

2017 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, 2018

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Section 1: Annual Compliance Summary Table of Treatment Plant Performance

The 2016/17 water year was one of the wettest years in the history of the Bay Area. Nonetheless, there were no NPDES exceedances in 2017. EBDA submits all its data electronically into CIWQS, and this information is captured electronically by the CIWQS summary violation reports.

Section 2. Comprehensive Discussion of Treatment Plant Performance and Compliance

Major construction projects completed at the EBDA facilities included:

- Oro Loma's Equalization wetland with horizontal levee treatment began operation. Preliminary results showed TN concentrations below 1 ppm and excellent removal of Emerging Contaminants. Next year, they will be piloting Microvi's mainstream Nitrification/Denitrification media to be used in the design of a facility upgrade that is in permit negotiations.
- Fine-tuning of the recently completed San Leandro Fixed Film reactors that dramatically improved their operation.
- Hayward's chlorination channel was reinforced to improve its stability and minimize erosion.
- USD completed a Gravity Thickener upgrade and added a third Degritter for redundancy. USD will complete the final design of both Digester #7 and a new Standby Generator system in 2018. In addition its ongoing Solids Capacity Study and Facility Master Plan will be used to set future capital plans.

In addition, EBDA conducted a detailed video inspection of its transport system, covering about 13% of the total system. In all but a few hundred feet of pipe, where there was some scaling on the concrete, the system looked much younger than its 40 years.

Section 3. Biosolids Compliance

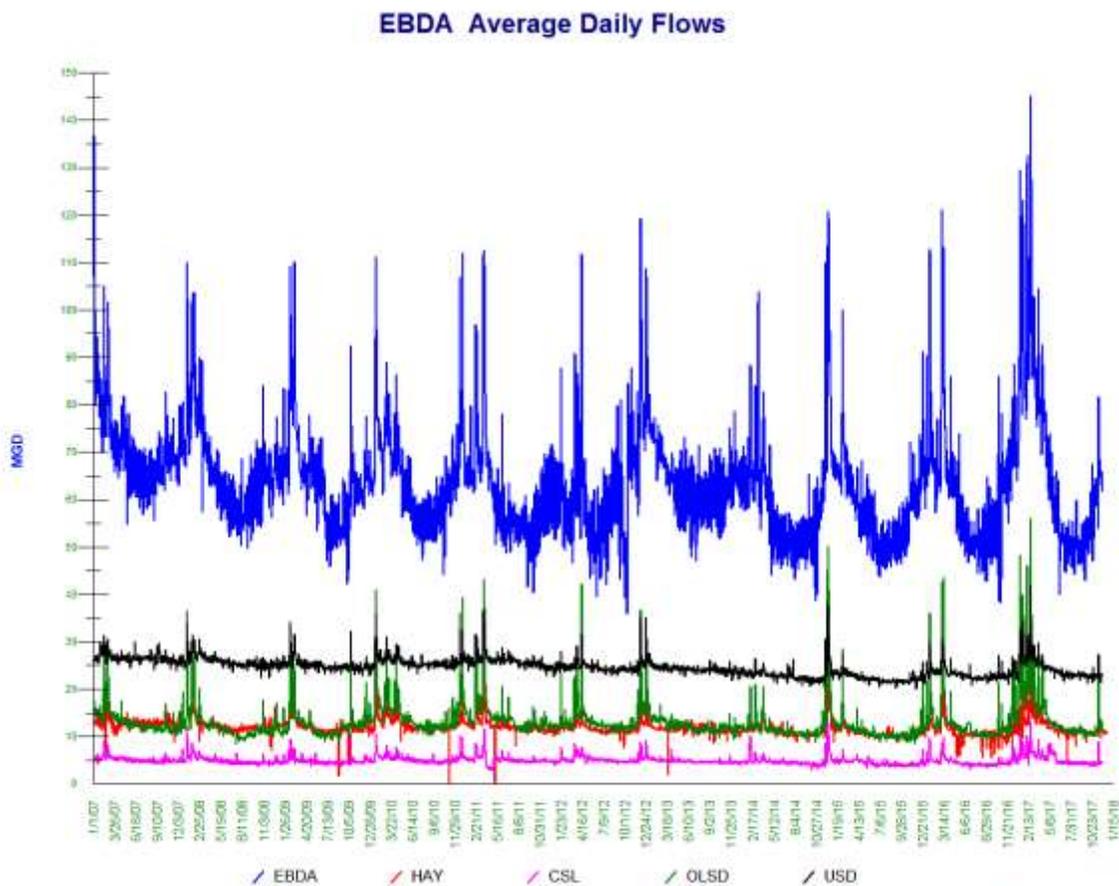
Biosolids reporting data are submitted separately to EPA. A summary of the amount and landfills to which biosolids were sent is below:

- OLSD transported 4260 wet tons to Altamont landfill for Alternate Daily Cover (ADC) and 1789 wet tons for land application in Sacramento County.
- USD produced a total of 19991.58 US wet tons of Class B biosolids. A total of 11,783.80 tons were transferred to Synagro for land application, 6,583.51 tons of Class B biosolids were composted to Class A by Synagro, and 1624.27 tons were transferred to Landfill.
- CSL produced 1141 dry tons in 2017. CSL hauled 1417 dry tons during 2017 to Robinson Ranch, Merced: 883 dry tons of Class A and 534 dry tons of Class B.
- Hayward did not transport biosolids offsite in 2017.

Section 4. Tabular and Graphical Summaries

Since EBDA submits all its data electronically into CIWQS, this section simply summarizes performance on the major contaminants for which there are permit limits. The 2016/17 water year was one of the wettest in history. During a six week period beginning on January 10, 2017, EBDA had nine days exceeding 120 MGD, the most in the last ten years. The average daily flow reached a maximum of 145 MGD on February 21, 2017, the highest daily flow since December 31, 2005.

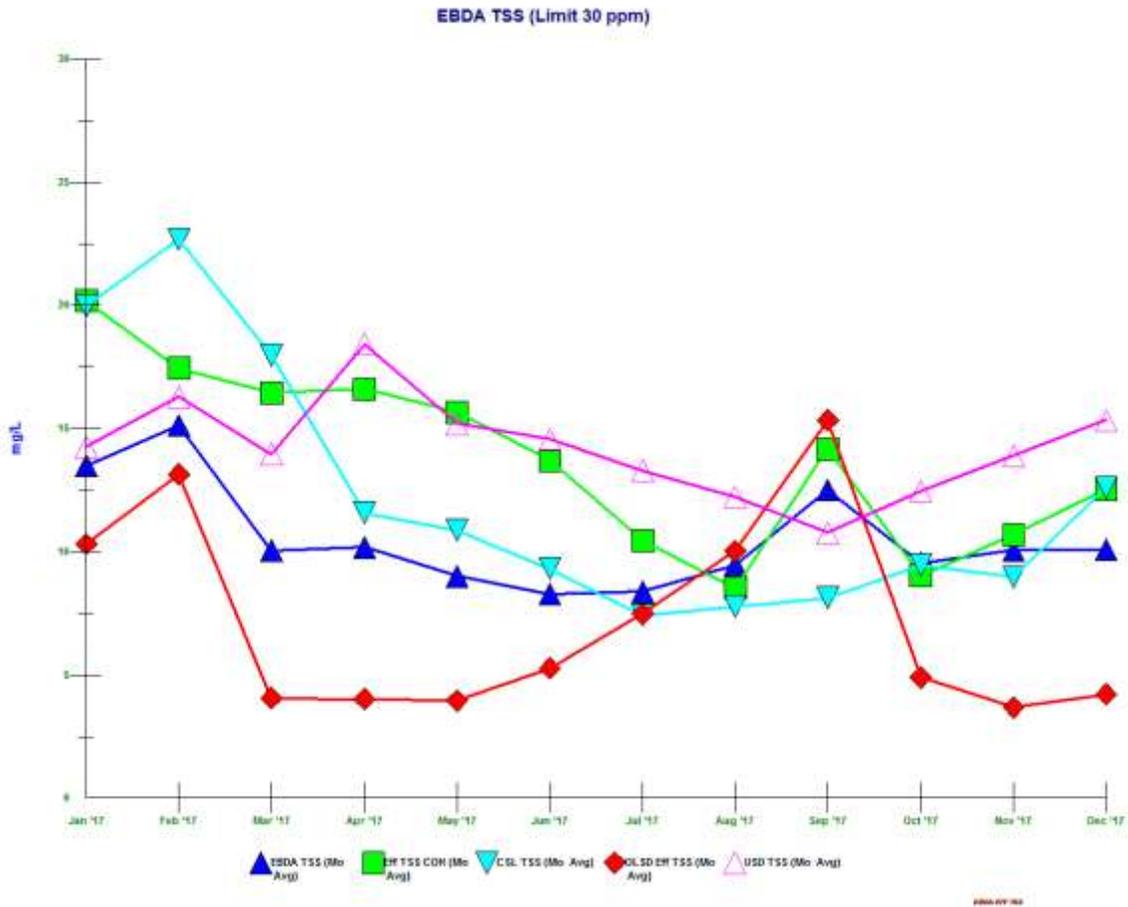
With the end of the drought, the demand for recycled water also declined. EBDA's Member Agencies recycled approximately 1.56 billion gallons in 2017 compared to 1.7 billion gallons in 2016. Including the LAVWMA agencies (DSRSD- 1.58 BG and Livermore – 598 MG), water recycling accounted for more than 3.7 billion gallons, about 16% of EBDA's outfall discharge last year of 23.3 billion gallons.



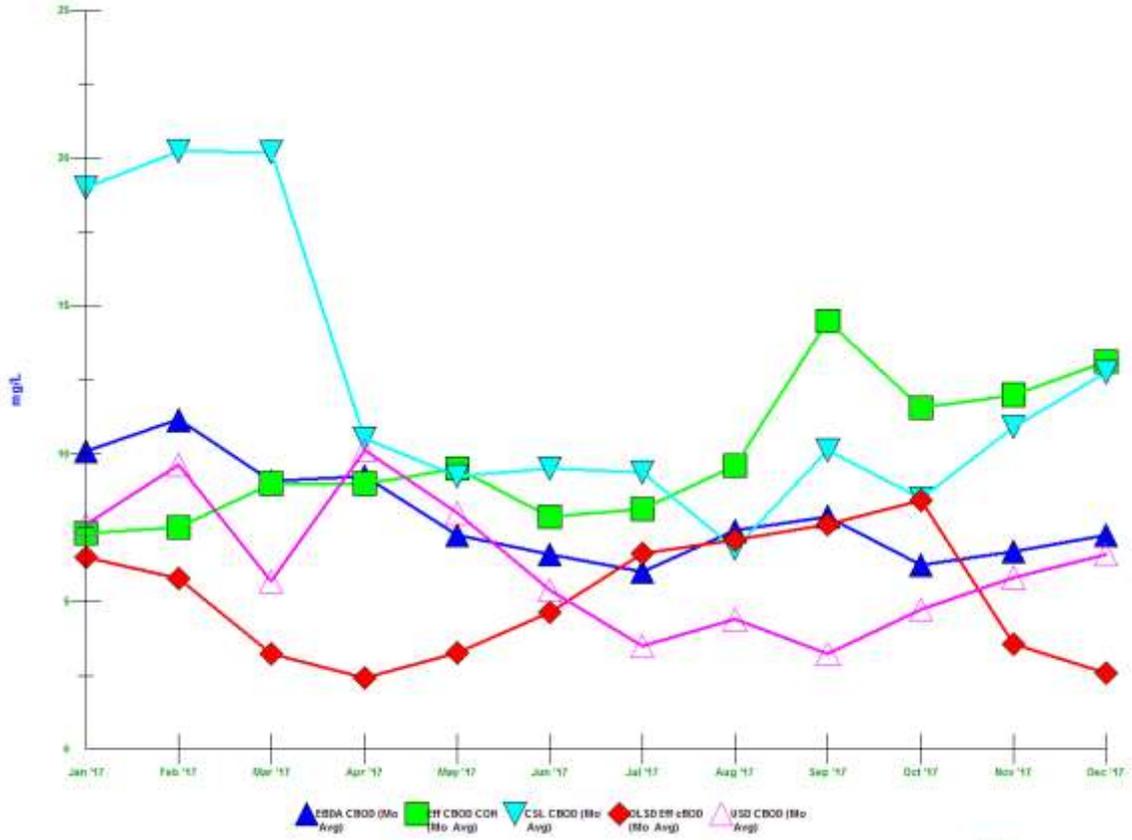
Performance-Based Limits

All EBDA's members' treatment plants are effectively complying with secondary treatment requirements. The TSS and CBOD data show a reasonably large safety

margin between monthly limits and performance. None of the plants have discharged above 23 ppm of TSS (compared to the NPDES limit of 30 ppm) nor 21ppm of CBOD (compared to the NPDES limit of 25 ppm). Heavy winter rains caused some higher effluent concentrations of TSS and CBOD at San Leandro, but these were dramatically reduced before the dry season.



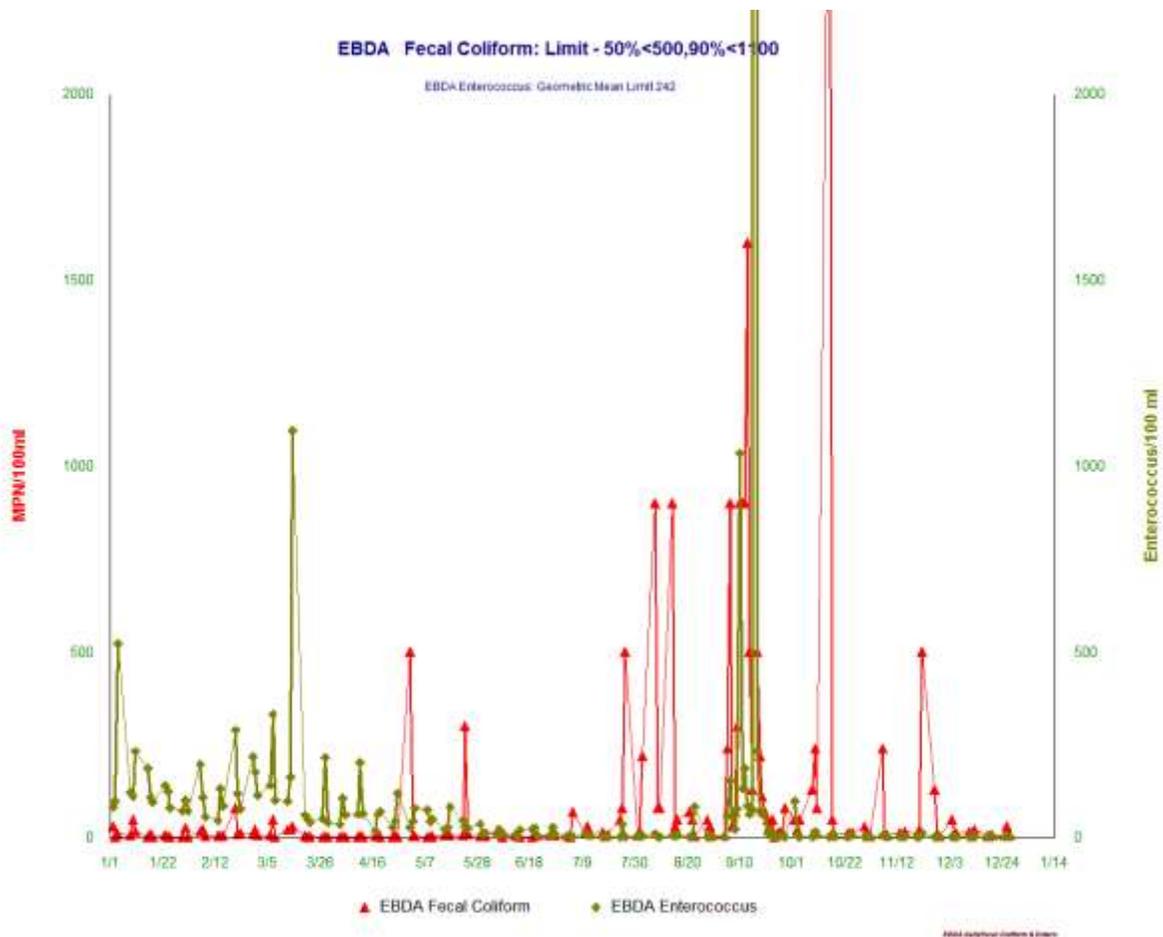
EEDA CBOD (Limit=25 ppm)



Bacterial Limits

The graphic below presents fecal pathogen data from daily samples through the year—note that permit limits are calculated as monthly geometric means or monthly 90%ile samples. At random intervals, perhaps once a month during warm weather, a high sample can be detected. This outcome is probably due to the sloughing of pipe biofilms into the sample line—these events are why permit compliance is determined by geometric means.

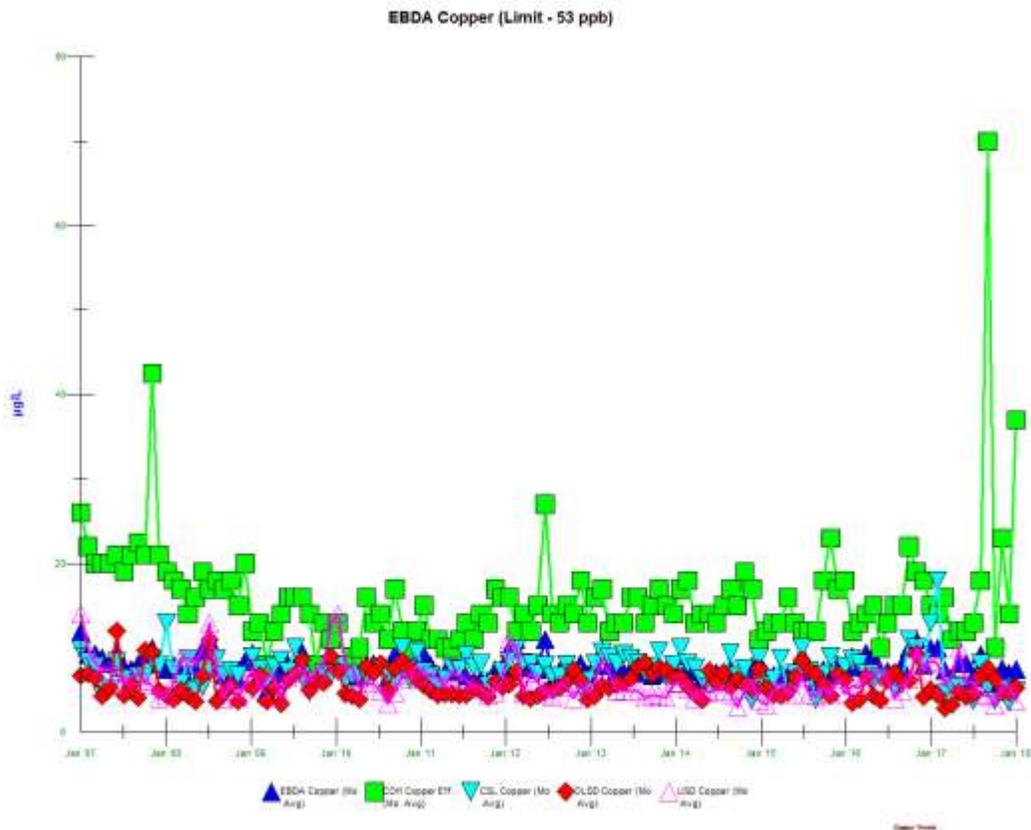
The elevated concentrations of Enterococcus that EBDA had experienced in 2016 was resolved by early winter. High concentrations of fecal coliforms were only found in September, normally the worst month of the year, during a pilot study when EBDA used a new disinfectant recommended by EPA, Peracetic Acid (PAA). Compared to other plants in the US and Europe, the pilot test indicated that the required dose of PAA was not cost-effective compared to chlorination-dechlorination.



Toxics Limits

EBDA's permit regulates toxicity through individual chemical limits for total residual chlorine, cyanide, and copper, and watershed-based permit limits for mercury and PCBs. Cyanide is rarely detected and the total residual chlorine limit is zero, so graphics are not presented for those parameters.

Long-term temporal trends for the other toxic contaminants continue to show that EBDA's discharge of PCB's, mercury and copper easily complies with its permit limits. In general, though, temporal trends have been flattening out. EBDA's ten year trends for copper, show that effluent concentrations have averaged less than 10 ppb versus a permit limit of 53 ppb (see figure below).

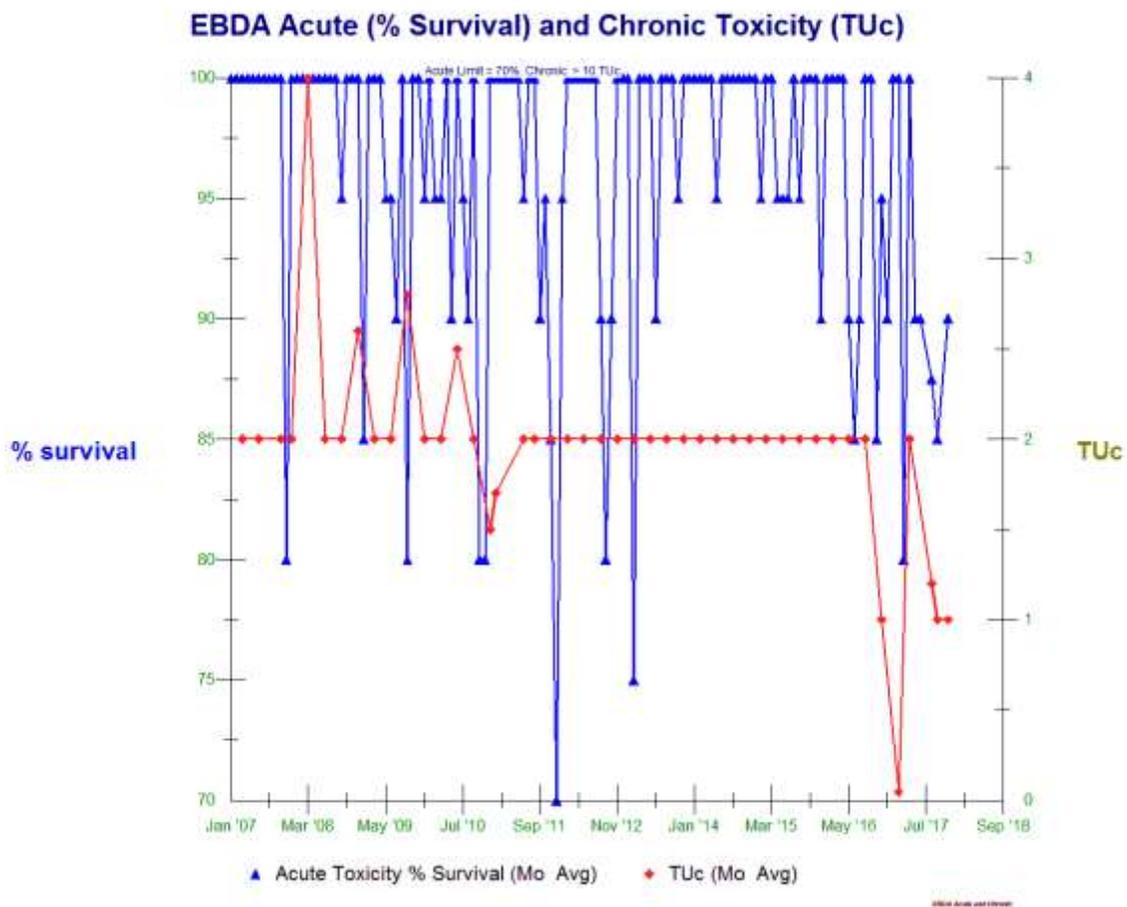


EBDA's mercury load (figures in Sec. 9) was 0.55 kg/yr (including discharges to Hayward Marsh), about one quarter of its 2020 watershed permit goal of 2.2 kg/yr with effluent concentrations peaking at 0.00891 ppb compared to its permit limit of 0.066 ppb. EBDA's PCBs load (Sec. 9) averaged 0.09 kg/yr versus its goal of 0.3 kg/yr. Further information and graphics are presented below in Section 9 on watershed permitting.

The toxics chemistry data are supplemented by monthly toxicity tests. All of the toxicity tests show a large safety factor between the permit limits and the effluent's acute or chronic toxicity. The permit limits allow for near-zero (acute) to ten-fold dilution

(chronic). Given the 80-fold initial dilution measured in the field, there is no risk from either acute nor chronic toxicity associated with EBDA's discharge.

With the new NPDES permit, EBDA initiated a new toxicity testing frequency, conducting acute and chronic toxicity tests every other month—an increase in chronic frequency in exchange for less acute testing. In order to conduct the tests simultaneously, the new design used a younger larval life stage of fish for the acute tests and a lower dilution series to account for the lower acute limits. The results of the new testing procedure are consistent with these testing changes: slightly reduced acute survival and lower chronic TUC.



EBDA also conducts extensive nutrient monitoring as part of its watershed nutrients permit. These data were extensively summarized in the BACWA watershed nutrient report.

Section 5. List of Analyses for Which the Discharger Is Certified

The Authority 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 as well as acute toxicity testing.

All metals and organics analyses are performed by the Authority's contract laboratory, East Bay Municipal Utility District (EBMUD), Laboratory Services Division. EBMUD's lab is certified by the State Water Resources Control Board for these analyses. EBMUD subcontracts for analytical work on some items, including dioxin and furan compounds.

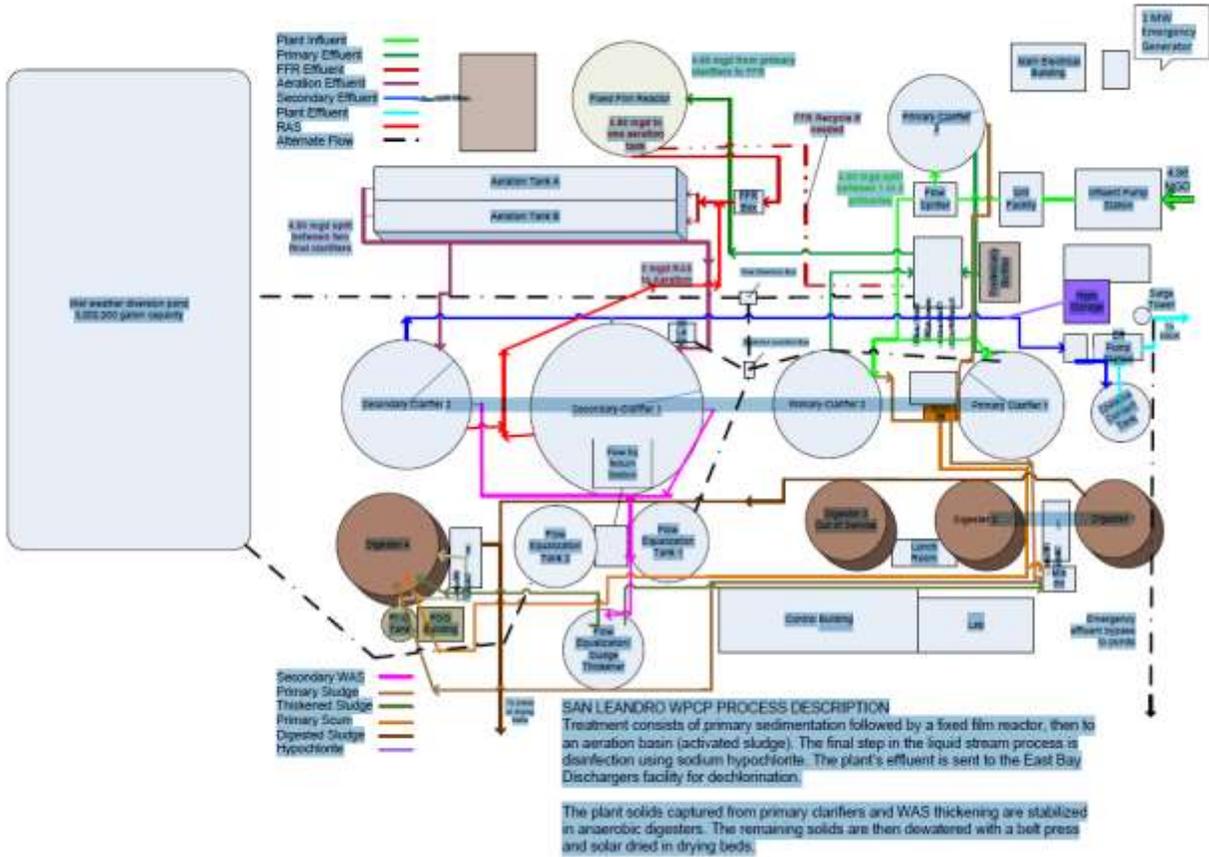
Pacific Eco-Risk Laboratory (PERL), also a certified laboratory, conducts the quarterly chronic toxicity testing for the Authority.

Each laboratory has separately submitted the required documentation to the Regional Water Board in the past. Therefore, this documentation is not resubmitted with this report. 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 6. Plan View Drawing or Map Showing the Discharger's Facility, Flow Routing, Sampling and Observation Station Locations



San Leandro Plant





Influent Sampling Point

Effluent Sampling Point

San Leandro WWTP Process Area

Oro Loma WWTP

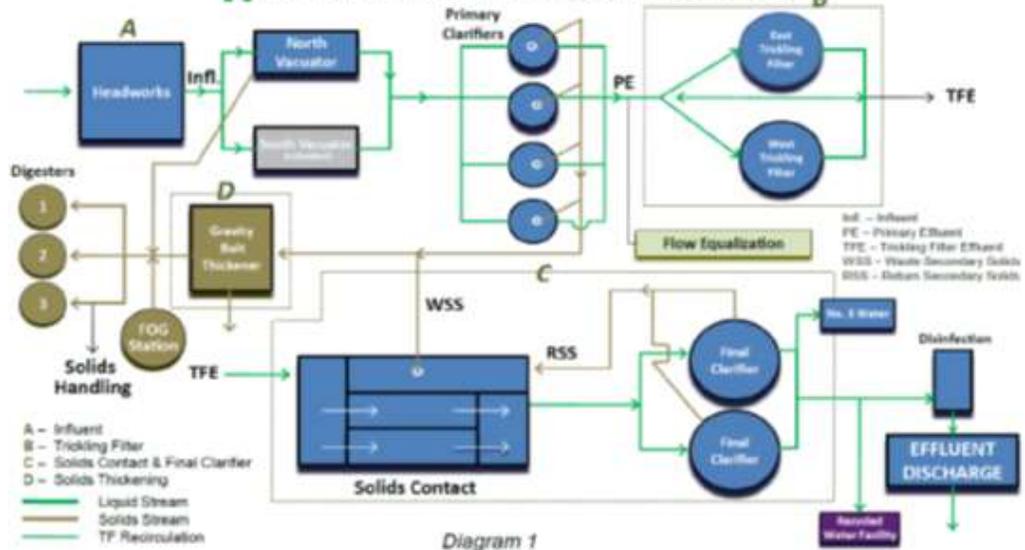
**PLANT
INFLUENT
SAMPLE POINT**



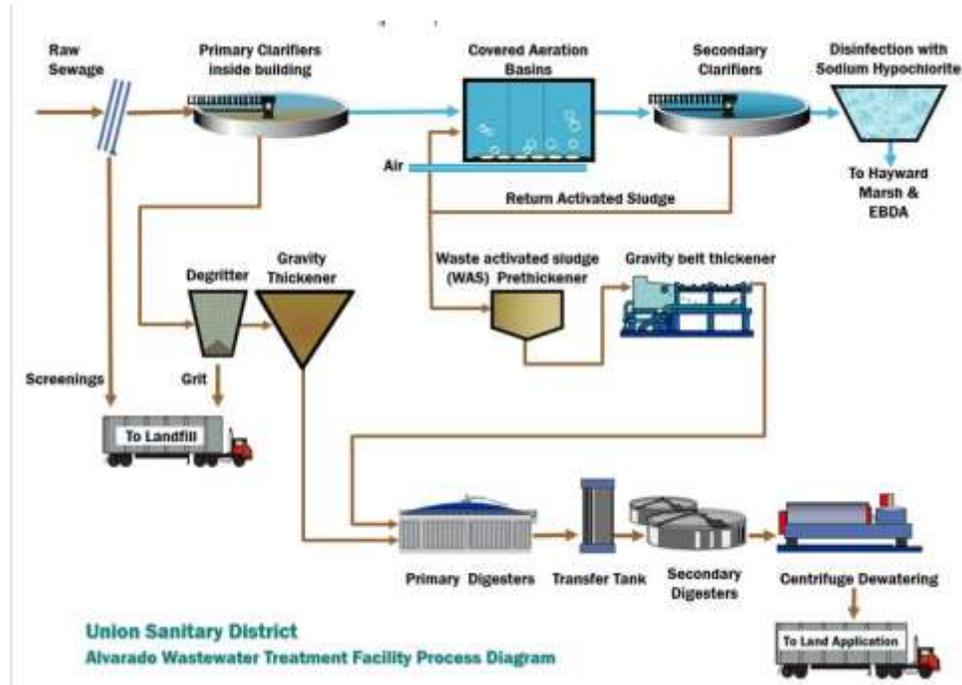
**PLANT
EFFLUENT
SAMPLE POINT**

Hayward WWTP

H HAYWARD Plant Unit Processes Flow Schematic



UNION SANITARY DISTRICT



Section 7. Results of Annual Facility Inspection

Given that all the member agency treatment plants treat their storm water, this section is waived.

Section 8. Results of Facility Report Reviews

Status report for reviewing and updating the following documents: O&M Manual, Contingency Plan, Spill Prevention Plan, and Wastewater Facilities Status Report

Union Sanitary District

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 1-3 years.
Contingency Plan	12- 2017	Plant Manager reviews and updates the Contingency Plan annually.	None. Contingency Plan was updated in December 2017.	Complete next review by December 2018.
Spill Prevention Plan	12- 2017	Spill Prevention Plan is incorporated into our Contingency Plan and is reviewed at the same time.	None. Spill Prevention Plan was reviewed in December 2017.	Complete next review by December 2018.
Wastewater Facilities Status Report	12- 2016	<p>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.</p> <p>2017 Projects Completed/in-progress:</p> <ul style="list-style-type: none"> • Plant Thickener Control Building improvements (Completed 2017) • Redundant Degritter system. (Almost Complete) • Solids Capacity Study Phase II (In Progress, almost complete) • Chemical Tank Replacement (Complete) • New Anaerobic Digester #7 (Pre-Design, Complete) 	<p>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.</p> <p>2017 Projects Planned:</p> <ul style="list-style-type: none"> • New Anaerobic Digester #7 (Design) • Standby Power Upgrade. (Design) • Aeration Tank Improvements (Pre-Design) • Headworks 3rd Bar Screen (Design) • Digester # 3 Rehabilitation (Construction) 	<p>20-year CIP annual update in June.</p> <p>10-year financial plan annual update in June.</p> <p>Master Plans:</p> <ul style="list-style-type: none"> • Plant 2018 • Plant Asset Condition 2018 • Newark Basin MP 2019 • Irvington Basin 2021 • Pump Stations 2021 • Alvarado Basin 2023

Hayward Water Pollution Control Facility

Document	Review Date	Review Procedures	Planned Actions	Schedule
O&M Manual	Ongoing	COH WPCF electronic O&M manuals, including SOP's, are reviewed and updated annually by staff. Revisions are made to Sections and SOP's	11 New SOPs were written in 2017. Headworks pH Probe Calibration, TFs - Clean Media and Arms, Digester 2 Heat Loop and Controls, Southwest Clarifier VFD Reset, Purge H2S and Siloxane Tanks, Priming the Foot Valve, pH Standardization, Priming and Starting Ferric Pump 'A', HEPS P2 Temporary MCC Panel, Pumping Down RCEC Channel with Sump Pump, and Calibrate the Portable D.O. Meter	SOP's and O&M sections are reviewed periodically and updated no less than on an annual basis. Updates occurred throughout 2017
Contingency Plan	January 2018	The entire plan is reviewed by the WPCF manager with updates and edits made by the Senior Secretary.	The latest update was made in January 2018. Edits and/or updates were made to the following areas: <ul style="list-style-type: none"> • Emergency Phone Numbers • WPCF Employee Phone List • Standby and Emergency Call Lists • Critical Emergency Procedures • Emergency Contact List • F.O.G. Supplier List 	A thorough and comprehensive review is completed annually in January. Emergency contact & Personnel phone lists are kept up-to-date.
Spill Prevention Plan	January 2018		Plan reviewed by WPCF Manager every January. Changes made by Senior Secretary.	None. Spill Prevention Plan was reviewed in January 2018
Facilities Status	January 2018	The City continues implementation of projects as recommended in the 2014 Master Plan update. Consultant selection process for Phase 2 Master Plan began in 2017.	Reviewed and Updated <ul style="list-style-type: none"> • Future elements of the Phase Two WPCF Improvements have been incorporated into the Sewer Replacement & Sewer Improvement CIP's. • Construction for renovation of the Digester Improvement Project was completed in 2017 • Recycled water project design is complete; preliminary construction to begin 2018 • Recycled water pipeline design complete; preliminary construction to begin 2018. • Effluent channel rock slope completed. The remaining 1600+ feet of channel were rocked. • Design of the Effluent Pump Station was completed and construction to begin in early 2018 	10-year Master Plan CIP planning changes are made every year in July with mid-year adjustments made in January/February.

Oro Loma Sanitary District Treatment Plant

	Review Date	Review Procedures	Planned Actions	Schedule
O&M Manual	January 2018	Operations Supervisor	The planned O&M Manual for the the Equalization Basin/Horizontal Levee was completed. Staff will audit the manual based upon actual performance during Winter 2018. Updates will be made as required in Summer 2018.	July 2018
Contingency Plan	January 2018	Operations Supervisor	Contingency plan updated most recently in December 2017.	Performed annually
Spill Prevention Plan	January 2018	Operations Supervisor	An update to the 2015 document is underway. The update will incorporate changes to the EBDA Pump Station's new above ground fuel tank.	May 2018
Wastewater Facilities Status Report	January 2018	General Manager	<p>The District continues to execute on its planned 5-Year, \$55M capital program. The majority of the planned Capital Spending in the next five years will be in the collection system. This ratio is subject to change based upon the outcome of the Nutrient Optimization permitting and bid results.</p> <p>The District has replaced 8 miles of collection system pipe over the past two years. The District plans to continue this pace of renewal for the foreseeable future.</p> <p>The District is in design now on a Nutrient Optimization project. The project will provide facilities to fully nitrify average daily flows as well as partial denitrification. The project is contingent upon obtaining a permit for local discharges and receipt of construction bids under <\$20M.</p>	<p>Four additional miles of sewer pipe renewal – July 2018.</p> <p>Nutrient Upgrade Project – Bid Opening in July 2018.</p>

San Leandro Treatment Plant

	Review Date	Review Procedures	Planned Actions	Schedule
O&M Manual	January 2018	O&M manuals and SOP's are written and revised as necessary by designated Plant Operators and reviewed by the Operations Supervisor and Plant Manager	Review O&M chapters and SOP's as needed. Continue developing and revising SOP's for plant processes. SOP's completed are: TSS calibration and cleaning SOP, Chemical pump flushing SOP, Industrial Accidental Discharge SOP, Rotating Influent Channels and flushing SOP, and Belt Filter Press Operation SOP. SOP's in progress are; Digester Start up SOP, New Fixed Film Reactor Flushing SOP, Wet Weather Operation SOP, Equalization Return Strategies SOP, and Biological Microscope Observation SOP. O&M Manuals are up to date. New electronic interactive (web based) WPCP O&M Manual was implemented and is accessible to every employee.	Performed annually
Contingency Plan	January 2018	WPCP management reviews, edits and approves	Contingency plan reviewed annually and updated as needed. Update employee list and emergency contacts as there have been and will continue to be significant personnel changes for the first half of 2018.	Performed annually
Spill Prevention Plan	January 2018	WPCP management reviews, edits and approves	Plan reviewed and updated. Training and review done annually, including: new employee orientation, 8 hour on-site level 1 responder training, and tailgate review on plan and emergency spill kits.	Performed annually
Waste-water Facilities Status Report	January 2018	SSMP 2015, reviewed biannually by WPCP management SS Maintenance Plan 2017, reviewed by Engineering and approved by City Council Plant staff reviews status of all facilities on a weekly basis. Plant predictive replacement, maintenance and repair activities are determined by CMMS Long term SS Lift Station replacement at four locations has been placed on the CIP list Wastewater rates and capacity charges are reviewed and approved annually	SSMP indicated several areas for improvement. City has addressed several issues, and continues to pursue improvements based on importance. The vast majority of the plant has had a major refit in the last five years. Currently in process in-house projects: <ul style="list-style-type: none"> • Installation of emergency backup generator at the second largest sewer lift station (Neptune) • Completion and bringing on line of a Residential Recycled Water Fill Station The next CIP projects for the plant will be energy improvements. There is currently a solar project already approved for construction. The City has applied for funding to modify digesters, add direct to digester waste feed, install new cogeneration, and install a large battery bank for power stability. There are planned improvements for small plant piping, and plant paving.	SSMP recommended improvements are ongoing Solar project expected completion in 2018 Funding information expected for energy project in spring 2018 Paving and piping improvements summer 2018 Lift Station replacement 2022-2025

Marina Dechlorination Facility

REPORTS	REVIEW DATE	REVIEW PROCEDURES	PLANNED ACTIONS	SCHEDULE
O&M Manual	Jan 2018	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. Most recent revisions were made to appropriate chapters 2010, 2012 and 2013.	Performed annually
Contingency Plan	Jan 2018	Updated annually by EBDA O&M Manager and EBDA Administrative Assistant. 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 that 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 and contracts with private specialty firms. Member Agencies have a mutual interest in the continuous uninterrupted use of the Authority force main and Bay Outfall system.	Performed annually
Spill Prevention Plan	Jan 2018	Updated annually by EBDA O&M Manager	No major changes planned for 2018	Performed annually
Wastewater Facilities Status Report	Jan 2018	EBDA continues to maintain a comprehensive Replacement and Renewal Policy covering all of EBDA's equipment above a \$3,000 value. The Authority has an asset management program that covers all critical equipment. The program is reviewed monthly by EBDA staff and is reviewed semi-annually by the EBDA General and O&M Managers	In 2018 the Authority is planning several projects that provided upgrades to the EBDA system as follows: <ol style="list-style-type: none"> 1. Replacement of the Motor Control Center at the Hayward Effluent Pump Station. 2. Oro Loma Effluent Pump Station Diesel Engine Control and PLC/SCADA programming project. 3. Upgrade of the SCADA System. 4. Complete the assessment of the Transport System. 	HEPS MCC Replacement, December 2018 OLEPS Engine and PLC Project, Late 2018 SCADA System Upgrade, Summer 2018 Transport System Assessment, Summer 2018

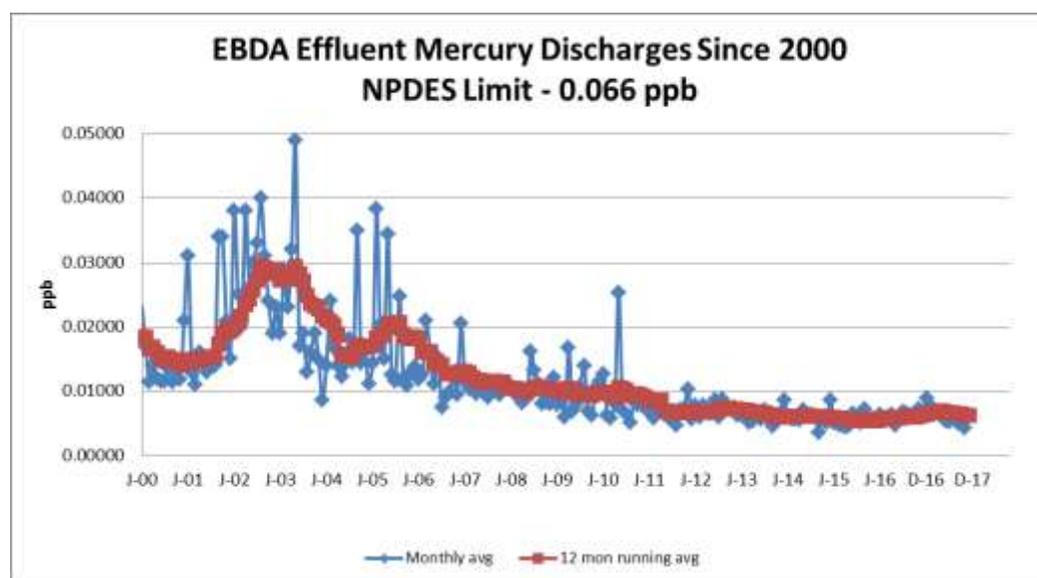
Section 9: BACWA Watershed Permitting and Monitoring

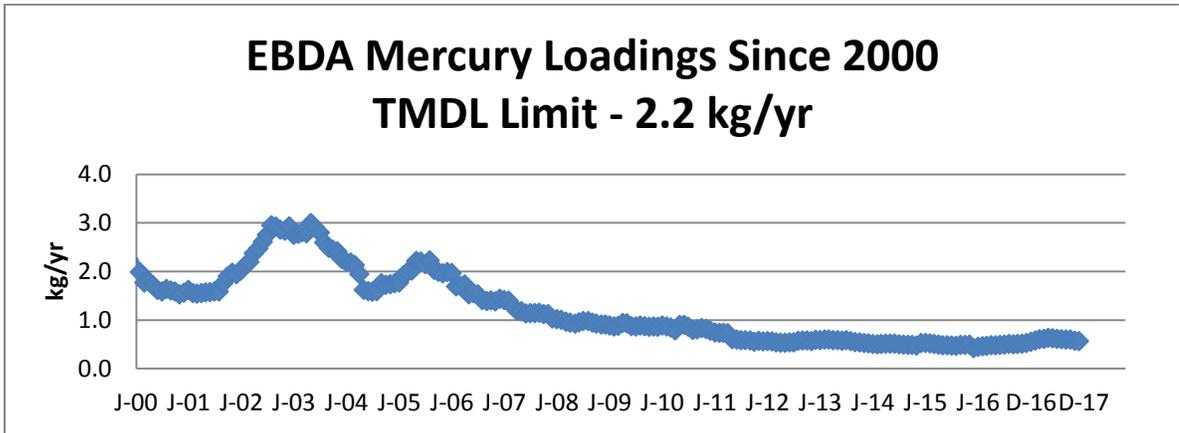
EBDA participates in a number of group processes coordinated by BACWA to fulfill other permit requirements: BACWA Group Activities including Receiving Water Quality Monitoring, TMDL/SSO Support, Mercury and PCBs Watershed Permit Support, and Implementation of Copper Action. Participation in these items is described in an annual BACWA letter to Water Board (<https://bacwa.org/wp-content/uploads/2018/01/BACWA-NPDES-Permit-Letter-2018.pdf>).

Mercury and PCB Watershed Permit (CA 0038849)

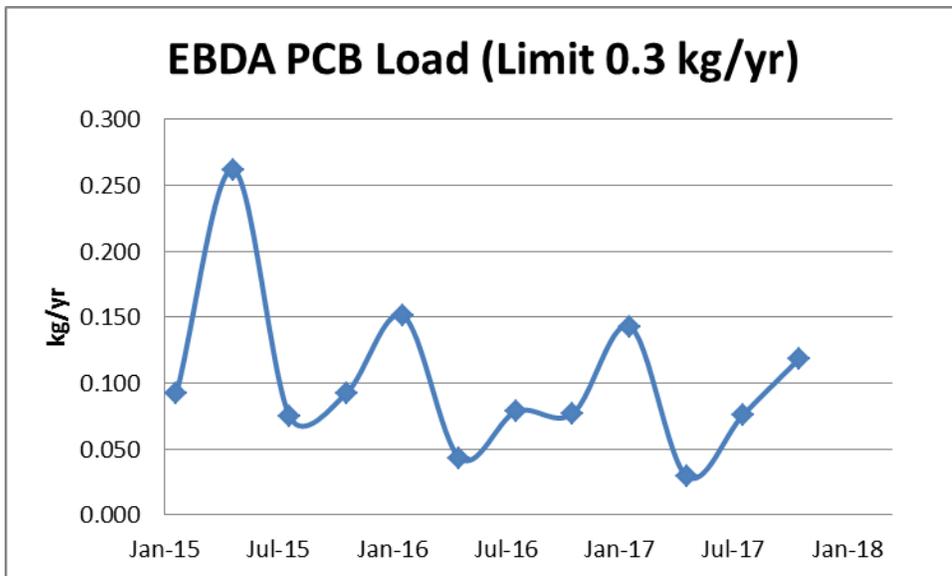
EBDA participates in a watershed permit, CA0038849, with monthly limits of 0.066 ppb of mercury, an annual loading of 2.2 kg mercury, and annual PCB loadings of 0.3 kg. While formal permit reporting was discontinued in the renewal of the watershed permit, EBDA performance for these contaminants is summarized below:

- None of EBDA's effluent samples exceeded the mercury nor PCB limits. In fact, mercury concentrations peaked at 0.00891 ppb, about seven times less than the limit. The peak load occurred in January when flows were quite high. The total mercury loading as shown in Section 4 was 0.58 kg/yr, about one-quarter of the limit.
- Nonetheless, EBDA's member agencies continued their emphasis on mercury reduction strategies. Dental Amalgam pretreatment is a continued emphasis with full participation by dentists in Union Sanitary District and Oro Loma Sanitary District, and Hayward. San Leandro has an unique approach that regulates dentists through building permits. Mercury recycling events in the agencies' service areas continue to collect residential mercury-containing products including thermometers, thermostats, batteries and fluorescent lamps. In addition, some EBDA communities have purchasing policies that require product substitution for mercury-containing items, and a major mercury waste recycling facility that recycles several million fluorescent bulbs is located in the EBDA district in Hayward.





- EBDA’s PCB loads have been estimated by using a special low-detection limit method (EPA 1668C) which has not been formally approved. Using this method (and the assumptions from the Watershed permit for concentrations below detection or quantification limits), the following graph of the last three years of data shows that EBDA’s PCB loads remain less than half (0.15 kg/yr) of its watershed permit allocation of 0.3 kg/yr. The data show about three-fold variability that seems to correlate with the wet/dry seasonal cycle with higher loads during wet seasons.



- The bar chart below shows the concentrations of individual congeners that were consistently above detection limits. Most of the variation in total PCB loads are driven by five lighter congeners (18,28,31,52, and 110).

EBDA PCB Congener Mix (pg/l)

