2022 NPDES SELF-MONITORING PROGRAM ANNUAL REPORT

NPDES PERMIT NO. CA0037869

East Bay Dischargers Authority
City of San Leandro
Oro Loma Sanitary District
Castro Valley Sanitary District
City of Hayward
Union Sanitary District

January 30, 2023

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Section 1: Comprehensive Discussion of Treatment Plant Performance and Compliance

EBDA's reissued permit was adopted in July 2022 and took effect September 1, 2022. EBDA has maintained consistent compliance with all provisions and effluent limits.

Major milestones and construction projects completed at the EBDA member treatment plants included the following:

- Oro Loma/Castro Valley Sanitary Districts (OLSD/CVSan)
    - Installed new washer compactor units (2) to replace existing grinder units (2) at the headworks in Spring of 2022. Screened material is being removed and hauled offsite.
    - Continuing to operate a full scale sidestream nitrification process using Microvi's biocatalyst. As constructed, approximately 100,000 gpd of belt press filtrate will be treated each day. The sidestream contains approximately 17% of the total influent nitrogen. To date, the process reduces ammonia concentrations by 70%. Staff continues to work to improve the performance with a 90% removal target. The process is designed to reduce ammonia to nitrite or nitrate, which is readily available for denitrification in the mainstream process.
    - Much of the Oro Loma Sanitary District's Capital Program spending has shifted to the collection system. The District is approximately 30% complete with its goal to replace 40 miles of sewer pipe by 2029 at an approximate cost of $60M. The District has completed one of ten planned contracts in 2022 with four currently actively in construction and expects to award two more in 2023.
- Union Sanitary District (USD)
    - Construction of the first phase of the Enhanced Treatment and Site Upgrade Program, which includes nutrient removal options in the future has begun. The construction for phase 1a and for phase 1b has commenced. Phase 1a will modify the existing aeration basins, add an 8th aeration basin, and relocate existing administrative buildings to allow for phase 1b to be built. Phase 1b will construct new secondary clarifiers and new effluent pump station.
    - Digester #7 construction is completed and in service.
    - New Standby Generator system is currently under construction will be completed in 2025, barring any unforeseen construction delays.
- City of Hayward
    - Recycled water membrane treatment system was permitted by the Division of Drinking Water (DDW) and put in service during the first quarter of 2022. The system is capable of treating up to 500K gallons per day and the pump

station is capable of pumping up to 5 million gallons per day. The anticipated initial demand was expected to be around 300k gallons of recycled water per day to neighboring businesses and parks.

- The Headworks project was completed in 2021. This involved major reconstruction of the headworks building along with replacing the influent grinders with bar screens which will helps protect the downstream plant equipment and processes. In 2022 the air handling system and a new Ferric Chloride dosing station were completed along with the construction of the biofilter. We are working with the contractor to install a dewatering system for the foul-air line, so it can convey the specified volume of air to the biofilter.
- The 12KV Switch Gear replacement project was awarded to Carollo in late 2021, and final designs were completed in the spring of 2022. The project went to bid and was awarded in summer of 2022. Due to lead times on electrical components, construction is scheduled to begin in late 2023.
- The Nutrient Management Upgrades and Administration Building project was awarded to Brown and Caldwell in August of 2022. Planning and design began in the Fall of 2022 with an expected 2-year timeline line for completion.

- <u>City of San Leandro</u>
  - Pending BAAQMD permit approval and analysis of the financial viability of the project, designs for a “micro-grid” battery system to provide peak shaving and other energy efficiency improvements are approaching completion, and work will begin in Spring 2023.
  - The Treatment Wetlands project is undergoing a modification to the original design. The NPDES permit has been issued, and other permits are pending CEQA, which will be completed in 2023. Construction will begin in 2024, pending funding approval. Installation of a pilot version of MABR nitrification units is planned for summer 2023.
  - Kickoff of a capital improvement planning project will begin in 2023, with expected completion in early 2024.
  - On the afternoon of December 31, 2022, the City bypassed approximately 300,000 gallons past the secondary treatment process to prevent severe damage to electrical pumping equipment. This was a result of the severe storm event that caused unprecedented flows that overwhelmed the primary and secondary processes and eventually the site drain system, causing a dangerous flood in the effluent pumping station. If the decision to bypass had not been made, the effluent pumping equipment may have been submerged and stopped functioning. The permit and 40 CFR 122.41(m)(4) allow bypasses under limited circumstances, including where there are no feasible alternatives during peak wet weather flow. This incident was further detailed to the Regional Water Board in a report dated January 17, 2023.

- A targeted I&I reduction study is planned for the 2023-24 rainy season in low lying areas with excessive rain-related flow, with more widespread studies to follow.

EBDA's major projects in 2022 included the following:

- EBDA continues to implement its Asset Management Plan to ensure appropriate renewal and replacement of infrastructure. The estimated total restoration cost over 20 years is approximately $11.3 million. This includes $420,000 annually through 2030 (for a total of $4.2 million) that EBDA is contributing for capital improvements to the Union Effluent Pump station, per EBDA's Amended and Restated Joint Powers Agreement.
- In 2022, EBDA made significant improvements to the main electrical switchboard at the Oro Loma Effluent Pump Station (OLEPS). All breakers in the main electrical switchboard, including the main breaker, were replaced. Upgraded power monitoring equipment was also installed, that will allow OLEPS instantaneous power usage to be displayed on EBDA's SCADA system.
- EBDA went out to bid for the Hayward Effluent Pump Station (HEPS) Pump Replacement project. This project to replace all four pumps and motors was awarded in January 2023.
- EBDA initiated a project to replace the roofs on the EBDA Office Building, the Marina Dechlorination Facility (MDF) SBS Storage Building, and OLEPS. Work is underway and will be completed in Spring 2023.
- EBDA continued its key role in the Transforming Shorelines Project. This project, funded by an EPA Water Quality Improvement Fund grant, includes design of a full-scale horizontal levee south of Oro Loma ("First Mile" project), continued research at Oro Loma's horizontal levee pilot, advancement of pilot wetlands projects at San Leandro and Hayward, and building capacity for nature-based solutions among Bay Area wastewater agencies. In close coordination with East Bay Regional Park District, Hayward Area Shoreline Protection Agency, and San Francisco Estuary Partnership, EBDA has been managing the First Mile and Hayward projects. In 2022, the First Mile team developed a Design Decisions Memo, the first step toward preliminary design. The team also hosted a site tour and received valuable feedback from the Bay Restoration Regulatory Integration Team (BRRIT). A parallel process to engage the BRRIT's Policy Management Committee on regulatory challenges associated with horizontal levees and other multi-benefit projects has also been launched. The goal is to use the First Mile project as a case study to work through regulatory and other barriers to multi-benefit shoreline project implementation. The team also completed a high- level Feasibility Study for treatment wetlands and a horizontal levee at the Hayward Water Pollution Control Facility. Further feasibility assessment is being carried forward in 2023 as part of the City of Hayward's nutrient upgrade design.
- In late 2021, EBDA started a project to update programming and automation associated with sodium bisulfite (SBS) dosing at the Marina Dechlorination Facility (MDF). These updates are needed to implement the change to EBDA's effluent

limit for total residual chlorine (TRC), which was adopted as a blanket permit amendment by the Regional Water Board in October 2021. The new TRC effluent limit is expected to reduce SBS usage by approximately 85%, or a $200,000 budgetary savings. The remainder of this project was put on hold in 2022 while EBDA awaits approval of the Basin Plan Amendment by EPA.

- EBDA has been working closely with Cargill, Inc. to develop a project that would deliver mixed sea salt brine from Cargill's solar salt ponds in Newark to EBDA's transport system for dilution and discharge. In 2022, Cargill and EBDA continued work to develop strategies to mitigate potential acceleration of corrosion induced by the brine addition. The team developed a schedule and cost estimate for protective measures at the Marina Dechlorination Facility as well as pipeline appurtenances. Work also progressed on a monitoring plan to assess corrosion in the conveyance system. The team also continued work on assessing the water quality of the brine-effluent blend and a sampling plan to ensure continued compliance with the NPDES permit. Lastly, the team developed a Draft Environmental Impact Report for the project, which was released in early January 2023 and is available here: https://ebda.org/projects/cargill-partnership/

- EBDA's Member Agencies recycled approximately 821 million gallons in 2022, a 44% increase over 2021. The increase is primarily attributed to the operation of the Russell City Energy Center (RCEC), which resumed larger scale recycled water deliveries from the City of Hayward. For consistency with recycled water totals submitted through GeoTracker, the totals presented below include in-plant reuse. Also of note, there was no discharge to the Hayward Marsh again in 2022, and the permit for this discharge was revoked.

  As shown in the following table, including the LAVWMA agencies, water recycling accounted for more than 3.1 billion gallons, about 14% of EBDA's outfall discharge last year of approximately 22.2 billion gallons. Overall, this is consistent with last year's totals and ratio.

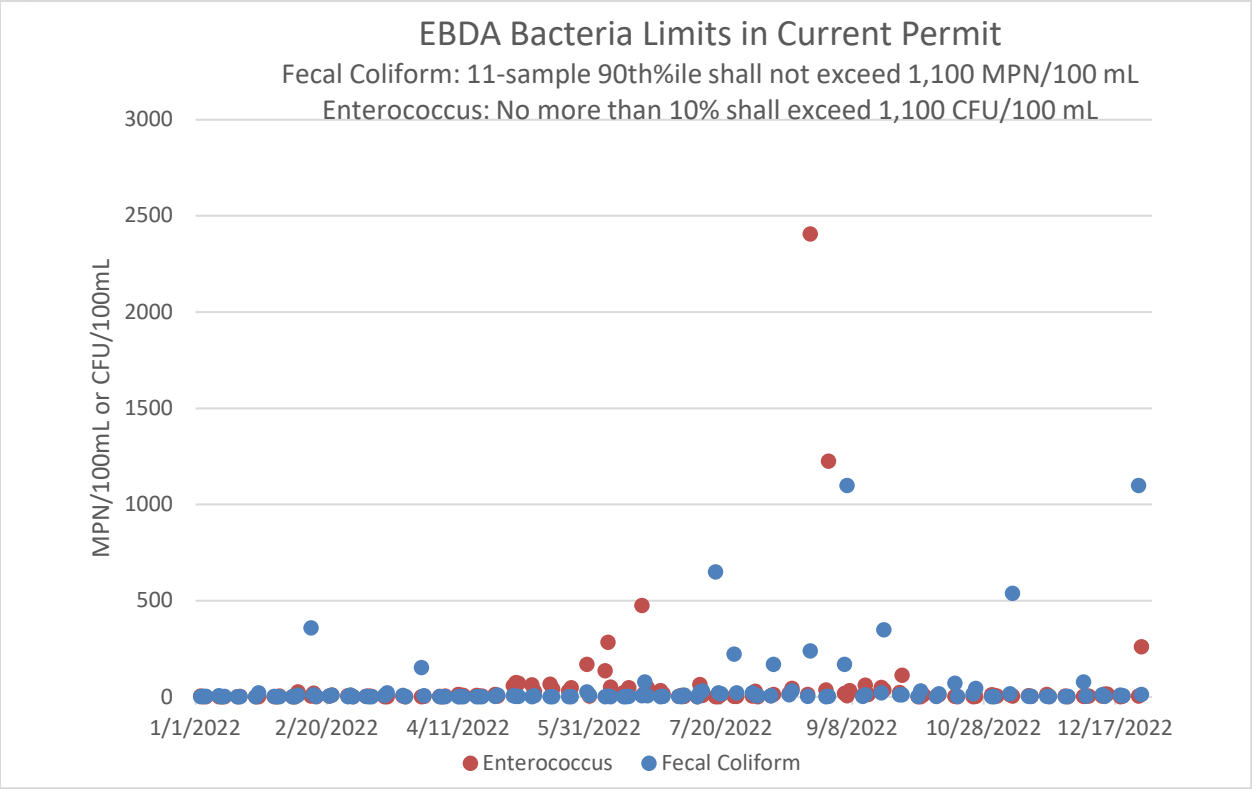
Agency	*2021 Recycled Water Production (MG)*	*2022 Recycled Water Production (MG)*
Hayward	129	345
San Leandro	89	94
EBDA Skywest Project	12	10
Oro Loma Sanitary District	18	18
Union Sanitary District	323	354
EBDA Subtotal	**571**	**821**
USD Hayward Marsh	0	0
EBDA Total	**571**	**821**
Livermore	706	636
Dublin San Ramon Services District (DSRSD)	1872	1733
LAVWMA Total	**2578**	**2368**
Grand Total	**3149**	**3190**

Bacterial Compliance

The chart that follows presents pathogen data from samples through the year. Note that permit limits are calculated as monthly geometric means or monthly 90%ile samples. Sporadically, at random intervals, a high sample can be detected. This outcome is probably due to the sloughing of pipe biofilms into the sample line. These non-representative events are why permit compliance is determined by geometric means.

EBDA and its member agencies worked hard over the past few years to improve chlorine dosing to prevent periodic increases in bacterial contamination, which had occurred in prior years. This increased attention to chlorine dosing has led to consistent compliance with limits. EBDA prepared a Disinfection Master Plan in 2021 and began implementation of its recommendations during the 2022 dry season. This Master Plan has assisted EBDA in further optimizing chlorine dosing to prevent bacterial regrowth.

Figure 1 – EBDA Bacterial Contaminant Performance



Section 2: List of Analyses for Which the Discharger Is Certified

EBDA conducts no analyses of its own. Each member agency is certified by the State Water Resources Control Board for standard water quality tests such as BOD, TSS, pH, DO, enterococcus, and fecal coliform. City of San Leandro staff performs these analyses on the combined effluent.

All metals and organics analyses are performed by the Authority's contract laboratory, Caltest Analytical Laboratory. Caltest's lab is certified for these analyses. Caltest subcontracts for analytical work on some items, including dioxin and furan compounds and PCBs to other certified labs.

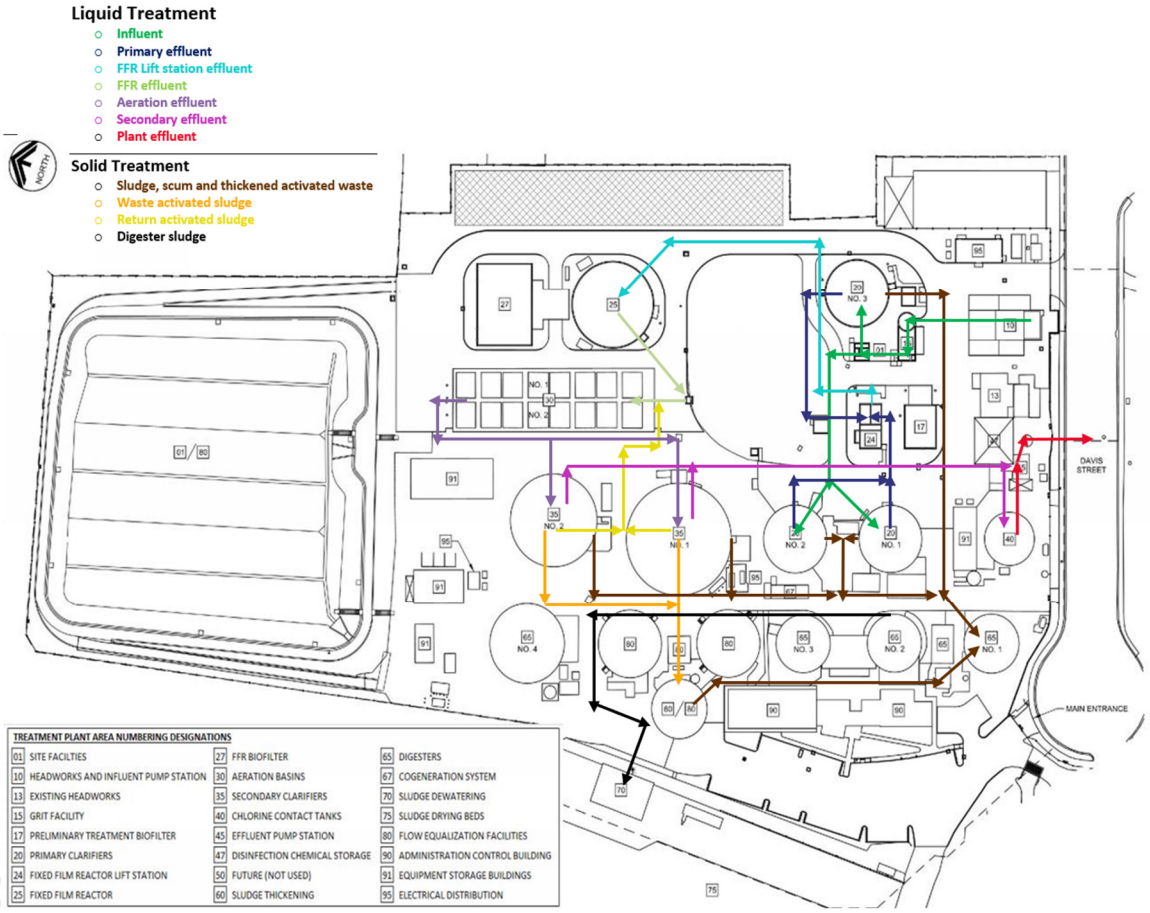
Pacific Eco-Risk Laboratory (PERL), also a certified laboratory, conducts the required acute and chronic toxicity testing for the Authority.

Copies of all laboratory reports are maintained on file at the Authority's office and are available for review upon request. Said reports are not included in this report.

Section 3: Plan View Drawing or Map Showing the Discharger's Facility, Flow Routing, Sampling and Observation Station Locations

Marina Dechlorination Facility

San Leandro Plant – Process Flow Diagram



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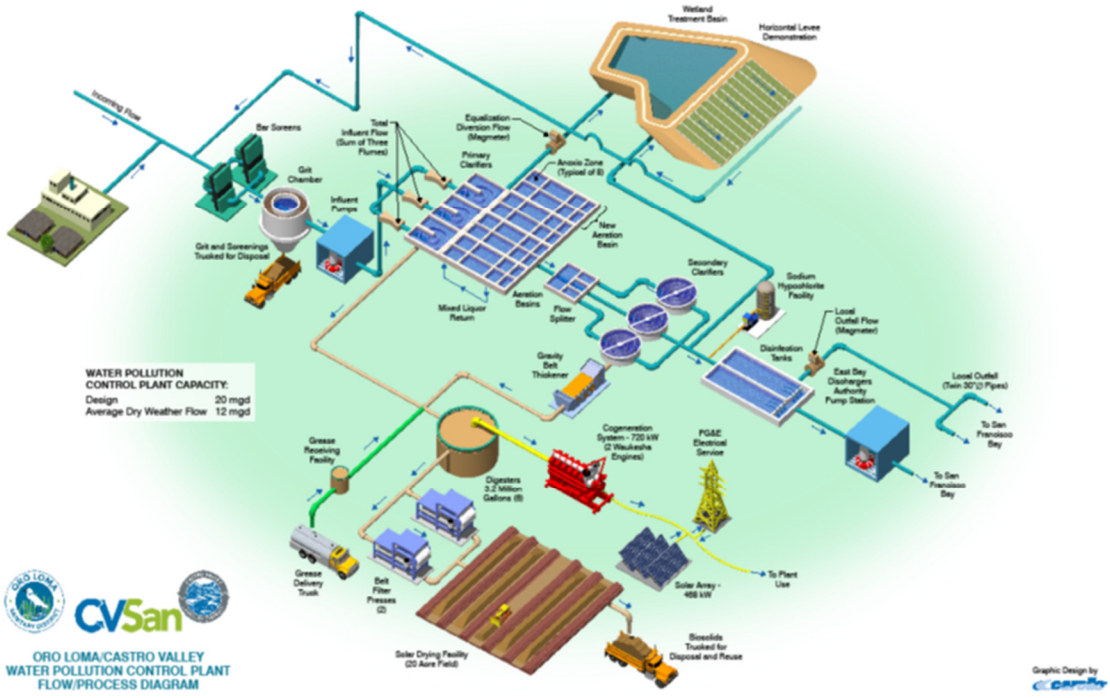
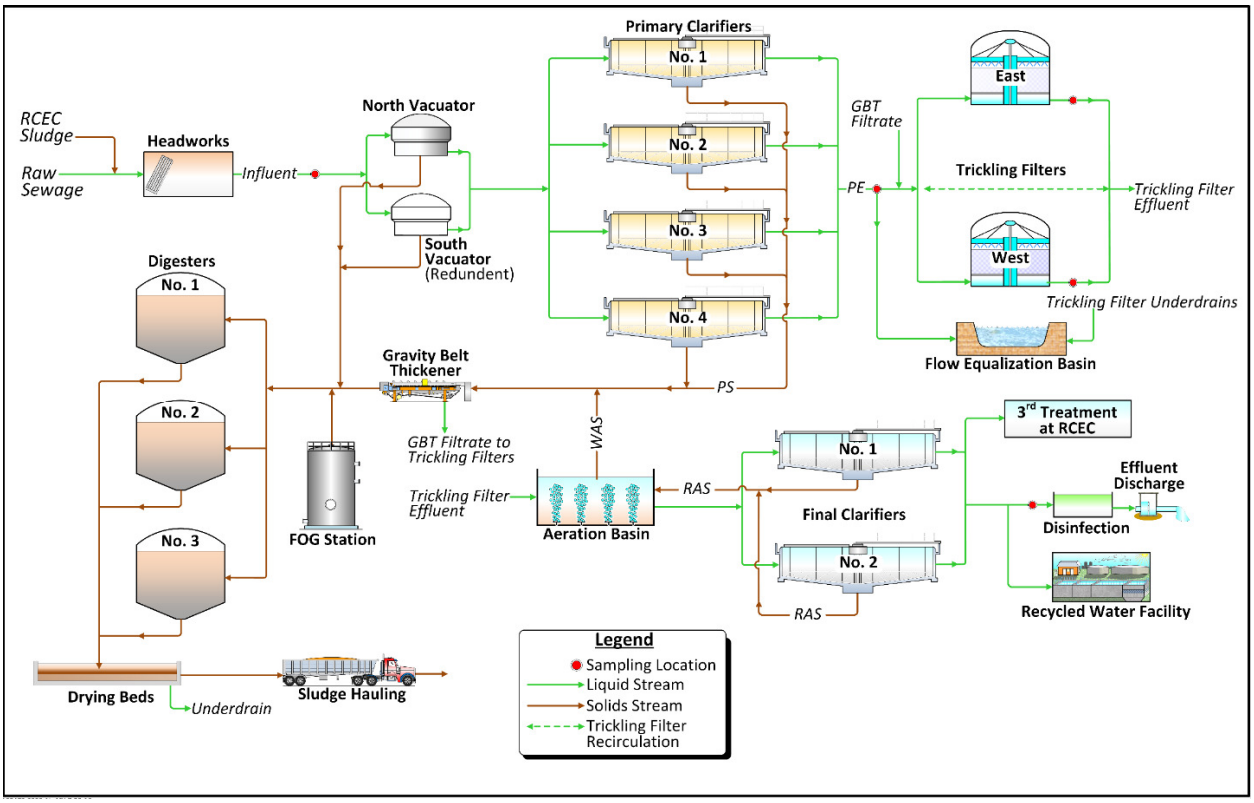
San Leandro Plant – Sampling Locations

OLSD/CVSan Plant – Process Flow Diagram



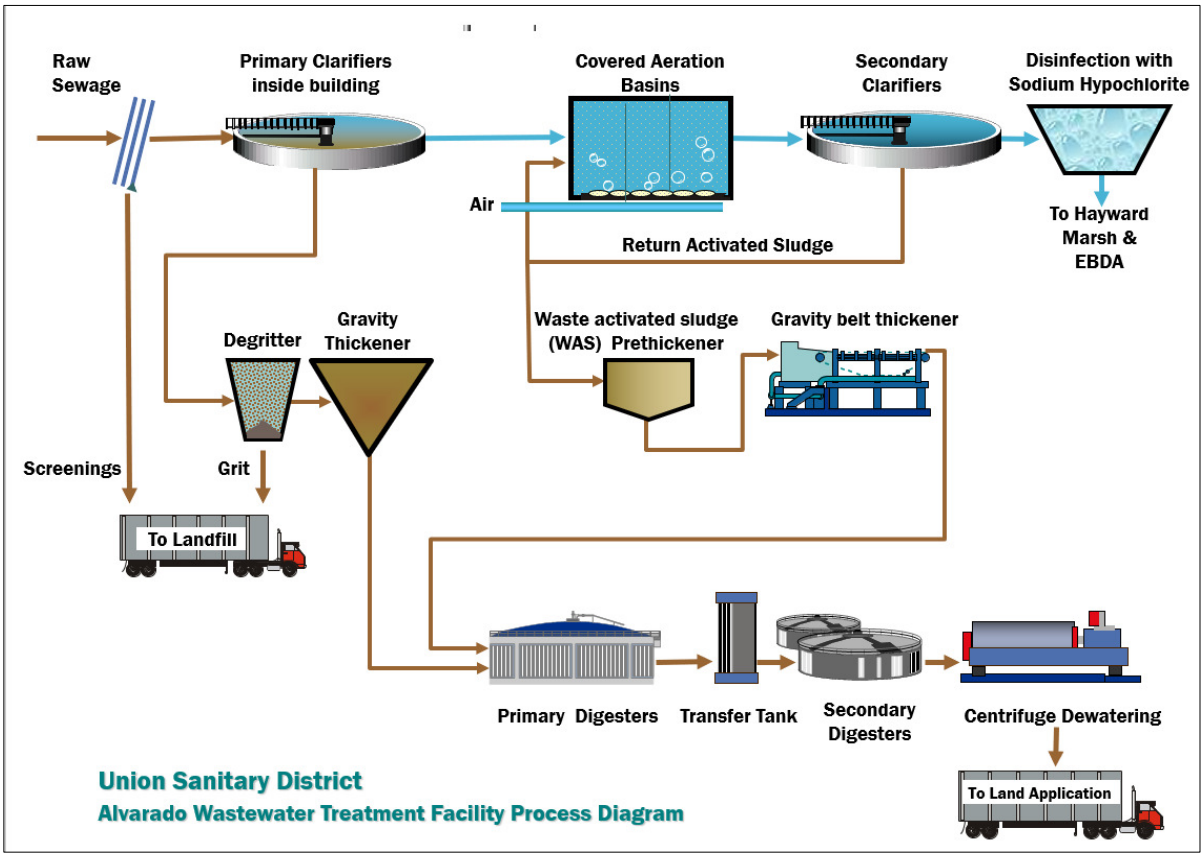
OLSD/CVSan Plant – Sampling Locations

Hayward Plant – Process Flow Diagram



Hayward Plant – Sampling Locations

USD Plant – Process Flow Diagram



USD Plant – Sampling Locations

Section 4: Results of Facility Report Reviews

The tables in this section summarize the status of reviewing and updating the following documents: Operations & Maintenance (O&M) Manual, Contingency Plan, Spill Prevention Plan, and Wastewater Facilities Status Report.

EBDA Facilities

REPORTS	REVIEW DATE	REVIEW PROCEDURES	PLANNED ACTIONS	SCHEDULE
O&M Manual	Jan 2023	Updated on an as-needed basis and reviewed annually by the EBDA O&M Manager.	The Authority maintains a comprehensive O&M Manual for the joint-use facilities. Chapters of the Manual are regularly reviewed and updated. EBDA's Wet Weather SOP is reviewed annually and updated as needed.	Performed annually
Contingency Plan	Jan 2023	Updated annually by EBDA O&M and Administration Managers. EBDA is included in the Alameda County's Office of Emergency Service's Utility Unit.	The Emergency Operating Contingency Plan is supported by Operations & Maintenance Agreements between Member Agencies, which are compatible with their existing plans and known to all other local and county agencies for emergency purposes. Operation and maintenance activities are contracted with the Member Agencies for routine work. Emergency work is performed sometimes by Member Agencies and sometimes through contracts with private specialty firms.	Performed annually
Spill Prevention Plan	The SPCC Plan was updated in April and July of 2022.	Reviewed annually by EBDA O&M Manager	No major changes planned for 2023.	Performed as needed
Wastewater Facilities Status Report	Jan 2023	EBDA continues to implement a comprehensive Renewal and Replacement Program. The Authority has an Asset Management Plan that covers all critical equipment.	In 2022, EBDA completed the following projects: • UEPS payment #2 of 10 for a total of $4.2 M • OLEPS Main Electrical Switchboard Upgrade In 2023, the Authority is continuing work on the following upgrades to the EBDA system: • MDF Main Breaker and ATS Replacement • HEPS Pump Replacement Project • OLEPS ATS Replacement • OLEPS Emergency Outfall Upgrade • OLEPS Pump Station Bypass Evaluation	Anticipated Completion: Building Roof Replacements, April 2023 HEPS Pump Replacements, December 2023

San Leandro Treatment Plant

Document	Review Date	Review Procedures	Planned Actions	Schedule
O&M Manual	Sections assigned and updated throughout the year	O&M manuals and SOPs are written and revised as necessary by designated Plant Operators and reviewed by the Operations Supervisor and Plant Manager	Review O&M chapters and SOPs as needed. Continue developing and revising SOPs for plant processes. O&M is still a mix of electronic and older paper as we transition; we have fewer and fewer paper versions per year.	Performed continuously
Contingency Plan	January 2022	WPCP management reviews, edits and approves	Current contingency plan updated as needed with changes. A significant revision is planned for 2023 with more detailed plans for specific scenarios.	Performed annually
Spill Prevention Plan	January 2022	WPCP management reviews, edits and approves	Currently up to date.	Performed annually
Wastewater Facilities Status Report	January 2023		RFP to create 10-year capital improvement plan by the end of 2023. Annual Street Overlay and Sewer Point Repair Project Construction will be completed for energy efficiency and resiliency project. This includes new high strength waste receiving facility, renewable natural gas production and storage facility, microgrid battery backup system and other energy efficiency improvements. Treatment Wetland project will receive regulatory approval, and the City plans to begin construction in summer 2024. This project will treat approximately 20% of the ADWF to remove nitrogen and other contaminants through both technological and biological processes. Design and bid, rehab. and upgrade of 3 sewer lift stations and force main in 2023 and 2024.	Maintenance and project schedule for 2023

Oro Loma/Castro Valley Sanitary District Treatment Plant

Document	Review Date	Review Procedures	Planned Actions	Schedule
O&M Manual	Ongoing	Continual reviews and revisions as necessary when new processes come online or when modifications are made to current processes.	The District has completed developing a computer based training program for the 25 unit processes in the treatment plant (including the EBDA OLEPS pump station). Staff will continue to train on the modules.	Ongoing
Contingency Plan	September 2022	Management team completed its review and updated document to reflect changes in contact information or equipment/facility changes.	Continue to make updates as needed, at least annually.	Annually
Spill Prevention Plan	July 2022	The District performed a significant update to its plan in 2022 to reflect administrative audit findings from CUPA.	Currently up to date and will update as necessary.	As needed
Wastewater Facilities Status Report	December 2022		The District continues to execute on its planned 10-Year, $168M capital program. The program includes extensive sewer pipe renewal (1.5% of system/year), Digester Construction in 2025, and Cogeneration System Replacement in 2030. In 2021, the District obtained financing in the amount of $50M from State (SRF) and Federal (WIFIA) sources for sewer replacement work. The District is working to replace 40 miles (15%) of its 270 mile collection system by 2029.	10-Year Capital Plan (Updated December 2022)

Hayward Water Pollution Control Facility

REPORTS	REVIEW DATE	REVIEW PROCEDURES	PLANNED ACTIONS	SCHEDULE
O&M Manual	Ongoing	COH WPCF electronic O&M manuals, including SOP's, are reviewed, and updated throughout the year by staff. Revisions are made to Sections and SOP's	Create new SOPs as required and review and updated older SOPs throughout the year. Continually review and update O&M sections. Brown and Caldwell will be looking into a fully revised O&M as part of the nutrient management project.	SOP's and O&M sections are reviewed continuously
Contingency Plan	January 2023	The entire plan is reviewed by the WPCF manager with updates and edits made by the Senior Secretary.	Continue to make updates as needed.	Performed annually
Spill Prevention Plan	January 2023	Plan reviewed by WPCF Manager every January. Changes made by Senior Secretary.	Make updates as needed.	Performed annually
Wastewater Facilities Status Report	Jan 2023	The phase II Facilities Plan was completed in 2020. The city will implement projects as recommended in the 2020 Phase II Facilities Plan.	Planned for 2023: • Construction of the Headworks bar screen project was near substantial completion and the bar screens were placed in service in 2021. In 2022, the Ferric Chloride station, and air handling system were be placed into service. The biofilter construction was complete. We are now working with the contractor for construction of a dewatering system, so the biofilter can be permanently put into service in 2023. • The replacement of the effluent pumps is anticipated in 2023. • Construction of the new 12KV switchgear replacement project will begin in 2023. • There are several elements of the Phase Two WPCF Improvements that have been incorporated into the Sewer Replacement & Sewer Improvement CIP's which will move forward in year 2023.	10-year Master Plan CIP planning changes are made every year in July with mid-year adjustments made in January/February

Union Sanitary District Treatment Plant

Document	Review Date	Review Procedures	Planned Actions	Schedule
O&M Manual	Ongoing	Plant O&M documents are incorporated into the District's Competency-Based Training Program. USD utilizes Microsoft Sharepoint software to track document review.	Plant management reviews training documents and SOP's as changes occur (i.e., following construction) or as scheduled.	Each individual training module and SOP has a review frequency of 3 years.
Contingency Plan	December 2022	Plant Manager reviews and updates the Contingency Plan annually.	None. Contingency Plan was updated in December 2022.	Complete next review by December 2023.
Spill Prevention Plan	December 2022	Spill Prevention Plan is incorporated into our Contingency Plan and is reviewed at the same time.	None. Spill Prevention Plan was reviewed in December 2022.	Complete next review by December 2023.
Wastewater Facilities Status Report	December 2022	USD's Master Plans address most of the Facilities Evaluation requirements. Our Plant Master Plan is updated every 5 years and Pump Station and Collection System Master Plans are updated as needed. Asset management data is updated on an ongoing basis. CIP and Operating plans and budgets are reviewed and revised annually. 2022 Projects Completed/in-progress: • New Anaerobic Digester #7 (Complete) • Alvarado Influent Pump Station (Complete) • Old Alameda Creek Outfall Improvements. (Complete) • New High-speed Aeration Blower (Complete) • Calcium Thiosulfate Dosing Improvements (Complete) • Centrifuge Building Improvements (Complete) • Standby Power Upgrade. (Construction in progress) **ETSU: Phase 1A** • Aeration Basin Modification (Construction in progress) • Campus relocation (Construction in progress)	Complete capital improvements in accordance with 20-year CIP plan. Implement annual rate adjustments for Sewer Service Charges and Capacity Fees in accordance with 10-year financial plan. 2023 Projects Planned: • WAS Gravity Belt Thickener (In Design) • Anaerobic Digester #6 Rehab (Design to commence) • Plant Miscellaneous Improvements (structural, mechanical, and electrical) (Complete Design) **ETSU: Phase 1B** • New Secondary Clarifiers. (In Design) • New Effluent Pump Station (In Design)	20-year CIP annual update in June. Master Plans: • Alvarado Basin MP 2023-25 • Newark Basin MP 2025-27 • Irvington Basin 2027-29 • Pump Station Asset Condition Assessment 2021-23 • Plant Asset Condition Assessment 2023-25 • Plant Solids System/Capacity Assessment 2025-27

Section 5: BACWA Watershed Permitting and Monitoring

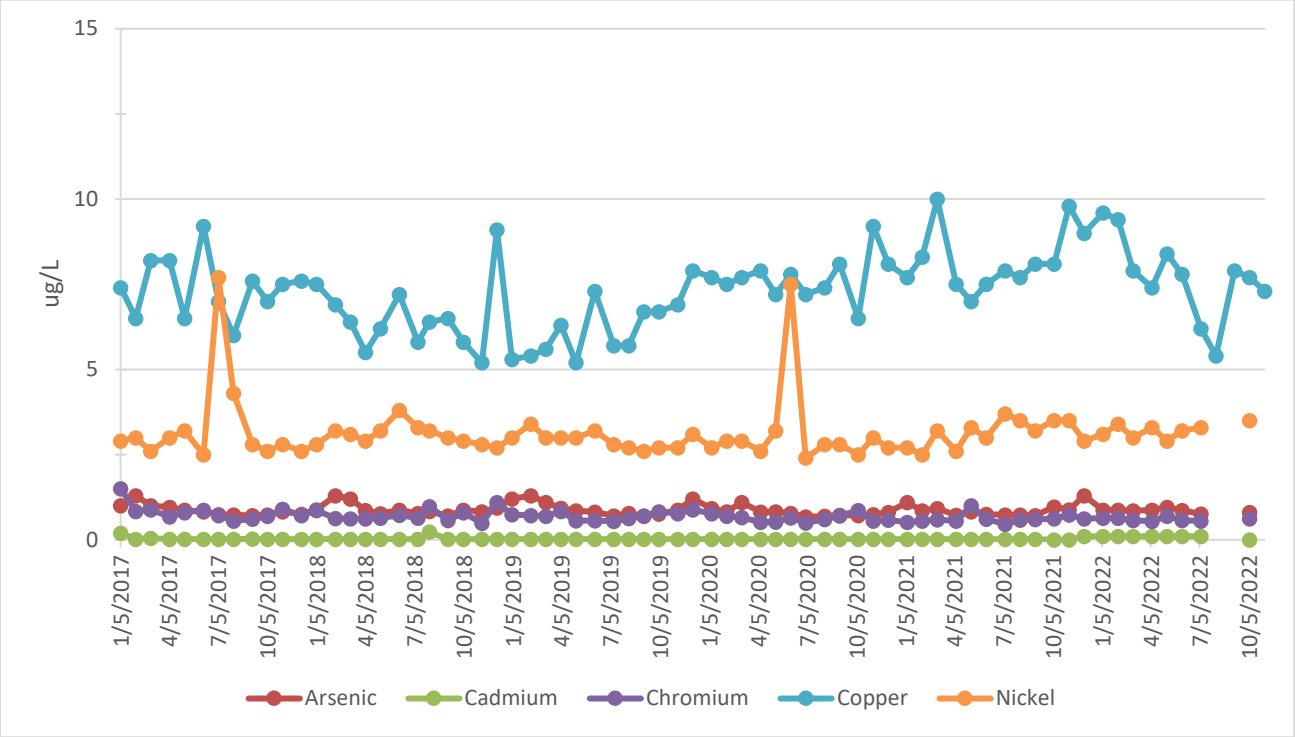
EBDA participates in a number of group processes coordinated by the Bay Area Clean Water Agencies (BACWA) to fulfill permit requirements, including Receiving Water Quality Monitoring, TMDL/SSO Support, Mercury and PCBs Watershed Permit Support, Nutrients Watershed Permit Support, and Implementation of Copper Action. Participation in these items is described in an annual BACWA letter to the Regional Water Board found here:
https://bacwa.org/wp-content/uploads/2023/01/BACWA-NPDES-Permit-Letter-2023-with-SFEI-attach.pdf

Section 6: Effluent Characterization Study and Report

EBDA regularly monitors and evaluates discharges from the common outfall and each contributing plant's effluent to identify any concerning trends. No significant increases over past performance were noted in 2022 data.

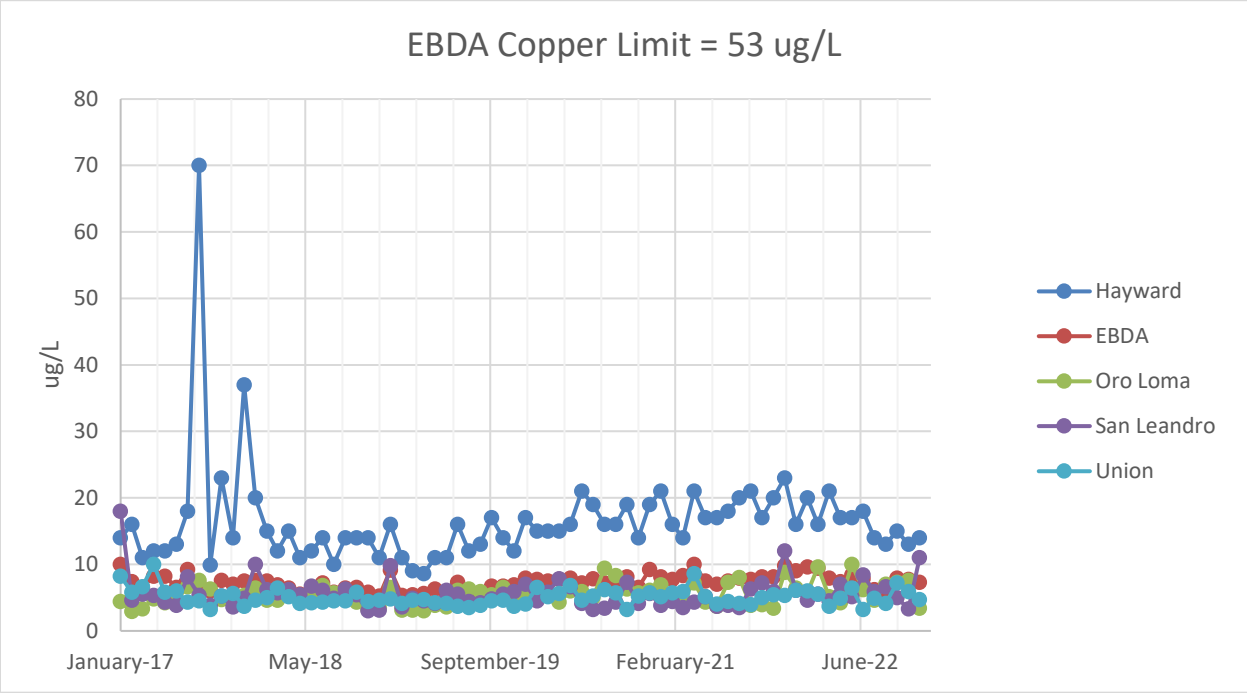
EBDA monitors monthly for metals and cyanide. Cyanide is rarely detected. As shown in Figure 2, five years of metals data continue to show flat b trends.

Figure 2 – EBDA Effluent Metals Trends



EBDA's five-year trend for copper shows that while individual member agency effluent concentrations have varied, EBDA's common outfall concentration consistently averaged less than 20 ppb, versus a permit limit of 53 ppb (see Figure 3).

Figure 3 – Effluent Copper Trend



EBDA's effluent mercury concentrations also continue to be well below permit limits, as shown in Figure 4.

Figure 4 – Effluent Mercury Trend