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TECHNICAL MEMORANDUM - 2020 LAKE MERCED WATER QUALITY MONITORING REPORT

1.0 BACKGROUND AND SETTING

Lake Merced is a freshwater lake located approximately 0.25 miles east of the Pacific Ocean in the southwestern portion of San Francisco, California. It is bounded by Lake Merced Boulevard to the north and east, and John Muir Drive to the west (Figure 1) and is designated as a non-potable emergency water supply for the City of San Francisco. Lake Merced is a natural habitat for many species of birds and waterfowl and a regional recreational venue offering fishing, boating, bicycling, walking paths, and wildlife viewing.

Prior to the 1870's Lake Merced was a coastal estuary which would fill up with water and overflow during large rain events, creating a stream which connected the lake to the ocean[1]. The lake drained an area of 6,320 acres in size, approximately 10 square miles which included Daly City's Westlake, and the Stonestown area of San Francisco.

The stream flowed to the ocean through the present-day location of the San Francisco Zoo and Sloat Boulevard. The springs were primarily along the eastern side and beneath the southern portion of the lake, resulting in primarily south-to-north flow through the lake.

In 1895, the Spring Valley Water Company (SVWC) built a dam at Lake Merced, disconnecting the lake from the ocean. This allowed the company to use the lake as a source of drinking water. As the city grew in the late 1800's, so did its need to protect its drinking water sources . The sewer system was built to divert the creeks that drained into Lake Merced, protecting the lake from debris and pollution that might otherwise flow into the lake.

After the SVWC was purchased by San Francisco, and Hetch Hetchy water replaced Lake Merced water in 1934, the lake was no longer used as a drinking water source but has since been designated as an emergency non-potable supply for the City of San Francisco. In 1950, the San Francisco Recreation and Park District was given jurisdiction to develop beneficial recreational uses

[1]Over a period of hundreds of years, this outlet was closed off by the natural transport of beach and dune sands, and intermittently reopened during extraordinary events, such as high lake levels in unusually wet years or during earthquakes."

at the Lake while maintaining its status as an emergency non-potable water supply with the SFPUC managing the water aspects of the lake.

1.1 Current Lake Conditions

Today, Lake Merced remains a terminal lake which consists of four lakes (North, East, South, and Impound lakes) and has no channelized inflow or outflow. A narrow channel connects North Lake and East Lake and equalizes their water surface elevations. A conduit between North Lake and South Lake allows water to flow between the lakes when the elevation in either lake is at least approximately 3.35 feet San Francisco City datum (14.72 feet NAVD88). When lake levels are below that elevation, these two lakes are separated and typically exhibit different water surface elevations. South Lake and Impound Lake are separated below an elevation of approximately 4.26 feet San Francisco City datum (15.63 feet NAVD88), by a levee that contains the Ingleside combined sewer pipeline and the foundation of a pedestrian walkway. Water flows freely beneath the pedestrian walkway and connects both lakes when the level of either lake is above this levee. The flow through the four lakes is generally north to south.

1.2 Lake Water Levels

Beginning in the late 1980s, Lake Merced's water levels began declining. By the early 1990s, water levels had dropped ten feet below the previous historic averages of the 1950s to 1980s. Declining water levels generated significant concern among stakeholders and SFPUC watershed managers over the long-term health of Lake Merced for recreational, ecological, and emergency water supply uses. Conclusions of various investigations and evaluations commissioned by SFPUC, indicated that these declines were the result of a reduction in stormwater runoff from the historical watershed into the lake due to urbanization, increased groundwater pumping and below average precipitation.

In order to address these significant decreases in lake levels, the SFPUC working with local stakeholders and regulatory agencies implemented a multi-pronged approach to manage lake levels. This included the short-term addition of regional system water to stabilize declining lake levels and establishing an interim target lake level elevation range between 14 and 16ft NAVD88. In 2002 the SFPUC in coordination with the City of Daly City implemented a test program to evaluate the effectiveness of potentially diverting treated stormwater from the historical watershed back into the lake. Limited addition of stormwater was added to the lake from 2004 to 2006 as part of the Lake Merced Pilot Stormwater Enhancement Project. Hydrogeological studies completed to enhance understanding of how the lake system operated in relation to the regional groundwater aquifers determined that additional impacts to lake levels were the result of groundwater pumping by three golf courses in the near vicinity of the lake. This pumping for golf course irrigation resulted in net outflow from the lake to underlying shallow aquifers further impacting lake levels. To this end, the SFPUC once again in coordination with the City of Daly

City, developed a recycled water project to deliver water to the surrounding golf courses, allowing significant reduction in the amount of groundwater pumped for irrigation.

Ultimately following implementation of these various measures and projects, as well as above average precipitation, lake level increased from 2002 to 2006 and have generally remained above the historical drought and groundwater pumping induced lows observed in the early 2000s.

As part of the ongoing monitoring program, Lake Merced levels are measured daily using pressure transducers located at the Lake Merced Pump Station and connected remotely to the SFPUC's SCADA reporting system. For 2020, lake levels ranged from a low of 4.61 ft City datum or 15.98ft NAVD88 on November 17th, 2020 to 6.36ft City datum or 17.73ft NAVD88 on January 29th 2020. This was compared to 2019, lake levels ranging from 5.27ft to 7.04ft City datum. Measured lake levels for 2020 decreased compared to 2019 values, primarily due to less precipitation and resulting abnormally dry conditions of 2020.

1.3 Lake Merced Climatic Setting

The proximity of Lake Merced to the Pacific Ocean results in a distinct maritime Mediterranean climate primarily influenced by wind, fog, and precipitation. This climate is characterized by cool, foggy summers and mild, rainy winters. In summer and fall, locations adjacent to the ocean, such as Lake Merced, are often enclosed in fog with cool temperatures in the 50s and 60s ºF. The Lake Merced area often experiences its warmest weather in late September and early October as a result of less fog and the occasional off-shore breezes.

Based on historical precipitation data from the Lake Merced Pump Station rain gauge, the majority of annual rainfall occurs from late October through March. Precipitation typically declines during the late spring and becomes minimal during the summer. Average annual rainfall (based on a water year of October through September) at the Lake Merced rain gauge[2] is approximately 20.4 inches, with a record high of 47.6 inches in 1998 and a record low of 9.5 inches in 1976.

The Lake Merced rain gauge was repaired and returned to service for calendar year 2020, Cumulative rainfall totals collected from the Downtown San Francisco and the Lake Merced rain gauges indicated drought conditions generally recognized across the state. Precipitation measured at the San Francisco Downtown gauge was only 11.6 inches during water year 2020 (October 2019 through September 2020) and just 7.8 inches for the 2020 calendar year. Measured annual precipitation at the Lake Merced gauge for

2020 calendar year was 8.9 inches. The average annual precipitation for the preceding 30 years (1990-2019) at the Downtown San Francisco station is 23.1 inches (NOAA, 2020).

2.0 HISTORICAL LAKE WATER QUALITY MONITORING

Quarterly water quality monitoring, testing and reporting has occurred at Lake Merced since 1997. Lake Merced is considered a terminal, stratified, shallow eutrophic lake; meaning that it is rich in minerals and organic nutrients that promote proliferation of plant life including algae which can lead to depressed dissolved oxygen levels within lower portions of the lake. The lake is on the State of California Clean Water Act (CWA) Section 303 [d] list for pH and dissolved oxygen (DO) with occasional pH levels above 9 and DO levels below 5mg/l specifically in the lower portions of the lake (hypolimnion). DO levels in the upper portion of the lake (epilimnion) typically remain fairly high and well above the 5mg/l threshold for the entire year.

In January 2010, Kennedy/Jenks Consultants finalized the Lake Merced Water Quality Data Organization, Review and Analysis (Kennedy/Jenks Consultants 2010), which provided a review of the water quality data gathered from the lake between 1997 and 2008, evaluated the overall health markers of Lake Merced, and provided recommendations for the monitoring program. Based on the review of the data, seven water quality parameters were chosen to generally represent lake health. Brief descriptions of these parameters are as follows:

- Dissolved oxygen (DO): Sufficient DO is required for fish habitat and healthy biological processes.

- Secchi depth: Secchi depth is a measurement of lake clarity but can be impacted by algae production and suspended solids.

- Algae, total bioavailable nitrogen, and nitrogen to phosphorus ratio (N:P): These parameters are the limiting macro-nutrients within the lake system and indicators of algal production, which impact long-term lake health. A limiting nutrient in a lake is a nutrient necessary for plant/algae growth which is available in smaller quantities than needed for said plant or algae population to increase their abundance. Once this limiting nutrient is exhausted, the population of algae stops growing. If more of the limiting nutrient is added, larger algal populations will result until their growth is again limited by nutrients or by other environmental factors.

- Total coliform and Esherichia coli (E. coli): Total coliform and E. coli are indicators of pathogenic microorganisms and fecal contamination.

Results of the 2010 report indicated that based mainly on the parameters listed above, the health of Lake Merced had remained relatively constant between 1997 and 2008 with a slight improvement in lake clarity (Secchi depth). From 2001 to 2005, the Lake appeared to be phosphorous-limited or nitrogen and

phosphorous co-limited. In 2005, the lake shifted to being nitrogen-limited and has generally remained that way to date. Also, during the 1997-2008 sampling period, there were no significant changes in algal biomass levels. The lake continues to exhibit periodic fluctuations in algal biomass concentration due to algae blooms. Dissolved oxygen (DO) levels remained in general above the warm (5 mg/L) and cold (7 mg/L) water habitat criteria for the majority of the data set, however there remained episodes of DO concentrations lower than 5 mg/L during the summer within the deeper portions (hypolimnion) of the lake as a result of weak stratification which is typical of eutrophic lakes.

Additionally, while swimming is prohibited in Lake Merced, and various activities at the lake can result in direct body contact, the bacteria levels (e.g., total coliform and E. coli levels) typically have met State guidelines for the protection of public health in recreational waters (Kennedy/Jenks 2010).

4.0 LAKE MERCED WATER QUALITY MONITORING 2020

The SFPUC's Natural Resources Land Management's Limnology Division conducted quarterly water quality monitoring at Lake Merced in 2020, collecting samples in March, September and December (no samples were collected during the second quarter of 2020 due to impacts of the global pandemic). The historic statistical analyses for each parameter is summarized in Table 1. Figure 1 shows the field sampling locations while, Figures 2 through 8 show representative lake health parameters, with data results presented in Appendix A.

4.1 Statistical Analysis

Table 1 lists the parameters that were measured in Lake Merced from May 1997 to December 2020 and a statistical analysis for each parameter. The number of sampling events is listed for each constituent.

The average values from 1997 to 2009 and the average values from 1997 to 2020 were compared. Results indicate increases in the average values of algal biomass, ammonia-nitrogen (NH3-N), chlorophyll, conductivity, dissolved oxygen, hardness, lead (Pb), orthophosphate (PSO4), total dissolved solids (TDS), , total coliform, total organic carbon (TOC), total phosphorous and turbidity. There were decreases in the average values of E. coli, oxygen reduction potential (ORP) and plankton, however, low ORP values can result in internal nutrient cycling. There were relatively no changes in the average values of iron (Fe), pH, manganese (Mn), nitrate (NO3), Secchi depth and total phosphorus. A summary of findings is presented below as well as in Table 1 attached.

4.2 Dissolved Oxygen (DO)

Dissolved oxygen concentrations in Lake Merced are affected by temperature, algal photosynthetic activity, and diffusion from the atmosphere. DO is an indicator of stratification. Lake Merced is a weakly and intermittently stratified lake, but long-term hypolimnetic anoxia (extended periods of very low DO which typically lead to acute adverse effects on fish) has not been observed at the lake. Additionally, summer stratification is a common phenomenon in natural lakes and ponds. Lake Merced is on the State of California CWA Section 303 [d] list of impaired water bodies for DO and pH. Dissolved oxygen concentrations measured to date in Lake Merced at the surface, 5, 10 and 15ft below the surface are presented in Figure 2a. Figure 2b presents measured DO concentrations at the lake's surface, 5ft and 10ft below the surface as a function of water surface elevation. These show that dissolved oxygen measured at the surface and at 5- and 10-foot depths continue to exceed 5 mg/L, which is the water quality objective for warm water habitat established by the State Water Resources Control Board. For 2020 the lowest measured dissolved oxygen level of 1.4 mg/l was observed at 15 feet below surface in south Lake Merced during the fall event. This was lower that the 3.1mg/l measured during the fall 2019 event at the same depth. Measured DO concentrations at the surface, 5 and 10 ft respectively were also lower than observed concentrations during the 2019 monitoring event. This decrease is likely due in part to the decreased precipitation and increased temperatures resulting in lower lake levels, increased algal biomass and activity resulting in lower DO levels. Dissolved oxygen concentrations measured at surface, 5 and 10 ft intervals remained above the 5 mg/l threshold for 2020.

In 2018 SFPUC implemented an "Aeration Demonstration Project" in the southern portion of South Lake Merced. The demonstration project operated between July 2017 and September 2018 and consisted of twelve (12) 3/4 HP super-duty, Brookwood twin cylinder HighFlow air compressors installed to provide sufficient airflow to the diffusers for aeration of this portion of the lake. The air compressors were housed in three (3) rustproof aluminum outdoor cabinets for protection and to minimize noise. The system was operated continuously (24hrs/day) during the demonstration period. During operation of the demonstration project, DO levels measured at 15 feet below surface remained above 5mg/l and also remained above 7mg/l for the entire year. In 2020 the SFPUC restarted the aeration mixing system on a 6hr per day operational schedule to determine whether similar benefits to lake DO will be observed in the lower levels of the lake without continuous daily operation. During this period, Lake Merced continued to exhibit consistently low DO levels measured at the sediment water interface during summer months due to weak stratification. Following increases as part of the above demonstration project, DO levels while still averaging slightly above average, appear to be returning to historical ranges.

4.3 Secchi Depth

Secchi depth is a measure of lake clarity or lake health and decreases are usually due to increases in algae and/or mineral particles. Secchi depth data, is shown on Figure 3, For 2020 measured Secchi depth averaged 1.9 ft which was the same for 2019.

4.4 Algae and Nitrogen to Phosphorus Ratio (N:P)

Several studies have evaluated the “total nitrogen to total phosphorus ratios” in Lake Merced to determine if the lake is nitrogen-limited. These studies used slightly different approaches to calculating nitrogen to phosphorous ratios. However, in general, all of the studies found nitrogen to be the limiting nutrient in the lake.

Total phosphorous, total nitrogen and total algal biomass are plotted on Figure 4a. Algae blooms typically spike in the fall and the bioavailable nitrogen typically peaks in the winter or spring. The ratio of total inorganic nitrogen (NH3-N + NO3-N) to the bioavailable phosphorus (80% of total phosphorus) is plotted on Figure 4b. Since Lake Merced has high levels of organic nitrogen, it is more appropriate to analyze the bioavailable nitrogen to bioavailable phosphorus ratio. This is because algae can uptake the inorganic forms of nitrogen more easily. Bioavailable nitrogen is the sum of nitrate and ammonia, which is referred to as total inorganic nitrogen (TIN). Bioavailable phosphorus is approximately 80% of total phosphorus (Professor A. Horne, personal communication, November 9, 2010).

This report uses the ratio of bioavailable total nitrogen to bioavailable total phosphorous as described above to calculate nitrogen to phosphorous ratios. Based on this approach Lake Merced is nitrogen limited. However, due to very shallow Secchi depth readings, the lake algal biomass production is arguably light-limited physically, as well as the nutrient limitation.

For 2020, average TIN was 71.3 ug/l which is an increase compared to the 46.3 ug/l average concentration from 2019. Average bioavailable phosphorous was 110 ug/l. Algal biomass concentrations however decreased slightly during this monitoring period (Figure 4A and 4B).

A ratio of TIN to Total Inorganic Phosphorous between 10 and 15 indicates growth is balanced between nitrogen and phosphorus, while a ratio above 15 would indicate that phosphorus is the limiting nutrient. The average ratio of TIN to Total Inorganic Phosphorous (80% of Total P), for Lake Merced in 2020 is 0.65 (71.3 ug/l : 110 ug/l) and well below 10. Compared to an average TIN to TIP ratio of 0.36 in 2019. This indicates that the Lake continues to be strongly nitrogen limited and has been since 2000.

4.5 Total Coliform and Escherichia coli (E. coli)

Results indicate that average total coliform and E. coli concentrations decreased slightly compared to the previous monitoring periods however remain within historical ranges. As shown on Figure 5, coliform levels remain well below the California Department of Public Health threshold guidelines for recreational waters, which are 10,000 per 100 mL total coliform and 235 per 100 mL for E. coli (Table 1 and Figure 5).

4.6 Trophic Status Index (TSI)

Trophic Status Index (TSI) is a measurement that uses Secchi depth (a measure of the clarity of a water body) and chlorophyll-a concentrations to calculate a numeric value of a water body's algal productivity level. This report utilizes the formula TSI= 60-14.41ln (Secchi depth (m)) to calculate the Trophic Status Index. Changes in nutrient levels can cause increases in algal biomass, which can result in changes to lake clarity and Secchi depth readings. The index ranges from 0 to 100, where a value less than 40 is an unproductive lake, a value between 40 and 50 is moderately productive, and a value greater than 50 is highly productive. As demonstrated on Figure 6, over the past 15 years, TSI has historically ranged from about 50 to 75. During the 2020 monitoring period, average TSI remained virtually unchanged at about 68 compared to 2019 values. Between 2010 and 2020, TSI has remained well above 50 indicating that Lake Merced remains moderately to highly productive. Figure 6 shows Secchi depths, Chlorophyll a and TSI for Lake Merced.

4.7 pH

Lake Merced is currently on the State of California CWA Section 303 [d] list of impaired water bodies for pH exceeding 8.5. Lake Merced continues to display high alkalinity with a historical surface pH range of approximately 7.5 to 8.8. The average pH across all depths sampled over time was 8.1, within the range of Basin Plan WQOs of 6.5 to 8.5 and near the level of 8.3 which would result from equilibrium with carbon dioxide in the atmosphere. The higher pH levels in Lake Merced appear to be the result of photosynthesis from algal activity, combined with the elevated alkalinity due to it being a terminal lake, with no regularly occurring outflow since it lost connection to the ocean in 1895. Results of water quality monitoring at Lake Merced from 1997 to 2009 indicated statistically similar values for pH compared to current values. Average surface pH of the lake in 2020 was 8.6, while average pH for the entire lake depths sampled was 8.3 which remains well within historical ranges (Figure 7 and Table 1).

4.8 Lake Levels

Lake Merced water levels have fluctuated significantly since 1997 as shown on Figure 8. Since 2006, Lake levels had remained more consistently between 5 and 7 feet (City Datum). Lake Merced levels peaked in 2011 at an elevation of about 7 feet city datum. Lake levels decreased in 2012 and 2013 and continued to decrease through 2015 due to drought conditions and resulting below average precipitation. Lake levels rebounded in 2016 and 2017 due to increased precipitation. For 2020, lake levels decreased with water levels ranging from 4.61 to 6.36ft city datum compared to a range of 5.3 to 7.0ft city datum for 2019.

Of note for 2020 is increased pumping of groundwater by the surrounding golf courses (Olympic Club, San Francisco Golf Course and the Lake Merced Country Club), which had previously been meeting approximately 80% of their irrigation demand by using recycled water produced at the Daly City Treatment Plant. Due to operational issues, no recycled water was produced during the entire irrigation season, forcing the golf courses to revert to pumping

groundwater. SFPUC will continue to observe measured lake levels in order to determine what if any impact the additional pumping may have on the lake.

Lake Merced Aeration Mixing Project

The SFPUC completed implementation of the Demonstration Aeration Mixing Project in the southern portion of Lake Merced's South Lake. The project entailed installation of up to 1500 ft of pvc tubing, connected to three air compressors located at the Lake Merced Pump Station. Compressed air is pumped through these pipes which are connected to diffusers located along the bottom of the lake. The compressed air released at the bottom of the lake assists in mixing various lake layers, potentially minimizing periods of hypoxia/anoxia that fall below the warm and cold-water quality objectives at lower depths in the lake during the warm summer months. This was expected to result in higher dissolved oxygen levels within the lower layers of the lake and general lake water quality improvement. The system was installed and activated in July 2017 and operated continuously through September 2018. The demonstration project was originally scheduled to operate through February 2018. However due to malfunction of sondes deployed in the deeper portion of the lake, the demonstration project was extended through September 2018.

The Lake Merced aeration demonstration appeared to be successful in raising DO levels in the water column. Overall, measured DO levels during aeration were above the 5 mg/L target 99% of the time during the aeration demonstration compared to 85% of the time prior to the demonstration project. With or without aeration, Lake Merced is relatively well-mixed in the winter months (December to March) and DO levels below 5 mg/L were rarely observed during this time. During aeration, near-bottom DO levels during non-winter months were observed to be above the target DO level 97% of the time as opposed to baseline data where DO levels were above 5 mg/L only 40% of the time.

During aeration, pH values stabilized between the surface and near-bottom as mixing of the water column resulted in a more consistent pH. The pH in Lake Merced is on the high side of the target range of 6.5 to 8.5 with approximately half of collected data during aeration being within this range and approximately half above 8.5. During aeration, the maximum pH measured was 8.9.

The SFPUC is evaluating whether improvement in DO concentrations justifies implementation of a larger scale aeration mixing project.

Additional Water Quality Analysis - Harmful Algal Blooms

Harmful Algal Blooms (HABs) generally refer to large growths of cyanobacteria in lake water environments which typically result in degradation of the water aesthetics. Harmful algal blooms (HABs) are caused by the rapid growth of algae or cyanobacteria (also called blue-green algae) in a water body that can cause harm to people, animals, or the local ecology. HAB's have become an increasing issue in urban lakes and reservoirs across California including Lake Merced. These algal blooms may typically occur as a result of sunlight, high temperatures and availability of nutrients that support their growth. In addition to potential aesthetic degradation of a water body, as cyanobacteria multiply some can produce toxic chemicals called cyanotoxins which can be harmful to animal and human health at elevated concentrations. The California Water Quality Monitoring Council (a joint effort from the California Environmental Protection Agency (CalEPA) and the California Natural Resources Agency) has established various voluntary cyanotoxin screening thresholds for publicly accessible waterbodies to be protective of public health. The SFPUC conducts monthly HAB by-product analysis as part of our lake water quality monitoring program. Results are compared to the Cal EPA HAB voluntary screening levels and appropriate "Notifications" are posted around the lake if sampling results indicate algal toxin concentrations exceed these thresholds. These notifications provide guidance for recreational use based on detected total microcystin concentrations.

For 2020 analysis detected concentrations ranging from 1 ug/l (May 2020) in East Lake to 24 ug/l (December 2020) in North Lake. Analytical testing results are summarized in Table (2). Abnormally dry conditions in 2020 resulted in lower lake levels, and increased temperature within the lake, and likely contributed to increase in algal toxins. Detected concentrations appeared to have generally increased as the dry weather of 2020 persisted. SFPUC in coordination and cooperation with the San Francisco Recreation and Parks Department (SFRPD) maintain notification signage around various access points of Lake Merced in accordance with the State voluntary notification guidelines. SFPUC will also maintain updated voluntary notifications on our *Lake Merced website* based on these sampling results.

5.0 CONCLUSIONS

Overall, Lake Merced water quality has remained relatively constant from 1997 through 2020. Precipitation decreased in 2020 compared to 2019 resulting in decreases in lake levels for this period. For 2020 Secchi depth remained the same at an average of 1.9ft. Dissolved oxygen (DO) levels across the lake are affected by periods of weak stratification, however DO levels in the upper 5 feet of the lake continue to remain well above the cold and warm water quality objectives of 7 and 5 mg/l respectively.

Following conclusion of the Aeration Mixing Demonstration, there has been a observed decrease in DO levels in the lower portion of South Lake. DO levels in this portion of the lake appear to be reverting back to historical averages compared to the 2018 periods during which the system was operational. Based on these observations, SFPUC restarted the aeration system running on a 6hr per day schedule and will evaluate additional operation for the upcoming year. Results of subsequent monitoring will assist SFPUC staff further fine tune operation while maintaining higher DO concentrations in the hypolimnion.

The Lake continues to be strongly nitrogen-limited, coliform levels remained below the regulatory guidelines and the TSI continued to indicate a moderately to highly productive lake. Average pH levels remained below the fresh water criteria and did not exceed 9.0 during this period. For 2020, sampling detected total microcystin concentrations resulting in various voluntary notifications around Lake Merced. Although HABs and resulting total microcystins can be caused by various conditions, abnormally dry conditions of 2020 which resulted in increased temperatures, and decreases in lake levels appear correlated with higher detected concentrations. SFPUC in cooperation with SFRPD will continue to post physical notifications around the lake and at the SFPUC's *Lake Merced website* based on available sampling data.

The Lake Merced monitoring program will continue to be implemented and the Lake Merced Water Quality Summary Technical Memo will be updated annually.

Attachments

Table 1 – Water Quality Summary Data South Lake Merced

Table 2 - Total Microcystin and Congeners

Figures 1-8

Appendix A – Analytical Results (SFPUC Millbrae Lab and SFPUC NRLMD Limnology Lab)

References

EDAW, 2004, Initiative to Raise and Maintain Lake Level and Improve Water Quality, Task 3 Technical Memorandum, FINAL, September 2004.

Kennedy/Jenks Consultants, 2010, Lake Merced Water Quality Data Organization, Review and Analysis. Prepared for San Francisco Public Utilities Commission, January 2010.

RMC, 2007, John Muir Wetland Conceptual Design Update. Prepared for SFPUC Water Resources Planning, September 17, 2007.

Kennedy Jenks Consultants, 2019, Lake Merced Aeration Demonstration Results. Prepared for San Francisco Public Utilities Commission, June 2019

Tables

Table 1
Water Quality Summary Data - Lake Merced Water Quality Monitoring
South Lake 0-5 Feet

Number of Sampling Dates	Parameter	Units	Average 1997-2009	Change	Average 1997-2020	1997-2020 Median	1997-2020 Minimum	1997-2020 Maximum
115	Algal Biomass	ug/L	1879	191	2070	1838	442	6705
193	Ammonia (NH3-N)	mg/L	0.05	0.02	0.07	0.05	ND	0.50
127	Chlorophyll	ug/L	27.0	4	31.0	27.3	5	100
201	Conductivity	mmho/cm	580	106	686	655	431	1244
197	Dissolved oxygen (DO)	mg/L	7.1	2	9.1	9.1	5.0	12.7
152	E.Coli	MPN/100 mL	36.9	-10	26.6	18.0	0.50	100
187	Hardness	mg/L	180	28	208	205	145	280
77	Iron (Fe)	mg/L	0.03	0.00	0.024	0.01	ND	0.14
48	Lead (Pb)*	ug/L	0.44	0.10	0.54	0.50	ND	2.0
86	Manganese (Mn)	mg/L	0.06	0.0	0.07	0.04	ND	1.7
191	Nitrate ($NO3^-$)	mg/L	0.03	-0.01	0.02	0.01	ND	0.62
195	Orthophosphate	mg/L	0.06	0.03	0.09	0.08	ND	0.26
197	Oxidation-reduction potential (ORP)	mV	319.0	-20	299.0	306.0	-37.6	543
201	pH	-	8.1	0.2	8.3	8.3	7.5	8.8
94	Plankton	NU/mL	822.0	-205	616.5	576.9	6.48	2511
102	Secchi depth	Feet	1.8	0	1.8	1.8	0.50	3.0
201	Temperature	°C	15.8	0.4	16.2	16.4	9.80	22.6
75	Total Coliform	MPN/100 mL	925.0	103	1027.8	914.0	109.0	2420
195	Total dissolved solids (TDS)	mg/L	372	66	438.5	420.0	276.0	809
152	Total Kjeldahl nitrogren (TKN)	mg/L	3.76	-0.1	3.71	2.71	ND	28.2
80	Total organic carbon (TOC)	mg/L	6.7	0.8	7.53	7.30	ND	15.18
186	Total phosphorus	mg/L	0.14	0.03	0.17	0.16	ND	0.48
189	Turbidity	NTU	13.2	0.4	13.58	12.0	2.20	34

Note:
ND* Not detected above laboratory detection limits
Samples summarized above were collected form the surface and 5ft below the surface at the South Lake Pump Station sampling location.

Table 2
Summary of Analytical Results - Surface Water Total Microcystin and Congeners
Lake Merced
San Francisco California

			Analytes									
			Total Microcystins	Congeners (Algal Toxins)								
Sample Location and Designation	**Units**	**Date Sampled**	**Total Microcystins**	**Anatoxin-a**	**Cylindrospermopsin**	**Microcystin-LA**	**Microcystin-LF**	**Microcystin-LR**	**Microcystin-LY**	**Microcystin-RR**	**Microcystin-YR**	**Nodularin**
Lake Merced East (E)	ug/l											
		5/12/2020	**1**	ND	ND	ND	ND	ND	**0.89**	ND	ND	ND
		9/29/2020	**9.1**	ND	ND	ND	ND	ND	**0.11**	ND	ND	ND
		12/8/2020	**11**	ND	ND	ND	ND	ND	ND	ND	ND	ND
		12/17/2020	**19**	--	--	--	--	--	--	--	--	--
Lake Merced North (N)	ug/l											
		05/12/20	**1.3**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**
		09/29/20	**23**	**ND**	**ND**	**ND**	**ND**	**ND**	**0.12**	**ND**	**0.22**	**ND**
		12/08/20	**9.8**	--	--	--	--	--	--	--	--	--
		12/09/20		ND	ND	ND	ND	ND	ND	ND	ND	ND
		12/17/20	**24**	--	--	--	--	--	--	--	--	--
Lake Merced South (R)	ug/l											
		05/12/20	**2.1**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**
		09/29/20	**7.2**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**
		12/08/20	**7.5**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**
		12/17/20	--	--	--	--	--	--	--	--	--	--
Lake Merced South (S)	ug/l											
		05/12/20	**5.4**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**
		09/29/20	**8.6**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**
		12/08/20	**6.8**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**
		12/17/20	--	--	--	--	--	--	--	--	--	--
Trigger Norification Levels[1]												
No Advisory	ug/l		**<0.8**	**ND**	**<1**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**
Caution	ug/l		**0.8**	**Detect**	**1**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**
Warning	ug/l		**6**	**20**	**4**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**
Danger	ug/l		**20**	**90**	**17**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**

Notes:

[1] Trigger Notification Levels established by the California Cyanobacteria and Harmful Algal Bloom Network

[2] Average result from 3 sampling locations along the shoreline.

ug/l = micrograms per liter

ND = Not Detected

NE = Not Establsihed

-- = Not Analyzed

Sample locatoins shown on Figure 2

Figures

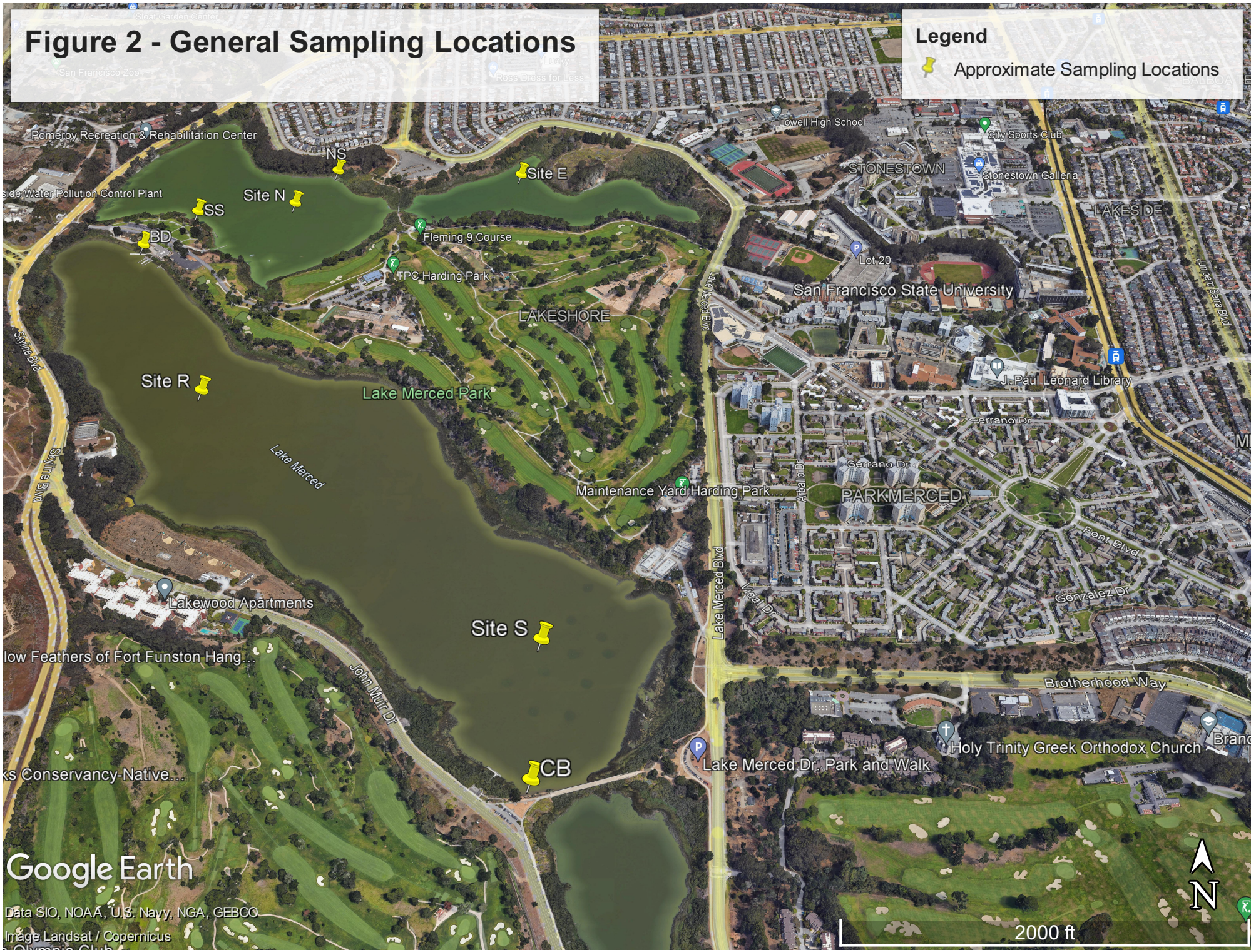
N

0 325 650 1,300 Feet

San Francisco Public Utilities Commission
Lake Merced Water Quality Summary Report
March 2022

Figure 1 – Vicinity Map

Figure 2 - General Sampling Locations



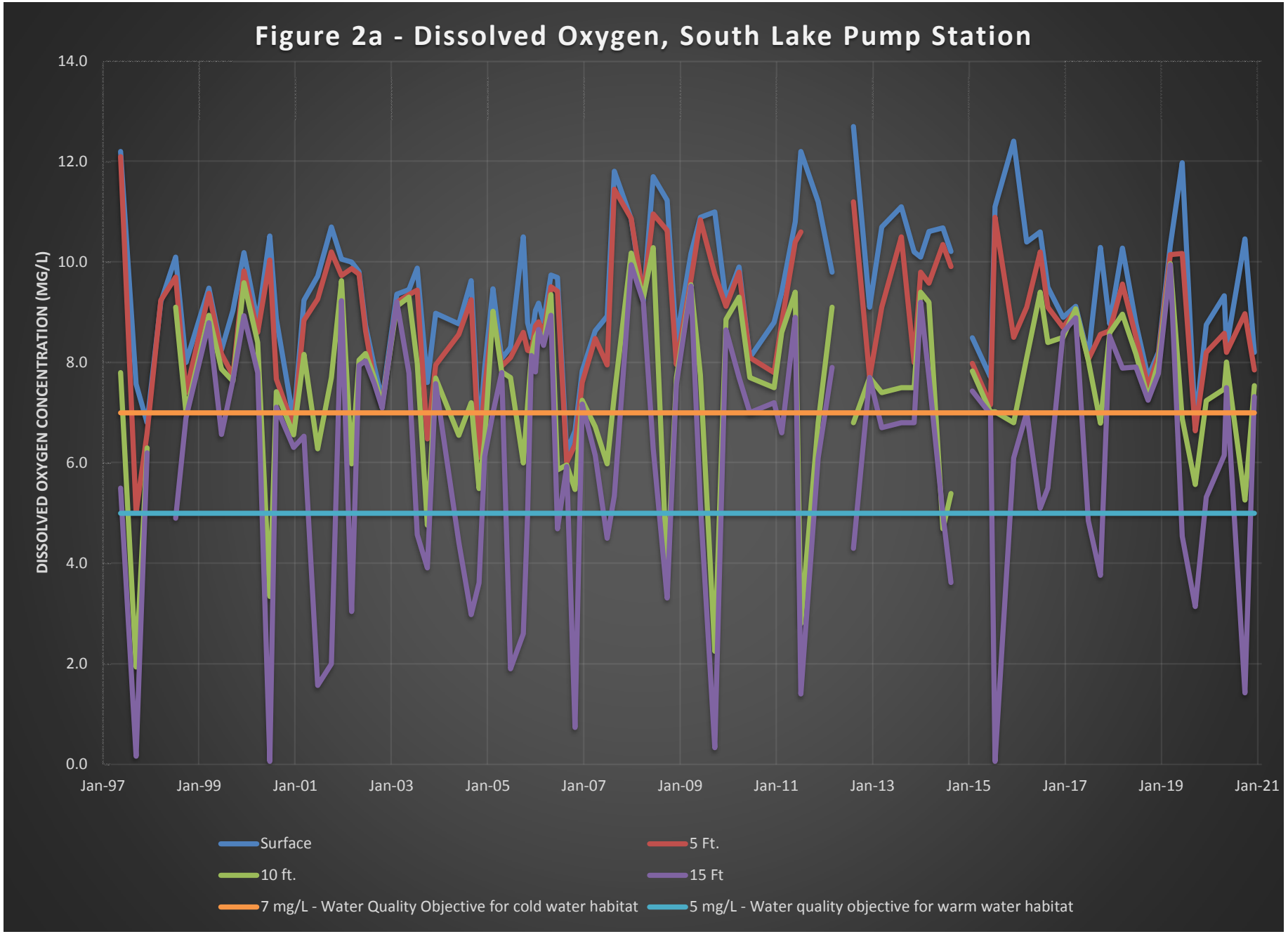


Figure 2a - Dissolved Oxygen, South Lake Pump Station
DISSOLVED OXYGEN CONCENTRATION (MG/L)
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
Jan-97
Jan-99
Jan-01
Jan-03
Jan-05
Jan-07
Jan-09
Jan-11
Jan-13
Jan-15
Jan-17
Jan-19
Jan-21
Surface
5 Ft.
10 ft.
15 Ft
7 mg/L - Water Quality Objective for cold water habitat
5 mg/L - Water quality objective for warm water habitat

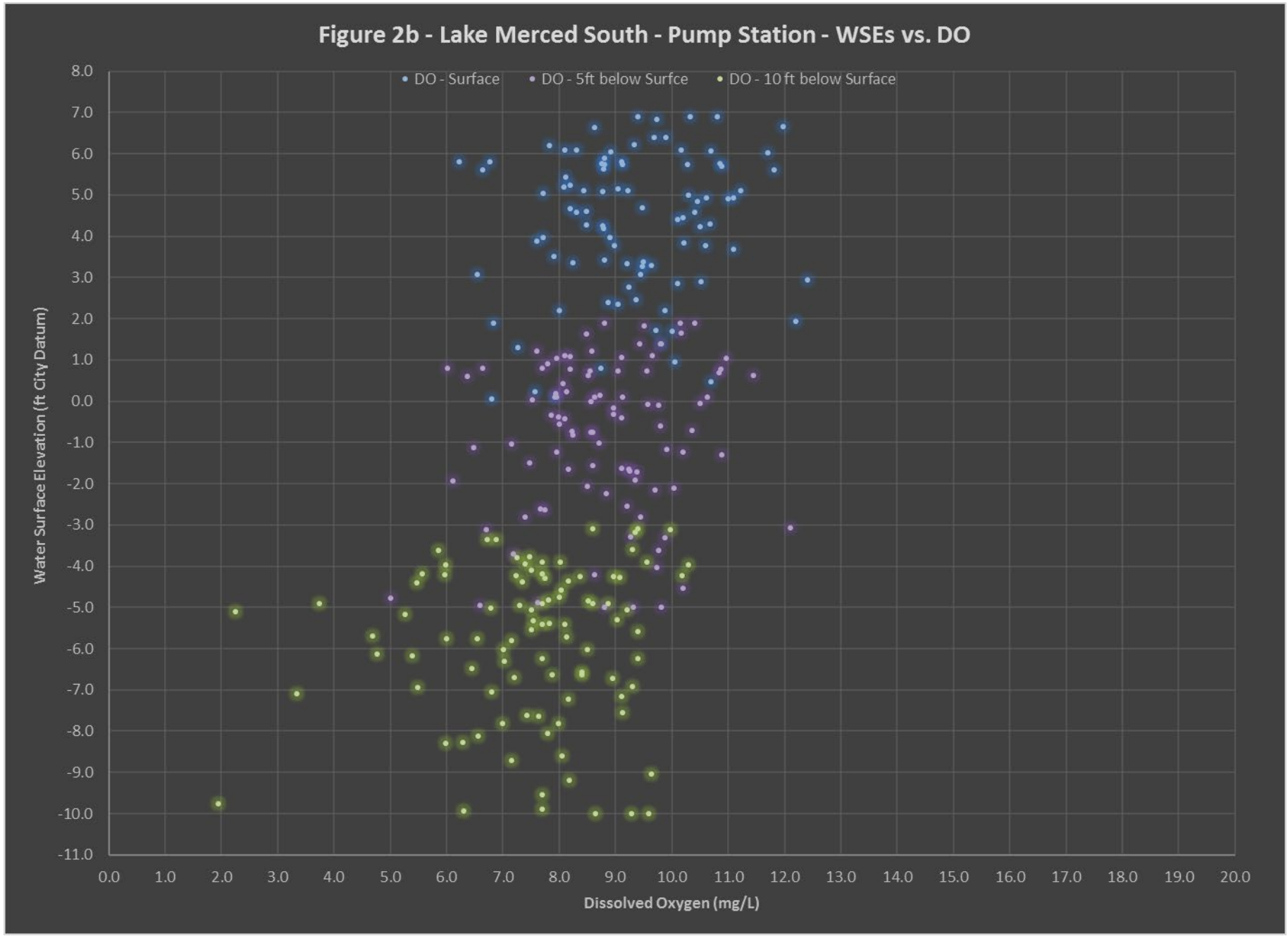


Figure 2b - Lake Merced South - Pump Station - WSEs vs. DO
DO - Surface
DO - 5ft below Surfce
DO - 10 ft below Surface
Water Surface Elevation (ft City Datum)
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
-1.0
-2.0
-3.0
-4.0
-5.0
-6.0
-7.0
-8.0
-9.0
-10.0
-11.0
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
10.0
11.0
12.0
13.0
14.0
15.0
16.0
17.0
18.0
19.0
20.0
Dissolved Oxygen (mg/L)

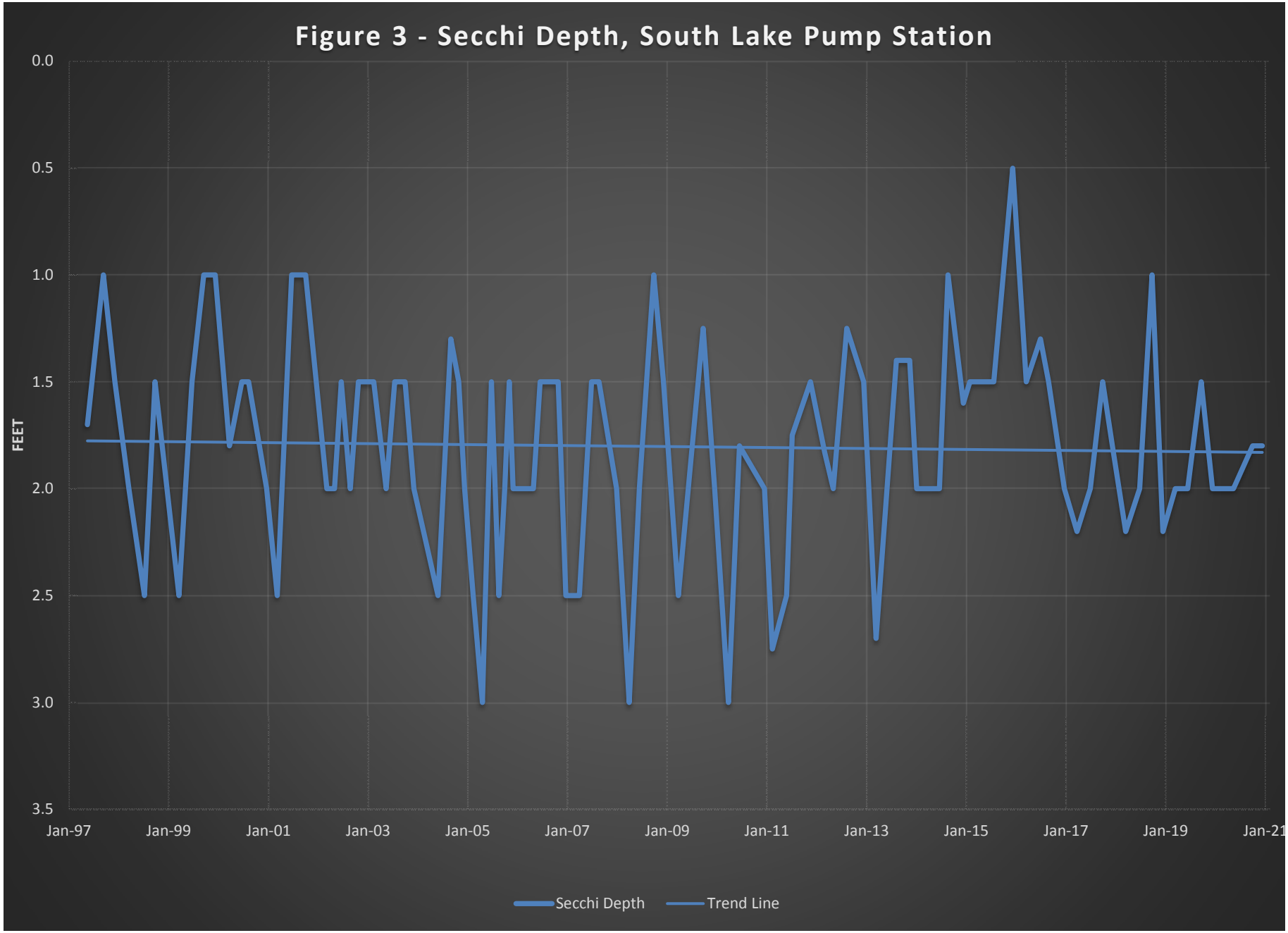


Figure 3 - Secchi Depth, South Lake Pump Station
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
FEET
Jan-97
Jan-99
Jan-01
Jan-03
Jan-05
Jan-07
Jan-09
Jan-11
Jan-13
Jan-15
Jan-17
Jan-19
Jan-21
Secchi Depth
Trend Line

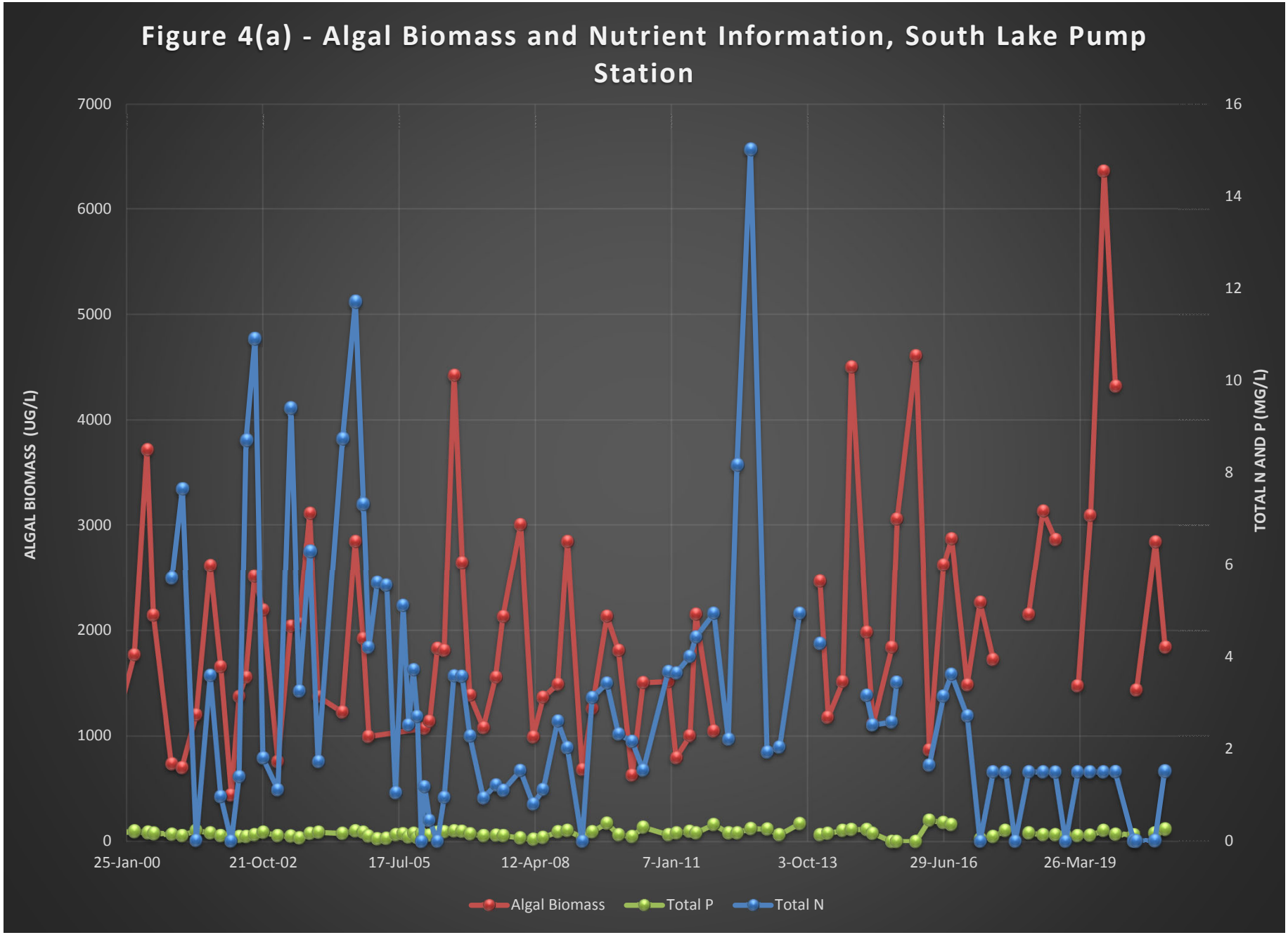


Figure 4(a) - Algal Biomass and Nutrient Information, South Lake Pump Station
ALGAL BIOMASS (UG/L)
TOTAL N AND P (MG/L)
7000
6000
5000
4000
3000
2000
1000
0
16
14
12
10
8
6
4
2
0
25-Jan-00
21-Oct-02
17-Jul-05
12-Apr-08
7-Jan-11
3-Oct-13
29-Jun-16
26-Mar-19
Algal Biomass
Total P
Total N

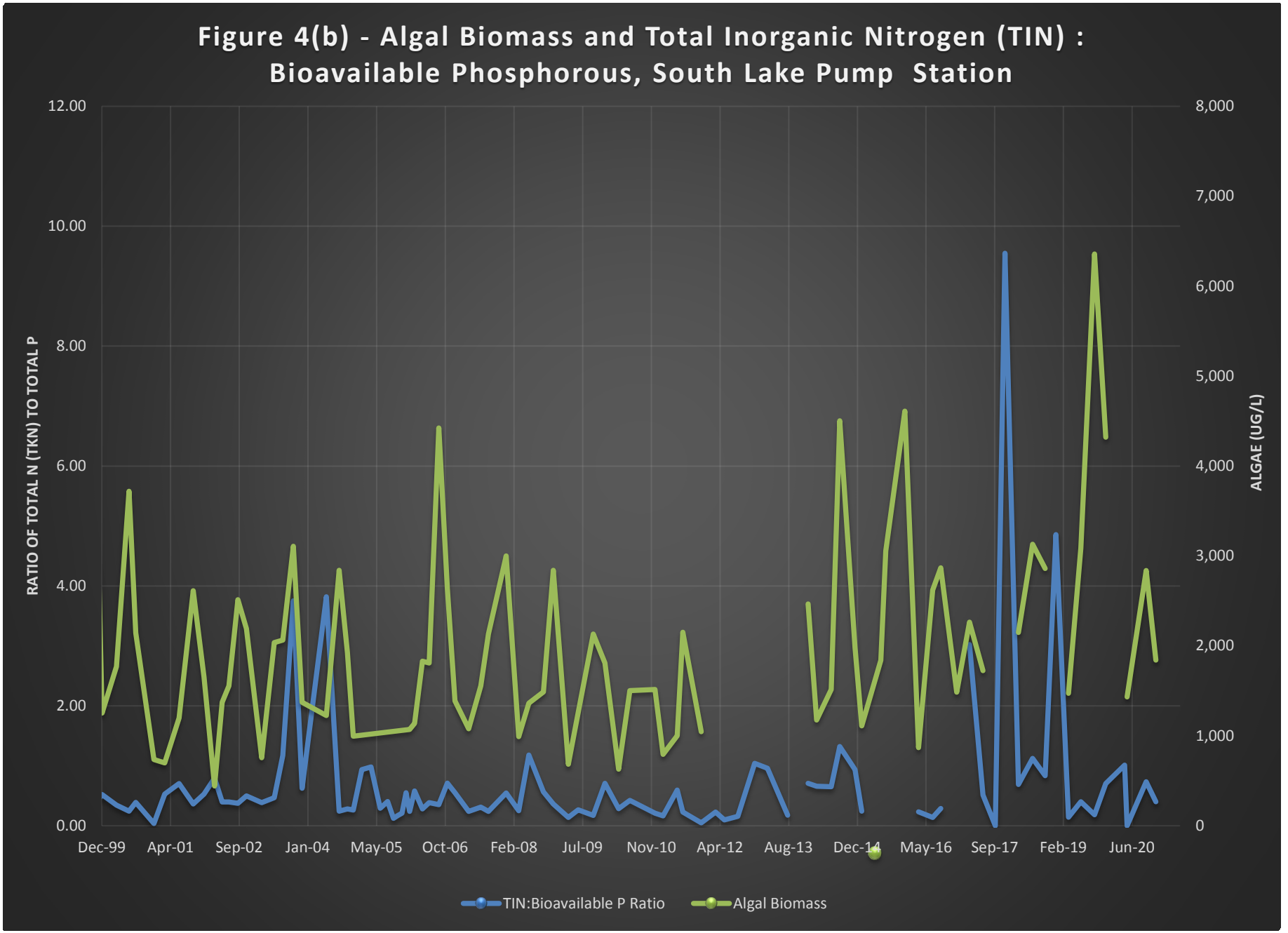


Figure 4(b) - Algal Biomass and Total Inorganic Nitrogen (TIN) : Bioavailable Phosphorous, South Lake Pump Station
RATIO OF TOTAL N (TKN) TO TOTAL P
ALGAE (UG/L)
12.00
10.00
8.00
6.00
4.00
2.00
0.00
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
Dec-99
Apr-01
Sep-02
Jan-04
May-05
Oct-06
Feb-08
Jul-09
Nov-10
Apr-12
Aug-13
Dec-14
May-16
Sep-17
Feb-19
Jun-20
TIN:Bioavailable P Ratio
Algal Biomass

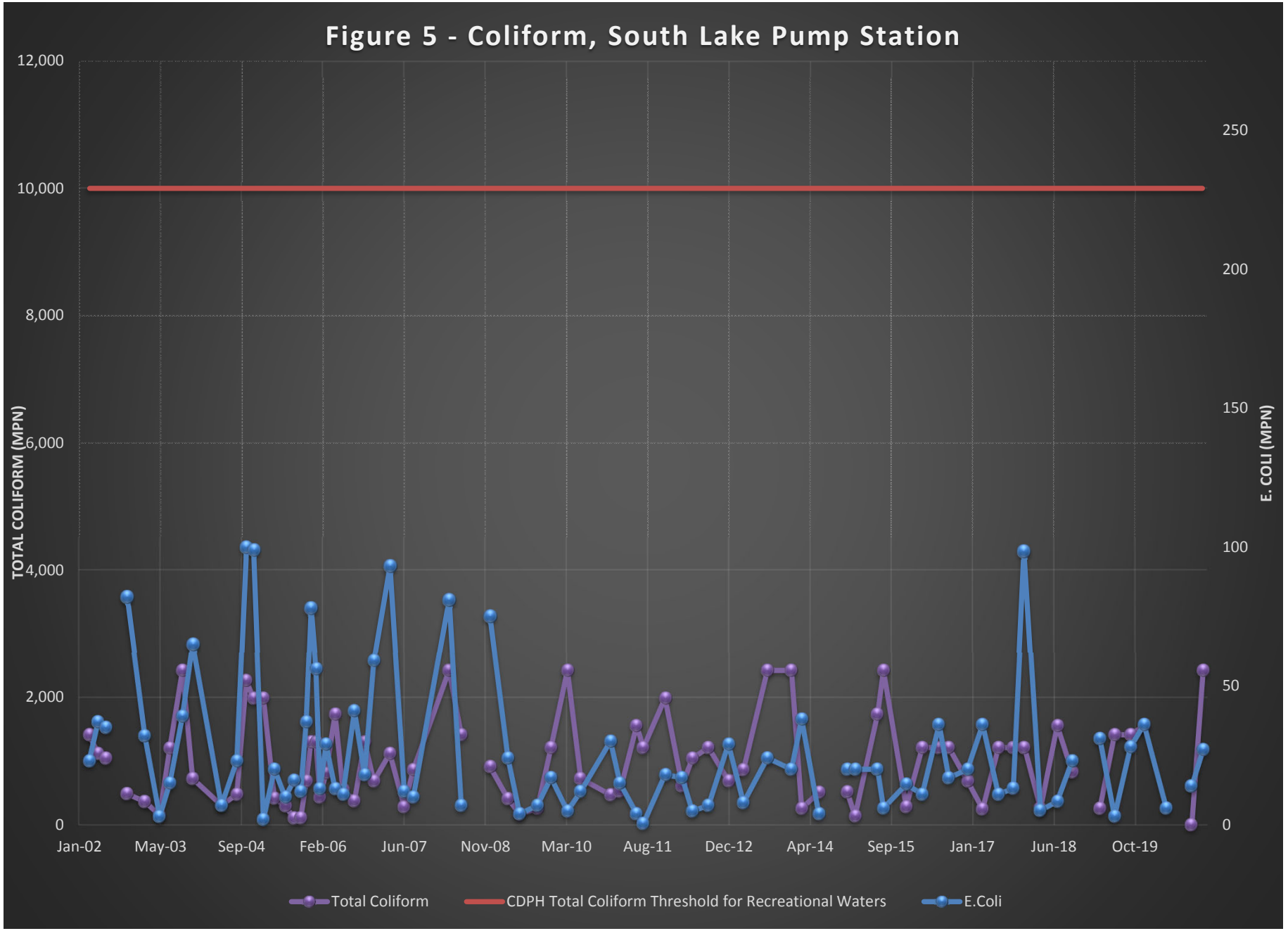
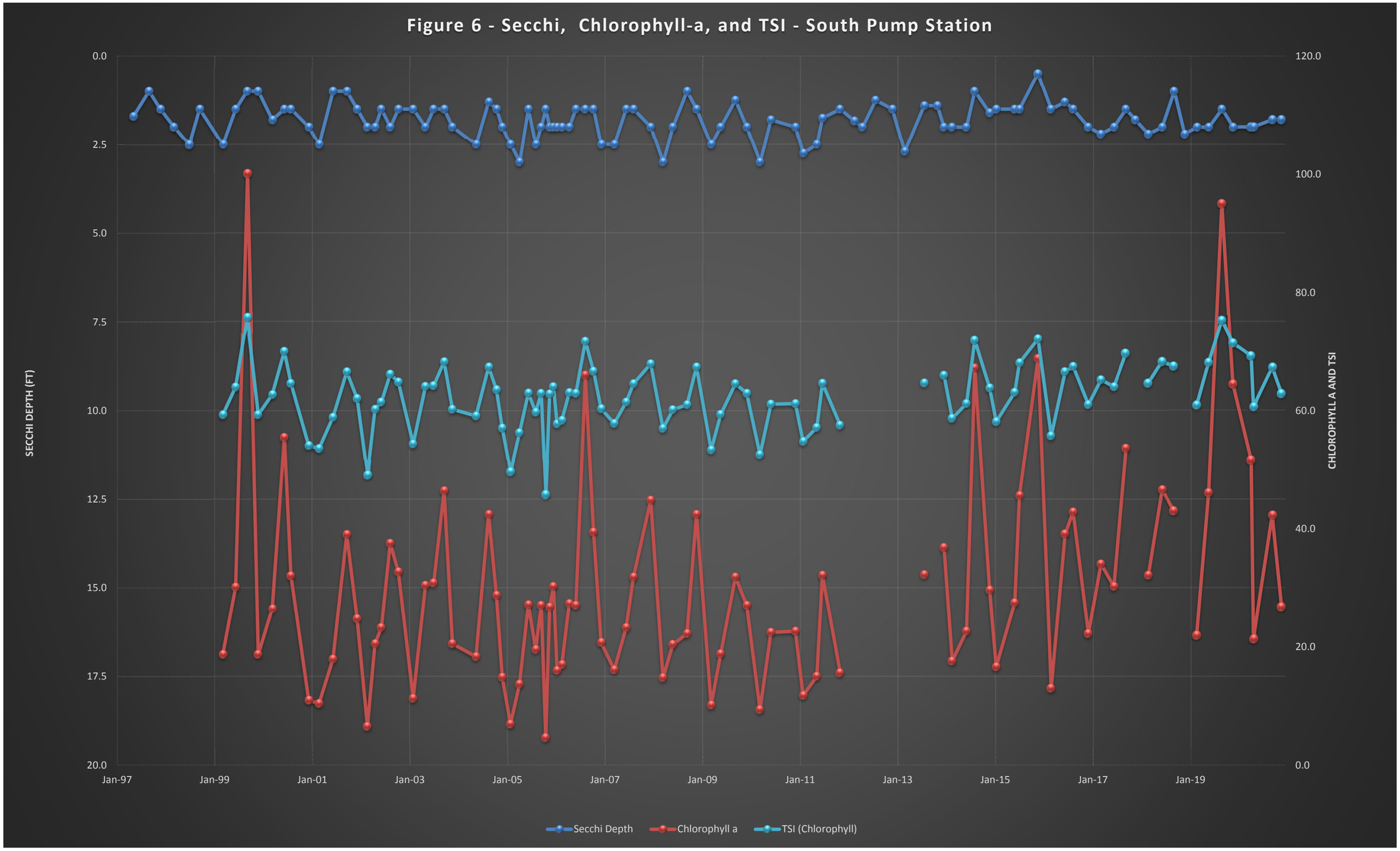


Figure 5 - Coliform, South Lake Pump Station
12,000
10,000
8,000
6,000
4,000
2,000
0
TOTAL COLIFORM (MPN)
250
200
150
100
50
0
E. COLI (MPN)
Jan-02
May-03
Sep-04
Feb-06
Jun-07
Nov-08
Mar-10
Aug-11
Dec-12
Apr-14
Sep-15
Jan-17
Jun-18
Oct-19
Total Coliform
CDPH Total Coliform Threshold for Recreational Waters
E.Coli

Figure 6 - Secchi, Chlorophyll-a, and TSI - South Pump Station



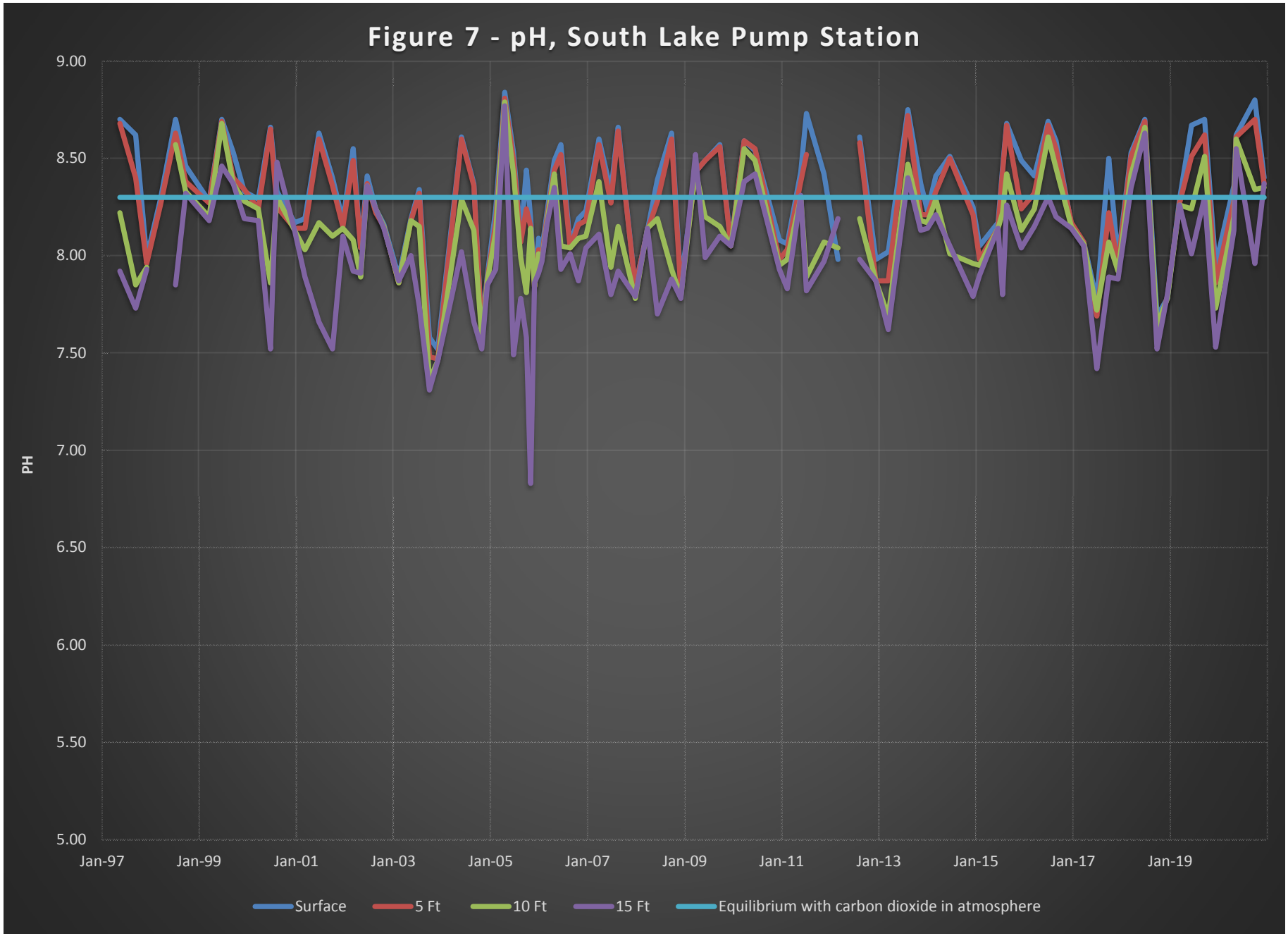
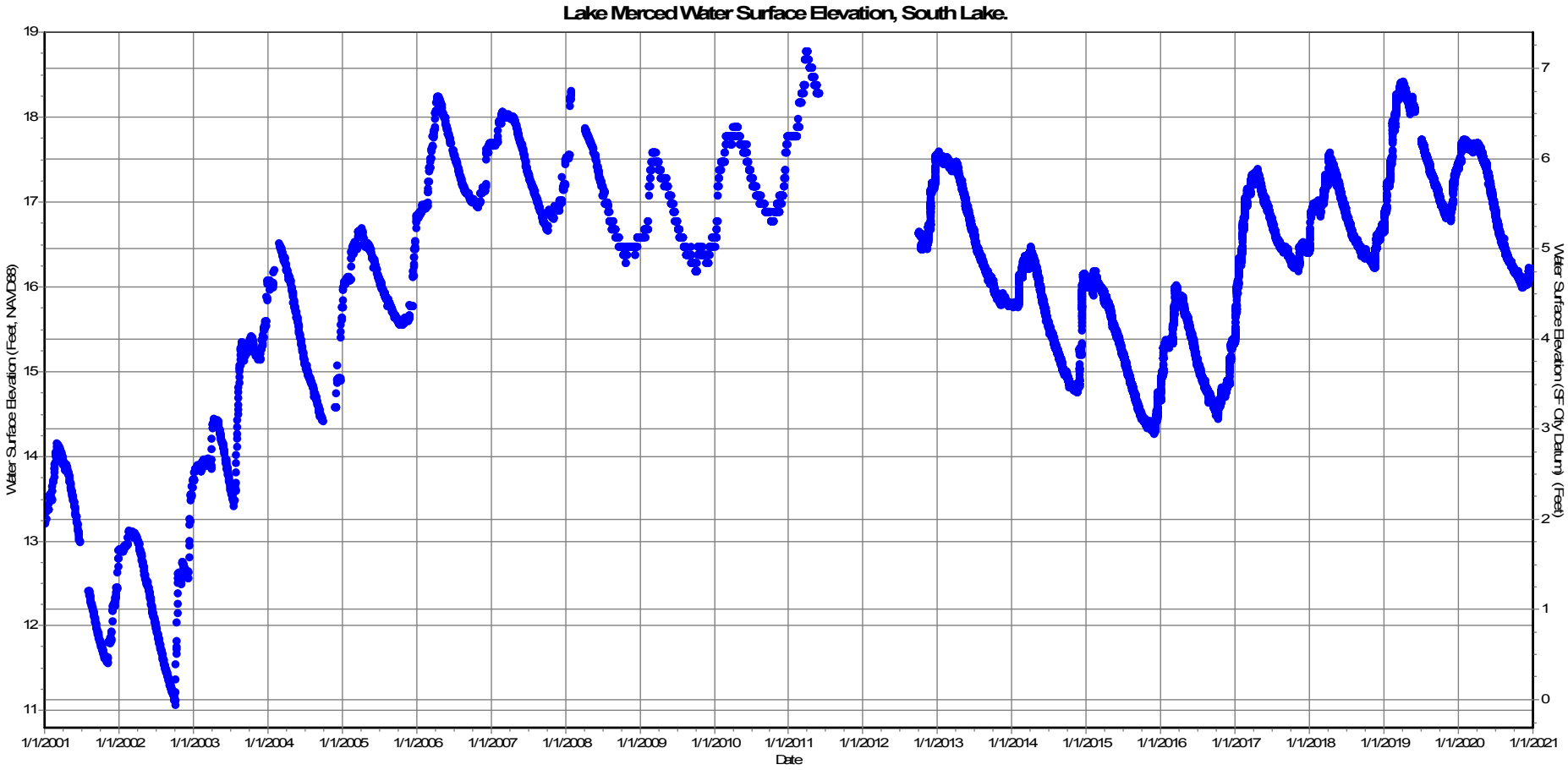


Figure 7 - pH, South Lake Pump Station
9.00
8.50
8.00
7.50
7.00
6.50
6.00
5.50
5.00
PH
Jan-97
Jan-99
Jan-01
Jan-03
Jan-05
Jan-07
Jan-09
Jan-11
Jan-13
Jan-15
Jan-17
Jan-19
Surface
5 Ft
10 Ft
15 Ft
Equilibrium with carbon dioxide in atmosphere

Figure 8 - Water Surface Elevations

Level 1 is equal to Surface Water
Level 2 is equal to North Westside Basin
Level 3 is in list "Lake Merced","Lake Merced (Wet Well)"
Date is between 1/1/2001 and 1/1/2021



Appendix

San Francisco Public Utilities Commission

Land and Natural Resources - Limnology

Reservoir: Lake Merced - **Police Range**
Date: April 29, 2020 **Limnologist:** RmJ, E. Wong

Limnological Profile

Depth ft.	Temp °C	pH pH units	Cond µS/cm	TDS mg/L	DO mg/L	ORP mV	TKN mg/L	Hard mg/L	NO_3-N mg/L	NH_3-N mg/L	PO_4-P mg/L	Tot P mg/L	Mn mg/L	Fe mg/L	Pb mg/L	TOC mg/L	Turb NTU
0	17.28	8.45	881	573	7.9	-45			<0.01	0.01	0.12	0.19					11.1
5	16.91	8.37	882	573	6.9	-56			<0.01	0.12	0.10	0.10					9.3
10	16.73	8.30	883	574	6.0	-69			<0.01	0.15	0.13						10.2
15	15.88	8.18	885	575	3.3	-108			<0.01	0.16	0.15						10.3
20	15.54	8.19	886	576	3.6	-122											
21.1	15.43	8.32	878	571	9.4	-89			<0.01	0.14	0.11	0.54					9.3

Depth ft.	Chlorophyll-*a* µg/L	Algal Biomass µg/L
0		
5		

Bacteriological Data (MPN)	
Total Coliform	
E. Coli	5.0

Secchi Disc (ft): 2
Air Temp (°C): 13
Weather: Overcast, Westerly wi
Wind: West 5-10mph

PR

Phytoplankton Count (>98% of total population)

Phytoplankter	1	2	3	4	Total	Natural Unit/m^3	Natural Unit/mL
Planktothrix	1242	1368	1164	1122	4896	153,000,000	153
Limnothrix	144	156	144	150	594	19,000,000	19
					Total	172,000,000	172

Sample Vol (ml): 210
Tow Vol (m^3): 0.048

Summary

Reservoir: Lake Merced - **Pump Station**
Date: April 29, 2020 **Limnologist:** RmJ, E. Wong

Limnological Profile

Depth ft.	Temp °C	pH pH units	Cond µS/cm	TDS mg/L	DO mg/L	ORP mV	TKN mg/L	Hard mg/L	NO_3-N mg/L	NH_3-N mg/L	PO_4-P mg/L	Tot P mg/L	Mn mg/L	Fe mg/L	Pb mg/L	TOC mg/L	Turb NTU
0	18.16	8.36	881	573	9.33	-30.1			<0.01	0.10	0.13	0.24					9.3
5	17.98	8.28	881	573	8.58	-37.6			<0.01	0.04	0.11	.					9.7
10	17.69	8.20	881	573	7.47	-47.9			<0.01	0.03	0.09	0.53					8.6
15	17.34	8.13	883	574	6.15	-59.6			<0.01	0.03							9.4
20	15.74	7.96	885	575	2.68	-86.8											
23	15.21	8.10	877	570	10.64	-98.6			<0.01	0.01	0.12	0.52					6.7

Depth ft.	Chlorophyll-*a* µg/L	Algal Biomass µg/L
0		
5		

Bacteriological Data (MPN)	
Total Coliform	
E. Coli	6.0

Secchi Disc (ft): 2.0
Air Temp (°C): 13.0
Weather: Overcast, Wes
Wind: West 5-10mph

PS

Phytoplankton Count (>98% of total population)

Phytoplankter	1	2	3	4	Total	Natural Unit/m^3	Natural Unit/mL
Planktothrix	1570	1460	1505	1470	6005	188,000,000	188
Limnothrix	160	150	170	150	630	20,000,000	20
					Total	208,000,000	208

Sample Vol (ml): 185
Tow Vol (m^3): 0.048

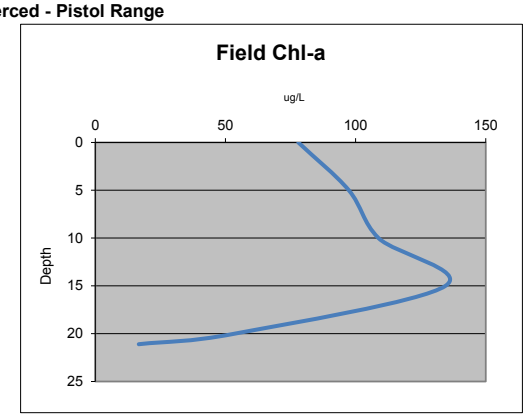
Summary

Lake Merced - Pistol Range

Depth Ft.	Chl-a ug/L*	% Sat. DO
0	78.00	82.6
5	97.40	70.9
10	108.80	62.0
15	134.50	33.5
20	53.50	36.3
21.1	16.70	94.6

***Based on** Relative Fluoresence Unit from YSI

PR

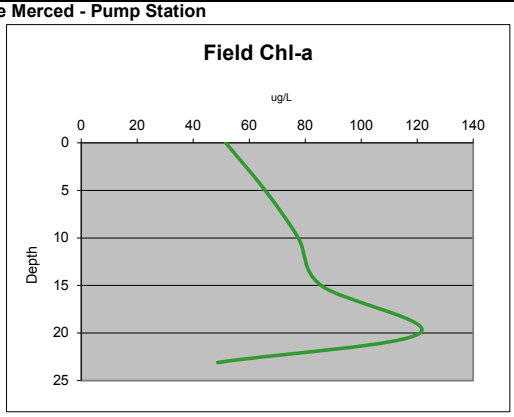


Lake Merced - Pump Station

Depth Ft.	Chl-a ug/L*	% Sat. DO
0	51.60	99.1
5	65.70	90.8
10	77.50	78.6
15	85.70	64.2
20	121.00	27.1
23.1	48.70	106.2

***Based on** Relative Fluoresence Unit from YSI

PS

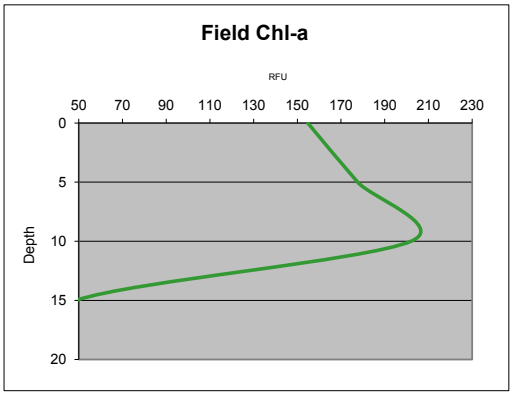


Lake Merced North

Depth Ft.	Chl-a ug/L*	% Sat. DO
0	154.80	90.4
5	177.60	62.3
10	202.00	3.6
15	48.70	8.0
20.1	40.30	19.6

***Based on** Relative Fluoresence Unit from YSI

N

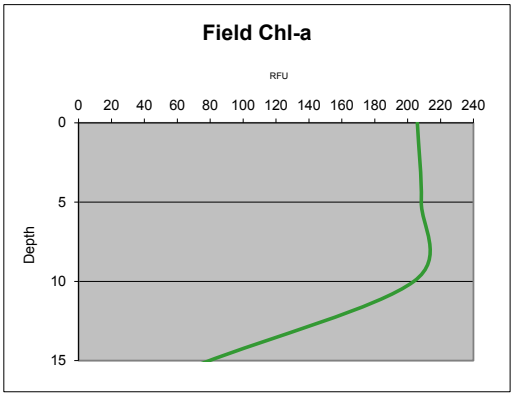


Lake Merced North East

Depth Ft.	Chl-a ug/L*	% Sat. DO mg/L
0	205.90	74.3
5	208.30	46.9
10	203.80	19.2
15.2	74.50	0.8

* **Based on R**elative Fluoresence Unit from YSI

E



San Francisco Public Utilities Commission

Land and Natural Resources - Limnology

Reservoir: Lake Merced - **North**
Date: April 29, 2020
Limnologist: RmJ, E. Wong

Limnological Profile

Depth ft.	Temp °C	pH pH units	Cond µS/cm	TDS mg/L	DO mg/L	ORP mV	TKN mg/L	Hard mg/L	NO_3-N mg/L	NH_3-N mg/L	PO_4-P mg/L	Tot P mg/L	Mn mg/L	Fe mg/L	Pb mg/L	TOC mg/L	Turb NTU
0	18.33	8.69	833	542	8.48	-82.2			<0.01	0.05	0.28	0.33					20.6
5	18.30	8.53	833	542	5.85	-120			<0.01	0.13	0.25	0.34					20.4
10	16.66	8.09	840	546	0.35	-224			<0.01	0.24	0.28						20.0
15	15.01	8.03	844	548	0.80	-257			<0.01	0.11	0.27	0.32					8.1
18.1	14.46	8.09	850	553	1.99	-252			<0.01	0.27	0.38	0.43					4.9

Depth ft.	Chlorophyll-*a* µg/L	Algal Biomass µg/L
0		
5		

Bacteriological Data (MPN)	
Total Coliform	>2420
E. Coli	12.0

Secchi Disc (ft): 1.5
Air Temp (°C): 14
Weather: Overcast, We
Wind: West 5-10mp

N

Phytoplankton Count (>98% of total population)

Phytoplankter	1	2	3	4	Total	Natural Unit/m^3	Natural Unit/mL
Planktothrix	1904	1932	1788	1866	7490	234,000,000	234
Limnothrix	144	138	90	114	486	15,000,000	15
					Total	249,000,000	249

Sample Vol (ml): 238
Tow Vol (m^3): 0.048

Summary

Reservoir: Lake Merced - **North East**
Date: April 29, 2020
Limnologist: RmJ, E. Wong

Limnological Profile

Depth ft.	Temp °C	pH pH units	Cond µS/cm	TDS mg/L	DO mg/L	ORP mV	TKN mg/L	Hard mg/L	NO_3-N mg/L	NH_3-N mg/L	PO_4-P mg/L	Tot P mg/L	Mn mg/L	Fe mg/L	Pb mg/L	TOC mg/L	Turb NTU
0	18.11	8.21	822	534	7.00	-67.9			<0.01	0.15	0.29	0.38					16.9
5	18.01	8.13	822	534	4.43	-94.7			<0.01	0.09	0.31	0.36					17.9
10	17.36	8.00	826	537	1.84	-131.4			<0.01	0.12	0.27	0.39					17.3
15.2	16.08	7.79	832	541	0.08	-227.0			<0.01	<0.01	0.35	0.39					12.6

Depth ft.	Chlorophyll-*a* µg/L	Algal Biomass µg/L
0		
5		

Bacteriological Data (MPN)	
Total Coliform	2420.0
E. Coli	16.0

Secchi Disc (ft): 1.8
Air Temp (°C): 14
Weather: Overcast, We
Wind: West 5-10mp

E

Phytoplankton Count (>98% of total population)

Phytoplankter	1	2	3	4	Total	Natural Unit/m^3	Natural Unit/mL
Planktothrix	1904	2070	2106	2052	8132	254,000,000	254
Limnothrix	126	114	90	72	402	13,000,000	13
					Total	267,000,000	267

Sample Vol (ml): 221
Tow Vol (m^3): 0.032

Summary

San Francisco Public Utilities Commission

Land and Natural Resources - Limnology

Lake Merced Annual Limnology

Reservoir: Lake Merced - South Lake (**Pistol Range)**

Date: December 8, 2020 **Limnologist:** RMJ; EW

Annual Profile

Depth ft.	Alk mg/L	Hard mg/L	Cl mg/L	Fl mg/L	MTBE µg/mL	TDS mg/L
0	268	264	100	0.18	<0.5	476
5	280	268	100			489
10.1	280	268	102			472
15.1	260	268	102			506
18.3	272	268	102			512

Reservoir: Lake Merced -South Lake (**Pump Station)**

Date: December 8, 2020 **Limnologist:** RMJ; EW

Annual Profile

Depth ft.	Alk mg/L	Hard mg/L	Cl mg/L	Fl mg/L	MTBE µg/mL	TDS mg/L
0	276	264	110	0.18	<0.5	478
5	264	268	110			515
10.1	260	276	110			500
15.2	264	268	110			488
20						
20.8	276	264	110			535

Reservoir: Lake Merced - **North**

Date: December 8, 2020 **Limnologist:** RMJ; EW

Depth ft.	Alk mg/L	Hard mg/L	Cl mg/L	Fl mg/L	MTBE µg/mL	TDS mg/L
0	260	272	94	0.11	<0.5	444
5	296	280	92			421
10.3	304	292	94			416
15.2	312	288	93			451
17.0	300	284	93			499

Reservoir: Lake Merced - **North East**

Date: December 8, 2020 **Limnologist:** RMJ; EW

Depth ft.	Alk mg/L	Hard mg/L	Cl mg/L	Fl mg/L	MTBE µg/mL	TDS mg/L
0	292	280	86	0.11	<0.5	441
5	284	276	92			418
10	276	276	89			426
14	272	276	87			462

San Francisco Public Utilities Commission

Land and Natural Resources - Limnology

Reservoir: Lake Merced - **North**
Date: December 8, 2020 **Limnologist:** RmJ, EW

Limnological Profile

Depth ft.	Temp °C	pH pH units	Sp. Cond µS/cm	TDS mg/L	DO mg/L	ORP mV	TKN mg/L	Hard mg/L	NO_3-N mg/L	NH_3-N mg/L	PO_4-P mg/L	Tot P mg/L	Mn mg/L	Fe mg/L	Pb mg/L	TOC mg/L	Turb NTU
0.2	12.82	8.41	857	557	8.02	164.5	<3.00	272	<0.01	0.20	0.33	0.50	0.16	0.043	<0.001		27.0
5.0	12.40	8.37	859	558	7.29	165	<3.00	280	<0.01	0.23	0.23	0.42					29.0
10.3	12.31	8.36	859	559	7.12	164	<3.00	292	<0.01	0.25	0.24	0.41					28.0
15.2	12.24	8.33	860	559	6.52	162	<3.00	288	<0.01	0.27	0.25	0.45					25.0
17.0	12.25	8.35	861	559	6.39	161	4.43	284	<0.01	0.30	0.27	0.42	0.23	0.090	<0.001		28.0

Depth ft.	Chlorophyll-*a* µg/L	Algal Biomass µg/L
0	47.0	3149
5	57.0	3819

Bacteriological Data (MPN)	
Total Coliform	201
E. Coli	8.0

Secchi Disc (ft): 1.0
Air Temp (°C): 17
Weather: Sunny
Wind: N. 1-3mph

N

Phytoplankton Count (>98% of total population)

Phytoplankter	1	2	3	4	Total	Natural Unit/m^3	Natural Unit/mL
Planktothrix	1080	1170	1155	1200	4605	256,973,391	256.9733906
					Total	256,973,391	256.9733906

Sample Vol (ml): 204
Tow Vol (m^3): 0.048

Summary

North Lake appears to be fully mixed - A temperature differential of 0.5 degrees Celcius separates surface from bottom waters while dissolved oxygen is above 6 mg/l throughout. Plankton community appears to be a mono-culture with Planktothryx at 257 million NU/m3 which is similar to that observed in September (236 million).

Reservoir: Lake Merced - **North East**
Date: December 8, 2020 **Limnologist:** RmJ, EW

Limnological Profile

Depth ft.	Temp °C	pH pH units	Sp. Cond µS/cm	TDS mg/L	DO mg/L	ORP mV	TKN mg/L	Hard mg/L	NO_3-N mg/L	NH_3-N mg/L	PO_4-P mg/L	Tot P mg/L	Mn mg/L	Fe mg/L	Pb mg/L	TOC mg/L	Turb NTU
0.3	11.86	8.26	813	529	8.15	131.5	3.14	280	<0.01	0.37	0.21	0.36	0.16	0.084	<0.001		27.0
5.0	11.45	8.21	814	529	7.14	131.3	<3.00	276	<0.01	0.30	0.20	0.36					27.0
10.0	11.37	8.13	814	529	4.93	133.2	3.14	276	<0.01	0.52	0.19	0.38					27.0
14.0	11.57	7.96	798	519	1.45	141.1	<3.00	276	<0.01	0.25	0.19	0.37	0.17	0.095	<0.001		27.0

Depth ft.	Chlorophyll-*a* µg/L	Algal Biomass µg/L
0	77.1	5166
5	59.6	3993

Bacteriological Data (MPN)	
Total Coliform	816.0
E. Coli	23.0

Secchi Disc (ft): 1.3
Air Temp (°C): 17
Weather: Sunny
Wind: N. 1-3 mph

E

Phytoplankton Count (>98% of total population)

Phytoplankter	1	2	3	4	Total	Natural Unit/m^3	Natural Unit/mL
Planktothrix	3590	3270	3410	3270	13540	755,574,313	755.5743125
					Total	755,574,313	755.5743125

Sample Vol (ml): 250
Tow Vol (m^3): 0.032

Summary

East lake is mostly mixed - A temperature differential of just 0.3 degrees Celcius separates surface from bottom waters and dissolved oxygen in the upper ten feet is betwwen 8-5mg/l although the bottom is still hypoxic with dissolved oxygen below 2mg/l. Plankton community appears to be a mono-culture with Planktothryx at 756 million NU/m3 which is an increase over that observed in September (611 million).

San Francisco Public Utilities Commission

Land and Natural Resources - Limnology

Reservoir: Lake Merced - **Police Range**
Date: December 8, 2020 **Limnologist:** RmJ, EW

Limnological Profile

Depth ft.	Temp °C	pH pH units	Sp. Cond µS/cm	TDS mg/L	DO mg/L	ORP mV	TKN mg/L	Hard mg/L	NO_3-N mg/L	NH_3-N mg/L	PO_4-P mg/L	Tot P mg/L	Mn mg/L	Fe mg/L	Pb mg/L	TOC mg/L	Turb NTU
0.2	12.5	8.3	879	571	8.1	152	<3.00	264	0.04	0.07	0.13	0.18	0.044	0.030	<0.001		14.0
4.9	12.4	8.3	878	571	7.9	151	<3.00	268	0.01	0.12	0.13	0.17					14.0
10.1	12.3	8.3	878	571	7.0	150	<3.00	268	0.01	0.11	0.14	0.20					14.0
15.1	12.3	8.2	879	571	6.0	150	<3.00	268	0.01	0.26	0.14	0.18					14.0
18.3	12.4	8.2	863	561	2.8	157	<3.00	268	0.01	0.09	0.10	0.21	0.052	0.052	<0.001		14.0

Depth ft.	Chlorophyll-*a* µg/L	Algal Biomass µg/L
0	16.5	1105
5	19.5	1306

Bacteriological Data (MPN)	
Total Coliform	2420
E. Coli	11.0

Secchi Disc (ft): 2
Air Temp (°C): 16
Weather: Sunny
Wind: N. 1-3 mph

PR

Sample Vol (ml): 185
Tow Vol (m^3): 0.048

Phytoplankton Count (>98% of total population)

Phytoplankter	1	2	3	4	Total	Natural Unit/m^3	Natural Unit/mL
Planktothrix	2370	2260	2520	2490	9640	537,942,125	537.942125
					Total	537,942,125	537.942125

Summary

Lake appears to be fully mixed - A temperature differential of just 0.1 degrees Celcius separates surface from bottom waters although dissolved oxygen at the bottom is still low. Plankton community appears to be a mono-culture with Planktothryx at 538 million NU/m3 which is a considerable increase over that observed in September (392 million).

Reservoir: Lake Merced - **Pump Station**
Date: December 8, 2020 **Limnologist:** RmJ, EW

Limnological Profile

Depth ft.	Temp °C	pH pH units	Sp. Cond µS/cm	TDS mg/L	DO mg/L	ORP mV	TKN mg/L	Hard mg/L	NO_3-N mg/L	NH_3-N mg/L	PO_4-P mg/L	Tot P mg/L	Mn mg/L	Fe mg/L	Pb mg/L	TOC mg/L	Turb NTU
0.2	12.4	8.4	878	571	8.20	165	<3.00	264	0.01	0.07	0.16	0.25	0.040	0.024	<0.001		15.0
5.1	12.3	8.4	878	571	7.85	163	<3.00	268	0.01	0.06	0.12	0.18					15.0
10.1	12.2	8.4	879	571	7.54	162	<3.00	276	0.01	0.02	0.12	0.19					14.0
15.2	12.2	8.4	879	571	7.32	159	<3.00	268	0.01	0.16	0.10	0.17					15.0
20.8	12.3	8.4	870	565	5.68	156	<3.00	264	0.01	0.03	0.13	0.20	0.040	0.027	<0.001		15.0

Depth ft.	Chlorophyll-*a* µg/L	Algal Biomass µg/L
0	27.5	1842
5	28.2	1889

Bacteriological Data (MPN)	
Total Coliform	2420
E. Coli	27.0

Secchi Disc (ft): 1.8
Air Temp (°C): 16.0
Weather: Sunny
Wind: N. 1-3mph

PS

Sample Vol (ml): 222
Tow Vol (m^3): 0.048

Phytoplankton Count (>98% of total population)

Phytoplankter	1	2	3	4	Total	Natural Unit/m^3	Natural Unit/mL
Planktothrix	2720	2880	2850	2770	11220	626,111,063	626.111063
					Total	626,111,063	626.111063

Summary

Lake appears to be fully mixed - A temperature differential of just 0.1 degrees Celcius separates surface from bottom waters with dissolved oxygen greater than 5mg/l throughout. Plankton community appears to be a mono-culture with Planktothryx at 626 million NU/m3 which is a considerable increase over that observed in September (350 million).

KorEXO MEASUREMENT DATA FILE EXPORT 1 6 7 4 5 3 2

FILE CREATED: 12/10/2020 22:35

Date (MM/DD/YYYY)	Time (HH:mm:ss)	Site Name	Chlorophyll RFU	Chlorophyll ug/L	Depth ft	ODO % sat	ODO mg/L	ORP mV	SpCond µS/cm	BGA PC RFU	BGA PC ug/L	TDS mg/L	pH	pH mV	Temp °C
12/8/2020	10:08:54	***lake merced s***	0.64	26.81	0.193	77	8.2	165	878.3	4.06	4.06	571	8.4	-76	12.388
12/8/2020	10:08:17	***lake merced s***	0.76	30.67	5.079	73.5	7.85	163.4	878.3	6.24	6.24	571	8.37	-74.8	12.279
12/8/2020	10:07:45	***lake merced s***	0.85	33.45	10.141	70.5	7.54	161.9	878.6	5.68	5.68	571	8.35	-74.1	12.228
12/8/2020	10:07:05	***lake merced s***	0.9	35.01	15.241	68.4	7.32	159.3	878.6	5.64	5.64	571	8.37	-74.6	12.213
12/8/2020	10:06:12	***lake merced s***	2.18	74.94	20.752	53.2	5.68	156.3	869.9	4.46	4.46	565	8.39	-75.5	12.286

Date (MM/DD/YYYY)	Time (HH:mm:ss)	Site Name	Chlorophyll RFU	Chlorophyll ug/L	Depth ft	ODO % sat	ODO mg/L	ORP mV	SpCond µS/cm	BGA PC RFU	BGA PC ug/L	TDS mg/L	pH	pH mV	Temp °C
12/8/2020	10:44:35	***lake merced r***	0.59	25.06	0.175	76.5	8.13	152.1	878.7	4.21	4.21	571	8.33	-73.1	12.513
12/8/2020	10:44:12	***lake merced r***	0.74	29.88	4.867	74.5	7.94	150.9	878.4	6.27	6.27	571	8.32	-72.9	12.404
12/8/2020	10:43:28	***lake merced r***	0.78	31.14	10.066	66	7.04	149.5	878.3	5.58	5.58	571	8.28	-71.2	12.3
12/8/2020	10:43:03	***lake merced r***	1.22	44.95	15.106	55.9	5.97	150	878.8	5.44	5.44	571	8.21	-68.2	12.272
12/8/2020	10:42:38	***lake merced r***	1.62	57.59	18.311	26.1	2.78	156.5	862.5	0.88	0.88	561	8.18	-66.9	12.402

Date (MM/DD/YYYY)	Time (HH:mm:ss)	Site Name	Chlorophyll RFU	Chlorophyll ug/L	Depth ft	ODO % sat	ODO mg/L	ORP mV	SpCond µS/cm	BGA PC RFU	BGA PC ug/L	TDS mg/L	pH	pH mV	Temp °C
12/8/2020	13:28:15	***lake merced E***	3.34	111.57	0.257	75.6	8.15	131.5	813.3	13.78	13.78	529	8.26	-70	11.856
12/8/2020	13:27:41	***lake merced E***	3.75	124.38	5.02	65.6	7.14	131.3	813.8	16.48	16.48	529	8.21	-67.9	11.449
12/8/2020	13:27:00	***lake merced E***	2.78	93.85	10.039	45.2	4.93	133.2	814.2	13.21	13.21	529	8.13	-64.9	11.371
12/8/2020	13:26:38	***lake merced E***	0.26	14.8	14.024	13.4	1.45	141.1	798.4	-0.99	-0.99	519	7.96	-57.8	11.572

Date (MM/DD/YYYY)	Time (HH:mm:ss)	Site Name	Chlorophyll RFU	Chlorophyll ug/L	Depth ft	ODO % sat	ODO mg/L	ORP mV	SpCond µS/cm	BGA PC RFU	BGA PC ug/L	TDS mg/L	pH	pH mV	Temp °C
12/8/2020	14:11:30	***lake merced N***	2.77	93.47	0.177	76	8.02	164.5	857.2	18.41	18.41	557	8.41	-76.7	12.824
12/8/2020	14:11:08	***lake merced N***	2.4	81.99	5.003	68.5	7.29	164.8	858.9	17.61	17.61	558	8.37	-75	12.399
12/8/2020	14:10:35	***lake merced N***	2.05	71.02	10.309	66.8	7.12	164.3	859.3	16.64	16.64	559	8.36	-74.6	12.314
12/8/2020	14:08:44	***lake merced N***	1.98	68.67	15.159	61	6.52	162.1	860	16.54	16.54	559	8.33	-73.3	12.24
12/8/2020	14:08:05	***lake merced N***	2.12	73.02	16.992	59.8	6.39	161.4	860.5	14.26	14.26	559	8.35	-74.1	12.247

Reservoir: East Lake
Sample Vol (ml): 250
Tow Vol (m^3): 0.032

15' Tow = 0.048 m^3
10' Tow = 0.032 m^3

Plankton Count - Dominant Species (>98% of total population)

Organism	1	2	3	4	Total	No./m^3	No./mL
Planktothrix	3590	3270	3410	3270	13540	755,574,313	755.5743125

Reservoir: North Lake
Sample Vol (ml): 204
Tow Vol (m^3): 0.048

15' Tow = 0.048 m^3
10' Tow = 0.032 m^3

Plankton Count - Dominant Species (>98% of total population)

Organism	1	2	3	4	Total	No./m^3	No./mL
Planktothrix	1080	1170	1155	1200	4605	256,973,391	256.9733906

Reservoir: Police Range
Sample Vol (ml): 185
Tow Vol (m^3): 0.048

15' Tow = 0.048 m^3
10' Tow = 0.032 m^3

Plankton Count - Dominant Species (>98% of total population)

Organism	1	2	3	4	Total	No./m^3	No./mL
Planktothrix	2370	2260	2520	2490	9640	537,942,125	537.942125

Reservoir: Pump Station
Sample Vol (ml): 222
Tow Vol (m^3): 0.048

15' Tow = 0.048 m^3
10' Tow = 0.032 m^3

Plankton Count - Dominant Species (>98% of total population)

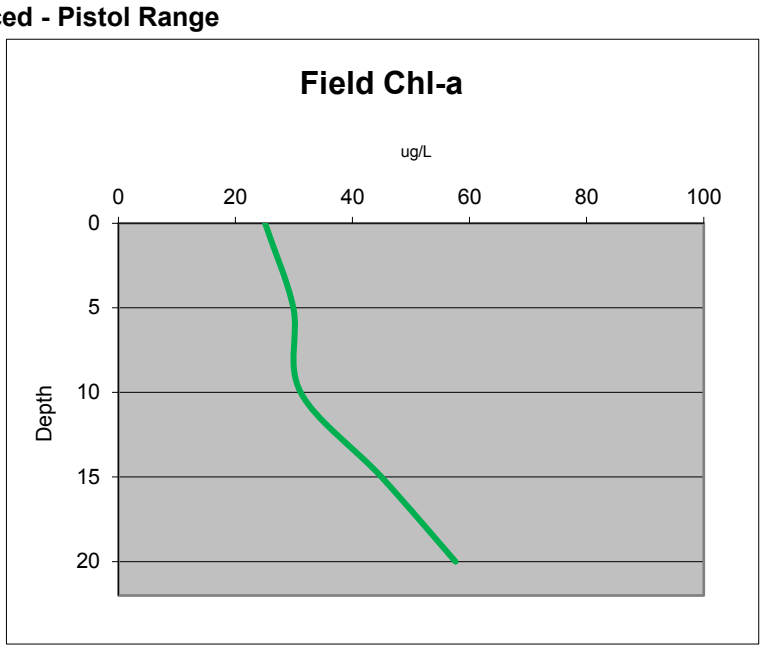
Organism	1	2	3	4	Total	No./m^3	No./mL
Planktothrix	2720	2880	2850	2770	11220	626,111,063	626.1110625

Lake Merced - Pistol Range

Depth Ft.	Chl-a ug/L*	% Sat. DO
0	25.06	
5	29.88	
10	31.14	
15	44.95	
20	57.59	

***Based on** Relative Fluoresence Unit from YSI

PR

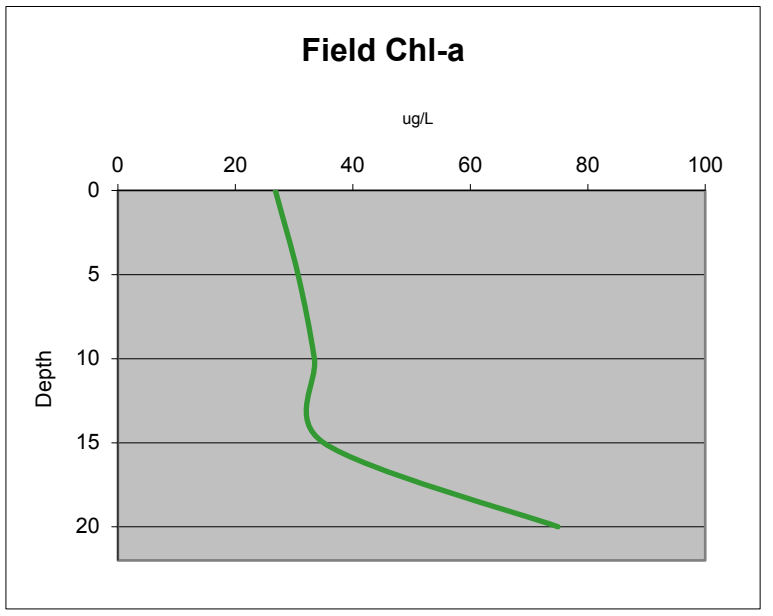


Lake Merced - Pump Station

Depth Ft.	Chl-a ug/L*	% Sat. DO
0	26.81	
5	30.67	
10	33.45	
15	35.01	
20	74.94	

***Based on** Relative Fluoresence Unit from YSI

PS

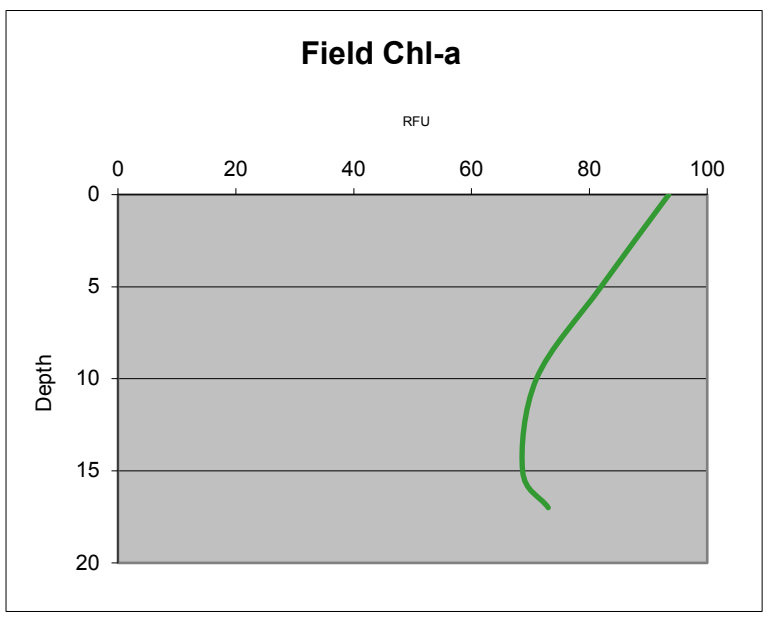


Lake Merced North

Depth Ft.	Chl-a ug/L*	% Sat. DO
0	93.47	
5	81.99	
10	71.02	
15	68.67	
17	73.02	

***Based on** Relative Fluoresence Unit from YSI

N

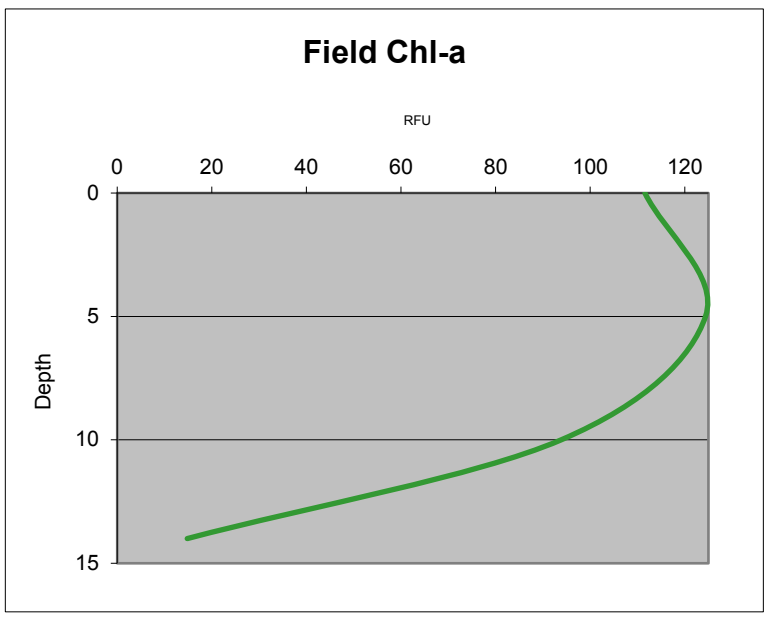


Lake Merced North East

Depth Ft.	Chl-a ug/L*	% Sat. DO mg/L
0	111.57	
5	124.38	
10	93.85	
14	14.80	

***Based on R**elative Fluoresence Unit from YSI

E



San Francisco Public Utilities Commission

Land and Natural Resources - Limnology

Reservoir: Lake Merced - **Police Range**
Date: May 12, 2020 **Limnologist:** RmJ, E. Wong

Limnological Profile

Depth ft.	Temp °C	pH pH units	Cond µS/cm	TDS mg/L	DO mg/L	ORP mV	TKN mg/L	Hard mg/L	NO_3-N mg/L	NH_3-N mg/L	PO_4-P mg/L	Tot P mg/L	Mn mg/L	Fe mg/L	Pb mg/L	TOC mg/L	Turb NTU
0	18.32	8.66	817	549	8.7	77											10.1
5	18.14	8.63	814	548	8.3	65											
10	18.09	8.62	813	548	8.2	60											
15	18.05	8.55	813	549	7.5	29											
20.2	17.61	7.96	798	544	1.9	-30											

Depth ft.	Chlorophyll-*a* µg/L	Algal Biomass µg/L
0	22.6	1514
5		

Bacteriological Data (MPN)	
Total Coliform	
E. Coli	

Secchi Disc (ft): 2.0'
Air Temp (°C):
Weather: Partly sunny
Wind: slight, SW

PR

Phytoplankton Count (>98% of total population)

Phytoplankter	1	2	3	4	Total	Natural Unit/m^3	Natural Unit/mL
Planktothrix							
Limnothrix							
					Total	0	0

Sample Vol (ml):
Tow Vol (m^3):

Summary

Reservoir: Lake Merced - **Pump Station**
Date: May 12, 2020 **Limnologist:** RmJ, E. Wong

Limnological Profile

Depth ft.	Temp °C	pH pH units	Cond µS/cm	TDS mg/L	DO mg/L	ORP mV	TKN mg/L	Hard mg/L	NO_3-N mg/L	NH_3-N mg/L	PO_4-P mg/L	Tot P mg/L	Mn mg/L	Fe mg/L	Pb mg/L	TOC mg/L	Turb NTU
0	18.20	8.62	815	549	8.30	84.5											10.8
5	18.14	8.61	814	548	8.20	78.7											
10	18.11	8.60	813	549	8.01	70.3											
15	18.02	8.55	812	548	7.50	63.7											
20	17.83	8.43	809	549	6.36	43.0											
22	17.56	8.06	807	550	2.32	36.2											

Depth ft.	Chlorophyll-*a* µg/L	Algal Biomass µg/L
0	21.4	1434
5		

Bacteriological Data (MPN)	
Total Coliform	
E. Coli	

Secchi Disc (ft): 2.0'
Air Temp (°C):
Weather: Overcast, mild
Wind: Slight, SW

PS

Phytoplankton Count (>98% of total population)

Phytoplankter	1	2	3	4	Total	Natural Unit/m^3	Natural Unit/mL
Planktothrix							
Limnothrix							
					Total	0	0

Sample Vol (ml):
Tow Vol (m^3):

Summary

San Francisco Public Utilities Commission

Land and Natural Resources - Limnology

Reservoir: Lake Merced - **North**
Date: May 12, 2020
Limnologist: RmJ, E. Wong

Limnological Profile

Depth ft.	Temp °C	pH pH units	Cond µS/cm	TDS mg/L	DO mg/L	ORP mV	TKN mg/L	Hard mg/L	NO_3-N mg/L	NH_3-N mg/L	PO_4-P mg/L	Tot P mg/L	Mn mg/L	Fe mg/L	Pb mg/L	TOC mg/L	Turb NTU
0	19.12	8.78	787	520	7.94	26.9											19.2
5	18.50	8.74	776	519	7.41	10											
10	18.37	8.69	775	520	6.75	-16											
15	16.39	7.89	747	522	0.37	-141											
19.5	15.00	7.70	746	536	0.45	-132											

Depth ft.	Chlorophyll-*a* µg/L	Algal Biomass µg/L
0	46.3	3105
5		

Bacteriological Data (MPN)	
Total Coliform	
E. Coli	

Secchi Disc (ft): 1.5'
Air Temp (°C):
Weather: Mostly sunny
Wind:

N

Sample Vol (ml):
Tow Vol (m^3):

Phytoplankton Count (>98% of total population)

Phytoplankter	1	2	3	4	Total	Natural Unit/m^3	Natural Unit/mL
Planktothrix							
Limnothrix							
					Total	0	0

Summary

Reservoir: Lake Merced - **North East**
Date: May 12, 2020
Limnologist: RmJ, E. Wong

Limnological Profile

Depth ft.	Temp °C	pH pH units	Cond µS/cm	TDS mg/L	DO mg/L	ORP mV	TKN mg/L	Hard mg/L	NO_3-N mg/L	NH_3-N mg/L	PO_4-P mg/L	Tot P mg/L	Mn mg/L	Fe mg/L	Pb mg/L	TOC mg/L	Turb NTU
0	19.23	8.48	776	512	7.71	55.9											18.1
5	18.64	8.44	767	512	7.07	41.6											
10	18.30	7.99	764	513	2.26	-69.4											
14	18.04	7.81	765	516	0.63	-124.5											

Depth ft.	Chlorophyll-*a* µg/L	Algal Biomass µg/L
0	45.1	3025
5		

Bacteriological Data (MPN)	
Total Coliform	
E. Coli	

Secchi Disc (ft): 1.5'
Air Temp (°C):
Weather: Mostly sunny
Wind:

E

Sample Vol (ml):
Tow Vol (m^3):

Phytoplankton Count (>98% of total population)

Phytoplankter	1	2	3	4	Total	Natural Unit/m^3	Natural Unit/mL
Planktothrix							
Limnothrix							
					Total	0	0

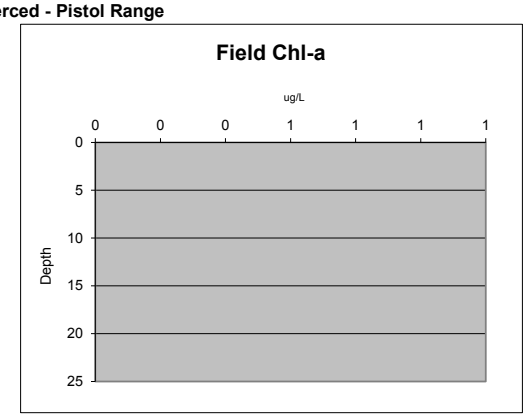
Summary

Lake Merced - Pistol Range

Depth Ft.	Chl-a ug/L*	% Sat. DO
0		92.5
5		88.1
10		86.7
15		78.9
20.2		19.9

***Based on** Relative Fluoresence Unit from YSI

PR

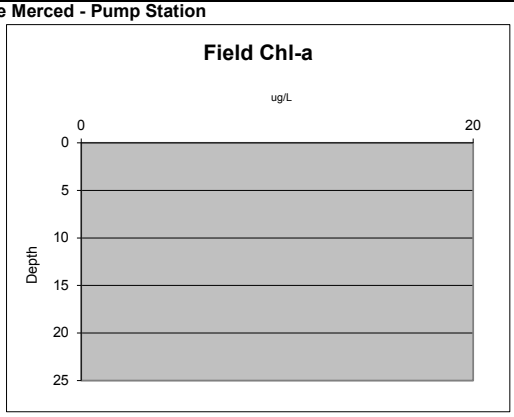


Lake Merced - Pump Station

Depth Ft.	Chl-a ug/L*	% Sat. DO
0		88.2
5		87.1
10		85.0
15		79.5
20		67.2
22		24.4

***Based on** Relative Fluoresence Unit from YSI

PS

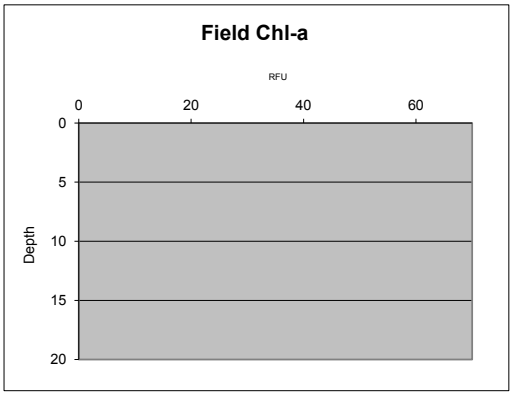


Lake Merced North

Depth Ft.	Chl-a ug/L*	% Sat. DO
0		86.0
5		79.3
10		72.0
15		3.8
19.5		4.5

***Based on** Relative Fluoresence Unit from YSI

N

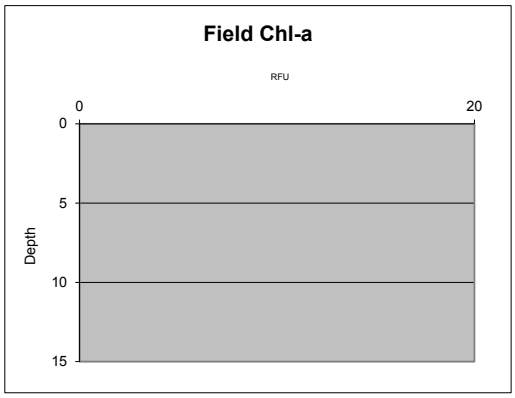


Lake Merced North East

Depth Ft.	Chl-a ug/L*	% Sat. DO mg/L
0		83.7
5		75.9
10		24.1
14		6.6

* **Based on R**elative Fluoresence Unit from YSI

E



San Francisco Public Utilities Commission

Land and Natural Resources - Limnology

Reservoir: Lake Merced - **North**
Date: September 29, 2020
Limnologist: RmJ, JJ

Limnological Profile

Depth ft.	Temp °C	pH pH units	Cond µS/cm	TDS mg/L	DO mg/L	ORP mV	TKN mg/L	Hard mg/L	NO_3-N mg/L	NH_3-N mg/L	PO_4-P mg/L	Tot P mg/L	Mn mg/L	Fe mg/L	Pb mg/L	TOC mg/L	Turb NTU
0	20.71	9.25	858	550	10.60	-51.5	3.79	276	<0.01	0.23	0.33	0.52	0.05	0.01	<0.01		38.0
5	20.62	9.17	857	550	9.50	-78	3.65	284	<0.01	0.25	0.30	0.57					48.0
10	19.29	8.43	854	563	0.44	-109	3.62	284	<0.01	0.46	0.36	0.47					12.0
15	18.33	8.12	848	569	0.57	-88		268	<0.01	0.80	0.43	0.54					10.0
20.1	18.27	8.02	852	572	0.76	-73		272	<0.01	1.20	0.50	0.59	1.00	0.05	<0.01		12.0

Depth ft.	Chlorophyll-*a* µg/L	Algal Biomass µg/L
0	73.0	4891
5	106.0	7102

Bacteriological Data (MPN)	
Total Coliform	>2420
E. Coli	13.0

Secchi Disc (ft): 0.8
Air Temp (°C): 15
Weather: Foggy, cool
Wind: N/A

N

Phytoplankton Count (>98% of total population)

Phytoplankter	1	2	3	4	Total	Natural Unit/m^3	Natural Unit/mL
Planktothrix	5075	5850	5950	6075	22950	234,000,000	234
Dolichospermum	25	0	0	50	75	2,455,338	2.4553375
Asterionella	0	0	0	25	25	818,446	0.818445833
					Total	236,455,338	236.4553375

Sample Vol (ml): 220
Tow Vol (m^3): 0.048

Summary

Reservoir: Lake Merced - **North East**
Date: September 29, 2020
Limnologist: RmJ, JJ

Limnological Profile

Depth ft.	Temp °C	pH pH units	Cond µS/cm	TDS mg/L	DO mg/L	ORP mV	TKN mg/L	Hard mg/L	NO_3-N mg/L	NH_3-N mg/L	PO_4-P mg/L	Tot P mg/L	Mn mg/L	Fe mg/L	Pb mg/L	TOC mg/L	Turb NTU
0	20.44	8.99	845	545	8.80	-82.5	3.26	284	<0.01	0.20	0.42	0.50	0.06	0.03	<0.01		36.0
5	20.33	8.82	845	546	7.37	-107.6	7.21	276	<0.01	0.10	0.43	0.49					36.0
10	19.30	7.87	844	556	0.30	-143.7	<3.00	280	<0.01	0.40	0.48	0.55					13.0
15.2	18.57	7.48	849	568	0.31	-131.7	3.29	268	<0.01	1.50	0.71	0.73	1.20	0.10	<0.01		12.0

Depth ft.	Chlorophyll-*a* µg/L	Algal Biomass µg/L
0	70.0	4690
5	57.5	3852

Bacteriological Data (MPN)	
Total Coliform	1986.0
E. Coli	7.0

Secchi Disc (ft): 1.0
Air Temp (°C): 15
Weather: Foggy, cool
Wind: N/A

E

Phytoplankton Count (>98% of total population)

Phytoplankter	1	2	3	4	Total	Natural Unit/m^3	Natural Unit/mL
Planktothrix	3900	4650	4475	5625	18650	610,560,592	610.5605917
Asterionella	0	0	25	0	25	818,446	0.818445833
					Total	611,379,038	611

Sample Vol (ml): 220
Tow Vol (m^3): 0.032

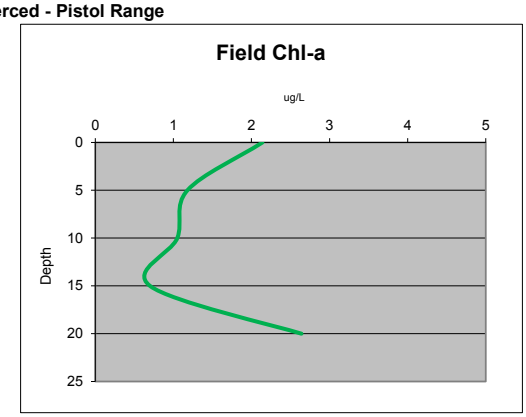
Summary

Lake Merced - Pistol Range

Depth Ft.	Chl-a ug/L*	% Sat. DO
0	2.14	114.6
5	1.18	92.8
10	1.05	44.7
15	0.70	5.9
20	2.64	6.9

***Based on** Relative Fluoresence Unit from YSI

PR

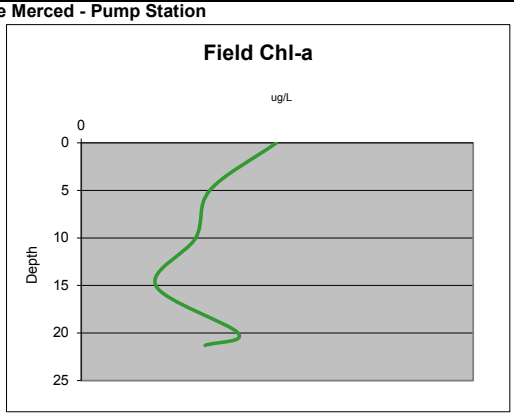


Lake Merced - Pump Station

Depth Ft.	Chl-a ug/L*	% Sat. DO
0	2.49	117.4
5	1.64	100.2
10	1.46	58.4
15	0.95	15.5
20	2	5.9
21.3	1.58	6.6

***Based on** Relative Fluoresence Unit from YSI

PS

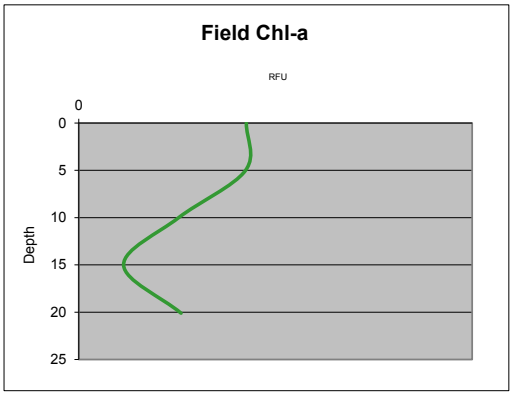


Lake Merced North

Depth Ft.	Chl-a ug/L*	% Sat. DO
0	2.13	118.5
5	2.12	106.0
10	1.27	4.8
15	0.57	6.1
20.1	1.30	8.1

***Based on** Relative Fluoresence Unit from YSI

N

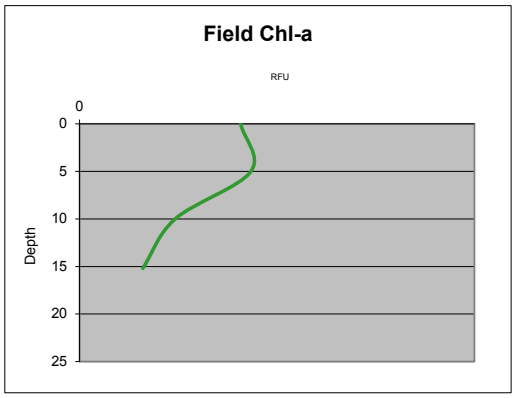


Lake Merced North East

Depth Ft.	Chl-a ug/L*	% Sat. DO mg/L
0	2.04	97.9
5	2.17	81.8
10	1.21	3.3
15.2	0.80	3.4

* **Based on R**elative Fluoresence Unit from YSI

E



San Francisco Public Utilities Commission

Land and Natural Resources - Limnology

Reservoir: Lake Merced - **Police Range**
Date: September 29, 2020 **Limnologist:** RmJ, JJ

Limnological Profile

Depth ft.	Temp °C	pH pH units	Cond µS/cm	TDS mg/L	DO mg/L	ORP mV	TKN mg/L	Hard mg/L	NO_3-N mg/L	NH_3-N mg/L	PO_4-P mg/L	Tot P mg/L	Mn mg/L	Fe mg/L	Pb mg/L	TOC mg/L	Turb NTU
0	20.39	8.86	893	576	10.3	92		264	0.01	0.06	0.14	0.17	0.07	0.01	<0.01		18.0
5	20.24	8.73	893	578	8.4	59		256	<0.01	0.11	0.12	0.17					15.0
10	19.78	8.29	889	580	4.1	3		264	0.01	0.14	0.12	0.17					15.0
15	19.25	7.98	884	583	0.5	-46		264	<0.01	0.31	0.15	0.16					15.0
21.1	19.11	8.01	887	587	0.6	-43		264	<0.01	0.19	0.18	0.22	0.48	0.02	<0.01		14.0

Depth ft.	Chlorophyll-*a* µg/L	Algal Biomass µg/L
0	47.3	3169
5	31.0	2077

Bacteriological Data (MPN)	
Total Coliform	>2420
E. Coli	13.0

Secchi Disc (ft): 1.5
Air Temp (°C): 14
Weather: Foggy, cool.
Wind: NW 1-3mph

PR

Phytoplankton Count (>98% of total population)

Phytoplankter	1	2	3	4	Total	Natural Unit/m^3	Natural Unit/mL
Planktothrix	2300	3375	2800	3250	11725	383,851,096	383.851096
Limnothrix	75	25	50	100	250	8,184,458	8.18445833
					Total	392,035,554	392.04

Sample Vol (ml): 220
Tow Vol (m^3): 0.048

Summary

Reservoir: Lake Merced - **Pump Station**
Date: September 29, 2020 **Limnologist:** RmJ, JJ

Limnological Profile

Depth ft.	Temp °C	pH pH units	Cond µS/cm	TDS mg/L	DO mg/L	ORP mV	TKN mg/L	Hard mg/L	NO_3-N mg/L	NH_3-N mg/L	PO_4-P mg/L	Tot P mg/L	Mn mg/L	Fe mg/L	Pb mg/L	TOC mg/L	Turb NTU
0	20.89	8.80	903	577	10.46	128.0		264	0.01	0.09	0.11	0.17	0.08	0.01	<0.01		16.0
5	20.65	8.70	900	578	8.97	98.8		268	<0.01	0.08	0.11	0.16					16.0
10	20.33	8.34	899	581	5.26	40.6		260	<0.01	0.06	0.11	0.20					17.0
15	19.46	7.96	887	582	1.42	-32.4		260	<0.01	0.20	0.13	0.18					13.0
20	19.27	7.88	885	583	0.54	-71.2											
23.1	19.03	7.75	896	593	0.61	-80.8		260	<0.01	0.07	0.20	0.20	0.41	0.01	<0.01		14.0

Depth ft.	Chlorophyll-*a* µg/L	Algal Biomass µg/L
0	42.3	2837
5	29.8	1997

Bacteriological Data (MPN)	
Total Coliform	>2420
E. Coli	14.0

Secchi Disc (ft): 1.8
Air Temp (°C): 14.0
Weather: Foggy, cool
Wind: NW 1-3mph

PS

Phytoplankton Count (>98% of total population)

Phytoplankter	1	2	3	4	Total	Natural Unit/m^3	Natural Unit/mL
Planktothrix	2850	2800	2650	2050	10350	338,836,575	338.836575
Dolichospermum	125	100	50	75	350	11,458,242	11.4582417
					Total	350,294,817	350.3

Sample Vol (ml): 220
Tow Vol (m^3): 0.048

Summary

eurofins | Eaton Analytical

750 Royal Oaks Drive, Suite 100
Monrovia, California 91016-3629
Tel: (626) 386-1100
Fax: (866) 988-3757
1 800 566 LABS (1 800 566 5227)

ACCREDITED
CERTIFICATE #'s 5890.01 & 5890.02

Laboratory Report

for

San Francisco PUC
1000 El Camino Real
Millbrae, CA 94030
Attention: Megan Tran

REPORT REVISED,
replaces the original report.

NELAP ACCREDITED TNI LABORATORY
Utah ELCP CA00006

Date of Issue
05/27/2020
Monica Van Natta
EUROFINS EATON ANALYTICAL, LLC

UMVN: Monica Van Natta
Project Manager

Report: 870843
Project: 470440-DW1
Group: Lake Merced - Microcystins

* Accredited in accordance with TNI 2016 and ISO/IEC 17025:2017.
* Laboratory certifies that the test results meet all **TNI 2016 and ISO/IEC 17025:2017** requirements unless noted under the individual analysis.
* Following the cover page are State Certification List, ISO 17025 Accredited Method List, Acknowledgement of Samples Received, Comments, Hits Report,
Data Report, QC Summary, QC Report and Regulatory Forms, as applicable.
* Test results relate only to the sample(s) tested.
* Test results apply to the sample(s) as received, unless otherwise noted in the comments report (ISO/IEC 17025:2017).

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STATE CERTIFICATION LIST

State	Certification Number	State	Certification Number
Alabama	41060	**Montana**	Cert 0035
Arizona	AZ0778	**Nebraska**	Certified
Arkansas	Certified	**Nevada**	CA000062018
California	2813	**New Hampshire ***	2959
Colorado	Certified	**New Jersey ***	CA 008
Connecticut	PH-0107	**New Mexico**	Certified
Delaware	CA 006	**New York ***	11320
Florida *	E871024	**North Carolina**	06701
Georgia	947	**North Dakota**	R-009
Guam	18-005R	**Oregon ***	CA200003-005
Hawaii	Certified	**Pennsylvania ***	68-565
Idaho	Certified	**Puerto Rico**	Certified
Illinois *	200033	**Rhode Island**	LAO00326
Indiana	C-CA-01	**South Carolina**	87016
Iowa - Asbestos	413	**South Dakota**	Certified
Kansas *	E-10268	**Tennessee**	TN02839
Kentucky	90107	**Texas ***	T104704230-18-15
Louisiana *	LA180000	**Utah (Primary AB) ***	CA00006
Maine	CA0006	**Vermont**	VT0114
Maryland	224	**Virginia ***	460260
Commonwealth of Northern Marianas Is.	MP0004	**Washington**	C838
Massachusetts	M-CA006	**EPA Region 5**	Certified
Michigan	9906	**Los Angeles County Sanitation Districts**	10264
Mississippi	Certified		

* NELAP/TNI Recognized Accreditation Bodies

Eurofins Eaton Analytical, LLC
750 Royal Oaks Drive, Suite 100
Monrovia, CA 91016-3629
T | 626-386-1100
F | 866-988-3757
www.EurofinsUS.com/Eaton

The tests listed below are accredited and meet the requirements of ISO/IEC 17025 as verified by the ANSI-ASQ National Accreditation Board/A2LA.
Refer to Certificate and scope of accreditation (5890) found at: https://www.eurofinsus.com/Eaton

SPECIFIC TESTS	METHOD OR TECHNIQUE USED	Environ-mental (Drinking Water)	Environ-mental (Waste Water)	Water as a Component of Food and Bev/Bev/ Bottled Water
1,2,3-TCP (5 PPT & 0.5 PPT)	CA SRL 524M-TCP	x		x
1,4-Dioxane	EPA 522	x		x
2,3,7,8-TCDD	Modified EPA 1613B	x		x
Acrylamide	In House Method (2440)	x		x
Algal Toxins/Microcystin	In House Method (3570)			
Alkalinity	SM 2320B	x	x	x
Ammonia	EPA 350.1		x	x
Ammonia	SM 4500-NH3 H		x	x
Anions and DBPs by IC	EPA 300.0	x	x	x
Anions and DBPs by IC	EPA 300.1	x		x
Asbestos	EPA 100.2	x	x	
BOD / CBOD	SM 5210B		x	x
Bromate	In House Method (2447)	x		x
Carbamates	EPA 531.2	x		x
Carbonate as CO3	SM 2330B	x	x	x
Carbonyls	EPA 556	x		x
COD	EPA 410.4 / SM 5220D		x	
Chloramines	SM 4500-CL G	x	x	x
Chlorinated Acids	EPA 515.4	x		x
Chlorinated Acids	EPA 555	x		x
Chlorine Dioxide	SM 4500-CLO2 D Palin Test	x		x
Chlorine -Total/Free/ Combined Residual	SM 4500-Cl G	x	x	x
Conductivity	EPA 120.1		x	
Conductivity	SM 2510B	x	x	x
Corrosivity (Langelier Index)	SM 2330B	x		x
Cyanide, Amenable	SM 4500-CN G	x	x	
Cyanide, Free	SM 4500CN F	x	x	x
Cyanide, Total	EPA 335.4	x	x	x
Cyanogen Chloride (screen)	In House Method (2470)	x		x
Diquat and Paraquat	EPA 549.2	x		x
DBP/HAA	SM 6251B	x		x
Dissolved Oxygen	SM 4500-O G		x	x
DOC	SM 5310C	x		x
E. Coli	(MTF/EC+MUG)	x		x
E. Coli	CFR 141.21(f)(6)(i)	x		x
E. Coli	SM 9223		x	
E. Coli (Enumeration)	SM 9221B.1/ SM 9221F	x		x
E. Coli (Enumeration)	SM 9223B	x		x
EDB/DCBP	EPA 504.1	x		
EDB/DBCP and DBP	EPA 551.1	x		x
EDTA and NTA	In House Method (2454)	x		x
Endothall	EPA 548.1	x		x
Endothall	In-house Method (2445)	x		x
Enterococci	SM 9230B	x	x	
Fecal Coliform	SM 9221 E (MTF/EC)	x		
Fecal Coliform	SM 9221C, E (MTF/EC)		x	
Fecal Coliform (Enumeration)	SM 9221E (MTF/EC)	x		x
Fecal Coliform with Chlorine Present	SM 9221E		x	
Fecal Streptococci	SM 9230B	x	x	
Fluoride	SM 4500-F C	x	x	x
Glyphosate	EPA 547	x		x
Glyphosate + AMPA	In House Method (3618)	x		x
Gross Alpha/Beta	EPA 900.0	x	x	x
Gross Alpha Coprecipitation	SM 7110 C	x	x	x
Hardness	SM 2340B	x	x	x
Heterotrophic Bacteria	In House Method (2439)	x		x
Heterotrophic Bacteria	SM 9215 B	x		x
Hexavalent Chromium	EPA 218.6	x	x	x
Hexavalent Chromium	EPA 218.7	x		x
Hexavalent Chromium	SM 3500-Cr B		x	
Hormones	EPA 539	x		x
Hydroxide as OH Calc.	SM 2330B	x		x
Kjeldahl Nitrogen	EPA 351.2		x	
Legionella	Legiolert	x		x
Mercury	EPA 200.8	x		x
Metals	EPA 200.7 / 200.8	x	x	x
Microcystin LR	ELISA (2360)	x		x
Microcystin, Total	EPA 546	x		x
NDMA	EEA/Agilent 521.1 In house method (2425)	x		x
Nitrate/Nitrite Nitrogen	EPA 353.2	x	x	x
OCL, Pesticides/PCB	EPA 505	x		x
Ortho Phosphate	EPA 365.1	x	x	x
Ortho Phosphorous	SM 4500P E	x		x
Oxyhalides Disinfection Byproducts	EPA 317.0	x		x
Perchlorate	EPA 331.0	x		x
Perchlorate (low and high)	EPA 314.0	x		x
Perfluorinated Alkyl Acids	EPA 537	x		x
Perfluorinated Polutant	In house Method (2434)	x		x
pH	EPA 150.1	x		
pH	SM 4500-H+B	x	x	x
Phenylurea Pesticides/ Herbicides	In House Method, based on EPA 532 (2448)	x		x
Pseudomonas	IDEXX Pseudalert (2461)	x		x
Radium-226	GA Institute of Tech	x		x
Radium-228	GA Institute of Tech	x		x
Radon-222	SM 7500RN	x		x
Residue, Filterable	SM 2540C	x	x	x
Residue, Non-filterable	SM 2540D		x	
Residue, Total	SM 2540B		x	x
Residue, Volatile	EPA 160.4		x	
Semi-VOC	EPA 525.2	x		x
Silica	SM 4500-Si D	x	x	
Silica	SM 4500-SiO2 C	x	x	
Sulfide	SM 4500-$S^{=}$ D		x	
Sulfite	SM 4500-SO^{3}B	x	x	x
Surfactants	SM 5540C	x	x	x
Taste and Odor Analytes	SM 6040E	x		x
Total Coliform (P/A)	SM 9221 A, B	x		x
Total Coliform (Enumeration)	SM 9221 A, B, C	x		x
Total Coliform / E. coli	Colisure SM 9223	x		x
Total Coliform	SM 9221B		x	
Total Coliform with Chlorine Present	SM 9221B		x	
Total Coliform / E.coli (P/A and Enumeration)	SM 9223	x		x
TOC	SM 5310C	x	x	x
TOX	SM 5320B		x	
Total Phenols	EPA 420.1		x	
Total Phenols	EPA 420.4	x	x	x
Total Phosphorous	SM 4500 P E		x	
Triazine Pesticides & Degradates	In House (3617)	x		x
Turbidity	EPA 180.1	x	x	x
Turbidity	SM 2130B	x	x	
Uranium by ICP/MS	EPA 200.8	x		x
UV 254	SM 5910B	x		
VOC	EPA 524.2	x		x
VOC	In House Method (2411)	x		x
Yeast and Mold	SM 9610	x		x
Field Sampling	N/A			

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Acknowledgement of Samples Received

Addr: **San Francisco PUC**
1000 El Camino Real
Millbrae, CA 94030

Attn: Megan Tran
Phone: 650-872-5945

Client ID: SANFRAN
Folder #: 870843
Project: 470440-DW1
Sample Group: Lake Merced - Microcystins

Project Manager: Monica Van Natta
Phone: 559-797-1931

PO #: PRO.0001 000PRO.0001 000201997 T

The following samples were received from you on **May 13, 2020** at **1134**. They have been scheduled for the tests listed below each sample. If this information is incorrect, please contact your service representative. Thank you for using Eurofins Eaton Analytical, LLC.

Sample #	Sample ID	Sample Date
202005130220	LMER_E_00_LIM	05/12/2020 1045
	Variable ID: 2073900-01	
	@UCMR4 546 RUSH	
202005130221	LMER_N_00_LIM	05/12/2020 1145
	Variable ID: 2073901-01	
	@UCMR4 546 RUSH	
202005130222	LMER_R_00_LIM	05/12/2020 0945
	Variable ID: 2073902-01	
	@UCMR4 546 RUSH	
202005130223	LMER_S_00_LIM	05/12/2020 0900
	Variable ID: 2073903-01	
	@UCMR4 546 RUSH	

Test Description

@UCMR4 546 -- UCMR4 546

San Francisco Water Power Sewer
Services of the San Francisco Public Utilities Commission

SAN FRANCISCO PUBLIC UTILITIES COMMISSION

SUB LABORATORY CHAIN OF CUSTODY RECORD

Water Quality Division
1000 El Camino Real
Millbrae, CA 94030
Tel: (650) 872-5945
Fax: (650) 952-3407

EnRofins - Monrovia

470843

Out Source#: 4081 **Ship To : SUB_LAB** **Ship Date: 05/12/2020** **Ship Via: FedEx** **Tracking#: 7910 3212 1824**

Index Code: ☐ 921021(WW)/920901(WW) ☐ 470440(DW)

SHIPPED BY: phuong ltg / WSH

TYPE: ROUTINE / SPECIAL
(Circle One)

FOR LAB USE ONLY

METHOD OF TRANSPORT (CHECK ONE)	SAMPLE CONDITION UPON RECEIPT (CHECK APPROPRIATE BOXES)		SAMPLE STORAGE
☐ MILLBRAE	☐ CHILLED	☐ CONTAINER INTACT	LOCATION
☐ MOCCASIN	☐ SEALED	☐ # OF SAMPLES MATCH COC	REFRIG#
☐ COURIER	☐ SEAL INTACT	☐ HEADSPACE (VOA)	SHELF#
☐ OTHER	☐ PRESERVED	COOLER TEMPERATURE (0-6°C):	OTHERS

STATE EDT REQUIRED: Y / N SYTEM ID:

48 HR
RUSH!

Sample ID	Source	Collected Date	Time	By	WQD Rec. Date	By	LocationNotes\Comments	TAT	SUB_546
2073900-01	LMER_E_00_LIM	5/12/20	1045	OTHER	5/12/20	PHOANG	Eric Wong	21 DAYS	7
2073901-01	LMER_N_00_LIM	5/12/20	1145	OTHER	5/12/20	PHOANG	Eric Wong	21 DAYS	6
2073902-01	LMER_R_00_LIM	5/12/20	0945	OTHER	5/12/20	PHOANG	Eric Wong	21 DAYS	8
2073903-01	LMER_S_00_LIM	5/12/20	0900	OTHER	5/12/20	PHOANG	Eric Wong	21 DAYS	6

↑ indicates the last digit(s) of container ID

RELINQUISHED FROM: (Print Name/Sign)	DATE/TIME:	RELINQUISHED TO: (Print Name/Sign)	DATE/TIME:	Comments:
phuong ltg / WSH	5/12/2020 @1530	/		4704400 (Method 546/LK MERCED): Please see subsequent pages for analyte details.
SUB LAB RECEIVED BY: (Print Name/Sign) Chuck Brooks ELD /	DATE/TIME: 5.13.20 1134	SEND REPORT TO:	AGENCY:	

San Francisco Water Power Sewer
Services of the San Francisco Public Utilities Commission

SAN FRANCISCO PUBLIC UTILITIES COMMISSION

SUB LABORATORY CHAIN OF CUSTODY RECORD

Water Quality Division
1000 El Camino Real
Millbrae, CA 94030
Tel: (650) 872-5945
Fax: (650) 952-3407

Out Source#: 4081 | **Ship To : SUB_LAB** | **Ship Date: 05/12/2020** | **Ship Via: FedEx** | **Tracking#: 7910 3212 1824**

FOR LAB USE ONLY

Sample ID	Source	
2073900-01	LMER_E_00_LIM	
Container ID (Rep of 1)		**Collect Method**
2073900-01-07		4°C
Analysis: SUB 546 Total Microcystins	**Method:** EPA 546	

Sample ID	Source	
2073901-01	LMER_N_00_LIM	
Container ID (Rep of 1)		**Collect Method**
2073901-01-06		4°C
Analysis: SUB 546 Total Microcystins	**Method:** EPA 546	

Sample ID	Source	
2073902-01	LMER_R_00_LIM	
Container ID (Rep of 1)		**Collect Method**
2073902-01-08		4°C
Analysis: SUB 546 Total Microcystins	**Method:** EPA 546	

Sample ID	Source	
2073903-01	LMER_S_00_LIM	
Container ID (Rep of 1)		**Collect Method**
2073903-01-06		4°C
Analysis: SUB 546 Total Microcystins	**Method:** EPA 546	

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UCMR4 INTERNAL CHAIN OF CUSTODY RECORD

EEA Folder Number: 872243

SAMPLES RECEIVED WITHIN 48 HOURS OF COLLECTION TIME? ☐

TYPE OF ICE: Real ____ Synthetic X No Ice ____

CONDITION OF ICE: Frozen ____ Partially Frozen X Thawed ____ N/A ____

CONDITION OF SAMPLE: Frozen ____ Partially Frozen ____ Not Frozen X

METHOD OF SHIPMENT: Pick-Up / Walk-In / (FedEx) / UPS / DHL / Area Fast / Top Line / Other: ____________

Compliance Acceptance Criteria: 791032121824

If sample(s) received:

1) on the same day as the collection day; sample temperature may be ≥10°C with evidence of cooling

2) within the first 48 hours of collection time; sample temperature must be ≤10°C (except 200.8) and not frozen (except 546), and

3) after 48 hours of collection time; sample temperature must be ≤ 6°C (except 200.8) and not frozen (except 546), and not rejected if refrigerated between collection and shipment documented on UCMR4 COC as "yes."

Note: A minimum of 1 bottle for every analytical method must be checked for temperature. If the bottle that is checked does not meet the temperature criterion, then the sample bottle is rejected. The temperature of the other samples collected for that method is checked to determined if a valid sample was received.

Facility ID & Unique Field Sample ID: LK-MERCED (E)

IR Gun ID = 616B

Method	Container ID	Observation (°C)	Correction Factor (°C)	Final (°C)
UCMR4 200B	1		+	=
UCMR4 525.3	1		+	=
	2		+	=
	3		+	=
UCMR4 530	1		+	=
	2		+	=
	3		+	=
UCMR4 541	1		+	=
	2		+	=
	3		+	=
UCMR4 552.3	1		+	=
TOC (5310C)	1		+	=
Bromide (300.0)	1		+	=

Method	Container ID	Observation (°C)	Correction Factor (°C)	Final (°C)
UCMR4 544	1		+	=
	2		+	=
	3		+	=
UCMR4 545	1		+	=
UCMR4 546	1	3.3	+ -0.2	= 3.1

Note: If samples are out of temperature range, let the ASM know. ASM will determine whether to proceed with analysis or not.

SIGNATURE	PRINT NAME	COMPANY/TITLE	DATE	TIME
RECEIVED BY: Chuck Brooks	Chuck Brooks	Eurofins Eaton Analytical	5.13.20	1134

QA FO 0010A.1 (FR# 17965) (01/10/13) Ver 2

Page ___ of ___

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Tel: (626) 386-1100
Fax: (866) 988-3757
1 800 566 LABS (1 800 566 5227)

Laboratory Comments

Report: 870843
Project: 470440-DW1
Group: Lake Merced - Microcystins

San Francisco PUC
Megan Tran
1000 El Camino Real
Millbrae, CA 94030

Folder Comments

Possible matrix effect caused result over 5ppb in raw sample. Dilutions confirmed presence of microcystin at a slightly lower concentration than original test.

Revised report to include the results of samples when diluted. UMVN 05/27/20

The Comments Report may be blank if there are no comments for this report.

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Laboratory Hits

Report: 870843
Project: 470440-DW1
Group: Lake Merced - Microcystins

San Francisco PUC
Megan Tran
1000 El Camino Real
Millbrae, CA 94030

Samples Received on:
05/13/2020 1134

Analyzed	Analyte	Sample ID	Result	Federal MCL	Units	MRL
	202005130220	**LMER_E_00_LIM**				
05/18/2020 15:24	Total Microcystins		1.0		ug/L	0.30
	202005130221	**LMER_N_00_LIM**				
05/18/2020 15:24	Total Microcystins		1.3		ug/L	0.30
	202005130222	**LMER_R_00_LIM**				
05/18/2020 15:24	Total Microcystins		2.1		ug/L	0.30
	202005130223	**LMER_S_00_LIM**				
05/18/2020 15:24	Total Microcystins		5.4		ug/L	0.30

SUMMARY OF POSITIVE DATA ONLY

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Tel: (626) 386-1100
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Laboratory Data

Report: 870843
Project: 470440-DW1
Group: Lake Merced - Microcystins

San Francisco PUC
Megan Tran
1000 El Camino Real
Millbrae, CA 94030

Samples Received on:
05/13/2020 1134

Prepped	Analyzed	Prep Batch	Analytical Batch	Method	Analyte	Result	Units	MRL	Dilution
LMER_E_00_LIM (202005130220)							**Sampled on 05/12/2020 1045**		
Variable ID: 2073900-01									
EPA 546 - UCMR4 546									
05/15/20	05/18/20 15:24	1249409	1248695	(EPA 546)	Total Microcystins	1.0	ug/L	0.30	1
05/15/20	05/18/20 15:24	1249409	1248695	(EPA 546)	%CV	0.500	%	50.0	1
LMER_N_00_LIM (202005130221)							**Sampled on 05/12/2020 1145**		
Variable ID: 2073901-01									
EPA 546 - UCMR4 546									
05/15/20	05/18/20 15:24	1249409	1248695	(EPA 546)	Total Microcystins	1.3	ug/L	0.30	1
05/15/20	05/18/20 15:24	1249409	1248695	(EPA 546)	%CV	3.80	%	380	1
LMER_R_00_LIM (202005130222)							**Sampled on 05/12/2020 0945**		
Variable ID: 2073902-01									
EPA 546 - UCMR4 546									
05/15/20	05/18/20 15:24	1249409	1248695	(EPA 546)	Total Microcystins	2.1	ug/L	0.30	1
05/15/20	05/18/20 15:24	1249409	1248695	(EPA 546)	%CV	3.00	%	300	1
LMER_S_00_LIM (202005130223)							**Sampled on 05/12/2020 0900**		
Variable ID: 2073903-01									
EPA 546 - UCMR4 546									
05/15/20	05/18/20 15:24	1249409	1248695	(EPA 546)	Total Microcystins	5.4	ug/L	0.30	1
05/15/20	05/18/20 15:24	1249409	1248695	(EPA 546)	%CV	8.70	%	870	1

Rounding on totals after summation.
(c) - indicates calculated results. Analysis is a calculated result. Reported results are not rounded until the final step before reporting. Therefore methods that use a test result with further calculation may have slight differences in final result than the component analyses.

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Laboratory QC Summary

Report: 870843
Project: 470440-DW1
Group: Lake Merced - Microcystins

San Francisco PUC

UCMR4 546

Prep Batch: 1249409	**Analytical Batch: 1248695**	**Analysis Date: 05/18/2020**
202005130220	LMER_E_00_LIM	Analyzed by: M8OF
202005130221	LMER_N_00_LIM	Analyzed by: M8OF
202005130222	LMER_R_00_LIM	Analyzed by: M8OF
202005130223	LMER_S_00_LIM	Analyzed by: M8OF

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Report: 870843
Project: 470440-DW1
Group: Lake Merced - Microcystins

San Francisco PUC

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield(%)	Limits (%)	RPD Limit(%)	RPD%
UCMR4 546 by EPA 546									
Analytical Batch: 1248695						**Analysis Date: 05/18/2020**			
LCS1	%CV			1.60	%				
LCS2	%CV			ND	%				
MBLK	%CV			<15	%				
MBLK	%CV			<15	%				
MRL_CHK	%CV			ND	%				
MS2_202005120325	%CV	4.10		ND	%				
MSD2_202005120325	%CV	4.10		ND	%				
LCS1	Total Microcystins		0.5	0.402	ug/L	80	(60-140)		
LCS2	Total Microcystins		0.5	0.349	ug/L	70	(60-140)		
MBLK	Total Microcystins			<0.15	ug/L				
MBLK	Total Microcystins			<0.15	ug/L				
MRL_CHK	Total Microcystins		0.3	0.243	ug/L	81	(50-150)		
MS2_202005120325	Total Microcystins	ND	0.5	0.171	ug/L	**31**	(60-140)		
MSD2_202005120325	Total Microcystins	ND	0.5	0.208	ug/L	**39**	(60-140)	40	20

Spike recovery is already corrected for native results.
Spikes which exceed Limits and Method Blanks with positive results are highlighted by Underlining.
Criteria for MS and Dup are advisory only, batch control is based on LCS. Criteria for duplicates are advisory only, unless otherwise specified in the method.
RPD not calculated for LCS2 when different a concentration than LCS1 is used.
RPD not calculated for Duplicates when the result is not five times the MRL (Minimum Reporting Level).
(S) - Indicates surrogate compound.
(I) - Indicates internal standard compound.

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750 Royal Oaks Drive, Suite 100
Monrovia, California 91016-3629
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1 800 566 LABS (1 800 566 5227)

ACCREDITED
CERTIFICATE #'s 5890.01 & 5890.02

Laboratory Report

for

San Francisco PUC
1000 El Camino Real
Millbrae, CA 94030
Attention: Megan Tran

NELAP ACCREDITED TNI LABORATORY
Utah ELCP CA00006

Date of Issue
05/20/2020
Monica Van Natta
EUROFINS EATON ANALYTICAL, LLC

Report: 871586
Project: 470440-DW
Group: Drinking

UMVN: Monica Van Natta
Project Manager

* Accredited in accordance with TNI 2016 and ISO/IEC 17025:2017.
* Laboratory certifies that the test results meet all **TNI 2016 and ISO/IEC 17025:2017** requirements unless noted under the individual analysis.
* Following the cover page are State Certification List, ISO 17025 Accredited Method List, Acknowledgement of Samples Received, Comments, Hits Report, Data Report, QC Summary, QC Report and Regulatory Forms, as applicable.
* Test results relate only to the sample(s) tested.
* Test results apply to the sample(s) as received, unless otherwise noted in the comments report (ISO/IEC 17025:2017).
* This report shall not be reproduced except in full, without the written approval of the laboratory.
* This report includes ISO/IEC 17025 and non-ISO 17025 accredited methods.

STATE CERTIFICATION LIST

State	Certification Number	State	Certification Number
Alabama	41060	**Montana**	Cert 0035
Arizona	AZ0778	**Nebraska**	Certified
Arkansas	Certified	**Nevada**	CA000062018
California	2813	**New Hampshire ***	2959
Colorado	Certified	**New Jersey ***	CA 008
Connecticut	PH-0107	**New Mexico**	Certified
Delaware	CA 006	**New York ***	11320
Florida *	E871024	**North Carolina**	06701
Georgia	947	**North Dakota**	R-009
Guam	18-005R	**Oregon ***	CA200003-005
Hawaii	Certified	**Pennsylvania ***	68-565
Idaho	Certified	**Puerto Rico**	Certified
Illinois *	200033	**Rhode Island**	LAO00326
Indiana	C-CA-01	**South Carolina**	87016
Iowa - Asbestos	413	**South Dakota**	Certified
Kansas *	E-10268	**Tennessee**	TN02839
Kentucky	90107	**Texas ***	T104704230-18-15
Louisiana *	LA180000	**Utah (Primary AB) ***	CA00006
Maine	CA0006	**Vermont**	VT0114
Maryland	224	**Virginia ***	460260
Commonwealth of Northern Marianas Is.	MP0004	**Washington**	C838
Massachusetts	M-CA006	**EPA Region 5**	Certified
Michigan	9906	**Los Angeles County Sanitation Districts**	10264
Mississippi	Certified		

* NELAP/TNI Recognized Accreditation Bodies

Eurofins Eaton Analytical, LLC
750 Royal Oaks Drive, Suite 100
Monrovia, CA 91016-3629
T | 626-386-1100
F | 866-988-3757
www.EurofinsUS.com/Eaton

The tests listed below are accredited and meet the requirements of ISO/IEC 17025 as verified by the ANSI-ASQ National Accreditation Board/A2LA.
Refer to Certificate and scope of accreditation (5890) found at: https://www.eurofinsus.com/Eaton

SPECIFIC TESTS	METHOD OR TECHNIQUE USED	Environ-mental (Drinking Water)	Environ-mental (Waste Water)	Water as a Component of Food and Bev/Bev/ Bottled Water
1,2,3-TCP (5 PPT & 0.5 PPT)	CA SRL 524M-TCP	x		x
1,4-Dioxane	EPA 522	x		x
2,3,7,8-TCDD	Modified EPA 1613B	x		x
Acrylamide	In House Method (2440)	x		x
Algal Toxins/Microcystin	In House Method (3570)			
Alkalinity	SM 2320B	x	x	x
Ammonia	EPA 350.1		x	x
Ammonia	SM 4500-NH3 H		x	x
Anions and DBPs by IC	EPA 300.0	x	x	x
Anions and DBPs by IC	EPA 300.1	x		x
Asbestos	EPA 100.2	x	x	
BOD / CBOD	SM 5210B		x	x
Bromate	In House Method (2447)	x		x
Carbamates	EPA 531.2	x		x
Carbonate as CO3	SM 2330B	x	x	x
Carbonyls	EPA 556	x		x
COD	EPA 410.4 / SM 5220D		x	
Chloramines	SM 4500-CL G	x	x	x
Chlorinated Acids	EPA 515.4	x		x
Chlorinated Acids	EPA 555	x		x
Chlorine Dioxide	SM 4500-CLO2 D Palin Test	x		x
Chlorine -Total/Free/ Combined Residual	SM 4500-Cl G	x	x	x
Conductivity	EPA 120.1		x	
Conductivity	SM 2510B	x	x	x
Corrosivity (Langelier Index)	SM 2330B	x		x
Cyanide, Amenable	SM 4500-CN G	x	x	
Cyanide, Free	SM 4500CN F	x	x	x
Cyanide, Total	EPA 335.4	x	x	x
Cyanogen Chloride (screen)	In House Method (2470)	x		x
Diquat and Paraquat	EPA 549.2	x		x
DBP/HAA	SM 6251B	x		x
Dissolved Oxygen	SM 4500-O G		x	x
DOC	SM 5310C	x		x
E. Coli	(MTF/EC+MUG)	x		x
E. Coli	CFR 141.21(f)(6)(i)	x		x
E. Coli	SM 9223		x	
E. Coli (Enumeration)	SM 9221B.1/ SM 9221F	x		x
E. Coli (Enumeration)	SM 9223B	x		x
EDB/DCBP	EPA 504.1	x		
EDB/DBCP and DBP	EPA 551.1	x		x
EDTA and NTA	In House Method (2454)	x		x
Endothall	EPA 548.1	x		x
Endothall	In-house Method (2445)	x		x
Enterococci	SM 9230B	x	x	
Fecal Coliform	SM 9221 E (MTF/EC)	x		
Fecal Coliform	SM 9221C, E (MTF/EC)		x	
Fecal Coliform (Enumeration)	SM 9221E (MTF/EC)	x		x
Fecal Coliform with Chlorine Present	SM 9221E		x	
Fecal Streptococci	SM 9230B	x	x	
Fluoride	SM 4500-F C	x	x	x
Glyphosate	EPA 547	x		x
Glyphosate + AMPA	In House Method (3618)	x		x
Gross Alpha/Beta	EPA 900.0	x	x	x
Gross Alpha Coprecipitation	SM 7110 C	x	x	x
Hardness	SM 2340B	x	x	x
Heterotrophic Bacteria	In House Method (2439)	x		x
Heterotrophic Bacteria	SM 9215 B	x		x
Hexavalent Chromium	EPA 218.6	x	x	x
Hexavalent Chromium	EPA 218.7	x		x
Hexavalent Chromium	SM 3500-Cr B		x	
Hormones	EPA 539	x		x
Hydroxide as OH Calc.	SM 2330B	x		x
Kjeldahl Nitrogen	EPA 351.2		x	
Legionella	Legiolert	x		x
Mercury	EPA 200.8	x		x
Metals	EPA 200.7 / 200.8	x	x	x
Microcystin LR	ELISA (2360)	x		x
Microcystin, Total	EPA 546	x		x
NDMA	EEA/Agilent 521.1 In house method (2425)	x		x
Nitrate/Nitrite Nitrogen	EPA 353.2	x	x	x
OCL, Pesticides/PCB	EPA 505	x		x
Ortho Phosphate	EPA 365.1	x	x	x
Ortho Phosphorous	SM 4500P E	x		x
Oxyhalides Disinfection Byproducts	EPA 317.0	x		x
Perchlorate	EPA 331.0	x		x
Perchlorate (low and high)	EPA 314.0	x		x
Perfluorinated Alkyl Acids	EPA 537	x		x
Perfluorinated Polutant	In house Method (2434)	x		x
pH	EPA 150.1	x		
pH	SM 4500-H+B	x	x	x
Phenylurea Pesticides/ Herbicides	In House Method, based on EPA 532 (2448)	x		x
Pseudomonas	IDEXX Pseudalert (2461)	x		x
Radium-226	GA Institute of Tech	x		x
Radium-228	GA Institute of Tech	x		x
Radon-222	SM 7500RN	x		x
Residue, Filterable	SM 2540C	x	x	x
Residue, Non-filterable	SM 2540D		x	
Residue, Total	SM 2540B		x	x
Residue, Volatile	EPA 160.4		x	
Semi-VOC	EPA 525.2	x		x
Silica	SM 4500-Si D	x	x	
Silica	SM 4500-SiO2 C	x	x	
Sulfide	SM 4500-$S^{=}$ D		x	
Sulfite	SM 4500-SO^{3}B	x	x	x
Surfactants	SM 5540C	x	x	x
Taste and Odor Analytes	SM 6040E	x		x
Total Coliform (P/A)	SM 9221 A, B	x		x
Total Coliform (Enumeration)	SM 9221 A, B, C	x		x
Total Coliform / E. coli	Colisure SM 9223	x		x
Total Coliform	SM 9221B		x	
Total Coliform with Chlorine Present	SM 9221B		x	
Total Coliform / E.coli (P/A and Enumeration)	SM 9223	x		x
TOC	SM 5310C	x	x	x
TOX	SM 5320B		x	
Total Phenols	EPA 420.1		x	
Total Phenols	EPA 420.4	x	x	x
Total Phosphorous	SM 4500 P E		x	
Triazine Pesticides & Degradates	In House (3617)	x		x
Turbidity	EPA 180.1	x	x	x
Turbidity	SM 2130B	x	x	
Uranium by ICP/MS	EPA 200.8	x		x
UV 254	SM 5910B	x		
VOC	EPA 524.2	x		x
VOC	In House Method (2411)	x		x
Yeast and Mold	SM 9610	x		x
Field Sampling	N/A			

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Acknowledgement of Samples Received

Addr: **San Francisco PUC**
1000 El Camino Real
Millbrae, CA 94030

Attn: Megan Tran
Phone: 650-872-5945

Client ID: SANFRAN
Folder #: 871586
Project: 470440-DW
Sample Group: Drinking

Project Manager: Monica Van Natta
Phone: 559-797-1931
PO #: PRO.0001 000PRO.0001 000201997 T

The following samples were received from you on **May 14, 2020** at **09:00**. They have been scheduled for the tests listed below each sample. If this information is incorrect, please contact your service representative. Thank you for using Eurofins Eaton Analytical, LLC.

Sample #	Sample ID	Sample Date
202005180024	LMER_E_00_LIM	05/12/2020 1045
	Variable ID: 2073900-01	
	L231_SB	
202005180028	LMER_N_00_LIM	05/12/2020 1145
	Variable ID: 2073901-01	
	L231_SB	
202005180029	LMER_R_00_LIM	05/12/2020 0945
	Variable ID: 2073902-01	
	L231_SB	
202005180030	LMER_S_00_LIM	05/12/2020 0900
	Variable ID: 2073903-01	
	L231_SB	

Test Description

750 Royal Oaks Drive, Suite 100, Monrovia, CA 91016 Tel (626) 386-1100 Fax (866) 988-3757 www.EurofinsUS.com/Eaton

871586

398855

San Francisco Water Power Sewer
Services of the San Francisco Public Utilities Commission

SAN FRANCISCO PUBLIC UTILITIES COMMISSION

SUB LABORATORY CHAIN OF CUSTODY RECORD

485743

Water Quality Division
1000 El Camino Real
Millbrae, CA 94030
Tel: (650) 872-5945
Fax: (650) 952-3407

Eurofins - South Bend

Out Source#: 4080 | Ship To : SUB_LAB | Ship Date: 05/12/2020 | Ship Via: FedEx | Tracking#: 4590 3428 8510

Index Code: ☐ 921021(WW)/920901(WW) ☑ 470440(DW)

SHIPPED BY: [signature]

TYPE: (Circle One) ROUTINE / SPECIAL

FOR LAB USE ONLY

METHOD OF TRANSPORT (CHECK ONE)	SAMPLE CONDITION UPON RECEIPT (CHECK APPROPRIATE BOXES)		SAMPLE STORAGE
☐ MILLBRAE	☐ CHILLED	☐ CONTAINER INTACT	LOCATION ____
☐ MOCCASIN	☐ SEALED	☐ # OF SAMPLES MATCH COC	REFRIG# ____
☐ COURIER	☐ SEAL INTACT	☐ HEADSPACE (VOA)	SHELF# ____
☐ OTHER ____	☐ PRESERVED	COOLER TEMPERATURE (0-6°C): ☐	OTHERS ____

STATE EDT REQUIRED: Y / N SYTEM ID: ____

48HR RUSH!

Sample ID	Source	Collected Date/Time/By			WQD Rec. Date/By		LocationNotes\Comments	TAT	SUB_ALGAL_TOXI N
2073900-01	LMER_E_00_LIM	5/12/20	1045	OTHER	5/12/20	PHOANG	Eric Wong 1.8	21 DAYS	4-6
2073901-01	LMER_N_00_LIM	5/12/20	1145	OTHER	5/12/20	PHOANG	Eric Wong 1.6	21 DAYS	3-5
2073902-01	LMER_R_00_LIM	5/12/20	0945	OTHER	5/12/20	PHOANG	Eric Wong 2.0	21 DAYS	5-7
2073903-01	LMER_S_00_LIM	5/12/20	0900	OTHER	5/12/20	PHOANG	Eric Wong 1.6	21 DAYS	3-5

4626882
883
884
885

1.6°C

Client Provided Sample Container
1 indicates the last digit(s) of container ID

Mailed COC was not Signed at "Relinquished by" by Client

RELINQUISHED FROM: (Print Name/Sign)	DATE/TIME:	RELINQUISHED TO: (Print Name/Sign)	DATE/TIME:	Comments:
/		/		4704400 (ALGAL_TOXINS by Method L231/LK MERCED): Please see subsequent pages for analyte details.
SUB LAB RECEIVED BY: (Print Name/Sign) dmarts /	DATE/TIME: 5/14/2020 0900	SEND REPORT TO:	AGENCY:	

Printed on: Tuesday, May 12, 2020

Vertical Page Number: Page 1 of 2
Horizontal Page Number: 1

San Francisco Water Power Sewer
Services of the San Francisco Public Utilities Commission

SAN FRANCISCO PUBLIC UTILITIES COMMISSION

SUB LABORATORY CHAIN OF CUSTODY RECORD

Water Quality Division
1000 El Camino Real
Millbrae, CA 94030
Tel: (650) 872-5945
Fax: (650) 952-3407

Out Source#: 4080 **Ship To : SUB_LAB** **Ship Date: 05/12/2020** **Ship Via: FedEx** **Tracking#: 4590 3428 8510**

FOR LAB USE ONLY

Sample ID 2073900-01	**Source** LMER_E_00_LIM			
Container ID (Rep of 3) 2073900-01-04 to 2073900-01-06				**Collect Method** 4°C
Analysis: SUB ALGAL TOXIN	**Method:** Default			
Anatoxin	Cylindrospermopsin	Microcystin-LA	Microcystin-LF	Microcystin-LR
Microcystin-LY	Microcystin-RR	Microcystin-YR	Nodularin	
Sample ID 2073901-01	**Source** LMER_N_00_LIM			
Container ID (Rep of 3) 2073901-01-03 to 2073901-01-05				**Collect Method** 4°C
Analysis: SUB ALGAL TOXIN	**Method:** Default			
Anatoxin	Cylindrospermopsin	Microcystin-LA	Microcystin-LF	Microcystin-LR
Microcystin-LY	Microcystin-RR	Microcystin-YR	Nodularin	
Sample ID 2073902-01	**Source** LMER_R_00_LIM			
Container ID (Rep of 3) 2073902-01-05 to 2073902-01-07				**Collect Method** 4°C
Analysis: SUB ALGAL TOXIN	**Method:** Default			
Anatoxin	Cylindrospermopsin	Microcystin-LA	Microcystin-LF	Microcystin-LR
Microcystin-LY	Microcystin-RR	Microcystin-YR	Nodularin	
Sample ID 2073903-01	**Source** LMER_S_00_LIM			
Container ID (Rep of 3) 2073903-01-03 to 2073903-01-05				**Collect Method** 4°C
Analysis: SUB ALGAL TOXIN	**Method:** Default			
Anatoxin	Cylindrospermopsin	Microcystin-LA	Microcystin-LF	Microcystin-LR
Microcystin-LY	Microcystin-RR	Microcystin-YR	Nodularin	

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Tel: (626) 386-1100
Fax: (866) 988-3757
1 800 566 LABS (1 800 566 5227)

Laboratory Comments

Report: 871586
Project: 470440-DW
Group: Drinking

San Francisco PUC
Megan Tran
1000 El Camino Real
Millbrae, CA 94030

Folder Comments

Results for L231 are submitted by Eurofins Eaton Analtyical in Southbend IN

The Comments Report may be blank if there are no comments for this report.

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Tel: (626) 386-1100
Fax: (866) 988-3757
1 800 566 LABS (1 800 566 5227)

Laboratory Data

Report: 871586
Project: 470440-DW
Group: Drinking

San Francisco PUC
Megan Tran
1000 El Camino Real
Millbrae, CA 94030

Samples Received on:
05/14/2020 09:00

Prepped	Analyzed	Prep Batch	Analytical Batch	Method	Analyte	Result	Units	MRL	Dilution
LMER_E_00_LIM (202005180024)							**Sampled on 05/12/2020 1045**		
Variable ID: 2073900-01									
EPA 545 - Algal Toxins									
	05/14/20 19:48			(EPA 545)	Anatoxin-a	ND	ug/L	0.02	1
	05/14/20 19:48			(EPA 545)	Cylindrospermopsin	ND	ug/L	0.05	1
	05/14/20 19:48			(EPA 545)	Microcystin-LA	ND	ug/L	0.1	1
	05/14/20 19:48			(EPA 545)	Microcystin-LF	ND	ug/L	0.1	1
	05/14/20 19:48			(EPA 545)	Microcystin-LR	ND	ug/L	0.1	1
	05/14/20 19:48			(EPA 545)	Microcystin-LY	ND	ug/L	0.1	1
	05/14/20 19:48			(EPA 545)	Microcystin-RR	ND	ug/L	0.1	1
	05/14/20 19:48			(EPA 545)	Microcystin-YR	ND	ug/L	0.1	1
	05/14/20 19:48			(EPA 545)	Nodularin	ND	ug/L	0.1	1
LMER_N_00_LIM (202005180028)							**Sampled on 05/12/2020 1145**		
Variable ID: 2073901-01									
EPA 545 - Algal Toxins									
	05/14/20 20:01			(EPA 545)	Anatoxin-a	ND	ug/L	0.02	1
	05/14/20 20:01			(EPA 545)	Cylindrospermopsin	ND	ug/L	0.05	1
	05/14/20 20:01			(EPA 545)	Microcystin-LA	ND	ug/L	0.1	1
	05/14/20 20:01			(EPA 545)	Microcystin-LF	ND	ug/L	0.1	1
	05/14/20 20:01			(EPA 545)	Microcystin-LR	ND	ug/L	0.1	1
	05/14/20 20:01			(EPA 545)	Microcystin-LY	ND	ug/L	0.1	1
	05/14/20 20:01			(EPA 545)	Microcystin-RR	ND	ug/L	0.1	1
	05/14/20 20:01			(EPA 545)	Microcystin-YR	ND	ug/L	0.1	1
	05/14/20 20:01			(EPA 545)	Nodularin	ND	ug/L	0.1	1
LMER_R_00_LIM (202005180029)							**Sampled on 05/12/2020 0945**		
Variable ID: 2073902-01									
EPA 545 - Algal Toxins									
	05/14/20 20:15			(EPA 545)	Anatoxin-a	ND	ug/L	0.02	1
	05/14/20 20:15			(EPA 545)	Cylindrospermopsin	ND	ug/L	0.05	1
	05/14/20 20:15			(EPA 545)	Microcystin-LA	ND	ug/L	0.1	1
	05/14/20 20:15			(EPA 545)	Microcystin-LF	ND	ug/L	0.1	1
	05/14/20 20:15			(EPA 545)	Microcystin-LR	ND	ug/L	0.1	1
	05/14/20 20:15			(EPA 545)	Microcystin-LY	ND	ug/L	0.1	1
	05/14/20 20:15			(EPA 545)	Microcystin-RR	ND	ug/L	0.1	1
	05/14/20 20:15			(EPA 545)	Microcystin-YR	ND	ug/L	0.1	1
	05/14/20 20:15			(EPA 545)	Nodularin	ND	ug/L	0.1	1
LMER_S_00_LIM (202005180030)							**Sampled on 05/12/2020 0900**		
Variable ID: 2073903-01									

Rounding on totals after summation.
(c) - indicates calculated results. Analysis is a calculated result. Reported results are not rounded until the final step before reporting. Therefore methods that use a test result with further calculation may have slight differences in final result than the component analyses.

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Tel: (626) 386-1100
Fax: (866) 988-3757
1 800 566 LABS (1 800 566 5227)

Laboratory Data

Report: 871586
Project: 470440-DW
Group: Drinking

San Francisco PUC
Megan Tran
1000 El Camino Real
Millbrae, CA 94030

Samples Received on:
05/14/2020 09:00

Prepped	Analyzed	Prep Batch	Analytical Batch	Method	Analyte	Result	Units	MRL	Dilution
	EPA 545 - Algal Toxins								
	05/14/20 20:28			(EPA 545)	Anatoxin-a	ND	ug/L	0.02	1
	05/14/20 20:28			(EPA 545)	Cylindrospermopsin	ND	ug/L	0.05	1
	05/14/20 20:28			(EPA 545)	Microcystin-LA	ND	ug/L	0.1	1
	05/14/20 20:28			(EPA 545)	Microcystin-LF	ND	ug/L	0.1	1
	05/14/20 20:28			(EPA 545)	Microcystin-LR	ND	ug/L	0.1	1
	05/14/20 20:28			(EPA 545)	Microcystin-LY	ND	ug/L	0.1	1
	05/14/20 20:28			(EPA 545)	Microcystin-RR	ND	ug/L	0.1	1
	05/14/20 20:28			(EPA 545)	Microcystin-YR	ND	ug/L	0.1	1
	05/14/20 20:28			(EPA 545)	Nodularin	ND	ug/L	0.1	1

Rounding on totals after summation.
(c) - indicates calculated results. Analysis is a calculated result. Reported results are not rounded until the final step before reporting. Therefore methods that use a test result with further calculation may have slight differences in final result than the component analyses.

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LABORATORY REPORT

If you have any questions concerning this report, please do not hesitate to call us at (800) 332-4345 or (574) 233-4777.

STATE CERTIFICATION LIST

State	Certification	State	Certification
Alabama	40700	Missouri	880
Alaska	IN00035	Montana	CERT0026
Arizona	AZ0432	Nebraska	NE-OS-05-04
Arkansas	IN00035	Nevada	IN00035
California	2920	New Hampshire*	2124
Colorado	IN00035	New Jersey*	IN598
Colorado Radiochemistry	IN00035	New Mexico	IN00035
Connecticut	PH-0132	New York*	11398
Delaware	IN035	North Carolina	18700
Florida*	E87775	North Dakota	R-035
Georgia	929	Ohio	87775
Hawaii	IN035	Oklahoma	D9508
Idaho	IN00035	Oregon (Primary AB)*	4074
Illinois*	200001	Pennsylvania*	68-00466
Illinois Microbiology	17767	Puerto Rico	IN00035
Illinois Radiochemistry	IN00035	Rhode Island	LAO00343
Indiana Chemistry	C-71-01	South Carolina	95005
Indiana Microbiology	M-76-07	South Dakota	IN00035
Iowa	098	Tennessee	TN02973
Kansas*	E-10233	Texas*	T104704187-18-12
Kentucky	90056	Texas/TCEQ	TX207
Louisiana*	LA014	Utah*	IN00035
Maine	IN00035	Vermont	VT-8775
Maryland	209	Virginia*	460275
Massachusetts	M-IN035	Washington	C837
Michigan	9926	West Virginia	9927 C
Minnesota*	018-999-338	Wisconsin	999766900
Mississippi	IN035	Wyoming	IN035
EPA	IN00035		

*NELAP/TNI Recognized Accreditation Bodies

Revision date: 03/14/2019

NELAC NARRATIVE PAGE

Client: Eurofins Eaton Analytical Report #: 485743NP

Eurofins Eaton Analytical, LLC is a NELAP accredited laboratory. All reported results meet the requirements of the NELAC standards, unless otherwise noted.

EEA contact person: Karen Fullmer

NELAP requires complete reporting of deviations from method requirements, regardless of the suspected impact on the data. Quality control failures not reported within the report summary are noted here.

Note: In the Method L231 analysis for Microcystin-LR, the matrix spike duplicate associated with the sample submitted for analysis from site 2073903-01 has a RPD value of 35%, which is outside of EEA's in-house RPD limit of 30%. Both MS and MSD were with acceptable recovery limits and there were no detects in the parent sample.

There were no quality control failures.

Karen Fullmer ASM 05/19/2020

Authorized Signature Title Date

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110 South Hill Street
South Bend, IN 46617
Tel: (574) 233-4777
Fax: (574) 233-8207
1 800 332 4345

Laboratory Report

Client: Eurofins Eaton Analytical

Attn: Jackie Contreras
750 Royal Oaks Drive
Suite 100
Monrovia, CA 91016

Report: 485743
Priority: Immediate Written
Status: Final
PWS ID: Not Supplied

Sample Information

EEA ID #	Client ID	Method	Collected Date / Time	Collected By:	Received Date / Time
4626882	202005180024	L231	05/12/20 10:45	Client	05/14/20 09:00
4626883	202005180028	L231	05/12/20 11:45	Client	05/14/20 09:00
4626884	202005180029	L231	05/12/20 09:45	Client	05/14/20 09:00
4626885	202005180030	L231	05/12/20 09:00	Client	05/14/20 09:00

Report Summary

Note: Sample containers were provided by the client.

ANote: This report was amended on 05/19/2020 to correct the sample IDs, at the request of the client.

Detailed quantitative results are presented on the following pages. The results presented relate only to the samples provided for analysis.

We appreciate the opportunity to provide you with this analysis. If you have any questions concerning this report, please do not hesitate to call Karen Fullmer at (574) 233-4777.

Karen Fullmer ASM

Authorized Signature | Title

05/19/2020

Date

Client Name: Eurofins Eaton Analytical
Report #: 485743

Sampling Point: 202005180024 PWS ID: Not Supplied

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
64285-06-9	Anatoxin-a	L231	---	0.02	< 0.02	ug/L	---	05/14/20 19:48	4626882
143545-90-8	Cylindrospermopsin	L231	---	0.05	< 0.05	ug/L	---	05/14/20 19:48	4626882
96180-79-9	Microcystin-LA	L231	---	0.1	< 0.1	ug/L	---	05/14/20 19:48	4626882
154037-70-4	Microcystin-LF	L231	---	0.1	< 0.1	ug/L	---	05/14/20 19:48	4626882
101043-37-2	Microcystin-LR	L231	---	0.1	< 0.1	ug/L	---	05/14/20 19:48	4626882
123304-10-9	Microcystin-LY	L231	---	0.1	< 0.1	ug/L	---	05/14/20 19:48	4626882
111755-37-4	Microcystin-RR	L231	---	0.1	< 0.1	ug/L	---	05/14/20 19:48	4626882
101064-48-6	Microcystin-YR	L231	---	0.1	< 0.1	ug/L	---	05/14/20 19:48	4626882
118399-22-7	Nodularin	L231	---	0.1	< 0.1	ug/L	---	05/14/20 19:48	4626882

Sampling Point: 202005180028 PWS ID: Not Supplied

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
64285-06-9	Anatoxin-a	L231	---	0.02	< 0.02	ug/L	---	05/14/20 20:01	4626883
143545-90-8	Cylindrospermopsin	L231	---	0.05	< 0.05	ug/L	---	05/14/20 20:01	4626883
96180-79-9	Microcystin-LA	L231	---	0.1	< 0.1	ug/L	---	05/14/20 20:01	4626883
154037-70-4	Microcystin-LF	L231	---	0.1	< 0.1	ug/L	---	05/14/20 20:01	4626883
101043-37-2	Microcystin-LR	L231	---	0.1	< 0.1	ug/L	---	05/14/20 20:01	4626883
123304-10-9	Microcystin-LY	L231	---	0.1	< 0.1	ug/L	---	05/14/20 20:01	4626883
111755-37-4	Microcystin-RR	L231	---	0.1	< 0.1	ug/L	---	05/14/20 20:01	4626883
101064-48-6	Microcystin-YR	L231	---	0.1	< 0.1	ug/L	---	05/14/20 20:01	4626883
118399-22-7	Nodularin	L231	---	0.1	< 0.1	ug/L	---	05/14/20 20:01	4626883

Sampling Point: 202005180029 PWS ID: Not Supplied

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
64285-06-9	Anatoxin-a	L231	---	0.02	< 0.02	ug/L	---	05/14/20 20:15	4626884
143545-90-8	Cylindrospermopsin	L231	---	0.05	< 0.05	ug/L	---	05/14/20 20:15	4626884
96180-79-9	Microcystin-LA	L231	---	0.1	< 0.1	ug/L	---	05/14/20 20:15	4626884
154037-70-4	Microcystin-LF	L231	---	0.1	< 0.1	ug/L	---	05/14/20 20:15	4626884
101043-37-2	Microcystin-LR	L231	---	0.1	< 0.1	ug/L	---	05/14/20 20:15	4626884
123304-10-9	Microcystin-LY	L231	---	0.1	< 0.1	ug/L	---	05/14/20 20:15	4626884
111755-37-4	Microcystin-RR	L231	---	0.1	< 0.1	ug/L	---	05/14/20 20:15	4626884
101064-48-6	Microcystin-YR	L231	---	0.1	< 0.1	ug/L	---	05/14/20 20:15	4626884
118399-22-7	Nodularin	L231	---	0.1	< 0.1	ug/L	---	05/14/20 20:15	4626884

Client Name: Eurofins Eaton Analytical Report #: 485743

Sampling Point: 202005180030 PWS ID: Not Supplied

EEA Methods

Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
64285-06-9	Anatoxin-a	L231	---	0.02	< 0.02	ug/L	---	05/14/20 20:28	4626885
143545-90-8	Cylindrospermopsin	L231	---	0.05	< 0.05	ug/L	---	05/14/20 20:28	4626885
96180-79-9	Microcystin-LA	L231	---	0.1	< 0.1	ug/L	---	05/14/20 20:28	4626885
154037-70-4	Microcystin-LF	L231	---	0.1	< 0.1	ug/L	---	05/14/20 20:28	4626885
101043-37-2	Microcystin-LR	L231	---	0.1	< 0.1	ug/L	---	05/14/20 20:28	4626885
123304-10-9	Microcystin-LY	L231	---	0.1	< 0.1	ug/L	---	05/14/20 20:28	4626885
111755-37-4	Microcystin-RR	L231	---	0.1	< 0.1	ug/L	---	05/14/20 20:28	4626885
101064-48-6	Microcystin-YR	L231	---	0.1	< 0.1	ug/L	---	05/14/20 20:28	4626885
118399-22-7	Nodularin	L231	---	0.1	< 0.1	ug/L	---	05/14/20 20:28	4626885

† EEA has demonstrated it can achieve these report limits in reagent water, but can not document them in all sample matrices.

Reg Limit Type:	MCL	SMCL	AL
Symbol:	*	^	!

Lab Definitions

Continuing Calibration Check Standard (CCC) / Continuing Calibration Verification (CCV) / Initial Calibration Verification Standard (ICV) / Initial Performance Check (IPC) - is a standard containing one or more of the target analytes that is prepared from the same standards used to calibrate the instrument. This standard is used to verify the calibration curve at the beginning of each analytical sequence, and may also be analyzed throughout and at the end of the sequence. The concentration of continuing standards may be varied, when prescribed by the reference method, so that the range of the calibration curve is verified on a regular basis. CCL, CCM, and CCH are the CCC standards at low, mid, and high concentration levels, respectively.

Internal Standards (IS) - are pure compounds with properties similar to the analytes of interest, which are added to field samples or extracts, calibration standards, and quality control standards at a known concentration. They are used to measure the relative responses of the analytes of interest and surrogates in the sample, calibration standard or quality control standard.

Laboratory Duplicate (LD) - is a field sample aliquot taken from the same sample container in the laboratory and analyzed separately using identical procedures. Analysis of laboratory duplicates provides a measure of the precision of the laboratory procedures.

Laboratory Fortified Blank (LFB) / Laboratory Control Sample (LCS) - is an aliquot of reagent water to which known concentrations of the analytes of interest are added. The LFB is analyzed exactly the same as the field samples. LFBs are used to determine whether the method is in control. FBL, FBM, and FBH are the LFB samples at low, mid, and high concentration levels, respectively.

Laboratory Method Blank (LMB) / Laboratory Reagent Blank (LRB) - is a sample of reagent water included in the sample batch analyzed in the same way as the associated field samples. The LMB is used to determine if method analytes or other background contamination have been introduced during the preparation or analytical procedure. The LMB is analyzed exactly the same as the field samples.

Laboratory Trip Blank (LTB) / Field Reagent Blank (FRB) - is a sample of laboratory reagent water placed in a sample container in the laboratory and treated as a field sample, including storage, preservation, and all analytical procedures. The FRB/LTB container follows the collection bottles to and from the collection site, but the FRB/LTB is not opened at any time during the trip. The FRB/LTB is primarily a travel blank used to verify that the samples were not contaminated during shipment.

If applicable, the calculation of the matrix spike (MS) or matrix spike duplicate (MSD) percent recovery is as follows: (MS or MSD value - Sample value) * 100 / spike target / dilution factor = **Recovery %**

Matrix Spike Duplicate Sample (MSD) / Laboratory Fortified Sample Matrix Duplicate (LFSMD) - is a sample aliquot taken from the same field sample source as the Matrix Spike Sample to which known quantities of the analytes of interest are added in the laboratory. The MSD is analyzed exactly the same as the field samples. Analysis of the MSD provides a measure of the precision of the laboratory procedures in a specific matrix. SDL, SDM, and SDH / LFSMDL, LFSMDM, and LFSMDH are the MSD or LFSMD at low, mid, and high concentration levels, respectively.

Matrix Spike Sample (MS) / Laboratory Fortified Sample Matrix (LFSM) - is a sample aliquot taken from field sample source to which known quantities of the analytes of interest are added in the laboratory. The MS is analyzed exactly the same as the field samples. The purpose is to demonstrate recovery of the analytes from a sample matrix to determine if the specific matrix contributes bias to the analytical results. MSL, MSM, and MSH / LFSML, LFSMM, and LFSMH are the MS or LFSM at low, mid, and high concentration levels, respectively.

Quality Control Standard (QCS) / Second Source Calibration Verification (SSCV) - is a solution containing known concentrations of the analytes of interest prepared from a source different from the source of the calibration standards. The solution is obtained from a second manufacturer or lot if the lot can be demonstrated by the manufacturer as prepared independently from other lots. The QCS sample is analyzed using the same procedures as field samples. The QCS is used as a check on the calibration standards used in the method on a routine basis.

Reporting Limit Check (RLC) / Initial Calibration Check Standard (ICCS) - is a procedural standard that is analyzed each day to evaluate instrument performance at or below the minimum reporting limit (MRL).

Surrogate Standard (SS) / Surrogate Analyte (SUR) - is a pure compound with properties similar to the analytes of interest, which is highly unlikely to be found in any field sample, that is added to the field samples, calibration standards, blanks and quality control standards before sample preparation. The SS is used to evaluate the efficiency of the sample preparation process.

398855
485743

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Submittal Form

Date: 5/18/2020

Ship To:
`Eurofins Eaton Analytical
110 South Hill Street

South Bend, IN 46617-2702

Phone: 800-332-4345 Fax: 574-233-8207

Folder #: 871586 **Report Due:** 06/12/2020

*REPORTING REQUIRMENTS: *Do Not Combine Reports with any other samples submitted under different Folder Numbers!*
Report & Invoice must have the Folder # **871586** Job # **1000014**

Report all quality control data according to Method, Include dates analyzed. Date extracted (if extracted) and Method reference on the report.
Results must have Complete data & QC with Approval Signature.

Reports: Jackie Contreras Sub-Contracting Administrator
EMAIL TO: us20_subcontract@eurofinsus.com
Eurofins Eaton Analytical, LLC 750 Royal Oaks Drive, Suite 100, Monrovia, CA 91016
Phone (626) 386-1165 Fax (626) 386-1122
Invoices to: Eurofins Eaton Analytical, LLC
Accounts Payable 2425 New Holland Pike, Lancaster, PA 17605

Provide in each Report the Specified StateCertification # and Exp Date for requested tests + matrix.

Samples from: **CALIFORNIA**

Sample ID	Client Sample ID for reference onl	Sample Date & Time	Matrix	PWS Systemcode	PWSID
202005180024	LMER_E_00_LIM	05/12/20 1045	DW		JLS

Sample type:	Sample Event:	Facility ID:	Sample Point ID:	Static ID:

Method	Prep Method	Analysis Requested
EPA 545		Algal Toxins

4626882

Sample ID	Client Sample ID for reference onl	Sample Date & Time	Matrix	PWS Systemcode	PWSID
202005180028	LMER_N_00_LIM	05/12/20 1145	DW		JLS

Sample type:	Sample Event:	Facility ID:	Sample Point ID:	Static ID:

Method	Prep Method	Analysis Requested
EPA 545		Algal Toxins

4626883

Sample ID	Client Sample ID for reference onl	Sample Date & Time	Matrix	PWS Systemcode	PWSID
202005180029	LMER_R_00_LIM	05/12/20 0945	DW		JLS

Sample type:	Sample Event:	Facility ID:	Sample Point ID:	Static ID:

Method	Prep Method	Analysis Requested
EPA 545		Algal Toxins

4626884

Client Provided Sample Container

Relinquished by: Sample Control Date _____ Time _____

Received by: Signature for dmartis Date 5/14/2020 Time 0900

Relinquished by: Sample Control Date _____ Time _____

Received by: _____ Date _____ Time _____

NOTIFICATION REQUIRED IF RECEIVED OUTSIDE OF 0-6 CELSIUS

An Acknowledgement of Receipt is requested to attn: Jackie Contreras

Sample ID	Client Sample ID for reference onl	Sample Date & Time	Matrix	PWS Systemcode	PWSID
202005180030	LMER_S_00_LIM	05/12/20 0900	DW		JLS

Sample type:	Sample Event:	Facility ID:	Sample Point ID:	Static ID:

Method	Prep Method	Analysis Requested
EPA 545		Algal Toxins

4626885

Shell Frosted Sample Container

Relinquished by: Sample Control Date _____ Time _____

Received by: [signature] for dmartis Date 5/14/2020 Time 0900

Relinquished by: Sample Control Date _____ Time _____

Received by: _____ Date _____ Time _____

NOTIFICATION REQUIRED IF RECEIVED OUTSIDE OF 0-6 CELSIUS

An Acknowledgement of Receipt is requested to attn: Jackie Contreras

750 Royal Oaks Drive, Suite 100, Monrovia, CA 91016 Tel (626) 386-1100 Fax (866) 988-3757 www.EurofinsUS.com/Eaton

398855

San Francisco Water Power Sewer
Services of the San Francisco Public Utilities Commission

SAN FRANCISCO PUBLIC UTILITIES COMMISSION

SUB LABORATORY CHAIN OF CUSTODY RECORD

485743

Water Quality Division
1000 El Camino Real
Millbrae, CA 94030
Tel: (650) 872-5945
Fax: (650) 952-3407

Eurofins - South Bend

Out Source#: 4080 | **Ship To : SUB_LAB** | **Ship Date: 05/12/2020** | **Ship Via: FedEx** | **Tracking#: 4590 3428 8510**

Index Code: ☐ 921021(WW)/920901(WW) ☑ 470440(DW)

SHIPPED BY: Phuong Hoang 5/12

TYPE: ROUTINE / SPECIAL
(Circle One)

FOR LAB USE ONLY

METHOD OF TRANSPORT (CHECK ONE)	SAMPLE CONDITION UPON RECEIPT (CHECK APPROPRIATE BOXES)		SAMPLE STORAGE
☐ MILLBRAE	☐ CHILLED	☐ CONTAINER INTACT	LOCATION
☐ MOCCASIN	☐ SEALED	☐ # OF SAMPLES MATCH COC	REFRIG#
☐ COURIER	☐ SEAL INTACT	☐ HEADSPACE (VOA)	SHELF#
☐ OTHER	☐ PRESERVED	COOLER TEMPERATURE (0-6°C):	OTHERS

STATE EDT REQUIRED: Y / N SYTEM ID:

Sample ID	Source	Collected Date/Time/By			WQD Rec. Date/By		LocationNotes\Comments	TAT	SUB_ALGAL_TOXI N
2073900-01	LMER_E_00_LIM	5/12/20	1045	OTHER	5/12/20	PHOANG	Eric Wong 1.8	21 DAYS	4-6
2073901-01	LMER_N_00_LIM	5/12/20	1145	OTHER	5/12/20	PHOANG	Eric Wong 1.6	21 DAYS	3-5
2073902-01	LMER_R_00_LIM	5/12/20	0945	OTHER	5/12/20	PHOANG	Eric Wong 2.0	21 DAYS	5-7
2073903-01	LMER_S_00_LIM	5/12/20	0900	OTHER	5/12/20	PHOANG	Eric Wong 1.6	21 DAYS	3-5

48HR
RUSH!

H626882
883
884
885

Mailed COC was not Signed at "Relinquished by" by Client

1.6°C

Client Provided Sample Container
↑ indicates the last digit(s) of container ID

RELINQUISHED FROM: (Print Name/Sign) /	DATE/TIME:	RELINQUISHED TO: (Print Name/Sign) /	DATE/TIME:	Comments: 4704400 (ALGAL_TOXINS by Method L231/LK MERCED): Please see subsequent pages for analyte details.
SUB LAB RECEIVED BY: (Print Name/Sign) dmarks /	DATE/TIME: 5/14/2020 0900	SEND REPORT TO:	AGENCY:	

San Francisco Water Power Sewer
Services of the San Francisco Public Utilities Commission

SAN FRANCISCO PUBLIC UTILITIES COMMISSION

SUB LABORATORY CHAIN OF CUSTODY RECORD

Water Quality Division
1000 El Camino Real
Millbrae, CA 94030
Tel: (650) 872-5945
Fax: (650) 952-3407

Out Source#: 4080 | **Ship To : SUB_LAB** | **Ship Date: 05/12/2020** | **Ship Via: FedEx** | **Tracking#: 4590 3428 8510**

FOR LAB USE ONLY

Sample ID 2073900-01	**Source** LMER_E_00_LIM			
Container ID (Rep of 3) 2073900-01-04 to 2073900-01-06				**Collect Method** 4°C
Analysis: SUB ALGAL TOXIN	**Method:** Default			
Anatoxin	Cylindrospermopsin	Microcystin-LA	Microcystin-LF	Microcystin-LR
Microcystin-LY	Microcystin-RR	Microcystin-YR	Nodularin	
Sample ID 2073901-01	**Source** LMER_N_00_LIM			
Container ID (Rep of 3) 2073901-01-03 to 2073901-01-05				**Collect Method** 4°C
Analysis: SUB ALGAL TOXIN	**Method:** Default			
Anatoxin	Cylindrospermopsin	Microcystin-LA	Microcystin-LF	Microcystin-LR
Microcystin-LY	Microcystin-RR	Microcystin-YR	Nodularin	
Sample ID 2073902-01	**Source** LMER_R_00_LIM			
Container ID (Rep of 3) 2073902-01-05 to 2073902-01-07				**Collect Method** 4°C
Analysis: SUB ALGAL TOXIN	**Method:** Default			
Anatoxin	Cylindrospermopsin	Microcystin-LA	Microcystin-LF	Microcystin-LR
Microcystin-LY	Microcystin-RR	Microcystin-YR	Nodularin	
Sample ID 2073903-01	**Source** LMER_S_00_LIM			
Container ID (Rep of 3) 2073903-01-03 to 2073903-01-05				**Collect Method** 4°C
Analysis: SUB ALGAL TOXIN	**Method:** Default			
Anatoxin	Cylindrospermopsin	Microcystin-LA	Microcystin-LF	Microcystin-LR
Microcystin-LY	Microcystin-RR	Microcystin-YR	Nodularin	

Eurofins Eaton Analytical
Run Log

Run ID: **274697** Method: **L231**

Type	Sample Id	Sample Site	Matrix	Instrument ID	Analysis Date	Calibration File
LMB	4627913		RW	DQ	05/14/2020 19:35	051420L231a.mdb
FS	4626882	202005180024	SW	DQ	05/14/2020 19:48	051420L231a.mdb
FS	4626883	202005180028	SW	DQ	05/14/2020 20:01	051420L231a.mdb
FS	4626884	202005180029	SW	DQ	05/14/2020 20:15	051420L231a.mdb
FS	4626885	202005180030	SW	DQ	05/14/2020 20:28	051420L231a.mdb
MS	4627914	202005180030	SW	DQ	05/14/2020 20:41	051420L231a.mdb
MSD	4627915	202005180030	SW	DQ	05/14/2020 20:54	051420L231a.mdb
CCC	4627916		RW	DQ	05/14/2020 21:21	051420L231a.mdb

QC Summary Report

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
LMB	IS-L-phenylalanine-d5	L231	N/A	---		50434	57114	ug/L	88	50 - 150	---	---	1.0	---	05/14/2020 19:35	4627913
LMB	IS-Microcystin-LR-15N10	L231	N/A	---		777	855	ug/L	91	50 - 150	---	---	1.0	---	05/14/2020 19:35	4627913
LMB	IS-Microcystin-RR-15N13	L231	N/A	---		9309	9674	ug/L	96	50 - 150	---	---	1.0	---	05/14/2020 19:35	4627913
LMB	IS-Microcystin-YR-15N10	L231	N/A	---		3474	3646	ug/L	95	50 - 150	---	---	1.0	---	05/14/2020 19:35	4627913
LMB	IS-Uracil-d4	L231	N/A	---		4704	4756	ug/L	99	50 - 150	---	---	1.0	---	05/14/2020 19:35	4627913
LMB	Anatoxin-a	L231	0.02	---	<	0.02		ug/L	---	---	---	---	1.0	---	05/14/2020 19:35	4627913
LMB	Cylindrospermopsin	L231	0.05	---	<	0.05		ug/L	---	---	---	---	1.0	---	05/14/2020 19:35	4627913
LMB	Microcystin-LA	L231	0.1	---	<	0.1		ug/L	---	---	---	---	1.0	---	05/14/2020 19:35	4627913
LMB	Microcystin-LF	L231	0.1	---	<	0.1		ug/L	---	---	---	---	1.0	---	05/14/2020 19:35	4627913
LMB	Microcystin-LR	L231	0.1	---	<	0.1		ug/L	---	---	---	---	1.0	---	05/14/2020 19:35	4627913
LMB	Microcystin-LY	L231	0.1	---	<	0.1		ug/L	---	---	---	---	1.0	---	05/14/2020 19:35	4627913
LMB	Microcystin-RR	L231	0.1	---	<	0.1		ug/L	---	---	---	---	1.0	---	05/14/2020 19:35	4627913
LMB	Microcystin-YR	L231	0.1	---	<	0.1		ug/L	---	---	---	---	1.0	---	05/14/2020 19:35	4627913
LMB	Nodularin	L231	0.1	---	<	0.1		ug/L	---	---	---	---	1.0	---	05/14/2020 19:35	4627913
FS	IS-L-phenylalanine-d5	L231	N/A	202005180024		56061	57114	ug/L	98	50 - 150	---	---	1.0	---	05/14/2020 19:48	4626882
FS	IS-Microcystin-LR-15N10	L231	N/A	202005180024		936	855	ug/L	109	50 - 150	---	---	1.0	---	05/14/2020 19:48	4626882
FS	IS-Microcystin-RR-15N13	L231	N/A	202005180024		10138	9674	ug/L	105	50 - 150	---	---	1.0	---	05/14/2020 19:48	4626882
FS	IS-Microcystin-YR-15N10	L231	N/A	202005180024		3621	3646	ug/L	99	50 - 150	---	---	1.0	---	05/14/2020 19:48	4626882
FS	IS-Uracil-d4	L231	N/A	202005180024		4733	4756	ug/L	100	50 - 150	---	---	1.0	---	05/14/2020 19:48	4626882
FS	Anatoxin-a	L231	0.02	202005180024	<	0.02		ug/L	---	---	---	---	1.0	---	05/14/2020 19:48	4626882
FS	Cylindrospermopsin	L231	0.05	202005180024	<	0.05		ug/L	---	---	---	---	1.0	---	05/14/2020 19:48	4626882
FS	Microcystin-LA	L231	0.1	202005180024	<	0.1		ug/L	---	---	---	---	1.0	---	05/14/2020 19:48	4626882
FS	Microcystin-LF	L231	0.1	202005180024	<	0.1		ug/L	---	---	---	---	1.0	---	05/14/2020 19:48	4626882
FS	Microcystin-LR	L231	0.1	202005180024	<	0.1		ug/L	---	---	---	---	1.0	---	05/14/2020 19:48	4626882
FS	Microcystin-LY	L231	0.1	202005180024	<	0.1		ug/L	---	---	---	---	1.0	---	05/14/2020 19:48	4626882
FS	Microcystin-RR	L231	0.1	202005180024	<	0.1		ug/L	---	---	---	---	1.0	---	05/14/2020 19:48	4626882
FS	Microcystin-YR	L231	0.1	202005180024	<	0.1		ug/L	---	---	---	---	1.0	---	05/14/2020 19:48	4626882
FS	Nodularin	L231	0.1	202005180024	<	0.1		ug/L	---	---	---	---	1.0	---	05/14/2020 19:48	4626882
FS	IS-L-phenylalanine-d5	L231	N/A	202005180028		55594	57114	ug/L	97	50 - 150	---	---	1.0	---	05/14/2020 20:01	4626883
FS	IS-Microcystin-LR-15N10	L231	N/A	202005180028		974	855	ug/L	114	50 - 150	---	---	1.0	---	05/14/2020 20:01	4626883
FS	IS-Microcystin-RR-15N13	L231	N/A	202005180028		9532	9674	ug/L	99	50 - 150	---	---	1.0	---	05/14/2020 20:01	4626883
FS	IS-Microcystin-YR-15N10	L231	N/A	202005180028		3656	3646	ug/L	100	50 - 150	---	---	1.0	---	05/14/2020 20:01	4626883
FS	IS-Uracil-d4	L231	N/A	202005180028		4474	4756	ug/L	94	50 - 150	---	---	1.0	---	05/14/2020 20:01	4626883
FS	Anatoxin-a	L231	0.02	202005180028	<	0.02		ug/L	---	---	---	---	1.0	---	05/14/2020 20:01	4626883
FS	Cylindrospermopsin	L231	0.05	202005180028	<	0.05		ug/L	---	---	---	---	1.0	---	05/14/2020 20:01	4626883
FS	Microcystin-LA	L231	0.1	202005180028	<	0.1		ug/L	---	---	---	---	1.0	---	05/14/2020 20:01	4626883
FS	Microcystin-LF	L231	0.1	202005180028	<	0.1		ug/L	---	---	---	---	1.0	---	05/14/2020 20:01	4626883
FS	Microcystin-LR	L231	0.1	202005180028	<	0.1		ug/L	---	---	---	---	1.0	---	05/14/2020 20:01	4626883
FS	Microcystin-LY	L231	0.1	202005180028	<	0.1		ug/L	---	---	---	---	1.0	---	05/14/2020 20:01	4626883
FS	Microcystin-RR	L231	0.1	202005180028	<	0.1		ug/L	---	---	---	---	1.0	---	05/14/2020 20:01	4626883

QC Summary Report (cont.)

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
FS	Microcystin-YR	L231	0.1	202005180028	<	0.1		ug/L	---	---	---	---	1.0	---	05/14/2020 20:01	4626883
FS	Nodularin	L231	0.1	202005180028	<	0.1		ug/L	---	---	---	---	1.0	---	05/14/2020 20:01	4626883
FS	IS-L-phenylalanine-d5	L231	N/A	202005180029		55136	57114	ug/L	97	50 - 150	---	---	1.0	---	05/14/2020 20:15	4626884
FS	IS-Microcystin-LR-15N10	L231	N/A	202005180029		908	855	ug/L	106	50 - 150	---	---	1.0	---	05/14/2020 20:15	4626884
FS	IS-Microcystin-RR-15N13	L231	N/A	202005180029		10212	9674	ug/L	106	50 - 150	---	---	1.0	---	05/14/2020 20:15	4626884
FS	IS-Microcystin-YR-15N10	L231	N/A	202005180029		3860	3646	ug/L	106	50 - 150	---	---	1.0	---	05/14/2020 20:15	4626884
FS	IS-Uracil-d4	L231	N/A	202005180029		4601	4756	ug/L	97	50 - 150	---	---	1.0	---	05/14/2020 20:15	4626884
FS	Anatoxin-a	L231	0.02	202005180029	<	0.02		ug/L	---	---	---	---	1.0	---	05/14/2020 20:15	4626884
FS	Cylindrospermopsin	L231	0.05	202005180029	<	0.05		ug/L	---	---	---	---	1.0	---	05/14/2020 20:15	4626884
FS	Microcystin-LA	L231	0.1	202005180029	<	0.1		ug/L	---	---	---	---	1.0	---	05/14/2020 20:15	4626884
FS	Microcystin-LF	L231	0.1	202005180029	<	0.1		ug/L	---	---	---	---	1.0	---	05/14/2020 20:15	4626884
FS	Microcystin-LR	L231	0.1	202005180029	<	0.1		ug/L	---	---	---	---	1.0	---	05/14/2020 20:15	4626884
FS	Microcystin-LY	L231	0.1	202005180029	<	0.1		ug/L	---	---	---	---	1.0	---	05/14/2020 20:15	4626884
FS	Microcystin-RR	L231	0.1	202005180029	<	0.1		ug/L	---	---	---	---	1.0	---	05/14/2020 20:15	4626884
FS	Microcystin-YR	L231	0.1	202005180029	<	0.1		ug/L	---	---	---	---	1.0	---	05/14/2020 20:15	4626884
FS	Nodularin	L231	0.1	202005180029	<	0.1		ug/L	---	---	---	---	1.0	---	05/14/2020 20:15	4626884
FS	IS-L-phenylalanine-d5	L231	N/A	202005180030		54444	57114	ug/L	95	50 - 150	---	---	1.0	---	05/14/2020 20:28	4626885
FS	IS-Microcystin-LR-15N10	L231	N/A	202005180030		1141	855	ug/L	133	50 - 150	---	---	1.0	---	05/14/2020 20:28	4626885
FS	IS-Microcystin-RR-15N13	L231	N/A	202005180030		9789	9674	ug/L	101	50 - 150	---	---	1.0	---	05/14/2020 20:28	4626885
FS	IS-Microcystin-YR-15N10	L231	N/A	202005180030		3755	3646	ug/L	103	50 - 150	---	---	1.0	---	05/14/2020 20:28	4626885
FS	IS-Uracil-d4	L231	N/A	202005180030		4393	4756	ug/L	92	50 - 150	---	---	1.0	---	05/14/2020 20:28	4626885
FS	Anatoxin-a	L231	0.02	202005180030	<	0.02		ug/L	---	---	---	---	1.0	---	05/14/2020 20:28	4626885
FS	Cylindrospermopsin	L231	0.05	202005180030	<	0.05		ug/L	---	---	---	---	1.0	---	05/14/2020 20:28	4626885
FS	Microcystin-LA	L231	0.1	202005180030	<	0.1		ug/L	---	---	---	---	1.0	---	05/14/2020 20:28	4626885
FS	Microcystin-LF	L231	0.1	202005180030	<	0.1		ug/L	---	---	---	---	1.0	---	05/14/2020 20:28	4626885
FS	Microcystin-LR	L231	0.1	202005180030	<	0.1		ug/L	---	---	---	---	1.0	---	05/14/2020 20:28	4626885
FS	Microcystin-LY	L231	0.1	202005180030	<	0.1		ug/L	---	---	---	---	1.0	---	05/14/2020 20:28	4626885
FS	Microcystin-RR	L231	0.1	202005180030	<	0.1		ug/L	---	---	---	---	1.0	---	05/14/2020 20:28	4626885
FS	Microcystin-YR	L231	0.1	202005180030	<	0.1		ug/L	---	---	---	---	1.0	---	05/14/2020 20:28	4626885
FS	Nodularin	L231	0.1	202005180030	<	0.1		ug/L	---	---	---	---	1.0	---	05/14/2020 20:28	4626885
MS	IS-L-phenylalanine-d5	L231	N/A	202005180030		58660	57114	ug/L	103	50 - 150	---	---	1.0	---	05/14/2020 20:41	4627914
MS	IS-Microcystin-LR-15N10	L231	N/A	202005180030		984	855	ug/L	115	50 - 150	---	---	1.0	---	05/14/2020 20:41	4627914
MS	IS-Microcystin-RR-15N13	L231	N/A	202005180030		10068	9674	ug/L	104	50 - 150	---	---	1.0	---	05/14/2020 20:41	4627914
MS	IS-Microcystin-YR-15N10	L231	N/A	202005180030		3849	3646	ug/L	106	50 - 150	---	---	1.0	---	05/14/2020 20:41	4627914
MS	IS-Uracil-d4	L231	N/A	202005180030		4727	4756	ug/L	99	50 - 150	---	---	1.0	---	05/14/2020 20:41	4627914
MS	Anatoxin-a	L231	0.02	202005180030		0.1947	0.2	ug/L	97	70 - 130	---	---	1.0	---	05/14/2020 20:41	4627914
MS	Cylindrospermopsin	L231	0.05	202005180030		0.4817	0.5	ug/L	96	70 - 130	---	---	1.0	---	05/14/2020 20:41	4627914
MS	Microcystin-LA	L231	0.1	202005180030		0.7973	1.0	ug/L	80	70 - 130	---	---	1.0	---	05/14/2020 20:41	4627914
MS	Microcystin-LF	L231	0.1	202005180030		0.8233	1.0	ug/L	82	70 - 130	---	---	1.0	---	05/14/2020 20:41	4627914
MS	Microcystin-LR	L231	0.1	202005180030		0.8650	1.0	ug/L	86	70 - 130	---	---	1.0	---	05/14/2020 20:41	4627914
MS	Microcystin-LY	L231	0.1	202005180030		0.7615	1.0	ug/L	76	70 - 130	---	---	1.0	---	05/14/2020 20:41	4627914

QC Summary Report (cont.)

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
MS	Microcystin-RR	L231	0.1	202005180030		0.9434	1.0	ug/L	94	70 - 130	---	---	1.0	---	05/14/2020 20:41	4627914
MS	Microcystin-YR	L231	0.1	202005180030		0.8840	1.0	ug/L	88	70 - 130	---	---	1.0	---	05/14/2020 20:41	4627914
MS	Nodularin	L231	0.1	202005180030		0.9484	1.0	ug/L	95	70 - 130	---	---	1.0	---	05/14/2020 20:41	4627914
MSD	IS-L-phenylalanine-d5	L231	N/A	202005180030		57608	57114	ug/L	101	50 - 150	---	---	1.0	---	05/14/2020 20:54	4627915
MSD	IS-Microcystin-LR-15N10	L231	N/A	202005180030		826	855	ug/L	97	50 - 150	---	---	1.0	---	05/14/2020 20:54	4627915
MSD	IS-Microcystin-RR-15N13	L231	N/A	202005180030		9875	9674	ug/L	102	50 - 150	---	---	1.0	---	05/14/2020 20:54	4627915
MSD	IS-Microcystin-YR-15N10	L231	N/A	202005180030		3713	3646	ug/L	102	50 - 150	---	---	1.0	---	05/14/2020 20:54	4627915
MSD	IS-Uracil-d4	L231	N/A	202005180030		4283	4756	ug/L	90	50 - 150	---	---	1.0	---	05/14/2020 20:54	4627915
MSD	Anatoxin-a	L231	0.02	202005180030		0.1923	0.2	ug/L	96	70 - 130	1.2	30	1.0	---	05/14/2020 20:54	4627915
MSD	Cylindrospermopsin	L231	0.05	202005180030		0.5148	0.5	ug/L	103	70 - 130	6.6	30	1.0	---	05/14/2020 20:54	4627915
MSD	Microcystin-LA	L231	0.1	202005180030		0.9293	1.0	ug/L	93	70 - 130	15	30	1.0	---	05/14/2020 20:54	4627915
MSD	Microcystin-LF	L231	0.1	202005180030		1.0464	1.0	ug/L	105	70 - 130	24	30	1.0	---	05/14/2020 20:54	4627915
MSD	Microcystin-LR	L231	0.1	202005180030		1.2382	1.0	ug/L	124	70 - 130	**35**	30	1.0	---	05/14/2020 20:54	4627915
MSD	Microcystin-LY	L231	0.1	202005180030		0.9759	1.0	ug/L	98	70 - 130	25	30	1.0	---	05/14/2020 20:54	4627915
MSD	Microcystin-RR	L231	0.1	202005180030		0.9839	1.0	ug/L	98	70 - 130	4.2	30	1.0	---	05/14/2020 20:54	4627915
MSD	Microcystin-YR	L231	0.1	202005180030		0.9729	1.0	ug/L	97	70 - 130	9.6	30	1.0	---	05/14/2020 20:54	4627915
MSD	Nodularin	L231	0.1	202005180030		1.1730	1.0	ug/L	117	70 - 130	21	30	1.0	---	05/14/2020 20:54	4627915
CCC	IS-L-phenylalanine-d5	L231	N/A	---		55313	57114	ug/L	97	50 - 150	---	---	1.0	---	05/14/2020 21:21	4627916
CCC	IS-Microcystin-LR-15N10	L231	N/A	---		912	855	ug/L	107	50 - 150	---	---	1.0	---	05/14/2020 21:21	4627916
CCC	IS-Microcystin-RR-15N13	L231	N/A	---		8963	9674	ug/L	93	50 - 150	---	---	1.0	---	05/14/2020 21:21	4627916
CCC	IS-Microcystin-YR-15N10	L231	N/A	---		3477	3646	ug/L	95	50 - 150	---	---	1.0	---	05/14/2020 21:21	4627916
CCC	IS-Uracil-d4	L231	N/A	---		4380	4756	ug/L	92	50 - 150	---	---	1.0	---	05/14/2020 21:21	4627916
CCC	Anatoxin-a	L231	0.02	---		0.1958	0.2	ug/L	98	70 - 130	---	---	1.0	---	05/14/2020 21:21	4627916
CCC	Cylindrospermopsin	L231	0.05	---		0.5044	0.5	ug/L	101	70 - 130	---	---	1.0	---	05/14/2020 21:21	4627916
CCC	Microcystin-LA	L231	0.1	---		0.8317	1.0	ug/L	83	70 - 130	---	---	1.0	---	05/14/2020 21:21	4627916
CCC	Microcystin-LF	L231	0.1	---		0.8572	1.0	ug/L	86	70 - 130	---	---	1.0	---	05/14/2020 21:21	4627916
CCC	Microcystin-LR	L231	0.1	---		1.0412	1.0	ug/L	104	70 - 130	---	---	1.0	---	05/14/2020 21:21	4627916
CCC	Microcystin-LY	L231	0.1	---		0.9542	1.0	ug/L	95	70 - 130	---	---	1.0	---	05/14/2020 21:21	4627916
CCC	Microcystin-RR	L231	0.1	---		1.0356	1.0	ug/L	104	70 - 130	---	---	1.0	---	05/14/2020 21:21	4627916
CCC	Microcystin-YR	L231	0.1	---		1.0044	1.0	ug/L	100	70 - 130	---	---	1.0	---	05/14/2020 21:21	4627916
CCC	Nodularin	L231	0.1	---		0.9568	1.0	ug/L	96	70 - 130	---	---	1.0	---	05/14/2020 21:21	4627916

Sample Type Key

Type (Abbr.)	Sample Type	Type (Abbr.)	Sample Type
CCC	Continuing Calibration Check		
FS	Field Sample		
LMB	Laboratory Method Blank		
MS	Matrix Spike		
MSD	Matrix Spike Duplicate		

END OF REPORT

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750 Royal Oaks Drive, Suite 100
Monrovia, California 91016-3629
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Fax: (866) 988-3757
1 800 566 LABS (1 800 566 5227)

ACCREDITED
CERTIFICATE #'s 5890.01 & 5890.02

Laboratory Report

for

San Francisco PUC
1000 El Camino Real
Millbrae, CA 94030
Attention: Megan Tran

NELAP ACCREDITED TNI LABORATORY
Utah ELCP CA00006

Date of Issue
10/23/2020

EUROFINS EATON ANALYTICAL, LLC

Report: 895439
Project: 470440-DW1
Group: Algal Toxins

UMVN: Monica Van Natta

Project Manager

* Accredited in accordance with TNI 2016 and ISO/IEC 17025:2017.
* Laboratory certifies that the test results meet all **TNI 2016 and ISO/IEC 17025:2017** requirements unless noted under the individual analysis.
* Following the cover page are State Certification List, ISO 17025 Accredited Method List, Acknowledgement of Samples Received, Comments, Hits Report, Data Report, QC Summary, QC Report and Regulatory Forms, as applicable.
* Test results relate only to the sample(s) tested.
* Test results apply to the sample(s) as received, unless otherwise noted in the comments report (ISO/IEC 17025:2017).
* This report shall not be reproduced except in full, without the written approval of the laboratory.
* This report includes ISO/IEC 17025 and non-ISO 17025 accredited methods.

STATE CERTIFICATION LIST

State	Certification Number	State	Certification Number
Alabama	41060	**Montana**	Cert 0035
Arizona	AZ0778	**Nebraska**	Certified
Arkansas	Certified	**Nevada**	CA000062018
California	2813	**New Hampshire ***	2959
Colorado	Certified	**New Jersey ***	CA 008
Connecticut	PH-0107	**New Mexico**	Certified
Delaware	CA 006	**New York ***	11320
Florida *	E871024	**North Carolina**	06701
Georgia	947	**North Dakota**	R-009
Guam	18-005R	**Oregon ***	CA200003-005
Hawaii	Certified	**Pennsylvania ***	68-565
Idaho	Certified	**Puerto Rico**	Certified
Illinois *	200033	**Rhode Island**	LAO00326
Indiana	C-CA-01	**South Carolina**	87016
Iowa - Asbestos	413	**South Dakota**	Certified
Kansas *	E-10268	**Tennessee**	TN02839
Kentucky	90107	**Texas ***	T104704230-18-15
Louisiana *	LA180000	**Utah (Primary AB) ***	CA00006
Maine	CA0006	**Vermont**	VT0114
Maryland	224	**Virginia ***	460260
Commonwealth of Northern Marianas Is.	MP0004	**Washington**	C838
Massachusetts	M-CA006	**EPA Region 5**	Certified
Michigan	9906	**Los Angeles County Sanitation Districts**	10264
Mississippi	Certified		

* NELAP/TNI Recognized Accreditation Bodies

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The tests listed below are accredited and meet the requirements of ISO/IEC 17025 as verified by the ANSI-ASQ National Accreditation Board/A2LA.
Refer to Certificate and scope of accreditation (5890) found at: https://www.eurofinsus.com/Eaton

SPECIFIC TESTS	METHOD OR TECHNIQUE USED	Environ-mental (Drinking Water)	Environ-mental (Waste Water)	Water as a Component of Food and Bev/Bev/ Bottled Water
1,2,3-TCP (5 PPT & 0.5 PPT)	CA SRL 524M-TCP	x		x
1,4-Dioxane	EPA 522	x		x
2,3,7,8-TCDD	Modified EPA 1613B	x		x
Acrylamide	In House Method (2440)	x		x
Algal Toxins/Microcystin	In House Method (3570)			
Alkalinity	SM 2320B	x	x	x
Ammonia	EPA 350.1		x	x
Ammonia	SM 4500-NH3 H		x	x
Anions and DBPs by IC	EPA 300.0	x	x	x
Anions and DBPs by IC	EPA 300.1	x		x
Asbestos	EPA 100.2	x	x	
BOD / CBOD	SM 5210B		x	x
Bromate	In House Method (2447)	x		x
Carbamates	EPA 531.2	x		x
Carbonate as CO3	SM 2330B	x	x	x
Carbonyls	EPA 556	x		x
COD	EPA 410.4 / SM 5220D		x	
Chloramines	SM 4500-CL G	x	x	x
Chlorinated Acids	EPA 515.4	x		x
Chlorinated Acids	EPA 555	x		x
Chlorine Dioxide	SM 4500-CLO2 D Palin Test	x		x
Chlorine -Total/Free/ Combined Residual	SM 4500-Cl G	x	x	x
Conductivity	EPA 120.1		x	
Conductivity	SM 2510B	x	x	x
Corrosivity (Langelier Index)	SM 2330B	x		x
Cyanide, Amenable	SM 4500-CN G	x	x	
Cyanide, Free	SM 4500CN F	x	x	x
Cyanide, Total	EPA 335.4	x	x	x
Cyanogen Chloride (screen)	In House Method (2470)	x		x
Diquat and Paraquat	EPA 549.2	x		x
DBP/HAA	SM 6251B	x		x
Dissolved Oxygen	SM 4500-O G		x	x
DOC	SM 5310C	x		x
E. Coli	(MTF/EC+MUG)	x		x
E. Coli	CFR 141.21(f)(6)(i)	x		x
E. Coli	SM 9223		x	
E. Coli (Enumeration)	SM 9221B.1/ SM 9221F	x		x
E. Coli (Enumeration)	SM 9223B	x		x
EDB/DCBP	EPA 504.1	x		
EDB/DBCP and DBP	EPA 551.1	x		x
EDTA and NTA	In House Method (2454)	x		x
Endothall	EPA 548.1	x		x
Endothall	In-house Method (2445)	x		x
Enterococci	SM 9230B	x	x	
Fecal Coliform	SM 9221 E (MTF/EC)	x		
Fecal Coliform	SM 9221C, E (MTF/EC)		x	
Fecal Coliform (Enumeration)	SM 9221E (MTF/EC)	x		x
Fecal Coliform with Chlorine Present	SM 9221E		x	
Fecal Streptococci	SM 9230B	x	x	
Fluoride	SM 4500-F C	x	x	x
Glyphosate	EPA 547	x		x
Glyphosate + AMPA	In House Method (3618)	x		x
Gross Alpha/Beta	EPA 900.0	x	x	x
Gross Alpha Coprecipitation	SM 7110 C	x	x	x
Hardness	SM 2340B	x	x	x
Heterotrophic Bacteria	In House Method (2439)	x		x
Heterotrophic Bacteria	SM 9215 B	x		x
Hexavalent Chromium	EPA 218.6	x	x	x
Hexavalent Chromium	EPA 218.7	x		x
Hexavalent Chromium	SM 3500-Cr B		x	
Hormones	EPA 539	x		x
Hydroxide as OH Calc.	SM 2330B	x		x
Kjeldahl Nitrogen	EPA 351.2		x	
Legionella	Legiolert	x		x
Mercury	EPA 200.8	x		x
Metals	EPA 200.7 / 200.8	x	x	x
Microcystin LR	ELISA (2360)	x		x
Microcystin, Total	EPA 546	x		x
NDMA	EEA/Agilent 521.1 In house method (2425)	x		x
Nitrate/Nitrite Nitrogen	EPA 353.2	x	x	x
OCL, Pesticides/PCB	EPA 505	x		x
Ortho Phosphate	EPA 365.1	x	x	x
Ortho Phosphorous	SM 4500P E	x		x
Oxyhalides Disinfection Byproducts	EPA 317.0	x		x
Perchlorate	EPA 331.0	x		x
Perchlorate (low and high)	EPA 314.0	x		x
Perfluorinated Alkyl Acids	EPA 537	x		x
Perfluorinated Polutant	In house Method (2434)	x		x
pH	EPA 150.1	x		
pH	SM 4500-H+B	x	x	x
Phenylurea Pesticides/ Herbicides	In House Method, based on EPA 532 (2448)	x		x
Pseudomonas	IDEXX Pseudalert (2461)	x		x
Radium-226	GA Institute of Tech	x		x
Radium-228	GA Institute of Tech	x		x
Radon-222	SM 7500RN	x		x
Residue, Filterable	SM 2540C	x	x	x
Residue, Non-filterable	SM 2540D		x	
Residue, Total	SM 2540B		x	x
Residue, Volatile	EPA 160.4		x	
Semi-VOC	EPA 525.2	x		x
Silica	SM 4500-Si D	x	x	
Silica	SM 4500-SiO2 C	x	x	
Sulfide	SM 4500-$S^{=}$ D		x	
Sulfite	SM 4500-SO^{3}B	x	x	x
Surfactants	SM 5540C	x	x	x
Taste and Odor Analytes	SM 6040E	x		x
Total Coliform (P/A)	SM 9221 A, B	x		x
Total Coliform (Enumeration)	SM 9221 A, B, C	x		x
Total Coliform / E. coli	Colisure SM 9223	x		x
Total Coliform	SM 9221B		x	
Total Coliform with Chlorine Present	SM 9221B		x	
Total Coliform / E.coli (P/A and Enumeration)	SM 9223	x		x
TOC	SM 5310C	x	x	x
TOX	SM 5320B		x	
Total Phenols	EPA 420.1		x	
Total Phenols	EPA 420.4	x	x	x
Total Phosphorous	SM 4500 P E		x	
Triazine Pesticides & Degradates	In House (3617)	x		x
Turbidity	EPA 180.1	x	x	x
Turbidity	SM 2130B	x	x	
Uranium by ICP/MS	EPA 200.8	x		x
UV 254	SM 5910B	x		
VOC	EPA 524.2	x		x
VOC	In House Method (2411)	x		x
Yeast and Mold	SM 9610	x		x
Field Sampling	N/A			

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Acknowledgement of Samples Received

Addr: **San Francisco PUC**
1000 El Camino Real
Millbrae, CA 94030

Client ID: SANFRAN
Folder #: 895439
Project: 470440-DW1
Sample Group: Algal Toxins

Attn: Megan Tran
Phone: 650-872-5945

Project Manager: Monica Van Natta
Phone: 559-797-1931
PO #: PRO.0165 PO-000043463 TO#01

The following samples were received from you on **September 30, 2020** at **1126**. They have been scheduled for the tests listed below each sample. If this information is incorrect, please contact your service representative. Thank you for using Eurofins Eaton Analytical, LLC.

Sample #	Sample ID	Sample Date
202009300254	LMER_E_00_LIM	09/29/2020 1200
	Variable ID: 2076535-01	
	@LCMS-ALGALTOX - LOW @UCMR4 546	
202009300255	LMER_N_00_LIM	09/29/2020 1300
	Variable ID: 2076536-01	
	@LCMS-ALGALTOX - LOW @UCMR4 546	
202009300256	LMER_R_00_LIM	09/29/2020 0900
	Variable ID: 2076537-01	
	@LCMS-ALGALTOX - LOW @UCMR4 546	
202009300257	LMER_S_00_LIM	09/29/2020 1000
	Variable ID: 2076538-01	
	@LCMS-ALGALTOX - LOW @UCMR4 546	

Test Description

@LCMS-ALGALTOX - LOW -- Algal-toxins by LCMS Low

@UCMR4 546 -- UCMR4 546

750 Royal Oaks Drive, Suite 100, Monrovia, CA 91016 Tel (626) 386-1100 Fax (866) 988-3757 www.EurofinsUS.com/Eaton

San Francisco Water Power Sewer
Services of the San Francisco Public Utilities Commission

SAN FRANCISCO PUBLIC UTILITIES COMMISSION

SUB LABORATORY CHAIN OF CUSTODY RECORD

845439

Water Quality Division
1000 El Camino Real
Millbrae, CA 94030
Tel: (650) 872-5945
Fax: (650) 952-3407

Out Source#: 4349 **Ship To : SUB_LAB** **Ship Date: 09/29/2020** **Ship Via: FedEx** **Tracking#: 7711 0278 2750**

Index Code: ☐ 921021(WW)/920901(WW) ☐ 470440(DW)

SHIPPED BY: Phuong Hz / MH

TYPE: ROUTINE / SPECIAL
(Circle One)

FOR LAB USE ONLY

METHOD OF TRANSPORT (CHECK ONE)	SAMPLE CONDITION UPON RECEIPT (CHECK APPROPRIATE BOXES)		SAMPLE STORAGE
☐ MILLBRAE	☐ CHILLED	☐ CONTAINER INTACT	LOCATION
☐ MOCCASIN	☐ SEALED	☐ # OF SAMPLES MATCH COC	REFRIG#
☐ COURIER	☐ SEAL INTACT	☐ HEADSPACE (VOA)	SHELF#
☐ OTHER	☐ PRESERVED	COOLER TEMPERATURE (0-6°C):	OTHERS

STATE EDT REQUIRED: Y / N SYTEM ID:

Sample ID	Source	Collected Date	Time	By	WQD Rec. Date	By	LocationNotes\Comments	TAT	SUB_546	SUB_ALGAL_TOXIN
2076535-01	LMER_E_00_LIM	9/29/20	1200	RMJOHNSON	9/29/20	PHOANG		21 DAYS	10	7-9
2076536-01	LMER_N_00_LIM	9/29/20	1300	RMJOHNSON	9/29/20	PHOANG		21 DAYS	10	7-9
2076537-01	LMER_R_00_LIM	9/29/20	0900	RMJOHNSON	9/29/20	PHOANG		21 DAYS	10	7-9
2076538-01	LMER_S_00_LIM	9/29/20	1000	RMJOHNSON	9/29/20	PHOANG		21 DAYS	10	7-9

(PH_9/29/20)

7711 0278 2750

↑ indicates the last digit(s) of container ID

RELINQUISHED FROM: (Print Name/Sign)	DATE/TIME:	RELINQUISHED TO: (Print Name/Sign)	DATE/TIME:	Comments:
Phuong Hz. / MH	9/29/2020 @1530	/		470440DW: (SUB_546/SUB_ALGAL_TOXIN/LK MERCED) : Please see subsequent pages for analyte details
SUB LAB RECEIVED BY: (Print Name/Sign) YUDI /	DATE/TIME: 9/29/20 1:26	SEND REPORT TO:	AGENCY:	

San Francisco Water Power Sewer
Services of the San Francisco Public Utilities Commission

SAN FRANCISCO PUBLIC UTILITIES COMMISSION

SUB LABORATORY CHAIN OF CUSTODY RECORD

Water Quality Division
1000 El Camino Real
Millbrae, CA 94030
Tel: (650) 872-5945
Fax: (650) 952-3407

Out Source#: 4349	Ship To : SUB_LAB	Ship Date: 09/29/2020	Ship Via: FedEx	Tracking#: 7711 0278 2750

FOR LAB USE ONLY

Sample ID 2076535-01 — **Source** LMER_E_00_LIM

Container ID (Rep of 3) — **Collect Method** 4°C

2076535-01-07 to 2076535-01-09

Analysis: SUB ALGAL TOXIN — **Method:** Default

Anatoxin	Cylindrospermopsin	Microcystin-LA	Microcystin-LF	Microcystin-LR
Microcystin-LY	Microcystin-RR	Microcystin-YR	Nodularin	

Container ID (Rep of 1) — **Collect Method** 4°C

2076535-01-10

Analysis: SUB 546 — **Method:** EPA 546

Total Microcystins

Sample ID 2076536-01 — **Source** LMER_N_00_LIM

Container ID (Rep of 3) — **Collect Method** 4°C

2076536-01-07 to 2076536-01-09

Analysis: SUB ALGAL TOXIN — **Method:** Default

Anatoxin	Cylindrospermopsin	Microcystin-LA	Microcystin-LF	Microcystin-LR
Microcystin-LY	Microcystin-RR	Microcystin-YR	Nodularin	

Container ID (Rep of 1) — **Collect Method** 4°C

2076536-01-10

Analysis: SUB 546 — **Method:** EPA 546

Total Microcystins

Sample ID 2076537-01 — **Source** LMER_R_00_LIM

Container ID (Rep of 3) — **Collect Method** 4°C

2076537-01-07 to 2076537-01-09

Analysis: SUB ALGAL TOXIN — **Method:** Default

Anatoxin	Cylindrospermopsin	Microcystin-LA	Microcystin-LF	Microcystin-LR
Microcystin-LY	Microcystin-RR	Microcystin-YR	Nodularin	

Container ID (Rep of 1) — **Collect Method** 4°C

2076537-01-10

Analysis: SUB 546 — **Method:** EPA 546

Total Microcystins

Sample ID 2076538-01 — **Source** LMER_S_00_LIM

Container ID (Rep of 3) — **Collect Method**

San Francisco Water Power Sewer
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SAN FRANCISCO PUBLIC UTILITIES COMMISSION

SUB LABORATORY CHAIN OF CUSTODY RECORD

Water Quality Division
1000 El Camino Real
Millbrae, CA 94030
Tel: (650) 872-5945
Fax: (650) 952-3407

Out Source#: 4349 | **Ship To : SUB_LAB** | **Ship Date: 09/29/2020** | **Ship Via: FedEx** | **Tracking#: 7711 0278 2750**

FOR LAB USE ONLY

2076538-01-07 to 2076538-01-09 — 4°C

Analysis: SUB ALGAL TOXIN — **Method:** Default

Anatoxin	Cylindrospermopsin	Microcystin-LA	Microcystin-LF	Microcystin-LR
Microcystin-LY	Microcystin-RR	Microcystin-YR	Nodularin	

Container ID (Rep of 1) — **Collect Method**

2076538-01-10 — 4°C

Analysis: SUB 546 — **Method:** EPA 546

Total Microcystins

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INTERNAL CHAIN OF CUSTODY RECORD

EEA Folder Number: 845439

SAMPLE TEMP RECEIVED:

Note: If samples are out of temperature range, let the ASMs know. ASMs will determine whether to proceed with analysis or not.

SAMPLES REC'D DAY OF COLLECTION? Yes / No

IR Gun ID = 618A (Observation= 3.9 °C) (Corr.Factor -0.2 °C) (Final = 3.7 °C)

TYPE OF ICE: Real ____ Synthetic ✓ No Ice ____ **CONDITION OF ICE:** Frozen ✓ Partially Frozen ____ Thawed ____ N/A ____

METHOD OF SHIPMENT: Pick-Up / Walk-In / (FedEx) / UPS / DHL / Area Fast / Top Line / Other: ____

Compliance Acceptance Criteria:

1) **Chemistry:** >0, ≤ 6°C, not frozen (NELAP) (if received after 24 hrs of sample collection)

2) **Microbiology, Distribution:** < 10°C, not frozen (can be ≥10°C if received on ice the same day as sample collection, within 8 hours)

3) **Microbiology, Surface Water:** < 10°C (if received after 2 hours of sample collection)

If out of temperature range for both Chemistry and Microbiology samples and temperature does not confirm, then measure the temperature of each quadrant and record each temperature of the quadrants

1 = (Observation= ____ °C) (Corr.Factor ____ °C) (Final = ____ °C)	2 = (Observation= ____ °C) (Corr.Factor ____ °C) (Final = ____ °C)
3 = (Observation= ____ °C) (Corr.Factor ____ °C) (Final = ____ °C)	4 = (Observation= ____ °C) (Corr.Factor ____ °C) (Final = ____ °C)

4 **Dioxin (1613 or 2,3,7,8 TCDD):** must be between 0-4 °C, not frozen (if received after 24 hrs of sample collection)

5) **pH Check.** Manufacturer: ____ Lot Number: ____ pH strip type: 0 - 14 or ____ Expiration Date ____ Results: ____

6) **Chlorine check.** Manufacturer: Sansafe. Lot No.: ____ Expiration Date: ____ Results ____

7) **VOA and Radon Headspace:** **No Samples with Headspace:** ☐ **Samples with Headspace (see below):** ☐

Headspace Documentation (use additional VOC and Radon Internal COFC for additional bottles)

Exempt from headspace concerns: Methods 515.4, HAA(6251,552), 505, SPME, @CH, 532LCMS, 556, 536, Anatoxin, LCMS methods using 40 ml vials, International clients:

Samp ID	Bottle #	None/<6 mm	>6mm

Samp ID	Bottle #	None/<6 mm	>6mm

Samp ID	Bottle #	None/<6 mm	>6mm

Samp ID	Bottle #	None/<6 mm	>6mm

Note Sample IDs which have dissimilar headspace (i.e. potential sampling errors): ____

	SIGNATURE	PRINT NAME	COMPANY/TITLE	DATE	TIME
RECEIVED BY:	✓	M	Eurofins Eaton Analytical	9/30/20	11:26

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Laboratory Comments

Report: 895439
Project: 470440-DW1
Group: Algal Toxins

San Francisco PUC
Megan Tran
1000 El Camino Real
Millbrae, CA 94030

Folder Comments

Flags Legend:

V1 - CCV recovery was above method acceptance limits. This target analyte was not detected in the sample.

The Comments Report may be blank if there are no comments for this report.

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Laboratory Hits

Report: 895439
Project: 470440-DW1
Group: Algal Toxins

San Francisco PUC
Megan Tran
1000 El Camino Real
Millbrae, CA 94030

Samples Received on:
09/30/2020 1126

Analyzed	Analyte	Sample ID	Result	Federal MCL	Units	MRL
	202009300254	**LMER_E_00_LIM**				
10/16/2020 0:25	Microcystin-LY (MC-LY)		0.11		ug/L	0.10
10/09/2020 11:38	Total Microcystins		9.1		ug/L	30
	202009300255	**LMER_N_00_LIM**				
10/16/2020 0:38	Microcystin-LY (MC-LY)		0.12		ug/L	0.10
10/22/2020 13:20	Microcystin-YR (MC-YR)		0.22		ug/L	0.10
10/09/2020 11:38	Total Microcystins		23		ug/L	30
	202009300256	**LMER_R_00_LIM**				
10/09/2020 11:38	Total Microcystins		7.2		ug/L	30
	202009300257	**LMER_S_00_LIM**				
10/09/2020 11:38	Total Microcystins		8.6		ug/L	30

SUMMARY OF POSITIVE DATA ONLY

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Tel: (626) 386-1100
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1 800 566 LABS (1 800 566 5227)

Laboratory Data

Report: 895439
Project: 470440-DW1
Group: Algal Toxins

San Francisco PUC
Megan Tran
1000 El Camino Real
Millbrae, CA 94030

Samples Received on:
09/30/2020 1126

Prepped	Analyzed	Prep Batch	Analytical Batch	Method	Analyte	Result	Units	MRL	Dilution
LMER_E_00_LIM (202009300254)							**Sampled on 09/29/2020 1200**		
Variable ID: 2076535-01									
EPA 546 - UCMR4 546									
09/30/20	10/09/20 11:38	1277783	1280234	(EPA 546)	Total Microcystins	9.1	ug/L	30	10
09/30/20	10/09/20 11:38	1277783	1280234	(EPA 546)	%CV	1.10	%	110	1
LC-MS-MS - Algal-toxins by LCMS Low									
10/22/20	10/22/20 12:08	1283309	1282281	(LC-MS-MS)	Anatoxin a	ND	ug/L	0.020	1
10/22/20	10/22/20 12:08	1283309	1282281	(LC-MS-MS)	Cylindrospermopsin	ND	ug/L	0.050	1
10/15/20	10/16/20 0:25	1281780	1281820	(LC-MS-MS)	Microcystin-LA (MC-LA)	ND	ug/L	0.10	1
10/15/20	10/16/20 0:25	1281780	1281820	(LC-MS-MS)	Microcystin-LF (MC-LF)	ND	ug/L	0.10	1
10/15/20	10/16/20 0:25	1281780	1281820	(LC-MS-MS)	Microcystin-LR (MC-LR)	ND (V1)	ug/L	0.10	1
10/15/20	10/16/20 0:25	1281780	1281820	(LC-MS-MS)	Microcystin-LY (MC-LY)	0.11	ug/L	0.10	1
10/15/20	10/16/20 0:25	1281780	1281820	(LC-MS-MS)	Microcystin-RR (MC-RR)	ND	ug/L	0.10	1
10/22/20	10/22/20 12:08	1283309	1282281	(LC-MS-MS)	Microcystin-YR (MC-YR)	ND	ug/L	0.10	1
10/15/20	10/16/20 0:25	1281780	1281820	(LC-MS-MS)	Nodularin (NOD)	ND	ug/L	0.10	1
LMER_N_00_LIM (202009300255)							**Sampled on 09/29/2020 1300**		
Variable ID: 2076536-01									
EPA 546 - UCMR4 546									
09/30/20	10/09/20 11:38	1277783	1280234	(EPA 546)	Total Microcystins	23	ug/L	30	10
09/30/20	10/09/20 11:38	1277783	1280234	(EPA 546)	%CV	3.90	%	390	1
LC-MS-MS - Algal-toxins by LCMS Low									
10/22/20	10/22/20 13:20	1283309	1282281	(LC-MS-MS)	Anatoxin a	ND	ug/L	0.020	1
10/22/20	10/22/20 13:20	1283309	1282281	(LC-MS-MS)	Cylindrospermopsin	ND	ug/L	0.050	1
10/15/20	10/16/20 0:38	1281780	1281820	(LC-MS-MS)	Microcystin-LA (MC-LA)	ND	ug/L	0.10	1
10/15/20	10/16/20 0:38	1281780	1281820	(LC-MS-MS)	Microcystin-LF (MC-LF)	ND	ug/L	0.10	1
10/22/20	10/22/20 13:20	1283309	1282281	(LC-MS-MS)	Microcystin-LR (MC-LR)	ND	ug/L	0.10	1
10/15/20	10/16/20 0:38	1281780	1281820	(LC-MS-MS)	Microcystin-LY (MC-LY)	0.12	ug/L	0.10	1
10/15/20	10/16/20 0:38	1281780	1281820	(LC-MS-MS)	Microcystin-RR (MC-RR)	ND	ug/L	0.10	1
10/22/20	10/22/20 13:20	1283309	1282281	(LC-MS-MS)	Microcystin-YR (MC-YR)	0.22	ug/L	0.10	1
10/15/20	10/16/20 0:38	1281780	1281820	(LC-MS-MS)	Nodularin (NOD)	ND	ug/L	0.10	1
LMER_R_00_LIM (202009300256)							**Sampled on 09/29/2020 0900**		
Variable ID: 2076537-01									
EPA 546 - UCMR4 546									
09/30/20	10/09/20 11:38	1277783	1280234	(EPA 546)	Total Microcystins	7.2	ug/L	30	10
09/30/20	10/09/20 11:38	1277783	1280234	(EPA 546)	%CV	0.200	%	20.0	1
LC-MS-MS - Algal-toxins by LCMS Low									
10/22/20	10/22/20 13:39	1283309	1282281	(LC-MS-MS)	Anatoxin a	ND	ug/L	0.020	1
10/22/20	10/22/20 13:39	1283309	1282281	(LC-MS-MS)	Cylindrospermopsin	ND	ug/L	0.050	1

Rounding on totals after summation.
(c) - indicates calculated results. Analysis is a calculated result. Reported results are not rounded until the final step before reporting. Therefore methods that use a test result with further calculation may have slight differences in final result than the component analyses.

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Laboratory Data

Report: 895439
Project: 470440-DW1
Group: Algal Toxins

San Francisco PUC
Megan Tran
1000 El Camino Real
Millbrae, CA 94030

Samples Received on:
09/30/2020 1126

Prepped	Analyzed	Prep Batch	Analytical Batch	Method	Analyte	Result	Units	MRL	Dilution
10/15/20	10/16/20 0:50	1281780	1281820	(LC-MS-MS)	Microcystin-LA (MC-LA)	ND	ug/L	0.10	1
10/15/20	10/16/20 0:50	1281780	1281820	(LC-MS-MS)	Microcystin-LF (MC-LF)	ND	ug/L	0.10	1
10/15/20	10/16/20 0:50	1281780	1281820	(LC-MS-MS)	Microcystin-LR (MC-LR)	ND (V1)	ug/L	0.10	1
10/15/20	10/16/20 0:50	1281780	1281820	(LC-MS-MS)	Microcystin-LY (MC-LY)	ND	ug/L	0.10	1
10/15/20	10/16/20 0:50	1281780	1281820	(LC-MS-MS)	Microcystin-RR (MC-RR)	ND	ug/L	0.10	1
10/22/20	10/22/20 13:39	1283309	1282281	(LC-MS-MS)	Microcystin-YR (MC-YR)	ND	ug/L	0.10	1
10/15/20	10/16/20 0:50	1281780	1281820	(LC-MS-MS)	Nodularin (NOD)	ND	ug/L	0.10	1
LMER_S_00_LIM (202009300257)							**Sampled on 09/29/2020 1000**		
Variable ID: 2076538-01									
EPA 546 - UCMR4 546									
09/30/20	10/09/20 11:38	1277783	1280234	(EPA 546)	Total Microcystins	8.6	ug/L	30	10
09/30/20	10/09/20 11:38	1277783	1280234	(EPA 546)	%CV	3.20	%	320	1
LC-MS-MS - Algal-toxins by LCMS Low									
10/22/20	10/22/20 13:55	1283309	1282281	(LC-MS-MS)	Anatoxin a	ND	ug/L	0.020	1
10/22/20	10/22/20 13:55	1283309	1282281	(LC-MS-MS)	Cylindrospermopsin	ND	ug/L	0.050	1
10/15/20	10/16/20 1:02	1281780	1281820	(LC-MS-MS)	Microcystin-LA (MC-LA)	ND	ug/L	0.10	1
10/15/20	10/16/20 1:02	1281780	1281820	(LC-MS-MS)	Microcystin-LF (MC-LF)	ND	ug/L	0.10	1
10/15/20	10/16/20 1:02	1281780	1281820	(LC-MS-MS)	Microcystin-LR (MC-LR)	ND (V1)	ug/L	0.10	1
10/15/20	10/16/20 1:02	1281780	1281820	(LC-MS-MS)	Microcystin-LY (MC-LY)	ND	ug/L	0.10	1
10/15/20	10/16/20 1:02	1281780	1281820	(LC-MS-MS)	Microcystin-RR (MC-RR)	ND	ug/L	0.10	1
10/15/20	10/16/20 1:02	1281780	1281820	(LC-MS-MS)	Microcystin-YR (MC-YR)	ND (V1)	ug/L	0.10	1
10/15/20	10/16/20 1:02	1281780	1281820	(LC-MS-MS)	Nodularin (NOD)	ND	ug/L	0.10	1

Rounding on totals after summation.
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Laboratory QC Summary

Report: 895439
Project: 470440-DW1
Group: Algal Toxins

San Francisco PUC

UCMR4 546

Prep Batch: 1277783 **Analytical Batch: 1280234** **Analysis Date: 10/09/2020**

202009300254	LMER_E_00_LIM	Analyzed by: M8OF
202009300255	LMER_N_00_LIM	Analyzed by: M8OF
202009300256	LMER_R_00_LIM	Analyzed by: M8OF
202009300257	LMER_S_00_LIM	Analyzed by: M8OF

Algal-toxins by LCMS Low

Prep Batch: 1281780 **Analytical Batch: 1281820** **Analysis Date: 10/16/2020**

202009300254	LMER_E_00_LIM	Analyzed by: CWG
202009300255	LMER_N_00_LIM	Analyzed by: CWG
202009300256	LMER_R_00_LIM	Analyzed by: CWG
202009300257	LMER_S_00_LIM	Analyzed by: CWG

Algal-toxins by LCMS Low

Prep Batch: 1283309 **Analytical Batch: 1282281** **Analysis Date: 10/22/2020**

202009300254	LMER_E_00_LIM	Analyzed by: CWG
202009300255	LMER_N_00_LIM	Analyzed by: CWG
202009300256	LMER_R_00_LIM	Analyzed by: CWG
202009300257	LMER_S_00_LIM	Analyzed by: CWG

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Laboratory QC

Report: 895439
Project: 470440-DW1
Group: Algal Toxins

San Francisco PUC

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield(%)	Limits (%)	RPD Limit(%)	RPD%
UCMR4 546 by EPA 546									
Analytical Batch: 1280234						**Analysis Date: 10/09/2020**			
LCS1	%CV			2.80	%				
LCS2	%CV			ND	%				
MBLK	%CV			<15	%				
MBLK	%CV			<15	%				
MRL_CHK	%CV			ND	%				
MS2_202010050529	%CV	2.20		ND	%				
MSD2_202010050529	%CV	2.20		ND	%				
LCS1	Total Microcystins		0.5	0.472	ug/L	94	(60-140)		
LCS2	Total Microcystins		0.5	0.479	ug/L	96	(60-140)		
MBLK	Total Microcystins			<0.15	ug/L				
MBLK	Total Microcystins			<0.15	ug/L				
MRL_CHK	Total Microcystins		0.3	0.252	ug/L	84	(50-150)		
MS2_202010050529	Total Microcystins	ND	0.5	0.229	ug/L	**34**	(60-140)		
MSD2_202010050529	Total Microcystins	ND	0.5	0.207	ug/L	**29**	(60-140)	40	10
Algal-toxins by LCMS Low by LC-MS-MS									
Analytical Batch: 1281820						**Analysis Date: 10/15/2020**			
LCS1	Anatoxin a		0.2	0.131	ug/L	**66**	(70-130)		
LCS2	Anatoxin a		0.2	0.133	ug/L	**67**	(70-130)	30	1.5
MBLK	Anatoxin a			<0.02	ug/L				
MBLK	Anatoxin a			<0.02	ug/L				
MRL_CHK	Anatoxin a		0.02	0.0150	ug/L	75	(50-150)		
LCS1	Cylindrospermopsin		0.5	0.363	ug/L	73	(70-130)		
LCS2	Cylindrospermopsin		0.5	0.326	ug/L	**65**	(70-130)	30	11
MBLK	Cylindrospermopsin			<0.05	ug/L				
MBLK	Cylindrospermopsin			<0.05	ug/L				
MRL_CHK	Cylindrospermopsin		0.05	0.0460	ug/L	92	(50-150)		
MS_202010100112	Cylindrospermopsin	ND	0.5	0.378	ug/L	76	(60-140)		
MSD_202010100112	Cylindrospermopsin	ND	0.5	0.371	ug/L	74	(60-140)	30	1.9
LCS1	Microcystin-LA (MC-LA)		1	0.897	ug/L	90	(70-130)		
LCS2	Microcystin-LA (MC-LA)		1	0.950	ug/L	95	(70-130)	30	5.7
MBLK	Microcystin-LA (MC-LA)			<0.1	ug/L				
MBLK	Microcystin-LA (MC-LA)			<0.1	ug/L				
MRL_CHK	Microcystin-LA (MC-LA)		0.1	0.115	ug/L	115	(50-150)		
MS_202010100112	Microcystin-LA (MC-LA)	0.24	1	1.08	ug/L	84	(60-140)		

Spike recovery is already corrected for native results.
Spikes which exceed Limits and Method Blanks with positive results are highlighted by Underlining.
Criteria for MS and Dup are advisory only, batch control is based on LCS. Criteria for duplicates are advisory only, unless otherwise specified in the method.
RPD not calculated for LCS2 when different a concentration than LCS1 is used.
RPD not calculated for Duplicates when the result is not five times the MRL (Minimum Reporting Level).
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Laboratory QC

Report: 895439
Project: 470440-DW1
Group: Algal Toxins

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QC Type	Analyte	Native	Spiked	Recovered	Units	Yield(%)	Limits (%)	RPD Limit(%)	RPD%
MSD_202010100112	Microcystin-LA (MC-LA)	0.24	1	1.06	ug/L	82	(60-140)	30	2.3
LCS1	Microcystin-LF (MC-LF)		1	0.797	ug/L	80	(70-130)		
LCS2	Microcystin-LF (MC-LF)		1	0.825	ug/L	83	(70-130)	30	3.5
MBLK	Microcystin-LF (MC-LF)			<0.1	ug/L				
MBLK	Microcystin-LF (MC-LF)			<0.1	ug/L				
MRL_CHK	Microcystin-LF (MC-LF)		0.1	0.133	ug/L	133	(50-150)		
MS_202010100112	Microcystin-LF (MC-LF)	ND	1	0.660	ug/L	60	(60-140)		
MSD_202010100112	Microcystin-LF (MC-LF)	ND	1	0.751	ug/L	69	(60-140)	30	13
LCS1	Microcystin-LR (MC-LR)		1	0.864	ug/L	86	(70-130)		
LCS2	Microcystin-LR (MC-LR)		1	0.905	ug/L	91	(70-130)	30	4.6
MBLK	Microcystin-LR (MC-LR)			<0.1	ug/L				
MBLK	Microcystin-LR (MC-LR)			<0.1	ug/L				
MRL_CHK	Microcystin-LR (MC-LR)		0.1	0.172	ug/L	**172**	(50-150)		
MS_202010100112	Microcystin-LR (MC-LR)	ND	1	1.07	ug/L	99	(60-140)		
MSD_202010100112	Microcystin-LR (MC-LR)	ND	1	0.972	ug/L	89	(60-140)	30	9.4
LCS1	Microcystin-LY (MC-LY)		1	0.825	ug/L	83	(70-130)		
LCS2	Microcystin-LY (MC-LY)		1	0.733	ug/L	73	(70-130)	30	12
MBLK	Microcystin-LY (MC-LY)			<0.1	ug/L				
MBLK	Microcystin-LY (MC-LY)			<0.1	ug/L				
MRL_CHK	Microcystin-LY (MC-LY)		0.1	0.0960	ug/L	96	(50-150)		
MS_202010100112	Microcystin-LY (MC-LY)	ND	1	1.03	ug/L	103	(60-140)		
MSD_202010100112	Microcystin-LY (MC-LY)	ND	1	0.857	ug/L	86	(60-140)	30	18
LCS1	Microcystin-RR (MC-RR)		1	0.842	ug/L	84	(70-130)		
LCS2	Microcystin-RR (MC-RR)		1	0.862	ug/L	86	(70-130)	30	2.4
MBLK	Microcystin-RR (MC-RR)			<0.1	ug/L				
MBLK	Microcystin-RR (MC-RR)			<0.1	ug/L				
MRL_CHK	Microcystin-RR (MC-RR)		0.1	0.103	ug/L	103	(50-150)		
MS_202010100112	Microcystin-RR (MC-RR)	ND	1	0.969	ug/L	92	(60-140)		
MSD_202010100112	Microcystin-RR (MC-RR)	ND	1	0.821	ug/L	78	(60-140)	30	17
LCS1	Microcystin-YR (MC-YR)		1	0.852	ug/L	85	(70-130)		
LCS2	Microcystin-YR (MC-YR)		1	0.782	ug/L	78	(70-130)	30	8.6
MBLK	Microcystin-YR (MC-YR)			<0.1	ug/L				
MBLK	Microcystin-YR (MC-YR)			<0.1	ug/L				
MRL_CHK	Microcystin-YR (MC-YR)		0.1	0.176	ug/L	**176**	(50-150)		
MS_202010100112	Microcystin-YR (MC-YR)	ND	1	1.08	ug/L	100	(60-140)		
MSD_202010100112	Microcystin-YR (MC-YR)	ND	1	1.18	ug/L	110	(60-140)	30	8.5
LCS1	Nodularin (NOD)		1	1.05	ug/L	105	(70-130)		
LCS2	Nodularin (NOD)		1	1.02	ug/L	102	(70-130)	30	2.9

Spike recovery is already corrected for native results.
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Report: 895439
Project: 470440-DW1
Group: Algal Toxins

San Francisco PUC

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield(%)	Limits (%)	RPD Limit(%)	RPD%
MBLK	Nodularin (NOD)			<0.1	ug/L				
MBLK	Nodularin (NOD)			<0.1	ug/L				
MRL_CHK	Nodularin (NOD)		0.1	0.138	ug/L	138	(50-150)		
MS_202010100112	Nodularin (NOD)	ND	1	1.02	ug/L	99	(60-140)		
MSD_202010100112	Nodularin (NOD)	ND	1	1.13	ug/L	110	(60-140)	30	9.9
Algal-toxins by LCMS Low by LC-MS-MS									
Analytical Batch: 1282281						**Analysis Date: 10/22/2020**			
LCS1	Anatoxin a		0.2	0.169	ug/L	85	(70-130)		
LCS2	Anatoxin a		0.2	0.166	ug/L	83	(70-130)	30	1.8
MBLK	Anatoxin a			<0.02	ug/L				
MRL_CHK	Anatoxin a		0.02	0.0140	ug/L	70	(50-150)		
MS_202010230054	Anatoxin a	ND	0.2	0.154	ug/L	73	(60-140)		
MSD_202010230054	Anatoxin a	ND	0.2	0.140	ug/L	66	(60-140)	30	9.5
LCS1	Cylindrospermopsin		0.5	0.521	ug/L	104	(70-130)		
LCS2	Cylindrospermopsin		0.5	0.590	ug/L	118	(70-130)	30	12
MBLK	Cylindrospermopsin			<0.05	ug/L				
MRL_CHK	Cylindrospermopsin		0.05	0.0400	ug/L	80	(50-150)		
MS_202010230054	Cylindrospermopsin	ND	0.5	0.314	ug/L	63	(60-140)		
MSD_202010230054	Cylindrospermopsin	ND	0.5	0.263	ug/L	**53**	(60-140)	30	18
LCS1	Microcystin-LA (MC-LA)		1	0.847	ug/L	85	(70-130)		
LCS2	Microcystin-LA (MC-LA)		1	0.867	ug/L	87	(70-130)	30	2.3
MBLK	Microcystin-LA (MC-LA)			<0.1	ug/L				
MRL_CHK	Microcystin-LA (MC-LA)		0.1	0.0800	ug/L	80	(50-150)		
MS_202010230054	Microcystin-LA (MC-LA)	ND	1	0.762	ug/L	76	(60-140)		
MSD_202010230054	Microcystin-LA (MC-LA)	ND	1	0.763	ug/L	76	(60-140)	30	0.13
LCS1	Microcystin-LF (MC-LF)		1	0.980	ug/L	98	(70-130)		
LCS2	Microcystin-LF (MC-LF)		1	1.22	ug/L	122	(70-130)	30	22
MBLK	Microcystin-LF (MC-LF)			<0.1	ug/L				
MRL_CHK	Microcystin-LF (MC-LF)		0.1	0.102	ug/L	102	(50-150)		
MS_202010230054	Microcystin-LF (MC-LF)	ND	1	1.06	ug/L	106	(60-140)		
MSD_202010230054	Microcystin-LF (MC-LF)	ND	1	0.927	ug/L	93	(60-140)	30	13
LCS1	Microcystin-LR (MC-LR)		1	0.729	ug/L	73	(70-130)		
LCS2	Microcystin-LR (MC-LR)		1	0.874	ug/L	87	(70-130)	30	18
MBLK	Microcystin-LR (MC-LR)			<0.1	ug/L				
MRL_CHK	Microcystin-LR (MC-LR)		0.1	0.132	ug/L	132	(50-150)		
MS_202010230054	Microcystin-LR (MC-LR)	ND	1	0.824	ug/L	76	(60-140)		
MSD_202010230054	Microcystin-LR (MC-LR)	ND	1	0.706	ug/L	65	(60-140)	30	15

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Laboratory QC

Report: 895439
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San Francisco PUC

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield(%)	Limits (%)	RPD Limit(%)	RPD%
LCS1	Microcystin-LY (MC-LY)		1	0.868	ug/L	87	(70-130)		
LCS2	Microcystin-LY (MC-LY)		1	1.08	ug/L	108	(70-130)	30	22
MBLK	Microcystin-LY (MC-LY)			<0.1	ug/L				
MRL_CHK	Microcystin-LY (MC-LY)		0.1	0.0520	ug/L	52	(50-150)		
MS_202010230054	Microcystin-LY (MC-LY)	ND	1	0.992	ug/L	99	(60-140)		
MSD_202010230054	Microcystin-LY (MC-LY)	ND	1	0.980	ug/L	98	(60-140)	30	1.2
LCS1	Microcystin-RR (MC-RR)		1	0.915	ug/L	92	(70-130)		
LCS2	Microcystin-RR (MC-RR)		1	0.911	ug/L	91	(70-130)	30	0.44
MBLK	Microcystin-RR (MC-RR)			<0.1	ug/L				
MRL_CHK	Microcystin-RR (MC-RR)		0.1	0.0860	ug/L	86	(50-150)		
MS_202010230054	Microcystin-RR (MC-RR)	ND	1	0.748	ug/L	75	(60-140)		
MSD_202010230054	Microcystin-RR (MC-RR)	ND	1	0.805	ug/L	80	(60-140)	30	7.3
LCS1	Microcystin-YR (MC-YR)		1	1.02	ug/L	102	(70-130)		
LCS2	Microcystin-YR (MC-YR)		1	1.13	ug/L	113	(70-130)	30	9.3
MBLK	Microcystin-YR (MC-YR)			<0.1	ug/L				
MRL_CHK	Microcystin-YR (MC-YR)		0.1	0.0980	ug/L	98	(50-150)		
MS_202010230054	Microcystin-YR (MC-YR)	ND	1	0.930	ug/L	93	(60-140)		
MSD_202010230054	Microcystin-YR (MC-YR)	ND	1	0.881	ug/L	88	(60-140)	30	5.4
LCS1	Nodularin (NOD)		1	0.830	ug/L	83	(70-130)		
LCS2	Nodularin (NOD)		1	0.761	ug/L	76	(70-130)	30	8.7
MBLK	Nodularin (NOD)			<0.1	ug/L				
MRL_CHK	Nodularin (NOD)		0.1	0.0810	ug/L	81	(50-150)		
MS_202010230054	Nodularin (NOD)	ND	1	0.618	ug/L	**59**	(60-140)		
MSD_202010230054	Nodularin (NOD)	ND	1	0.590	ug/L	**57**	(60-140)	30	4.6

Spike recovery is already corrected for native results.
Spikes which exceed Limits and Method Blanks with positive results are highlighted by Underlining.
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RPD not calculated for LCS2 when different a concentration than LCS1 is used.
RPD not calculated for Duplicates when the result is not five times the MRL (Minimum Reporting Level).
(S) - Indicates surrogate compound.
(I) - Indicates internal standard compound.

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Laboratory Comments

Report: 895439
Project: 470440-DW1
Group: Algal Toxins

San Francisco PUC
Megan Tran
1000 El Camino Real
Millbrae, CA 94030

Folder Comments

Flags Legend:

V1 - CCV recovery was above method acceptance limits. This target analyte was not detected in the sample.

The Comments Report may be blank if there are no comments for this report.

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Laboratory Hits

Report: 895439
Project: 470440-DW1
Group: Algal Toxins

San Francisco PUC
Megan Tran
1000 El Camino Real
Millbrae, CA 94030

Samples Received on:
09/30/2020 1126

Analyzed	Analyte	Sample ID	Result	Federal MCL	Units	MRL
	202009300254	**LMER_E_00_LIM**				
10/16/2020 0:25	Microcystin-LY (MC-LY)		0.11		ug/L	0.10
10/09/2020 11:38	Total Microcystins		9.1		ug/L	30
	202009300255	**LMER_N_00_LIM**				
10/16/2020 0:38	Microcystin-LY (MC-LY)		0.12		ug/L	0.10
10/09/2020 11:38	Total Microcystins		23		ug/L	30
	202009300256	**LMER_R_00_LIM**				
10/09/2020 11:38	Total Microcystins		7.2		ug/L	30
	202009300257	**LMER_S_00_LIM**				
10/09/2020 11:38	Total Microcystins		8.6		ug/L	30

SUMMARY OF POSITIVE DATA ONLY

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Laboratory Data

Report: 895439
Project: 470440-DW1
Group: Algal Toxins

San Francisco PUC
Megan Tran
1000 El Camino Real
Millbrae, CA 94030

Samples Received on:
09/30/2020 1126

Prepped	Analyzed	Prep Batch	Analytical Batch	Method	Analyte	Result	Units	MRL	Dilution
LMER_E_00_LIM (202009300254)							**Sampled on 09/29/2020 1200**		
	Variable ID: 2076535-01								
		EPA 546 - UCMR4 546							
09/30/20	10/09/20 11:38	1277783	1280234	(EPA 546)	Total Microcystins	9.1	ug/L	30	10
09/30/20	10/09/20 11:38	1277783	1280234	(EPA 546)	%CV	1.10	%	110	1
		LC-MS-MS - Algal-toxins by LCMS Low							
10/15/20	:	1281780		(LC-MS-MS)	Anatoxin a		ug/L		1
10/15/20	:	1281780		(LC-MS-MS)	Cylindrospermopsin		ug/L		1
10/15/20	10/16/20 0:25	1281780	1281820	(LC-MS-MS)	Microcystin-LA (MC-LA)	ND	ug/L	0.10	1
10/15/20	10/16/20 0:25	1281780	1281820	(LC-MS-MS)	Microcystin-LF (MC-LF)	ND	ug/L	0.10	1
10/15/20	10/16/20 0:25	1281780	1281820	(LC-MS-MS)	Microcystin-LR (MC-LR)	ND (V1)	ug/L	0.10	1
10/15/20	10/16/20 0:25	1281780	1281820	(LC-MS-MS)	Microcystin-LY (MC-LY)	0.11	ug/L	0.10	1
10/15/20	10/16/20 0:25	1281780	1281820	(LC-MS-MS)	Microcystin-RR (MC-RR)	ND	ug/L	0.10	1
10/15/20	:	1281780		(LC-MS-MS)	Microcystin-YR (MC-YR)		ug/L		1
10/15/20	10/16/20 0:25	1281780	1281820	(LC-MS-MS)	Nodularin (NOD)	ND	ug/L	0.10	1
LMER_N_00_LIM (202009300255)							**Sampled on 09/29/2020 1300**		
	Variable ID: 2076536-01								
		EPA 546 - UCMR4 546							
09/30/20	10/09/20 11:38	1277783	1280234	(EPA 546)	Total Microcystins	23	ug/L	30	10
09/30/20	10/09/20 11:38	1277783	1280234	(EPA 546)	%CV	3.90	%	390	1
		LC-MS-MS - Algal-toxins by LCMS Low							
10/15/20	:	1281780		(LC-MS-MS)	Anatoxin a		ug/L		1
10/15/20	:	1281780		(LC-MS-MS)	Cylindrospermopsin		ug/L		1
10/15/20	10/16/20 0:38	1281780	1281820	(LC-MS-MS)	Microcystin-LA (MC-LA)	ND	ug/L	0.10	1
10/15/20	10/16/20 0:38	1281780	1281820	(LC-MS-MS)	Microcystin-LF (MC-LF)	ND	ug/L	0.10	1
10/15/20	:	1281780		(LC-MS-MS)	Microcystin-LR (MC-LR)		ug/L		1
10/15/20	10/16/20 0:38	1281780	1281820	(LC-MS-MS)	Microcystin-LY (MC-LY)	0.12	ug/L	0.10	1
10/15/20	10/16/20 0:38	1281780	1281820	(LC-MS-MS)	Microcystin-RR (MC-RR)	ND	ug/L	0.10	1
10/15/20	:	1281780		(LC-MS-MS)	Microcystin-YR (MC-YR)		ug/L		1
10/15/20	10/16/20 0:38	1281780	1281820	(LC-MS-MS)	Nodularin (NOD)	ND	ug/L	0.10	1
LMER_R_00_LIM (202009300256)							**Sampled on 09/29/2020 0900**		
	Variable ID: 2076537-01								
		EPA 546 - UCMR4 546							
09/30/20	10/09/20 11:38	1277783	1280234	(EPA 546)	Total Microcystins	7.2	ug/L	30	10
09/30/20	10/09/20 11:38	1277783	1280234	(EPA 546)	%CV	0.200	%	20.0	1
		LC-MS-MS - Algal-toxins by LCMS Low							
10/15/20	:	1281780		(LC-MS-MS)	Anatoxin a		ug/L		1
10/15/20	:	1281780		(LC-MS-MS)	Cylindrospermopsin		ug/L		1

Rounding on totals after summation.
(c) - indicates calculated results. Analysis is a calculated result. Reported results are not rounded until the final step before reporting. Therefore methods that use a test result with further calculation may have slight differences in final result than the component analyses.

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Laboratory Data

Report: 895439
Project: 470440-DW1
Group: Algal Toxins

San Francisco PUC
Megan Tran
1000 El Camino Real
Millbrae, CA 94030

Samples Received on:
09/30/2020 1126

Prepped	Analyzed	Prep Batch	Analytical Batch	Method	Analyte	Result	Units	MRL	Dilution
10/15/20	10/16/20 0:50	1281780	1281820	(LC-MS-MS)	Microcystin-LA (MC-LA)	ND	ug/L	0.10	1
10/15/20	10/16/20 0:50	1281780	1281820	(LC-MS-MS)	Microcystin-LF (MC-LF)	ND	ug/L	0.10	1
10/15/20	10/16/20 0:50	1281780	1281820	(LC-MS-MS)	Microcystin-LR (MC-LR)	ND (V1)	ug/L	0.10	1
10/15/20	10/16/20 0:50	1281780	1281820	(LC-MS-MS)	Microcystin-LY (MC-LY)	ND	ug/L	0.10	1
10/15/20	10/16/20 0:50	1281780	1281820	(LC-MS-MS)	Microcystin-RR (MC-RR)	ND	ug/L	0.10	1
10/15/20	:	1281780		(LC-MS-MS)	Microcystin-YR (MC-YR)		ug/L		1
10/15/20	10/16/20 0:50	1281780	1281820	(LC-MS-MS)	Nodularin (NOD)	ND	ug/L	0.10	1
LMER_S_00_LIM (202009300257)							**Sampled on 09/29/2020 1000**		
Variable ID: 2076538-01									
EPA 546 - UCMR4 546									
09/30/20	10/09/20 11:38	1277783	1280234	(EPA 546)	Total Microcystins	8.6	ug/L	30	10
09/30/20	10/09/20 11:38	1277783	1280234	(EPA 546)	%CV	3.20	%	320	1
LC-MS-MS - Algal-toxins by LCMS Low									
10/15/20	:	1281780		(LC-MS-MS)	Anatoxin a		ug/L		1
10/15/20	:	1281780		(LC-MS-MS)	Cylindrospermopsin		ug/L		1
10/15/20	10/16/20 1:02	1281780	1281820	(LC-MS-MS)	Microcystin-LA (MC-LA)	ND	ug/L	0.10	1
10/15/20	10/16/20 1:02	1281780	1281820	(LC-MS-MS)	Microcystin-LF (MC-LF)	ND	ug/L	0.10	1
10/15/20	10/16/20 1:02	1281780	1281820	(LC-MS-MS)	Microcystin-LR (MC-LR)	ND (V1)	ug/L	0.10	1
10/15/20	10/16/20 1:02	1281780	1281820	(LC-MS-MS)	Microcystin-LY (MC-LY)	ND	ug/L	0.10	1
10/15/20	10/16/20 1:02	1281780	1281820	(LC-MS-MS)	Microcystin-RR (MC-RR)	ND	ug/L	0.10	1
10/15/20	10/16/20 1:02	1281780	1281820	(LC-MS-MS)	Microcystin-YR (MC-YR)	ND (V1)	ug/L	0.10	1
10/15/20	10/16/20 1:02	1281780	1281820	(LC-MS-MS)	Nodularin (NOD)	ND	ug/L	0.10	1

Rounding on totals after summation.
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Laboratory QC Summary

Report: 895439
Project: 470440-DW1
Group: Algal Toxins

San Francisco PUC

UCMR4 546

Prep Batch: 1277783 **Analytical Batch: 1280234** **Analysis Date: 10/09/2020**

202009300254	LMER_E_00_LIM	Analyzed by: M8OF
202009300255	LMER_N_00_LIM	Analyzed by: M8OF
202009300256	LMER_R_00_LIM	Analyzed by: M8OF
202009300257	LMER_S_00_LIM	Analyzed by: M8OF

Algal-toxins by LCMS Low

Prep Batch: 1281780 **Analytical Batch: 1281820** **Analysis Date: 10/16/2020**

202009300254	LMER_E_00_LIM	Analyzed by: CWG
202009300255	LMER_N_00_LIM	Analyzed by: CWG
202009300256	LMER_R_00_LIM	Analyzed by: CWG
202009300257	LMER_S_00_LIM	Analyzed by: CWG

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Laboratory QC

Report: 895439
Project: 470440-DW1
Group: Algal Toxins

San Francisco PUC

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield(%)	Limits (%)	RPD Limit(%)	RPD%
UCMR4 546 by EPA 546									
Analytical Batch: 1280234							**Analysis Date: 10/09/2020**		
LCS1	%CV			2.80	%				
LCS2	%CV			ND	%				
MBLK	%CV			<15	%				
MBLK	%CV			<15	%				
MRL_CHK	%CV			ND	%				
MS2_202010050529	%CV	2.20		ND	%				
MSD2_202010050529	%CV	2.20		ND	%				
LCS1	Total Microcystins		0.5	0.472	ug/L	94	(60-140)		
LCS2	Total Microcystins		0.5	0.479	ug/L	96	(60-140)		
MBLK	Total Microcystins			<0.15	ug/L				
MBLK	Total Microcystins			<0.15	ug/L				
MRL_CHK	Total Microcystins		0.3	0.252	ug/L	84	(50-150)		
MS2_202010050529	Total Microcystins	ND	0.5	0.229	ug/L	**34**	(60-140)		
MSD2_202010050529	Total Microcystins	ND	0.5	0.207	ug/L	**29**	(60-140)	40	10
Algal-toxins by LCMS Low by LC-MS-MS									
Analytical Batch: 1281820							**Analysis Date: 10/15/2020**		
LCS1	Anatoxin a		0.2	0.131	ug/L	**66**	(70-130)		
LCS2	Anatoxin a		0.2	0.133	ug/L	**67**	(70-130)	30	1.5
MBLK	Anatoxin a			<0.02	ug/L				
MBLK	Anatoxin a			<0.02	ug/L				
MRL_CHK	Anatoxin a		0.02	0.0150	ug/L	75	(50-150)		
LCS1	Cylindrospermopsin		0.5	0.363	ug/L	73	(70-130)		
LCS2	Cylindrospermopsin		0.5	0.326	ug/L	**65**	(70-130)	30	11
MBLK	Cylindrospermopsin			<0.05	ug/L				
MBLK	Cylindrospermopsin			<0.05	ug/L				
MRL_CHK	Cylindrospermopsin		0.05	0.0460	ug/L	92	(50-150)		
MS_202010100112	Cylindrospermopsin	ND	0.5	0.378	ug/L	76	(60-140)		
MSD_202010100112	Cylindrospermopsin	ND	0.5	0.371	ug/L	74	(60-140)	30	1.9
LCS1	Microcystin-LA (MC-LA)		1	0.897	ug/L	90	(70-130)		
LCS2	Microcystin-LA (MC-LA)		1	0.950	ug/L	95	(70-130)	30	5.7
MBLK	Microcystin-LA (MC-LA)			<0.1	ug/L				
MBLK	Microcystin-LA (MC-LA)			<0.1	ug/L				
MRL_CHK	Microcystin-LA (MC-LA)		0.1	0.115	ug/L	115	(50-150)		
MS_202010100112	Microcystin-LA (MC-LA)	0.24	1	1.08	ug/L	84	(60-140)		

Spike recovery is already corrected for native results.
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RPD not calculated for Duplicates when the result is not five times the MRL (Minimum Reporting Level).
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Laboratory QC

Report: 895439
Project: 470440-DW1
Group: Algal Toxins

San Francisco PUC

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield(%)	Limits (%)	RPD Limit(%)	RPD%
MSD_202010100112	Microcystin-LA (MC-LA)	0.24	1	1.06	ug/L	82	(60-140)	30	2.3
LCS1	Microcystin-LF (MC-LF)		1	0.797	ug/L	80	(70-130)		
LCS2	Microcystin-LF (MC-LF)		1	0.825	ug/L	83	(70-130)	30	3.5
MBLK	Microcystin-LF (MC-LF)			<0.1	ug/L				
MBLK	Microcystin-LF (MC-LF)			<0.1	ug/L				
MRL_CHK	Microcystin-LF (MC-LF)		0.1	0.133	ug/L	133	(50-150)		
MS_202010100112	Microcystin-LF (MC-LF)	ND	1	0.660	ug/L	60	(60-140)		
MSD_202010100112	Microcystin-LF (MC-LF)	ND	1	0.751	ug/L	69	(60-140)	30	13
LCS1	Microcystin-LR (MC-LR)		1	0.864	ug/L	86	(70-130)		
LCS2	Microcystin-LR (MC-LR)		1	0.905	ug/L	91	(70-130)	30	4.6
MBLK	Microcystin-LR (MC-LR)			<0.1	ug/L				
MBLK	Microcystin-LR (MC-LR)			<0.1	ug/L				
MRL_CHK	Microcystin-LR (MC-LR)		0.1	0.172	ug/L	**172**	(50-150)		
MS_202010100112	Microcystin-LR (MC-LR)	ND	1	1.07	ug/L	99	(60-140)		
MSD_202010100112	Microcystin-LR (MC-LR)	ND	1	0.972	ug/L	89	(60-140)	30	9.4
LCS1	Microcystin-LY (MC-LY)		1	0.825	ug/L	83	(70-130)		
LCS2	Microcystin-LY (MC-LY)		1	0.733	ug/L	73	(70-130)	30	12
MBLK	Microcystin-LY (MC-LY)			<0.1	ug/L				
MBLK	Microcystin-LY (MC-LY)			<0.1	ug/L				
MRL_CHK	Microcystin-LY (MC-LY)		0.1	0.0960	ug/L	96	(50-150)		
MS_202010100112	Microcystin-LY (MC-LY)	ND	1	1.03	ug/L	103	(60-140)		
MSD_202010100112	Microcystin-LY (MC-LY)	ND	1	0.857	ug/L	86	(60-140)	30	18
LCS1	Microcystin-RR (MC-RR)		1	0.842	ug/L	84	(70-130)		
LCS2	Microcystin-RR (MC-RR)		1	0.862	ug/L	86	(70-130)	30	2.4
MBLK	Microcystin-RR (MC-RR)			<0.1	ug/L				
MBLK	Microcystin-RR (MC-RR)			<0.1	ug/L				
MRL_CHK	Microcystin-RR (MC-RR)		0.1	0.103	ug/L	103	(50-150)		
MS_202010100112	Microcystin-RR (MC-RR)	ND	1	0.969	ug/L	92	(60-140)		
MSD_202010100112	Microcystin-RR (MC-RR)	ND	1	0.821	ug/L	78	(60-140)	30	17
LCS1	Microcystin-YR (MC-YR)		1	0.852	ug/L	85	(70-130)		
LCS2	Microcystin-YR (MC-YR)		1	0.782	ug/L	78	(70-130)	30	8.6
MBLK	Microcystin-YR (MC-YR)			<0.1	ug/L				
MBLK	Microcystin-YR (MC-YR)			<0.1	ug/L				
MRL_CHK	Microcystin-YR (MC-YR)		0.1	0.176	ug/L	**176**	(50-150)		
MS_202010100112	Microcystin-YR (MC-YR)	ND	1	1.08	ug/L	100	(60-140)		
MSD_202010100112	Microcystin-YR (MC-YR)	ND	1	1.18	ug/L	110	(60-140)	30	8.5
LCS1	Nodularin (NOD)		1	1.05	ug/L	105	(70-130)		
LCS2	Nodularin (NOD)		1	1.02	ug/L	102	(70-130)	30	2.9

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Laboratory QC

Report: 895439
Project: 470440-DW1
Group: Algal Toxins

San Francisco PUC

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield(%)	Limits (%)	RPD Limit(%)	RPD%
MBLK	Nodularin (NOD)			<0.1	ug/L				
MBLK	Nodularin (NOD)			<0.1	ug/L				
MRL_CHK	Nodularin (NOD)		0.1	0.138	ug/L	138	(50-150)		
MS_202010100112	Nodularin (NOD)	ND	1	1.02	ug/L	99	(60-140)		
MSD_202010100112	Nodularin (NOD)	ND	1	1.13	ug/L	110	(60-140)	30	9.9

Spike recovery is already corrected for native results.
Spikes which exceed Limits and Method Blanks with positive results are highlighted by Underlining.
Criteria for MS and Dup are advisory only, batch control is based on LCS. Criteria for duplicates are advisory only, unless otherwise specified in the method.
RPD not calculated for LCS2 when different a concentration than LCS1 is used.
RPD not calculated for Duplicates when the result is not five times the MRL (Minimum Reporting Level).
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ACCREDITED
CERTIFICATE #'s 5890.01 & 5890.02

Laboratory Report

for

San Francisco PUC
1000 El Camino Real
Millbrae, CA 94030
Attention: Megan Tran

NELAP ACCREDITED TNI LABORATORY
Utah ELCP CA00006

Date of Issue
01/04/2021
Monica Van Natta
EUROFINS EATON ANALYTICAL, LLC

Report: 907916
Project: 470440-DW1
Group: Microcystins-Lake Merced

UMVN: Monica Van Natta
Project Manager

* Accredited in accordance with TNI 2016 and ISO/IEC 17025:2017.
* Laboratory certifies that the test results meet all **TNI 2016 and ISO/IEC 17025:2017** requirements unless noted under the individual analysis.
* Following the cover page are State Certification List, ISO 17025 Accredited Method List, Acknowledgement of Samples Received, Comments, Hits Report, Data Report, QC Summary, QC Report and Regulatory Forms, as applicable.
* Test results relate only to the sample(s) tested.
* Test results apply to the sample(s) as received, unless otherwise noted in the comments report (ISO/IEC 17025:2017).
* This report shall not be reproduced except in full, without the written approval of the laboratory.
* This report includes ISO/IEC 17025 and non-ISO 17025 accredited methods.

STATE CERTIFICATION LIST

State	Certification Number	State	Certification Number
Alabama	41060	**Montana**	Cert 0035
Arizona	AZ0778	**Nebraska**	Certified
Arkansas	Certified	**Nevada**	CA000062018
California	2813	**New Hampshire ***	2959
Colorado	Certified	**New Jersey ***	CA 008
Connecticut	PH-0107	**New Mexico**	Certified
Delaware	CA 006	**New York ***	11320
Florida *	E871024	**North Carolina**	06701
Georgia	947	**North Dakota**	R-009
Guam	18-005R	**Oregon ***	CA200003-005
Hawaii	Certified	**Pennsylvania ***	68-565
Idaho	Certified	**Puerto Rico**	Certified
Illinois *	200033	**Rhode Island**	LAO00326
Indiana	C-CA-01	**South Carolina**	87016
Iowa - Asbestos	413	**South Dakota**	Certified
Kansas *	E-10268	**Tennessee**	TN02839
Kentucky	90107	**Texas ***	T104704230-18-15
Louisiana *	LA180000	**Utah (Primary AB) ***	CA00006
Maine	CA0006	**Vermont**	VT0114
Maryland	224	**Virginia ***	460260
Commonwealth of Northern Marianas Is.	MP0004	**Washington**	C838
Massachusetts	M-CA006	**EPA Region 5**	Certified
Michigan	9906	**Los Angeles County Sanitation Districts**	10264
Mississippi	Certified		

* NELAP/TNI Recognized Accreditation Bodies

Eurofins Eaton Analytical, LLC
750 Royal Oaks Drive, Suite 100
Monrovia, CA 91016-3629
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The tests listed below are accredited and meet the requirements of ISO/IEC 17025 as verified by the ANSI-ASQ National Accreditation Board/A2LA.
Refer to Certificate and scope of accreditation (5890) found at: https://www.eurofinsus.com/Eaton

SPECIFIC TESTS	METHOD OR TECHNIQUE USED	Environ-mental (Drinking Water)	Environ-mental (Waste Water)	Water as a Component of Food and Bev/Bev/ Bottled Water
1,2,3-TCP (5 PPT & 0.5 PPT)	CA SRL 524M-TCP	x		x
1,4-Dioxane	EPA 522	x		x
2,3,7,8-TCDD	Modified EPA 1613B	x		x
Acrylamide	In House Method (2440)	x		x
Algal Toxins/Microcystin	In House Method (3570)			
Alkalinity	SM 2320B	x	x	x
Ammonia	EPA 350.1		x	x
Ammonia	SM 4500-NH3 H		x	x
Anions and DBPs by IC	EPA 300.0	x	x	x
Anions and DBPs by IC	EPA 300.1	x		x
Asbestos	EPA 100.2	x	x	
BOD / CBOD	SM 5210B		x	x
Bromate	In House Method (2447)	x		x
Carbamates	EPA 531.2	x		x
Carbonate as CO3	SM 2330B	x	x	x
Carbonyls	EPA 556	x		x
COD	EPA 410.4 / SM 5220D		x	
Chloramines	SM 4500-CL G	x	x	x
Chlorinated Acids	EPA 515.4	x		x
Chlorinated Acids	EPA 555	x		x
Chlorine Dioxide	SM 4500-CLO2 D Palin Test	x		x
Chlorine -Total/Free/ Combined Residual	SM 4500-Cl G	x	x	x
Conductivity	EPA 120.1		x	
Conductivity	SM 2510B	x	x	x
Corrosivity (Langelier Index)	SM 2330B	x		x
Cyanide, Amenable	SM 4500-CN G	x	x	
Cyanide, Free	SM 4500CN F	x	x	x
Cyanide, Total	EPA 335.4	x	x	x
Cyanogen Chloride (screen)	In House Method (2470)	x		x
Diquat and Paraquat	EPA 549.2	x		x
DBP/HAA	SM 6251B	x		x
Dissolved Oxygen	SM 4500-O G		x	x
DOC	SM 5310C	x		x
E. Coli	(MTF/EC+MUG)	x		x
E. Coli	CFR 141.21(f)(6)(i)	x		x
E. Coli	SM 9223		x	
E. Coli (Enumeration)	SM 9221B.1/ SM 9221F	x		x
E. Coli (Enumeration)	SM 9223B	x		x
EDB/DCBP	EPA 504.1	x		
EDB/DBCP and DBP	EPA 551.1	x		x
EDTA and NTA	In House Method (2454)	x		x
Endothall	EPA 548.1	x		x
Endothall	In-house Method (2445)	x		x
Enterococci	SM 9230B	x	x	
Fecal Coliform	SM 9221 E (MTF/EC)	x		
Fecal Coliform	SM 9221C, E (MTF/EC)		x	
Fecal Coliform (Enumeration)	SM 9221E (MTF/EC)	x		x
Fecal Coliform with Chlorine Present	SM 9221E		x	
Fecal Streptococci	SM 9230B	x	x	
Fluoride	SM 4500-F C	x	x	x
Glyphosate	EPA 547	x		x
Glyphosate + AMPA	In House Method (3618)	x		x
Gross Alpha/Beta	EPA 900.0	x	x	x
Gross Alpha Coprecipitation	SM 7110 C	x	x	x
Hardness	SM 2340B	x	x	x
Heterotrophic Bacteria	In House Method (2439)	x		x
Heterotrophic Bacteria	SM 9215 B	x		x
Hexavalent Chromium	EPA 218.6	x	x	x
Hexavalent Chromium	EPA 218.7	x		x
Hexavalent Chromium	SM 3500-Cr B		x	
Hormones	EPA 539	x		x
Hydroxide as OH Calc.	SM 2330B	x		x
Kjeldahl Nitrogen	EPA 351.2		x	
Legionella	Legiolert	x		x
Mercury	EPA 200.8	x		x
Metals	EPA 200.7 / 200.8	x	x	x
Microcystin LR	ELISA (2360)	x		x
Microcystin, Total	EPA 546	x		x
NDMA	EEA/Agilent 521.1 In house method (2425)	x		x
Nitrate/Nitrite Nitrogen	EPA 353.2	x	x	x
OCL, Pesticides/PCB	EPA 505	x		x
Ortho Phosphate	EPA 365.1	x	x	x
Ortho Phosphorous	SM 4500P E	x		x
Oxyhalides Disinfection Byproducts	EPA 317.0	x		x
Perchlorate	EPA 331.0	x		x
Perchlorate (low and high)	EPA 314.0	x		x
Perfluorinated Alkyl Acids	EPA 537	x		x
Perfluorinated Polutant	In house Method (2434)	x		x
pH	EPA 150.1	x		
pH	SM 4500-H+B	x	x	x
Phenylurea Pesticides/ Herbicides	In House Method, based on EPA 532 (2448)	x		x
Pseudomonas	IDEXX Pseudalert (2461)	x		x
Radium-226	GA Institute of Tech	x		x
Radium-228	GA Institute of Tech	x		x
Radon-222	SM 7500RN	x		x
Residue, Filterable	SM 2540C	x	x	x
Residue, Non-filterable	SM 2540D		x	
Residue, Total	SM 2540B		x	x
Residue, Volatile	EPA 160.4		x	
Semi-VOC	EPA 525.2	x		x
Silica	SM 4500-Si D	x	x	
Silica	SM 4500-SiO2 C	x	x	
Sulfide	SM 4500-$S^{=}$ D		x	
Sulfite	SM 4500-SO^{3}B	x	x	x
Surfactants	SM 5540C	x	x	x
Taste and Odor Analytes	SM 6040E	x		x
Total Coliform (P/A)	SM 9221 A, B	x		x
Total Coliform (Enumeration)	SM 9221 A, B, C	x		x
Total Coliform / E. coli	Colisure SM 9223	x		x
Total Coliform	SM 9221B		x	
Total Coliform with Chlorine Present	SM 9221B		x	
Total Coliform / E.coli (P/A and Enumeration)	SM 9223	x		x
TOC	SM 5310C	x	x	x
TOX	SM 5320B		x	
Total Phenols	EPA 420.1		x	
Total Phenols	EPA 420.4	x	x	x
Total Phosphorous	SM 4500 P E		x	
Triazine Pesticides & Degradates	In House (3617)	x		x
Turbidity	EPA 180.1	x	x	x
Turbidity	SM 2130B	x	x	
Uranium by ICP/MS	EPA 200.8	x		x
UV 254	SM 5910B	x		
VOC	EPA 524.2	x		x
VOC	In House Method (2411)	x		x
Yeast and Mold	SM 9610	x		x
Field Sampling	N/A			

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Acknowledgement of Samples Received

Addr: **San Francisco PUC**
1000 El Camino Real
Millbrae, CA 94030

Attn: Megan Tran
Phone: 650-872-5945

Client ID: SANFRAN
Folder #: 907916
Project: 470440-DW1
Sample Group: Microcystins-Lake Merced

Project Manager: Monica Van Natta
Phone: 559-797-1931
PO #: PRO.0165 PO-000043463 TO#01

The following samples were received from you on **December 10, 2020** at **1143**. They have been scheduled for the tests listed below each sample. If this information is incorrect, please contact your service representative. Thank you for using Eurofins Eaton Analytical, LLC.

Sample #	Sample ID	Sample Date
202012100362	LMER_E_00_LIM	12/08/2020 1400
	Variable ID: 2079121-01	
	@UCMR4 546 L231_SB	
202012100363	LMER_N_00_LIM	12/08/2020 1500
	Variable ID: 2079123-01	
	@UCMR4 546	
202012100364	LMER_N_00_LIM	12/09/2020 1200
	Variable ID: 2079123-07	
	L231_SB	
202012100365	LMER_R_00_LIM	12/08/2020 1000
	Variable ID: 2079125-01	
	@UCMR4 546 L231_SB	
202012100366	LMER_S_00_LIM	12/08/2020 0900
	Variable ID: 2079127-01	
	@UCMR4 546 L231_SB	

Test Description

@UCMR4 546 -- UCMR4 546

750 Royal Oaks Drive, Suite 100, Monrovia, CA 91016 Tel (626) 386-1100 Fax (866) 988-3757 www.EurofinsUS.com/Eaton

San Francisco Water Power Sewer
Services of the San Francisco Public Utilities Commission

SAN FRANCISCO PUBLIC UTILITIES COMMISSION

SUB LABORATORY CHAIN OF CUSTODY RECORD

987416

Water Quality Division
1000 El Camino Real
Millbrae, CA 94030
Tel: (650) 872-5945
Fax: (650) 952-3407

Out Source#: 4500 **Ship To : SUB_LAB** **Ship Date: 12/09/2020** **Ship Via: FedEx** **Tracking#: 121103155778**

Index Code: ☐ 921021(WW)/920901(WW) ☐ 470440(DW)

SHIPPED BY: PHUONG H / NM

TYPE: ROUTINE / SPECIAL
(Circle One)

FOR LAB USE ONLY

METHOD OF TRANSPORT (CHECK ONE)	SAMPLE CONDITION UPON RECEIPT (CHECK APPROPRIATE BOXES)		SAMPLE STORAGE
☐ MILLBRAE	☐ CHILLED	☐ CONTAINER INTACT	LOCATION
☐ MOCCASIN	☐ SEALED	☐ # OF SAMPLES MATCH COC	REFRIG#
☐ COURIER	☐ SEAL INTACT	☐ HEADSPACE (VOA)	SHELF#
☐ OTHER	☐ PRESERVED	COOLER TEMPERATURE (0-6°C):	OTHERS

STATE EDT REQUIRED: Y / N **SYTEM ID:**

Sample ID	Source	Collected Date	Time	By	WQD Rec. Date	By	LocationNotes\Comments	TAT	SUB_546	SUB_ALGAL_TOXIN
2079121-01	LMER_E_00_LIM	12/8/20	1400	RMJOHNSON	12/8/20	PHOANG		21 DAYS	10	7-8
					12/9/20	PHOANG		21 DAYS		9
2079123-01	LMER_N_00_LIM	12/8/20	1500	RMJOHNSON	12/8/20	PHOANG		21 DAYS	10	
2079123-07	LMER_N_00_LIM	12/9/20	1200	SDELEO	12/9/20	JMITTRY		21 DAYS		7-8
2079125-01	LMER_R_00_LIM	12/8/20	1000	RMJOHNSON	12/8/20	PHOANG		21 DAYS	10	7-8
					12/9/20	PHOANG		21 DAYS		9
2079127-01	LMER_S_00_LIM	12/8/20	0900	RMJOHNSON	12/8/20	PHOANG		21 DAYS	10	7-8

↑ indicates the last digit(s) of container ID

RELINQUISHED FROM: (Print Name/Sign)	DATE/TIME:	RELINQUISHED TO: (Print Name/Sign)	DATE/TIME:	Comments:
PHUONG H / NM	12/9/2020 @1500	/		470440DW: (SUB_546/SUB_ALGAL_TOXIN/LK MERCED) : Please see subsequent pages for analyte details
SUB LAB RECEIVED BY: (Print Name/Sign)	DATE/TIME:	SEND REPORT TO:	AGENCY:	
YUN L /	12/10/20 11:43			

San Francisco Water Power Sewer
Services of the San Francisco Public Utilities Commission

SAN FRANCISCO PUBLIC UTILITIES COMMISSION

SUB LABORATORY CHAIN OF CUSTODY RECORD

Water Quality Division
1000 El Camino Real
Millbrae, CA 94030
Tel: (650) 872-5945
Fax: (650) 952-3407

Out Source#: 4500 | **Ship To : SUB_LAB** | **Ship Date: 12/09/2020** | **Ship Via: FedEx** | **Tracking#: 121103155778**

FOR LAB USE ONLY

2079127-01 LMER_S_00_LIM

Container ID (Rep of 3) — **Collect Method**
2079127-01-07 to 2079127-01-09 — 4°C

Analysis: SUB ALGAL TOXIN — **Method:** Default

Anatoxin	Cylindrospermopsin	Microcystin-LA	Microcystin-LF	Microcystin-LR
Microcystin-LY	Microcystin-RR	Microcystin-YR	Nodularin	

Container ID (Rep of 1) — **Collect Method**
2079127-01-10 — 4°C

Analysis: SUB 546 — **Method:** EPA 546

Total Microcystins

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INTERNAL CHAIN OF CUSTODY RECORD

EEA Folder Number: 40716

SAMPLE TEMP RECEIVED:

Note: If samples are out of temperature range, let the ASMs know. ASMs will determine whether to proceed with analysis or not.

SAMPLES REC'D DAY OF COLLECTION? Yes / No

IR Gun ID = 6184 (Observation= 1.5 °C) (Corr.Factor 0.2 °C) (Final = 1.3 °C)

TYPE OF ICE: Real ____ Synthetic ✓ No Ice ____ CONDITION OF ICE: Frozen ✓ Partially Frozen ____ Thawed ____ N/A ____

METHOD OF SHIPMENT: Pick-Up / Walk-In / FedEx / UPS / DHL / Area Fast / Top Line / Other: ____

FedEx (#1) 1211 0315 5778

Compliance Acceptance Criteria:

1) Chemistry: >0, ≤ 6°C, not frozen (NELAP) (If received after 24 hrs of sample collection)

2) Microbiology, Distribution: < 10°C, not frozen (can be ≥10°C if received on ice the same day as sample collection, within 8 hours)

3) Microbiology, Surface Water: < 10°C (if received after 2 hours of sample collection)

If out of temperature range for both Chemistry and Microbiology samples and temperature does not confirm, then measure the temperature of each quadrant and record each temperature of the quadrants

1 = (Observation= ____ °C) (Corr.Factor ____ °C) (Final = ____ °C)	2 = (Observation= ____ °C) (Corr.Factor ____ °C) (Final = ____ °C)
3 = (Observation= ____ °C) (Corr.Factor ____ °C) (Final = ____ °C)	4 = (Observation= ____ °C) (Corr.Factor ____ °C) (Final = ____ °C)

4 Dioxin (1613 or 2,3,7,8 TCDD): must be between 0-4 °C, not frozen (If received after 24 hrs of sample collection)

5) pH Check. Manufacturer: ____ Lot Number: ____ pH strip type: 0 - 14 or ____ Expiration Date ____ Results: ____

6) Chlorine check. Manufacturer: Sansafe. Lot No.: ____ Expiration Date: ____ Results ____

7) VOA and Radon Headspace: No Samples with Headspace: ☐ Samples with Headspace (see below): ☐

Headspace Documentation (use additional VOC and Radon Internal COFC for additional bottles)

Exempt from headspace concerns: Methods 515.4, HAA(6251,552), 505, SPME, @CH, 532LCMS, 556, 535, Anatoxin, LCMS methods using 40 ml vials, International clients:

Samp ID	Bottle #	None/<6 mm	>6mm

Samp ID	Bottle #	None/<6 mm	>6mm

Samp ID	Bottle #	None/<6 mm	>6mm

Samp ID	Bottle #	None/<6 mm	>6mm

Note Sample IDs which have dissimilar headspace (i.e. potential sampling errors): ____

SIGNATURE	PRINT NAME	COMPANY/TITLE	DATE	TIME
RECEIVED BY:	Yuri	Eurofins Eaton Analytical	12/10/20	1143

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Tel: (626) 386-1100
Fax: (866) 988-3757
1 800 566 LABS (1 800 566 5227)

Laboratory Comments

Report: 907916
Project: 470440-DW1
Group: Microcystins-Lake Merced

San Francisco PUC
Megan Tran
1000 El Camino Real
Millbrae, CA 94030

Folder Comments

Analtyical results for L231 are submitted by Eurofins Eaton Analytical in Southbend IN

The Comments Report may be blank if there are no comments for this report.

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Tel: (626) 386-1100
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1 800 566 LABS (1 800 566 5227)

Laboratory Hits

Report: 907916
Project: 470440-DW1
Group: Microcystins-Lake Merced

San Francisco PUC
Megan Tran
1000 El Camino Real
Millbrae, CA 94030

Samples Received on:
12/10/2020 1143

Analyzed	Analyte	Sample ID	Result	Federal MCL	Units	MRL
	202012100362	**LMER_E_00_LIM**				
12/14/2020 14:48	Total Microcystins		11		ug/L	0.30
	202012100363	**LMER_N_00_LIM**				
12/22/2020 14:27	Total Microcystins		9.8		ug/L	0.30
	202012100365	**LMER_R_00_LIM**				
12/14/2020 14:48	Total Microcystins		7.5		ug/L	0.30
	202012100366	**LMER_S_00_LIM**				
12/14/2020 14:48	Total Microcystins		6.8		ug/L	0.30

SUMMARY OF POSITIVE DATA ONLY

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Laboratory Data

Report: 907916
Project: 470440-DW1
Group: Microcystins-Lake Merced

San Francisco PUC
Megan Tran
1000 El Camino Real
Millbrae, CA 94030

Samples Received on:
12/10/2020 1143

Prepped	Analyzed	Prep Batch	Analytical Batch	Method	Analyte	Result	Units	MRL	Dilution
LMER_E_00_LIM (202012100362)							**Sampled on 12/08/2020 1400**		
	Variable ID: 2079121-01								
	EPA 546 - UCMR4 546								
12/10/20	12/14/20 14:48	1293501	1294106	(EPA 546)	Total Microcystins	11	ug/L	0.30	1
12/10/20	12/14/20 14:48	1293501	1294106	(EPA 546)	%CV	1.80	%	180	1
	EPA 545 - Algal Toxins								
	12/15/20 18:02			(EPA 545)	Anatoxin-a	ND	ug/L	0.02	1
	12/15/20 18:02			(EPA 545)	Cylindrospermopsin	ND	ug/L	0.05	1
	12/15/20 18:02			(EPA 545)	Microcystin-LA	ND	ug/L	0.1	1
	12/15/20 18:02			(EPA 545)	Microcystin-LF	ND	ug/L	0.1	1
	12/15/20 18:02			(EPA 545)	Microcystin-LR	ND	ug/L	0.1	1
	12/15/20 18:02			(EPA 545)	Microcystin-LY	ND	ug/L	0.1	1
	12/15/20 18:02			(EPA 545)	Microcystin-RR	ND	ug/L	0.1	1
	12/15/20 18:02			(EPA 545)	Microcystin-YR	ND	ug/L	0.1	1
	12/15/20 18:02			(EPA 545)	Nodularin	ND	ug/L	0.1	1
LMER_N_00_LIM (202012100363)							**Sampled on 12/08/2020 1500**		
	Variable ID: 2079123-01								
	EPA 546 - UCMR4 546								
12/10/20	12/22/20 14:27	1293501	1295128	(EPA 546)	Total Microcystins	9.8	ug/L	0.30	1
12/10/20	12/22/20 14:27	1293501	1295128	(EPA 546)	%CV	3.70	%	370	1
LMER_N_00_LIM (202012100364)							**Sampled on 12/09/2020 1200**		
	Variable ID: 2079123-07								
	EPA 545 - Algal Toxins								
	12/15/20 18:15			(EPA 545)	Anatoxin-a	ND	ug/L	0.02	1
	12/15/20 18:15			(EPA 545)	Cylindrospermopsin	ND	ug/L	0.05	1
	12/15/20 18:15			(EPA 545)	Microcystin-LA	ND	ug/L	0.1	1
	12/15/20 18:15			(EPA 545)	Microcystin-LF	ND	ug/L	0.1	1
	12/15/20 18:15			(EPA 545)	Microcystin-LR	ND	ug/L	0.1	1
	12/15/20 18:15			(EPA 545)	Microcystin-LY	ND	ug/L	0.1	1
	12/15/20 18:15			(EPA 545)	Microcystin-RR	ND	ug/L	0.1	1
	12/15/20 18:15			(EPA 545)	Microcystin-YR	ND	ug/L	0.1	1
	12/15/20 18:15			(EPA 545)	Nodularin	ND	ug/L	0.1	1
LMER_R_00_LIM (202012100365)							**Sampled on 12/08/2020 1000**		
	Variable ID: 2079125-01								
	EPA 546 - UCMR4 546								
12/10/20	12/14/20 14:48	1293501	1294106	(EPA 546)	Total Microcystins	7.5	ug/L	0.30	1
12/10/20	12/14/20 14:48	1293501	1294106	(EPA 546)	%CV	1.40	%	140	1
	EPA 545 - Algal Toxins								

Rounding on totals after summation.
(c) - indicates calculated results. Analysis is a calculated result. Reported results are not rounded until the final step before reporting. Therefore methods that use a test result with further calculation may have slight differences in final result than the component analyses.

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Tel: (626) 386-1100
Fax: (866) 988-3757
1 800 566 LABS (1 800 566 5227)

Laboratory Data

Report: 907916
Project: 470440-DW1
Group: Microcystins-Lake Merced

San Francisco PUC
Megan Tran
1000 El Camino Real
Millbrae, CA 94030

Samples Received on:
12/10/2020 1143

Prepped	Analyzed	Prep Batch	Analytical Batch	Method	Analyte	Result	Units	MRL	Dilution
	12/15/20 18:29			(EPA 545)	Anatoxin-a	ND	ug/L	0.02	1
	12/15/20 18:29			(EPA 545)	Cylindrospermopsin	ND	ug/L	0.05	1
	12/15/20 18:29			(EPA 545)	Microcystin-LA	ND	ug/L	0.1	1
	12/15/20 18:29			(EPA 545)	Microcystin-LF	ND	ug/L	0.1	1
	12/15/20 18:29			(EPA 545)	Microcystin-LR	ND	ug/L	0.1	1
	12/15/20 18:29			(EPA 545)	Microcystin-LY	ND	ug/L	0.1	1
	12/15/20 18:29			(EPA 545)	Microcystin-RR	ND	ug/L	0.1	1
	12/15/20 18:29			(EPA 545)	Microcystin-YR	ND	ug/L	0.1	1
	12/15/20 18:29			(EPA 545)	Nodularin	ND	ug/L	0.1	1
LMER_S_00_LIM (202012100366)							**Sampled on 12/08/2020 0900**		
	Variable ID: 2079127-01								
			EPA 546 - UCMR4 546						
12/10/20	12/14/20 14:48	1293501	1294106	(EPA 546)	Total Microcystins	6.8	ug/L	0.30	1
12/10/20	12/14/20 14:48	1293501	1294106	(EPA 546)	%CV	2.70	%	270	1
			EPA 545 - Algal Toxins						
	12/15/20 18:42			(EPA 545)	Anatoxin-a	ND	ug/L	0.02	1
	12/15/20 18:42			(EPA 545)	Cylindrospermopsin	ND	ug/L	0.05	1
	12/15/20 18:42			(EPA 545)	Microcystin-LA	ND	ug/L	0.1	1
	12/15/20 18:42			(EPA 545)	Microcystin-LF	ND	ug/L	0.1	1
	12/15/20 18:42			(EPA 545)	Microcystin-LR	ND	ug/L	0.1	1
	12/15/20 18:42			(EPA 545)	Microcystin-LY	ND	ug/L	0.1	1
	12/15/20 18:42			(EPA 545)	Microcystin-RR	ND	ug/L	0.1	1
	12/15/20 18:42			(EPA 545)	Microcystin-YR	ND	ug/L	0.1	1
	12/15/20 18:42			(EPA 545)	Nodularin	ND	ug/L	0.1	1

Rounding on totals after summation.
(c) - indicates calculated results. Analysis is a calculated result. Reported results are not rounded until the final step before reporting. Therefore methods that use a test result with further calculation may have slight differences in final result than the component analyses.

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Tel: (626) 386-1100
Fax: (866) 988-3757
1 800 566 LABS (1 800 566 5227)

Laboratory QC Summary

Report: 907916
Project: 470440-DW1
Group: Microcystins-Lake Merced

San Francisco PUC

UCMR4 546

Prep Batch: 1293501	**Analytical Batch: 1294106**	**Analysis Date: 12/14/2020**
202012100362	LMER_E_00_LIM	Analyzed by: M8OF
202012100365	LMER_R_00_LIM	Analyzed by: M8OF
202012100366	LMER_S_00_LIM	Analyzed by: M8OF

UCMR4 546

Prep Batch: 1293501	**Analytical Batch: 1295128**	**Analysis Date: 12/22/2020**
202012100363	LMER_N_00_LIM	Analyzed by: M8OF

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Tel: (626) 386-1100
Fax: (866) 988-3757
1 800 566 LABS (1 800 566 5227)

Report: 907916
Project: 470440-DW1
Group: Microcystins-Lake Merced

San Francisco PUC

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield(%)	Limits (%)	RPD Limit(%)	RPD%
UCMR4 546 by EPA 546									
Analytical Batch: 1294106						**Analysis Date: 12/14/2020**			
LCS1	%CV			2.10	%				
LCS2	%CV			ND	%				
MBLK	%CV			<15	%				
MBLK	%CV			<15	%				
MRL_CHK	%CV			ND	%				
MS2_202011300070	%CV	1.60		ND	%				
MSD2_202011300070	%CV	1.60		ND	%				
LCS1	Total Microcystins		0.5	0.603	ug/L	121	(60-140)		
LCS2	Total Microcystins		0.5	0.548	ug/L	110	(60-140)		
MBLK	Total Microcystins			<0.15	ug/L				
MBLK	Total Microcystins			<0.15	ug/L				
MRL_CHK	Total Microcystins		0.3	0.345	ug/L	115	(50-150)		
MS2_202011300070	Total Microcystins	ND	0.5	0.512	ug/L	94	(60-140)		
MSD2_202011300070	Total Microcystins	ND	0.5	0.637	ug/L	119	(60-140)	40	22
UCMR4 546 by EPA 546									
Analytical Batch: 1295128						**Analysis Date: 12/22/2020**			
LCS1	%CV			1.90	%				
LCS2	%CV			ND	%				
MBLK	%CV			<15	%				
MBLK	%CV			<15	%				
MRL_CHK	%CV			ND	%				
MS2_202012180093	%CV	1.10		ND	%				
MSD2_202012180093	%CV	1.10		ND	%				
LCS1	Total Microcystins		0.5	0.502	ug/L	100	(60-140)		
LCS2	Total Microcystins		0.5	0.443	ug/L	89	(60-140)		
MBLK	Total Microcystins			<0.15	ug/L				
MBLK	Total Microcystins			<0.15	ug/L				
MRL_CHK	Total Microcystins		0.3	0.303	ug/L	101	(50-150)		
MS2_202012180093	Total Microcystins	19	0.5	28.9	ug/L	**1890**	(60-140)		
MSD2_202012180093	Total Microcystins	19	0.5	35.5	ug/L	**3210**	(60-140)	40	21

Spike recovery is already corrected for native results.
Spikes which exceed Limits and Method Blanks with positive results are highlighted by Underlining.
Criteria for MS and Dup are advisory only, batch control is based on LCS. Criteria for duplicates are advisory only, unless otherwise specified in the method.
RPD not calculated for LCS2 when different a concentration than LCS1 is used.
RPD not calculated for Duplicates when the result is not five times the MRL (Minimum Reporting Level).
(S) - Indicates surrogate compound.
(I) - Indicates internal standard compound.

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LABORATORY REPORT

If you have any questions concerning this report, please do not hesitate to call us at (800) 332-4345 or (574) 233-4777.

STATE CERTIFICATION LIST

State	Certification	State	Certification
Alabama	40700	Missouri	880
Alaska	IN00035	Montana	CERT0026
Arizona	AZ0432	Nebraska	NE-OS-05-04
Arkansas	IN00035	Nevada	IN00035
California	2920	New Hampshire*	2124
Colorado	IN00035	New Jersey*	IN598
Colorado Radiochemistry	IN00035	New Mexico	IN00035
Connecticut	PH-0132	New York*	11398
Delaware	IN035	North Carolina	18700
Florida(Primary AB)*	E87775	North Dakota	R-035
Georgia	929	Ohio	87775
Hawaii	IN035	Oklahoma	D9508
Idaho	IN00035	Oregon*	4156
Illinois*	200001	Pennsylvania*	68-00466
Illinois Microbiology	17767	Puerto Rico	IN00035
Illinois Radiochemistry	IN00035	Rhode Island	LAO00343
Indiana Chemistry	C-71-01	South Carolina	95005
Indiana Microbiology	M-76-07	South Dakota	IN00035
Iowa	098	Tennessee	TN02973
Kansas*	E-10233	Texas*	T104704187
Kentucky	90056	Texas/TCEQ	TX207
Louisiana*	LA014	Utah*	IN00035
Maine	IN00035	Vermont	VT-8775
Maryland	209	Virginia*	460275
Massachusetts	M-IN035	Washington	C837
Michigan	9926	West Virginia	9927 C
Minnesota*	018-999-338	Wisconsin	999766900
Mississippi	IN035	Wyoming	IN035
EPA	IN00035		

*NELAP/TNI Recognized Accreditation Bodies

Revision date: 09/29/2020

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NELAC NARRATIVE PAGE

Client: Eurofins Eaton Analytical Report #: 506146NP

Eurofins Eaton Analytical, LLC is a NELAP accredited laboratory. All reported results meet the requirements of the NELAC standards, unless otherwise noted.

EEA contact person: Karen Fullmer

NELAP requires complete reporting of deviations from method requirements, regardless of the suspected impact on the data. Quality control failures not reported within the report summary are noted here.

There were no quality control failures.

Karen Fullmer ASM 12/17/2020

Authorized Signature Title Date

110 South Hill Street
South Bend, IN 46617
Tel: (574) 233-4777
Fax: (574) 233-8207
1 800 332 4345

Laboratory Report

Client: Eurofins Eaton Analytical

Attn: Jackie Contreras
750 Royal Oaks Drive
Suite 100
Monrovia, CA 91016

Report: 506146
Priority: Standard Written
Status: Final
PWS ID: Not Supplied

Sample Information

EEA ID #	Client ID	Method	Collected Date / Time	Collected By:	Received Date / Time
4795813	202012100362	L231	12/08/20 14:00	Client	12/12/20 09:45
4795814	202012100364	L231	12/09/20 12:00	Client	12/12/20 09:45
4795815	202012100365	L231	12/08/20 10:00	Client	12/12/20 09:45
4795816	202012100366	L231	12/08/20 09:00	Client	12/12/20 09:45

Report Summary

Note: Sample containers were provided by the client.

Samples came in bottles for Method 545. Samples were transferred to L231 vials and mixed well.

Detailed quantitative results are presented on the following pages. The results presented relate only to the samples provided for analysis.

We appreciate the opportunity to provide you with this analysis. If you have any questions concerning this report, please do not hesitate to call Karen Fullmer at (574) 233-4777.

Karen Fullmer ASM

Authorized Signature | Title

12/17/2020

Date

Client Name: Eurofins Eaton Analytical
Report #: 506146

Sampling Point: 202012100362 PWS ID: Not Supplied

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
64285-06-9	Anatoxin-a	L231	---	0.02	< 0.02	ug/L	---	12/15/20 18:02	4795813
143545-90-8	Cylindrospermopsin	L231	---	0.05	< 0.05	ug/L	---	12/15/20 18:02	4795813
96180-79-9	Microcystin-LA	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:02	4795813
154037-70-4	Microcystin-LF	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:02	4795813
101043-37-2	Microcystin-LR	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:02	4795813
123304-10-9	Microcystin-LY	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:02	4795813
111755-37-4	Microcystin-RR	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:02	4795813
101064-48-6	Microcystin-YR	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:02	4795813
118399-22-7	Nodularin	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:02	4795813

Sampling Point: 202012100364 PWS ID: Not Supplied

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
64285-06-9	Anatoxin-a	L231	---	0.02	< 0.02	ug/L	---	12/15/20 18:15	4795814
143545-90-8	Cylindrospermopsin	L231	---	0.05	< 0.05	ug/L	---	12/15/20 18:15	4795814
96180-79-9	Microcystin-LA	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:15	4795814
154037-70-4	Microcystin-LF	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:15	4795814
101043-37-2	Microcystin-LR	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:15	4795814
123304-10-9	Microcystin-LY	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:15	4795814
111755-37-4	Microcystin-RR	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:15	4795814
101064-48-6	Microcystin-YR	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:15	4795814
118399-22-7	Nodularin	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:15	4795814

Sampling Point: 202012100365 PWS ID: Not Supplied

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
64285-06-9	Anatoxin-a	L231	---	0.02	< 0.02	ug/L	---	12/15/20 18:29	4795815
143545-90-8	Cylindrospermopsin	L231	---	0.05	< 0.05	ug/L	---	12/15/20 18:29	4795815
96180-79-9	Microcystin-LA	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:29	4795815
154037-70-4	Microcystin-LF	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:29	4795815
101043-37-2	Microcystin-LR	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:29	4795815
123304-10-9	Microcystin-LY	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:29	4795815
111755-37-4	Microcystin-RR	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:29	4795815
101064-48-6	Microcystin-YR	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:29	4795815
118399-22-7	Nodularin	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:29	4795815

Client Name: Eurofins Eaton Analytical Report #: 506146

Sampling Point: 202012100366 PWS ID: Not Supplied

EEA Methods

Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
64285-06-9	Anatoxin-a	L231	---	0.02	< 0.02	ug/L	---	12/15/20 18:42	4795816
143545-90-8	Cylindrospermopsin	L231	---	0.05	< 0.05	ug/L	---	12/15/20 18:42	4795816
96180-79-9	Microcystin-LA	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:42	4795816
154037-70-4	Microcystin-LF	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:42	4795816
101043-37-2	Microcystin-LR	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:42	4795816
123304-10-9	Microcystin-LY	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:42	4795816
111755-37-4	Microcystin-RR	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:42	4795816
101064-48-6	Microcystin-YR	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:42	4795816
118399-22-7	Nodularin	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:42	4795816

† EEA has demonstrated it can achieve these report limits in reagent water, but can not document them in all sample matrices.

Reg Limit Type:	MCL	SMCL	AL
Symbol:	*	^	!

Lab Definitions

Continuing Calibration Check Standard (CCC) / Continuing Calibration Verification (CCV) / Initial Calibration Verification Standard (ICV) / Initial Performance Check (IPC) - is a standard containing one or more of the target analytes that is prepared from the same standards used to calibrate the instrument. This standard is used to verify the calibration curve at the beginning of each analytical sequence, and may also be analyzed throughout and at the end of the sequence. The concentration of continuing standards may be varied, when prescribed by the reference method, so that the range of the calibration curve is verified on a regular basis. CCL, CCM, and CCH are the CCC standards at low, mid, and high concentration levels, respectively.

Internal Standards (IS) - are pure compounds with properties similar to the analytes of interest, which are added to field samples or extracts, calibration standards, and quality control standards at a known concentration. They are used to measure the relative responses of the analytes of interest and surrogates in the sample, calibration standard or quality control standard.

Laboratory Duplicate (LD) - is a field sample aliquot taken from the same sample container in the laboratory and analyzed separately using identical procedures. Analysis of laboratory duplicates provides a measure of the precision of the laboratory procedures.

Laboratory Fortified Blank (LFB) / Laboratory Control Sample (LCS) - is an aliquot of reagent water to which known concentrations of the analytes of interest are added. The LFB is analyzed exactly the same as the field samples. LFBs are used to determine whether the method is in control. FBL, FBM, and FBH are the LFB samples at low, mid, and high concentration levels, respectively.

Laboratory Method Blank (LMB) / Laboratory Reagent Blank (LRB) - is a sample of reagent water included in the sample batch analyzed in the same way as the associated field samples. The LMB is used to determine if method analytes or other background contamination have been introduced during the preparation or analytical procedure. The LMB is analyzed exactly the same as the field samples.

Laboratory Trip Blank (LTB) / Field Reagent Blank (FRB) - is a sample of laboratory reagent water placed in a sample container in the laboratory and treated as a field sample, including storage, preservation, and all analytical procedures. The FRB/LTB container follows the collection bottles to and from the collection site, but the FRB/LTB is not opened at any time during the trip. The FRB/LTB is primarily a travel blank used to verify that the samples were not contaminated during shipment.

If applicable, the calculation of the matrix spike (MS) or matrix spike duplicate (MSD) percent recovery is as follows: (MS or MSD value - Sample value) * 100 / spike target / dilution factor = **Recovery %**

Matrix Spike Duplicate Sample (MSD) / Laboratory Fortified Sample Matrix Duplicate (LFSMD) - is a sample aliquot taken from the same field sample source as the Matrix Spike Sample to which known quantities of the analytes of interest are added in the laboratory. The MSD is analyzed exactly the same as the field samples. Analysis of the MSD provides a measure of the precision of the laboratory procedures in a specific matrix. SDL, SDM, and SDH / LFSMDL, LFSMDM, and LFSMDH are the MSD or LFSMD at low, mid, and high concentration levels, respectively.

Matrix Spike Sample (MS) / Laboratory Fortified Sample Matrix (LFSM) - is a sample aliquot taken from field sample source to which known quantities of the analytes of interest are added in the laboratory. The MS is analyzed exactly the same as the field samples. The purpose is to demonstrate recovery of the analytes from a sample matrix to determine if the specific matrix contributes bias to the analytical results. MSL, MSM, and MSH / LFSML, LFSMM, and LFSMH are the MS or LFSM at low, mid, and high concentration levels, respectively.

Quality Control Standard (QCS) / Second Source Calibration Verification (SSCV) - is a solution containing known concentrations of the analytes of interest prepared from a source different from the source of the calibration standards. The solution is obtained from a second manufacturer or lot if the lot can be demonstrated by the manufacturer as prepared independently from other lots. The QCS sample is analyzed using the same procedures as field samples. The QCS is used as a check on the calibration standards used in the method on a routine basis.

Reporting Limit Check (RLC) / Initial Calibration Check Standard (ICCS) - is a procedural standard that is analyzed each day to evaluate instrument performance at or below the minimum reporting limit (MRL).

Surrogate Standard (SS) / Surrogate Analyte (SUR) - is a pure compound with properties similar to the analytes of interest, which is highly unlikely to be found in any field sample, that is added to the field samples, calibration standards, blanks and quality control standards before sample preparation. The SS is used to evaluate the efficiency of the sample preparation process.

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Submittal Form

407016

Date: 12/11/2020

Ship To:
`Eurofins Eaton Analytical
110 South Hill Street

South Bend, IN 46617-2702

Phone: 800-332-4345 Fax: 574-233-8207

Folder #: 907916 **Report Due:** 01/12/2021

*REPORTING REQUIRMENTS: *Do Not Combine Reports with any other samples submitted under different Folder Numbers!*
Report & Invoice must have the Folder # 907916 Job # 1000014

506146

Report all quality control data according to Method. Include dates analyzed. Date extracted (if extracted) and Method reference on the report.
Results must have Complete data & QC with Approval Signature.

Reports: Jackie Contreras Sub-Contracting Administrator
EMAIL TO: Eaton-MonroviaSubContract@eurofinset.com
Eurofins Eaton Analytical, LLC 750 Royal Oaks Drive, Suite 100, Monrovia, CA 91016
Phone (626) 386-1165 Fax (626) 386-1122
Invoices to: Eurofins Eaton Analytical, LLC
Accounts Payable 2425 New Holland Pike, Lancaster, PA 17605

Provide in each Report the Specified StateCertification # and Exp Date for requested tests + matrix.

Samples from: CALIFORNIA

Client Provided Sample Container

Sample ID	Client Sample ID for reference onl	Sample Date & Time	Matrix	PWS Systemcode	PWSID
(2) 202012100362	LMER_E_00_LIM	12/08/20 1400	DW		JLS

Sample type: | Sample Event: | Facility ID: | Sample Point ID: | Static ID: 4795813

Method	Prep Method	Analysis Requested
EPA 545		Algal Toxins

Sample ID	Client Sample ID for reference onl	Sample Date & Time	Matrix	PWS Systemcode	PWSID
(3) 202012100364	LMER_N_00_LIM	12/09/20 1200	DW		JLS

Sample type: | Sample Event: | Facility ID: | Sample Point ID: | Static ID: 4795814

Method	Prep Method	Analysis Requested
EPA 545		Algal Toxins

Sample ID	Client Sample ID for reference onl	Sample Date & Time	Matrix	PWS Systemcode	PWSID
(2) 202012100365	LMER_R_00_LIM	12/08/20 1000	DW		JLS

Sample type: | Sample Event: | Facility ID: | Sample Point ID: | Static ID: 4795815

Method	Prep Method	Analysis Requested
EPA 545		Algal Toxins

WO 0.2

Relinquished by: _____ Sample Control Ray Cabral/EGA Date 12/11/20 Time 0953

Received by: _____ Date _____ Time _____

Relinquished by: _____ Sample Control _____ Date _____ Time _____

Received by: K Dunn Date 12-12-2020 Time 0945

NOTIFICATION REQUIRED IF RECEIVED OUTSIDE OF 0-6 CELSIUS

An Acknowledgement of Receipt is requested to attn: Jackie Contreras

Sample ID	Client Sample ID for reference onl	Sample Date & Time	Matrix	PWS Systemcode	PWSID
202012100366 (2)	LMER_S_00_LIM	12/08/20 0900	DW		JLS

Sample type:	Sample Event:	Facility ID:	Sample Point ID:	Static ID: 4795816

Method	Prep Method	Analysis Requested
EPA 545		Algal Toxins

Relinquished by: Sample Control Date 12/11/20 Time 0953

Received by: Date Time

Relinquished by: Sample Control Date Time

Received by: Date 12-12-2020 Time 0945

NOTIFICATION REQUIRED IF RECEIVED OUTSIDE OF 0-6 CELSIUS

An Acknowledgement of Receipt is requested to attn: Jackie Contreras

750 Royal Oaks Drive, Suite 100, Monrovia, CA 91016 Tel (626) 386-1100 Fax (866) 988-3757 www.EurofinsUS.com/Eaton

Eurofins Eaton Analytical
Run Log

Run ID: **283359** Method: **L231**

Type	Sample Id	Sample Site	Matrix	Instrument ID	Analysis Date	Calibration File
LMB	4796653		RW	DQ	12/15/2020 17:09	121520L231a.mdb
FS	4795813	202012100362	SW	DQ	12/15/2020 18:02	121520L231a.mdb
FS	4795814	202012100364	SW	DQ	12/15/2020 18:15	121520L231a.mdb
FS	4795815	202012100365	SW	DQ	12/15/2020 18:29	121520L231a.mdb
FS	4795816	202012100366	SW	DQ	12/15/2020 18:42	121520L231a.mdb
MS	4796654	202012100366	SW	DQ	12/15/2020 18:55	121520L231a.mdb
MSD	4796655	202012100366	SW	DQ	12/15/2020 19:09	121520L231a.mdb
CCC	4796656		RW	DQ	12/15/2020 19:22	121520L231a.mdb

QC Summary Report

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
LMB	IS-L-phenylalanine-d5	L231	N/A	---		41036	42923	ug/L	96	50 - 150	---	---	1.0	---	12/15/2020 17:09	4796653
LMB	IS-Microcystin-LR-15N10	L231	N/A	---		793	938	ug/L	85	50 - 150	---	---	1.0	---	12/15/2020 17:09	4796653
LMB	IS-Microcystin-RR-15N13	L231	N/A	---		12696	12368	ug/L	103	50 - 150	---	---	1.0	---	12/15/2020 17:09	4796653
LMB	IS-Microcystin-YR-15N10	L231	N/A	---		3231	3295	ug/L	98	50 - 150	---	---	1.0	---	12/15/2020 17:09	4796653
LMB	IS-Uracil-d4	L231	N/A	---		5085	4925	ug/L	103	50 - 150	---	---	1.0	---	12/15/2020 17:09	4796653
LMB	Anatoxin-a	L231	0.02	---	<	0.02		ug/L	---	---	---	---	1.0	---	12/15/2020 17:09	4796653
LMB	Cylindrospermopsin	L231	0.05	---	<	0.05		ug/L	---	---	---	---	1.0	---	12/15/2020 17:09	4796653
LMB	Microcystin-LA	L231	0.1	---	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 17:09	4796653
LMB	Microcystin-LF	L231	0.1	---	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 17:09	4796653
LMB	Microcystin-LR	L231	0.1	---	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 17:09	4796653
LMB	Microcystin-LY	L231	0.1	---	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 17:09	4796653
LMB	Microcystin-RR	L231	0.1	---	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 17:09	4796653
LMB	Microcystin-YR	L231	0.1	---	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 17:09	4796653
LMB	Nodularin	L231	0.1	---	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 17:09	4796653
FS	IS-L-phenylalanine-d5	L231	N/A	202012100362		44596	42923	ug/L	104	50 - 150	---	---	1.0	---	12/15/2020 18:02	4795813
FS	IS-Microcystin-LR-15N10	L231	N/A	202012100362		935	938	ug/L	100	50 - 150	---	---	1.0	---	12/15/2020 18:02	4795813
FS	IS-Microcystin-RR-15N13	L231	N/A	202012100362		12659	12368	ug/L	102	50 - 150	---	---	1.0	---	12/15/2020 18:02	4795813
FS	IS-Microcystin-YR-15N10	L231	N/A	202012100362		3397	3295	ug/L	103	50 - 150	---	---	1.0	---	12/15/2020 18:02	4795813
FS	IS-Uracil-d4	L231	N/A	202012100362		4270	4925	ug/L	87	50 - 150	---	---	1.0	---	12/15/2020 18:02	4795813
FS	Anatoxin-a	L231	0.02	202012100362	<	0.02		ug/L	---	---	---	---	1.0	---	12/15/2020 18:02	4795813
FS	Cylindrospermopsin	L231	0.05	202012100362	<	0.05		ug/L	---	---	---	---	1.0	---	12/15/2020 18:02	4795813
FS	Microcystin-LA	L231	0.1	202012100362	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:02	4795813
FS	Microcystin-LF	L231	0.1	202012100362	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:02	4795813
FS	Microcystin-LR	L231	0.1	202012100362	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:02	4795813
FS	Microcystin-LY	L231	0.1	202012100362	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:02	4795813
FS	Microcystin-RR	L231	0.1	202012100362	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:02	4795813
FS	Microcystin-YR	L231	0.1	202012100362	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:02	4795813
FS	Nodularin	L231	0.1	202012100362	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:02	4795813
FS	IS-L-phenylalanine-d5	L231	N/A	202012100364		44554	42923	ug/L	104	50 - 150	---	---	1.0	---	12/15/2020 18:15	4795814
FS	IS-Microcystin-LR-15N10	L231	N/A	202012100364		916	938	ug/L	98	50 - 150	---	---	1.0	---	12/15/2020 18:15	4795814
FS	IS-Microcystin-RR-15N13	L231	N/A	202012100364		14307	12368	ug/L	116	50 - 150	---	---	1.0	---	12/15/2020 18:15	4795814
FS	IS-Microcystin-YR-15N10	L231	N/A	202012100364		3540	3295	ug/L	107	50 - 150	---	---	1.0	---	12/15/2020 18:15	4795814
FS	IS-Uracil-d4	L231	N/A	202012100364		4496	4925	ug/L	91	50 - 150	---	---	1.0	---	12/15/2020 18:15	4795814
FS	Anatoxin-a	L231	0.02	202012100364	<	0.02		ug/L	---	---	---	---	1.0	---	12/15/2020 18:15	4795814
FS	Cylindrospermopsin	L231	0.05	202012100364	<	0.05		ug/L	---	---	---	---	1.0	---	12/15/2020 18:15	4795814
FS	Microcystin-LA	L231	0.1	202012100364	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:15	4795814
FS	Microcystin-LF	L231	0.1	202012100364	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:15	4795814
FS	Microcystin-LR	L231	0.1	202012100364	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:15	4795814
FS	Microcystin-LY	L231	0.1	202012100364	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:15	4795814
FS	Microcystin-RR	L231	0.1	202012100364	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:15	4795814

QC Summary Report (cont.)

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
FS	Microcystin-YR	L231	0.1	202012100364	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:15	4795814
FS	Nodularin	L231	0.1	202012100364	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:15	4795814
FS	IS-L-phenylalanine-d5	L231	N/A	202012100365		43970	42923	ug/L	102	50 - 150	---	---	1.0	---	12/15/2020 18:29	4795815
FS	IS-Microcystin-LR-15N10	L231	N/A	202012100365		900	938	ug/L	96	50 - 150	---	---	1.0	---	12/15/2020 18:29	4795815
FS	IS-Microcystin-RR-15N13	L231	N/A	202012100365		12708	12368	ug/L	103	50 - 150	---	---	1.0	---	12/15/2020 18:29	4795815
FS	IS-Microcystin-YR-15N10	L231	N/A	202012100365		3277	3295	ug/L	99	50 - 150	---	---	1.0	---	12/15/2020 18:29	4795815
FS	IS-Uracil-d4	L231	N/A	202012100365		4341	4925	ug/L	88	50 - 150	---	---	1.0	---	12/15/2020 18:29	4795815
FS	Anatoxin-a	L231	0.02	202012100365	<	0.02		ug/L	---	---	---	---	1.0	---	12/15/2020 18:29	4795815
FS	Cylindrospermopsin	L231	0.05	202012100365	<	0.05		ug/L	---	---	---	---	1.0	---	12/15/2020 18:29	4795815
FS	Microcystin-LA	L231	0.1	202012100365	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:29	4795815
FS	Microcystin-LF	L231	0.1	202012100365	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:29	4795815
FS	Microcystin-LR	L231	0.1	202012100365	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:29	4795815
FS	Microcystin-LY	L231	0.1	202012100365	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:29	4795815
FS	Microcystin-RR	L231	0.1	202012100365	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:29	4795815
FS	Microcystin-YR	L231	0.1	202012100365	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:29	4795815
FS	Nodularin	L231	0.1	202012100365	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:29	4795815
FS	IS-L-phenylalanine-d5	L231	N/A	202012100366		43433	42923	ug/L	101	50 - 150	---	---	1.0	---	12/15/2020 18:42	4795816
FS	IS-Microcystin-LR-15N10	L231	N/A	202012100366		831	938	ug/L	89	50 - 150	---	---	1.0	---	12/15/2020 18:42	4795816
FS	IS-Microcystin-RR-15N13	L231	N/A	202012100366		12980	12368	ug/L	105	50 - 150	---	---	1.0	---	12/15/2020 18:42	4795816
FS	IS-Microcystin-YR-15N10	L231	N/A	202012100366		3369	3295	ug/L	102	50 - 150	---	---	1.0	---	12/15/2020 18:42	4795816
FS	IS-Uracil-d4	L231	N/A	202012100366		4352	4925	ug/L	88	50 - 150	---	---	1.0	---	12/15/2020 18:42	4795816
FS	Anatoxin-a	L231	0.02	202012100366	<	0.02		ug/L	---	---	---	---	1.0	---	12/15/2020 18:42	4795816
FS	Cylindrospermopsin	L231	0.05	202012100366	<	0.05		ug/L	---	---	---	---	1.0	---	12/15/2020 18:42	4795816
FS	Microcystin-LA	L231	0.1	202012100366	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:42	4795816
FS	Microcystin-LF	L231	0.1	202012100366	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:42	4795816
FS	Microcystin-LR	L231	0.1	202012100366	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:42	4795816
FS	Microcystin-LY	L231	0.1	202012100366	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:42	4795816
FS	Microcystin-RR	L231	0.1	202012100366	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:42	4795816
FS	Microcystin-YR	L231	0.1	202012100366	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:42	4795816
FS	Nodularin	L231	0.1	202012100366	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:42	4795816
MS	IS-L-phenylalanine-d5	L231	N/A	202012100366		44173	42923	ug/L	103	50 - 150	---	---	1.0	---	12/15/2020 18:55	4796654
MS	IS-Microcystin-LR-15N10	L231	N/A	202012100366		956	938	ug/L	102	50 - 150	---	---	1.0	---	12/15/2020 18:55	4796654
MS	IS-Microcystin-RR-15N13	L231	N/A	202012100366		12676	12368	ug/L	102	50 - 150	---	---	1.0	---	12/15/2020 18:55	4796654
MS	IS-Microcystin-YR-15N10	L231	N/A	202012100366		3240	3295	ug/L	98	50 - 150	---	---	1.0	---	12/15/2020 18:55	4796654
MS	IS-Uracil-d4	L231	N/A	202012100366		4347	4925	ug/L	88	50 - 150	---	---	1.0	---	12/15/2020 18:55	4796654
MS	Anatoxin-a	L231	0.02	202012100366		0.1819	0.2	ug/L	91	70 - 130	---	---	1.0	---	12/15/2020 18:55	4796654
MS	Cylindrospermopsin	L231	0.05	202012100366		0.5276	0.5	ug/L	106	70 - 130	---	---	1.0	---	12/15/2020 18:55	4796654
MS	Microcystin-LA	L231	0.1	202012100366		0.9923	1.0	ug/L	99	70 - 130	---	---	1.0	---	12/15/2020 18:55	4796654
MS	Microcystin-LF	L231	0.1	202012100366		0.9706	1.0	ug/L	97	70 - 130	---	---	1.0	---	12/15/2020 18:55	4796654
MS	Microcystin-LR	L231	0.1	202012100366		0.9565	1.0	ug/L	96	70 - 130	---	---	1.0	---	12/15/2020 18:55	4796654
MS	Microcystin-LY	L231	0.1	202012100366		0.9061	1.0	ug/L	91	70 - 130	---	---	1.0	---	12/15/2020 18:55	4796654

QC Summary Report (cont.)

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
MS	Microcystin-RR	L231	0.1	202012100366		0.9693	1.0	ug/L	97	70 - 130	---	---	1.0	---	12/15/2020 18:55	4796654
MS	Microcystin-YR	L231	0.1	202012100366		1.0620	1.0	ug/L	106	70 - 130	---	---	1.0	---	12/15/2020 18:55	4796654
MS	Nodularin	L231	0.1	202012100366		0.9864	1.0	ug/L	99	70 - 130	---	---	1.0	---	12/15/2020 18:55	4796654
MSD	IS-L-phenylalanine-d5	L231	N/A	202012100366		44602	42923	ug/L	104	50 - 150	---	---	1.0	---	12/15/2020 19:09	4796655
MSD	IS-Microcystin-LR-15N10	L231	N/A	202012100366		887	938	ug/L	95	50 - 150	---	---	1.0	---	12/15/2020 19:09	4796655
MSD	IS-Microcystin-RR-15N13	L231	N/A	202012100366		12402	12368	ug/L	100	50 - 150	---	---	1.0	---	12/15/2020 19:09	4796655
MSD	IS-Microcystin-YR-15N10	L231	N/A	202012100366		3251	3295	ug/L	99	50 - 150	---	---	1.0	---	12/15/2020 19:09	4796655
MSD	IS-Uracil-d4	L231	N/A	202012100366		4094	4925	ug/L	83	50 - 150	---	---	1.0	---	12/15/2020 19:09	4796655
MSD	Anatoxin-a	L231	0.02	202012100366		0.2070	0.2	ug/L	104	70 - 130	13	30	1.0	---	12/15/2020 19:09	4796655
MSD	Cylindrospermopsin	L231	0.05	202012100366		0.5058	0.5	ug/L	101	70 - 130	4.2	30	1.0	---	12/15/2020 19:09	4796655
MSD	Microcystin-LA	L231	0.1	202012100366		1.0732	1.0	ug/L	107	70 - 130	7.8	30	1.0	---	12/15/2020 19:09	4796655
MSD	Microcystin-LF	L231	0.1	202012100366		1.0422	1.0	ug/L	104	70 - 130	7.1	30	1.0	---	12/15/2020 19:09	4796655
MSD	Microcystin-LR	L231	0.1	202012100366		1.0445	1.0	ug/L	104	70 - 130	8.8	30	1.0	---	12/15/2020 19:09	4796655
MSD	Microcystin-LY	L231	0.1	202012100366		1.1240	1.0	ug/L	112	70 - 130	21	30	1.0	---	12/15/2020 19:09	4796655
MSD	Microcystin-RR	L231	0.1	202012100366		1.0212	1.0	ug/L	102	70 - 130	5.2	30	1.0	---	12/15/2020 19:09	4796655
MSD	Microcystin-YR	L231	0.1	202012100366		1.0379	1.0	ug/L	104	70 - 130	2.3	30	1.0	---	12/15/2020 19:09	4796655
MSD	Nodularin	L231	0.1	202012100366		1.0663	1.0	ug/L	107	70 - 130	7.8	30	1.0	---	12/15/2020 19:09	4796655
CCC	IS-L-phenylalanine-d5	L231	N/A	---		43418	42923	ug/L	101	50 - 150	---	---	1.0	---	12/15/2020 19:22	4796656
CCC	IS-Microcystin-LR-15N10	L231	N/A	---		869	938	ug/L	93	50 - 150	---	---	1.0	---	12/15/2020 19:22	4796656
CCC	IS-Microcystin-RR-15N13	L231	N/A	---		13290	12368	ug/L	107	50 - 150	---	---	1.0	---	12/15/2020 19:22	4796656
CCC	IS-Microcystin-YR-15N10	L231	N/A	---		3267	3295	ug/L	99	50 - 150	---	---	1.0	---	12/15/2020 19:22	4796656
CCC	IS-Uracil-d4	L231	N/A	---		5079	4925	ug/L	103	50 - 150	---	---	1.0	---	12/15/2020 19:22	4796656
CCC	Anatoxin-a	L231	0.02	---		0.2142	0.2	ug/L	107	70 - 130	---	---	1.0	---	12/15/2020 19:22	4796656
CCC	Cylindrospermopsin	L231	0.05	---		0.5425	0.5	ug/L	109	70 - 130	---	---	1.0	---	12/15/2020 19:22	4796656
CCC	Microcystin-LA	L231	0.1	---		1.1356	1.0	ug/L	114	70 - 130	---	---	1.0	---	12/15/2020 19:22	4796656
CCC	Microcystin-LF	L231	0.1	---		1.0353	1.0	ug/L	104	70 - 130	---	---	1.0	---	12/15/2020 19:22	4796656
CCC	Microcystin-LR	L231	0.1	---		1.0789	1.0	ug/L	108	70 - 130	---	---	1.0	---	12/15/2020 19:22	4796656
CCC	Microcystin-LY	L231	0.1	---		1.0980	1.0	ug/L	110	70 - 130	---	---	1.0	---	12/15/2020 19:22	4796656
CCC	Microcystin-RR	L231	0.1	---		0.9754	1.0	ug/L	98	70 - 130	---	---	1.0	---	12/15/2020 19:22	4796656
CCC	Microcystin-YR	L231	0.1	---		0.9805	1.0	ug/L	98	70 - 130	---	---	1.0	---	12/15/2020 19:22	4796656
CCC	Nodularin	L231	0.1	---		1.0539	1.0	ug/L	105	70 - 130	---	---	1.0	---	12/15/2020 19:22	4796656

Sample Type Key

Type (Abbr.)	Sample Type	Type (Abbr.)	Sample Type
CCC	Continuing Calibration Check		
FS	Field Sample		
LMB	Laboratory Method Blank		
MS	Matrix Spike		
MSD	Matrix Spike Duplicate		

END OF REPORT

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ACCREDITED
CERTIFICATE #'s 5890.01 & 5890.02

Laboratory Report

for

San Francisco PUC
1000 El Camino Real
Millbrae, CA 94030
Attention: Megan Tran

REPORT REVISED,
replaces the original report.

NELAP ACCREDITED TNI LABORATORY
Utah ELCP CA00006

Date of Issue
01/05/2021
Monica Van Natta
EUROFINS EATON ANALYTICAL, LLC

UMVN: Monica Van Natta
Project Manager

Report: 907916
Project: 470440-DW1
Group: Microcystins-Lake Merced

* Accredited in accordance with TNI 2016 and ISO/IEC 17025:2017.
* Laboratory certifies that the test results meet all **TNI 2016 and ISO/IEC 17025:2017** requirements unless noted under the individual analysis.
* Following the cover page are State Certification List, ISO 17025 Accredited Method List, Acknowledgement of Samples Received, Comments, Hits Report, Data Report, QC Summary, QC Report and Regulatory Forms, as applicable.
* Test results relate only to the sample(s) tested.
* Test results apply to the sample(s) as received, unless otherwise noted in the comments report (ISO/IEC 17025:2017).
* This report shall not be reproduced except in full, without the written approval of the laboratory.
* This report includes ISO/IEC 17025 and non-ISO 17025 accredited methods.

STATE CERTIFICATION LIST

State	Certification Number	State	Certification Number
Alabama	41060	**Montana**	Cert 0035
Arizona	AZ0778	**Nebraska**	Certified
Arkansas	Certified	**Nevada**	CA000062018
California	2813	**New Hampshire ***	2959
Colorado	Certified	**New Jersey ***	CA 008
Connecticut	PH-0107	**New Mexico**	Certified
Delaware	CA 006	**New York ***	11320
Florida *	E871024	**North Carolina**	06701
Georgia	947	**North Dakota**	R-009
Guam	18-005R	**Oregon ***	CA200003-005
Hawaii	Certified	**Pennsylvania ***	68-565
Idaho	Certified	**Puerto Rico**	Certified
Illinois *	200033	**Rhode Island**	LAO00326
Indiana	C-CA-01	**South Carolina**	87016
Iowa - Asbestos	413	**South Dakota**	Certified
Kansas *	E-10268	**Tennessee**	TN02839
Kentucky	90107	**Texas ***	T104704230-18-15
Louisiana *	LA180000	**Utah (Primary AB) ***	CA00006
Maine	CA0006	**Vermont**	VT0114
Maryland	224	**Virginia ***	460260
Commonwealth of Northern Marianas Is.	MP0004	**Washington**	C838
Massachusetts	M-CA006	**EPA Region 5**	Certified
Michigan	9906	**Los Angeles County Sanitation Districts**	10264
Mississippi	Certified		

* NELAP/TNI Recognized Accreditation Bodies

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The tests listed below are accredited and meet the requirements of ISO/IEC 17025 as verified by the ANSI-ASQ National Accreditation Board/A2LA.
Refer to Certificate and scope of accreditation (5890) found at: https://www.eurofinsus.com/Eaton

SPECIFIC TESTS	METHOD OR TECHNIQUE USED	Environ-mental (Drinking Water)	Environ-mental (Waste Water)	Water as a Component of Food and Bev/Bev/ Bottled Water
1,2,3-TCP (5 PPT & 0.5 PPT)	CA SRL 524M-TCP	x		x
1,4-Dioxane	EPA 522	x		x
2,3,7,8-TCDD	Modified EPA 1613B	x		x
Acrylamide	In House Method (2440)	x		x
Algal Toxins/Microcystin	In House Method (3570)			
Alkalinity	SM 2320B	x	x	x
Ammonia	EPA 350.1		x	x
Ammonia	SM 4500-NH3 H		x	x
Anions and DBPs by IC	EPA 300.0	x	x	x
Anions and DBPs by IC	EPA 300.1	x		x
Asbestos	EPA 100.2	x	x	
BOD / CBOD	SM 5210B		x	x
Bromate	In House Method (2447)	x		x
Carbamates	EPA 531.2	x		x
Carbonate as CO3	SM 2330B	x	x	x
Carbonyls	EPA 556	x		x
COD	EPA 410.4 / SM 5220D		x	
Chloramines	SM 4500-CL G	x	x	x
Chlorinated Acids	EPA 515.4	x		x
Chlorinated Acids	EPA 555	x		x
Chlorine Dioxide	SM 4500-CLO2 D Palin Test	x		x
Chlorine -Total/Free/ Combined Residual	SM 4500-Cl G	x	x	x
Conductivity	EPA 120.1		x	
Conductivity	SM 2510B	x	x	x
Corrosivity (Langelier Index)	SM 2330B	x		x
Cyanide, Amenable	SM 4500-CN G	x	x	
Cyanide, Free	SM 4500CN F	x	x	x
Cyanide, Total	EPA 335.4	x	x	x
Cyanogen Chloride (screen)	In House Method (2470)	x		x
Diquat and Paraquat	EPA 549.2	x		x
DBP/HAA	SM 6251B	x		x
Dissolved Oxygen	SM 4500-O G		x	x
DOC	SM 5310C	x		x
E. Coli	(MTF/EC+MUG)	x		x
E. Coli	CFR 141.21(f)(6)(i)	x		x
E. Coli	SM 9223		x	
E. Coli (Enumeration)	SM 9221B.1/ SM 9221F	x		x
E. Coli (Enumeration)	SM 9223B	x		x
EDB/DCBP	EPA 504.1	x		
EDB/DBCP and DBP	EPA 551.1	x		x
EDTA and NTA	In House Method (2454)	x		x
Endothall	EPA 548.1	x		x
Endothall	In-house Method (2445)	x		x
Enterococci	SM 9230B	x	x	
Fecal Coliform	SM 9221 E (MTF/EC)	x		
Fecal Coliform	SM 9221C, E (MTF/EC)		x	
Fecal Coliform (Enumeration)	SM 9221E (MTF/EC)	x		x
Fecal Coliform with Chlorine Present	SM 9221E		x	
Fecal Streptococci	SM 9230B	x	x	
Fluoride	SM 4500-F C	x	x	x
Glyphosate	EPA 547	x		x
Glyphosate + AMPA	In House Method (3618)	x		x
Gross Alpha/Beta	EPA 900.0	x	x	x
Gross Alpha Coprecipitation	SM 7110 C	x	x	x
Hardness	SM 2340B	x	x	x
Heterotrophic Bacteria	In House Method (2439)	x		x
Heterotrophic Bacteria	SM 9215 B	x		x
Hexavalent Chromium	EPA 218.6	x	x	x
Hexavalent Chromium	EPA 218.7	x		x
Hexavalent Chromium	SM 3500-Cr B		x	
Hormones	EPA 539	x		x
Hydroxide as OH Calc.	SM 2330B	x		x
Kjeldahl Nitrogen	EPA 351.2		x	
Legionella	Legiolert	x		x
Mercury	EPA 200.8	x		x
Metals	EPA 200.7 / 200.8	x	x	x
Microcystin LR	ELISA (2360)	x		x
Microcystin, Total	EPA 546	x		x
NDMA	EEA/Agilent 521.1 In house method (2425)	x		x
Nitrate/Nitrite Nitrogen	EPA 353.2	x	x	x
OCL, Pesticides/PCB	EPA 505	x		x
Ortho Phosphate	EPA 365.1	x	x	x
Ortho Phosphorous	SM 4500P E	x		x
Oxyhalides Disinfection Byproducts	EPA 317.0	x		x
Perchlorate	EPA 331.0	x		x
Perchlorate (low and high)	EPA 314.0	x		x
Perfluorinated Alkyl Acids	EPA 537	x		x
Perfluorinated Polutant	In house Method (2434)	x		x
pH	EPA 150.1	x		
pH	SM 4500-H+B	x	x	x
Phenylurea Pesticides/ Herbicides	In House Method, based on EPA 532 (2448)	x		x
Pseudomonas	IDEXX Pseudalert (2461)	x		x
Radium-226	GA Institute of Tech	x		x
Radium-228	GA Institute of Tech	x		x
Radon-222	SM 7500RN	x		x
Residue, Filterable	SM 2540C	x	x	x
Residue, Non-filterable	SM 2540D		x	
Residue, Total	SM 2540B		x	x
Residue, Volatile	EPA 160.4		x	
Semi-VOC	EPA 525.2	x		x
Silica	SM 4500-Si D	x	x	
Silica	SM 4500-SiO2 C	x	x	
Sulfide	SM 4500-$S^{=}$ D		x	
Sulfite	SM 4500-SO^{3}B	x	x	x
Surfactants	SM 5540C	x	x	x
Taste and Odor Analytes	SM 6040E	x		x
Total Coliform (P/A)	SM 9221 A, B	x		x
Total Coliform (Enumeration)	SM 9221 A, B, C	x		x
Total Coliform / E. coli	Colisure SM 9223	x		x
Total Coliform	SM 9221B		x	
Total Coliform with Chlorine Present	SM 9221B		x	
Total Coliform / E.coli (P/A and Enumeration)	SM 9223	x		x
TOC	SM 5310C	x	x	x
TOX	SM 5320B		x	
Total Phenols	EPA 420.1		x	
Total Phenols	EPA 420.4	x	x	x
Total Phosphorous	SM 4500 P E		x	
Triazine Pesticides & Degradates	In House (3617)	x		x
Turbidity	EPA 180.1	x	x	x
Turbidity	SM 2130B	x	x	
Uranium by ICP/MS	EPA 200.8	x		x
UV 254	SM 5910B	x		
VOC	EPA 524.2	x		x
VOC	In House Method (2411)	x		x
Yeast and Mold	SM 9610	x		x
Field Sampling	N/A			

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Acknowledgement of Samples Received

Addr: **San Francisco PUC**
1000 El Camino Real
Millbrae, CA 94030

Attn: Megan Tran
Phone: 650-872-5945

Client ID: SANFRAN
Folder #: 907916
Project: 470440-DW1
Sample Group: Microcystins-Lake Merced

Project Manager: Monica Van Natta
Phone: 559-797-1931
PO #: PRO.0165 PO-000043463 TO#01

The following samples were received from you on **December 10, 2020** at **1143**. They have been scheduled for the tests listed below each sample. If this information is incorrect, please contact your service representative. Thank you for using Eurofins Eaton Analytical, LLC.

Sample #	Sample ID	Sample Date
202012100362	LMER_E_00_LIM	12/08/2020 1400
	Variable ID: 2079121-01	
	@UCMR4 546 L231_SB	
202012100363	LMER_N_00_LIM	12/08/2020 1500
	Variable ID: 2079123-01	
	@UCMR4 546	
202012100364	LMER_N_00_LIM	12/09/2020 1200
	Variable ID: 2079123-07	
	L231_SB	
202012100365	LMER_R_00_LIM	12/08/2020 1000
	Variable ID: 2079125-01	
	@UCMR4 546 L231_SB	
202012100366	LMER_S_00_LIM	12/08/2020 0900
	Variable ID: 2079127-01	
	@UCMR4 546 L231_SB	

Test Description

@UCMR4 546 -- UCMR4 546

San Francisco Water Power Sewer
Services of the San Francisco Public Utilities Commission

SAN FRANCISCO PUBLIC UTILITIES COMMISSION

SUB LABORATORY CHAIN OF CUSTODY RECORD

987416

Water Quality Division
1000 El Camino Real
Millbrae, CA 94030
Tel: (650) 872-5945
Fax: (650) 952-3407

Out Source#: 4500 **Ship To : SUB_LAB** **Ship Date: 12/09/2020** **Ship Via: FedEx** **Tracking#: 121103155778**

Index Code: ☐ 921021(WW)/920901(WW) ☐ 470440(DW)

SHIPPED BY: PHUONG H / NM

TYPE: ROUTINE / SPECIAL
(Circle One)

FOR LAB USE ONLY

METHOD OF TRANSPORT (CHECK ONE)	SAMPLE CONDITION UPON RECEIPT (CHECK APPROPRIATE BOXES)		SAMPLE STORAGE
☐ MILLBRAE	☐ CHILLED	☐ CONTAINER INTACT	LOCATION
☐ MOCCASIN	☐ SEALED	☐ # OF SAMPLES MATCH COC	REFRIG#
☐ COURIER	☐ SEAL INTACT	☐ HEADSPACE (VOA)	SHELF#
☐ OTHER	☐ PRESERVED	COOLER TEMPERATURE (0-6°C):	OTHERS

STATE EDT REQUIRED: Y / N **SYTEM ID:**

Sample ID	Source	Collected Date	Time	By	WQD Rec. Date	By	LocationNotes\Comments	TAT	SUB_546	SUB_ALGAL_TOXIN
2079121-01	LMER_E_00_LIM	12/8/20	1400	RMJOHNSON	12/8/20	PHOANG		21 DAYS	10	7-8
					12/9/20	PHOANG		21 DAYS		9
2079123-01	LMER_N_00_LIM	12/8/20	1500	RMJOHNSON	12/8/20	PHOANG		21 DAYS	10	
2079123-07	LMER_N_00_LIM	12/9/20	1200	SDELEO	12/9/20	JMITTRY		21 DAYS		7-8
2079125-01	LMER_R_00_LIM	12/8/20	1000	RMJOHNSON	12/8/20	PHOANG		21 DAYS	10	7-8
					12/9/20	PHOANG		21 DAYS		9
2079127-01	LMER_S_00_LIM	12/8/20	0900	RMJOHNSON	12/8/20	PHOANG		21 DAYS	10	7-8

↑ indicates the last digit(s) of container ID

RELINQUISHED FROM: (Print Name/Sign)	DATE/TIME:	RELINQUISHED TO: (Print Name/Sign)	DATE/TIME:	Comments:
PHUONG H / NM	12/9/2020 @1500	/		470440DW: (SUB_546/SUB_ALGAL_TOXIN/LK MERCED) : Please see subsequent pages for analyte details
SUB LAB RECEIVED BY: (Print Name/Sign)	DATE/TIME:	SEND REPORT TO:	AGENCY:	
YUN L /	12/10/20 11:43			

San Francisco Water Power Sewer
Services of the San Francisco Public Utilities Commission

SAN FRANCISCO PUBLIC UTILITIES COMMISSION

SUB LABORATORY CHAIN OF CUSTODY RECORD

Water Quality Division
1000 El Camino Real
Millbrae, CA 94030
Tel: (650) 872-5945
Fax: (650) 952-3407

Out Source#: 4500 | **Ship To : SUB_LAB** | **Ship Date: 12/09/2020** | **Ship Via: FedEx** | **Tracking#: 121103155778**

FOR LAB USE ONLY

2079127-01 LMER_S_00_LIM

Container ID (Rep of 3) — **Collect Method**
2079127-01-07 to 2079127-01-09 — 4°C

Analysis: SUB ALGAL TOXIN — **Method:** Default

Anatoxin	Cylindrospermopsin	Microcystin-LA	Microcystin-LF	Microcystin-LR
Microcystin-LY	Microcystin-RR	Microcystin-YR	Nodularin	

Container ID (Rep of 1) — **Collect Method**
2079127-01-10 — 4°C

Analysis: SUB 546 — **Method:** EPA 546

Total Microcystins

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INTERNAL CHAIN OF CUSTODY RECORD

EEA Folder Number: 40716

SAMPLE TEMP RECEIVED:

Note: If samples are out of temperature range, let the ASMs know. ASMs will determine whether to proceed with analysis or not.

SAMPLES REC'D DAY OF COLLECTION? Yes / No

IR Gun ID = 6184 (Observation= 1.5 °C) (Corr.Factor 0.2 °C) (Final = 1.3 °C)

TYPE OF ICE: Real ____ Synthetic ✓ No Ice ____ CONDITION OF ICE: Frozen ✓ Partially Frozen ____ Thawed ____ N/A ____

METHOD OF SHIPMENT: Pick-Up / Walk-In / FedEx / UPS / DHL / Area Fast / Top Line / Other: ____

FedEx (#1) 1211 0315 5778

Compliance Acceptance Criteria:

1) Chemistry: >0, ≤ 6°C, not frozen (NELAP) (If received after 24 hrs of sample collection)

2) Microbiology, Distribution: < 10°C, not frozen (can be ≥10°C if received on ice the same day as sample collection, within 8 hours)

3) Microbiology, Surface Water: < 10°C (if received after 2 hours of sample collection)

If out of temperature range for both Chemistry and Microbiology samples and temperature does not confirm, then measure the temperature of each quadrant and record each temperature of the quadrants

1 = (Observation= ____ °C) (Corr.Factor ____ °C) (Final = ____ °C)	2 = (Observation= ____ °C) (Corr.Factor ____ °C) (Final = ____ °C)
3 = (Observation= ____ °C) (Corr.Factor ____ °C) (Final = ____ °C)	4 = (Observation= ____ °C) (Corr.Factor ____ °C) (Final = ____ °C)

4 Dioxin (1613 or 2,3,7,8 TCDD): must be between 0-4 °C, not frozen (If received after 24 hrs of sample collection)

5) pH Check. Manufacturer: ____ Lot Number: ____ pH strip type: 0 - 14 or ____ Expiration Date ____ Results: ____

6) Chlorine check. Manufacturer: Sansafe. Lot No.: ____ Expiration Date: ____ Results ____

7) VOA and Radon Headspace: No Samples with Headspace: ☐ Samples with Headspace (see below): ☐

Headspace Documentation (use additional VOC and Radon Internal COFC for additional bottles)

Exempt from headspace concerns: Methods 515.4, HAA(6251,552), 505, SPME, @CH, 532LCMS, 556, 535, Anatoxin, LCMS methods using 40 ml vials, International clients:

Samp ID	Bottle #	None/<6 mm	>6mm

Samp ID	Bottle #	None/<6 mm	>6mm

Samp ID	Bottle #	None/<6 mm	>6mm

Samp ID	Bottle #	None/<6 mm	>6mm

Note Sample IDs which have dissimilar headspace (i.e. potential sampling errors): ____

SIGNATURE	PRINT NAME	COMPANY/TITLE	DATE	TIME
RECEIVED BY:	Yuri	Eurofins Eaton Analytical	12/10/20	1143

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Laboratory Comments

Report: 907916
Project: 470440-DW1
Group: Microcystins-Lake Merced

San Francisco PUC
Megan Tran
1000 El Camino Real
Millbrae, CA 94030

Folder Comments

Analtyical results for L231 are submitted by Eurofins Eaton Analytical in Southbend IN

Revised report to edit dilution factors. UMVN, 01/05/2021

The Comments Report may be blank if there are no comments for this report.

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Laboratory Hits

Report: 907916
Project: 470440-DW1
Group: Microcystins-Lake Merced

San Francisco PUC
Megan Tran
1000 El Camino Real
Millbrae, CA 94030

Samples Received on:
12/10/2020 1143

Analyzed	Analyte	Sample ID	Result	Federal MCL	Units	MRL
	202012100362	**LMER_E_00_LIM**				
12/14/2020 14:48	Total Microcystins		11		ug/L	3.0
	202012100363	**LMER_N_00_LIM**				
12/22/2020 14:27	Total Microcystins		9.8		ug/L	6.0
	202012100365	**LMER_R_00_LIM**				
12/14/2020 14:48	Total Microcystins		7.5		ug/L	3.0
	202012100366	**LMER_S_00_LIM**				
12/14/2020 14:48	Total Microcystins		6.8		ug/L	3.0

SUMMARY OF POSITIVE DATA ONLY

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Laboratory Data

Report: 907916
Project: 470440-DW1
Group: Microcystins-Lake Merced

San Francisco PUC
Megan Tran
1000 El Camino Real
Millbrae, CA 94030

Samples Received on:
12/10/2020 1143

Prepped	Analyzed	Prep Batch	Analytical Batch	Method	Analyte	Result	Units	MRL	Dilution
LMER_E_00_LIM (202012100362)							**Sampled on 12/08/2020 1400**		
	Variable ID: 2079121-01								
	EPA 546 - UCMR4 546								
12/10/20	12/14/20 14:48	1293501	1294106	(EPA 546)	Total Microcystins	11	ug/L	3.0	10
12/10/20	12/14/20 14:48	1293501	1294106	(EPA 546)	%CV	1.80	%	180	1
	EPA 545 - Algal Toxins								
	12/15/20 18:02			(EPA 545)	Anatoxin-a	ND	ug/L	0.02	1
	12/15/20 18:02			(EPA 545)	Cylindrospermopsin	ND	ug/L	0.05	1
	12/15/20 18:02			(EPA 545)	Microcystin-LA	ND	ug/L	0.1	1
	12/15/20 18:02			(EPA 545)	Microcystin-LF	ND	ug/L	0.1	1
	12/15/20 18:02			(EPA 545)	Microcystin-LR	ND	ug/L	0.1	1
	12/15/20 18:02			(EPA 545)	Microcystin-LY	ND	ug/L	0.1	1
	12/15/20 18:02			(EPA 545)	Microcystin-RR	ND	ug/L	0.1	1
	12/15/20 18:02			(EPA 545)	Microcystin-YR	ND	ug/L	0.1	1
	12/15/20 18:02			(EPA 545)	Nodularin	ND	ug/L	0.1	1
LMER_N_00_LIM (202012100363)							**Sampled on 12/08/2020 1500**		
	Variable ID: 2079123-01								
	EPA 546 - UCMR4 546								
12/10/20	12/22/20 14:27	1293501	1295128	(EPA 546)	Total Microcystins	9.8	ug/L	6.0	20
12/10/20	12/22/20 14:27	1293501	1295128	(EPA 546)	%CV	3.70	%	370	1
LMER_N_00_LIM (202012100364)							**Sampled on 12/09/2020 1200**		
	Variable ID: 2079123-07								
	EPA 545 - Algal Toxins								
	12/15/20 18:15			(EPA 545)	Anatoxin-a	ND	ug/L	0.02	1
	12/15/20 18:15			(EPA 545)	Cylindrospermopsin	ND	ug/L	0.05	1
	12/15/20 18:15			(EPA 545)	Microcystin-LA	ND	ug/L	0.1	1
	12/15/20 18:15			(EPA 545)	Microcystin-LF	ND	ug/L	0.1	1
	12/15/20 18:15			(EPA 545)	Microcystin-LR	ND	ug/L	0.1	1
	12/15/20 18:15			(EPA 545)	Microcystin-LY	ND	ug/L	0.1	1
	12/15/20 18:15			(EPA 545)	Microcystin-RR	ND	ug/L	0.1	1
	12/15/20 18:15			(EPA 545)	Microcystin-YR	ND	ug/L	0.1	1
	12/15/20 18:15			(EPA 545)	Nodularin	ND	ug/L	0.1	1
LMER_R_00_LIM (202012100365)							**Sampled on 12/08/2020 1000**		
	Variable ID: 2079125-01								
	EPA 546 - UCMR4 546								
12/10/20	12/14/20 14:48	1293501	1294106	(EPA 546)	Total Microcystins	7.5	ug/L	3.0	10
12/10/20	12/14/20 14:48	1293501	1294106	(EPA 546)	%CV	1.40	%	140	1
	EPA 545 - Algal Toxins								

Rounding on totals after summation.
(c) - indicates calculated results. Analysis is a calculated result. Reported results are not rounded until the final step before reporting. Therefore methods that use a test result with further calculation may have slight differences in final result than the component analyses.

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Laboratory Data

Report: 907916
Project: 470440-DW1
Group: Microcystins-Lake Merced

San Francisco PUC
Megan Tran
1000 El Camino Real
Millbrae, CA 94030

Samples Received on:
12/10/2020 1143

Prepped	Analyzed	Prep Batch	Analytical Batch	Method	Analyte	Result	Units	MRL	Dilution
	12/15/20 18:29			(EPA 545)	Anatoxin-a	ND	ug/L	0.02	1
	12/15/20 18:29			(EPA 545)	Cylindrospermopsin	ND	ug/L	0.05	1
	12/15/20 18:29			(EPA 545)	Microcystin-LA	ND	ug/L	0.1	1
	12/15/20 18:29			(EPA 545)	Microcystin-LF	ND	ug/L	0.1	1
	12/15/20 18:29			(EPA 545)	Microcystin-LR	ND	ug/L	0.1	1
	12/15/20 18:29			(EPA 545)	Microcystin-LY	ND	ug/L	0.1	1
	12/15/20 18:29			(EPA 545)	Microcystin-RR	ND	ug/L	0.1	1
	12/15/20 18:29			(EPA 545)	Microcystin-YR	ND	ug/L	0.1	1
	12/15/20 18:29			(EPA 545)	Nodularin	ND	ug/L	0.1	1
LMER_S_00_LIM (202012100366)							**Sampled on 12/08/2020 0900**		
	Variable ID: 2079127-01								
				EPA 546 - UCMR4 546					
12/10/20	12/14/20 14:48	1293501	1294106	(EPA 546)	Total Microcystins	6.8	ug/L	3.0	10
12/10/20	12/14/20 14:48	1293501	1294106	(EPA 546)	%CV	2.70	%	270	1
				EPA 545 - Algal Toxins					
	12/15/20 18:42			(EPA 545)	Anatoxin-a	ND	ug/L	0.02	1
	12/15/20 18:42			(EPA 545)	Cylindrospermopsin	ND	ug/L	0.05	1
	12/15/20 18:42			(EPA 545)	Microcystin-LA	ND	ug/L	0.1	1
	12/15/20 18:42			(EPA 545)	Microcystin-LF	ND	ug/L	0.1	1
	12/15/20 18:42			(EPA 545)	Microcystin-LR	ND	ug/L	0.1	1
	12/15/20 18:42			(EPA 545)	Microcystin-LY	ND	ug/L	0.1	1
	12/15/20 18:42			(EPA 545)	Microcystin-RR	ND	ug/L	0.1	1
	12/15/20 18:42			(EPA 545)	Microcystin-YR	ND	ug/L	0.1	1
	12/15/20 18:42			(EPA 545)	Nodularin	ND	ug/L	0.1	1

Rounding on totals after summation.
(c) - indicates calculated results. Analysis is a calculated result. Reported results are not rounded until the final step before reporting. Therefore methods that use a test result with further calculation may have slight differences in final result than the component analyses.

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Laboratory QC Summary

Report: 907916
Project: 470440-DW1
Group: Microcystins-Lake Merced

San Francisco PUC

UCMR4 546

Prep Batch: 1293501	**Analytical Batch: 1294106**	**Analysis Date: 12/14/2020**
202012100362	LMER_E_00_LIM	Analyzed by: M8OF
202012100365	LMER_R_00_LIM	Analyzed by: M8OF
202012100366	LMER_S_00_LIM	Analyzed by: M8OF

UCMR4 546

Prep Batch: 1293501	**Analytical Batch: 1295128**	**Analysis Date: 12/22/2020**
202012100363	LMER_N_00_LIM	Analyzed by: M8OF

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Report: 907916
Project: 470440-DW1
Group: Microcystins-Lake Merced

San Francisco PUC

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield(%)	Limits (%)	RPD Limit(%)	RPD%
UCMR4 546 by EPA 546									
Analytical Batch: 1294106						**Analysis Date: 12/14/2020**			
LCS1	%CV			2.10	%				
LCS2	%CV			ND	%				
MBLK	%CV			<15	%				
MBLK	%CV			<15	%				
MRL_CHK	%CV			ND	%				
MS2_202011300070	%CV	1.60		ND	%				
MSD2_202011300070	%CV	1.60		ND	%				
LCS1	Total Microcystins		0.5	0.603	ug/L	121	(60-140)		
LCS2	Total Microcystins		0.5	0.548	ug/L	110	(60-140)		
MBLK	Total Microcystins			<0.15	ug/L				
MBLK	Total Microcystins			<0.15	ug/L				
MRL_CHK	Total Microcystins		0.3	0.345	ug/L	115	(50-150)		
MS2_202011300070	Total Microcystins	ND	0.5	0.512	ug/L	94	(60-140)		
MSD2_202011300070	Total Microcystins	ND	0.5	0.637	ug/L	119	(60-140)	40	22
UCMR4 546 by EPA 546									
Analytical Batch: 1295128						**Analysis Date: 12/22/2020**			
LCS1	%CV			1.90	%				
LCS2	%CV			ND	%				
MBLK	%CV			<15	%				
MBLK	%CV			<15	%				
MRL_CHK	%CV			ND	%				
MS2_202012180093	%CV	1.10		ND	%				
MSD2_202012180093	%CV	1.10		ND	%				
LCS1	Total Microcystins		0.5	0.502	ug/L	100	(60-140)		
LCS2	Total Microcystins		0.5	0.443	ug/L	89	(60-140)		
MBLK	Total Microcystins			<0.15	ug/L				
MBLK	Total Microcystins			<0.15	ug/L				
MRL_CHK	Total Microcystins		0.3	0.303	ug/L	101	(50-150)		
MS2_202012180093	Total Microcystins	19	5	28.9	ug/L	**1890**	(60-140)		
MSD2_202012180093	Total Microcystins	19	5	35.5	ug/L	**3210**	(60-140)	40	21

Spike recovery is already corrected for native results.
Spikes which exceed Limits and Method Blanks with positive results are highlighted by Underlining.
Criteria for MS and Dup are advisory only, batch control is based on LCS. Criteria for duplicates are advisory only, unless otherwise specified in the method.
RPD not calculated for LCS2 when different a concentration than LCS1 is used.
RPD not calculated for Duplicates when the result is not five times the MRL (Minimum Reporting Level).
(S) - Indicates surrogate compound.
(I) - Indicates internal standard compound.

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LABORATORY REPORT

If you have any questions concerning this report, please do not hesitate to call us at (800) 332-4345 or (574) 233-4777.

STATE CERTIFICATION LIST

State	Certification	State	Certification
Alabama	40700	Missouri	880
Alaska	IN00035	Montana	CERT0026
Arizona	AZ0432	Nebraska	NE-OS-05-04
Arkansas	IN00035	Nevada	IN00035
California	2920	New Hampshire*	2124
Colorado	IN00035	New Jersey*	IN598
Colorado Radiochemistry	IN00035	New Mexico	IN00035
Connecticut	PH-0132	New York*	11398
Delaware	IN035	North Carolina	18700
Florida(Primary AB)*	E87775	North Dakota	R-035
Georgia	929	Ohio	87775
Hawaii	IN035	Oklahoma	D9508
Idaho	IN00035	Oregon*	4156
Illinois*	200001	Pennsylvania*	68-00466
Illinois Microbiology	17767	Puerto Rico	IN00035
Illinois Radiochemistry	IN00035	Rhode Island	LAO00343
Indiana Chemistry	C-71-01	South Carolina	95005
Indiana Microbiology	M-76-07	South Dakota	IN00035
Iowa	098	Tennessee	TN02973
Kansas*	E-10233	Texas*	T104704187
Kentucky	90056	Texas/TCEQ	TX207
Louisiana*	LA014	Utah*	IN00035
Maine	IN00035	Vermont	VT-8775
Maryland	209	Virginia*	460275
Massachusetts	M-IN035	Washington	C837
Michigan	9926	West Virginia	9927 C
Minnesota*	018-999-338	Wisconsin	999766900
Mississippi	IN035	Wyoming	IN035
EPA	IN00035		

*NELAP/TNI Recognized Accreditation Bodies

Revision date: 09/29/2020

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NELAC NARRATIVE PAGE

Client: Eurofins Eaton Analytical Report #: 506146NP

Eurofins Eaton Analytical, LLC is a NELAP accredited laboratory. All reported results meet the requirements of the NELAC standards, unless otherwise noted.

EEA contact person: Karen Fullmer

NELAP requires complete reporting of deviations from method requirements, regardless of the suspected impact on the data. Quality control failures not reported within the report summary are noted here.

There were no quality control failures.

Karen Fullmer ASM 12/17/2020

Authorized Signature Title Date

110 South Hill Street
South Bend, IN 46617
Tel: (574) 233-4777
Fax: (574) 233-8207
1 800 332 4345

Laboratory Report

Client: Eurofins Eaton Analytical

Attn: Jackie Contreras
750 Royal Oaks Drive
Suite 100
Monrovia, CA 91016

Report: 506146
Priority: Standard Written
Status: Final
PWS ID: Not Supplied

Sample Information

EEA ID #	Client ID	Method	Collected Date / Time	Collected By:	Received Date / Time
4795813	202012100362	L231	12/08/20 14:00	Client	12/12/20 09:45
4795814	202012100364	L231	12/09/20 12:00	Client	12/12/20 09:45
4795815	202012100365	L231	12/08/20 10:00	Client	12/12/20 09:45
4795816	202012100366	L231	12/08/20 09:00	Client	12/12/20 09:45

Report Summary

Note: Sample containers were provided by the client.

Samples came in bottles for Method 545. Samples were transferred to L231 vials and mixed well.

Detailed quantitative results are presented on the following pages. The results presented relate only to the samples provided for analysis.

We appreciate the opportunity to provide you with this analysis. If you have any questions concerning this report, please do not hesitate to call Karen Fullmer at (574) 233-4777.

Karen Fullmer ASM

Authorized Signature | Title

12/17/2020

Date

Client Name: Eurofins Eaton Analytical
Report #: 506146

Sampling Point: 202012100362 PWS ID: Not Supplied

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
64285-06-9	Anatoxin-a	L231	---	0.02	< 0.02	ug/L	---	12/15/20 18:02	4795813
143545-90-8	Cylindrospermopsin	L231	---	0.05	< 0.05	ug/L	---	12/15/20 18:02	4795813
96180-79-9	Microcystin-LA	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:02	4795813
154037-70-4	Microcystin-LF	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:02	4795813
101043-37-2	Microcystin-LR	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:02	4795813
123304-10-9	Microcystin-LY	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:02	4795813
111755-37-4	Microcystin-RR	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:02	4795813
101064-48-6	Microcystin-YR	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:02	4795813
118399-22-7	Nodularin	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:02	4795813

Sampling Point: 202012100364 PWS ID: Not Supplied

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
64285-06-9	Anatoxin-a	L231	---	0.02	< 0.02	ug/L	---	12/15/20 18:15	4795814
143545-90-8	Cylindrospermopsin	L231	---	0.05	< 0.05	ug/L	---	12/15/20 18:15	4795814
96180-79-9	Microcystin-LA	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:15	4795814
154037-70-4	Microcystin-LF	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:15	4795814
101043-37-2	Microcystin-LR	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:15	4795814
123304-10-9	Microcystin-LY	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:15	4795814
111755-37-4	Microcystin-RR	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:15	4795814
101064-48-6	Microcystin-YR	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:15	4795814
118399-22-7	Nodularin	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:15	4795814

Sampling Point: 202012100365 PWS ID: Not Supplied

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
64285-06-9	Anatoxin-a	L231	---	0.02	< 0.02	ug/L	---	12/15/20 18:29	4795815
143545-90-8	Cylindrospermopsin	L231	---	0.05	< 0.05	ug/L	---	12/15/20 18:29	4795815
96180-79-9	Microcystin-LA	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:29	4795815
154037-70-4	Microcystin-LF	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:29	4795815
101043-37-2	Microcystin-LR	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:29	4795815
123304-10-9	Microcystin-LY	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:29	4795815
111755-37-4	Microcystin-RR	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:29	4795815
101064-48-6	Microcystin-YR	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:29	4795815
118399-22-7	Nodularin	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:29	4795815

Client Name: Eurofins Eaton Analytical Report #: 506146

Sampling Point: 202012100366 PWS ID: Not Supplied

EEA Methods

Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
64285-06-9	Anatoxin-a	L231	---	0.02	< 0.02	ug/L	---	12/15/20 18:42	4795816
143545-90-8	Cylindrospermopsin	L231	---	0.05	< 0.05	ug/L	---	12/15/20 18:42	4795816
96180-79-9	Microcystin-LA	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:42	4795816
154037-70-4	Microcystin-LF	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:42	4795816
101043-37-2	Microcystin-LR	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:42	4795816
123304-10-9	Microcystin-LY	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:42	4795816
111755-37-4	Microcystin-RR	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:42	4795816
101064-48-6	Microcystin-YR	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:42	4795816
118399-22-7	Nodularin	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:42	4795816

† EEA has demonstrated it can achieve these report limits in reagent water, but can not document them in all sample matrices.

Reg Limit Type:	MCL	SMCL	AL
Symbol:	*	^	!

Lab Definitions

Continuing Calibration Check Standard (CCC) / Continuing Calibration Verification (CCV) / Initial Calibration Verification Standard (ICV) / Initial Performance Check (IPC) - is a standard containing one or more of the target analytes that is prepared from the same standards used to calibrate the instrument. This standard is used to verify the calibration curve at the beginning of each analytical sequence, and may also be analyzed throughout and at the end of the sequence. The concentration of continuing standards may be varied, when prescribed by the reference method, so that the range of the calibration curve is verified on a regular basis. CCL, CCM, and CCH are the CCC standards at low, mid, and high concentration levels, respectively.

Internal Standards (IS) - are pure compounds with properties similar to the analytes of interest, which are added to field samples or extracts, calibration standards, and quality control standards at a known concentration. They are used to measure the relative responses of the analytes of interest and surrogates in the sample, calibration standard or quality control standard.

Laboratory Duplicate (LD) - is a field sample aliquot taken from the same sample container in the laboratory and analyzed separately using identical procedures. Analysis of laboratory duplicates provides a measure of the precision of the laboratory procedures.

Laboratory Fortified Blank (LFB) / Laboratory Control Sample (LCS) - is an aliquot of reagent water to which known concentrations of the analytes of interest are added. The LFB is analyzed exactly the same as the field samples. LFBs are used to determine whether the method is in control. FBL, FBM, and FBH are the LFB samples at low, mid, and high concentration levels, respectively.

Laboratory Method Blank (LMB) / Laboratory Reagent Blank (LRB) - is a sample of reagent water included in the sample batch analyzed in the same way as the associated field samples. The LMB is used to determine if method analytes or other background contamination have been introduced during the preparation or analytical procedure. The LMB is analyzed exactly the same as the field samples.

Laboratory Trip Blank (LTB) / Field Reagent Blank (FRB) - is a sample of laboratory reagent water placed in a sample container in the laboratory and treated as a field sample, including storage, preservation, and all analytical procedures. The FRB/LTB container follows the collection bottles to and from the collection site, but the FRB/LTB is not opened at any time during the trip. The FRB/LTB is primarily a travel blank used to verify that the samples were not contaminated during shipment.

If applicable, the calculation of the matrix spike (MS) or matrix spike duplicate (MSD) percent recovery is as follows: (MS or MSD value - Sample value) * 100 / spike target / dilution factor = **Recovery %**

Matrix Spike Duplicate Sample (MSD) / Laboratory Fortified Sample Matrix Duplicate (LFSMD) - is a sample aliquot taken from the same field sample source as the Matrix Spike Sample to which known quantities of the analytes of interest are added in the laboratory. The MSD is analyzed exactly the same as the field samples. Analysis of the MSD provides a measure of the precision of the laboratory procedures in a specific matrix. SDL, SDM, and SDH / LFSMDL, LFSMDM, and LFSMDH are the MSD or LFSMD at low, mid, and high concentration levels, respectively.

Matrix Spike Sample (MS) / Laboratory Fortified Sample Matrix (LFSM) - is a sample aliquot taken from field sample source to which known quantities of the analytes of interest are added in the laboratory. The MS is analyzed exactly the same as the field samples. The purpose is to demonstrate recovery of the analytes from a sample matrix to determine if the specific matrix contributes bias to the analytical results. MSL, MSM, and MSH / LFSML, LFSMM, and LFSMH are the MS or LFSM at low, mid, and high concentration levels, respectively.

Quality Control Standard (QCS) / Second Source Calibration Verification (SSCV) - is a solution containing known concentrations of the analytes of interest prepared from a source different from the source of the calibration standards. The solution is obtained from a second manufacturer or lot if the lot can be demonstrated by the manufacturer as prepared independently from other lots. The QCS sample is analyzed using the same procedures as field samples. The QCS is used as a check on the calibration standards used in the method on a routine basis.

Reporting Limit Check (RLC) / Initial Calibration Check Standard (ICCS) - is a procedural standard that is analyzed each day to evaluate instrument performance at or below the minimum reporting limit (MRL).

Surrogate Standard (SS) / Surrogate Analyte (SUR) - is a pure compound with properties similar to the analytes of interest, which is highly unlikely to be found in any field sample, that is added to the field samples, calibration standards, blanks and quality control standards before sample preparation. The SS is used to evaluate the efficiency of the sample preparation process.

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Submittal Form

407016

Date: 12/11/2020

Ship To:
`Eurofins Eaton Analytical
110 South Hill Street

South Bend, IN 46617-2702

Phone: 800-332-4345 Fax: 574-233-8207

Folder #: 907916 **Report Due:** 01/12/2021

*REPORTING REQUIRMENTS: *Do Not Combine Reports with any other samples submitted under different Folder Numbers!*
Report & Invoice must have the Folder # 907916 Job # 1000014

506146

Report all quality control data according to Method. Include dates analyzed. Date extracted (if extracted) and Method reference on the report.
Results must have Complete data & QC with Approval Signature.

Reports: Jackie Contreras Sub-Contracting Administrator
EMAIL TO: Eaton-MonroviaSubContract@eurofinset.com
Eurofins Eaton Analytical, LLC 750 Royal Oaks Drive, Suite 100, Monrovia, CA 91016
Phone (626) 386-1165 Fax (626) 386-1122
Invoices to: Eurofins Eaton Analytical, LLC
Accounts Payable 2425 New Holland Pike, Lancaster, PA 17605

Provide in each Report the Specified StateCertification # and Exp Date for requested tests + matrix.

Samples from: CALIFORNIA

Client Provided Sample Container

Sample ID	Client Sample ID for reference onl	Sample Date & Time	Matrix	PWS Systemcode	PWSID
(2) 202012100362	LMER_E_00_LIM	12/08/20 1400	DW		JLS

Sample type: | Sample Event: | Facility ID: | Sample Point ID: | Static ID: 4795813

Method	Prep Method	Analysis Requested
EPA 545		Algal Toxins

Sample ID	Client Sample ID for reference onl	Sample Date & Time	Matrix	PWS Systemcode	PWSID
(3) 202012100364	LMER_N_00_LIM	12/09/20 1200	DW		JLS

Sample type: | Sample Event: | Facility ID: | Sample Point ID: | Static ID: 4795814

Method	Prep Method	Analysis Requested
EPA 545		Algal Toxins

Sample ID	Client Sample ID for reference onl	Sample Date & Time	Matrix	PWS Systemcode	PWSID
(2) 202012100365	LMER_R_00_LIM	12/08/20 1000	DW		JLS

Sample type: | Sample Event: | Facility ID: | Sample Point ID: | Static ID: 4795815

Method	Prep Method	Analysis Requested
EPA 545		Algal Toxins

WO 0.2

Relinquished by: _____ Sample Control Ray Cabral/EGA Date 12/11/20 Time 0953

Received by: _____ Date _____ Time _____

Relinquished by: _____ Sample Control _____ Date _____ Time _____

Received by: K Dunn Date 12-12-2020 Time 0945

NOTIFICATION REQUIRED IF RECEIVED OUTSIDE OF 0-6 CELSIUS

An Acknowledgement of Receipt is requested to attn: Jackie Contreras

Sample ID	Client Sample ID for reference onl	Sample Date & Time	Matrix	PWS Systemcode	PWSID
202012100366 (2)	LMER_S_00_LIM	12/08/20 0900	DW		JLS

Sample type:	Sample Event:	Facility ID:	Sample Point ID:	Static ID: 4795816

Method	Prep Method	Analysis Requested
EPA 545		Algal Toxins

Relinquished by: Sample Control Date 12/11/20 Time 0953

Received by: Date Time

Relinquished by: Sample Control Date Time

Received by: Date 12-12-2020 Time 0945

NOTIFICATION REQUIRED IF RECEIVED OUTSIDE OF 0-6 CELSIUS

An Acknowledgement of Receipt is requested to attn: Jackie Contreras

750 Royal Oaks Drive, Suite 100, Monrovia, CA 91016 Tel (626) 386-1100 Fax (866) 988-3757 www.EurofinsUS.com/Eaton

Eurofins Eaton Analytical
Run Log

Run ID: **283359** Method: **L231**

Type	Sample Id	Sample Site	Matrix	Instrument ID	Analysis Date	Calibration File
LMB	4796653		RW	DQ	12/15/2020 17:09	121520L231a.mdb
FS	4795813	202012100362	SW	DQ	12/15/2020 18:02	121520L231a.mdb
FS	4795814	202012100364	SW	DQ	12/15/2020 18:15	121520L231a.mdb
FS	4795815	202012100365	SW	DQ	12/15/2020 18:29	121520L231a.mdb
FS	4795816	202012100366	SW	DQ	12/15/2020 18:42	121520L231a.mdb
MS	4796654	202012100366	SW	DQ	12/15/2020 18:55	121520L231a.mdb
MSD	4796655	202012100366	SW	DQ	12/15/2020 19:09	121520L231a.mdb
CCC	4796656		RW	DQ	12/15/2020 19:22	121520L231a.mdb

QC Summary Report

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
LMB	IS-L-phenylalanine-d5	L231	N/A	---		41036	42923	ug/L	96	50 - 150	---	---	1.0	---	12/15/2020 17:09	4796653
LMB	IS-Microcystin-LR-15N10	L231	N/A	---		793	938	ug/L	85	50 - 150	---	---	1.0	---	12/15/2020 17:09	4796653
LMB	IS-Microcystin-RR-15N13	L231	N/A	---		12696	12368	ug/L	103	50 - 150	---	---	1.0	---	12/15/2020 17:09	4796653
LMB	IS-Microcystin-YR-15N10	L231	N/A	---		3231	3295	ug/L	98	50 - 150	---	---	1.0	---	12/15/2020 17:09	4796653
LMB	IS-Uracil-d4	L231	N/A	---		5085	4925	ug/L	103	50 - 150	---	---	1.0	---	12/15/2020 17:09	4796653
LMB	Anatoxin-a	L231	0.02	---	<	0.02		ug/L	---	---	---	---	1.0	---	12/15/2020 17:09	4796653
LMB	Cylindrospermopsin	L231	0.05	---	<	0.05		ug/L	---	---	---	---	1.0	---	12/15/2020 17:09	4796653
LMB	Microcystin-LA	L231	0.1	---	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 17:09	4796653
LMB	Microcystin-LF	L231	0.1	---	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 17:09	4796653
LMB	Microcystin-LR	L231	0.1	---	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 17:09	4796653
LMB	Microcystin-LY	L231	0.1	---	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 17:09	4796653
LMB	Microcystin-RR	L231	0.1	---	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 17:09	4796653
LMB	Microcystin-YR	L231	0.1	---	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 17:09	4796653
LMB	Nodularin	L231	0.1	---	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 17:09	4796653
FS	IS-L-phenylalanine-d5	L231	N/A	202012100362		44596	42923	ug/L	104	50 - 150	---	---	1.0	---	12/15/2020 18:02	4795813
FS	IS-Microcystin-LR-15N10	L231	N/A	202012100362		935	938	ug/L	100	50 - 150	---	---	1.0	---	12/15/2020 18:02	4795813
FS	IS-Microcystin-RR-15N13	L231	N/A	202012100362		12659	12368	ug/L	102	50 - 150	---	---	1.0	---	12/15/2020 18:02	4795813
FS	IS-Microcystin-YR-15N10	L231	N/A	202012100362		3397	3295	ug/L	103	50 - 150	---	---	1.0	---	12/15/2020 18:02	4795813
FS	IS-Uracil-d4	L231	N/A	202012100362		4270	4925	ug/L	87	50 - 150	---	---	1.0	---	12/15/2020 18:02	4795813
FS	Anatoxin-a	L231	0.02	202012100362	<	0.02		ug/L	---	---	---	---	1.0	---	12/15/2020 18:02	4795813
FS	Cylindrospermopsin	L231	0.05	202012100362	<	0.05		ug/L	---	---	---	---	1.0	---	12/15/2020 18:02	4795813
FS	Microcystin-LA	L231	0.1	202012100362	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:02	4795813
FS	Microcystin-LF	L231	0.1	202012100362	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:02	4795813
FS	Microcystin-LR	L231	0.1	202012100362	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:02	4795813
FS	Microcystin-LY	L231	0.1	202012100362	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:02	4795813
FS	Microcystin-RR	L231	0.1	202012100362	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:02	4795813
FS	Microcystin-YR	L231	0.1	202012100362	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:02	4795813
FS	Nodularin	L231	0.1	202012100362	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:02	4795813
FS	IS-L-phenylalanine-d5	L231	N/A	202012100364		44554	42923	ug/L	104	50 - 150	---	---	1.0	---	12/15/2020 18:15	4795814
FS	IS-Microcystin-LR-15N10	L231	N/A	202012100364		916	938	ug/L	98	50 - 150	---	---	1.0	---	12/15/2020 18:15	4795814
FS	IS-Microcystin-RR-15N13	L231	N/A	202012100364		14307	12368	ug/L	116	50 - 150	---	---	1.0	---	12/15/2020 18:15	4795814
FS	IS-Microcystin-YR-15N10	L231	N/A	202012100364		3540	3295	ug/L	107	50 - 150	---	---	1.0	---	12/15/2020 18:15	4795814
FS	IS-Uracil-d4	L231	N/A	202012100364		4496	4925	ug/L	91	50 - 150	---	---	1.0	---	12/15/2020 18:15	4795814
FS	Anatoxin-a	L231	0.02	202012100364	<	0.02		ug/L	---	---	---	---	1.0	---	12/15/2020 18:15	4795814
FS	Cylindrospermopsin	L231	0.05	202012100364	<	0.05		ug/L	---	---	---	---	1.0	---	12/15/2020 18:15	4795814
FS	Microcystin-LA	L231	0.1	202012100364	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:15	4795814
FS	Microcystin-LF	L231	0.1	202012100364	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:15	4795814
FS	Microcystin-LR	L231	0.1	202012100364	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:15	4795814
FS	Microcystin-LY	L231	0.1	202012100364	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:15	4795814
FS	Microcystin-RR	L231	0.1	202012100364	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:15	4795814

QC Summary Report (cont.)

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
FS	Microcystin-YR	L231	0.1	202012100364	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:15	4795814
FS	Nodularin	L231	0.1	202012100364	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:15	4795814
FS	IS-L-phenylalanine-d5	L231	N/A	202012100365		43970	42923	ug/L	102	50 - 150	---	---	1.0	---	12/15/2020 18:29	4795815
FS	IS-Microcystin-LR-15N10	L231	N/A	202012100365		900	938	ug/L	96	50 - 150	---	---	1.0	---	12/15/2020 18:29	4795815
FS	IS-Microcystin-RR-15N13	L231	N/A	202012100365		12708	12368	ug/L	103	50 - 150	---	---	1.0	---	12/15/2020 18:29	4795815
FS	IS-Microcystin-YR-15N10	L231	N/A	202012100365		3277	3295	ug/L	99	50 - 150	---	---	1.0	---	12/15/2020 18:29	4795815
FS	IS-Uracil-d4	L231	N/A	202012100365		4341	4925	ug/L	88	50 - 150	---	---	1.0	---	12/15/2020 18:29	4795815
FS	Anatoxin-a	L231	0.02	202012100365	<	0.02		ug/L	---	---	---	---	1.0	---	12/15/2020 18:29	4795815
FS	Cylindrospermopsin	L231	0.05	202012100365	<	0.05		ug/L	---	---	---	---	1.0	---	12/15/2020 18:29	4795815
FS	Microcystin-LA	L231	0.1	202012100365	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:29	4795815
FS	Microcystin-LF	L231	0.1	202012100365	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:29	4795815
FS	Microcystin-LR	L231	0.1	202012100365	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:29	4795815
FS	Microcystin-LY	L231	0.1	202012100365	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:29	4795815
FS	Microcystin-RR	L231	0.1	202012100365	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:29	4795815
FS	Microcystin-YR	L231	0.1	202012100365	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:29	4795815
FS	Nodularin	L231	0.1	202012100365	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:29	4795815
FS	IS-L-phenylalanine-d5	L231	N/A	202012100366		43433	42923	ug/L	101	50 - 150	---	---	1.0	---	12/15/2020 18:42	4795816
FS	IS-Microcystin-LR-15N10	L231	N/A	202012100366		831	938	ug/L	89	50 - 150	---	---	1.0	---	12/15/2020 18:42	4795816
FS	IS-Microcystin-RR-15N13	L231	N/A	202012100366		12980	12368	ug/L	105	50 - 150	---	---	1.0	---	12/15/2020 18:42	4795816
FS	IS-Microcystin-YR-15N10	L231	N/A	202012100366		3369	3295	ug/L	102	50 - 150	---	---	1.0	---	12/15/2020 18:42	4795816
FS	IS-Uracil-d4	L231	N/A	202012100366		4352	4925	ug/L	88	50 - 150	---	---	1.0	---	12/15/2020 18:42	4795816
FS	Anatoxin-a	L231	0.02	202012100366	<	0.02		ug/L	---	---	---	---	1.0	---	12/15/2020 18:42	4795816
FS	Cylindrospermopsin	L231	0.05	202012100366	<	0.05		ug/L	---	---	---	---	1.0	---	12/15/2020 18:42	4795816
FS	Microcystin-LA	L231	0.1	202012100366	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:42	4795816
FS	Microcystin-LF	L231	0.1	202012100366	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:42	4795816
FS	Microcystin-LR	L231	0.1	202012100366	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:42	4795816
FS	Microcystin-LY	L231	0.1	202012100366	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:42	4795816
FS	Microcystin-RR	L231	0.1	202012100366	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:42	4795816
FS	Microcystin-YR	L231	0.1	202012100366	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:42	4795816
FS	Nodularin	L231	0.1	202012100366	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:42	4795816
MS	IS-L-phenylalanine-d5	L231	N/A	202012100366		44173	42923	ug/L	103	50 - 150	---	---	1.0	---	12/15/2020 18:55	4796654
MS	IS-Microcystin-LR-15N10	L231	N/A	202012100366		956	938	ug/L	102	50 - 150	---	---	1.0	---	12/15/2020 18:55	4796654
MS	IS-Microcystin-RR-15N13	L231	N/A	202012100366		12676	12368	ug/L	102	50 - 150	---	---	1.0	---	12/15/2020 18:55	4796654
MS	IS-Microcystin-YR-15N10	L231	N/A	202012100366		3240	3295	ug/L	98	50 - 150	---	---	1.0	---	12/15/2020 18:55	4796654
MS	IS-Uracil-d4	L231	N/A	202012100366		4347	4925	ug/L	88	50 - 150	---	---	1.0	---	12/15/2020 18:55	4796654
MS	Anatoxin-a	L231	0.02	202012100366		0.1819	0.2	ug/L	91	70 - 130	---	---	1.0	---	12/15/2020 18:55	4796654
MS	Cylindrospermopsin	L231	0.05	202012100366		0.5276	0.5	ug/L	106	70 - 130	---	---	1.0	---	12/15/2020 18:55	4796654
MS	Microcystin-LA	L231	0.1	202012100366		0.9923	1.0	ug/L	99	70 - 130	---	---	1.0	---	12/15/2020 18:55	4796654
MS	Microcystin-LF	L231	0.1	202012100366		0.9706	1.0	ug/L	97	70 - 130	---	---	1.0	---	12/15/2020 18:55	4796654
MS	Microcystin-LR	L231	0.1	202012100366		0.9565	1.0	ug/L	96	70 - 130	---	---	1.0	---	12/15/2020 18:55	4796654
MS	Microcystin-LY	L231	0.1	202012100366		0.9061	1.0	ug/L	91	70 - 130	---	---	1.0	---	12/15/2020 18:55	4796654

QC Summary Report (cont.)

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
MS	Microcystin-RR	L231	0.1	202012100366		0.9693	1.0	ug/L	97	70 - 130	---	---	1.0	---	12/15/2020 18:55	4796654
MS	Microcystin-YR	L231	0.1	202012100366		1.0620	1.0	ug/L	106	70 - 130	---	---	1.0	---	12/15/2020 18:55	4796654
MS	Nodularin	L231	0.1	202012100366		0.9864	1.0	ug/L	99	70 - 130	---	---	1.0	---	12/15/2020 18:55	4796654
MSD	IS-L-phenylalanine-d5	L231	N/A	202012100366		44602	42923	ug/L	104	50 - 150	---	---	1.0	---	12/15/2020 19:09	4796655
MSD	IS-Microcystin-LR-15N10	L231	N/A	202012100366		887	938	ug/L	95	50 - 150	---	---	1.0	---	12/15/2020 19:09	4796655
MSD	IS-Microcystin-RR-15N13	L231	N/A	202012100366		12402	12368	ug/L	100	50 - 150	---	---	1.0	---	12/15/2020 19:09	4796655
MSD	IS-Microcystin-YR-15N10	L231	N/A	202012100366		3251	3295	ug/L	99	50 - 150	---	---	1.0	---	12/15/2020 19:09	4796655
MSD	IS-Uracil-d4	L231	N/A	202012100366		4094	4925	ug/L	83	50 - 150	---	---	1.0	---	12/15/2020 19:09	4796655
MSD	Anatoxin-a	L231	0.02	202012100366		0.2070	0.2	ug/L	104	70 - 130	13	30	1.0	---	12/15/2020 19:09	4796655
MSD	Cylindrospermopsin	L231	0.05	202012100366		0.5058	0.5	ug/L	101	70 - 130	4.2	30	1.0	---	12/15/2020 19:09	4796655
MSD	Microcystin-LA	L231	0.1	202012100366		1.0732	1.0	ug/L	107	70 - 130	7.8	30	1.0	---	12/15/2020 19:09	4796655
MSD	Microcystin-LF	L231	0.1	202012100366		1.0422	1.0	ug/L	104	70 - 130	7.1	30	1.0	---	12/15/2020 19:09	4796655
MSD	Microcystin-LR	L231	0.1	202012100366		1.0445	1.0	ug/L	104	70 - 130	8.8	30	1.0	---	12/15/2020 19:09	4796655
MSD	Microcystin-LY	L231	0.1	202012100366		1.1240	1.0	ug/L	112	70 - 130	21	30	1.0	---	12/15/2020 19:09	4796655
MSD	Microcystin-RR	L231	0.1	202012100366		1.0212	1.0	ug/L	102	70 - 130	5.2	30	1.0	---	12/15/2020 19:09	4796655
MSD	Microcystin-YR	L231	0.1	202012100366		1.0379	1.0	ug/L	104	70 - 130	2.3	30	1.0	---	12/15/2020 19:09	4796655
MSD	Nodularin	L231	0.1	202012100366		1.0663	1.0	ug/L	107	70 - 130	7.8	30	1.0	---	12/15/2020 19:09	4796655
CCC	IS-L-phenylalanine-d5	L231	N/A	---		43418	42923	ug/L	101	50 - 150	---	---	1.0	---	12/15/2020 19:22	4796656
CCC	IS-Microcystin-LR-15N10	L231	N/A	---		869	938	ug/L	93	50 - 150	---	---	1.0	---	12/15/2020 19:22	4796656
CCC	IS-Microcystin-RR-15N13	L231	N/A	---		13290	12368	ug/L	107	50 - 150	---	---	1.0	---	12/15/2020 19:22	4796656
CCC	IS-Microcystin-YR-15N10	L231	N/A	---		3267	3295	ug/L	99	50 - 150	---	---	1.0	---	12/15/2020 19:22	4796656
CCC	IS-Uracil-d4	L231	N/A	---		5079	4925	ug/L	103	50 - 150	---	---	1.0	---	12/15/2020 19:22	4796656
CCC	Anatoxin-a	L231	0.02	---		0.2142	0.2	ug/L	107	70 - 130	---	---	1.0	---	12/15/2020 19:22	4796656
CCC	Cylindrospermopsin	L231	0.05	---		0.5425	0.5	ug/L	109	70 - 130	---	---	1.0	---	12/15/2020 19:22	4796656
CCC	Microcystin-LA	L231	0.1	---		1.1356	1.0	ug/L	114	70 - 130	---	---	1.0	---	12/15/2020 19:22	4796656
CCC	Microcystin-LF	L231	0.1	---		1.0353	1.0	ug/L	104	70 - 130	---	---	1.0	---	12/15/2020 19:22	4796656
CCC	Microcystin-LR	L231	0.1	---		1.0789	1.0	ug/L	108	70 - 130	---	---	1.0	---	12/15/2020 19:22	4796656
CCC	Microcystin-LY	L231	0.1	---		1.0980	1.0	ug/L	110	70 - 130	---	---	1.0	---	12/15/2020 19:22	4796656
CCC	Microcystin-RR	L231	0.1	---		0.9754	1.0	ug/L	98	70 - 130	---	---	1.0	---	12/15/2020 19:22	4796656
CCC	Microcystin-YR	L231	0.1	---		0.9805	1.0	ug/L	98	70 - 130	---	---	1.0	---	12/15/2020 19:22	4796656
CCC	Nodularin	L231	0.1	---		1.0539	1.0	ug/L	105	70 - 130	---	---	1.0	---	12/15/2020 19:22	4796656

Sample Type Key

Type (Abbr.)	Sample Type	Type (Abbr.)	Sample Type
CCC	Continuing Calibration Check		
FS	Field Sample		
LMB	Laboratory Method Blank		
MS	Matrix Spike		
MSD	Matrix Spike Duplicate		

END OF REPORT

eurofins | Eaton Analytical

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ACCREDITED
CERTIFICATE #'s 5890.01 & 5890.02

Laboratory Report

for

San Francisco PUC
1000 El Camino Real
Millbrae, CA 94030
Attention: Megan Tran

REPORT REVISED,
replaces the original report.

NELAP ACCREDITED TNI LABORATORY
Utah ELCP CA00006

Date of Issue
01/05/2021
Monica Van Natta
EUROFINS EATON ANALYTICAL, LLC

UMVN: Monica Van Natta
Project Manager

Report: 907916
Project: 470440-DW1
Group: Microcystins-Lake Merced

* Accredited in accordance with TNI 2016 and ISO/IEC 17025:2017.
* Laboratory certifies that the test results meet all **TNI 2016 and ISO/IEC 17025:2017** requirements unless noted under the individual analysis.
* Following the cover page are State Certification List, ISO 17025 Accredited Method List, Acknowledgement of Samples Received, Comments, Hits Report, Data Report, QC Summary, QC Report and Regulatory Forms, as applicable.
* Test results relate only to the sample(s) tested.
* Test results apply to the sample(s) as received, unless otherwise noted in the comments report (ISO/IEC 17025:2017).
* This report shall not be reproduced except in full, without the written approval of the laboratory.
* This report includes ISO/IEC 17025 and non-ISO 17025 accredited methods.

STATE CERTIFICATION LIST

State	Certification Number	State	Certification Number
Alabama	41060	**Montana**	Cert 0035
Arizona	AZ0778	**Nebraska**	Certified
Arkansas	Certified	**Nevada**	CA000062018
California	2813	**New Hampshire ***	2959
Colorado	Certified	**New Jersey ***	CA 008
Connecticut	PH-0107	**New Mexico**	Certified
Delaware	CA 006	**New York ***	11320
Florida *	E871024	**North Carolina**	06701
Georgia	947	**North Dakota**	R-009
Guam	18-005R	**Oregon ***	CA200003-005
Hawaii	Certified	**Pennsylvania ***	68-565
Idaho	Certified	**Puerto Rico**	Certified
Illinois *	200033	**Rhode Island**	LAO00326
Indiana	C-CA-01	**South Carolina**	87016
Iowa - Asbestos	413	**South Dakota**	Certified
Kansas *	E-10268	**Tennessee**	TN02839
Kentucky	90107	**Texas ***	T104704230-18-15
Louisiana *	LA180000	**Utah (Primary AB) ***	CA00006
Maine	CA0006	**Vermont**	VT0114
Maryland	224	**Virginia ***	460260
Commonwealth of Northern Marianas Is.	MP0004	**Washington**	C838
Massachusetts	M-CA006	**EPA Region 5**	Certified
Michigan	9906	**Los Angeles County Sanitation Districts**	10264
Mississippi	Certified		

* NELAP/TNI Recognized Accreditation Bodies

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The tests listed below are accredited and meet the requirements of ISO/IEC 17025 as verified by the ANSI-ASQ National Accreditation Board/A2LA.
Refer to Certificate and scope of accreditation (5890) found at: https://www.eurofinsus.com/Eaton

SPECIFIC TESTS	METHOD OR TECHNIQUE USED	Environ-mental (Drinking Water)	Environ-mental (Waste Water)	Water as a Component of Food and Bev/Bev/ Bottled Water
1,2,3-TCP (5 PPT & 0.5 PPT)	CA SRL 524M-TCP	x		x
1,4-Dioxane	EPA 522	x		x
2,3,7,8-TCDD	Modified EPA 1613B	x		x
Acrylamide	In House Method (2440)	x		x
Algal Toxins/Microcystin	In House Method (3570)			
Alkalinity	SM 2320B	x	x	x
Ammonia	EPA 350.1		x	x
Ammonia	SM 4500-NH3 H		x	x
Anions and DBPs by IC	EPA 300.0	x	x	x
Anions and DBPs by IC	EPA 300.1	x		x
Asbestos	EPA 100.2	x	x	
BOD / CBOD	SM 5210B		x	x
Bromate	In House Method (2447)	x		x
Carbamates	EPA 531.2	x		x
Carbonate as CO3	SM 2330B	x	x	x
Carbonyls	EPA 556	x		x
COD	EPA 410.4 / SM 5220D		x	
Chloramines	SM 4500-CL G	x	x	x
Chlorinated Acids	EPA 515.4	x		x
Chlorinated Acids	EPA 555	x		x
Chlorine Dioxide	SM 4500-CLO2 D Palin Test	x		x
Chlorine -Total/Free/ Combined Residual	SM 4500-Cl G	x	x	x
Conductivity	EPA 120.1		x	
Conductivity	SM 2510B	x	x	x
Corrosivity (Langelier Index)	SM 2330B	x		x
Cyanide, Amenable	SM 4500-CN G	x	x	
Cyanide, Free	SM 4500CN F	x	x	x
Cyanide, Total	EPA 335.4	x	x	x
Cyanogen Chloride (screen)	In House Method (2470)	x		x
Diquat and Paraquat	EPA 549.2	x		x
DBP/HAA	SM 6251B	x		x
Dissolved Oxygen	SM 4500-O G		x	x
DOC	SM 5310C	x		x
E. Coli	(MTF/EC+MUG)	x		x
E. Coli	CFR 141.21(f)(6)(i)	x		x
E. Coli	SM 9223		x	
E. Coli (Enumeration)	SM 9221B.1/ SM 9221F	x		x
E. Coli (Enumeration)	SM 9223B	x		x
EDB/DCBP	EPA 504.1	x		
EDB/DBCP and DBP	EPA 551.1	x		x
EDTA and NTA	In House Method (2454)	x		x
Endothall	EPA 548.1	x		x
Endothall	In-house Method (2445)	x		x
Enterococci	SM 9230B	x	x	
Fecal Coliform	SM 9221 E (MTF/EC)	x		
Fecal Coliform	SM 9221C, E (MTF/EC)		x	
Fecal Coliform (Enumeration)	SM 9221E (MTF/EC)	x		x
Fecal Coliform with Chlorine Present	SM 9221E		x	
Fecal Streptococci	SM 9230B	x	x	
Fluoride	SM 4500-F C	x	x	x
Glyphosate	EPA 547	x		x
Glyphosate + AMPA	In House Method (3618)	x		x
Gross Alpha/Beta	EPA 900.0	x	x	x
Gross Alpha Coprecipitation	SM 7110 C	x	x	x
Hardness	SM 2340B	x	x	x
Heterotrophic Bacteria	In House Method (2439)	x		x
Heterotrophic Bacteria	SM 9215 B	x		x
Hexavalent Chromium	EPA 218.6	x	x	x
Hexavalent Chromium	EPA 218.7	x		x
Hexavalent Chromium	SM 3500-Cr B		x	
Hormones	EPA 539	x		x
Hydroxide as OH Calc.	SM 2330B	x		x
Kjeldahl Nitrogen	EPA 351.2		x	
Legionella	Legiolert	x		x
Mercury	EPA 200.8	x		x
Metals	EPA 200.7 / 200.8	x	x	x
Microcystin LR	ELISA (2360)	x		x
Microcystin, Total	EPA 546	x		x
NDMA	EEA/Agilent 521.1 In house method (2425)	x		x
Nitrate/Nitrite Nitrogen	EPA 353.2	x	x	x
OCL, Pesticides/PCB	EPA 505	x		x
Ortho Phosphate	EPA 365.1	x	x	x
Ortho Phosphorous	SM 4500P E	x		x
Oxyhalides Disinfection Byproducts	EPA 317.0	x		x
Perchlorate	EPA 331.0	x		x
Perchlorate (low and high)	EPA 314.0	x		x
Perfluorinated Alkyl Acids	EPA 537	x		x
Perfluorinated Polutant	In house Method (2434)	x		x
pH	EPA 150.1	x		
pH	SM 4500-H+B	x	x	x
Phenylurea Pesticides/ Herbicides	In House Method, based on EPA 532 (2448)	x		x
Pseudomonas	IDEXX Pseudalert (2461)	x		x
Radium-226	GA Institute of Tech	x		x
Radium-228	GA Institute of Tech	x		x
Radon-222	SM 7500RN	x		x
Residue, Filterable	SM 2540C	x	x	x
Residue, Non-filterable	SM 2540D		x	
Residue, Total	SM 2540B		x	x
Residue, Volatile	EPA 160.4		x	
Semi-VOC	EPA 525.2	x		x
Silica	SM 4500-Si D	x	x	
Silica	SM 4500-SiO2 C	x	x	
Sulfide	SM 4500-$S^{=}$ D		x	
Sulfite	SM 4500-SO^{3}B	x	x	x
Surfactants	SM 5540C	x	x	x
Taste and Odor Analytes	SM 6040E	x		x
Total Coliform (P/A)	SM 9221 A, B	x		x
Total Coliform (Enumeration)	SM 9221 A, B, C	x		x
Total Coliform / E. coli	Colisure SM 9223	x		x
Total Coliform	SM 9221B		x	
Total Coliform with Chlorine Present	SM 9221B		x	
Total Coliform / E.coli (P/A and Enumeration)	SM 9223	x		x
TOC	SM 5310C	x	x	x
TOX	SM 5320B		x	
Total Phenols	EPA 420.1		x	
Total Phenols	EPA 420.4	x	x	x
Total Phosphorous	SM 4500 P E		x	
Triazine Pesticides & Degradates	In House (3617)	x		x
Turbidity	EPA 180.1	x	x	x
Turbidity	SM 2130B	x	x	
Uranium by ICP/MS	EPA 200.8	x		x
UV 254	SM 5910B	x		
VOC	EPA 524.2	x		x
VOC	In House Method (2411)	x		x
Yeast and Mold	SM 9610	x		x
Field Sampling	N/A			

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Acknowledgement of Samples Received

Addr: **San Francisco PUC**
1000 El Camino Real
Millbrae, CA 94030

Attn: Megan Tran
Phone: 650-872-5945

Client ID: SANFRAN
Folder #: 907916
Project: 470440-DW1
Sample Group: Microcystins-Lake Merced

Project Manager: Monica Van Natta
Phone: 559-797-1931
PO #: PRO.0165 PO-000043463 TO#01

The following samples were received from you on **December 10, 2020** at **1143**. They have been scheduled for the tests listed below each sample. If this information is incorrect, please contact your service representative. Thank you for using Eurofins Eaton Analytical, LLC.

Sample #	Sample ID	Sample Date
202012100362	LMER_E_00_LIM	12/08/2020 1400
	Variable ID: 2079121-01	
	@UCMR4 546 L231_SB	
202012100363	LMER_N_00_LIM	12/08/2020 1500
	Variable ID: 2079123-01	
	@UCMR4 546	
202012100364	LMER_N_00_LIM	12/09/2020 1200
	Variable ID: 2079123-07	
	L231_SB	
202012100365	LMER_R_00_LIM	12/08/2020 1000
	Variable ID: 2079125-01	
	@UCMR4 546 L231_SB	
202012100366	LMER_S_00_LIM	12/08/2020 0900
	Variable ID: 2079127-01	
	@UCMR4 546 L231_SB	

Test Description

@UCMR4 546 -- UCMR4 546

San Francisco Water Power Sewer
Services of the San Francisco Public Utilities Commission

SAN FRANCISCO PUBLIC UTILITIES COMMISSION

SUB LABORATORY CHAIN OF CUSTODY RECORD

987416

Water Quality Division
1000 El Camino Real
Millbrae, CA 94030
Tel: (650) 872-5945
Fax: (650) 952-3407

Out Source#: 4500 **Ship To : SUB_LAB** **Ship Date: 12/09/2020** **Ship Via: FedEx** **Tracking#: 121103155778**

Index Code: ☐ 921021(WW)/920901(WW) ☐ 470440(DW)

SHIPPED BY: PHUONG H / NM

TYPE: ROUTINE / SPECIAL
(Circle One)

FOR LAB USE ONLY

METHOD OF TRANSPORT (CHECK ONE)	SAMPLE CONDITION UPON RECEIPT (CHECK APPROPRIATE BOXES)		SAMPLE STORAGE
☐ MILLBRAE	☐ CHILLED	☐ CONTAINER INTACT	LOCATION
☐ MOCCASIN	☐ SEALED	☐ # OF SAMPLES MATCH COC	REFRIG#
☐ COURIER	☐ SEAL INTACT	☐ HEADSPACE (VOA)	SHELF#
☐ OTHER	☐ PRESERVED	COOLER TEMPERATURE (0-6°C):	OTHERS

STATE EDT REQUIRED: Y / N **SYTEM ID:**

Sample ID	Source	Collected Date	Time	By	WQD Rec. Date	By	LocationNotes\Comments	TAT	SUB_546	SUB_ALGAL_TOXIN
2079121-01	LMER_E_00_LIM	12/8/20	1400	RMJOHNSON	12/8/20	PHOANG		21 DAYS	10	7-8
					12/9/20	PHOANG		21 DAYS		9
2079123-01	LMER_N_00_LIM	12/8/20	1500	RMJOHNSON	12/8/20	PHOANG		21 DAYS	10	
2079123-07	LMER_N_00_LIM	12/9/20	1200	SDELEO	12/9/20	JMITTRY		21 DAYS		7-8
2079125-01	LMER_R_00_LIM	12/8/20	1000	RMJOHNSON	12/8/20	PHOANG		21 DAYS	10	7-8
					12/9/20	PHOANG		21 DAYS		9
2079127-01	LMER_S_00_LIM	12/8/20	0900	RMJOHNSON	12/8/20	PHOANG		21 DAYS	10	7-8

↑ indicates the last digit(s) of container ID

RELINQUISHED FROM: (Print Name/Sign)	DATE/TIME:	RELINQUISHED TO: (Print Name/Sign)	DATE/TIME:	Comments:
PHUONG H / NM	12/9/2020 @1500	/		470440DW: (SUB_546/SUB_ALGAL_TOXIN/LK MERCED) : Please see subsequent pages for analyte details
SUB LAB RECEIVED BY: (Print Name/Sign)	DATE/TIME:	SEND REPORT TO:	AGENCY:	
YUN L /	12/10/20 11:43			

San Francisco Water Power Sewer
Services of the San Francisco Public Utilities Commission

SAN FRANCISCO PUBLIC UTILITIES COMMISSION

SUB LABORATORY CHAIN OF CUSTODY RECORD

Water Quality Division
1000 El Camino Real
Millbrae, CA 94030
Tel: (650) 872-5945
Fax: (650) 952-3407

Out Source#: 4500 | **Ship To : SUB_LAB** | **Ship Date: 12/09/2020** | **Ship Via: FedEx** | **Tracking#: 121103155778**

FOR LAB USE ONLY

2079127-01 LMER_S_00_LIM

Container ID (Rep of 3) — **Collect Method**
2079127-01-07 to 2079127-01-09 — 4°C

Analysis: SUB ALGAL TOXIN — **Method:** Default

Anatoxin	Cylindrospermopsin	Microcystin-LA	Microcystin-LF	Microcystin-LR
Microcystin-LY	Microcystin-RR	Microcystin-YR	Nodularin	

Container ID (Rep of 1) — **Collect Method**
2079127-01-10 — 4°C

Analysis: SUB 546 — **Method:** EPA 546

Total Microcystins

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INTERNAL CHAIN OF CUSTODY RECORD

EEA Folder Number: 40716

SAMPLE TEMP RECEIVED:

Note: If samples are out of temperature range, let the ASMs know. ASMs will determine whether to proceed with analysis or not.

SAMPLES REC'D DAY OF COLLECTION? Yes / No

IR Gun ID = 6184 (Observation= 1.5 °C) (Corr.Factor 0.2 °C) (Final = 1.3 °C)

TYPE OF ICE: Real ____ Synthetic ✓ No Ice ____ CONDITION OF ICE: Frozen ✓ Partially Frozen ____ Thawed ____ N/A ____

METHOD OF SHIPMENT: Pick-Up / Walk-In / FedEx / UPS / DHL / Area Fast / Top Line / Other: ____

FedEx (#1) 1211 0315 5778

Compliance Acceptance Criteria:

1) Chemistry: >0, ≤ 6°C, not frozen (NELAP) (If received after 24 hrs of sample collection)

2) Microbiology, Distribution: < 10°C, not frozen (can be ≥10°C if received on ice the same day as sample collection, within 8 hours)

3) Microbiology, Surface Water: < 10°C (if received after 2 hours of sample collection)

If out of temperature range for both Chemistry and Microbiology samples and temperature does not confirm, then measure the temperature of each quadrant and record each temperature of the quadrants

1 = (Observation= ____ °C) (Corr.Factor ____ °C) (Final = ____ °C)	2 = (Observation= ____ °C) (Corr.Factor ____ °C) (Final = ____ °C)
3 = (Observation= ____ °C) (Corr.Factor ____ °C) (Final = ____ °C)	4 = (Observation= ____ °C) (Corr.Factor ____ °C) (Final = ____ °C)

4 Dioxin (1613 or 2,3,7,8 TCDD): must be between 0-4 °C, not frozen (If received after 24 hrs of sample collection)

5) pH Check. Manufacturer: ____ Lot Number: ____ pH strip type: 0 - 14 or ____ Expiration Date ____ Results: ____

6) Chlorine check. Manufacturer: Sansafe. Lot No.: ____ Expiration Date: ____ Results ____

7) VOA and Radon Headspace: No Samples with Headspace: ☐ Samples with Headspace (see below): ☐

Headspace Documentation (use additional VOC and Radon Internal COFC for additional bottles)

Exempt from headspace concerns: Methods 515.4, HAA(6251,552), 505, SPME, @CH, 532LCMS, 556, 535, Anatoxin, LCMS methods using 40 ml vials, International clients:

Samp ID	Bottle #	None/<6 mm	>6mm

Samp ID	Bottle #	None/<6 mm	>6mm

Samp ID	Bottle #	None/<6 mm	>6mm

Samp ID	Bottle #	None/<6 mm	>6mm

Note Sample IDs which have dissimilar headspace (i.e. potential sampling errors): ____

SIGNATURE	PRINT NAME	COMPANY/TITLE	DATE	TIME
RECEIVED BY:	Yuri	Eurofins Eaton Analytical	12/10/20	1143

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Tel: (626) 386-1100
Fax: (866) 988-3757
1 800 566 LABS (1 800 566 5227)

Laboratory Comments

Report: 907916
Project: 470440-DW1
Group: Microcystins-Lake Merced

San Francisco PUC
Megan Tran
1000 El Camino Real
Millbrae, CA 94030

Folder Comments

Analtyical results for L231 are submitted by Eurofins Eaton Analytical in Southbend IN

Revised report to edit dilution factors. UMVN, 01/05/2021

The Comments Report may be blank if there are no comments for this report.

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Tel: (626) 386-1100
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1 800 566 LABS (1 800 566 5227)

Laboratory Hits

Report: 907916
Project: 470440-DW1
Group: Microcystins-Lake Merced

San Francisco PUC
Megan Tran
1000 El Camino Real
Millbrae, CA 94030

Samples Received on:
12/10/2020 1143

Analyzed	Analyte	Sample ID	Result	Federal MCL	Units	MRL
	202012100362	**LMER_E_00_LIM**				
12/14/2020 14:48	Total Microcystins		11		ug/L	3.0
	202012100363	**LMER_N_00_LIM**				
12/22/2020 14:27	Total Microcystins		9.8		ug/L	6.0
	202012100365	**LMER_R_00_LIM**				
12/14/2020 14:48	Total Microcystins		7.5		ug/L	3.0
	202012100366	**LMER_S_00_LIM**				
12/14/2020 14:48	Total Microcystins		6.8		ug/L	3.0

SUMMARY OF POSITIVE DATA ONLY

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Tel: (626) 386-1100
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Laboratory Data

Report: 907916
Project: 470440-DW1
Group: Microcystins-Lake Merced

San Francisco PUC
Megan Tran
1000 El Camino Real
Millbrae, CA 94030

Samples Received on:
12/10/2020 1143

Prepped	Analyzed	Prep Batch	Analytical Batch	Method	Analyte	Result	Units	MRL	Dilution
LMER_E_00_LIM (202012100362)							**Sampled on 12/08/2020 1400**		
	Variable ID: 2079121-01								
	EPA 546 - UCMR4 546								
12/10/20	12/14/20 14:48	1293501	1294106	(EPA 546)	Total Microcystins	11	ug/L	3.0	10
12/10/20	12/14/20 14:48	1293501	1294106	(EPA 546)	%CV	1.80	%	180	1
	EPA 545 - Algal Toxins								
	12/15/20 18:02			(EPA 545)	Anatoxin-a	ND	ug/L	0.02	1
	12/15/20 18:02			(EPA 545)	Cylindrospermopsin	ND	ug/L	0.05	1
	12/15/20 18:02			(EPA 545)	Microcystin-LA	ND	ug/L	0.1	1
	12/15/20 18:02			(EPA 545)	Microcystin-LF	ND	ug/L	0.1	1
	12/15/20 18:02			(EPA 545)	Microcystin-LR	ND	ug/L	0.1	1
	12/15/20 18:02			(EPA 545)	Microcystin-LY	ND	ug/L	0.1	1
	12/15/20 18:02			(EPA 545)	Microcystin-RR	ND	ug/L	0.1	1
	12/15/20 18:02			(EPA 545)	Microcystin-YR	ND	ug/L	0.1	1
	12/15/20 18:02			(EPA 545)	Nodularin	ND	ug/L	0.1	1
LMER_N_00_LIM (202012100363)							**Sampled on 12/08/2020 1500**		
	Variable ID: 2079123-01								
	EPA 546 - UCMR4 546								
12/10/20	12/22/20 14:27	1293501	1295128	(EPA 546)	Total Microcystins	9.8	ug/L	6.0	20
12/10/20	12/22/20 14:27	1293501	1295128	(EPA 546)	%CV	3.70	%	370	1
LMER_N_00_LIM (202012100364)							**Sampled on 12/09/2020 1200**		
	Variable ID: 2079123-07								
	EPA 545 - Algal Toxins								
	12/15/20 18:15			(EPA 545)	Anatoxin-a	ND	ug/L	0.02	1
	12/15/20 18:15			(EPA 545)	Cylindrospermopsin	ND	ug/L	0.05	1
	12/15/20 18:15			(EPA 545)	Microcystin-LA	ND	ug/L	0.1	1
	12/15/20 18:15			(EPA 545)	Microcystin-LF	ND	ug/L	0.1	1
	12/15/20 18:15			(EPA 545)	Microcystin-LR	ND	ug/L	0.1	1
	12/15/20 18:15			(EPA 545)	Microcystin-LY	ND	ug/L	0.1	1
	12/15/20 18:15			(EPA 545)	Microcystin-RR	ND	ug/L	0.1	1
	12/15/20 18:15			(EPA 545)	Microcystin-YR	ND	ug/L	0.1	1
	12/15/20 18:15			(EPA 545)	Nodularin	ND	ug/L	0.1	1
LMER_R_00_LIM (202012100365)							**Sampled on 12/08/2020 1000**		
	Variable ID: 2079125-01								
	EPA 546 - UCMR4 546								
12/10/20	12/14/20 14:48	1293501	1294106	(EPA 546)	Total Microcystins	7.5	ug/L	3.0	10
12/10/20	12/14/20 14:48	1293501	1294106	(EPA 546)	%CV	1.40	%	140	1
	EPA 545 - Algal Toxins								

Rounding on totals after summation.
(c) - indicates calculated results. Analysis is a calculated result. Reported results are not rounded until the final step before reporting. Therefore methods that use a test result with further calculation may have slight differences in final result than the component analyses.

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1 800 566 LABS (1 800 566 5227)

Laboratory Data

Report: 907916
Project: 470440-DW1
Group: Microcystins-Lake Merced

San Francisco PUC
Megan Tran
1000 El Camino Real
Millbrae, CA 94030

Samples Received on:
12/10/2020 1143

Prepped	Analyzed	Prep Batch	Analytical Batch	Method	Analyte	Result	Units	MRL	Dilution
	12/15/20 18:29			(EPA 545)	Anatoxin-a	ND	ug/L	0.02	1
	12/15/20 18:29			(EPA 545)	Cylindrospermopsin	ND	ug/L	0.05	1
	12/15/20 18:29			(EPA 545)	Microcystin-LA	ND	ug/L	0.1	1
	12/15/20 18:29			(EPA 545)	Microcystin-LF	ND	ug/L	0.1	1
	12/15/20 18:29			(EPA 545)	Microcystin-LR	ND	ug/L	0.1	1
	12/15/20 18:29			(EPA 545)	Microcystin-LY	ND	ug/L	0.1	1
	12/15/20 18:29			(EPA 545)	Microcystin-RR	ND	ug/L	0.1	1
	12/15/20 18:29			(EPA 545)	Microcystin-YR	ND	ug/L	0.1	1
	12/15/20 18:29			(EPA 545)	Nodularin	ND	ug/L	0.1	1
LMER_S_00_LIM (202012100366)							**Sampled on 12/08/2020 0900**		
	Variable ID: 2079127-01								
				EPA 546 - UCMR4 546					
12/10/20	12/14/20 14:48	1293501	1294106	(EPA 546)	Total Microcystins	6.8	ug/L	3.0	10
12/10/20	12/14/20 14:48	1293501	1294106	(EPA 546)	%CV	2.70	%	270	1
				EPA 545 - Algal Toxins					
	12/15/20 18:42			(EPA 545)	Anatoxin-a	ND	ug/L	0.02	1
	12/15/20 18:42			(EPA 545)	Cylindrospermopsin	ND	ug/L	0.05	1
	12/15/20 18:42			(EPA 545)	Microcystin-LA	ND	ug/L	0.1	1
	12/15/20 18:42			(EPA 545)	Microcystin-LF	ND	ug/L	0.1	1
	12/15/20 18:42			(EPA 545)	Microcystin-LR	ND	ug/L	0.1	1
	12/15/20 18:42			(EPA 545)	Microcystin-LY	ND	ug/L	0.1	1
	12/15/20 18:42			(EPA 545)	Microcystin-RR	ND	ug/L	0.1	1
	12/15/20 18:42			(EPA 545)	Microcystin-YR	ND	ug/L	0.1	1
	12/15/20 18:42			(EPA 545)	Nodularin	ND	ug/L	0.1	1

Rounding on totals after summation.
(c) - indicates calculated results. Analysis is a calculated result. Reported results are not rounded until the final step before reporting. Therefore methods that use a test result with further calculation may have slight differences in final result than the component analyses.

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Laboratory QC Summary

Report: 907916
Project: 470440-DW1
Group: Microcystins-Lake Merced

San Francisco PUC

UCMR4 546

Prep Batch: 1293501	**Analytical Batch: 1294106**	**Analysis Date: 12/14/2020**
202012100362	LMER_E_00_LIM	Analyzed by: M8OF
202012100365	LMER_R_00_LIM	Analyzed by: M8OF
202012100366	LMER_S_00_LIM	Analyzed by: M8OF

UCMR4 546

Prep Batch: 1293501	**Analytical Batch: 1295128**	**Analysis Date: 12/22/2020**
202012100363	LMER_N_00_LIM	Analyzed by: M8OF

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Tel: (626) 386-1100
Fax: (866) 988-3757
1 800 566 LABS (1 800 566 5227)

Report: 907916
Project: 470440-DW1
Group: Microcystins-Lake Merced

San Francisco PUC

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield(%)	Limits (%)	RPD Limit(%)	RPD%
UCMR4 546 by EPA 546									
Analytical Batch: 1294106						**Analysis Date: 12/14/2020**			
LCS1	%CV			2.10	%				
LCS2	%CV			ND	%				
MBLK	%CV			<15	%				
MBLK	%CV			<15	%				
MRL_CHK	%CV			ND	%				
MS2_202011300070	%CV	1.60		ND	%				
MSD2_202011300070	%CV	1.60		ND	%				
LCS1	Total Microcystins		0.5	0.603	ug/L	121	(60-140)		
LCS2	Total Microcystins		0.5	0.548	ug/L	110	(60-140)		
MBLK	Total Microcystins			<0.15	ug/L				
MBLK	Total Microcystins			<0.15	ug/L				
MRL_CHK	Total Microcystins		0.3	0.345	ug/L	115	(50-150)		
MS2_202011300070	Total Microcystins	ND	0.5	0.512	ug/L	94	(60-140)		
MSD2_202011300070	Total Microcystins	ND	0.5	0.637	ug/L	119	(60-140)	40	22
UCMR4 546 by EPA 546									
Analytical Batch: 1295128						**Analysis Date: 12/22/2020**			
LCS1	%CV			1.90	%				
LCS2	%CV			ND	%				
MBLK	%CV			<15	%				
MBLK	%CV			<15	%				
MRL_CHK	%CV			ND	%				
MS2_202012180093	%CV	1.10		ND	%				
MSD2_202012180093	%CV	1.10		ND	%				
LCS1	Total Microcystins		0.5	0.502	ug/L	100	(60-140)		
LCS2	Total Microcystins		0.5	0.443	ug/L	89	(60-140)		
MBLK	Total Microcystins			<0.15	ug/L				
MBLK	Total Microcystins			<0.15	ug/L				
MRL_CHK	Total Microcystins		0.3	0.303	ug/L	101	(50-150)		
MS2_202012180093	Total Microcystins	19	5	28.9	ug/L	**1890**	(60-140)		
MSD2_202012180093	Total Microcystins	19	5	35.5	ug/L	**3210**	(60-140)	40	21

Spike recovery is already corrected for native results.
Spikes which exceed Limits and Method Blanks with positive results are highlighted by Underlining.
Criteria for MS and Dup are advisory only, batch control is based on LCS. Criteria for duplicates are advisory only, unless otherwise specified in the method.
RPD not calculated for LCS2 when different a concentration than LCS1 is used.
RPD not calculated for Duplicates when the result is not five times the MRL (Minimum Reporting Level).
(S) - Indicates surrogate compound.
(I) - Indicates internal standard compound.

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LABORATORY REPORT

If you have any questions concerning this report, please do not hesitate to call us at (800) 332-4345 or (574) 233-4777.

STATE CERTIFICATION LIST

State	Certification	State	Certification
Alabama	40700	Missouri	880
Alaska	IN00035	Montana	CERT0026
Arizona	AZ0432	Nebraska	NE-OS-05-04
Arkansas	IN00035	Nevada	IN00035
California	2920	New Hampshire*	2124
Colorado	IN00035	New Jersey*	IN598
Colorado Radiochemistry	IN00035	New Mexico	IN00035
Connecticut	PH-0132	New York*	11398
Delaware	IN035	North Carolina	18700
Florida(Primary AB)*	E87775	North Dakota	R-035
Georgia	929	Ohio	87775
Hawaii	IN035	Oklahoma	D9508
Idaho	IN00035	Oregon*	4156
Illinois*	200001	Pennsylvania*	68-00466
Illinois Microbiology	17767	Puerto Rico	IN00035
Illinois Radiochemistry	IN00035	Rhode Island	LAO00343
Indiana Chemistry	C-71-01	South Carolina	95005
Indiana Microbiology	M-76-07	South Dakota	IN00035
Iowa	098	Tennessee	TN02973
Kansas*	E-10233	Texas*	T104704187
Kentucky	90056	Texas/TCEQ	TX207
Louisiana*	LA014	Utah*	IN00035
Maine	IN00035	Vermont	VT-8775
Maryland	209	Virginia*	460275
Massachusetts	M-IN035	Washington	C837
Michigan	9926	West Virginia	9927 C
Minnesota*	018-999-338	Wisconsin	999766900
Mississippi	IN035	Wyoming	IN035
EPA	IN00035		

*NELAP/TNI Recognized Accreditation Bodies

Revision date: 09/29/2020

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NELAC NARRATIVE PAGE

Client: Eurofins Eaton Analytical Report #: 506146NP

Eurofins Eaton Analytical, LLC is a NELAP accredited laboratory. All reported results meet the requirements of the NELAC standards, unless otherwise noted.

EEA contact person: Karen Fullmer

NELAP requires complete reporting of deviations from method requirements, regardless of the suspected impact on the data. Quality control failures not reported within the report summary are noted here.

There were no quality control failures.

Karen Fullmer ASM 12/17/2020

Authorized Signature Title Date

110 South Hill Street
South Bend, IN 46617
Tel: (574) 233-4777
Fax: (574) 233-8207
1 800 332 4345

Laboratory Report

Client: Eurofins Eaton Analytical

Attn: Jackie Contreras
750 Royal Oaks Drive
Suite 100
Monrovia, CA 91016

Report: 506146
Priority: Standard Written
Status: Final
PWS ID: Not Supplied

Sample Information

EEA ID #	Client ID	Method	Collected Date / Time	Collected By:	Received Date / Time
4795813	202012100362	L231	12/08/20 14:00	Client	12/12/20 09:45
4795814	202012100364	L231	12/09/20 12:00	Client	12/12/20 09:45
4795815	202012100365	L231	12/08/20 10:00	Client	12/12/20 09:45
4795816	202012100366	L231	12/08/20 09:00	Client	12/12/20 09:45

Report Summary

Note: Sample containers were provided by the client.

Samples came in bottles for Method 545. Samples were transferred to L231 vials and mixed well.

Detailed quantitative results are presented on the following pages. The results presented relate only to the samples provided for analysis.

We appreciate the opportunity to provide you with this analysis. If you have any questions concerning this report, please do not hesitate to call Karen Fullmer at (574) 233-4777.

Karen Fullmer ASM

Authorized Signature | Title

12/17/2020

Date

Client Name: Eurofins Eaton Analytical
Report #: 506146

Sampling Point: 202012100362 PWS ID: Not Supplied

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
64285-06-9	Anatoxin-a	L231	---	0.02	< 0.02	ug/L	---	12/15/20 18:02	4795813
143545-90-8	Cylindrospermopsin	L231	---	0.05	< 0.05	ug/L	---	12/15/20 18:02	4795813
96180-79-9	Microcystin-LA	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:02	4795813
154037-70-4	Microcystin-LF	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:02	4795813
101043-37-2	Microcystin-LR	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:02	4795813
123304-10-9	Microcystin-LY	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:02	4795813
111755-37-4	Microcystin-RR	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:02	4795813
101064-48-6	Microcystin-YR	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:02	4795813
118399-22-7	Nodularin	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:02	4795813

Sampling Point: 202012100364 PWS ID: Not Supplied

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
64285-06-9	Anatoxin-a	L231	---	0.02	< 0.02	ug/L	---	12/15/20 18:15	4795814
143545-90-8	Cylindrospermopsin	L231	---	0.05	< 0.05	ug/L	---	12/15/20 18:15	4795814
96180-79-9	Microcystin-LA	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:15	4795814
154037-70-4	Microcystin-LF	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:15	4795814
101043-37-2	Microcystin-LR	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:15	4795814
123304-10-9	Microcystin-LY	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:15	4795814
111755-37-4	Microcystin-RR	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:15	4795814
101064-48-6	Microcystin-YR	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:15	4795814
118399-22-7	Nodularin	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:15	4795814

Sampling Point: 202012100365 PWS ID: Not Supplied

EEA Methods									
Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
64285-06-9	Anatoxin-a	L231	---	0.02	< 0.02	ug/L	---	12/15/20 18:29	4795815
143545-90-8	Cylindrospermopsin	L231	---	0.05	< 0.05	ug/L	---	12/15/20 18:29	4795815
96180-79-9	Microcystin-LA	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:29	4795815
154037-70-4	Microcystin-LF	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:29	4795815
101043-37-2	Microcystin-LR	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:29	4795815
123304-10-9	Microcystin-LY	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:29	4795815
111755-37-4	Microcystin-RR	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:29	4795815
101064-48-6	Microcystin-YR	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:29	4795815
118399-22-7	Nodularin	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:29	4795815

Client Name: Eurofins Eaton Analytical Report #: 506146

Sampling Point: 202012100366 PWS ID: Not Supplied

EEA Methods

Analyte ID #	Analyte	Method	Reg Limit	MRL†	Result	Units	Preparation Date	Analyzed Date	EEA ID #
64285-06-9	Anatoxin-a	L231	---	0.02	< 0.02	ug/L	---	12/15/20 18:42	4795816
143545-90-8	Cylindrospermopsin	L231	---	0.05	< 0.05	ug/L	---	12/15/20 18:42	4795816
96180-79-9	Microcystin-LA	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:42	4795816
154037-70-4	Microcystin-LF	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:42	4795816
101043-37-2	Microcystin-LR	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:42	4795816
123304-10-9	Microcystin-LY	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:42	4795816
111755-37-4	Microcystin-RR	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:42	4795816
101064-48-6	Microcystin-YR	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:42	4795816
118399-22-7	Nodularin	L231	---	0.1	< 0.1	ug/L	---	12/15/20 18:42	4795816

† EEA has demonstrated it can achieve these report limits in reagent water, but can not document them in all sample matrices.

Reg Limit Type:	MCL	SMCL	AL
Symbol:	*	^	!

Lab Definitions

Continuing Calibration Check Standard (CCC) / Continuing Calibration Verification (CCV) / Initial Calibration Verification Standard (ICV) / Initial Performance Check (IPC) - is a standard containing one or more of the target analytes that is prepared from the same standards used to calibrate the instrument. This standard is used to verify the calibration curve at the beginning of each analytical sequence, and may also be analyzed throughout and at the end of the sequence. The concentration of continuing standards may be varied, when prescribed by the reference method, so that the range of the calibration curve is verified on a regular basis. CCL, CCM, and CCH are the CCC standards at low, mid, and high concentration levels, respectively.

Internal Standards (IS) - are pure compounds with properties similar to the analytes of interest, which are added to field samples or extracts, calibration standards, and quality control standards at a known concentration. They are used to measure the relative responses of the analytes of interest and surrogates in the sample, calibration standard or quality control standard.

Laboratory Duplicate (LD) - is a field sample aliquot taken from the same sample container in the laboratory and analyzed separately using identical procedures. Analysis of laboratory duplicates provides a measure of the precision of the laboratory procedures.

Laboratory Fortified Blank (LFB) / Laboratory Control Sample (LCS) - is an aliquot of reagent water to which known concentrations of the analytes of interest are added. The LFB is analyzed exactly the same as the field samples. LFBs are used to determine whether the method is in control. FBL, FBM, and FBH are the LFB samples at low, mid, and high concentration levels, respectively.

Laboratory Method Blank (LMB) / Laboratory Reagent Blank (LRB) - is a sample of reagent water included in the sample batch analyzed in the same way as the associated field samples. The LMB is used to determine if method analytes or other background contamination have been introduced during the preparation or analytical procedure. The LMB is analyzed exactly the same as the field samples.

Laboratory Trip Blank (LTB) / Field Reagent Blank (FRB) - is a sample of laboratory reagent water placed in a sample container in the laboratory and treated as a field sample, including storage, preservation, and all analytical procedures. The FRB/LTB container follows the collection bottles to and from the collection site, but the FRB/LTB is not opened at any time during the trip. The FRB/LTB is primarily a travel blank used to verify that the samples were not contaminated during shipment.

If applicable, the calculation of the matrix spike (MS) or matrix spike duplicate (MSD) percent recovery is as follows: (MS or MSD value - Sample value) * 100 / spike target / dilution factor = **Recovery %**

Matrix Spike Duplicate Sample (MSD) / Laboratory Fortified Sample Matrix Duplicate (LFSMD) - is a sample aliquot taken from the same field sample source as the Matrix Spike Sample to which known quantities of the analytes of interest are added in the laboratory. The MSD is analyzed exactly the same as the field samples. Analysis of the MSD provides a measure of the precision of the laboratory procedures in a specific matrix. SDL, SDM, and SDH / LFSMDL, LFSMDM, and LFSMDH are the MSD or LFSMD at low, mid, and high concentration levels, respectively.

Matrix Spike Sample (MS) / Laboratory Fortified Sample Matrix (LFSM) - is a sample aliquot taken from field sample source to which known quantities of the analytes of interest are added in the laboratory. The MS is analyzed exactly the same as the field samples. The purpose is to demonstrate recovery of the analytes from a sample matrix to determine if the specific matrix contributes bias to the analytical results. MSL, MSM, and MSH / LFSML, LFSMM, and LFSMH are the MS or LFSM at low, mid, and high concentration levels, respectively.

Quality Control Standard (QCS) / Second Source Calibration Verification (SSCV) - is a solution containing known concentrations of the analytes of interest prepared from a source different from the source of the calibration standards. The solution is obtained from a second manufacturer or lot if the lot can be demonstrated by the manufacturer as prepared independently from other lots. The QCS sample is analyzed using the same procedures as field samples. The QCS is used as a check on the calibration standards used in the method on a routine basis.

Reporting Limit Check (RLC) / Initial Calibration Check Standard (ICCS) - is a procedural standard that is analyzed each day to evaluate instrument performance at or below the minimum reporting limit (MRL).

Surrogate Standard (SS) / Surrogate Analyte (SUR) - is a pure compound with properties similar to the analytes of interest, which is highly unlikely to be found in any field sample, that is added to the field samples, calibration standards, blanks and quality control standards before sample preparation. The SS is used to evaluate the efficiency of the sample preparation process.

eurofins | Eaton Analytical

Submittal Form

407016

Date: 12/11/2020

Ship To:
`Eurofins Eaton Analytical
110 South Hill Street

South Bend, IN 46617-2702

Phone: 800-332-4345 Fax: 574-233-8207

Folder #: 907916 **Report Due:** 01/12/2021

*REPORTING REQUIRMENTS: *Do Not Combine Reports with any other samples submitted under different Folder Numbers!*
Report & Invoice must have the Folder # 907916 Job # 1000014

506146

Report all quality control data according to Method. Include dates analyzed. Date extracted (if extracted) and Method reference on the report.
Results must have Complete data & QC with Approval Signature.

Reports: Jackie Contreras Sub-Contracting Administrator
EMAIL TO: Eaton-MonroviaSubContract@eurofinset.com
Eurofins Eaton Analytical, LLC 750 Royal Oaks Drive, Suite 100, Monrovia, CA 91016
Phone (626) 386-1165 Fax (626) 386-1122
Invoices to: Eurofins Eaton Analytical, LLC
Accounts Payable 2425 New Holland Pike, Lancaster, PA 17605

Provide in each Report the Specified StateCertification # and Exp Date for requested tests + matrix.

Samples from: CALIFORNIA

Client Provided Sample Container

Sample ID	Client Sample ID for reference onl	Sample Date & Time	Matrix	PWS Systemcode	PWSID
(2) 202012100362	LMER_E_00_LIM	12/08/20 1400	DW		JLS

Sample type: | Sample Event: | Facility ID: | Sample Point ID: | Static ID: 4795813

Method	Prep Method	Analysis Requested
EPA 545		Algal Toxins

Sample ID	Client Sample ID for reference onl	Sample Date & Time	Matrix	PWS Systemcode	PWSID
(3) 202012100364	LMER_N_00_LIM	12/09/20 1200	DW		JLS

Sample type: | Sample Event: | Facility ID: | Sample Point ID: | Static ID: 4795814

Method	Prep Method	Analysis Requested
EPA 545		Algal Toxins

Sample ID	Client Sample ID for reference onl	Sample Date & Time	Matrix	PWS Systemcode	PWSID
(2) 202012100365	LMER_R_00_LIM	12/08/20 1000	DW		JLS

Sample type: | Sample Event: | Facility ID: | Sample Point ID: | Static ID: 4795815

Method	Prep Method	Analysis Requested
EPA 545		Algal Toxins

WO 0.2

Relinquished by: _____ Sample Control Ray Cabral/EGA Date 12/11/20 Time 0953

Received by: _____ Date _____ Time _____

Relinquished by: _____ Sample Control _____ Date _____ Time _____

Received by: K Dunn Date 12-12-2020 Time 0945

NOTIFICATION REQUIRED IF RECEIVED OUTSIDE OF 0-6 CELSIUS

An Acknowledgement of Receipt is requested to attn: Jackie Contreras

Sample ID	Client Sample ID for reference onl	Sample Date & Time	Matrix	PWS Systemcode	PWSID
202012100366 (2)	LMER_S_00_LIM	12/08/20 0900	DW		JLS

Sample type:	Sample Event:	Facility ID:	Sample Point ID:	Static ID: 4795816

Method	Prep Method	Analysis Requested
EPA 545		Algal Toxins

Relinquished by: Sample Control Date 12/11/20 Time 0953

Received by: Date Time

Relinquished by: Sample Control Date Time

Received by: Date 12-12-2020 Time 0945

NOTIFICATION REQUIRED IF RECEIVED OUTSIDE OF 0-6 CELSIUS

An Acknowledgement of Receipt is requested to attn: Jackie Contreras

750 Royal Oaks Drive, Suite 100, Monrovia, CA 91016 Tel (626) 386-1100 Fax (866) 988-3757 www.EurofinsUS.com/Eaton

Eurofins Eaton Analytical
Run Log

Run ID: **283359** Method: **L231**

Type	Sample Id	Sample Site	Matrix	Instrument ID	Analysis Date	Calibration File
LMB	4796653		RW	DQ	12/15/2020 17:09	121520L231a.mdb
FS	4795813	202012100362	SW	DQ	12/15/2020 18:02	121520L231a.mdb
FS	4795814	202012100364	SW	DQ	12/15/2020 18:15	121520L231a.mdb
FS	4795815	202012100365	SW	DQ	12/15/2020 18:29	121520L231a.mdb
FS	4795816	202012100366	SW	DQ	12/15/2020 18:42	121520L231a.mdb
MS	4796654	202012100366	SW	DQ	12/15/2020 18:55	121520L231a.mdb
MSD	4796655	202012100366	SW	DQ	12/15/2020 19:09	121520L231a.mdb
CCC	4796656		RW	DQ	12/15/2020 19:22	121520L231a.mdb

QC Summary Report

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
LMB	IS-L-phenylalanine-d5	L231	N/A	---		41036	42923	ug/L	96	50 - 150	---	---	1.0	---	12/15/2020 17:09	4796653
LMB	IS-Microcystin-LR-15N10	L231	N/A	---		793	938	ug/L	85	50 - 150	---	---	1.0	---	12/15/2020 17:09	4796653
LMB	IS-Microcystin-RR-15N13	L231	N/A	---		12696	12368	ug/L	103	50 - 150	---	---	1.0	---	12/15/2020 17:09	4796653
LMB	IS-Microcystin-YR-15N10	L231	N/A	---		3231	3295	ug/L	98	50 - 150	---	---	1.0	---	12/15/2020 17:09	4796653
LMB	IS-Uracil-d4	L231	N/A	---		5085	4925	ug/L	103	50 - 150	---	---	1.0	---	12/15/2020 17:09	4796653
LMB	Anatoxin-a	L231	0.02	---	<	0.02		ug/L	---	---	---	---	1.0	---	12/15/2020 17:09	4796653
LMB	Cylindrospermopsin	L231	0.05	---	<	0.05		ug/L	---	---	---	---	1.0	---	12/15/2020 17:09	4796653
LMB	Microcystin-LA	L231	0.1	---	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 17:09	4796653
LMB	Microcystin-LF	L231	0.1	---	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 17:09	4796653
LMB	Microcystin-LR	L231	0.1	---	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 17:09	4796653
LMB	Microcystin-LY	L231	0.1	---	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 17:09	4796653
LMB	Microcystin-RR	L231	0.1	---	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 17:09	4796653
LMB	Microcystin-YR	L231	0.1	---	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 17:09	4796653
LMB	Nodularin	L231	0.1	---	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 17:09	4796653
FS	IS-L-phenylalanine-d5	L231	N/A	202012100362		44596	42923	ug/L	104	50 - 150	---	---	1.0	---	12/15/2020 18:02	4795813
FS	IS-Microcystin-LR-15N10	L231	N/A	202012100362		935	938	ug/L	100	50 - 150	---	---	1.0	---	12/15/2020 18:02	4795813
FS	IS-Microcystin-RR-15N13	L231	N/A	202012100362		12659	12368	ug/L	102	50 - 150	---	---	1.0	---	12/15/2020 18:02	4795813
FS	IS-Microcystin-YR-15N10	L231	N/A	202012100362		3397	3295	ug/L	103	50 - 150	---	---	1.0	---	12/15/2020 18:02	4795813
FS	IS-Uracil-d4	L231	N/A	202012100362		4270	4925	ug/L	87	50 - 150	---	---	1.0	---	12/15/2020 18:02	4795813
FS	Anatoxin-a	L231	0.02	202012100362	<	0.02		ug/L	---	---	---	---	1.0	---	12/15/2020 18:02	4795813
FS	Cylindrospermopsin	L231	0.05	202012100362	<	0.05		ug/L	---	---	---	---	1.0	---	12/15/2020 18:02	4795813
FS	Microcystin-LA	L231	0.1	202012100362	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:02	4795813
FS	Microcystin-LF	L231	0.1	202012100362	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:02	4795813
FS	Microcystin-LR	L231	0.1	202012100362	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:02	4795813
FS	Microcystin-LY	L231	0.1	202012100362	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:02	4795813
FS	Microcystin-RR	L231	0.1	202012100362	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:02	4795813
FS	Microcystin-YR	L231	0.1	202012100362	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:02	4795813
FS	Nodularin	L231	0.1	202012100362	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:02	4795813
FS	IS-L-phenylalanine-d5	L231	N/A	202012100364		44554	42923	ug/L	104	50 - 150	---	---	1.0	---	12/15/2020 18:15	4795814
FS	IS-Microcystin-LR-15N10	L231	N/A	202012100364		916	938	ug/L	98	50 - 150	---	---	1.0	---	12/15/2020 18:15	4795814
FS	IS-Microcystin-RR-15N13	L231	N/A	202012100364		14307	12368	ug/L	116	50 - 150	---	---	1.0	---	12/15/2020 18:15	4795814
FS	IS-Microcystin-YR-15N10	L231	N/A	202012100364		3540	3295	ug/L	107	50 - 150	---	---	1.0	---	12/15/2020 18:15	4795814
FS	IS-Uracil-d4	L231	N/A	202012100364		4496	4925	ug/L	91	50 - 150	---	---	1.0	---	12/15/2020 18:15	4795814
FS	Anatoxin-a	L231	0.02	202012100364	<	0.02		ug/L	---	---	---	---	1.0	---	12/15/2020 18:15	4795814
FS	Cylindrospermopsin	L231	0.05	202012100364	<	0.05		ug/L	---	---	---	---	1.0	---	12/15/2020 18:15	4795814
FS	Microcystin-LA	L231	0.1	202012100364	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:15	4795814
FS	Microcystin-LF	L231	0.1	202012100364	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:15	4795814
FS	Microcystin-LR	L231	0.1	202012100364	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:15	4795814
FS	Microcystin-LY	L231	0.1	202012100364	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:15	4795814
FS	Microcystin-RR	L231	0.1	202012100364	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:15	4795814

QC Summary Report (cont.)

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
FS	Microcystin-YR	L231	0.1	202012100364	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:15	4795814
FS	Nodularin	L231	0.1	202012100364	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:15	4795814
FS	IS-L-phenylalanine-d5	L231	N/A	202012100365		43970	42923	ug/L	102	50 - 150	---	---	1.0	---	12/15/2020 18:29	4795815
FS	IS-Microcystin-LR-15N10	L231	N/A	202012100365		900	938	ug/L	96	50 - 150	---	---	1.0	---	12/15/2020 18:29	4795815
FS	IS-Microcystin-RR-15N13	L231	N/A	202012100365		12708	12368	ug/L	103	50 - 150	---	---	1.0	---	12/15/2020 18:29	4795815
FS	IS-Microcystin-YR-15N10	L231	N/A	202012100365		3277	3295	ug/L	99	50 - 150	---	---	1.0	---	12/15/2020 18:29	4795815
FS	IS-Uracil-d4	L231	N/A	202012100365		4341	4925	ug/L	88	50 - 150	---	---	1.0	---	12/15/2020 18:29	4795815
FS	Anatoxin-a	L231	0.02	202012100365	<	0.02		ug/L	---	---	---	---	1.0	---	12/15/2020 18:29	4795815
FS	Cylindrospermopsin	L231	0.05	202012100365	<	0.05		ug/L	---	---	---	---	1.0	---	12/15/2020 18:29	4795815
FS	Microcystin-LA	L231	0.1	202012100365	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:29	4795815
FS	Microcystin-LF	L231	0.1	202012100365	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:29	4795815
FS	Microcystin-LR	L231	0.1	202012100365	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:29	4795815
FS	Microcystin-LY	L231	0.1	202012100365	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:29	4795815
FS	Microcystin-RR	L231	0.1	202012100365	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:29	4795815
FS	Microcystin-YR	L231	0.1	202012100365	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:29	4795815
FS	Nodularin	L231	0.1	202012100365	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:29	4795815
FS	IS-L-phenylalanine-d5	L231	N/A	202012100366		43433	42923	ug/L	101	50 - 150	---	---	1.0	---	12/15/2020 18:42	4795816
FS	IS-Microcystin-LR-15N10	L231	N/A	202012100366		831	938	ug/L	89	50 - 150	---	---	1.0	---	12/15/2020 18:42	4795816
FS	IS-Microcystin-RR-15N13	L231	N/A	202012100366		12980	12368	ug/L	105	50 - 150	---	---	1.0	---	12/15/2020 18:42	4795816
FS	IS-Microcystin-YR-15N10	L231	N/A	202012100366		3369	3295	ug/L	102	50 - 150	---	---	1.0	---	12/15/2020 18:42	4795816
FS	IS-Uracil-d4	L231	N/A	202012100366		4352	4925	ug/L	88	50 - 150	---	---	1.0	---	12/15/2020 18:42	4795816
FS	Anatoxin-a	L231	0.02	202012100366	<	0.02		ug/L	---	---	---	---	1.0	---	12/15/2020 18:42	4795816
FS	Cylindrospermopsin	L231	0.05	202012100366	<	0.05		ug/L	---	---	---	---	1.0	---	12/15/2020 18:42	4795816
FS	Microcystin-LA	L231	0.1	202012100366	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:42	4795816
FS	Microcystin-LF	L231	0.1	202012100366	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:42	4795816
FS	Microcystin-LR	L231	0.1	202012100366	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:42	4795816
FS	Microcystin-LY	L231	0.1	202012100366	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:42	4795816
FS	Microcystin-RR	L231	0.1	202012100366	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:42	4795816
FS	Microcystin-YR	L231	0.1	202012100366	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:42	4795816
FS	Nodularin	L231	0.1	202012100366	<	0.1		ug/L	---	---	---	---	1.0	---	12/15/2020 18:42	4795816
MS	IS-L-phenylalanine-d5	L231	N/A	202012100366		44173	42923	ug/L	103	50 - 150	---	---	1.0	---	12/15/2020 18:55	4796654
MS	IS-Microcystin-LR-15N10	L231	N/A	202012100366		956	938	ug/L	102	50 - 150	---	---	1.0	---	12/15/2020 18:55	4796654
MS	IS-Microcystin-RR-15N13	L231	N/A	202012100366		12676	12368	ug/L	102	50 - 150	---	---	1.0	---	12/15/2020 18:55	4796654
MS	IS-Microcystin-YR-15N10	L231	N/A	202012100366		3240	3295	ug/L	98	50 - 150	---	---	1.0	---	12/15/2020 18:55	4796654
MS	IS-Uracil-d4	L231	N/A	202012100366		4347	4925	ug/L	88	50 - 150	---	---	1.0	---	12/15/2020 18:55	4796654
MS	Anatoxin-a	L231	0.02	202012100366		0.1819	0.2	ug/L	91	70 - 130	---	---	1.0	---	12/15/2020 18:55	4796654
MS	Cylindrospermopsin	L231	0.05	202012100366		0.5276	0.5	ug/L	106	70 - 130	---	---	1.0	---	12/15/2020 18:55	4796654
MS	Microcystin-LA	L231	0.1	202012100366		0.9923	1.0	ug/L	99	70 - 130	---	---	1.0	---	12/15/2020 18:55	4796654
MS	Microcystin-LF	L231	0.1	202012100366		0.9706	1.0	ug/L	97	70 - 130	---	---	1.0	---	12/15/2020 18:55	4796654
MS	Microcystin-LR	L231	0.1	202012100366		0.9565	1.0	ug/L	96	70 - 130	---	---	1.0	---	12/15/2020 18:55	4796654
MS	Microcystin-LY	L231	0.1	202012100366		0.9061	1.0	ug/L	91	70 - 130	---	---	1.0	---	12/15/2020 18:55	4796654

QC Summary Report (cont.)

Sample Type	Analyte	Method	MRL	Client ID	Result Flag	Amount	Target	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Dil Factor	Extracted	Analyzed	EEA ID #
MS	Microcystin-RR	L231	0.1	202012100366		0.9693	1.0	ug/L	97	70 - 130	---	---	1.0	---	12/15/2020 18:55	4796654
MS	Microcystin-YR	L231	0.1	202012100366		1.0620	1.0	ug/L	106	70 - 130	---	---	1.0	---	12/15/2020 18:55	4796654
MS	Nodularin	L231	0.1	202012100366		0.9864	1.0	ug/L	99	70 - 130	---	---	1.0	---	12/15/2020 18:55	4796654
MSD	IS-L-phenylalanine-d5	L231	N/A	202012100366		44602	42923	ug/L	104	50 - 150	---	---	1.0	---	12/15/2020 19:09	4796655
MSD	IS-Microcystin-LR-15N10	L231	N/A	202012100366		887	938	ug/L	95	50 - 150	---	---	1.0	---	12/15/2020 19:09	4796655
MSD	IS-Microcystin-RR-15N13	L231	N/A	202012100366		12402	12368	ug/L	100	50 - 150	---	---	1.0	---	12/15/2020 19:09	4796655
MSD	IS-Microcystin-YR-15N10	L231	N/A	202012100366		3251	3295	ug/L	99	50 - 150	---	---	1.0	---	12/15/2020 19:09	4796655
MSD	IS-Uracil-d4	L231	N/A	202012100366		4094	4925	ug/L	83	50 - 150	---	---	1.0	---	12/15/2020 19:09	4796655
MSD	Anatoxin-a	L231	0.02	202012100366		0.2070	0.2	ug/L	104	70 - 130	13	30	1.0	---	12/15/2020 19:09	4796655
MSD	Cylindrospermopsin	L231	0.05	202012100366		0.5058	0.5	ug/L	101	70 - 130	4.2	30	1.0	---	12/15/2020 19:09	4796655
MSD	Microcystin-LA	L231	0.1	202012100366		1.0732	1.0	ug/L	107	70 - 130	7.8	30	1.0	---	12/15/2020 19:09	4796655
MSD	Microcystin-LF	L231	0.1	202012100366		1.0422	1.0	ug/L	104	70 - 130	7.1	30	1.0	---	12/15/2020 19:09	4796655
MSD	Microcystin-LR	L231	0.1	202012100366		1.0445	1.0	ug/L	104	70 - 130	8.8	30	1.0	---	12/15/2020 19:09	4796655
MSD	Microcystin-LY	L231	0.1	202012100366		1.1240	1.0	ug/L	112	70 - 130	21	30	1.0	---	12/15/2020 19:09	4796655
MSD	Microcystin-RR	L231	0.1	202012100366		1.0212	1.0	ug/L	102	70 - 130	5.2	30	1.0	---	12/15/2020 19:09	4796655
MSD	Microcystin-YR	L231	0.1	202012100366		1.0379	1.0	ug/L	104	70 - 130	2.3	30	1.0	---	12/15/2020 19:09	4796655
MSD	Nodularin	L231	0.1	202012100366		1.0663	1.0	ug/L	107	70 - 130	7.8	30	1.0	---	12/15/2020 19:09	4796655
CCC	IS-L-phenylalanine-d5	L231	N/A	---		43418	42923	ug/L	101	50 - 150	---	---	1.0	---	12/15/2020 19:22	4796656
CCC	IS-Microcystin-LR-15N10	L231	N/A	---		869	938	ug/L	93	50 - 150	---	---	1.0	---	12/15/2020 19:22	4796656
CCC	IS-Microcystin-RR-15N13	L231	N/A	---		13290	12368	ug/L	107	50 - 150	---	---	1.0	---	12/15/2020 19:22	4796656
CCC	IS-Microcystin-YR-15N10	L231	N/A	---		3267	3295	ug/L	99	50 - 150	---	---	1.0	---	12/15/2020 19:22	4796656
CCC	IS-Uracil-d4	L231	N/A	---		5079	4925	ug/L	103	50 - 150	---	---	1.0	---	12/15/2020 19:22	4796656
CCC	Anatoxin-a	L231	0.02	---		0.2142	0.2	ug/L	107	70 - 130	---	---	1.0	---	12/15/2020 19:22	4796656
CCC	Cylindrospermopsin	L231	0.05	---		0.5425	0.5	ug/L	109	70 - 130	---	---	1.0	---	12/15/2020 19:22	4796656
CCC	Microcystin-LA	L231	0.1	---		1.1356	1.0	ug/L	114	70 - 130	---	---	1.0	---	12/15/2020 19:22	4796656
CCC	Microcystin-LF	L231	0.1	---		1.0353	1.0	ug/L	104	70 - 130	---	---	1.0	---	12/15/2020 19:22	4796656
CCC	Microcystin-LR	L231	0.1	---		1.0789	1.0	ug/L	108	70 - 130	---	---	1.0	---	12/15/2020 19:22	4796656
CCC	Microcystin-LY	L231	0.1	---		1.0980	1.0	ug/L	110	70 - 130	---	---	1.0	---	12/15/2020 19:22	4796656
CCC	Microcystin-RR	L231	0.1	---		0.9754	1.0	ug/L	98	70 - 130	---	---	1.0	---	12/15/2020 19:22	4796656
CCC	Microcystin-YR	L231	0.1	---		0.9805	1.0	ug/L	98	70 - 130	---	---	1.0	---	12/15/2020 19:22	4796656
CCC	Nodularin	L231	0.1	---		1.0539	1.0	ug/L	105	70 - 130	---	---	1.0	---	12/15/2020 19:22	4796656

Sample Type Key

Type (Abbr.)	Sample Type	Type (Abbr.)	Sample Type
CCC	Continuing Calibration Check		
FS	Field Sample		
LMB	Laboratory Method Blank		
MS	Matrix Spike		
MSD	Matrix Spike Duplicate		

END OF REPORT

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750 Royal Oaks Drive, Suite 100
Monrovia, California 91016-3629
Tel: (626) 386-1100
Fax: (866) 988-3757
1 800 566 LABS (1 800 566 5227)

ACCREDITED
CERTIFICATE #'s 5890.01 & 5890.02

Laboratory Report

for

San Francisco PUC
1000 El Camino Real
Millbrae, CA 94030
Attention: Megan Tran

REPORT REVISED,
replaces the original report.

NELAP ACCREDITED TNI LABORATORY
Utah ELCP CA00006

Date of Issue
01/05/2021
Monica Van Natta
EUROFINS EATON ANALYTICAL, LLC

UMVN: Monica Van Natta
Project Manager

Report: 909317
Project: 470440-DW1
Group: Microcystins-Lake Merced

* Accredited in accordance with TNI 2016 and ISO/IEC 17025:2017.
* Laboratory certifies that the test results meet all **TNI 2016 and ISO/IEC 17025:2017** requirements unless noted under the individual analysis.
* Following the cover page are State Certification List, ISO 17025 Accredited Method List, Acknowledgement of Samples Received, Comments, Hits Report, Data Report, QC Summary, QC Report and Regulatory Forms, as applicable.
* Test results relate only to the sample(s) tested.
* Test results apply to the sample(s) as received, unless otherwise noted in the comments report (ISO/IEC 17025:2017).
* This report shall not be reproduced except in full, without the written approval of the laboratory.
* This report includes ISO/IEC 17025 and non-ISO 17025 accredited methods.

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STATE CERTIFICATION LIST

State	Certification Number	State	Certification Number
Alabama	41060	**Montana**	Cert 0035
Arizona	AZ0778	**Nebraska**	Certified
Arkansas	Certified	**Nevada**	CA000062018
California	2813	**New Hampshire ***	2959
Colorado	Certified	**New Jersey ***	CA 008
Connecticut	PH-0107	**New Mexico**	Certified
Delaware	CA 006	**New York ***	11320
Florida *	E871024	**North Carolina**	06701
Georgia	947	**North Dakota**	R-009
Guam	18-005R	**Oregon ***	CA200003-005
Hawaii	Certified	**Pennsylvania ***	68-565
Idaho	Certified	**Puerto Rico**	Certified
Illinois *	200033	**Rhode Island**	LAO00326
Indiana	C-CA-01	**South Carolina**	87016
Iowa - Asbestos	413	**South Dakota**	Certified
Kansas *	E-10268	**Tennessee**	TN02839
Kentucky	90107	**Texas ***	T104704230-18-15
Louisiana *	LA180000	**Utah (Primary AB) ***	CA00006
Maine	CA0006	**Vermont**	VT0114
Maryland	224	**Virginia ***	460260
Commonwealth of Northern Marianas Is.	MP0004	**Washington**	C838
Massachusetts	M-CA006	**EPA Region 5**	Certified
Michigan	9906	**Los Angeles County Sanitation Districts**	10264
Mississippi	Certified		

* NELAP/TNI Recognized Accreditation Bodies

Eurofins Eaton Analytical, LLC
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Monrovia, CA 91016-3629
T | 626-386-1100
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The tests listed below are accredited and meet the requirements of ISO/IEC 17025 as verified by the ANSI-ASQ National Accreditation Board/A2LA.
Refer to Certificate and scope of accreditation (5890) found at: https://www.eurofinsus.com/Eaton

SPECIFIC TESTS	METHOD OR TECHNIQUE USED	Environ-mental (Drinking Water)	Environ-mental (Waste Water)	Water as a Component of Food and Bev/Bev/ Bottled Water
1,2,3-TCP (5 PPT & 0.5 PPT)	CA SRL 524M-TCP	x		x
1,4-Dioxane	EPA 522	x		x
2,3,7,8-TCDD	Modified EPA 1613B	x		x
Acrylamide	In House Method (2440)	x		x
Algal Toxins/Microcystin	In House Method (3570)			
Alkalinity	SM 2320B	x	x	x
Ammonia	EPA 350.1		x	x
Ammonia	SM 4500-NH3 H		x	x
Anions and DBPs by IC	EPA 300.0	x	x	x
Anions and DBPs by IC	EPA 300.1	x		x
Asbestos	EPA 100.2	x	x	
BOD / CBOD	SM 5210B		x	x
Bromate	In House Method (2447)	x		x
Carbamates	EPA 531.2	x		x
Carbonate as CO3	SM 2330B	x	x	x
Carbonyls	EPA 556	x		x
COD	EPA 410.4 / SM 5220D		x	
Chloramines	SM 4500-CL G	x	x	x
Chlorinated Acids	EPA 515.4	x		x
Chlorinated Acids	EPA 555	x		x
Chlorine Dioxide	SM 4500-CLO2 D Palin Test	x		x
Chlorine -Total/Free/ Combined Residual	SM 4500-Cl G	x	x	x
Conductivity	EPA 120.1		x	
Conductivity	SM 2510B	x	x	x
Corrosivity (Langelier Index)	SM 2330B	x		x
Cyanide, Amenable	SM 4500-CN G	x	x	
Cyanide, Free	SM 4500CN F	x	x	x
Cyanide, Total	EPA 335.4	x	x	x
Cyanogen Chloride (screen)	In House Method (2470)	x		x
Diquat and Paraquat	EPA 549.2	x		x
DBP/HAA	SM 6251B	x		x
Dissolved Oxygen	SM 4500-O G		x	x
DOC	SM 5310C	x		x
E. Coli	(MTF/EC+MUG)	x		x
E. Coli	CFR 141.21(f)(6)(i)	x		x
E. Coli	SM 9223		x	
E. Coli (Enumeration)	SM 9221B.1/ SM 9221F	x		x
E. Coli (Enumeration)	SM 9223B	x		x
EDB/DCBP	EPA 504.1	x		
EDB/DBCP and DBP	EPA 551.1	x		x
EDTA and NTA	In House Method (2454)	x		x
Endothall	EPA 548.1	x		x
Endothall	In-house Method (2445)	x		x
Enterococci	SM 9230B	x	x	
Fecal Coliform	SM 9221 E (MTF/EC)	x		
Fecal Coliform	SM 9221C, E (MTF/EC)		x	
Fecal Coliform (Enumeration)	SM 9221E (MTF/EC)	x		x
Fecal Coliform with Chlorine Present	SM 9221E		x	
Fecal Streptococci	SM 9230B	x	x	
Fluoride	SM 4500-F C	x	x	x
Glyphosate	EPA 547	x		x
Glyphosate + AMPA	In House Method (3618)	x		x
Gross Alpha/Beta	EPA 900.0	x	x	x
Gross Alpha Coprecipitation	SM 7110 C	x	x	x
Hardness	SM 2340B	x	x	x
Heterotrophic Bacteria	In House Method (2439)	x		x
Heterotrophic Bacteria	SM 9215 B	x		x
Hexavalent Chromium	EPA 218.6	x	x	x
Hexavalent Chromium	EPA 218.7	x		x
Hexavalent Chromium	SM 3500-Cr B		x	
Hormones	EPA 539	x		x
Hydroxide as OH Calc.	SM 2330B	x		x
Kjeldahl Nitrogen	EPA 351.2		x	
Legionella	Legiolert	x		x
Mercury	EPA 200.8	x		x
Metals	EPA 200.7 / 200.8	x	x	x
Microcystin LR	ELISA (2360)	x		x
Microcystin, Total	EPA 546	x		x
NDMA	EEA/Agilent 521.1 In house method (2425)	x		x
Nitrate/Nitrite Nitrogen	EPA 353.2	x	x	x
OCL, Pesticides/PCB	EPA 505	x		x
Ortho Phosphate	EPA 365.1	x	x	x
Ortho Phosphorous	SM 4500P E	x		x
Oxyhalides Disinfection Byproducts	EPA 317.0	x		x
Perchlorate	EPA 331.0	x		x
Perchlorate (low and high)	EPA 314.0	x		x
Perfluorinated Alkyl Acids	EPA 537	x		x
Perfluorinated Polutant	In house Method (2434)	x		x
pH	EPA 150.1	x		
pH	SM 4500-H+B	x	x	x
Phenylurea Pesticides/ Herbicides	In House Method, based on EPA 532 (2448)	x		x
Pseudomonas	IDEXX Pseudalert (2461)	x		x
Radium-226	GA Institute of Tech	x		x
Radium-228	GA Institute of Tech	x		x
Radon-222	SM 7500RN	x		x
Residue, Filterable	SM 2540C	x	x	x
Residue, Non-filterable	SM 2540D		x	
Residue, Total	SM 2540B		x	x
Residue, Volatile	EPA 160.4		x	
Semi-VOC	EPA 525.2	x		x
Silica	SM 4500-Si D	x	x	
Silica	SM 4500-SiO2 C	x	x	
Sulfide	SM 4500-$S^{=}$ D		x	
Sulfite	SM 4500-SO^{3}B	x	x	x
Surfactants	SM 5540C	x	x	x
Taste and Odor Analytes	SM 6040E	x		x
Total Coliform (P/A)	SM 9221 A, B	x		x
Total Coliform (Enumeration)	SM 9221 A, B, C	x		x
Total Coliform / E. coli	Colisure SM 9223	x		x
Total Coliform	SM 9221B		x	
Total Coliform with Chlorine Present	SM 9221B		x	
Total Coliform / E.coli (P/A and Enumeration)	SM 9223	x		x
TOC	SM 5310C	x	x	x
TOX	SM 5320B		x	
Total Phenols	EPA 420.1		x	
Total Phenols	EPA 420.4	x	x	x
Total Phosphorous	SM 4500 P E		x	
Triazine Pesticides & Degradates	In House (3617)	x		x
Turbidity	EPA 180.1	x	x	x
Turbidity	SM 2130B	x	x	
Uranium by ICP/MS	EPA 200.8	x		x
UV 254	SM 5910B	x		
VOC	EPA 524.2	x		x
VOC	In House Method (2411)	x		x
Yeast and Mold	SM 9610	x		x
Field Sampling	N/A			

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Acknowledgement of Samples Received

Addr: **San Francisco PUC**
1000 El Camino Real
Millbrae, CA 94030

Attn: Megan Tran
Phone: 650-872-5945

Client ID: SANFRAN
Folder #: 909317
Project: 470440-DW1
Sample Group: Microcystins-Lake Merced

Project Manager: Monica Van Natta
Phone: 559-797-1931
PO #: PRO.0165 PO-0000443463 TO#01

The following samples were received from you on **December 18, 2020** at **1058**. They have been scheduled for the tests listed below each sample. If this information is incorrect, please contact your service representative. Thank you for using Eurofins Eaton Analytical, LLC.

Sample #	Sample ID	Sample Date
202012180093	LMER_E_00_LIM	12/17/2020 0926
	Variable ID: 2079603-01	
	@UCMR4 546	
202012180094	LMER_N_00_LIM	12/17/2020 0932
	Variable ID: 2079604-01	
	@UCMR4 546	

Test Description

@UCMR4 546 -- UCMR4 546

San Francisco Water Power Sewer
Services of the San Francisco Public Utilities Commission

SAN FRANCISCO PUBLIC UTILITIES COMMISSION

SUB LABORATORY CHAIN OF CUSTODY RECORD

Water Quality Division
1000 El Camino Real
Millbrae, CA 94030
Tel: (650) 872-5945
Fax: (650) 952-3407

409317

Out Source#: 4534 | **Ship To : SUB_LAB** | **Ship Date: 12/17/2020** | **Ship Via: FedEx** | **Tracking#: 121103155620**

Index Code: ☐ 921021(WW)/920901(WW) ☐ 470440(DW)

SHIPPED BY: _____ /
(Print Name/Signature)

TYPE: ROUTINE / SPECIAL
(Circle One)

FOR LAB USE ONLY

METHOD OF TRANSPORT (CHECK ONE)	SAMPLE CONDITION UPON RECEIPT (CHECK APPROPRIATE BOXES)		SAMPLE STORAGE
☐ MILLBRAE	☐ CHILLED	☐ CONTAINER INTACT	LOCATION _____
☐ MOCCASIN	☐ SEALED	☐ # OF SAMPLES MATCH COC	REFRIG# _____
☐ COURIER	☐ SEAL INTACT	☐ HEADSPACE (VOA)	SHELF# _____
☐ OTHER _____	☐ PRESERVED	COOLER TEMPERATURE (0-6°C):	OTHERS _____

STATE EDT REQUIRED: Y / N SYTEM ID: _____
SPECIAL INSTRUCTIONS: _____

Sample ID	Source	Collected Date/Time/By			WQD Rec. Date/By		LocationNotes\Comments	TAT	SUB_546
2079603-01	LMER_E_00_LIM	12/17/20	0926	RMJOHNSON	12/17/20	PHOANG		21 DAYS	1
2079604-01	LMER_N_00_LIM	12/17/20	0932	RMJOHNSON	12/17/20	PHOANG		21 DAYS	1

↑ indicates the last digit(s) of container ID

RELINQUISHED FROM: (Print Name/Sign) /	DATE/TIME: 12/17/2020 @1500	RELINQUISHED TO: (Print Name/Sign) /	DATE/TIME:	Comments: 470440DW: (SUB_546/LMER_E/LMER_N) : Please see subsequent pages for analyte details.
SUB LAB RECEIVED BY: (Print Name/Sign) /	DATE/TIME: 12-18-20 1058	SEND REPORT TO:	AGENCY:	

San Francisco Water Power Sewer
Services of the San Francisco Public Utilities Commission

SAN FRANCISCO PUBLIC UTILITIES COMMISSION

SUB LABORATORY CHAIN OF CUSTODY RECORD

Water Quality Division
1000 El Camino Real
Millbrae, CA 94030
Tel: (650) 872-5945
Fax: (650) 952-3407

Out Source#: 4534 **Ship To : SUB_LAB** **Ship Date: 12/17/2020** **Ship Via: FedEx** **Tracking#: 121103155620**

FOR LAB USE ONLY

Sample ID	Source	
2079603-01	LMER_E_00_LIM	
Container ID (Rep of 1)		**Collect Method**
2079603-01-01		4°C
Analysis: SUB 546 Total Microcystins	**Method:** EPA 546	

Sample ID	Source	
2079604-01	LMER_N_00_LIM	
Container ID (Rep of 1)		**Collect Method**
2079604-01-01		4°C
Analysis: SUB 546 Total Microcystins	**Method:** EPA 546	

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UCMR4 INTERNAL CHAIN OF CUSTODY RECORD

EEA Folder Number: 909317

SAMPLES RECEIVED WITHIN 48 HOURS OF COLLECTION TIME? ☐

FedEx TRK# 0221 1211 0315 5620

TYPE OF ICE: Real ____ Synthetic ✓ No Ice ____

CONDITION OF ICE: Frozen ✓ Partially Frozen ____ Thawed ____ N/A ____

CONDITION OF SAMPLE: Frozen ____ Partially Frozen ____ Not Frozen ✓

METHOD OF SHIPMENT: Pick-Up / Walk-In / FedEx / UPS / DHL / Area Fast / Top Line / Other: ____

Compliance Acceptance Criteria:

If sample(s) received:

1) on the same day as the collection day; sample temperature may be ≥10°C with evidence of cooling
2) within the first 48 hours of collection time; sample temperature must be ≤10°C (except 200.8) and not frozen (except 546), and
3) after 48 hours of collection time; sample temperature must be ≤ 6°C (except 200.8) and not frozen (except 546), and not rejected if refrigerated between collection and shipment documented on UCMR4 COC as "yes."

Note: A minimum of 1 bottle for every analytical method must be checked for temperature. If the bottle that is checked does not meet the temperature criterion, then the sample bottle is rejected. The temperature of the other samples collected for that method is checked to determined if a valid sample was received.

Facility ID & Unique Field Sample ID 2079603-01-01

IR Gun ID = 649A

Method	Container ID	Observation (°C)	Correction Factor (°C)	Final (°C)
UCMR4 2008	1	+		=
UCMR4 525.3	1	+		=
	2	+		=
	3	+		=
UCMR4 530	1	+		=
	2	+		=
	3	+		=
UCMR4 541	1	+		=
	2	+		=
	3	+		=
UCMR4 552.3	1	+		=
TOC (5310C)	1	+		=
Bromide (300.0)	1	+		=

Method	Container ID	Observation (°C)	Correction Factor (°C)	Final (°C)
UCMR4 544	1	+		=
	2	+		=
	3	+		=
UCMR4 545	1	+		=
UCMR4 546	1	3.0 +	-0.2 =	2.8

Note: If samples are out of temperature range, let the ASMs know. ASMs will determine whether to proceed with analysis or not.

	SIGNATURE	PRINT NAME	COMPANY/TITLE	DATE	TIME
RECEIVED BY:			Eurofins Eaton Analytical	12-18-20	1059

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Tel: (626) 386-1100
Fax: (866) 988-3757
1 800 566 LABS (1 800 566 5227)

Laboratory Comments

Report: 909317
Project: 470440-DW1
Group: Microcystins-Lake Merced

San Francisco PUC
Megan Tran
1000 El Camino Real
Millbrae, CA 94030

Revised report to edit dilution factors. UMVN, 01/05/2021

The Comments Report may be blank if there are no comments for this report.

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Laboratory Hits

Report: 909317
Project: 470440-DW1
Group: Microcystins-Lake Merced

San Francisco PUC
Megan Tran
1000 El Camino Real
Millbrae, CA 94030

Samples Received on:
12/18/2020 1058

Analyzed	Analyte	Sample ID	Result	Federal MCL	Units	MRL
	202012180093	**LMER_E_00_LIM**				
12/22/2020 14:27	Total Microcystins		19		ug/L	3.0
	202012180094	**LMER_N_00_LIM**				
12/22/2020 14:27	Total Microcystins		24		ug/L	3.0

SUMMARY OF POSITIVE DATA ONLY

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Fax: (866) 988-3757
1 800 566 LABS (1 800 566 5227)

Laboratory Data

Report: 909317
Project: 470440-DW1
Group: Microcystins-Lake Merced

San Francisco PUC
Megan Tran
1000 El Camino Real
Millbrae, CA 94030

Samples Received on:
12/18/2020 1058

Prepped	Analyzed	Prep Batch	Analytical Batch	Method	Analyte	Result	Units	MRL	Dilution
LMER_E_00_LIM (202012180093)							**Sampled on 12/17/2020 0926**		
Variable ID: 2079603-01									
EPA 546 - UCMR4 546									
12/18/20	12/22/20 14:27	1295215	1295128	(EPA 546)	Total Microcystins	19	ug/L	3.0	10
12/18/20	12/22/20 14:27	1295215	1295128	(EPA 546)	%CV	1.10	%	110	1
LMER_N_00_LIM (202012180094)							**Sampled on 12/17/2020 0932**		
Variable ID: 2079604-01									
EPA 546 - UCMR4 546									
12/18/20	12/22/20 14:27	1295215	1295128	(EPA 546)	Total Microcystins	24	ug/L	3.0	10
12/18/20	12/22/20 14:27	1295215	1295128	(EPA 546)	%CV	2.00	%	200	1

Rounding on totals after summation.
(c) - indicates calculated results. Analysis is a calculated result. Reported results are not rounded until the final step before reporting. Therefore methods that use a test result with further calculation may have slight differences in final result than the component analyses.

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Laboratory QC Summary

Report: 909317
Project: 470440-DW1
Group: Microcystins-Lake Merced

San Francisco PUC

UCMR4 546

Prep Batch: 1295215 **Analytical Batch: 1295128** **Analysis Date: 12/22/2020**

202012180093	LMER_E_00_LIM	Analyzed by: M8OF
202012180094	LMER_N_00_LIM	Analyzed by: M8OF

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Report: 909317
Project: 470440-DW1
Group: Microcystins-Lake Merced

San Francisco PUC

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield(%)	Limits (%)	RPD Limit(%)	RPD%
UCMR4 546 by EPA 546									
Analytical Batch: 1295128						**Analysis Date: 12/22/2020**			
LCS1	%CV			1.90	%				
LCS2	%CV			ND	%				
MBLK	%CV			<15	%				
MBLK	%CV			<15	%				
MRL_CHK	%CV			ND	%				
MS2_202012180093	%CV	1.10		ND	%				
MSD2_202012180093	%CV	1.10		ND	%				
LCS1	Total Microcystins		0.5	0.502	ug/L	100	(60-140)		
LCS2	Total Microcystins		0.5	0.443	ug/L	89	(60-140)		
MBLK	Total Microcystins			<0.15	ug/L				
MBLK	Total Microcystins			<0.15	ug/L				
MRL_CHK	Total Microcystins		0.3	0.303	ug/L	101	(50-150)		
MS2_202012180093	Total Microcystins	19	5	28.9	ug/L	**1890**	(60-140)		
MSD2_202012180093	Total Microcystins	19	5	35.5	ug/L	**3210**	(60-140)	40	21

Spike recovery is already corrected for native results.
Spikes which exceed Limits and Method Blanks with positive results are highlighted by Underlining.
Criteria for MS and Dup are advisory only, batch control is based on LCS. Criteria for duplicates are advisory only, unless otherwise specified in the method.
RPD not calculated for LCS2 when different a concentration than LCS1 is used.
RPD not calculated for Duplicates when the result is not five times the MRL (Minimum Reporting Level).
(S) - Indicates surrogate compound.
(I) - Indicates internal standard compound.

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750 Royal Oaks Drive, Suite 100
Monrovia, California 91016-3629
Tel: (626) 386-1100
Fax: (866) 988-3757
1 800 566 LABS (1 800 566 5227)

ACCREDITED
CERTIFICATE #'s 5890.01 & 5890.02

Laboratory Report

for

San Francisco PUC
1000 El Camino Real
Millbrae, CA 94030
Attention: Megan Tran

REPORT REVISED,
replaces the original report.

NELAP ACCREDITED TNI LABORATORY
Utah ELCP CA00006

Date of Issue
01/05/2021
Monica Van Natta
EUROFINS EATON ANALYTICAL, LLC

UMVN: Monica Van Natta
Project Manager

Report: 909317
Project: 470440-DW1
Group: Microcystins-Lake Merced

* Accredited in accordance with TNI 2016 and ISO/IEC 17025:2017.
* Laboratory certifies that the test results meet all **TNI 2016 and ISO/IEC 17025:2017** requirements unless noted under the individual analysis.
* Following the cover page are State Certification List, ISO 17025 Accredited Method List, Acknowledgement of Samples Received, Comments, Hits Report, Data Report, QC Summary, QC Report and Regulatory Forms, as applicable.
* Test results relate only to the sample(s) tested.
* Test results apply to the sample(s) as received, unless otherwise noted in the comments report (ISO/IEC 17025:2017).
* This report shall not be reproduced except in full, without the written approval of the laboratory.
* This report includes ISO/IEC 17025 and non-ISO 17025 accredited methods.

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STATE CERTIFICATION LIST

State	Certification Number	State	Certification Number
Alabama	41060	**Montana**	Cert 0035
Arizona	AZ0778	**Nebraska**	Certified
Arkansas	Certified	**Nevada**	CA000062018
California	2813	**New Hampshire ***	2959
Colorado	Certified	**New Jersey ***	CA 008
Connecticut	PH-0107	**New Mexico**	Certified
Delaware	CA 006	**New York ***	11320
Florida *	E871024	**North Carolina**	06701
Georgia	947	**North Dakota**	R-009
Guam	18-005R	**Oregon ***	CA200003-005
Hawaii	Certified	**Pennsylvania ***	68-565
Idaho	Certified	**Puerto Rico**	Certified
Illinois *	200033	**Rhode Island**	LAO00326
Indiana	C-CA-01	**South Carolina**	87016
Iowa - Asbestos	413	**South Dakota**	Certified
Kansas *	E-10268	**Tennessee**	TN02839
Kentucky	90107	**Texas ***	T104704230-18-15
Louisiana *	LA180000	**Utah (Primary AB) ***	CA00006
Maine	CA0006	**Vermont**	VT0114
Maryland	224	**Virginia ***	460260
Commonwealth of Northern Marianas Is.	MP0004	**Washington**	C838
Massachusetts	M-CA006	**EPA Region 5**	Certified
Michigan	9906	**Los Angeles County Sanitation Districts**	10264
Mississippi	Certified		

* NELAP/TNI Recognized Accreditation Bodies

Eurofins Eaton Analytical, LLC
750 Royal Oaks Drive, Suite 100
Monrovia, CA 91016-3629
T | 626-386-1100
F | 866-988-3757
www.EurofinsUS.com/Eaton

The tests listed below are accredited and meet the requirements of ISO/IEC 17025 as verified by the ANSI-ASQ National Accreditation Board/A2LA.
Refer to Certificate and scope of accreditation (5890) found at: https://www.eurofinsus.com/Eaton

SPECIFIC TESTS	METHOD OR TECHNIQUE USED	Environ-mental (Drinking Water)	Environ-mental (Waste Water)	Water as a Component of Food and Bev/Bev/ Bottled Water
1,2,3-TCP (5 PPT & 0.5 PPT)	CA SRL 524M-TCP	x		x
1,4-Dioxane	EPA 522	x		x
2,3,7,8-TCDD	Modified EPA 1613B	x		x
Acrylamide	In House Method (2440)	x		x
Algal Toxins/Microcystin	In House Method (3570)			
Alkalinity	SM 2320B	x	x	x
Ammonia	EPA 350.1		x	x
Ammonia	SM 4500-NH3 H		x	x
Anions and DBPs by IC	EPA 300.0	x	x	x
Anions and DBPs by IC	EPA 300.1	x		x
Asbestos	EPA 100.2	x	x	
BOD / CBOD	SM 5210B		x	x
Bromate	In House Method (2447)	x		x
Carbamates	EPA 531.2	x		x
Carbonate as CO3	SM 2330B	x	x	x
Carbonyls	EPA 556	x		x
COD	EPA 410.4 / SM 5220D		x	
Chloramines	SM 4500-CL G	x	x	x
Chlorinated Acids	EPA 515.4	x		x
Chlorinated Acids	EPA 555	x		x
Chlorine Dioxide	SM 4500-CLO2 D Palin Test	x		x
Chlorine -Total/Free/ Combined Residual	SM 4500-Cl G	x	x	x
Conductivity	EPA 120.1		x	
Conductivity	SM 2510B	x	x	x
Corrosivity (Langelier Index)	SM 2330B	x		x
Cyanide, Amenable	SM 4500-CN G	x	x	
Cyanide, Free	SM 4500CN F	x	x	x
Cyanide, Total	EPA 335.4	x	x	x
Cyanogen Chloride (screen)	In House Method (2470)	x		x
Diquat and Paraquat	EPA 549.2	x		x
DBP/HAA	SM 6251B	x		x
Dissolved Oxygen	SM 4500-O G		x	x
DOC	SM 5310C	x		x
E. Coli	(MTF/EC+MUG)	x		x
E. Coli	CFR 141.21(f)(6)(i)	x		x
E. Coli	SM 9223		x	
E. Coli (Enumeration)	SM 9221B.1/ SM 9221F	x		x
E. Coli (Enumeration)	SM 9223B	x		x
EDB/DCBP	EPA 504.1	x		
EDB/DBCP and DBP	EPA 551.1	x		x
EDTA and NTA	In House Method (2454)	x		x
Endothall	EPA 548.1	x		x
Endothall	In-house Method (2445)	x		x
Enterococci	SM 9230B	x	x	
Fecal Coliform	SM 9221 E (MTF/EC)	x		
Fecal Coliform	SM 9221C, E (MTF/EC)		x	
Fecal Coliform (Enumeration)	SM 9221E (MTF/EC)	x		x
Fecal Coliform with Chlorine Present	SM 9221E		x	
Fecal Streptococci	SM 9230B	x	x	
Fluoride	SM 4500-F C	x	x	x
Glyphosate	EPA 547	x		x
Glyphosate + AMPA	In House Method (3618)	x		x
Gross Alpha/Beta	EPA 900.0	x	x	x
Gross Alpha Coprecipitation	SM 7110 C	x	x	x
Hardness	SM 2340B	x	x	x
Heterotrophic Bacteria	In House Method (2439)	x		x
Heterotrophic Bacteria	SM 9215 B	x		x
Hexavalent Chromium	EPA 218.6	x	x	x
Hexavalent Chromium	EPA 218.7	x		x
Hexavalent Chromium	SM 3500-Cr B		x	
Hormones	EPA 539	x		x
Hydroxide as OH Calc.	SM 2330B	x		x
Kjeldahl Nitrogen	EPA 351.2		x	
Legionella	Legiolert	x		x
Mercury	EPA 200.8	x		x
Metals	EPA 200.7 / 200.8	x	x	x
Microcystin LR	ELISA (2360)	x		x
Microcystin, Total	EPA 546	x		x
NDMA	EEA/Agilent 521.1 In house method (2425)	x		x
Nitrate/Nitrite Nitrogen	EPA 353.2	x	x	x
OCL, Pesticides/PCB	EPA 505	x		x
Ortho Phosphate	EPA 365.1	x	x	x
Ortho Phosphorous	SM 4500P E	x		x
Oxyhalides Disinfection Byproducts	EPA 317.0	x		x
Perchlorate	EPA 331.0	x		x
Perchlorate (low and high)	EPA 314.0	x		x
Perfluorinated Alkyl Acids	EPA 537	x		x
Perfluorinated Polutant	In house Method (2434)	x		x
pH	EPA 150.1	x		
pH	SM 4500-H+B	x	x	x
Phenylurea Pesticides/ Herbicides	In House Method, based on EPA 532 (2448)	x		x
Pseudomonas	IDEXX Pseudalert (2461)	x		x
Radium-226	GA Institute of Tech	x		x
Radium-228	GA Institute of Tech	x		x
Radon-222	SM 7500RN	x		x
Residue, Filterable	SM 2540C	x	x	x
Residue, Non-filterable	SM 2540D		x	
Residue, Total	SM 2540B		x	x
Residue, Volatile	EPA 160.4		x	
Semi-VOC	EPA 525.2	x		x
Silica	SM 4500-Si D	x	x	
Silica	SM 4500-SiO2 C	x	x	
Sulfide	SM 4500-$S^{=}$ D		x	
Sulfite	SM 4500-SO^{3}B	x	x	x
Surfactants	SM 5540C	x	x	x
Taste and Odor Analytes	SM 6040E	x		x
Total Coliform (P/A)	SM 9221 A, B	x		x
Total Coliform (Enumeration)	SM 9221 A, B, C	x		x
Total Coliform / E. coli	Colisure SM 9223	x		x
Total Coliform	SM 9221B		x	
Total Coliform with Chlorine Present	SM 9221B		x	
Total Coliform / E.coli (P/A and Enumeration)	SM 9223	x		x
TOC	SM 5310C	x	x	x
TOX	SM 5320B		x	
Total Phenols	EPA 420.1		x	
Total Phenols	EPA 420.4	x	x	x
Total Phosphorous	SM 4500 P E		x	
Triazine Pesticides & Degradates	In House (3617)	x		x
Turbidity	EPA 180.1	x	x	x
Turbidity	SM 2130B	x	x	
Uranium by ICP/MS	EPA 200.8	x		x
UV 254	SM 5910B	x		
VOC	EPA 524.2	x		x
VOC	In House Method (2411)	x		x
Yeast and Mold	SM 9610	x		x
Field Sampling	N/A			

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Acknowledgement of Samples Received

Addr: **San Francisco PUC**
1000 El Camino Real
Millbrae, CA 94030

Attn: Megan Tran
Phone: 650-872-5945

Client ID: SANFRAN
Folder #: 909317
Project: 470440-DW1
Sample Group: Microcystins-Lake Merced

Project Manager: Monica Van Natta
Phone: 559-797-1931
PO #: PRO.0165 PO-0000443463 TO#01

The following samples were received from you on **December 18, 2020** at **1058**. They have been scheduled for the tests listed below each sample. If this information is incorrect, please contact your service representative. Thank you for using Eurofins Eaton Analytical, LLC.

Sample #	Sample ID	Sample Date
202012180093	LMER_E_00_LIM	12/17/2020 0926
	Variable ID: 2079603-01	
	@UCMR4 546	
202012180094	LMER_N_00_LIM	12/17/2020 0932
	Variable ID: 2079604-01	
	@UCMR4 546	

Test Description

@UCMR4 546 -- UCMR4 546

San Francisco Water Power Sewer
Services of the San Francisco Public Utilities Commission

SAN FRANCISCO PUBLIC UTILITIES COMMISSION

SUB LABORATORY CHAIN OF CUSTODY RECORD

Water Quality Division
1000 El Camino Real
Millbrae, CA 94030
Tel: (650) 872-5945
Fax: (650) 952-3407

409317

Out Source#: 4534 | **Ship To : SUB_LAB** | **Ship Date: 12/17/2020** | **Ship Via: FedEx** | **Tracking#: 121103155620**

Index Code: ☐ 921021(WW)/920901(WW) ☐ 470440(DW)

SHIPPED BY: _____ /
(Print Name/Signature)

TYPE: ROUTINE / SPECIAL
(Circle One)

FOR LAB USE ONLY

METHOD OF TRANSPORT (CHECK ONE)	SAMPLE CONDITION UPON RECEIPT (CHECK APPROPRIATE BOXES)		SAMPLE STORAGE
☐ MILLBRAE	☐ CHILLED	☐ CONTAINER INTACT	LOCATION _____
☐ MOCCASIN	☐ SEALED	☐ # OF SAMPLES MATCH COC	REFRIG# _____
☐ COURIER	☐ SEAL INTACT	☐ HEADSPACE (VOA)	SHELF# _____
☐ OTHER _____	☐ PRESERVED	COOLER TEMPERATURE (0-6°C):	OTHERS _____

STATE EDT REQUIRED: Y / N SYTEM ID: _____
SPECIAL INSTRUCTIONS: _____

Sample ID	Source	Collected Date/Time/By			WQD Rec. Date/By		LocationNotes\Comments	TAT	SUB_546
2079603-01	LMER_E_00_LIM	12/17/20	0926	RMJOHNSON	12/17/20	PHOANG		21 DAYS	1
2079604-01	LMER_N_00_LIM	12/17/20	0932	RMJOHNSON	12/17/20	PHOANG		21 DAYS	1

↑ indicates the last digit(s) of container ID

RELINQUISHED FROM: (Print Name/Sign) /	DATE/TIME: 12/17/2020 @1500	RELINQUISHED TO: (Print Name/Sign) /	DATE/TIME:	Comments: 470440DW: (SUB_546/LMER_E/LMER_N) : Please see subsequent pages for analyte details.
SUB LAB RECEIVED BY: (Print Name/Sign) /	DATE/TIME: 12-18-20 1058	SEND REPORT TO:	AGENCY:	

San Francisco Water Power Sewer
Services of the San Francisco Public Utilities Commission

SAN FRANCISCO PUBLIC UTILITIES COMMISSION

SUB LABORATORY CHAIN OF CUSTODY RECORD

Water Quality Division
1000 El Camino Real
Millbrae, CA 94030
Tel: (650) 872-5945
Fax: (650) 952-3407

Out Source#: 4534 **Ship To : SUB_LAB** **Ship Date: 12/17/2020** **Ship Via: FedEx** **Tracking#: 121103155620**

FOR LAB USE ONLY

Sample ID	Source	
2079603-01	LMER_E_00_LIM	
Container ID (Rep of 1)		**Collect Method**
2079603-01-01		4°C
Analysis: SUB 546 Total Microcystins	**Method:** EPA 546	

Sample ID	Source	
2079604-01	LMER_N_00_LIM	
Container ID (Rep of 1)		**Collect Method**
2079604-01-01		4°C
Analysis: SUB 546 Total Microcystins	**Method:** EPA 546	

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UCMR4 INTERNAL CHAIN OF CUSTODY RECORD

EEA Folder Number: 909317

SAMPLES RECEIVED WITHIN 48 HOURS OF COLLECTION TIME? ☐

FedEx TRK# 0221 1211 0315 5620

TYPE OF ICE: Real ____ Synthetic ✓ No Ice ____

CONDITION OF ICE: Frozen ✓ Partially Frozen ____ Thawed ____ N/A ____

CONDITION OF SAMPLE: Frozen ____ Partially Frozen ____ Not Frozen ✓

METHOD OF SHIPMENT: Pick-Up / Walk-In / FedEx / UPS / DHL / Area Fast / Top Line / Other: ____

Compliance Acceptance Criteria:

If sample(s) received:

1) on the same day as the collection day; sample temperature may be ≥10°C with evidence of cooling
2) within the first 48 hours of collection time; sample temperature must be ≤10°C (except 200.8) and not frozen (except 546), and
3) after 48 hours of collection time; sample temperature must be ≤ 6°C (except 200.8) and not frozen (except 546), and not rejected if refrigerated between collection and shipment documented on UCMR4 COC as "yes."

Note: A minimum of 1 bottle for every analytical method must be checked for temperature. If the bottle that is checked does not meet the temperature criterion, then the sample bottle is rejected. The temperature of the other samples collected for that method is checked to determined if a valid sample was received.

Facility ID & Unique Field Sample ID 2079603-01-01

IR Gun ID = 649A

Method	Container ID	Observation (°C)	Correction Factor (°C)	Final (°C)
UCMR4 2008	1	+		=
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	3	+		=
UCMR4 541	1	+		=
	2	+		=
	3	+		=
UCMR4 552.3	1	+		=
TOC (5310C)	1	+		=
Bromide (300.0)	1	+		=

Method	Container ID	Observation (°C)	Correction Factor (°C)	Final (°C)
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	3	+		=
UCMR4 545	1	+		=
UCMR4 546	1	3.0 +	-0.2 =	2.8

Note: If samples are out of temperature range, let the ASMs know. ASMs will determine whether to proceed with analysis or not.

	SIGNATURE	PRINT NAME	COMPANY/TITLE	DATE	TIME
RECEIVED BY:			Eurofins Eaton Analytical	12-18-20	1059

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Tel: (626) 386-1100
Fax: (866) 988-3757
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Laboratory Comments

Report: 909317
Project: 470440-DW1
Group: Microcystins-Lake Merced

San Francisco PUC
Megan Tran
1000 El Camino Real
Millbrae, CA 94030

Revised report to edit dilution factors. UMVN, 01/05/2021

The Comments Report may be blank if there are no comments for this report.

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Laboratory Hits

Report: 909317
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Group: Microcystins-Lake Merced

San Francisco PUC
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1000 El Camino Real
Millbrae, CA 94030

Samples Received on:
12/18/2020 1058

Analyzed	Analyte	Sample ID	Result	Federal MCL	Units	MRL
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12/22/2020 14:27	Total Microcystins		19		ug/L	3.0
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12/22/2020 14:27	Total Microcystins		24		ug/L	3.0

SUMMARY OF POSITIVE DATA ONLY

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Tel: (626) 386-1100
Fax: (866) 988-3757
1 800 566 LABS (1 800 566 5227)

Laboratory Data

Report: 909317
Project: 470440-DW1
Group: Microcystins-Lake Merced

San Francisco PUC
Megan Tran
1000 El Camino Real
Millbrae, CA 94030

Samples Received on:
12/18/2020 1058

Prepped	Analyzed	Prep Batch	Analytical Batch	Method	Analyte	Result	Units	MRL	Dilution
LMER_E_00_LIM (202012180093)							**Sampled on 12/17/2020 0926**		
Variable ID: 2079603-01									
EPA 546 - UCMR4 546									
12/18/20	12/22/20 14:27	1295215	1295128	(EPA 546)	Total Microcystins	19	ug/L	3.0	10
12/18/20	12/22/20 14:27	1295215	1295128	(EPA 546)	%CV	1.10	%	110	1
LMER_N_00_LIM (202012180094)							**Sampled on 12/17/2020 0932**		
Variable ID: 2079604-01									
EPA 546 - UCMR4 546									
12/18/20	12/22/20 14:27	1295215	1295128	(EPA 546)	Total Microcystins	24	ug/L	3.0	10
12/18/20	12/22/20 14:27	1295215	1295128	(EPA 546)	%CV	2.00	%	200	1

Rounding on totals after summation.
(c) - indicates calculated results. Analysis is a calculated result. Reported results are not rounded until the final step before reporting. Therefore methods that use a test result with further calculation may have slight differences in final result than the component analyses.

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Laboratory QC Summary

Report: 909317
Project: 470440-DW1
Group: Microcystins-Lake Merced

San Francisco PUC

UCMR4 546

Prep Batch: 1295215 **Analytical Batch: 1295128** **Analysis Date: 12/22/2020**

202012180093	LMER_E_00_LIM	Analyzed by: M8OF
202012180094	LMER_N_00_LIM	Analyzed by: M8OF

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Report: 909317
Project: 470440-DW1
Group: Microcystins-Lake Merced

San Francisco PUC

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield(%)	Limits (%)	RPD Limit(%)	RPD%
UCMR4 546 by EPA 546									
Analytical Batch: 1295128						**Analysis Date: 12/22/2020**			
LCS1	%CV			1.90	%				
LCS2	%CV			ND	%				
MBLK	%CV			<15	%				
MBLK	%CV			<15	%				
MRL_CHK	%CV			ND	%				
MS2_202012180093	%CV	1.10		ND	%				
MSD2_202012180093	%CV	1.10		ND	%				
LCS1	Total Microcystins		0.5	0.502	ug/L	100	(60-140)		
LCS2	Total Microcystins		0.5	0.443	ug/L	89	(60-140)		
MBLK	Total Microcystins			<0.15	ug/L				
MBLK	Total Microcystins			<0.15	ug/L				
MRL_CHK	Total Microcystins		0.3	0.303	ug/L	101	(50-150)		
MS2_202012180093	Total Microcystins	19	5	28.9	ug/L	**1890**	(60-140)		
MSD2_202012180093	Total Microcystins	19	5	35.5	ug/L	**3210**	(60-140)	40	21

Spike recovery is already corrected for native results.
Spikes which exceed Limits and Method Blanks with positive results are highlighted by Underlining.
Criteria for MS and Dup are advisory only, batch control is based on LCS. Criteria for duplicates are advisory only, unless otherwise specified in the method.
RPD not calculated for LCS2 when different a concentration than LCS1 is used.
RPD not calculated for Duplicates when the result is not five times the MRL (Minimum Reporting Level).
(S) - Indicates surrogate compound.
(I) - Indicates internal standard compound.

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MICROCYSTINS ADDA - Assay Calibration Report

Assay Information

Assay Name: MICROCYSTINS ADDA
Version: 2
Temperature: Room Temperature
Last Modified By: Security disabled
Units: µg/L
Assay Description: PN 520011
Assay Substances: Controls:
MCT LRB (0.000-0.300)
MCT QCS (0.5625-0.9375)
Standards:
MCT Std 0, Concentration = 0.000, Minimum number to use: 2
MCT Std 1, Concentration = 0.150, Minimum number to use: 2
MCT Std 2, Concentration = 0.400, Minimum number to use: 2
MCT Std 3, Concentration = 1.000, Minimum number to use: 2
MCT Std 4, Concentration = 2.000, Minimum number to use: 2
MCT Std 5, Concentration = 5.000, Minimum number to use: 2
Curve valid interval: 1 days 0 hours
Axis Mode: Y = Abs, X = Log(Conc)

Assay Mode: 4-Parameter Logistic Weight by:None
Well Type: Flat bottom
Last Modified On: 7/25/2019 12:53:38 PM
Normal: 0.300 - 5.000
# of decimals: 3
Kit Lot Number: 19K1761 Exp Feb 2021

Assay Calibration

Current Calibration Status: " **"**

Name	Absorbance	Concentration	Interpretation	Position
5/4/2020 1:20:47 PM				
MCT Std 0	1.807 Abs	0.000 µg/L	R^2=0.99655, 100.781 %Ab	RK1:23->A01@2
MCT Std 0	1.778 Abs [1.7925] {1.1 CV	0.010 µg/L [0.005] {141.4 C	R^2=0.99655, 99.163 %Abs	RK1:23->B01@2
MCT Std 1	1.587 Abs	0.115 µg/L	R^2=0.99655, 88.511 %Abs	RK1:24->C01@2
MCT Std 1	1.487 Abs [1.5370] {4.6 CV	0.181 µg/L [0.148] {31.5 C\	R^2=0.99655, 82.934 %Abs	RK1:24->D01@2
MCT Std 2	1.259 Abs	0.374 µg/L	R^2=0.99655, 70.218 %Abs	RK1:25->E01@2
MCT Std 2	1.232 Abs [1.2455] {1.5 CV	0.403 µg/L [0.389] {5.3 CV}	R^2=0.99655, 68.712 %Abs	RK1:25->F01@3
MCT Std 3	0.818 Abs	1.173 µg/L	R^2=0.99655, 45.622 %Abs	RK1:26->G01@3
MCT Std 3	0.850 Abs [0.8340] {2.7 CV	1.076 µg/L [1.125] {6.1 CV}	R^2=0.99655, 47.407 %Abs	RK1:26->H01@3
MCT Std 4	0.697 Abs	1.672 µg/L	R^2=0.99655, 38.873 %Abs	RK1:27->A02@2
MCT Std 4	0.688 Abs [0.6925] {0.9 CV	1.721 µg/L [1.697] {2.0 CV}	R^2=0.99655, 38.371 %Abs	RK1:27->B02@2
MCT Std 5	0.447 Abs	4.865 µg/L	R^2=0.99655, 24.930 %Abs	RK1:28->C02@2
MCT Std 5	0.403 Abs [0.4250] {7.3 CV	> 5.000 µg/L [4.865]	22.476 %Abs	RK1:28->D02@2
++++++++++++++++++++++++++++++++	++++++++++++++++++++++	++++++++++++++++++++++	++++++++++++++++++++++	++++++++++++++++++++++++++
5/4/2020 1:20:47 PM				
MCT LRB (0.000-0.300)	1.710 Abs	0.045 µg/L	95.371 %Abs	RK1:10->E02@2
MCT LRB (0.000-0.300)	1.679 Abs [1.6945] {1.3 CV	0.062 µg/L [0.054] {22.5 C\	93.642 %Abs [94.506 %Abs	RK1:10->F02@3
MCT QCS (0.5625-0.9375)	1.021 Abs	0.692 µg/L	56.944 %Abs	RK1:29->G02@3
MCT QCS (0.5625-0.9375)	0.981 Abs [1.0010] {2.8 CV	0.766 µg/L [0.729] {7.2 CV}	54.713 %Abs [55.828 %Abs	RK1:29->H02@3
**********	**********	**********	**********	**********
Statistic				
MCT Std 0 [MEAN]	1.7925	0.0050		
MCT Std 0 [SD]	0.0205	0.0071		
MCT Std 0 [%CV]	1.1440	141.4214		
MCT Std 1 [MEAN]	1.5370	0.1480		
MCT Std 1 [SD]	0.0707	0.0467		
MCT Std 1 [%CV]	4.6006	31.5331		
MCT Std 1 [%DIFF]		-1.3333		
MCT Std 2 [MEAN]	1.2455	0.3885		
MCT Std 2 [SD]	0.0191	0.0205		
MCT Std 2 [%CV]	1.5329	5.2783		
MCT Std 2 [%DIFF]		-2.8750		
MCT Std 3 [MEAN]	0.8340	1.1245		
MCT Std 3 [SD]	0.0226	0.0686		
MCT Std 3 [%CV]	2.7131	6.0995		
MCT Std 3 [%DIFF]		12.4500		
MCT Std 4 [MEAN]	0.6925	1.6965		
MCT Std 4 [SD]	0.0064	0.0346		

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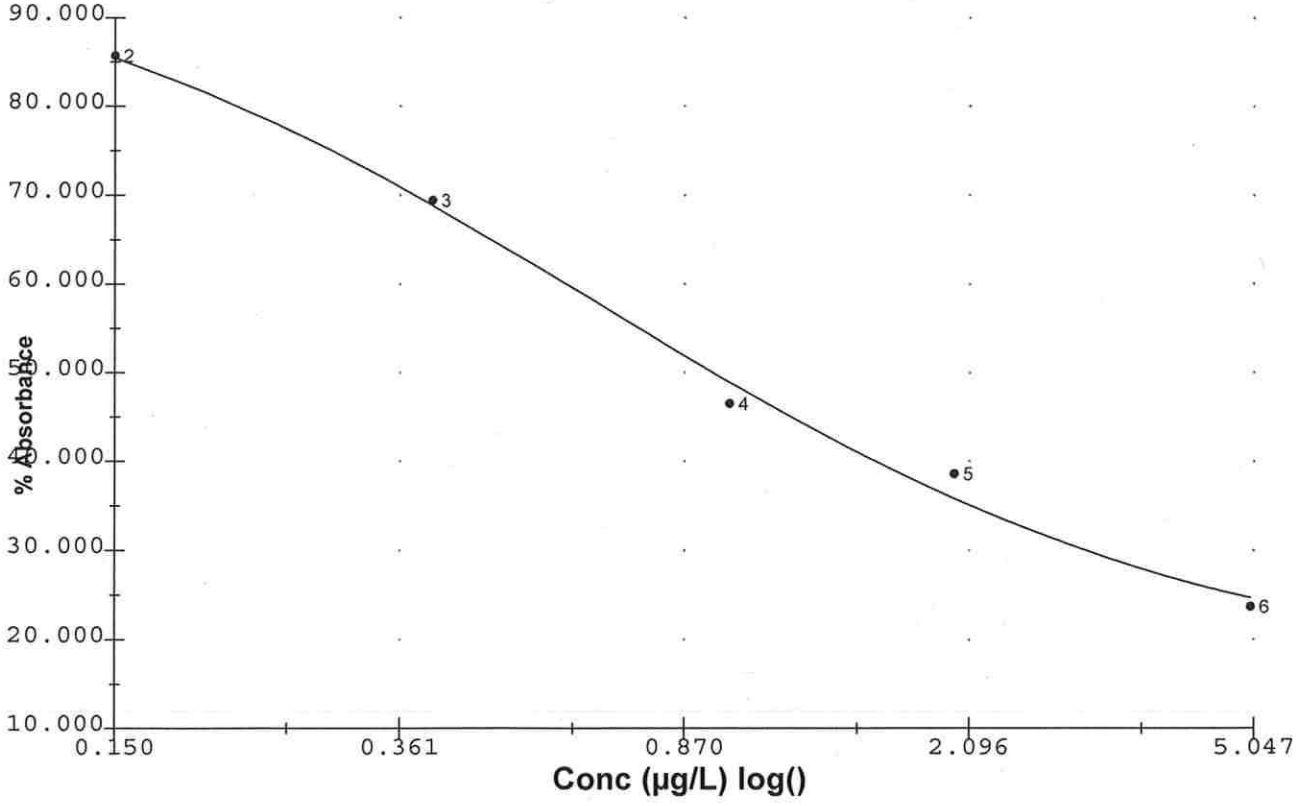
MICROCYSTINS ADDA - Assay Calibration Report

Name	Absorbance	Concentration	Interpretation	Position
MCT Std 4 [%CV]	0.9190	2.0423		
MCT Std 4 [%DIFF]		-15.1750		
MCT Std 5 [MEAN]	0.4250			
MCT Std 5 [SD]	0.0311			
MCT Std 5 [%CV]	7.3206			
MCT LRB (0.000-0.300) [MEAN]	1.6945	0.0535		
MCT LRB (0.000-0.300) [SD]	0.0219	0.0120		
MCT LRB (0.000-0.300) [%CV]	1.2936	22.4688		
MCT QCS (0.5625-0.9375) [MEAN]	1.0010	0.7290		
MCT QCS (0.5625-0.9375) [SD]	0.0283	0.0523		
MCT QCS (0.5625-0.9375) [%CV]	2.8256	7.1778		

Assay Curve

y = (A-D)/(1+(x/C)^B) + D
Weight: NONE
A = 1.7961
B = 1.0482
C = 0.66346
D = 0.27988
R2 coef = 0.99655
50% = 0.951



MICROCYSTINS ADDA - Assay Calibration Report

Assay Information

Assay Name: MICROCYSTINS ADDA
Version: 2
Temperature: Room Temperature
Last Modified By: Security disabled
Units: µg/L
Assay Description: PN 520011
Assay Substances: Controls:
MCT LRB (0.000-0.300)
MCT QCS (0.5625-0.9375)
Standards:
MCT Std 0, Concentration = 0.000, Minimum number to use: 2
MCT Std 1, Concentration = 0.150, Minimum number to use: 2
MCT Std 2, Concentration = 0.400, Minimum number to use: 2
MCT Std 3, Concentration = 1.000, Minimum number to use: 2
MCT Std 4, Concentration = 2.000, Minimum number to use: 2
MCT Std 5, Concentration = 5.000, Minimum number to use: 2
Curve valid interval: 1 days 0 hours
Axis Mode: Y = Abs, X = Log(Conc)

Assay Mode: 4-Parameter Logistic Weight by:None
Well Type: Flat bottom
Last Modified On: 7/25/2019 12:53:38 PM
Normal: 0.300 - 5.000
# of decimals: 3
Kit Lot Number: 19K1761 EXP FEB 2021

Assay Calibration

Current Calibration Status: " **"**

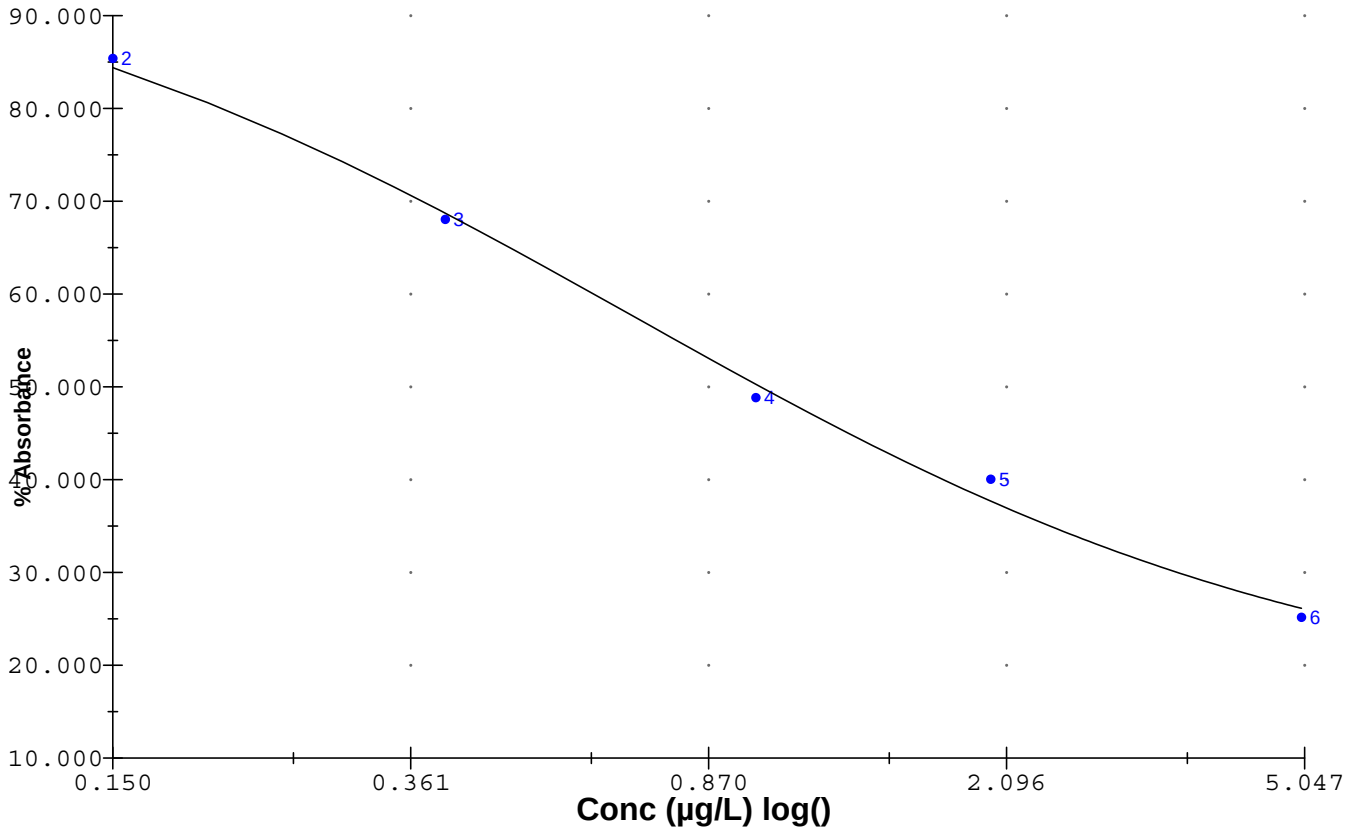
Name	Absorbance	Concentration	Interpretation	Position
5/4/2020 4:30:44 PM				
MCT Std 0	1.794 Abs	0.000 µg/L	R^2=0.99749, 101.070 %Abs	RK1:23->A01@2
MCT Std 0	1.756 Abs [1.7750] {1.5 CV}	0.010 µg/L [0.005] {141.4 CV	R^2=0.99749, 98.930 %Abs	RK1:23->B01@2
MCT Std 1	1.564 Abs	0.108 µg/L	R^2=0.99749, 88.113 %Abs	RK1:24->C01@2
MCT Std 1	1.467 Abs [1.5155] {4.5 CV}	0.172 µg/L [0.140] {32.3 CV}	R^2=0.99749, 82.648 %Abs	RK1:24->D01@2
MCT Std 2	1.259 Abs	0.356 µg/L	R^2=0.99749, 70.930 %Abs	RK1:25->E01@2
MCT Std 2	1.157 Abs [1.2080] {6.0 CV}	0.480 µg/L [0.418] {21.0 CV}	R^2=0.99749, 65.183 %Abs	RK1:25->F01@3
MCT Std 3	0.869 Abs	1.069 µg/L	R^2=0.99749, 48.958 %Abs	RK1:26->G01@3
MCT Std 3	0.865 Abs [0.8670] {0.3 CV}	1.082 µg/L [1.076] {0.9 CV}	R^2=0.99749, 48.732 %Abs	RK1:26->H01@3
MCT Std 4	0.694 Abs	1.835 µg/L	R^2=0.99749, 39.099 %Abs	RK1:27->A02@2
MCT Std 4	0.728 Abs [0.7110] {3.4 CV}	1.639 µg/L [1.737] {8.0 CV}	R^2=0.99749, 41.014 %Abs	RK1:27->B02@2
MCT Std 5	0.450 Abs	> 5.000 µg/L	25.352 %Abs	RK1:28->C02@2
MCT Std 5	0.444 Abs [0.4470] {0.9 CV}	> 5.000 µg/L	25.014 %Abs	RK1:28->D02@2
5/4/2020 4:30:44 PM				
MCT LRB (0.000-0.300)	1.676 Abs	0.046 µg/L	94.423 %Abs	RK1:10->E02@2
MCT LRB (0.000-0.300)	1.707 Abs [1.6915] {1.3 CV}	0.031 µg/L [0.038] {27.5 CV}	96.169 %Abs [95.296 %Abs]	RK1:10->F02@3
MCT QCS (0.5625-0.9375)	1.048 Abs	0.650 µg/L	59.042 %Abs	RK1:29->G02@3
MCT QCS (0.5625-0.9375)	1.053 Abs [1.0505] {0.3 CV}	0.641 µg/L [0.645] {1.0 CV}	59.324 %Abs [59.183 %Abs]	RK1:29->H02@3
Statistic				
MCT Std 0 [MEAN]	1.7750	0.0050		
MCT Std 0 [SD]	0.0269	0.0071		
MCT Std 0 [%CV]	1.5138	141.4214		
MCT Std 1 [MEAN]	1.5155	0.1400		
MCT Std 1 [SD]	0.0686	0.0453		
MCT Std 1 [%CV]	4.5259	32.3249		
MCT Std 1 [%DIFF]		-6.6667		
MCT Std 2 [MEAN]	1.2080	0.4180		
MCT Std 2 [SD]	0.0721	0.0877		
MCT Std 2 [%CV]	5.9706	20.9764		
MCT Std 2 [%DIFF]		4.5000		
MCT Std 3 [MEAN]	0.8670	1.0755		
MCT Std 3 [SD]	0.0028	0.0092		
MCT Std 3 [%CV]	0.3262	0.8547		
MCT Std 3 [%DIFF]		7.5500		
MCT Std 4 [MEAN]	0.7110	1.7370		
MCT Std 4 [SD]	0.0240	0.1386		
MCT Std 4 [%CV]	3.3814	7.9789		
MCT Std 4 [%DIFF]		-13.1500		

MICROCYSTINS ADDA - Assay Calibration Report

Name	Absorbance	Concentration	Interpretation	Position
MCT Std 5 [MEAN]	0.4470			
MCT Std 5 [SD]	0.0042			
MCT Std 5 [%CV]	0.9491			
MCT LRB (0.000-0.300) [MEAN]	1.6915	0.0385		
MCT LRB (0.000-0.300) [SD]	0.0219	0.0106		
MCT LRB (0.000-0.300) [%CV]	1.2959	27.5496		
MCT QCS (0.5625-0.9375) [MEAN]	1.0505	0.6455		
MCT QCS (0.5625-0.9375) [SD]	0.0035	0.0064		
MCT QCS (0.5625-0.9375) [%CV]	0.3366	0.9859		

Assay Curve

y = (A-D)/(1+(x/C)^B) + D
Weight: NONE
A = 1.7804
B = 0.96067
C = 0.69572
D = 0.26602
R2 coef = 0.99749
50% = 1.014



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Test Report (by Request)

Test Information

Request: 5/4/2020 4:32:28 PM
Date: 5/4/2020

Name/ID	Assay	Absorbance	Concentration	Interpretation	Reference	Lot #
2072412-01 lm e	MICROCYSTINS ADDA	0.176 Abs	> 5.000 µg/L	9.915 %Abs, Out(LR)	0.300 - 5.000	19K1761 EX
2072412-01 lm e	MICROCYSTINS ADDA	0.194 Abs [0.1850] {6.9 CV}	> 5.000 µg/L	10.930 %Abs, Out(LR	0.300 - 5.000	19K1761 EX
LM E 10X	MICROCYSTINS ADDA	0.654 Abs	2.110 µg/L	36.845 %Abs	0.300 - 5.000	19K1761 EX
LM E 10X	MICROCYSTINS ADDA	0.639 Abs [0.6465] {1.6 CV}	2.229 µg/L [2.169] {3	36.000 %Abs [36.423	0.300 - 5.000	19K1761 EX
LM E 15X	MICROCYSTINS ADDA	0.836 Abs	1.177 µg/L	47.099 %Abs	0.300 - 5.000	19K1761 EX
LM E 15X	MICROCYSTINS ADDA	0.842 Abs [0.8390] {0.5 CV}	1.156 µg/L [1.167] {1	47.437 %Abs [47.268	0.300 - 5.000	19K1761 EX
2072414-01 lm n	MICROCYSTINS ADDA	0.162 Abs	> 5.000 µg/L	9.127 %Abs, Out(LR)	0.300 - 5.000	19K1761 EX
2072414-01 lm n	MICROCYSTINS ADDA	0.121 Abs [0.1415] {20.5 CV	> 5.000 µg/L	6.817 %Abs, Out(LR)	0.300 - 5.000	19K1761 EX
LM N 10X	MICROCYSTINS ADDA	0.520 Abs	3.686 µg/L	29.296 %Abs	0.300 - 5.000	19K1761 EX
LM N 10X	MICROCYSTINS ADDA	0.527 Abs [0.5235] {0.9 CV}	3.563 µg/L [3.625] {2	29.690 %Abs [29.493	0.300 - 5.000	19K1761 EX
LM N 15X	MICROCYSTINS ADDA	0.669 Abs	2.000 µg/L	37.690 %Abs	0.300 - 5.000	19K1761 EX
LM N 15X	MICROCYSTINS ADDA	0.682 Abs [0.6755] {1.4 CV}	1.912 µg/L [1.956] {3	38.423 %Abs [38.056	0.300 - 5.000	19K1761 EX
2072416-01 lm r	MICROCYSTINS ADDA	0.157 Abs	> 5.000 µg/L	8.845 %Abs, Out(LR)	0.300 - 5.000	19K1761 EX
2072416-01 lm r	MICROCYSTINS ADDA	0.174 Abs [0.1655] {7.3 CV}	> 5.000 µg/L	9.803 %Abs, Out(LR)	0.300 - 5.000	19K1761 EX
LM R 10X	MICROCYSTINS ADDA	0.590 Abs	2.696 µg/L	33.239 %Abs	0.300 - 5.000	19K1761 EX
LM R 10X	MICROCYSTINS ADDA	0.575 Abs [0.5825] {1.8 CV}	2.870 µg/L [2.783] {4	32.394 %Abs [32.817	0.300 - 5.000	19K1761 EX
LM R 15X	MICROCYSTINS ADDA	0.790 Abs	1.350 µg/L	44.507 %Abs	0.300 - 5.000	19K1761 EX
LM R 15X	MICROCYSTINS ADDA	0.803 Abs [0.7965] {1.2 CV}	1.298 µg/L [1.324] {2	45.239 %Abs [44.873	0.300 - 5.000	19K1761 EX
2072417-01 lm s	MICROCYSTINS ADDA	0.138 Abs	> 5.000 µg/L	7.775 %Abs, Out(LR)	0.300 - 5.000	19K1761 EX
2072417-01 lm s	MICROCYSTINS ADDA	0.126 Abs [0.1320] {6.4 CV}	> 5.000 µg/L	7.099 %Abs, Out(LR)	0.300 - 5.000	19K1761 EX
LM S 1:10	MICROCYSTINS ADDA	0.468 Abs	4.880 µg/L	26.366 %Abs	0.300 - 5.000	19K1761 EX
LM S 1:10	MICROCYSTINS ADDA	0.484 Abs [0.4760] {2.4 CV}	4.451 µg/L [4.666] {6	27.268 %Abs [26.817	0.300 - 5.000	19K1761 EX
LM S 1:15	MICROCYSTINS ADDA	0.634 Abs	2.271 µg/L	35.718 %Abs	0.300 - 5.000	19K1761 EX
LM S 1:15	MICROCYSTINS ADDA	0.615 Abs [0.6245] {2.2 CV}	2.441 µg/L [2.356] {5	34.648 %Abs [35.183	0.300 - 5.000	19K1761 EX

* A - Abs > 3; IA - Initial Abs; DA - Delta Abs; SD - SD of Abs; LR - Linear Range; [...] - Mean result of duplicate tests
* Generated by software version (6.4.1.1073/1089/1.00/0.95) 5/4/2020 4:33:20 PM