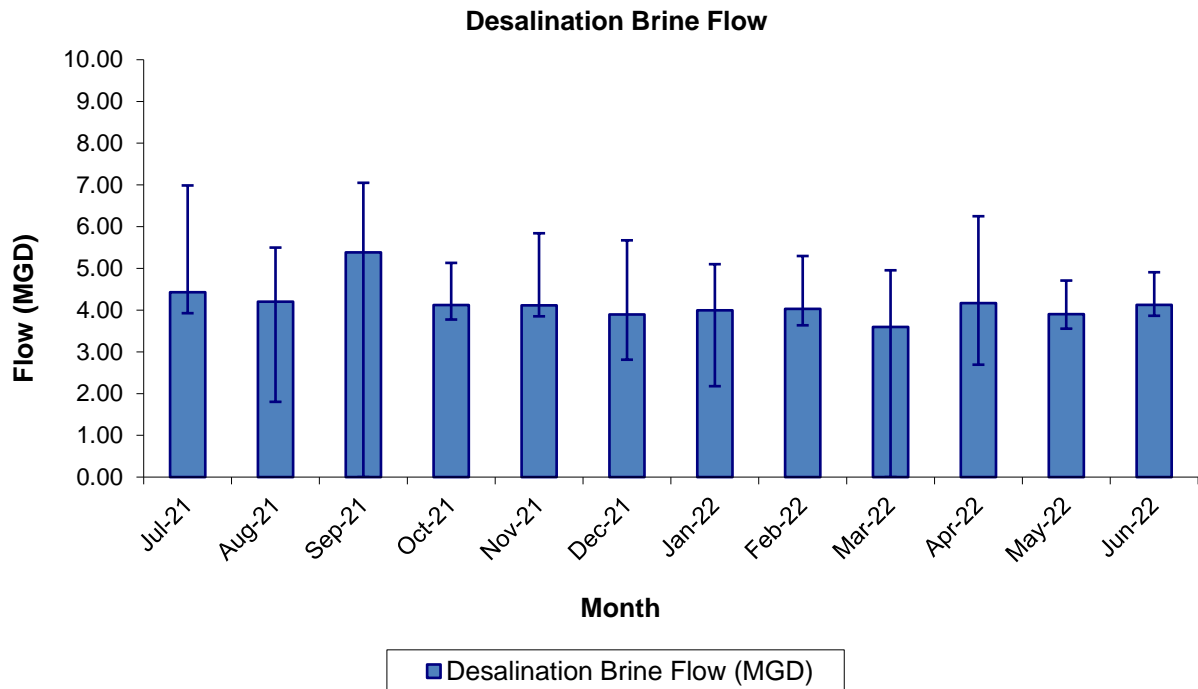
The following tables summarize El Estero's flows and water quality.

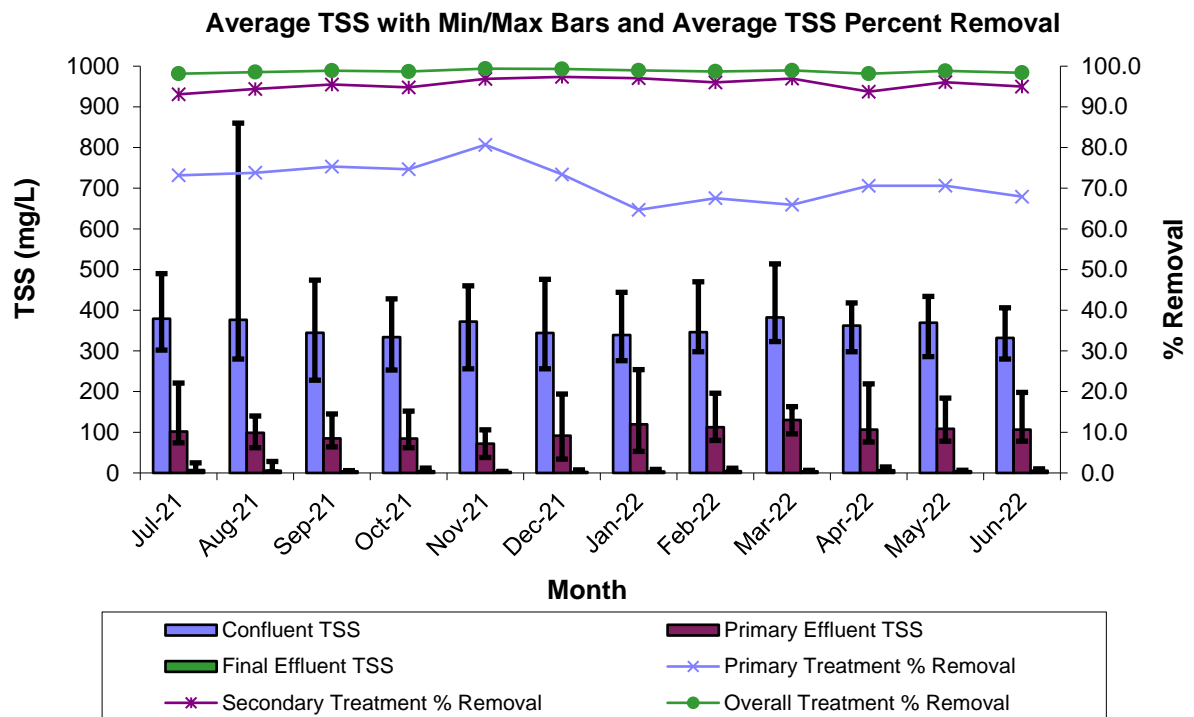
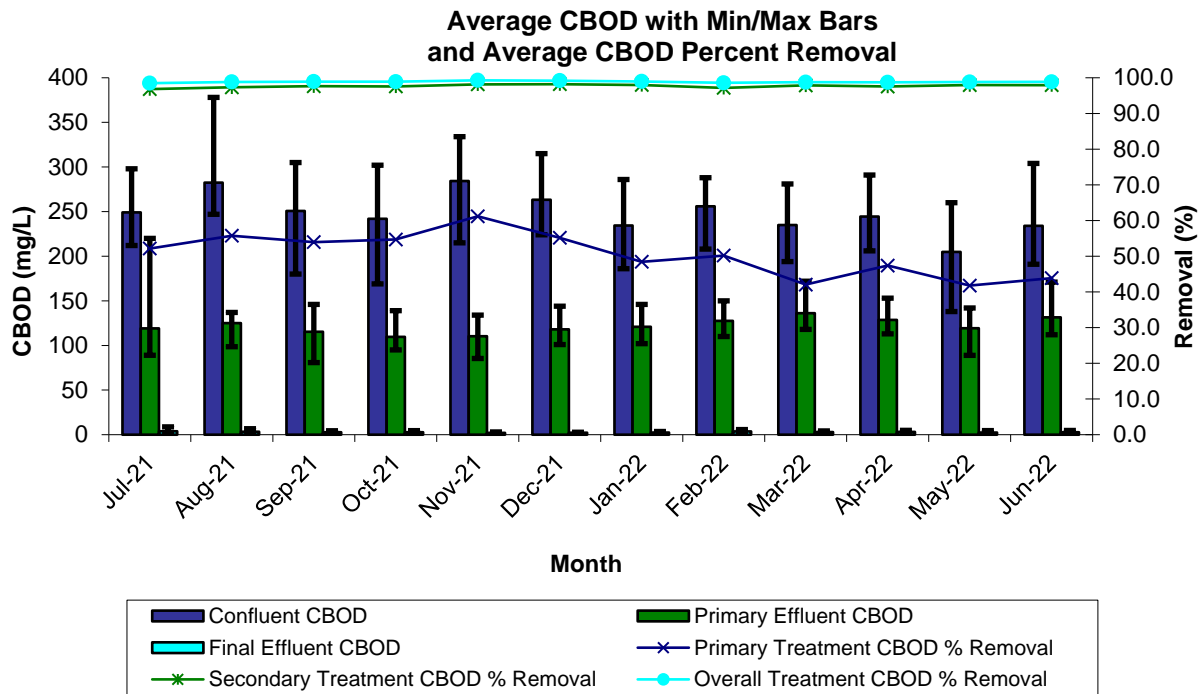
Average Plant Confluent Flow with Min/Max Bars



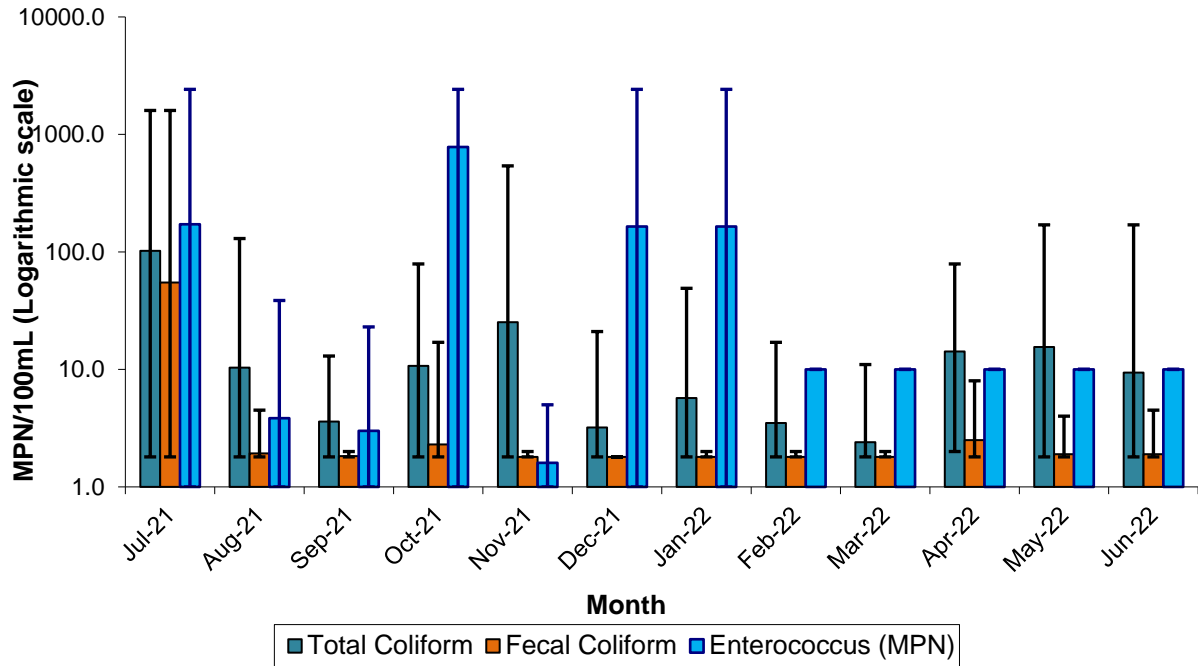
Average Plant Effluent Flow with Min/Max Bars



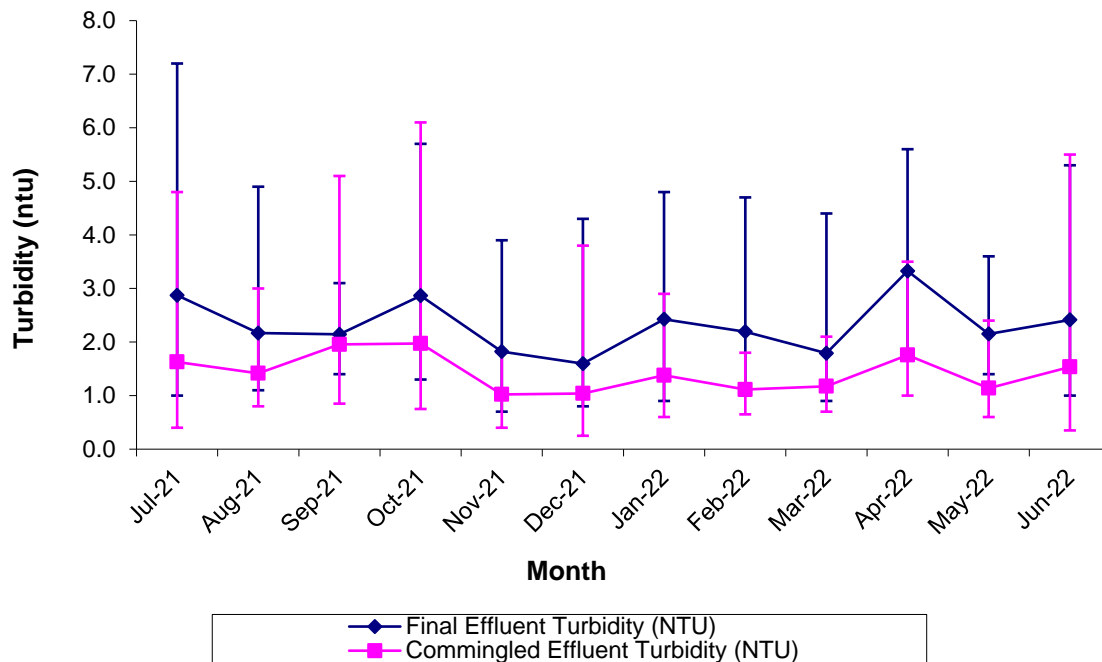




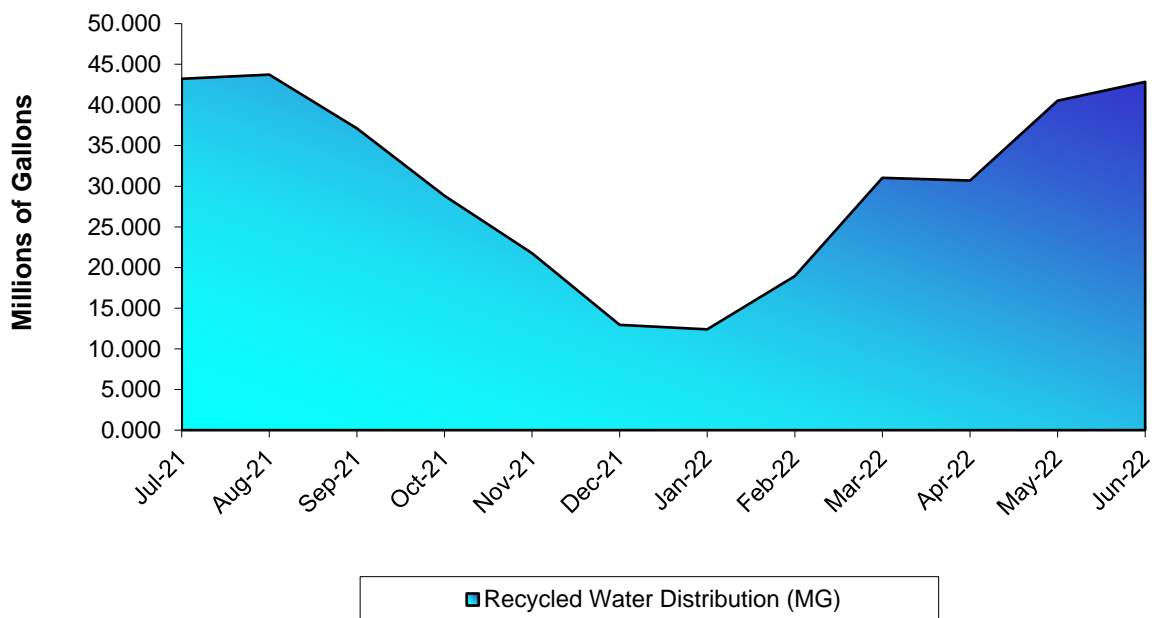
Average Final Effluent Total Coliform, Fecal Coliform, and Enterococcus with Min/Max Bars



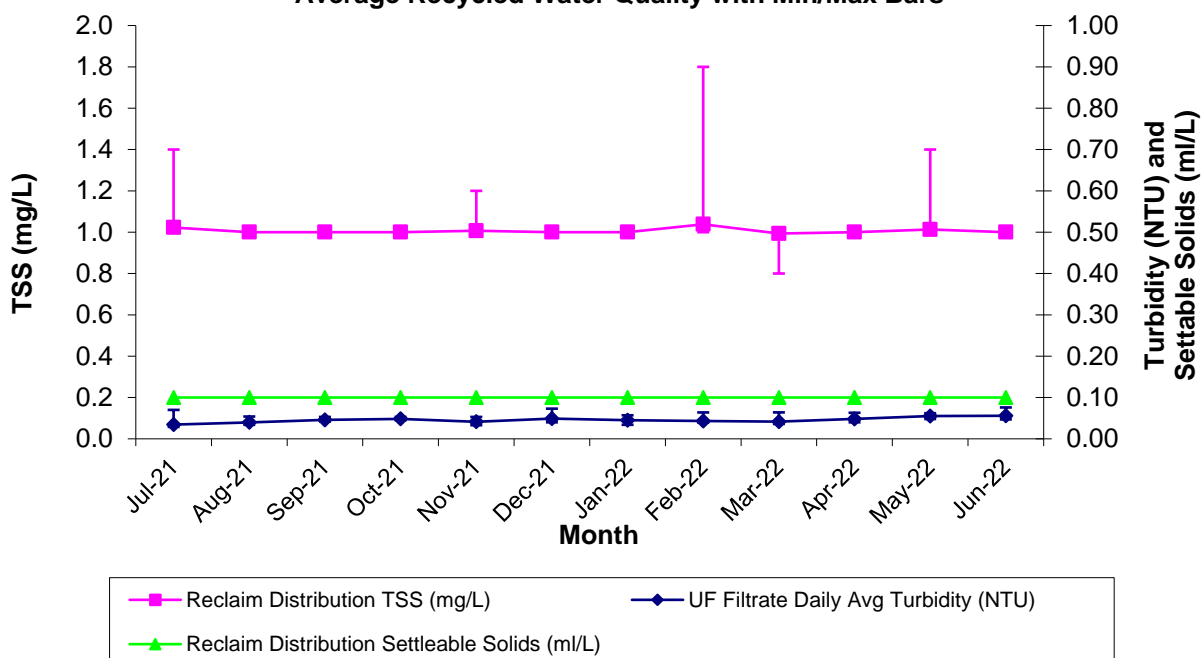
Average Final Effluent and Commingled Effluent with Min/Max Bars



Total Monthly Recycled Water Distribution (MG)



Average Recycled Water Quality with Min/Max Bars



Discussion of Compliance Record and Corrective Actions

The following table summarizes the compliance reports submitted to the State Water Resources Control Board through California Integrated Water Quality System (CIWQS).

Monthly / Quarterly / Semi Annual / Annual Report	Number of Violations Submitted/Comments
July 2021	1 Violation
August 2021	No Violations
September 2021	1 Violation
Quarter 3 – 2021	No Violations
October 2021	1 Violation
November 2021	2 Violations
December 2021	No Violations.
Quarter 4 – 2021	No Violations
Semi Annual 2 – 2021	No Violations
Annual 2021	2 Violations
January 2022	No Violations
February 2022	No Violations
March 2022	1 Violation
Quarter 1 – 2022	No Violations
April 2022	No Violations
May 2022	No Violations
June 2022	No Violations
Quarter 2 – 2022	No Violations. Submitted past due on 8/17/2022.
Semi Annual 1 – 2022	No Violations. Submitted past due on 8/17/2022.

Violations reported and corrective actions taken are described below.

July 2021

- a) Parameter(s) in Violation: Fecal Coliform Organisms at EFF-001A
- b) Section(s) of WDR/NPDES: Section IV.e.II.(b)
- c) Reported Value(s): 1600 MPN/100 mL
- d) WDR/NPDES, Limit/Conditions: Fecal Coliform shall not exceed 400 MPN/100 mL, as a single sample maximum
- e) Date of Violation: July 7, 2021
- f) Explanation of Causes: The COVID-19 pandemic caused supply issues with the vendor for sodium hypochlorite. In response, El Estero decreased the amount of sodium hypochlorite used in the chlorine contact chamber.
- g) Corrective Actions: Chlorine levels were increased in the chlorine contact chamber.
- h) Other Comments: UF Filter production (RCY-001) was offline from 6/18/21 at 16:40 through 7/2/2021 at 07:15. Only potable water was distributed to the Recycled Water Distribution System, no turbidity data reported on 7/01/21.

September 2021

a) Parameter(s) in Violation:	Total Suspended Solids (TSS) at EFF-001A
b) Section(s) of WDR/NPDES:	Attachment E, section IV, B, 1, Table E-4
c) Reported Value(s):	3.1 mg/L (sample type = grab)
d) WDR/NPDES, Limit/Conditions:	Total suspended solids on EFF-001A must be analyzed at a frequency of 1/Day on a 24-hour composite.
e) Date of Violation:	September 13, 2021.
f) Explanation of Causes:	The auto sampler for EFF-001A malfunctioned and failed to produce a composite sample. TSS was analyzed on a grab sample instead of a 24-hour composite.
g) Corrective Actions:	The program on the auto sampler was adjusted.

October 2021

a) Parameter(s) in Violation:	Enterococcus at EFF-001A
b) Section(s) of WDR/NPDES:	Limitations and Discharge Requirements, IV, e, iii, (b)
c) Reported Value(s):	Enterococcus 90th% value = >2419.2 MPN/100 mL
d) WDR/NPDES, Limit/Conditions:	Enterococcus shall not exceed 110 MPN/100 mL, not to be exceeded in more than 10 percent of samples collected in a calendar month, calculated in a static manner.
e) Date of Violation:	October 8, 2021.
f) Explanation of Causes:	9 out of 30 samples in the month of October exceeded 110 MPN/100 mL. The cause of the exceedance is under investigation.
g) Corrective Actions:	<p>Chlorine dose target in chlorine contact chamber was increased from 7 mg/L to 8 mg/L on 10/7 after getting results from first day of high enterococcus values. On 10/11 when enterococcus results remained high chlorine residual was again increased from 8 mg/L to 8.5 mg/L.</p> <p>The staff suspects that Aquabac, a larvicide used for midge fly mitigation, may have caused falsely high enterococcus results. Operations and laboratory staff found research papers which identified a non-enterococcus bacterial component of Aquabac as a possible interference for the enterococcus test. Operations staff discontinued the use of Aquabac.</p>

November 2021

a) Parameter(s) in Violation:	Total Suspended Solids (TSS) at EFF-001A
b) Section(s) of WDR/NPDES:	Attachment E, section IV, B, 1, Table E-4
c) Reported Value(s):	None
d) WDR/NPDES, Limit/Conditions:	Total suspended solids on EFF-001A must be analyzed at a frequency of 1/Day on a 24-hour composite.
e) Date of Violation:	November 20, 2021 and November 21, 2021
f) Explanation of Causes:	The auto sampler for EFF-001A produced an unusually high volume of sample, requiring multiple 10L bottles per one sample. One of the sample bottles that belonged to the 11/21 sample was mistakenly hand-composited with the 11/20 sample bottles, causing neither sample to be representative.
g) Corrective Actions:	The program on the auto sampler was adjusted and lab analyst were reminded to be extra cautious when hand-compositing samples.

Annual 2021

a) Parameter(s) in Violation:	Deficient Monitoring at INF-001: a) Cyanide, total chlorine residual b) TCDD Equivalents
b) Section(s) of WDR/NPDES:	Attachment E – MRP IV.A.1. Table E-2
c) Reported Value(s):	a) See CIWQS for grab sample results b) 2,3,7,8 TCDD = ND
d) WDR/NPDES, Limit/Conditions:	a) INF-001 Monitoring, Ocean Plan Table 3 Pollutants, 24-hour composite, September b) INF-001 Monitoring, Ocean Plan Table 3 Pollutants, 24-hour composite, September
e) Date of Violation:	a) September 8, 2021 b) September 8, 2021
f) Explanation of Causes:	a) Cyanide and total chlorine residual were collected as a grab sample. The analytical methods used to analyze these pollutants require grab samples however the permit requires a 24hour composite. b) Only 2.,3,7,8 TCDD was analyzed for the influent instead of the entire list of TCDD equivalents
g) Corrective Actions:	1. a. & b. The permit requirements have been reviewed by all operations and laboratory staff to ensure monitoring occurs according to the permit.

March 2022

a) Parameter(s) in Violation:	Deficient Monitoring: Multiple Parameters
b) Section(s) of WDR/NPDES:	Monitoring and Reporting Program III. A. 1. Monitoring and Reporting Program IV. B. 1. Monitoring and Reporting Program IV. C. 1. Monitoring and Reporting Program VII. A. 1
c) Reported Value(s):	Not Applicable
d) WDR/NPDES, Limit/Conditions:	Influent monitoring, minimum sampling frequency, meter continuous Effluent monitoring while Discharging Brine, minimum sampling frequency, meter continuous Commingled Effluent monitoring, minimum sampling frequency, meter continuous Recycled Water monitoring, minimum sampling frequency, meter continuous
e) Date of Violation:	March 11, 2022
f) Explanation of Causes:	Continuous monitoring was lost due to the data servers losing power for approximately 1 hour and 27 minutes on March 11, 2022. Real-time SCADA system operation, including online analyzers, flow monitors, and alarm handling, was unaffected but no historical data was stored. Parameters affected include: Influent pH, Influent Flow, Effluent Flow, Outfall Residual Chlorine (Monitoring location EFF-001A and M-001), Commingled Effluent pH, Recycled Water Chlorine Residual, Recycled Water Flow, Recycled Water Filtrate Turbidity from 3/11/2022 21:50 to 23:17. Flow totalizer data is also stored locally at the PLCs (Programmable Logic Controllers) in the facility so daily total values were unaffected. The loss of power was caused by the main electrical breaker supplying the administration building tripping and the UPS (Uninterruptible Power Supply) providing back up power to the data servers also failing simultaneously. Operations Staff were on-site monitoring the facility and did not report any other process related failures or exceedances.
g) Corrective Actions:	Staff bypassed the failed UPS and were able to restore power to the data servers from the emergency generator at 23:17 on March 11. The UPS is regularly maintained, and the batteries were replaced on March 2 however they failed and the batteries to the UPS were replaced again after the failure. The tripped electrical breaker was reset, and its settings were adjusted by a licensed contractor on March 12. A new monitoring trend screen was developed for the SCADA workstations that includes all the permitted continuous monitoring constituents and so data can be retrieved locally even if there are network or server failures. A facility wide electrical upgrade is in final design and is anticipated to start in Fiscal Year 2023. The electrical project will replace the breaker that tripped and provide for improved SCADA resiliency with upgrades like redundant server facilities and an upgraded SCADA network.

Investigation of Interference in Enterococcus Analysis

In February 2020, the City of Santa Barbara's El Estero Water Resource Center was issued a new NPDES permit, which included a new permit condition to monitor Enterococcus. The Water Resources Laboratory began analyzing Enterococcus using the IDEXX Enterolert method in February 2020. Variability of results began almost immediately, requiring additional monitoring, and remained inconsistent, however in October 2021, a weak fluorescence in all Quanti-Tray sample wells started occurring regularly. Although the wells were often uniformly fluorescing in each 1x Quanti-Tray, the fluorescence intensity of the Quanti-Tray as a whole was inconsistent from day to day, ranging from very weak to moderate. The uniform fluorescence in each Quanti-Tray was interpreted as a positive well and given a result of >2419.2 MPN/100mL, violating the limits in the NPDES permit. From October 2021 to March 2022, the Water Resources Laboratory (WRL) staff and El Estero Water Resource Center Operations (Operations) staff explored possible interferences, alternative methods, and adjustments to the current method in a multi-pronged investigation. The investigation resulted in modification of the method to mitigate the interference that was causing the false positive results. Results with the interference were initially incorrectly reported for the months of December 2021 and January 2022. Laboratory and Operations staff are in the process of withdrawing the reports and resubmitting results from the modified analyses.

The full Technical Justification can be found as an attachment to the December 2021 Monthly Self-Monitoring Report (SMR) on the CIWQS Website:

<https://ciwqs.waterboards.ca.gov/ciwqs/readOnly/PublicReportEsmrAtGlanceServlet?reportID=2&isDrilldown=true&documentID=2294383>

Sea Level Rise Adaptation Plan

El Estero Water Resource Center's NPDES permit included a requirement to submit a Climate Change Adaptation Plan that detailed the City's Sea-Level Rise Adaptation Plan. City staff submitted the report to the State on May 9, 2022. The Adaptation Plan recommends a phased approach to planning for sea-level rise based on monitoring of changing conditions and actions to reduce vulnerabilities once defined thresholds are reached. It provides detailed recommendations for necessary actions in the near-term (approximately ten years) and a structure for future decision-making in the mid- and long-term (beyond ten years). The Adaptation Plan covers all of the assets at the City, including identifying vulnerabilities, next steps, and near-term actions for the Wastewater system and El Estero Water Resource Center. One of the highest priority next steps include a wastewater system specific analysis of options to move or otherwise flood proof sewer mains and other portions of the collection system located south of Cabrillo Boulevard.

In February 2021, Santa Barbara's City Council approved the City's Sea-Level Rise Adaptation Plan (Adaptation Plan). Since then, staff have been further refining project scopes and applying for grant funds for the highest priority actions identified in the plan.

Recently, the City began implementation of the Adaptation Plan and is coordinating all climate adaptation matters out of the Sustainability and Resilience Department's Energy and Climate Division. The City also has a Climate Adaptation Interdepartmental Staff Team that guides prioritization, funding, and implementation of climate adaptation projects. Staff has been in the process of further scoping out the highest priority implementation projects and applying for grant funds as opportunities arise.

In March 2022, the California Coastal Commission awarded three grants to the City. One of the grants includes funds for development of a Wastewater and Water Systems Adaptation Options Report that will identify alternatives for relocating and flood proofing the major sewer mains and water lines currently located south of Cabrillo Boulevard and mid- and long-term adaptation options for the overall wastewater and water systems. This study will be included in future reports to satisfy the requirements in the NPDES permit for a "facilities specific analysis" to be conducted prior to August 2024.

The full Climate Change Adaptation submittal can be found listed as attachments on the CIWQS website: <https://ciwqs.waterboards.ca.gov/ciwqs/readOnly/PublicReportEsmrAtGlanceServlet?reportID=2&isDrilldown=true&documentID=2294703>

Biosolids Operations Summary

In FY 2022, The El Estero Water Resource Center (El Estero) had an annual production of 1775.62 dry metric tons per year (DMTY), 100% dry weight basis of biosolids. The annual average percent solids of biosolids dewatered by El Estero were 17.6%.

El Estero staff began taking Digester #1 out of service in December 2021 in preparation for the Digester Dome Replacement and Cleaning project. Lash Construction was awarded the project and subcontracted the cleaning activities to Synagro. Digester #1 remained out of service through June 2022. Synagro removed 231.50 dry metric tons (DMT) of solids from Digester #1. Solids removed from Digester #1 were sent to Liberty Composting. Solids removed from Digester #1 averaged 52.9% solids.

Biosolids Treatment Process at El Estero

The Biosolids Handling facilities are comprised of a number of unit processes designed to thicken, digest and dewater organic solids removed from the fluid treatment scheme. The sludge removed from the fluid treatment scheme requires thickening to reduce the amount of water introduced to both the anaerobic digester and the dewatering equipment. Thickening is performed by the gravitational thickener and the dissolved air flotation thickener.

The gravitational thickener functions similar to sedimentation basin, sludge is introduced to the surface of the tank and then allowed to settle and compact for 6 to 8 hours. Then the thickened sludge is scraped to and removed from center hopper or well, located at the bottom of the tank. In general, the primary sludge introduced into the thickener is condensed from 0.5% to 5.0% solids.

The dissolved air floatation thickener is a much more complex unit to operate, compared to its counterpart, the gravity thickener. The type of sludge introduced to this unit generally has a tendency to float (like activated sludge and grease). To aid this process the clarified thickener overflow is injected with air and pressurized it to 60 psi, this causes the air to be dissolved into solution. This dissolved air/water solution is mixed with the incoming sludge and released into the center of the tank. The air comes out of solution when introduced to the tank, forming bubbles that attach themselves to solids that then float to the surface of the tank where they are allowed to thicken. Then a slow-moving surface scraper pushes the thickened sludge into a trough where it flows to a wet well to be removed by a positive displacement transfer pump. This process generally increases the sludge concentration from 0.25% to 4.0% solids.

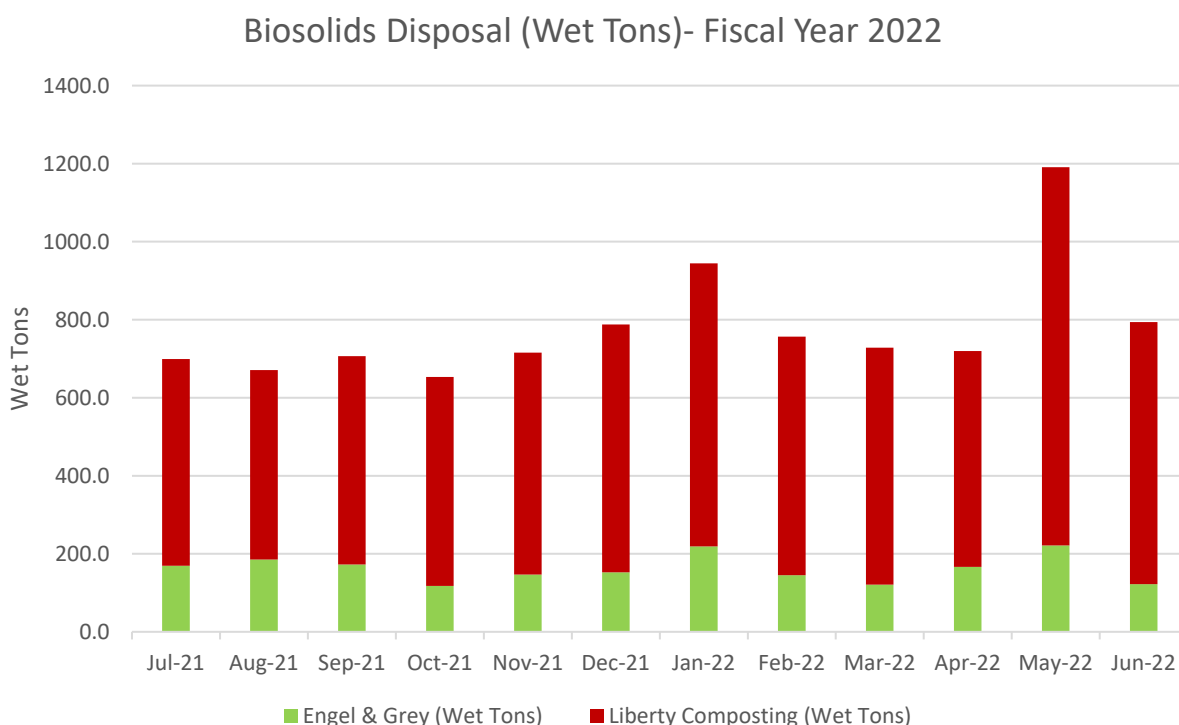
Once the sludge is thickened, it is transported by positive displacement transfer pumps to the anaerobic digesters. The anaerobic digestion process serves to stabilize the sludge, reduce its volume, destroy pathogens, and reduce vector attraction. Pathogen reduction is achieved by anaerobic digestion at a mean cell residence time of at least 15 days at 35 to 55 degrees Celsius. Vector attraction reduction is achieved by a reduction of the volatile solids in digestion by greater than 38%. Once introduced, the organic portion of the feed sludge is biologically broken down by anaerobic organisms. As a result of the organic breakdown, methane and carbon dioxide gases are produced. The anaerobic digestion gas produced is utilized by the Cogeneration Facility to produce electricity and hot water. The hot water is pumped through the heat exchangers to maintain the internal temperature of the digesters. Maintaining this temperature is critical to the process because the mesophilic anaerobic bacteria live in a temperature range between 35 C – 40 C. To ensure good treatment, sludge mixing is required; this is done with high rate mix pumps that mix the contents of the digesters with the incoming thickened sludge. The digester system reduces the volatile portion of feed solids by 50% or greater. In Fiscal Year 2022, the average temperature of the digested sludge was 38.9 C with an average retention time of 19 days.

The final stage of the solids handling incorporates the use of dewatering equipment. This final stage is comprised of (2) two-meter belt filter presses, each capable of dewatering 125 gpm of digested sludge. Polymer is injected into the digester sludge prior to application onto the belt filter press. The polymer coagulates and flocculates the particles of digested sludge; this facilitates the ability of the filter belt press to filter the water from the solids during the first stage. More water is removed when the biosolids are pressed by moving rollers to produce dewatered biosolids of approximately 18% solids, currently. This material is collected and then transported to permitted sites for composting.

Biosolids Off-Site Composting and Disposal

In FY 2022, El Estero contracted with Liberty Composting, Inc. and Engel and Gray, Inc. to haul biosolids for composting. Liberty Composting subcontracts with GIC Transports to haul biosolids from El Estero to the Liberty Composting, Inc., composting facility in Kern County. Engel and Gray, Inc. hauled and composted biosolids in Santa Barbara County, CA. 100% of the biosolids produced were composted. As part of the Digester Dome Replacement and Cleaning Project additional biosolids were removed from Digester #1. Synagro West was subcontracted to dispose of the biosolids in accordance with El Estero's permit. Synagro West hauled the biosolids to Liberty Composting's facility and all biosolids are accounted below. Of the total 1775.62 DMTY produced at El Estero, Liberty Composting, Inc. composted 1435.25 DMT and Engel and Gray, Inc. composted 340.37 DMT.

Biosolids disposal location is summarized in the following table.



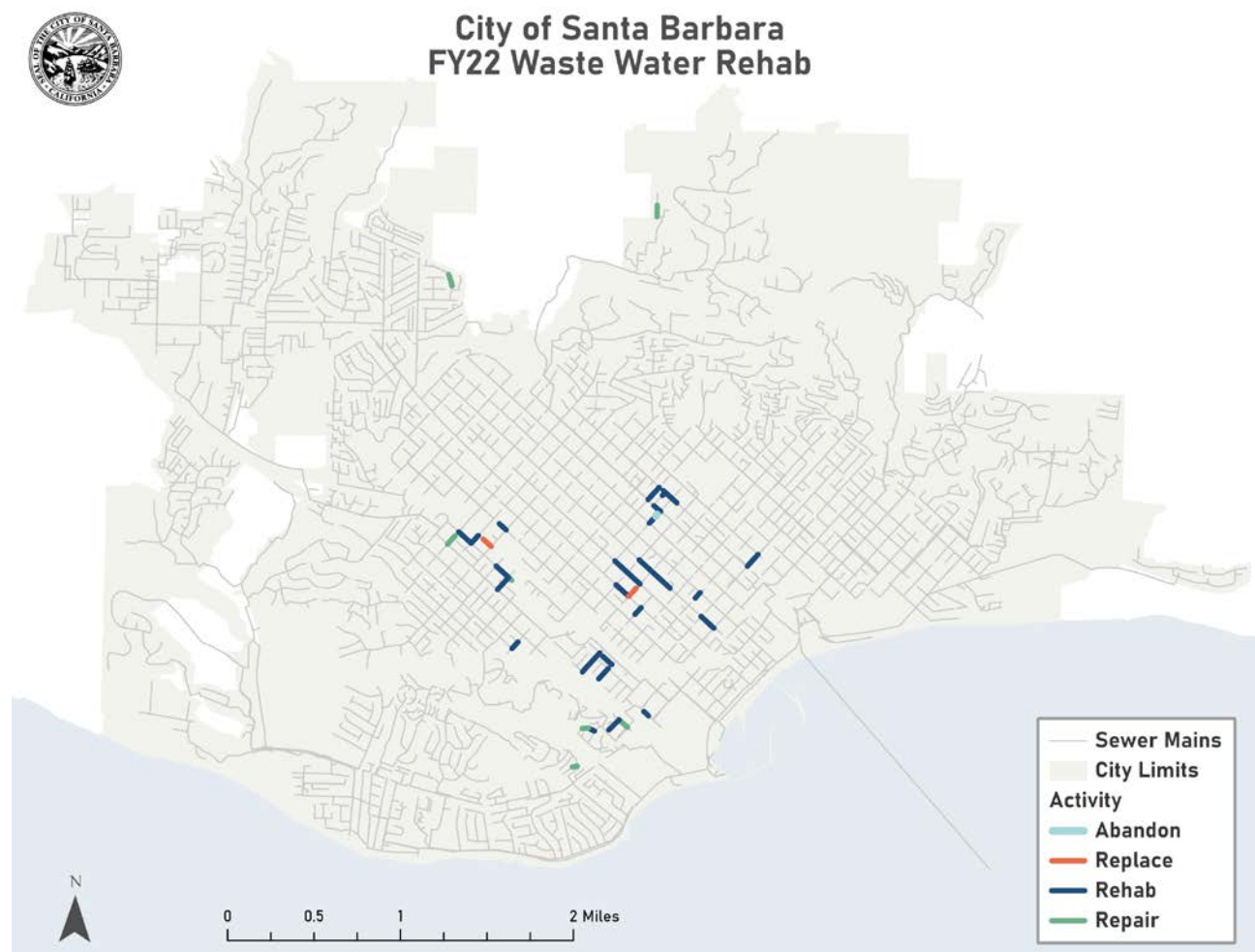
WASTEWATER CAPITAL PROJECTS

Staff continues work on a number of projects to improve the operations and maintenance of City's wastewater system and protecting the community's public health and safety:

- **Sewer Sanitary Overflow Compliance Program:**

The City typically commits between \$1.2 - \$1.5 million annually from its Capital Improvement Program (CIP) budget to prevent sewer spills and improve the condition of the aging sewer system. The City's targets repairing, rehabilitating or replacing 1%, or 2.56 miles, of the system mileage each year. Since a majority of the system is 6-inch and 8-inch diameter vitrified clay pipe (VCP), most of the CIP work can be accomplished through trenchless rehabilitation, but sometimes, the condition of the pipe is so deteriorated that excavation is necessary to repair or replace the entire pipe.

Staff tries to coordinate wastewater CIP work with other Public Works Department construction and land development work so that it provides reliable sewer service but is least impactful to the community. Below is a figure of the Sewer Mains that were repaired, rehabilitation, or replaced from July 1, 2021, to June 30, 2022.



- **Lift Station Maintenance Program:**

The City owns and maintains seven lift stations located though out the City. This fund is to help address maintenance needs for all of the lift stations within the community. Braemar Lift Station Rehabilitation Project has been identified as the top priority of the lift station maintenance needs.

The Braemar Rehabilitation Project is intended to replace aging equipment and address operation and maintenance challenges. The work generally includes replacement of the existing pumps and motors with new pumps and motors with Variable Frequency Drives (VFD). The VFDs are expected to provide a better long-term solution for maintenance issues in the wet well, in addition to increased energy efficiency. The work also includes replacing the existing ventilation system, rehabilitation of the wet well, condition assessment of the surge tank and associated appurtenances, replacing the motor control center, evaluating the condition for the standby generator, and upgrades to the SCADA system. The design has been submitted to the City's Building and Safety Division and due to the lift station's proximity to Arroyo Burro Creek and location in a FEMA floodplain, it was determined that the plans needed to be revised to include a flood wall protection and to address Sea Level Rise (SLR).

In response to the financial impacts due to the COVID pandemic, the funding for the construction portion of the Braemar project were sacrificed and the project was placed on hold until other funding sources could be identified. Fortunately, another funding source had been identified and is currently in the process of securing a State Revolving Fund (SRF) loan with the State. It is anticipated that the loan documents will be completed in the second quarter of FY23 and construction for the Braemar Project is expected to begin in the spring of calendar year 2023.

- **El Estero Electrical Distribution Renewal:**

The EEWRC Facility Plan (October 2018) prioritized two capital improvement projects to improve aging facilities in need of replacement. The EEWRC electrical distribution system was identified as a potential risk to the EEWRC and surrounding community due to the age of major power equipment extending beyond 30 years and existence of single points of failure in critical areas of the power distribution system. The EEWRC Electrical Distribution Renewal Project is being implemented to improve the reliability and redundancy of the facility's electrical distribution by replacing aging electrical equipment, eliminating single points of failure in the electrical system, upgrading the facility's aging fiber optic system, replacing multiple existing uninterruptable power supply units (UPS) with two industrial grade regional UPS systems, and proving a backup communications room to provide redundancy and enable future improvements in the primary communications room. The project will involve construction of three new substations buildings, two new electrical buildings, new subsurface and aboveground cable and conduit installation, and new fiber optic network installation. Also included in this project are the improvements for the existing waste gas flare (WGF) and digester gas piping which are undersized and additional capacity is required to ensure safe management of digester gas and to help expand the Fats, Oil, and Grease (FOG) disposal program.

A SRF loan is anticipated to be completed in the spring of 2023 and the project is scheduled to be awarded in the Summer of 2023.



PUBLIC WORKS DEPARTMENT
WATER RESOURCES DIVISION

WASTEWATER SYSTEM ANNUAL REPORT FOR FY2022

Water Commission
October 20, 2022

Presentation overview

- Wastewater System Overview
 - Wastewater Treatment
 - Wastewater Collections
 - Capital Improvement Projects

Achievements!



EOM

Luke Pico

Shannon
Eminihizer

TOM

* Consumer
Confidence Team



WASTEWATER TREATMENT

Wastewater Treatment

- Wastewater Treatment Plant Operations
 - *Treatment Plant Process Diagram*
 - *Performance Objectives*
 - *Maintenance Activities*
- Wastewater Treatment Summary
 - *Coronavirus Pandemic Impacts*
 - *Wastewater Flows and Water Quality*
 - *Discussion of Compliance Record and Corrective Actions*
 - *Biosolids Operations Summary*



Lift Station Locations

EEWRC Maintenance Staff Operate and Maintain 7 Lift Stations



FY2022 – P3 Project Objectives

- Maintain compliance with the NPDES and APCD permit limits during the Digester Cleaning & Dome Replacement Project. - **Completed.**
- Develop a request for proposal (RFP) for a Process Control Data Management System. – **Not Completed.**
 - SCADA system assessment and upgrade project is in progress.

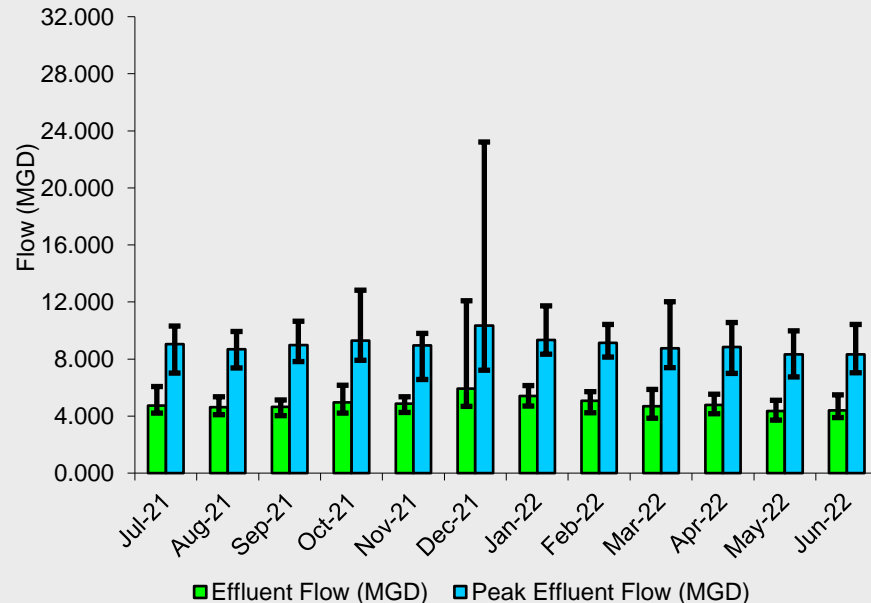


FY2022 – P3 Measurable Objectives

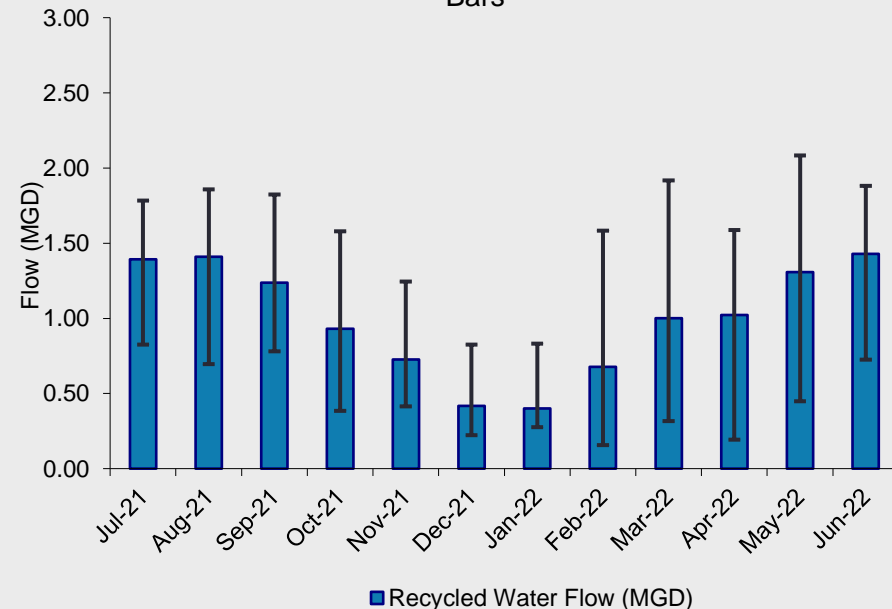
- Achieve 99.9% compliance with wastewater discharge limits as listed in the NPDES permit issued by Regional Water Quality Control Board. – 100.0% compliance achieved.
- Achieve 100% compliance with local air emissions standards as specified in the Santa Barbara Air Pollution Control District (SBAPCD) permit requirements. – 100% compliance achieved.
- Achieve 99.9% compliance with discharge limits for recycled water as listed in the Water Reclamation Discharge permit issued by the Regional Water Quality Control Board. – n/a – Recycled water monitoring has been incorporated into NPDES permit.
- Target 75% of completed wrench time hours as a percentage of total available craft hours for maintenance personnel. – 81% of hours completed as wrench time.
- Target 80% of proactive maintenance work order hours as a percentage of all maintenance work order hours completed. – 91% of hours were allocated to proactive work orders.

Other Program Measures - Wastewater Flows

Average Plant Effluent Flow with Min/Max Bars

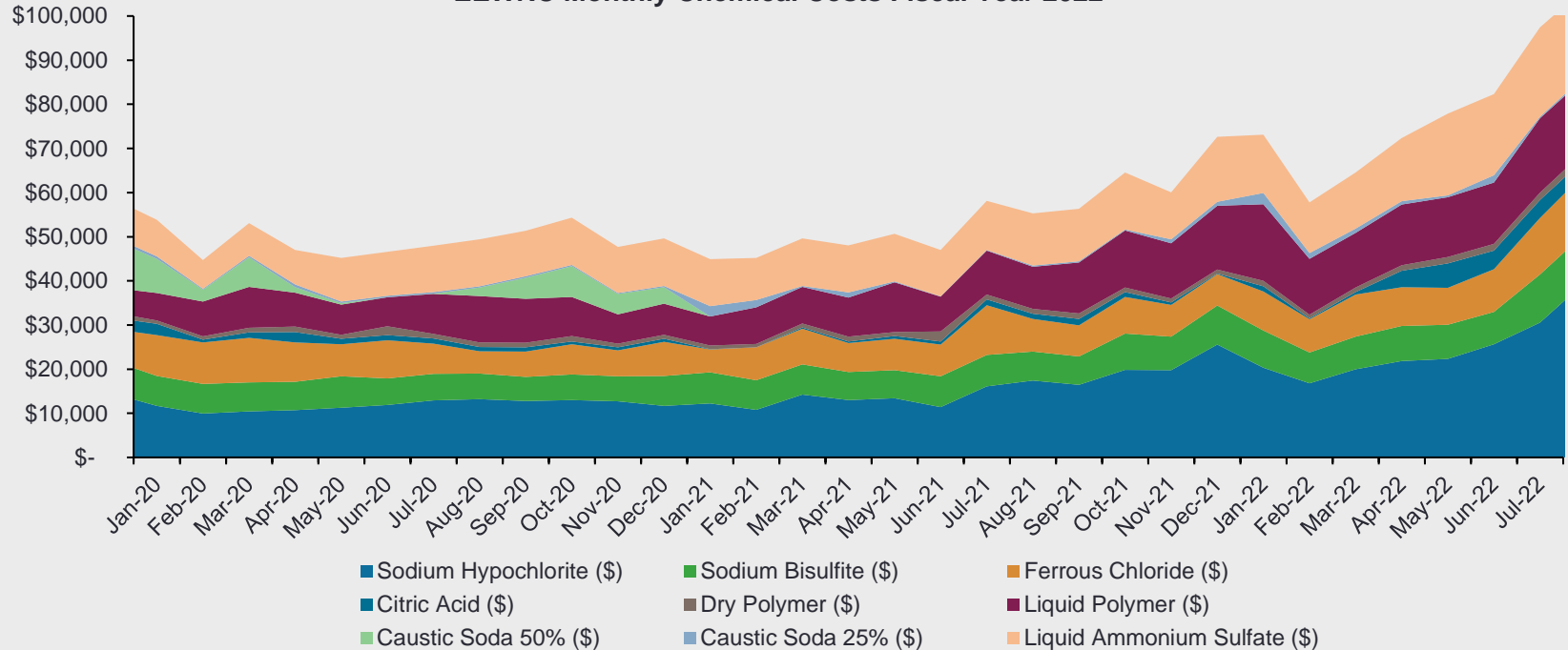


Average Recycled Water Distribution Flow with Min/Max Bars



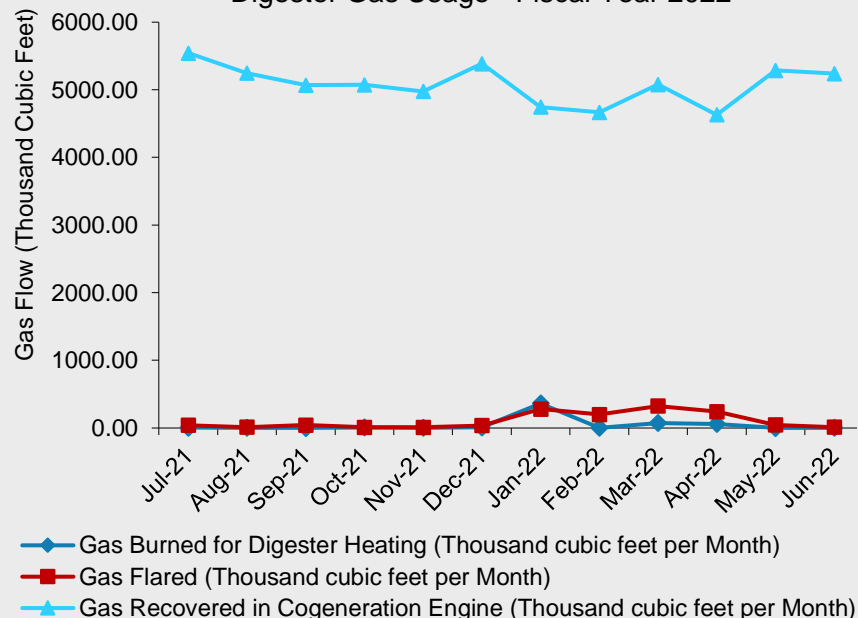
Other Program Measures

EEWRC Monthly Chemical Costs Fiscal Year 2022

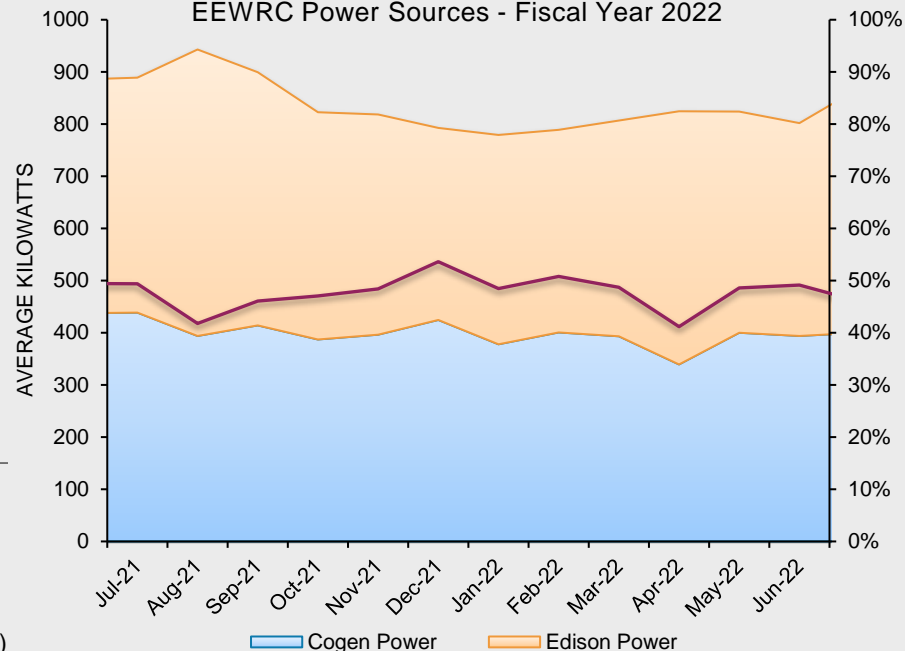


Other Program Measures

Digester Gas Usage - Fiscal Year 2022



EEWRC Power Sources - Fiscal Year 2022



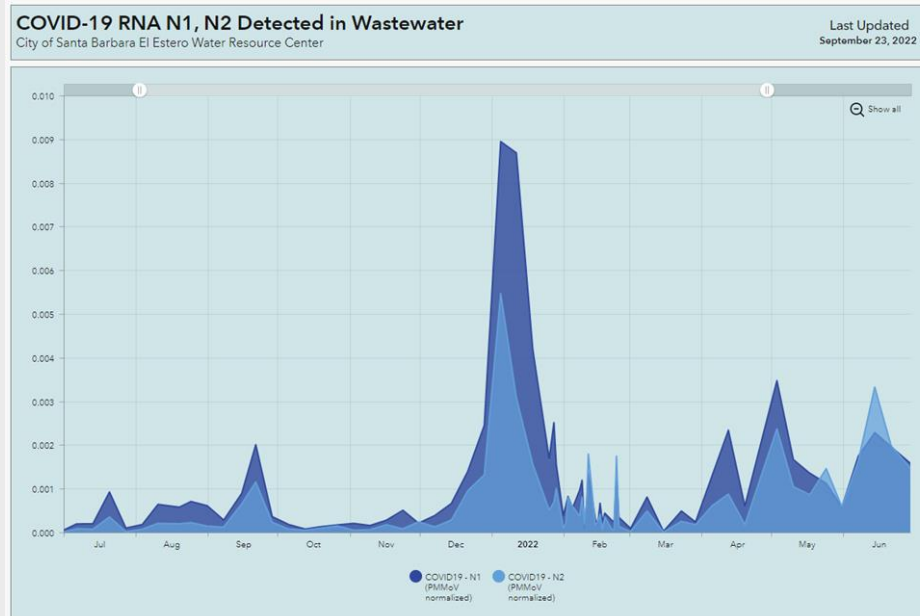
Maintenance Activities

Asset Management in Action



- 81% of available craft hours completed as wrench time for maintenance personnel.
- 91% of all maintenance work order hours were allocated to proactive work orders.

Coronavirus Pandemic Impacts



<https://www.sbcwastewater.org/>

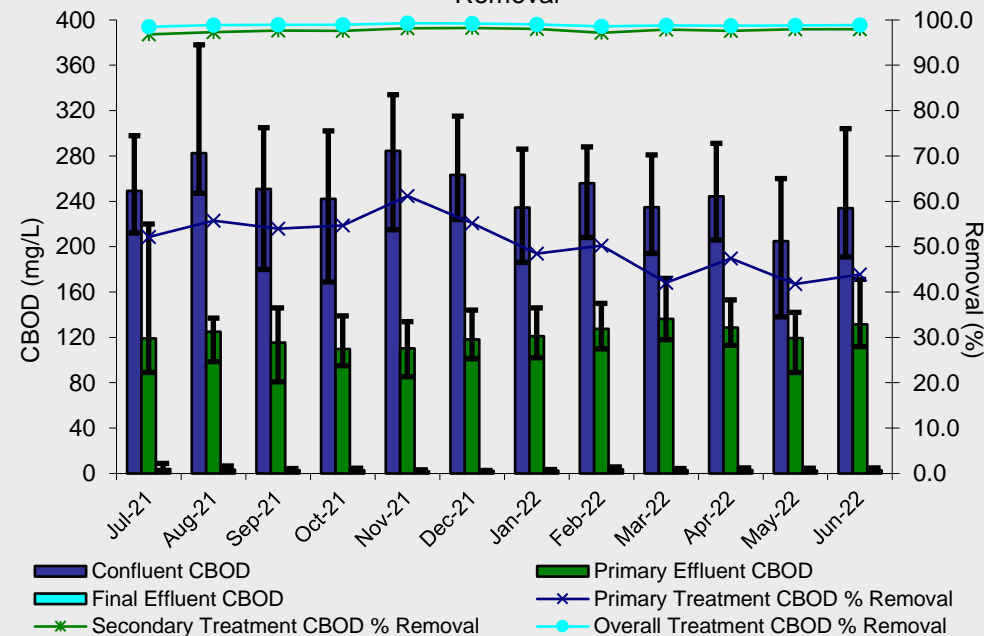
Coronavirus Pandemic Impacts

- Staffing
- Public outreach
- Limited chemical and other supply availability and cost increases
- Lift Station impacts from “flushables”

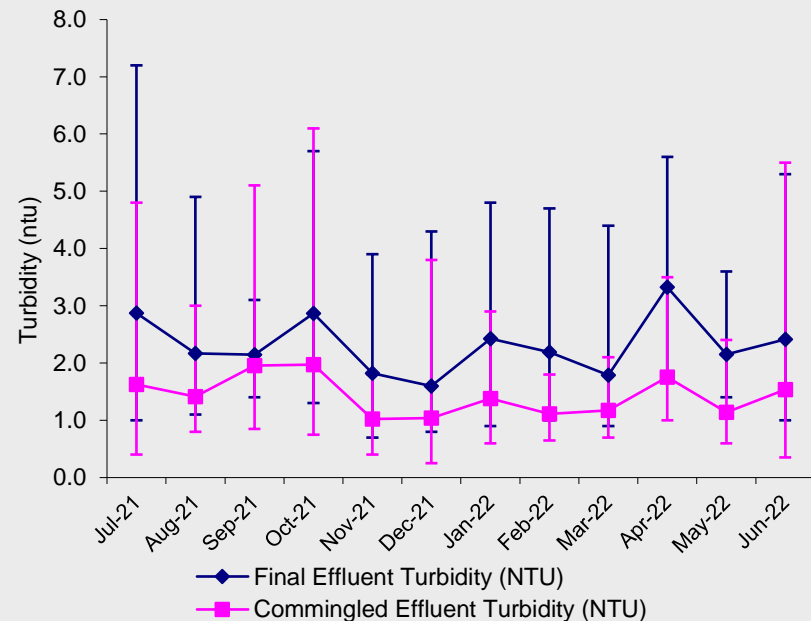


Water Quality

Average CBOD with Min/Max Bars and Average CBOD Percent Removal



Average Final Effluent and Commingled Effluent with Min/Max Bars



Discussion of NPDES Compliance

- Exceedances:
 - July 2021 - Fecal Coliform
 - October 2021 - Enterococcus
- Deficient Monitoring:
 - September 2021 - Effluent TSS.
 - November 2021 - Effluent TSS
 - Annual Monitoring 2021 - Influent cyanide, chlorine, and TCDD
 - March 2022 - Loss of continuous monitoring for multiple parameters



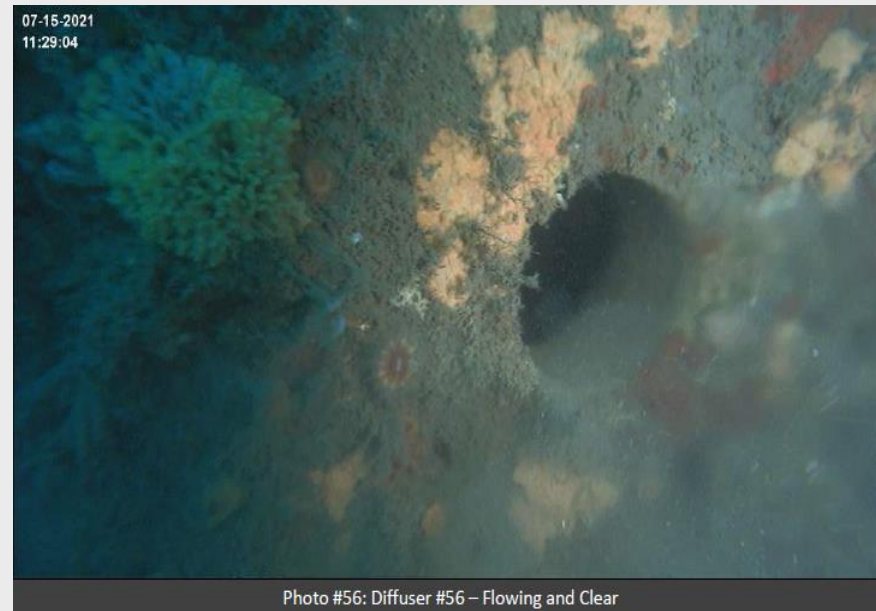
Enterococcus Analysis

- Laboratory staff identified interference in Enterococcus analysis, resulting in false positive results.
- Technical Justification to modify method was submitted to State Water Resources Control Board (SWRCB)
- Reports include results from modified method starting in December 2021.



Ocean Outfall Inspection

Outfall inspected annually, Buoy System inspected 2 x year



Sea Level Rise Adaptation

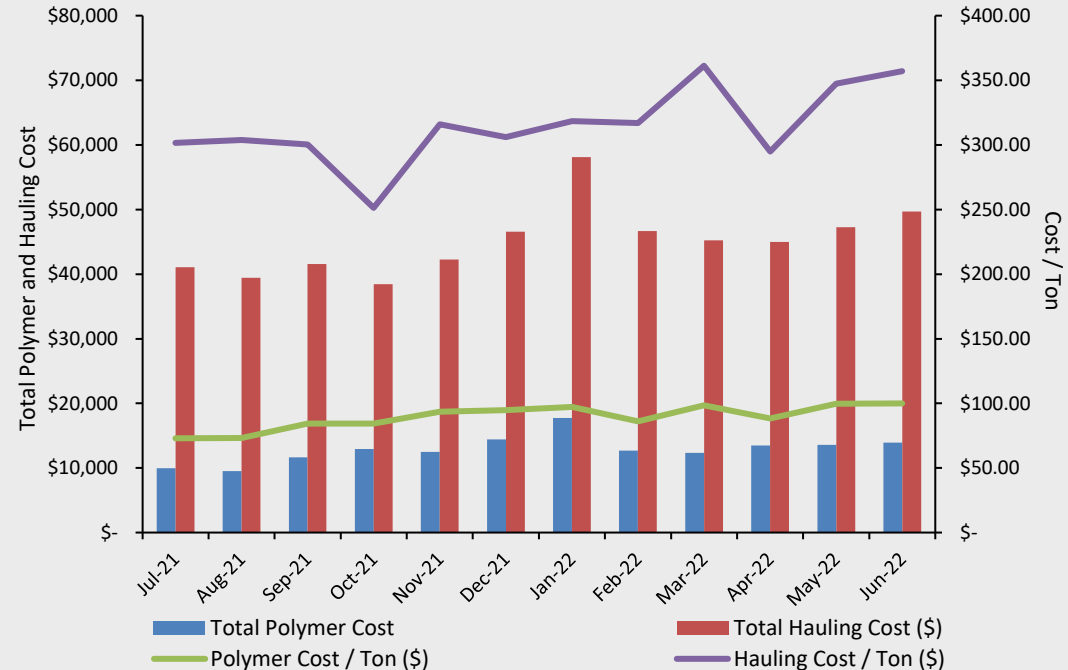
- Sustainability and Resilience Department is managing City efforts for Climate Change Adaptation
- Biggest near-term adaptation efforts should be focused on assets located along the coast
- Grant Funding for more analysis was obtained
- Facility-specific analysis is due to SWRCB August 2024



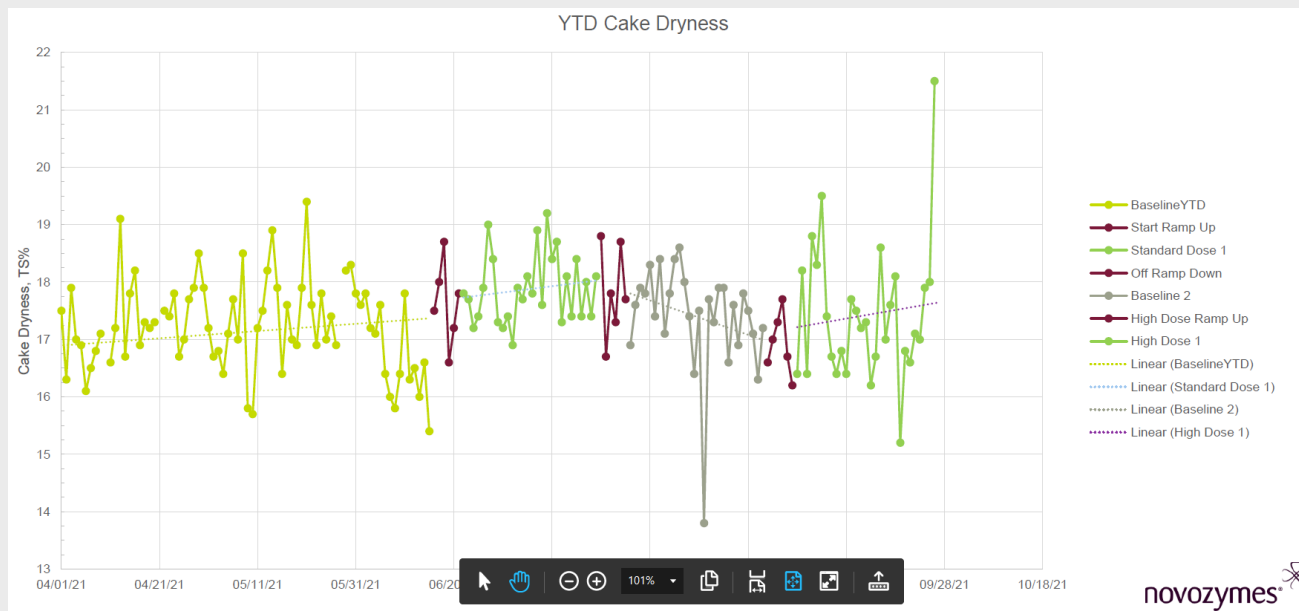
Biosolids Operations



Biosolids Disposal Costs

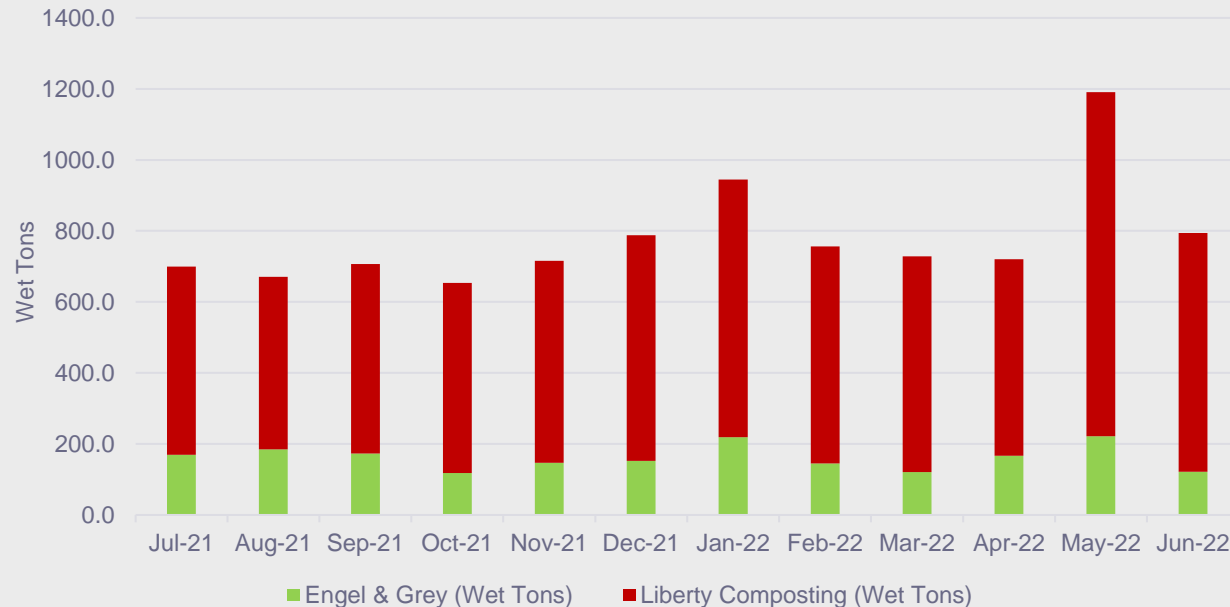


Novozymes BioSec Full Scale Trial



Biosolids Operations

Biosolids Disposal (Wet Tons)- Fiscal Year 2022



COLLECTION SYSTEM

Collection System Information

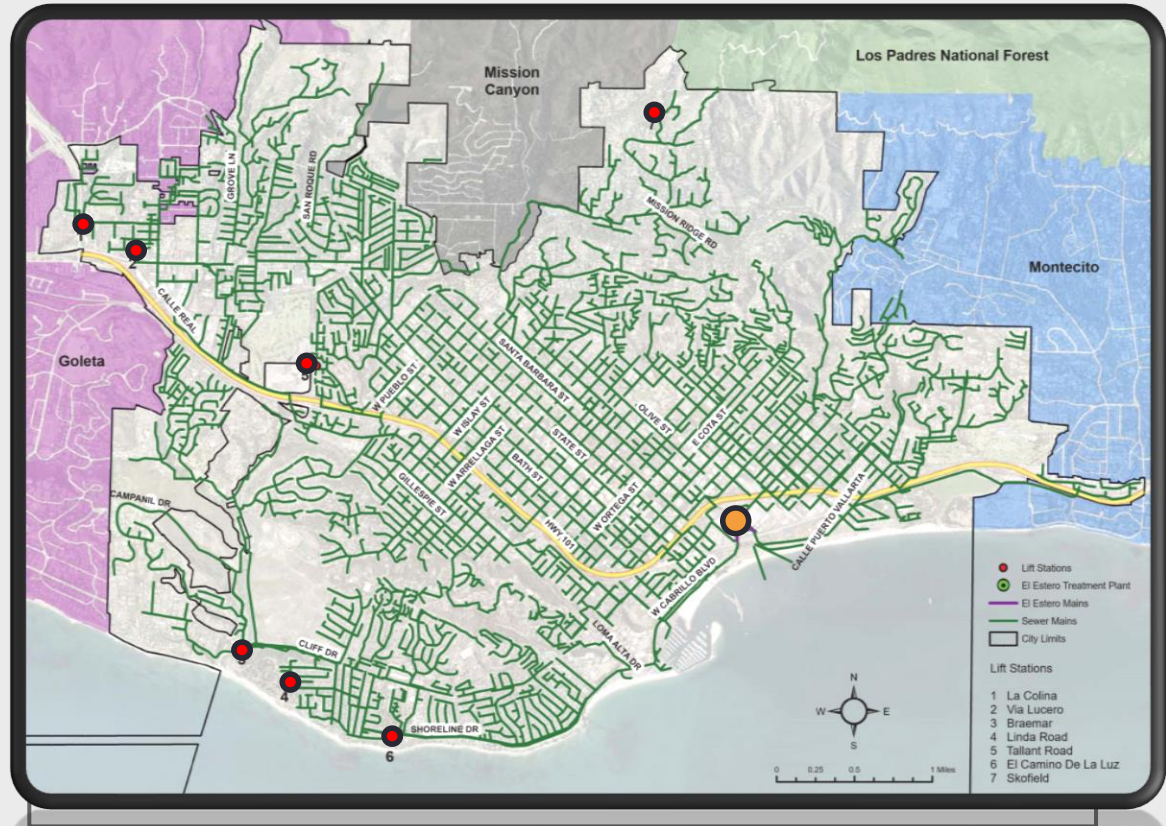
257 Miles

90% of gravity system
is 6" or 8"

55 Years (Average Age)

7 Lift Stations

2+ Miles of Force Main



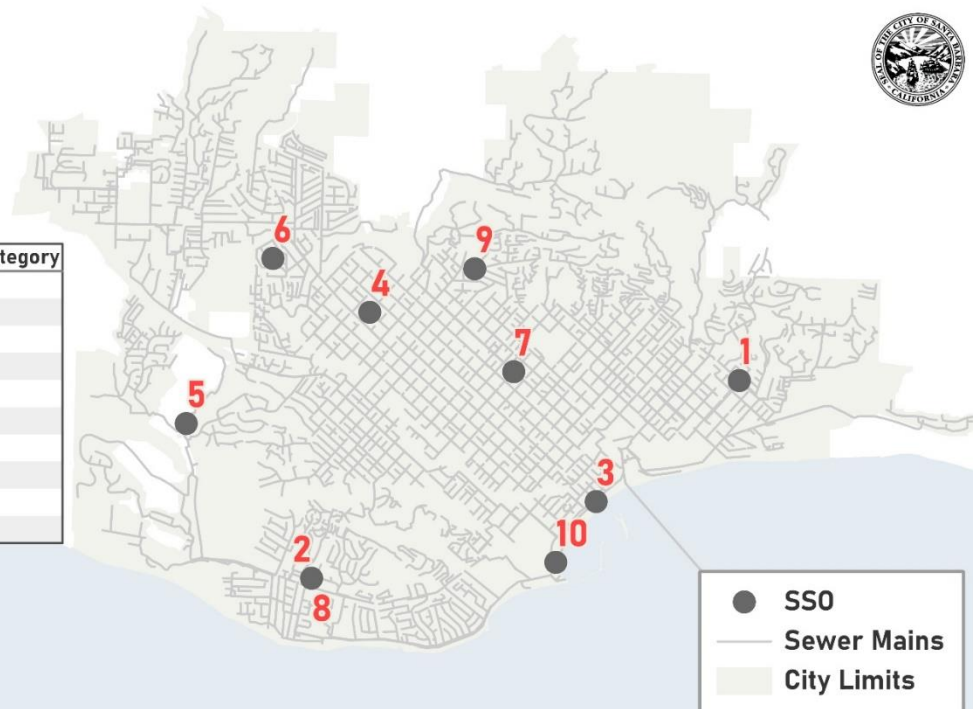
FY2022 – P3 Project Objectives

- Limit the number of overflows in the wastewater collection system to no more than 6. 10-SSO for FY22
- Clean 80% of scheduled pipes prior to due date pursuant to the assigned cleaning program at the mandated frequency. 66% cleaned by due date
- Make 500 site inspections of Food Service Establishments for Fats, Oils and Grease Program compliance. 582 site inspections completed

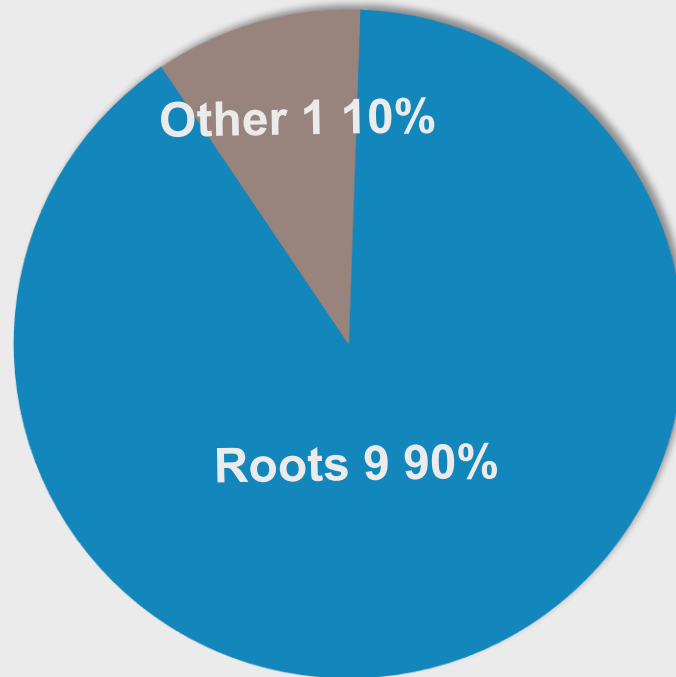
FY22 SSO Event Locations

City of Santa Barbara FY22 SSO Events

Event	SSO_YEAR	LOCATION	Category
1	2021	1329 Cacique St.	3
2	2021	2110 Cliff Dr.	3
3	2021	217 Stearns Wharf	3
4	2021	2100 Chapala St.	3
5	2021	1519 Veronica Pl	3
6	2021	3020 Hermosa Rd	1
7	2021	1000 Garden St	3
8	2022	2110 Cliff Dr.	3
9	2022	820 Moreno Rd	3
10	2022	401 Shoreline Dr (SB Harbor Parking Lot #2)	3

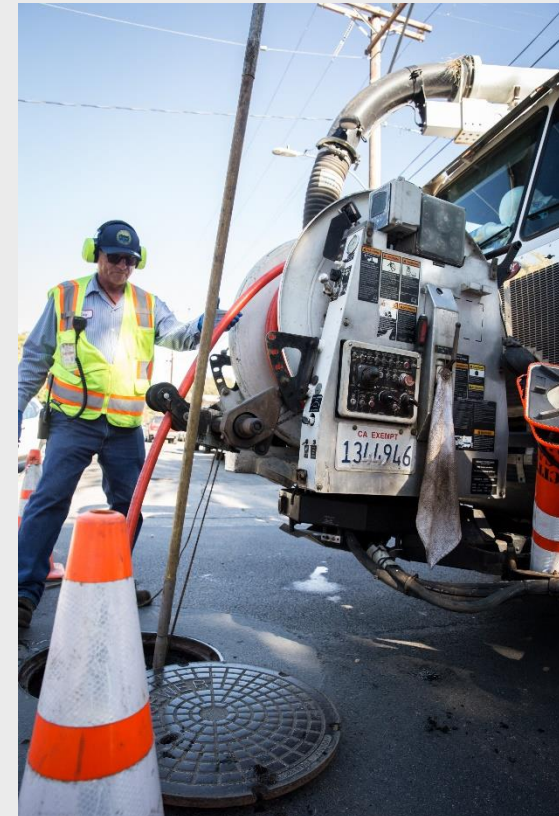


FY22 SSO Events By Cause

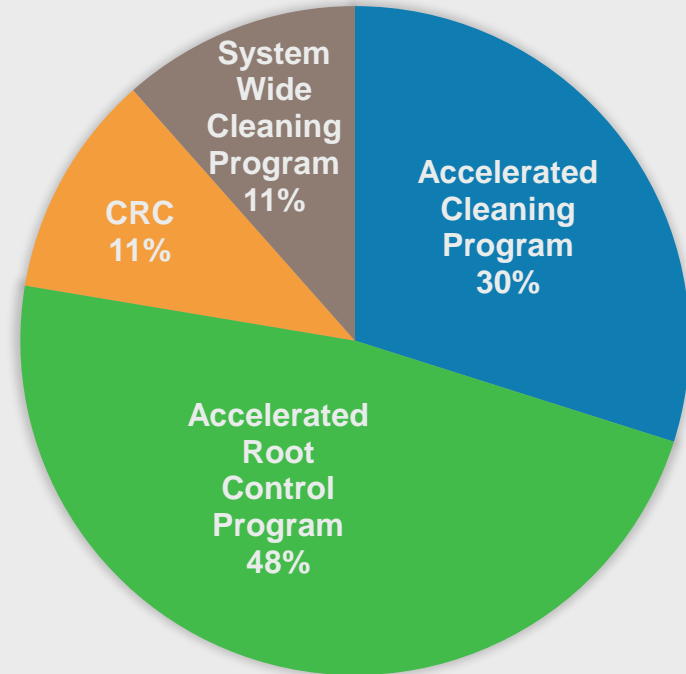
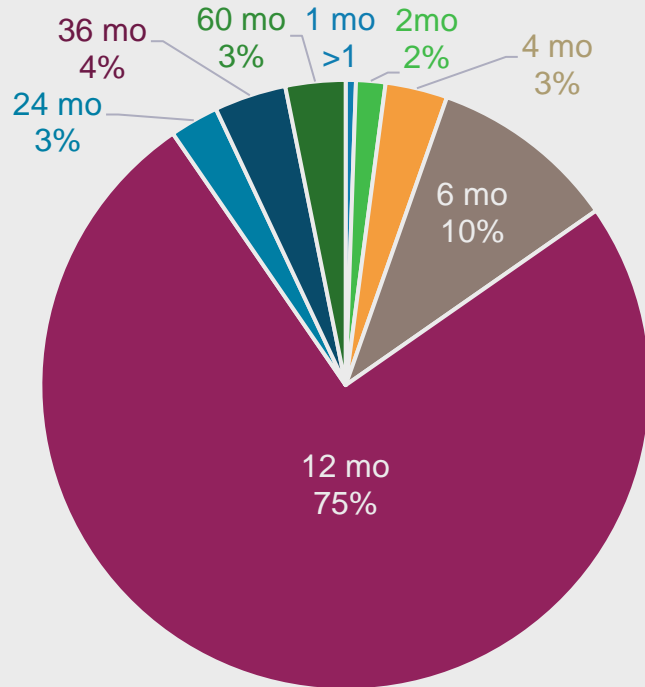


Sewer System Maintenance Programs

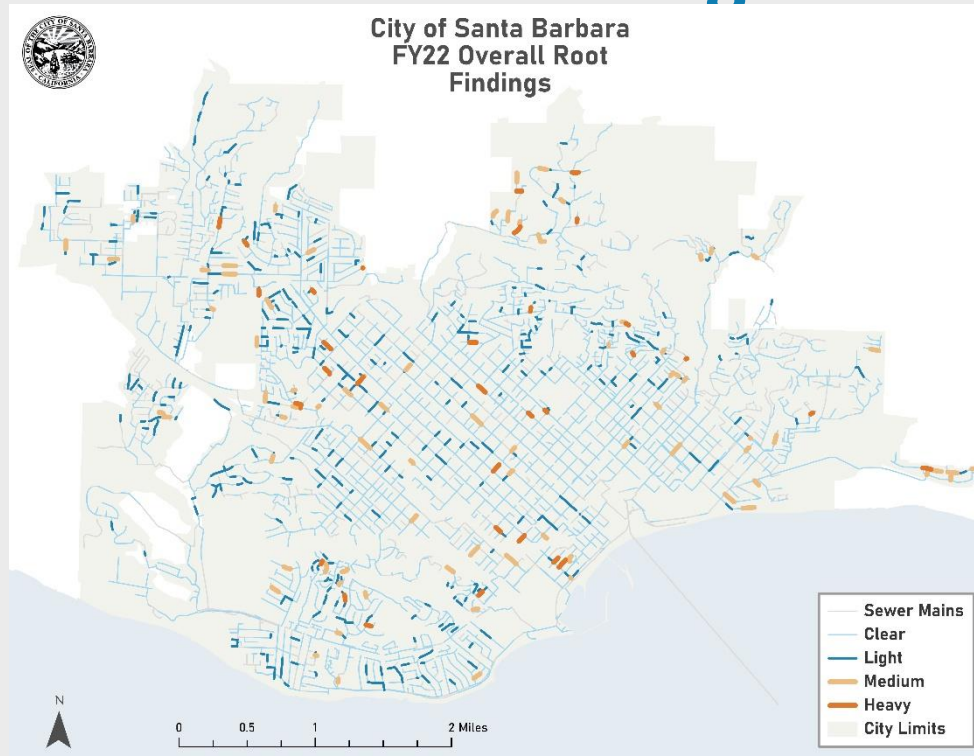
- Cleaning Program
- Acoustic Program
- Chemical Cleaning
- FOG Management



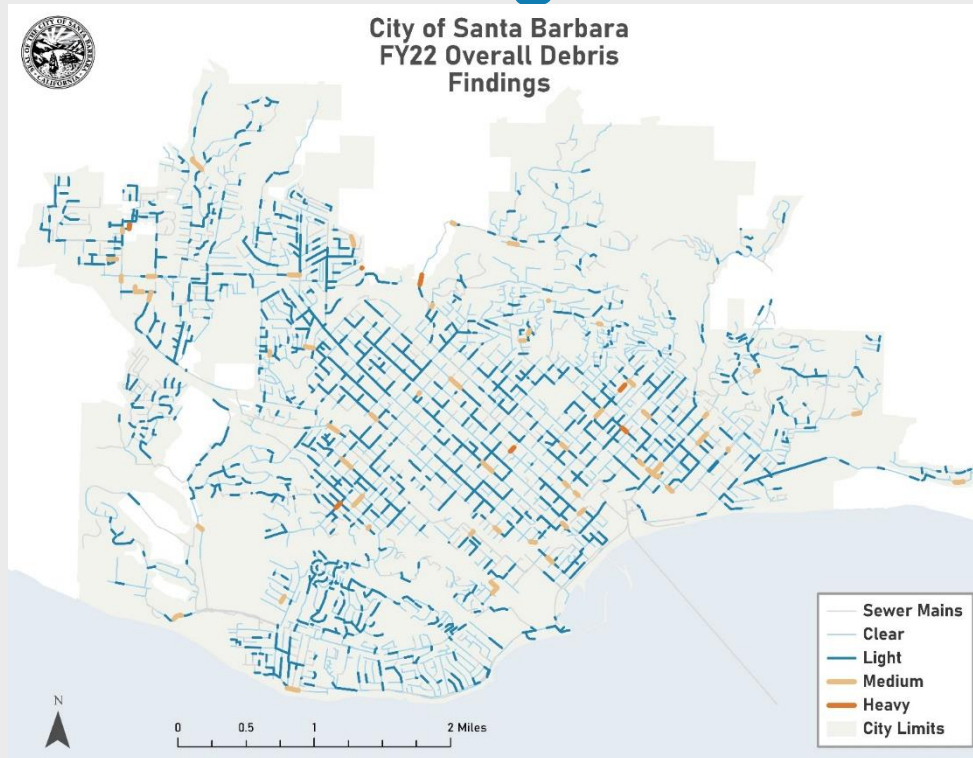
Cleaning Program



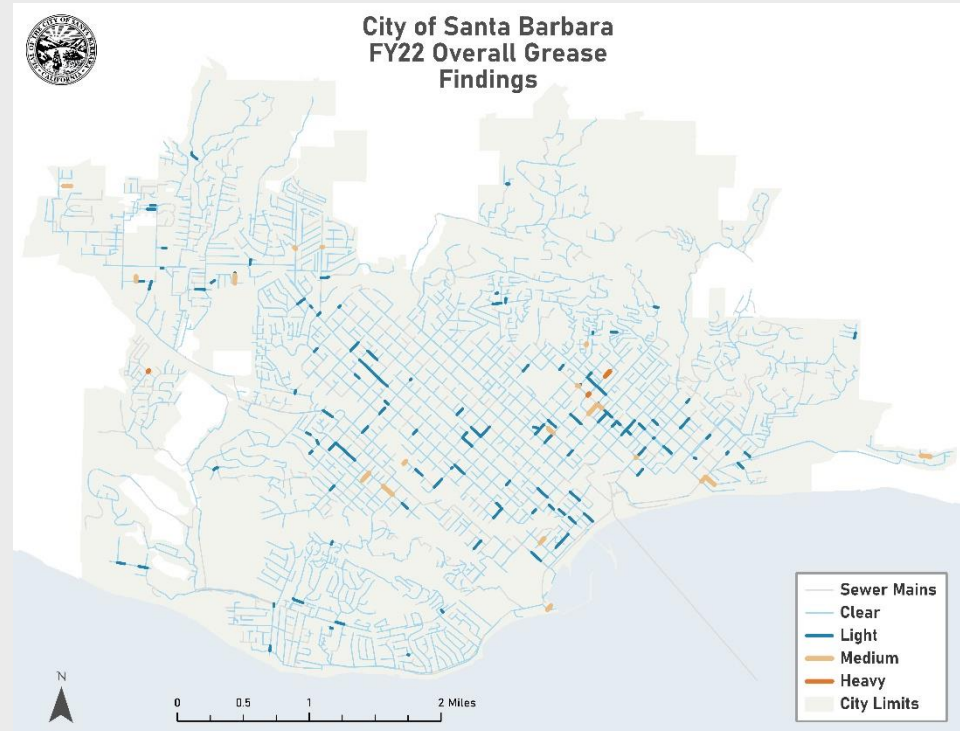
FY22 Root Findings



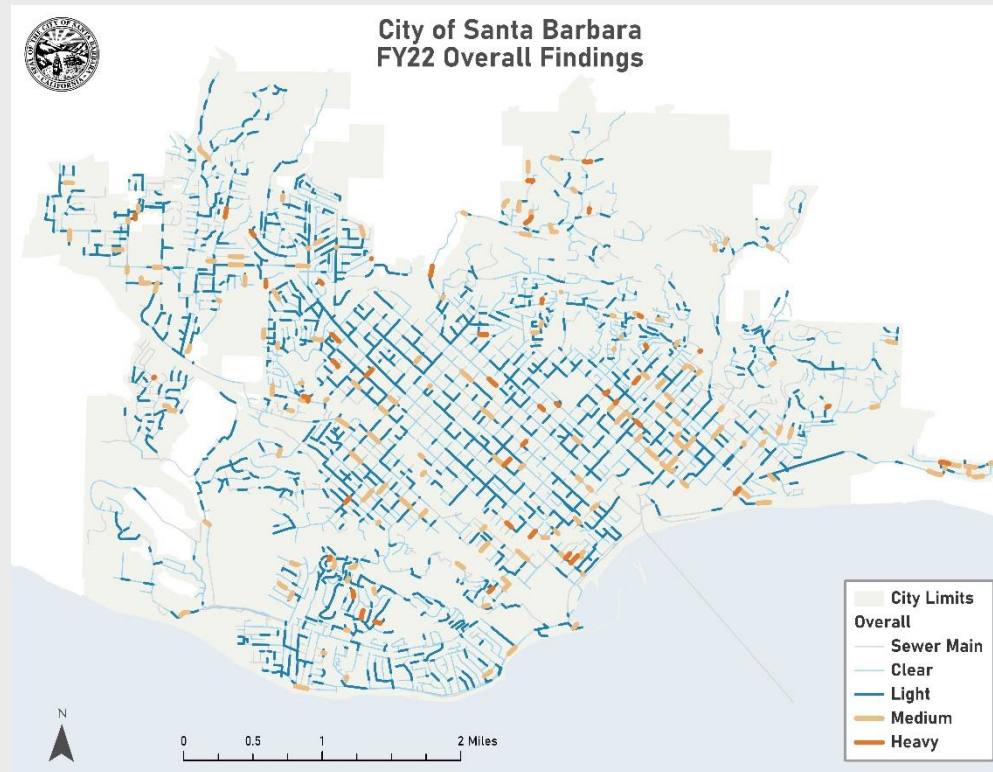
Debris Findings for FY22



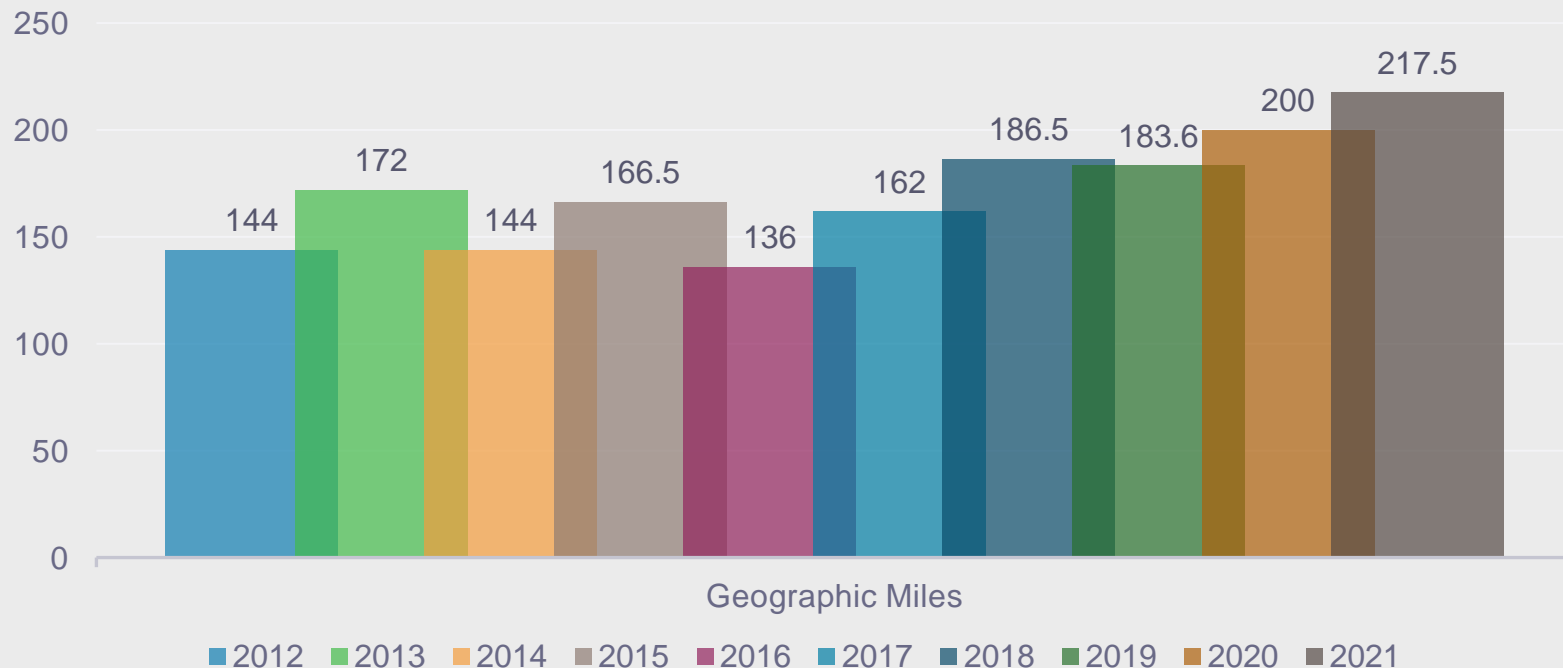
FOG Findings for FY22



Other Findings for FY22



Sewer System Geographic Mileage History



Future of the Collection System

- Staff development and training
 - Bucher Recycle Truck/New Jetter Truck
 - ITPipes CCTV Software
 - New CCTV equipment
 - NASSCO PACP
- Develop CCTV program
 - Large Diameter (12"≥)-Completed
 - Small Diameter (12"<)-Planned
 - Manhole inspection
- Revise Cleaning Programs
 - Revised frequency cleaning programs
 - Moved to Basin cleaning approach



Future of Wastewater and the Collection System

- [Wastewater Story Book](#)
- [Wastewater Story Book](#)

CAPITAL IMPROVEMENT PROJECTS

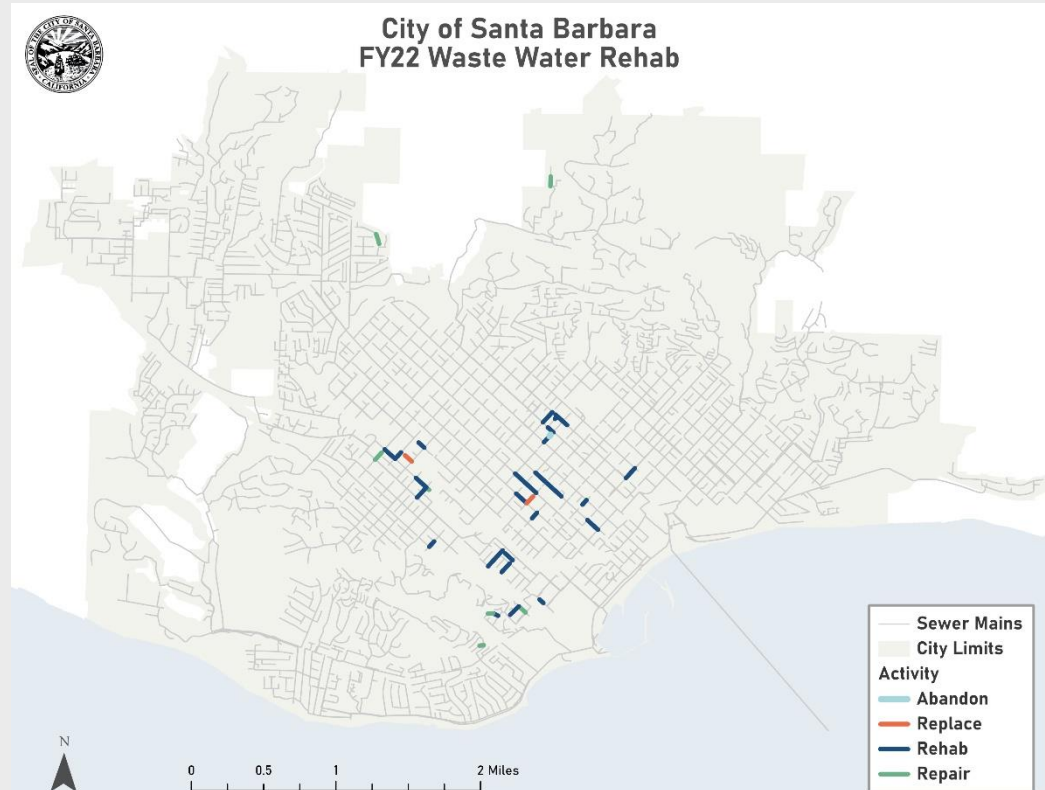
Current Capital Improvement Projects (CIPs)

Collections

- ❖ Annual Rehabilitation and Repair Projects

Treatment

- ❖ Digester Cleaning
- ❖ RW Pump Rehabilitation
- ❖ CCC Rehabilitation



Upcoming CIP for FY23

Collections

- ❖ Annual Rehabilitation and Repair Projects
- ❖ I&I update

Treatment

- ❖ Braemar Lift Station Rehabilitation Project
- ❖ Electrical Renewal Project at EEWRC
- ❖ CCC Rehabilitation



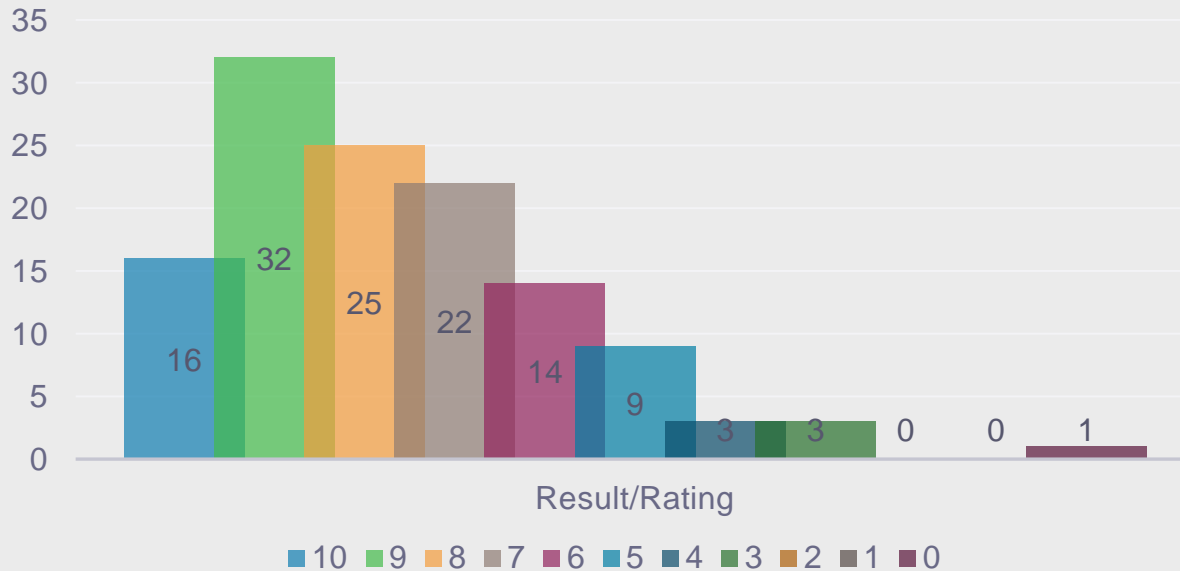
QUESTIONS?



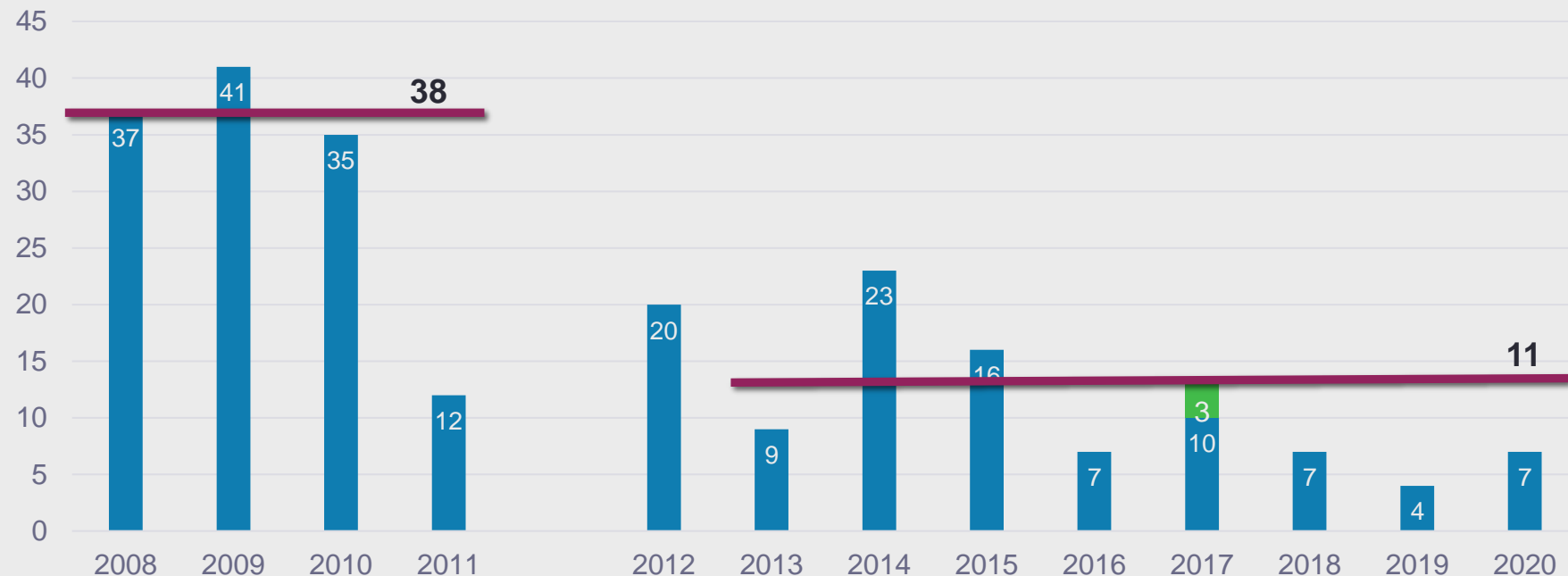
Equipment and Tools



Acoustic Sounding Results



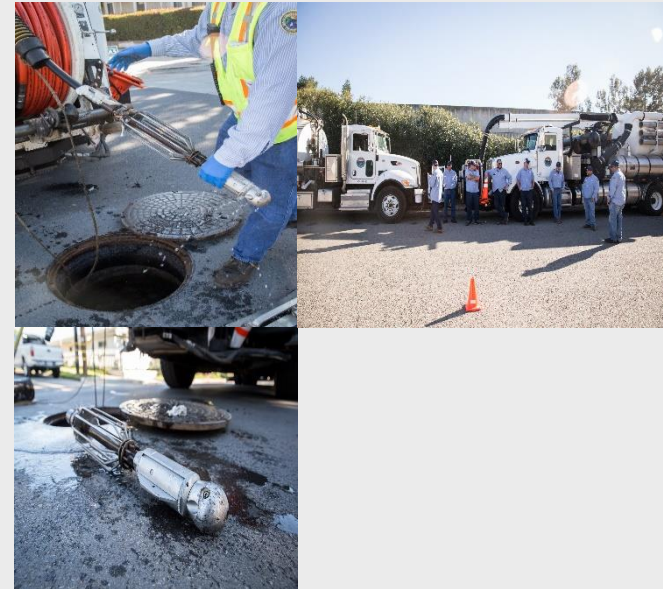
A Look at the Past...



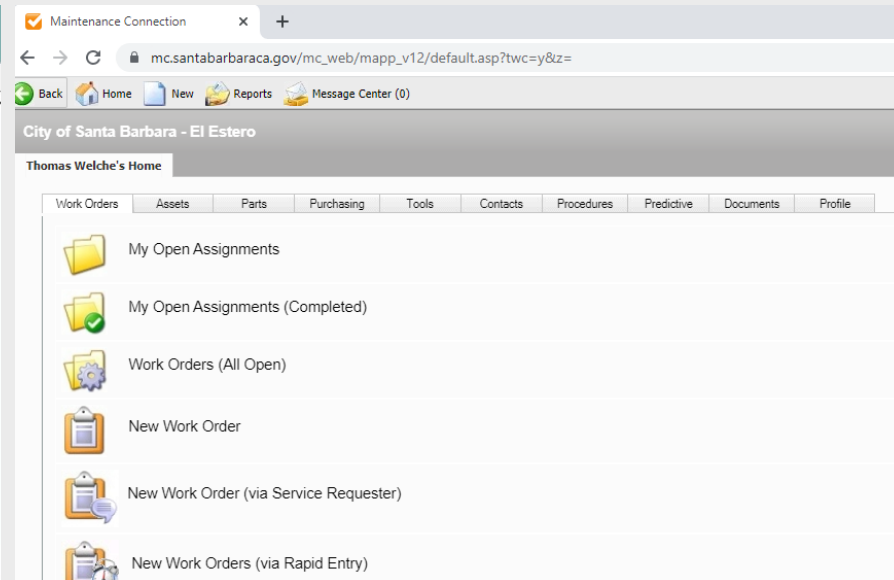
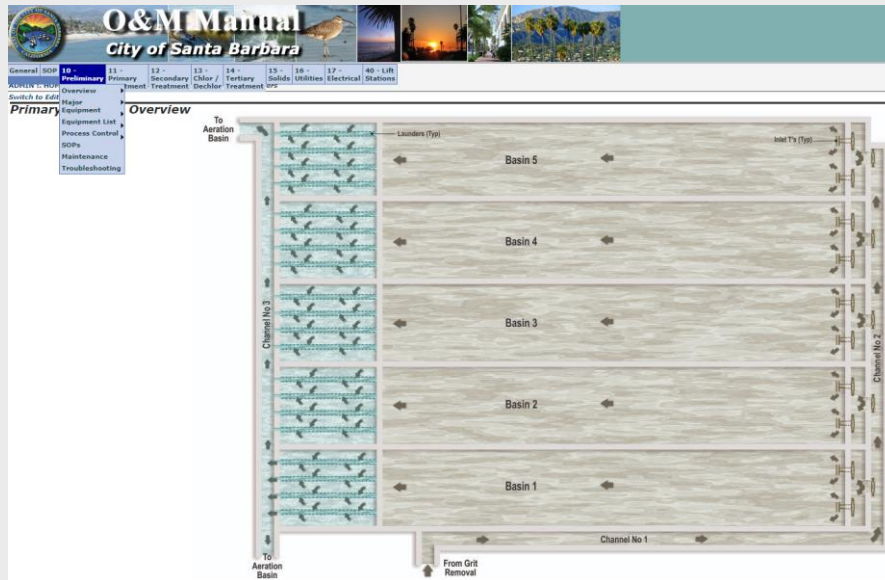
*2017 Storm related spills are shown in green and are not counted towards SSO reduction performance standard

Coronavirus Pandemic Impacts

- Staffing
- Contractor limitations
- Lift Station impacts from “flushables”.
- Public outreach



Operations and Maintenance Manual and Computerized Maintenance Management System



Industrial Pretreatment

- Program is implemented by Pretreatment Coordinator
- Enforces federal laws, municipal codes and compliance with Local Limits
- Monitor Influent, Effluent and Biosolids on a monthly basis



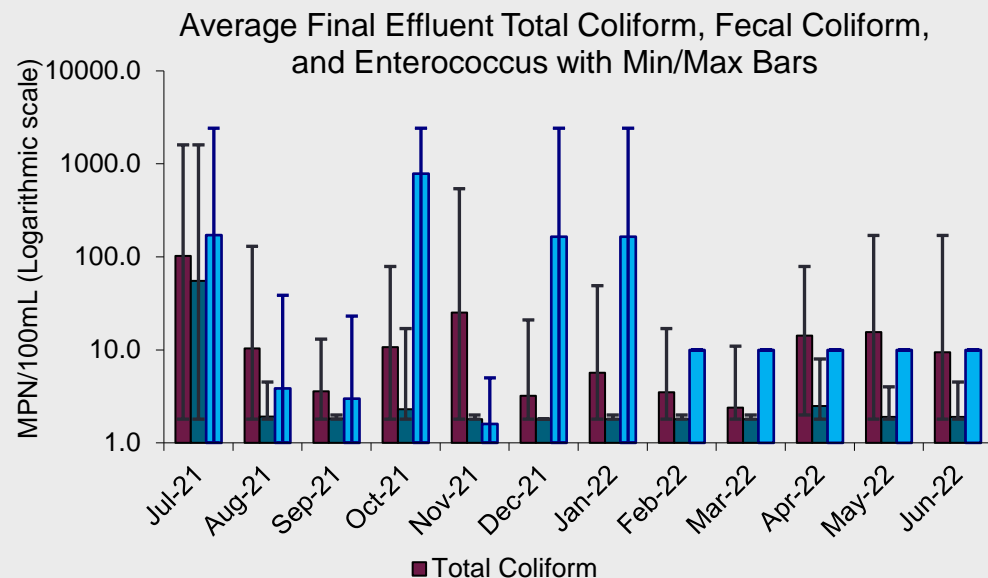
Industrial Pretreatment

Types of Industrial Users

- Categorical Industrial Users: 2
- Non-Categorical Industrial Users: 11
- Groundwater Dischargers: 3
- Direct Dischargers: 8



Coliform and Enterococcus



Other Program Measurements

