GOLETA WATER DISTRICT

Trihalomethane Reduction Program

Plan for Proposed Full Scale Plant Test of Jenfitch JC9450

Abstract

This document details the proposed testing procedures and sampling plan to be undertaken by Goleta Water District for a full scale plant test of a proprietary chemical, Jenfitch JC9450, at the Corona Del Mar Water Treatment Plant. JC9450 will be tested for effectiveness as an alternative to sodium hypochlorite for pre-oxidation and for effectiveness in reducing trihalomethane formation. Jar testing performed by the Goleta Water District in October 2017 showed substantial reductions in trihalomethane levels and formation potential.

December 6, 2017

Table of Contents

List of Figures

List of Tables

Executive Summary

The Goleta Water District (GWD) is currently in compliance with all State and Federal drinking water quality standards, including the four-quarter Locational Running Annual Average (LRAA) total trihalomethanes (TTHM) standard of 80 micrograms per liter (µg/L).

Water quality has been declining in Lake Cachuma, GWD's surface water supply, as a result of drought and wildfire impacts to its watershed. Increasing levels of organic matter are anticipated to exceed GWD's current treatment capabilities and persist at high levels into the foreseeable future. Accordingly, one of the District's top priorities is to maintain water quality, specifically to upgrade treatment to reduce organic matter and reduce the formation of THMs in the Corona Del Mar Water Treatment Plant (CDMWTP) treated water and in the distribution system.

This proposed plan serves to notify the California State Water Resources Control Board Division of Drinking Water of GWD's intent to perform a full scale plant test at CDMWTP of JC9450 as an alternative to sodium hypochlorite, with the goal of reducing THM formation. Manufactured by Jenfitch, LLC, JC9450 is a proprietary, NSF 61-approved water treatment chemical with properties similar to chlorine. Jenfitch NSF-approved products have been used for a number of water quality improvements by other water treatment plants, including Stenner Surface Water Treatment Plant (SSWTP) in San Luis Obispo, California and the City of Martinez Water Treatment Plant in Martinez, California.

Jar testing of JC9450 was performed by GWD staff in October 2017 to simulate CDMWTP treatment processes. GWD observed a 95% reduction of TTHM and a 21% reduction in the seven-day TTHM formation level in samples that were treated with a low dose of JC9450 as an oxidizing agent in lieu of sodium hypochlorite. Sodium hypochlorite was still used as the disinfectant.

Based on these promising results of the jar testing, GWD proposes a limited duration, low throughput, full scale plant test of JC9450. In addition to being NSF 61 approved, the JC9450 chemical has been used successfully at SSWTP and others plants with one adverse impacts reported: a turbidity increase at the filters, which was overcome by renewing the adsorption capacity of the filters. GWD is heeding the lesson of SSWTP's experience by proposing to super-chlorinate the filters in advance of the CDMWTP full scale test.

A preliminary full scale plant test of up to two weeks' duration is tentatively scheduled for January 2018. The test will allow GWD to evaluate the efficacy of JC9450 to reduce THM levels and formation potential and to monitor impacts to CDMWTP processes. During this test, GWD expects to operate CDMWTP at approximately three million gallons per day (MGD) throughput. GWD also anticipates meeting the balance of customer demand in the distribution system via groundwater production.

Full scale plant testing will be conducted with extensive process monitoring, cooperation from the chemical manufacturer, and routine plant sampling and monitoring by GWD Operators. If the initial two-week test shows promising results and no adverse impacts, the District expects to prepare for an additional full scale testing of up to three months to allow for a more comprehensive testing while primarily on surface water. During this longer full scale plant test, groundwater production may be

suspended and water quality changes will be monitored within CDMWTP and throughout the distribution over a longer period to evaluate the suitability of JC9450 as a long term treatment solution for reducing THM formation.

Purpose

This plan serves to notify the California State Water Resources Control Board Division of Drinking Water of Goleta Water District's (GWD) intent to perform a full scale plant test at Corona Del Mar Water Treatment Plant (CDMWTP) of an NSF 61-approved chemical, JC9450 from Jenfitch, LLC, to determine its efficacy for reducing total organic carbon (TOC) and trihalomethane (THM) formation. This plan also serves to detail GWD's testing approach, including an overview of the plant processes, a description of plant preparations for testing, a description of how the chemical will be introduced, a sampling plan, and safety measures.

Background

The District is currently in compliance with all State and Federal drinking water quality standards.

Six years of drought and two major wildfires in the Lake Cachuma watershed in the last 10 years have introduced large amounts of organic matter into Lake Cachuma via stormwater runoff. As a result, an increase of approximately 40% of total organic carbon (TOC) levels was measured, and further increases above the current level of 5.4 milligrams per liter (mg/L) are expected. Following the July 2017 Whittier fire in the immediate vicinity of Lake Cachuma, upcoming winter storms are expected to deliver even more organic matter to the lake when its steep watershed slopes experience runoff and erosion during the rainy seasons this winter and beyond. Additionally, fluctuation in lake levels before and during the recent drought promoted vegetation growth and decay of submerged vegetation, which is believed to have further increased the level of organic matter in the lake.

The elevated levels of organic matter are anticipated to exceed CDMWTP's capabilities for removal by existing treatment processes. As sodium hypochlorite is applied as a pre-oxidation agent and as disinfectant at CDMWTP, the reaction between chlorine and organic matter in the water forms THMs and other disinfection byproducts. The increased organic levels are expected to result in increased THM levels in CDMWTP treated water and throughout the distribution system.

In March 2017, in recognition of changing water quality conditions at Lake Cachuma, the GWD identified maintaining water quality as its top priority when the Board of Directors adopted an amendment to the 2015-2020 Infrastructure Improvement Plan.

THM Reduction Program

To help maintain water quality specific to THMs, GWD developed a THM reduction plan that includes immediate operational modifications that have already been implemented and short, intermediate and long term measures that include testing a range of treatment approaches. To reduce THMs in the short term, GWD is increasing its reliance on groundwater, which contains little to no TOC and therefore does not pose the same THM formation challenge as surface water from Lake Cachuma. Still, sufficient groundwater resources and production capacity do not exist to meet peak seasonal customer demand or to overcome Lake Cachuma water quality changes that are expected to persist for many years. Therefore, the plan's intermediate and long term measures include expanded treatment capacity at CDMWTP and/or in the distribution system.

GWD progress to date toward the intermediate and long term measures includes GWD having already performed jar testing, bench-scale testing, and/or pilot testing of ten different technologies, including jar testing of JC9450 manufactured by Jenfitch, LLC. GWD anticipates amending its current operation once intermediate and long term treatment measures are identified, which may include using JC9450 as an oxidation agent.

JC9450 Jar Testing

Jar testing of JC9450 with and without powder activated carbon (PAC) demonstrated substantial THM and total THM formation reductions when a dosage of 5 mg/L JC9450 was used as an alternative to sodium hypochlorite in CDMWTP water samples treated to simulate CDMWTP treatment processes (refer to Tables 1 and 2). Dosages of 10 mg/L and higher also achieved reductions in THM formation, but removal rate decreased as the dosage was increased up to 25 mg/L.

Procedures

The two jar test machines at the CDMWTP laboratory were programmed to simulate the plant operating conditions and the treatment processes prior to final disinfection. A simplified plant process flow diagram is illustrated in Figure 1.

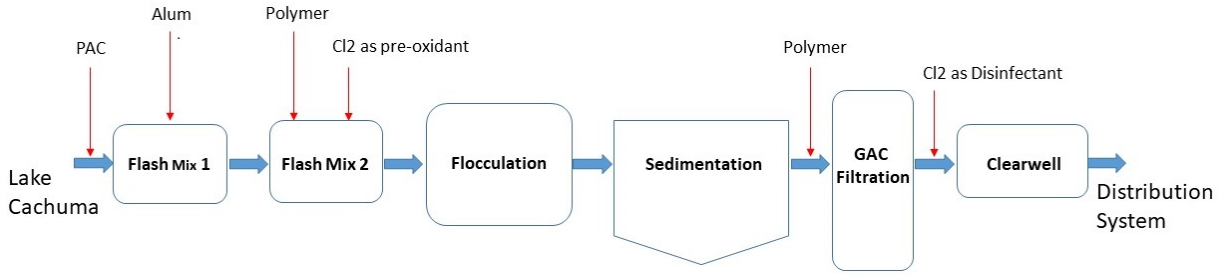


Figure 1. Process flow diagram for CDM

Water samples were collected from the plant influent prior to the jar tests and were tested at room temperature. The jar testing machines were programmed as follows:

1. Rapid mix of 60 seconds at 100 rpm
2. Slow mix of 30 minutes at 30 rpm
3. Settling period of 60 minutes

At the conclusion of jar tests, samples of the settled water were collected from individual jars and subsequently filtered using a PALL 0.45 micron (µm) membrane filter. The filtered samples that represented the plant filter effluent were handled according to the Standard Methods for the Examination of Water and Wastewater and shipped for futher analysis to Eurofins Eaton Analytical (EEA), the District's contract laboratory.

The samples were further treated to simulate water age in the distribution system. Filtered sample water was placed into 250 milliliter (mL) clear bottles without headspace and treated with 2.8 mg/L of

12.5 % sodium hypochlorite to simulate the plant disinfection process. Samples then were placed in a water bath and maintained at 27°C (80.6°F) for 168 hours to test for maximum TTHM formation. The water bath was covered to prevent light from penetrating into the sample bottles. The holding time of 168 hours (7 days) simulates the oldest water age estimated to occur anywhere in the distribution system. However, the typical water age in the outer reaches of the distribution system is estimated to be 144 hours (6 days).

Chemicals added to the jars included Powder Activated Carbon (PAC), alum, polymer (Magnafloc LT 7992), sodium hypochlorite, and JC9450 at dosages that corresponded to sequence and time delays between each chemical feed point during normal CDMWTP operating conditions. PAC slurry and dilute stock solutions of alum, polymer, and sodium hypochlorite were prepared using the District's undiluted chemical. Jar tests using JC9450 were completed by GWD staff on October 25, 2017.

JC9450 Jar Test Results

Of the five doses of JC9450 that were tested, 5 mg/L achieved the greatest reductions in THM levels and THM formation potential levels. Table 1 and Table 2 show the laboratory analytical results and TTHM concentrations that would be corresponding to the water quality in the clearwell prior to final disinfection and the maximum formation potential in the distribution system after 168 hours. The full laboratory report is included in Attachment 5.

Table 1 - JC9450 Jar Test Results without using PAC (October 25, 2017)

Sample Name	Sample ID #	JC9450 Dose mg/L	pH	Alkalinity mg CaCO3/L	Ca mg/L	Cl mg/L	Total Fe mg/L	Total Mn mg/L	TOC mg C/L	TTHM µg/L	Max TTHM Formation (168 hrs) µg/L
Control	17-1025-1	0	7.40	140	81	29	< 0.02	0.014	4.7	45	140
JC 1	17-1025-2	5	7.34	150	78	27	< 0.02	0.014	4.6	2.2	110
JC 2	17-1025-3	10	7.36	150	79	28	< 0.02	0.013	4.5	6.2	130
JC 3	17-1025-4	15	7.40	140	79	28	< 0.02	0.013	4.5	12	140
JC 4	17-1025-5	20	7.44	140	78	29	< 0.02	0.012	4.5	26	140
JC 5	17-1025-6	25	7.47	150	80	31	< 0.02	0.011	4.4	41	150

Note: all samples were also dosed with 40 mg/L alum, 1 mg/L polymer, 2.8 mg/L sodium hypochlorite.

Table 2 – JC9450 Jar Test Results using PAC (October 25, 2017)

Sample Name	Sample ID #	JC9450 Dose mg/L	pH	Alkalinity mg CaCO3/L	Ca mg/L	Cl mg/L	Total Fe mg/L	Total Mn mg/L	TOC mg C/L	TTHM µg/L	Max TTHM Formation (168 hrs) µg/L
Control	17-1025-7	0	7.48	150	79	29	<0.02	0.006	4.8	31	170
JCP 1	17-1025-8	5	7.52	150	79	27	<0.02	0.014	4.7	2.1	120
JCP 2	17-1025-9	10	7.48	150	79	28	<0.02	0.015	4.7	5.3	120
JCP 3	17-1025-10	15	7.42	150	83	28	0.057	0.016	4.6	7.2	120
JCP 4	17-1025-11	20	7.49	150	81	29	<0.02	0.014	4.6	9.8	130
JCP 5	17-1025-12	25	7.50	150	80	31	<0.02	0.011	4.6	15	130

Note: all samples were also dosed with 20 mg/L PAC, 40 mg/L alum, 1 mg/L polymer, 2.8 mg/L sodium hypochlorite.

The effectiveness of JC9450 as an oxidant was also evidenced by very low levels of total iron and manganese concentrations in the treated water. At the 5 mg/L dose of JC9450, maximum TTHM formation was reduced by 50 µg/L over the control sample.

Proposed Full Scale Testing

Full scale plant testing of JC9450 will allow GWD to obtain more detailed data on the efficacy of JC9450 to reduce TOC, THMs, and THM formation potential and on impacts to filter turbidity, algae and pathogen removal within the plant, corrosivity, and other potential disinfection byproducts. Further study of THM levels in the distribution system during a longer period full scale plant testing of JC9450 will be needed later to confirm the efficacy of JC9450 as a pre-oxidant alternative and a treatment chemical for THM control.

Objective

The objective of full scale testing of up to two weeks is to validate the THM reduction results measured during jar testing. While all other plant processes and operations are expected to remain unchanged, the goal is to gradually replace sodium hypochlorite with an initial dose of 5 mg/L of JC9450 in Flash Mix 2 at a flow rate of three (3) million gallons per day (MGD). Water quality through each treatment train process from flocculation through filtration will be monitored and the main focus will be given to monitoring the plant response by key water quality parameters, including pH, oxidation/reduction potential (ORP), filter turbidity, and TTHM reduction. JC9450 will initially be tested at 5 mg/L, but this dosage may be adjusted depending on the field data, daily plant inspections, and laboratory data.

Current Plant Process Overview

Figure 2 shows the current plant process, with the average chemical dosages currently being used. During full scale testing, GWD anticipates operating ~~operate~~ the treatment plant with a single train, isolating the other three trains from JC9450 testing. Therefore, full scale plant testing will be conducted by operating one flocculation basin, one sedimentation basin and three filters as shown in Figure 3. JC9450 will be added in place of sodium hypochlorite in Flash Mix 2.

Tank Type	Qty	Capacity Each (gals)
Surface Column	2	8,800
Flocculation	4	130,000
Sedimentation	4	930,000
Recarb Chamber	4	7,500
CEC	1	7,630
Filter	6	28,880
Clearwell	1	750,000

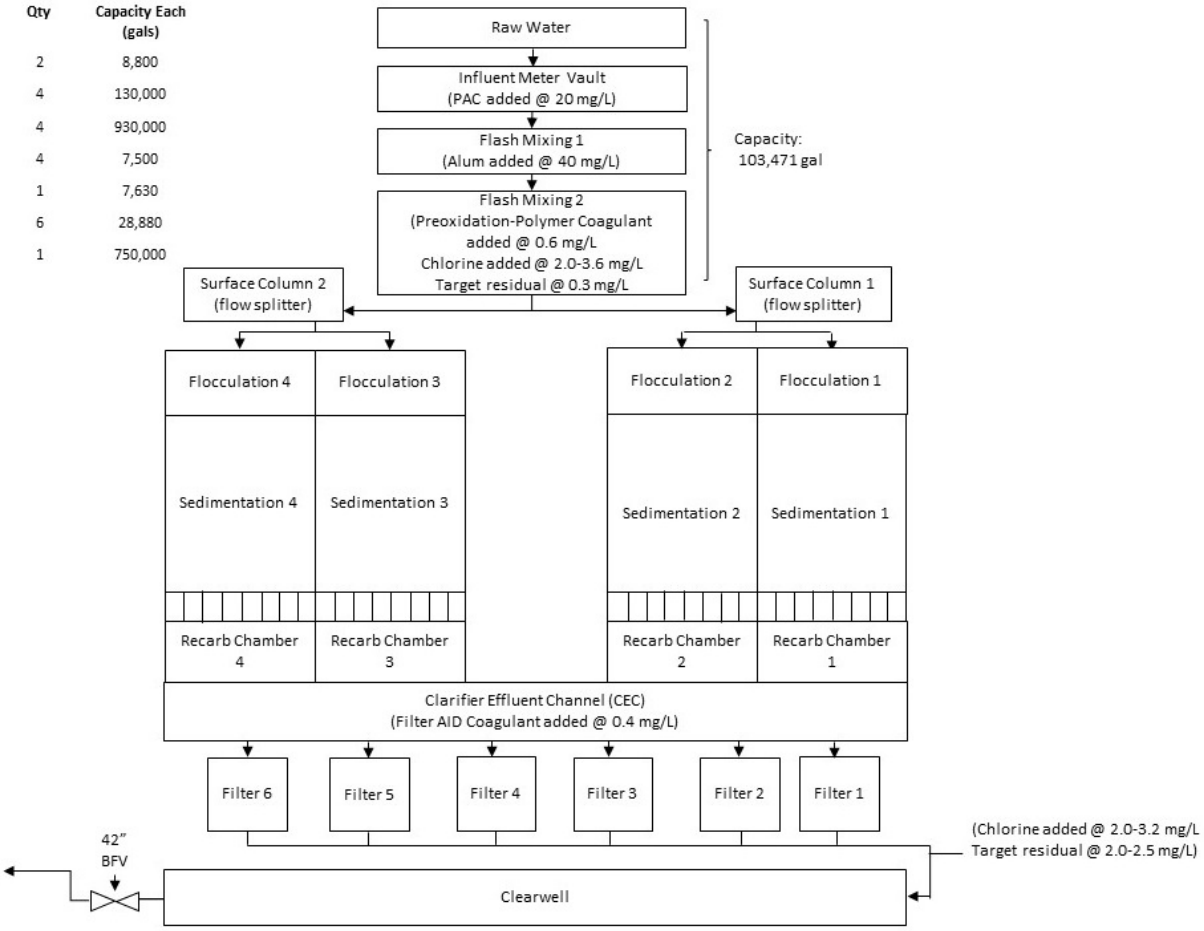


Figure 2 - Current Plant Process and Dosages

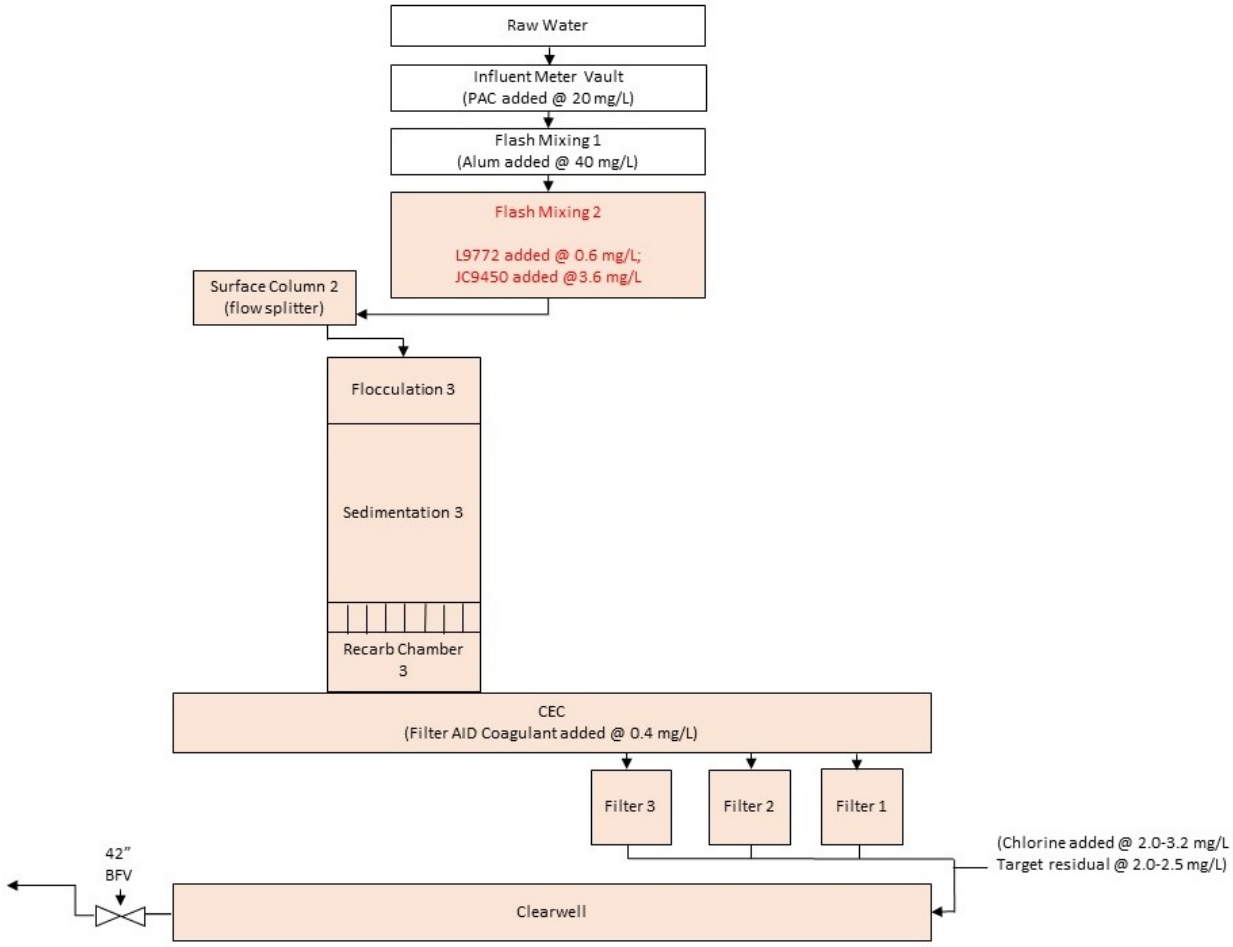


Figure 3 - Proposed Full Scale Testing of JC9450

Plant Preparation and Testing

Based on the lessons learned at SSWTP[1] and the manufacturer's recommendations, GWD will prepare the plant for the full scale testing to prevent potential operational upsets during the two-week testing period. The plant preparation and testing will include the following steps:

1. Clean flocculation and sedimentation basins. GWD will take out Treatment Train 3 (see Figure 3) out of service approximately two weeks prior to full scale testing. Operations staff will clean the flocculation and sedimentation basins (i.e., treatment train) to remove as much organic material and sludge from the basins as possible. The basins will be kept dry for approximately 10 days to prevent algae or other organic material built up that may cause upsets to downstream filters. Figure 6 shows a picture of cleaned treatment train.

[1] Based on telephone conversation with SSWTP staff, GWD understands that SSWTP experienced high filter turbidity during the full scale testing of JC9450. Introducing JC9450 to the plant without prior filter cleaning is thought to have caused an excessive load of algae and other organic matter from the upstream Actiflo® process on the filters, which, in turn, resulted increased turbidity.

2. Condition filters. Three filters will also be cleaned using chlorine at high concentrations (super chlorination) to remove as much organic materials and particles from the filters. Attachment 8 includes filter preparation procedures.

3. Set up a separate chemical storage and feed system for JC9450. JC9450 will be ordered in 250-gallon Intermediate Bulk Containers (IBC) and will be stored in accordance with the JC9450 Safety Data Sheet (see Attachment 2), which has similar handling and storage requirements as sodium hypochlorite. The chemical will be stored within an 860-gallon containment area to capture any run off, leaks or spills. The containment area is equipped with a drain to where the chemical can be neutralized and discharged to the sludge drying beds without environmental spills. Figure 4 shows the containment area, the existing poly tank shown in the picture will be removed and replaced with the IBC. The containment area will also house two new chemical metering pumps dedicated to JC9450.

   The IBC will be fitted with a quick connect valve to aid the changeover of chemical IBC's. A separate chemical feed system will be setup for manual operation. The metering pumps setpoint can be changed to allow adequate dose to accommodate any changes in the plant flow. The chemical metering pump setpoints must be changes following the tables in Attachment 7. Figure 5 shows the JC9450 chemical feed system set up that will consist of two Pulsafeeder pumps that discharge to a common header. The common header will be connected to an existing SHC feed mag meter that is linked to the plant SCADA. This will allow operators to monitor feed flow rates and set alarm limits for malfunctioning pumps or underfeeding situations (See Attachment 9). Alternatively, JC9450 can be fed into Flash Mix 2 through three new chemical feed lines. This will allow GWD to immediately switch back to chlorine if JC9450 does not perform as anticipated.

4. Establish baseline water quality parameters. As JC9450 does not leave a measurable residual in the water, the best way to monitor the presence of JC9450 is to track changes by monitoring ORP. A baseline including ORP will be developed prior to the addition of JC9450. ORP values will be monitored before and during JC9450 addition to the water using a mobile ORP monitor (MOM) that will allow for movement around the plant. MOM will be linked to the plant SCADA network, which will facilitate real time ORP trending. CDMWTP Operators will be able to track ORP changes and compare the values with historical data. Figure 7 shows the MOM setup and the various parts of the setup. Throughout the test duration, all routine plant monitoring activities will continue. This approach will provide daily records and immediate attention to any changes and actions necessary to stop or continue the test.

5. Introduce JC9450 gradually rather than suddenly. GWD will take precautionary measures to introduce JC9450 to Flash Mix 2. The treatment train prepared for the testing will be filled two days before the introduction of JC9450, during which the treatment train will be setup to run on one treatment train and three conditioned filters. Once the operating conditions are stabled, JC9450 will be slowly introduced. During the two-day transition, SHC dosing will be reduced by half dose and

JC9450 dose will be increased by half dose to finally switch over from SHC to 5 mg/L of JC945. This dose rate is similar to the dose that was used at SSWTP.

At the conclusion of the test, the JC9450 feed system will be shut off, and the chlorine feed will be resumed allowing the plant normal operations.

Figure 4 – Chemical Storage Area and Containment Area for JC9450

Figure 5 – Chemical Feed Skid

Figure 6 – A drained and cleaned treatment basin

Figure 7 – Mobile ORP Monitor (MOM)

JC9450 Chemical Introduction

The full scale plant test will commence slowly as a gradual changeover from sodium hypochlorite to JC9450 is achieved. To ensure a smooth transition from sodium hypochlorite to JC9450, CDMWTP Operators will fill treatment train #3 (see Figure 3) and deliver treatment chemicals to the water per the standard operations manual in the same manner that sodium hypochlorite has been historically delivered. If turbidity and ORP remain stable and if no visual signs of upset appear, flow will be transitioned from filters 4, 5, and 6 to pre-conditioned filters 1, 2, and 3. Once the treatment train is fed with JC9450 only, fine tuning the JC9450 dose will begin. During this time, the plant flow may be increased steadily up to 6 MGD or the maximum customer demand so that any potential changes to turbidity or ORP can be detected or visual signs of upset observed and addressed quickly. Increased clear well chlorine demand will be monitored which would indicate that the pre-oxidant is not fully oxidizing organic matter and minerals.

Full Scale Plant Testing Schedule

GWD has tentatively scheduled the full scale plant test to occur January 10 through January 24, 2018. Plant preparation is expected to start on December 28, 2017. Table 3 outlines the plant activities.

Table 3 – Plant Preparation and Full Scale Plant Testing Activities and Schedules

Step	Task	Description
Task 1. Empty Treatment Train In Service		
1.01	Day 1 - Commence filling the treatment train currently out of service	Fill the treatment train currently out of service, ensure that chlorine is being added to the treatment train as being filled.
1.02	Day 2 - Continue running on chlorine	Keep the treatment train being dosed with chlorine, and allow the 3 filters in service to match the pace of the treatment train.
1.03	Day 2 – Monitor treatment parameters	Treatment operator to monitor treatment parameters, making sure the treatment system is stable and ready to accept the chemical change. Chemical change not to happen until the treatment operator has verified stability.
Task 2. Full Scale Plant Test - JC9450 Chemical Introduction		
2.01	Day 3 – Reduce Chlorine Dose by 50%. Increase JC9450 Dose by 50%.	Treatment operator to reduce the chlorine dose at Flash Mix 2 by 50%, while commencing the feed of JC9450 to 50% of the recommended dose.
2.02	Day 4 – Reduce Chlorine dose to 0%, Increase JC9450 Dose to 100%	Treatment operator to reduce the chlorine dose to the head of the plant to 0%, while commencing the feed of JC9450 to 100% of the recommended dose.
2.03	Day 5 – Continue Dosing JC9450 at the recommended Dose	Treatment operator to monitor treatment parameters throughout the JC9450 testing period.
Task 3. Full Scale Plant Test - JC9450 Chemical Testing Completion		
3.01	Day 14 – Reduce the JC9450 slowly over the course of the day and return to Chlorine Dosing	JC9450 should be backed down slowly while simultaneously re-introducing chlorine into the treatment system. The following dosing percentages should be used as guidelines: Hour 1 - JC9450 80%, Chlorine 20% Hour 2 – JC9450 60%, Chlorine 40% Hour 3 – JC9450 40%, Chlorine 60% Hour 4 – JC9405 20%, Chlorine 80% Hour 5 – JC9450 0%, Chlorine 100%
3.02	Monitoring of Treatment Parameters	Monitoring of treatment parameters shall be undertaken by the treatment operator.

Water Quality Sampling Plan

This sampling plan has been developed specifically for the two-week testing period to detect any adverse water quality changes and/or improvements on the plant treatment processes. The TTHMs will be monitored as well as any visual changes in the settling of contaminants in the treatment train designated for JC9450 testing. In addition, testing will be performed to simulate TTHM formation potential in the distribution system at the end of the two week testing.

The sampling plan targets the main plant streams, including plant influent, plant effluent and intermittent streams as listed in Table 4. Additionally, water quality and process monitoring will continue to be monitored routinely per the plant operational plan during the two-week testing period. Specifically, the plant monitoring will focus on daily inspection of floc sizes in the flocculation basins and settlement of particles and flocs in the sedimentation basin, field measurement of key indicators such as pH, oxidation/ reduction potential (ORP), dissolved oxygen (DO) and UVA, and online and continuous monitoring of filter effluent turbidity, filter head loss and filter runtime facilitated through the plant SCADA System.

Table 4 – Water Quality Sampling Plan Matrix for Full Scale Testing of JC9450 at CDMWTP

Sample ID	Sample Location	Constituent	Field/ Lab Analysis	Sample Frequency	Sample Type
1	Plant Influent	pH, ORP, temp, DO, chlorine residual, UVA	Field	Daily	Grab & On-line
		turbidity, alkalinity, TOC, DOC, UVA, chlorine residual, conductivity, TTHM, LSI *pH, odor, color, iron, manganese, aluminum, chloride, sulfate, bromide, ammonia, nitrite, nitrate HAA9**	EEA Lab	Refer to Sampling Schedule	Grab
2	Flash Mix 1 • PAC is added upstream of Flash Mix 1 • Alum is added	pH, ORP, temp, DO, chlorine residual, UVA	Field	Daily	Grab & On-line
		Al, TTHM, TOC, DOC, UVA	EEA Lab	Refer to Sampling Schedule	Grab
3	Flash Mix 2 • Cationic Polymer added • **JC9450 added**	pH, ORP, temp, DO, chlorine residual, UVA	Field	Daily	Grab & On-line
		TTHM, TOC, DOC, UVA, odor, color *total chlorine, chlorine residual**	EEA Lab	Daily	Grab
4	Flocculator 3	pH, ORP, temp, DO, chlorine residual	Field	Daily	Grab & On-line
		TTHM, TOC, DOC, UVA *total chlorine, chlorine residual, HAA9**	EEA Lab	Daily	Grab
5	Sedimentation Basins 1 &4 ahead of Launders	pH, ORP, temp, DO, chlorine residual	Field	Daily	Grab & Online
		TTHM, TOC, DOC, UVA *total chlorine, chlorine residual**	EEA Lab	Daily	Grab
6	Clear Effluent Channel (CEC) • Flocculant Aid is added	pH, ORP, temp, DO, chlorine residual, UVA	Field	Daily	Grab & On-line
		turbidity, alkalinity, TTHM, TOC, DOC, UVA, odor, color	EEA Lab	Daily	Grab
7A, 7B, 7C	Top of Filters (3 out of 6 filters)	pH, Temp, DO, chlorine residual, UVA and SCADA data	Field	Daily	Grab & On-line
		turbidity, TOC, DOC, UVA	EEA Lab	Daily	Grab

Sample ID	Sample Location	Constituent	Field/ Lab Analysis	Sample Frequency	Sample Type
8A, 8B, 8C	Filter Effluent • Chlorine is added at CT tank	pH, Temp, DO, chlorine residual, UVA and SCADA	Field	Daily	Grab & On-line
		turbidity, TOC, DOC, UVA	EEA Lab	Daily	Grab
9	Clear Well Effluent	pH, ORP, Temp, DO, chlorine residual, UVA	Field	Daily	Grab & On-line
		turbidity, alkalinity, TOC, DOC, UVA, chlorine residual, conductivity, TTHM, LSI *pH, odor, color, iron, manganese, aluminum, chloride, sulfate, bromide, ammonia, nitrite, nitrate, HAA9**	EEA Lab	Daily	Grab
10	Reclaimed Water	pH, chlorine residual, UVA	Field	Once	Grab
		THM, TOC, DOC, UVA, chlorine residual	EEA Lab	Once	Grab

Notes:

*Constituents will be only measured once.

EEA Lab: GWD Contracting Laboratory Eurofins Eaton Analytical (ORELAP 4034)

Plant Sample Location Map

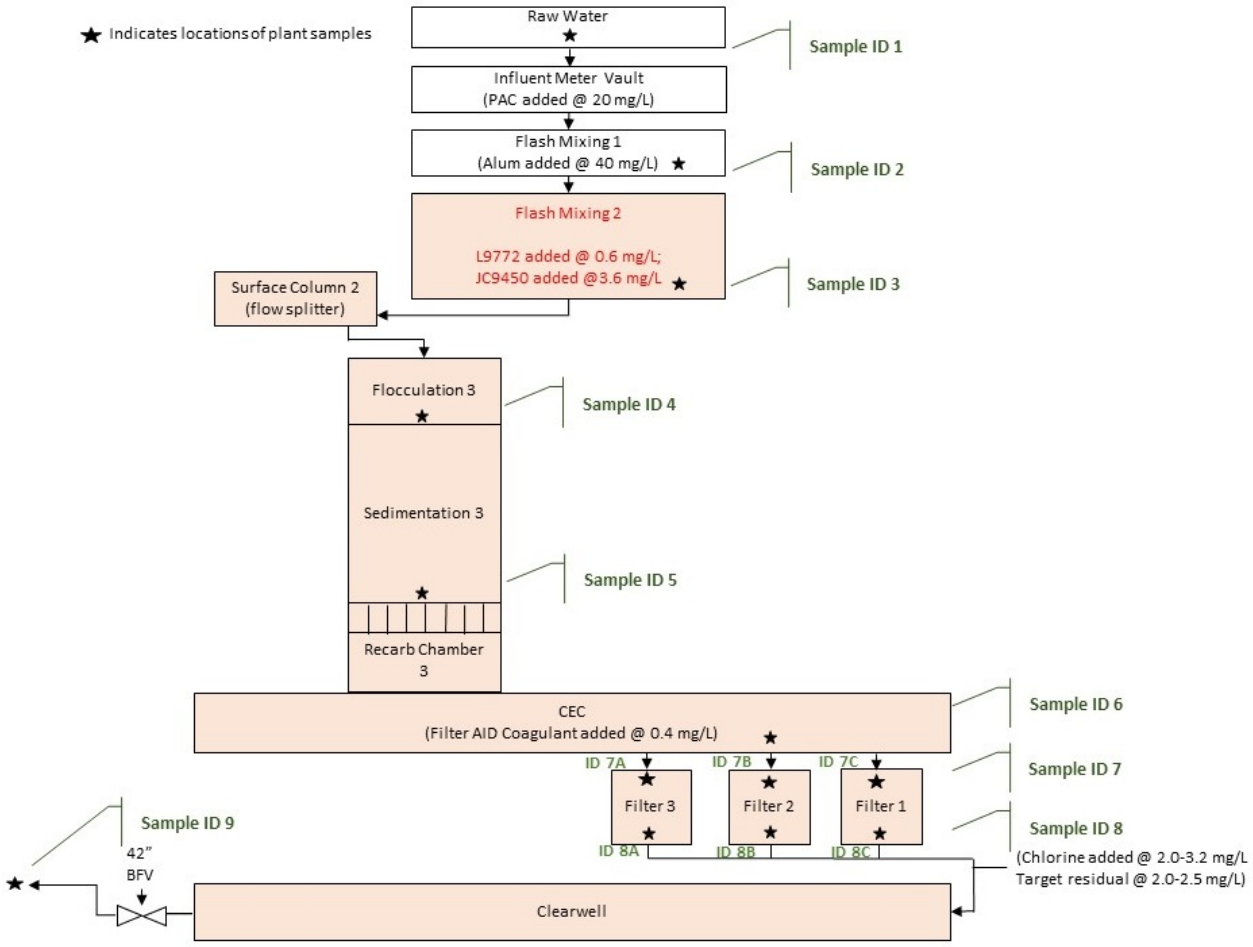


Figure 8 - Sample Location Map

Water Quality Sampling Schedule and Frequency

The plant influent and effluent will be sampled daily over two days prior to adding JC9450 to create a baseline. Table 5 shows the sampling dates, locations and frequency.

Table 5 – Sampling Frequency

Date	Sample ID	Frequency
Jan 8-9, 2018	Plant Preparation	
Jan 8/2018	1, 9	Once
Jan 9/2018	1, 9	Once
Jan 9/2018	10	Once
Jan 10/2018	Commence JC9450 Two Week Testing	
Jan 10/2018	2, 3, 4, 5, 6, 7A, 7B, 7C, 8A, 8B, 8C, 9	Twice, immediately after JC9450 addition and 8 hrs after
Jan 11/2018	2, 3, 4, 5, 6, 7A, 7B, 7C, 8A, 8B, 8C, 9	Once
Jan 15/2018	2, 3, 4, 5, 6, 7A, 7B, 7C, 8A, 8B, 8C, 9	Once
Jan 16/2018	2, 3, 4, 5, 6, 7A, 7B, 7C, 8A, 8B, 8C, 9	Once
Jan 17, 2018	2, 3, 4, 5, 6, 7A, 7B, 7C, 8A, 8B, 8C, 9	Once
Jan 18, 2018	2, 3, 4, 5, 6, 7A, 7B, 7C, 8A, 8B, 8C, 9	Once
Jan 22, 2018	2, 3, 4, 5, 6, 7A, 7B, 7C, 8A, 8B, 8C, 9	Once
Jan 23, 2018	2, 3, 4, 5, 6, 7A, 7B, 7C, 8A, 8B, 8C, 9	Once
Jan 24, 2018	9	Collect 12 sample for Distribution System Simulations
Jan 24, 2018	Two-Week Testing Ends	

Safety

In case of a failure or treatment upset, the plant staff can switch the JC9450 feed to chlorine feed within a short time and allow for water production to resume quickly. Additionally, GWD will keep the remaining treatment trains and three filters isolated from the JC9450 treatment train and ready in a standby mode for a switch over if needed. As a backup, groundwater wells will be online ready to operate to ensure an adequate water supply in case any issues rise during the testing of JC9450.

Customer safety is the utmost priority of the District. The introduction of JC9450 will be taken slowly and changes in the treatment train will be analyzed through certified laboratory testing to ensure the water leaving the treatment plant is in compliance with all State and Federal regulations. The full scale plant testing is scheduled to operate over a two week period, with treated groundwater as a back supply. The District will ensure that customers will not be see adverse effects on water quality if testing proves negative. Engineered procedures are in place to ensure the smooth transition from sodium hypochlorite to the JC9450 chemical.

The safety of all District personnel working who will be working with this new chemical is extremely important. The treatment operators are adequately trained and licensed to work around the plant and will be expected to adhere to safe chemical handling procedures and handle this chemical with care to avoid any spill or harm to themselves and others. The Operators will be required to handle the product in the same manner as sodium hypochlorite, wear appropriate PPE and perform appropriate lock out and tag out when transferring chemical containers and maintaining metering pumps and other associated equipment.

Attachment 1 - JC9450 Safety Data Sheet

SAFETY DATA SHEET

JENFITCH, LLC

Date Printed: 3/07/2016
Date Issued: 10/9/2015
Date Revised: 5/22/2015
Revision No: 1

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT CODE: JC 9450

PRODUCT TRADE NAME: JC 9450
COMMON NAMES/SYNONYMS: JC 9450 ROS
CATEGORY: WTP
RECOMMENDED USE: JC 9450 WATER TREATMENT, For industrial use only, refer to label and technical data sheet or call number below

MANUFACTURER

JENFITCH, LLC
712 BANCROFT ROAD SUITE 805
WALNUT CREEK, CA 94598
PHONE: 925-289-35598 FAX: 925-289-0094
E-Mail : charles@jenfitch.com

Emergency Contact: Charles Jennings
Emergency Phone: 925-289-3559
Alternate Emergency Phone: 800-644-3518
24 HR. EMERGENCY TELEPHONE NUMBERS
800-644-3518

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

PHYSICAL APPEARANCE: Deep red-purple liquid

IMMEDIATE CONCERNS: No applicable data available

POTENTIAL HEALTH EFFECTS

EYES: Causes severe irritation (tears, blurred vision and redness) May result in permanent eye damage.

SKIN: Causes severe skin irritation and tissue damage.

INGESTION: May cause nausea and vomiting. May cause irritation to the mouth, throat and stomach.

INHALATION: May cause physical discomfort to the respiratory tract.

UNCLASSIFIED HAZARDS: WARNING!! DO NOT MIX THIS PRODUCT WITH ACIDS

SIGNAL WORD: Caution

Potential Carcinogens as listed by OSHA, IARC, or NTP: NONE

OSHA HCS Status This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

GHS Pictogram:

Hazard Statement(s)

Code	Statement	GHS Chapter	Category
H302	Harmful if swallowed	Acute toxicity, oral (chapter 3.1)	4
H312	Harmful in contact with skin	Acute toxicity, dermal (chapter 3.1)	4
H314	Causes severe skin burns and eye damage	Skin corrosion/irritation (chapter 3.2)	1A, 1B, 1C
H318	Causes serious eye damage	Serious eye damage/eye irritation (chapter 3.3)	1
H332	Harmful if inhaled	Acute toxicity, inhalation (chapter 3.1)	4

Precautionary Statement(s)

P202	Do not handle until all safety precautions have been read and understood.
P264	Wash skin thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P301+ P310	IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P305+ P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P309+ P311	IF exposed or if you feel unwell: Call a POISON CENTER or doctor/physician.
P501	Dispose of contents/ container to an approved waste disposal plant.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	Common Names	CAS	Weight %
Mineral Oxychlorides	Mineral Oxychlorides	1332-17-8	9.0-12.5 %

4. FIRST AID MEASURES

COMMON SYMPTOMS OF OVEREXPOSURE: No Applicable data available

EYES: Immediately flush with water for at least 15 minutes or until the chemical is removed. Get medical attention!

SKIN: Wash off immediately with soap and water. If clothing is contaminated, remove and launder before reuse.

INGESTION: Do not induce vomiting. Never give anything by mouth to an unconscious person. Get immediate medical attention.

INHALATION: Move to fresh air. If not breathing, administer artificial respiration. Get immediate medical attention.

NOTES TO PHYSICIAN: Follow usual and customary procedures

ADDITIONAL INFORMATION: No Applicable data available

COMMENTS: No Applicable data available

5. FIRE FIGHTING MEASURES

FLASH POINT AND METHOD: No applicable data available

FLAMMABLE LIMITS: LEL : No applicable data available UEL: No applicable data available

GENERAL HAZARD: As with any chemical fire, combustion products of unknown toxicity are always possible.

EXTINGUISHING MEDIA: Carbon dioxide, dry chemical, foam or water spray.

FIRE FIGHTING EQUIPMENT: Vapors and fumes may be irritating and toxic. Firefighters should wear self No applicable data available contained breathing apparatus and full fire No applicable data available fighting turnout gear.

SENSITIVE TO STATIC DISCHARGE: No applicable data available

COMMENTS: Do not use Mono Ammonium Phosphate (MAP) fire extinguishers. May cause explosion with release of toxic gases.

6. ACCIDENTAL RELEASE MEASURES

SMALL SPILL: Absorb spilled liquid in a suitable material. Sweep or vacuum material into disposal containers.

LARGE SPILL: Absorb spilled liquid in a suitable material. Sweep or vacuum material into disposal containers.

EMERGENCY PROCEDURES: For hazardous waste regulations call 800-424-9346, the RCRA Hotline. Personal precautions, protective equipment and emergency procedures: Evacuate area. Keep upwind of spill. Refer to section 7, Handling, for additional precautionary measures. Only trained and properly protected personnel must be involved in clean-up operations. Ventilate area of leak or spill. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and personal protection.

GENERAL PROCEDURES: Do not allow spilled material to mix with any acids. Contain spilled material by diking with non-flammable diking materials.

RELEASE NOTES: Collect as much as possible in a clean container for reuse (if not contaminated) or disposal (if contaminated). Prevent from entering into soil, ditches, sewers, waterways and/or ground water. See section 12 Ecological information.

SPECIAL PROTECTIVE EQUIPMENT: Isolate area. Use appropriate safety equipment. For additional information, refer to section 8, Exposure Controls and Personal Protection.

COMMENTS: See also section 13 for disposal information.

7. HANDLING AND STORAGE

HANDLING: Use good industrial practices when handling. Avoid eye, skin, and clothing contact. Do not inhale mist or vapors. Do not taste or swallow. Use only with adequate ventilation.

STORAGE: Do not store near acids! Keep container closed when not in use. Avoid elevated and freezing temperatures.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Chemical Name	OSHA PEL	OSHA STEL	ACGIH TWA	ACGIH STEL
Mineral Oxychlorides	NE	NE	NE	NE

ENGINEERING CONTROLS: Work in well ventilated areas. Do not breathe vapors or mist. Ensure that existing ventilation is sufficient to prevent the circulation and/or accumulation of vapors in the air.

PERSONAL PROTECTIVE EQUIPMENT:

EYES AND FACE: Eye protection such as chemical splash goggles and/or face shield must be worn when possibility exists for eye contact due to splashing or spraying liquid, airborne particles, or vapor.

SKIN: Neoprene rubber gloves and suit should be worn to prevent repeated or prolonged contact with the liquid. Wash contaminated clothing prior to reuse.

RESPIRATORY: Have self-contained breathing apparatus (SCBA), positive pressure, MSHA/NIOSH (approved or equivalent) available in case of spillage or equipment failure.

WORK HYGIENIC PRACTICES: Discard contaminated gloves after use. Have eye-wash facilities in the immediate vicinity. Work in adequately ventilated area. Do not breathe vapors or mist. Minimize any contact with any chemical.

COMMENTS: Eye wash station and safety shower should be available in immediate work area. To identify additional Personal Protective Equipment (PPE) requirements, it is recommended that a hazard assessment, in accordance with the OSHA PPE Standard (29 CFR 1910.132), be conducted before using this product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance Form: Liquid **Appearance Color:** Red to Purple **Odor:** Slight Chlorine

Decomposition Temp: above 26.7^0 C

pH-value @ 68 °F: 11.0 – 12.5, Typical

Specific Gravity: 1.14-1.22

Boiling Point: Decomposes@ 110^{0}C

Flash Point: Not Applicable

Flammability: none

Ignition temperature: none

Support Combustion: no

Auto Igniting: none
Danger of explosion: none
Explosion Lower Limit: none
Explosion Upper Limit: none
Vapor pressure @ 68 °F: 12.1 mm Hg
Relative Density: 1.14-1.22
Vapor Density: 2.61 (air= 1)
Evaporation Rate: Not Determined
Solubility in Water: Complete
Partition coefficient: no data available
Dynamic viscosity: 2.95 cSt @ 20°C, 2.5 cSt @ 30°C.
Kinematic viscosity: no data available
Organic Content %age: no data available
Molecular Weight: 75.4 g/mole
Solids Content %age: no data available
Other Information: no data available

10. STABILITY AND REACTIVITY

STABILITY: Stable under recommended storage and handling conditions. Product begins to decompose at approximately 26.7^{0}C releasing monoxide gas
REACTIVITY: See sub-sections below.
POLYMERIZATION: Hazardous polymerization is not expected to occur under normal temperatures and pressures.
CONDITIONS TO AVOID: Heating will cause decomposition resulting in the release of monoxide gases
POSSIBILITY OF HAZARDOUS REACTIONS: Interaction with strong oxidizers, acids or acidic materials.
INCOMPATIBLE MATERIALS: Highly reactive or incompatible with the following materials: organic materials, metals, acids, alkalis, oxidizing materials, reducing materials, ammonia, finished petroleum products, paint products. Acid or ammonia contamination will release hazardous gases.
HAZARDOUS DECOMPOSITION MATERIALS: Under normal conditions of storage and uses, hazardous polymerization will not occur

11. TOXICOLOGICAL INFORMATION

SKIN: Skin Corrosion/Irritation: Mildly irritating., Skin Acute Toxicity: Not Determined
EYES: Severely irritating.
INHALATION: INH-Rat LC_{50}: 3.6 mg/L (4 hr. exposure).
INGESTION: Oral Rat LD_{50}: 820 mg/kg
CARCINOGENICITY
IARC: None of the components of this product are listed as a carcinogen by IARC, NTP, OSHA, or ACGIH.
NTP: None of the components of this product are listed as a carcinogen by IARC, NTP, OSHA, or ACGIH.
OSHA: None of the components of this product are listed as a carcinogen by IARC, NTP, OSHA, or ACGIH.
DERMAL TOXICITY: Dermal Rabbit LD_{50}: > 2,000 mg/kg
MUTAGENICITY: Not Determined
SENSITIZATION: Not a sensitizer
TERATOGENICITY: Not Determined
REPRODUCTIVE EFFECTS: Not Determined
TARGET ORGAN EFFECTS: Not Determined
ADDITIONAL INFORMATION: no additional information.

12. ENVIRONMENTAL INFORMATION				
PRODUCT	**TEST**	**DURATION**	**ORGANISM TYPE**	**TEST RESULTS**
Same as SDS name	LC_{50}	4.4 mg/l.	Green Algae	-
Same as SDS name	LC_{50}	2.1 mg/l.	Water Flea	-
Same as SDS name	LC_{50}	0.9 mg/l	Bluegill	-
Same as SDS name	LC_{50}	0.22 mg/l.	Fathead Minnow	-
Same as SDS name	LC_{50}	8.8mg/l	Rainbow Trout	-

ECOTOXICITY: no applicable data available

BIOACCUMULATION: Not determined

PERSISTENCE DEGRADABILITY: Degradation is expected under aerobic and anaerobic conditions.

MOBILITY: Not determined

ENVIRONMENTAL DATA: In fresh water, reactive oxygen species (ROS) breaks down rapidly into non-toxic compounds when exposed to sunlight. In seawater, ROS declines rapidly.

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHOD: Dispose of in accordance with national, state and local regulations. It is the waste generator's responsibility to determine if a particular waste is hazardous under RCRA.

EMPTY CONTAINER: Empty Container Warning (Where applicable). Empty Containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty containers should be taken for recycling, recovery or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations.

DISPOSAL INSTRUCTIONS: The generation of waste should be avoided or minimized wherever possible and should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.

WASTE FROM RESIDUES / UNUSED PRODUCTS: For hazardous waste regulations call 800-424-9346, the RCRA Hotline.

CONTAMINATED PACKAGING: For hazardous waste regulations call 800-424-9346, the RCRA Hotline.

14. TRANSPORT INFORMATION

DOT (DEPARTMENT OF TRANSPORTATION)

PROPER SHIPPING NAME: NON D.O.T. REGULATED

TECHNICAL NAME: Hypochlorite Solutions

PRIMARY HAZARD CLASS/DIVISION: Corrosive 8

UN/NA NUMBER: UN 1791,

PACKING GROUP: PG II

NAERG: N/A

LABEL: Corrosive 8

EMS NO: Not Applicable

ADDITIONAL INFO: none

15. REGULATORY INFORMATION

UNITED STATES

TSCA (TOXIC SUBSTANCE CONTROL ACT)

TSCA STATUS: On the inventory, or in compliance with the inventory

US federal regulations

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050) no applicable data available

CERCLA Hazardous Substance List (40 CFR 302.4): NO

Superfund amendments and reauthorization act of 1986 (SARA)

SARA 302 Extremely hazardous substance NO

SARA 304 Emergency release notification no applicable data available

SARA 311/312 Hazardous chemical no applicable data available

SARA 313 (TRI reporting) NO

Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3) no applicable data available

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):no applicable data available

US state regulations

US. California Proposition 65: NO

US. New Jersey Worker and Community Right-to-Know Act: no applicable data available

US. Massachusetts RTK - Substance List: no applicable data available

US. Pennsylvania RTK - Hazardous Substances: no applicable data available

US. Rhode Island RTK: no applicable data available

Inventory Status:

Europe REACH: On the inventory, or in compliance with the inventory

USA TSCA: On the inventory, or in compliance with the inventory

Canada DSL: On the inventory, or in compliance with the inventory

Australia AICS: On the inventory, or in compliance with the inventory

New Zealand NZIOC: On the inventory, or in compliance with the inventory

Japan ENCS: On the inventory, or in compliance with the inventory

Korea KECI: On the inventory, or in compliance with the inventory

Philippines PICCS: On the inventory, or in compliance with the inventory

China IECSC: On the inventory, or in compliance with the inventory

16. OTHER INFORMATION

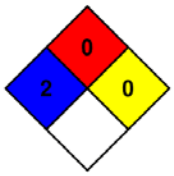
TITLE: EHS Management

PREPARED BY: JENFITCH, LLC.

FIRE: 0

REACTIVITY: 0

HEALTH: 2



MANUFACTURER SUPPLEMENTAL NOTES: no applicable data available

MANUFACTURER DISCLAIMER: The information contained herein is based on data believed to be accurate and is offered at no charge. No warranty is expressed or implied regarding the accuracy of this data. Liability is expressly disclaimed for loss or injury arising out of use of this information or the use of any materials designated. It is the user's responsibility for determining whether the product is suitable for its intended conditions of use.

Key or legend to abbreviations and acronyms used in the safety data sheet

ACGIH	American Conference of Government Industrial Hygienists	LD_{50}	Lethal Dose 50%
AICS	Australia, Inventory of Chemical Substances	LOAEL	Lowest Observed Adverse Effect Level
DSL	Canada, Domestic Substances List	NFPA	National Fire Protection Agency
NDSL	Canada, Non-Domestic Substances List	NIOSH	National Institute for Occupational Safety & Health
CNS	Central Nervous System	NTP	National Toxicology Program
CAS	Chemical Abstract Service	NZIoC	New Zealand Inventory of Chemicals
EC_{50}	Effective Concentration	NOAEL	No Observable Adverse Effect
EC	Effective Concentration	NOAEL	No Observable Adverse Effect Level
EC_{50}	Effective Concentration 50%	NOEC	No Observed Effect Concentration
EGEST	EOSCA Generic Exposure Scenario Tool	OSHA	Occupational Safety & Health Administration
EOSCA	European Oilfield Specialty Chemicals Association	PEL	Permissible Exposure Limit
EINECS	European Inventory of Existing Chemical Substances	PICCS	Philippines Inventory of Commercial Chemical Substances
MAK	Germany Maximum Concentration Values	PRNT	Presumed Not Toxic
GHS	Globally Harmonized System	RCRA	Resource Conservation Recovery Act
>=	Greater Than or Equal To	STEL	Short-term Exposure Limit
IC_{50}	Inhibition Concentration 50%	SARA	Superfund Amendments and Reauthorization Act.
IARC	International Agency for Research on Cancer	TLV	Threshold Limit Value
IECSC	Inventory of Existing Chemical Substances in China	TWA	Time Weighted Average
ENCS	Japan, Inventory of Existing and New Chemical Substances	TSCA	Toxic Substance Control Ac
KECI	Korea, Existing Chemical Inventory	UVCB	Unknown or Variable Composition, Complex Reaction Products, and Biological
<=	Less Than or Equal To	WHMIS	Workplace Hazardous Materials Information System
LC_{50}	Lethal Concentration 50%		

Attachment 2 - JC9450
Material Analysis Data Sheet

Certificate of Analysis

Product Name: JC 9450 LIQUID OZONE

Bell Chem Stock Number:

Batch Number: BCK287-9450

Manufacture Date: 11/28/17

	SPECIFICATIONS	ANALYSIS
Appearance	Slight lavender color, Slight Odor	
pH	11.0-12.5	11.86
Specific Gravity	1.14-1.24	1.16

This batch meets the specifications for this Bell Chem product.

Bell Chem Corp. certifies, warrants and guarantees the products sold or delivered by us shall be safe, complies with, will not have any adverse effect and are appropriate for their intended use when used according to label directions and/ or Good Manufacturing Practices. The intended use shall not conflict with the Federal Food, Drug & Cosmetic Act or any Federal, State or Local government regulations or restrictions. All of our Csan brand of cleaners and sanitizers contain ingredients that are suitable for use on food processing surfaces. All cleaners should be followed by a thorough potable water rinse. Sanitizers should be used in accordance with the label as approved by E.P.A. Specific instructions are found on each product's tech data sheet.

Attachment 3 - JC9450 NSF Listing

The Public Health and Safety Organization

NSF Product and Service Listings

These NSF Official Listings are current as of **Sunday, October 08, 2017** at 12:15 a.m. Eastern Time. Please contact NSF International to confirm the status of any Listing, report errors, or make suggestions.

Alert: NSF is concerned about fraudulent downloading and manipulation of website text. Always confirm this information by clicking on the below link for the most accurate information:
http://info.nsf.org/Certified/PwsChemicals/Listings.asp?Company=C0165759&Standard=060&

NSF/ANSI 60
Drinking Water Treatment Chemicals - Health Effects

Jenfitch, LLC
712 Bancroft Road
Suite 805
Walnut Creek, CA 94598
United States
800-644-3518
925-289-3559
Visit this company's website (http://www.jenfitch.com)

Facility : # 3 USA

Miscellaneous Treatment Chemical [CL]

Trade Designation	*Product Function*	*Max Use*
JC 9430[1]	Algicide	37mg/L
	Bactericide	
	Corrosion & Scale Control	
	Descaler	
	Disinfection & Oxidation	
	Molluscicide	
	Other	
JC 9430	Reverse Osmosis Antiscalant	84mg/L
JC 9430 ROS	Reverse Osmosis Antiscalant	84mg/L
JC 9430 ROS[1]	Algicide	37mg/L
	Bactericide	

	Corrosion & Scale Control	
	Descaler	
	Disinfection & Oxidation	
	Molluscicide	
	Other	
JC 9450	Reverse Osmosis Antiscalant	84mg/L
JC 9450[1]	Disinfection & Oxidation	37mg/L
	Molluscicide	
	Other	
	Corrosion & Scale Control	
	Descaler	
	Algicide	
	Bactericide	
JC 9450 BIOFILM REMOVER	Reverse Osmosis Antiscalant	84mg/L
JC 9450 BIOFILM REMOVER[1]	Disinfection & Oxidation	37mg/L
	Molluscicide	
	Other	
	Corrosion & Scale Control	
	Descaler	
	Algicide	
	Bactericide	
JC 9450 ROS	Reverse Osmosis Antiscalant	84mg/L
JC 9450 ROS[1]	Disinfection & Oxidation	37mg/L
	Molluscicide	
	Other	
	Corrosion & Scale Control	
	Descaler	
	Algicide	
	Bactericide	
JC 9465	Reverse Osmosis Antiscalant	84mg/L
JC 9465[1]	Disinfection & Oxidation	37mg/L
	Molluscicide	
	Other	
	Corrosion & Scale Control	
	Descaler	
	Algicide	
	Bactericide	
JC 9475	Reverse Osmosis Antiscalant	84mg/L
JC 9475[1]	Disinfection & Oxidation	37mg/L
	Molluscicide	
	Other	
	Corrosion & Scale Control	
	Descaler	
	Algicide	
	Bactericide	

TC 9430[1]	Algicide Bactericide Corrosion & Scale Control Descaler Disinfection & Oxidation Molluscicide Other	37mg/L
TC 9430 ROS[1]	Algicide Bactericide Corrosion & Scale Control Descaler Disinfection & Oxidation Molluscicide Other	37mg/L
TC 9450	Reverse Osmosis Antiscalant	84mg/L
TC 9450[1]	Disinfection & Oxidation Molluscicide Other Corrosion & Scale Control Descaler Algicide Bactericide	37mg/L
TC 9450 ROS	Reverse Osmosis Antiscalant	84mg/L
TC 9450 ROS[1]	Disinfection & Oxidation Molluscicide Other Corrosion & Scale Control Descaler Algicide Bactericide	37mg/L
TC 9465	Reverse Osmosis Antiscalant	84mg/L
TC 9465[1]	Disinfection & Oxidation Molluscicide Other Corrosion & Scale Control Descaler Algicide Algicide	37mg/L
Z-REMOVAL2	Reverse Osmosis Antiscalant	84mg/L

[1] This product functions to aid with the coagulation and flocculation process by oxidizing compounds in solution and creating additional particulates to be flocked.

[CL] The residual levels of chlorine (hypochlorite ion and hypochlorous acid), chlorine

dioxide, chlorate ion, chloramine and disinfection by-products shall be monitored in the finished drinking water to ensure compliance to all applicable regulations.

Miscellaneous Water Supply Products[2] [CL]

Trade Designation	*Product Function*	*Max Use*
JC 9430	Membrane Cleaner Reverse Osmosis Membrane Biocide Well Cleaning Aid	NA
JC 9430 ROS	Membrane Cleaner Reverse Osmosis Membrane Biocide Well Cleaning Aid	NA
JC 9450	Well Cleaning Aid Reverse Osmosis Membrane Biocide Membrane Cleaner	NA
JC 9450 BIOFILM REMOVER	Well Cleaning Aid Reverse Osmosis Membrane Biocide Membrane Cleaner	NA
JC 9450 ROS	Well Cleaning Aid Reverse Osmosis Membrane Biocide Membrane Cleaner	NA
JC 9465	Well Cleaning Aid Reverse Osmosis Membrane Biocide Membrane Cleaner	NA
JC 9475	Well Cleaning Aid Reverse Osmosis Membrane Biocide Membrane Cleaner	NA
TC 9430	Membrane Cleaner Reverse Osmosis Membrane Biocide Well Cleaning Aid	NA
TC 9430 ROS	Membrane Cleaner Reverse Osmosis Membrane Biocide Well Cleaning Aid	NA
TC 9450	Well Cleaning Aid Reverse Osmosis Membrane Biocide Membrane Cleaner	NA
TC 9450 ROS	Well Cleaning Aid Reverse Osmosis Membrane Biocide Membrane Cleaner	NA
TC 9465	Well Cleaning Aid Reverse Osmosis Membrane Biocide Membrane Cleaner	NA
Z-REMOVAL2	Well Cleaning Aid Reverse Osmosis Membrane Biocide Membrane Cleaner	NA

[2] This product is designed to be used off-line and flushed put prior to using the system for drinking water, following manufacturer's use instructions.
[CL] The residual levels of chlorine (hypochlorite ion and hypochlorous acid), chlorine dioxide, chlorate ion, chloramine and disinfection by-products shall be monitored in the finished drinking water to ensure compliance to all applicable regulations.

Facility : #4 USA

Miscellaneous Treatment Chemical [CL]

Trade Designation	*Product Function*	*Max Use*
JC 9430	Reverse Osmosis Antiscalant	84mg/L
JC 9430[1]	Disinfection & Oxidation	84mg/L
	Molluscicide	
	Other	
	Corrosion & Scale Control	
	Descaler	
	Algicide	
	Bactericide	
JC 9430 ROS[1]	Disinfection & Oxidation	84mg/L
	Molluscicide	
	Other	
	Corrosion & Scale Control	
	Descaler	
	Algicide	
	Bactericide	
JC 9430 ROS	Reverse Osmosis Antiscalant	84mg/L
JC 9450[1]	Disinfection & Oxidation	84mg/L
	Molluscicide	
	Other	
	Corrosion & Scale Control	
	Descaler	
	Algicide	
	Bactericide	
JC 9450	Reverse Osmosis Antiscalant	84mg/L
JC 9450 BIOFILM REMOVER[1]	Disinfection & Oxidation	84mg/L
	Molluscicide	
	Other	
	Corrosion & Scale Control	
	Descaler	
	Algicide	
	Bactericide	

JC 9450 BIOFILM REMOVER	Reverse Osmosis Antiscalant	84mg/L
JC 9450 ROS[1]	Disinfection & Oxidation	84mg/L
	Molluscicide	
	Other	
	Corrosion & Scale Control	
	Descaler	
	Algicide	
	Bactericide	
JC 9450 ROS	Reverse Osmosis Antiscalant	84mg/L
JC 9465	Reverse Osmosis Antiscalant	84mg/L
JC 9465[1]	Disinfection & Oxidation	84mg/L
	Molluscicide	
	Other	
	Corrosion & Scale Control	
	Descaler	
	Algicide	
	Bactericide	
JC 9475[1]	Disinfection & Oxidation	84mg/L
	Molluscicide	
	Other	
	Corrosion & Scale Control	
	Descaler	
	Algicide	
	Bactericide	
JC 9475	Reverse Osmosis Antiscalant	84mg/L
TC 9430	Reverse Osmosis Antiscalant	84mg/L
TC 9430[1]	Disinfection & Oxidation	84mg/L
	Molluscicide	
	Other	
	Corrosion & Scale Control	
	Descaler	
	Algicide	
	Bactericide	
TC 9430 ROS[1]	Disinfection & Oxidation	84mg/L
	Molluscicide	
	Other	
	Corrosion & Scale Control	
	Descaler	
	Algicide	
	Bactericide	
TC 9430 ROS	Reverse Osmosis Antiscalant	84mg/L
TC 9450[1]	Disinfection & Oxidation	84mg/L
	Molluscicide	
	Other	
	Corrosion & Scale Control	

	Descaler	
	Algicide	
	Bactericide	
TC 9450	Reverse Osmosis Antiscalant	84mg/L
TC 9450 ROS	Reverse Osmosis Antiscalant	84mg/L
TC 9450 ROS[1]	Disinfection & Oxidation	84mg/L
	Molluscicide	
	Other	
	Corrosion & Scale Control	
	Descaler	
	Algicide	
	Bactericide	
Z-REMOVAL2	Reverse Osmosis Antiscalant	84mg/L

[1] This product functions to aid with the coagulation & flocculation process by oxidizing compounds in solution and creating additional particulates to be flocked.

[CL] The residual levels of chlorine (hypochlorite ion and hypochlorous acid), chlorine dioxide, chlorate ion, chloramine and disinfection by-products shall be monitored in the finished drinking water to ensure compliance to all applicable regulations.

Miscellaneous Water Supply Products[2] [CL]

Trade Designation	*Product Function*	*Max Use*
JC 9430	Well Cleaning Aid	NA
	Reverse Osmosis Membrane Biocide	
	Membrane Cleaner	
JC 9430 ROS	Well Cleaning Aid	NA
	Reverse Osmosis Membrane Biocide	
	Membrane Cleaner	
JC 9450	Well Cleaning Aid	NA
	Reverse Osmosis Membrane Biocide	
	Membrane Cleaner	
JC 9450 BIOFILM REMOVER	Well Cleaning Aid	NA
	Reverse Osmosis Membrane Biocide	
	Membrane Cleaner	
JC 9450 ROS	Well Cleaning Aid	NA
	Reverse Osmosis Membrane Biocide	
	Membrane Cleaner	
JC 9465	Well Cleaning Aid	NA
	Reverse Osmosis Membrane Biocide	
	Membrane Cleaner	
JC 9475	Well Cleaning Aid	NA
	Reverse Osmosis Membrane Biocide	
	Membrane Cleaner	
TC 9430	Well Cleaning Aid	NA

	Reverse Osmosis Membrane Biocide Membrane Cleaner	
TC 9430 ROS	Well Cleaning Aid Reverse Osmosis Membrane Biocide Membrane Cleaner	NA
TC 9450	Well Cleaning Aid Reverse Osmosis Membrane Biocide Membrane Cleaner	NA
TC 9450 ROS	Well Cleaning Aid Reverse Osmosis Membrane Biocide Membrane Cleaner	NA
TC 9465	Well Cleaning Aid Reverse Osmosis Membrane Biocide Membrane Cleaner	NA
Z-REMOVAL2	Well Cleaning Aid Reverse Osmosis Membrane Biocide Membrane Cleaner	NA

[2] This product is designed to be used off-line and flushed out prior to using the system for drinking water, following manufacturer's use instructions.

[CL] The residual levels of chlorine (hypochlorite ion and hypochlorous acid), chlorine dioxide, chlorate ion, chloramine and disinfection by-products shall be monitored in the finished drinking water to ensure compliance to all applicable regulations.

Facility : #5 USA

Miscellaneous Treatment Chemical [CL]

Trade Designation	*Product Function*	*Max Use*
JC 9430	Reverse Osmosis Antiscalant	84mg/L
JC 9430[1]	Disinfection & Oxidation Molluscicide Other Corrosion & Scale Control Descaler Algicide Bactericide	84mg/L
JC 9430 ROS	Reverse Osmosis Antiscalant	84mg/L
JC 9430 ROS[1]	Disinfection & Oxidation Molluscicide Other Corrosion & Scale Control Descaler	84mgL

	Algicide	
	Bactericide	
JC 9450	Reverse Osmosis Antiscalant	84mg/L
JC 9450[1]	Disinfection & Oxidation	84mg/L
	Molluscicide	
	Other	
	Corrosion & Scale Control	
	Descaler	
	Algicide	
	Bactericide	
JC 9450 BIOFILM REMOVER[1]	Disinfection & Oxidation	84mg/L
	Molluscicide	
	Other	
	Corrosion & Scale Control	
	Descaler	
	Algicide	
	Bactericide	
JC 9450 BIOFILM REMOVER	Reverse Osmosis Antiscalant	84mg/L
JC 9450 ROS	Reverse Osmosis Antiscalant	84mg/L
JC 9450 ROS[1]	Disinfection & Oxidation	84mg/L
	Molluscicide	
	Other	
	Corrosion & Scale Control	
	Descaler	
	Algicide	
	Bactericide	
JC 9465[1]	Disinfection & Oxidation	84mg/L
	Molluscicide	
	Other	
	Corrosion & Scale Control	
	Descaler	
	Algicide	
	Bactericide	
JC 9465	Reverse Osmosis Antiscalant	84mg/L
JC 9475[1]	Disinfection & Oxidation	84mg/L
	Molluscicide	
	Other	
	Corrosion & Scale Control	
	Descaler	
	Algicide	
	Bactericide	
JC 9475	Reverse Osmosis Antiscalant	84mg/L
TC 9430	Reverse Osmosis Antiscalant	84mg/L
TC 9430[1]	Disinfection & Oxidation	84mg/L
	Molluscicide	

	Other	
	Corrosion & Scale Control	
	Descaler	
	Algicide	
	Bactericide	
TC 9430 ROS	Reverse Osmosis Antiscalant	84mg/L
TC 9430 ROS[1]	Disinfection & Oxidation	84mg/L
	Molluscicide	
	Other	
	Corrosion & Scale Control	
	Descaler	
	Algicide	
	Bactericide	
TC 9450[1]	Disinfection & Oxidation	84mg/L
	Molluscicide	
	Other	
	Corrosion & Scale Control	
	Descaler	
	Algicide	
	Bactericide	
TC 9450	Reverse Osmosis Antiscalant	84mg/L
TC 9450 ROS	Reverse Osmosis Antiscalant	84mg/L
TC 9450 ROS[1]	Disinfection & Oxidation	84mg/L
	Molluscicide	
	Other	
	Corrosion & Scale Control	
	Descaler	
	Algicide	
	Bactericide	
TC 9465[1]	Disinfection & Oxidation	84mg/L
	Molluscicide	
	Other	
	Corrosion & Scale Control	
	Descaler	
	Algicide	
	Bactericide	
TC 9465	Reverse Osmosis Antiscalant	84mg/L
Z-REMOVAL2	Reverse Osmosis Antiscalant	84mg/L

[1] This product functions to aid with the coagulation and flocculation process by oxidizing compounds in solution and creating additional particulates to be flocked.

[CL] The residual levels of chlorine (hypochlorite ion and hypochlorous acid), chlorine dioxide, chlorate ion, chloramine and disinfection by-products shall be monitored in the finished drinking water to ensure compliance to all applicable regulations.

Miscellaneous Water Supply Products[2] [CL]

Trade Designation	*Product Function*	*Max Use*
JC 9430	Well Cleaning Aid Reverse Osmosis Membrane Biocide Membrane Cleaner	NA
JC 9430 ROS	Well Cleaning Aid Reverse Osmosis Membrane Biocide Membrane Cleaner	NA
JC 9450	Well Cleaning Aid Reverse Osmosis Membrane Biocide Membrane Cleaner	NA
JC 9450 BIOFILM REMOVER	Well Cleaning Aid Reverse Osmosis Membrane Biocide Membrane Cleaner	NA
JC 9450 ROS	Well Cleaning Aid Reverse Osmosis Membrane Biocide Membrane Cleaner	NA
JC 9465	Well Cleaning Aid Reverse Osmosis Membrane Biocide Membrane Cleaner	NA
JC 9475	Well Cleaning Aid Reverse Osmosis Membrane Biocide Membrane Cleaner	NA
TC 9430	Well Cleaning Aid Reverse Osmosis Membrane Biocide Membrane Cleaner	NA
TC 9430 ROS	Well Cleaning Aid Reverse Osmosis Membrane Biocide Membrane Cleaner	NA
TC 9450	Well Cleaning Aid Reverse Osmosis Membrane Biocide Membrane Cleaner	NA
TC 9450 ROS	Well Cleaning Aid Reverse Osmosis Membrane Biocide Membrane Cleaner	NA
TC 9465	Well Cleaning Aid Reverse Osmosis Membrane Biocide Well Cleaning Aid	NA
Z-REMOVAL2	Well Cleaning Aid Reverse Osmosis Membrane Biocide Membrane Cleaner	NA

[2] This product is designed to be used off-line and flushed put prior to using the system for drinking water, following manufacturer's use instructions.

[CL] The residual levels of chlorine (hypochlorite ion and hypochlorous acid), chlorine dioxide, chlorate ion, chloramine and disinfection by-products shall be monitored in the finished drinking water to ensure compliance to all applicable regulations.

Number of matching Manufacturers is 1

Number of matching Products is 110

Processing time was 0 seconds

Attachment 4 - JC9450 Jar Tests

JC9450 Evaluation Jar Test Worksheet

Date: 10/25/17

Analyst: DA/DG

Sample: CDMWTP Raw (pre-Cl_2)

Influent Flow: 12.9 MGD

Sample Time: 0715

Alum Source: L6346

Jar Sample Size: 2000 ml

Polymer Source: L6347

Starting Temperature (°C): 20.5

Ending Temperature (°C): 21.1

	RPM	Time
FM	100	1 min
Flocculation	30	30 min
Settling	-	60 min

Alum Dose (mg/l as Alum)	Polymer Dose (mg/l as neat polymer)	JC9450 (mg/l)	pH	Alkalinity (mg/l)	Calcium (mg/l)	Chloride (mg/l)	Iron (µg/l)	Manganese (µg/l)	TTHM (µg/l)	TOC (mg/l)	TTHMMP (µg/l)	Notes
Control	---	---	7.48	150	79	30	<0.02	0.0057	31	4.8	170	3rd Cl_2 20 mg/L PAC
40	1.0	5	7.52	150	79	28	<0.02	0.014	2.1	4.7	120	
40	1.0	10	7.48	150	79	28	<0.02	0.015	5.3	4.7	120	
40	1.0	15	7.42	150	83	28	0.057	~~0.037~~ DA 0.016	7.2	4.6	120	
40	1.0	20	7.49	150	81	29	<0.02	0.014	9.8	4.6	130	
40	1.0	25	~~5.~~ 7.50	150	80	30	<0.02	0.011	15	4.6	130	

JC9450 Evaluation Jar Test Worksheet

Date: 10/25/17

Analyst: DA/DG

Sample: CDMWTP Raw (pre-Cl_2)

Influent Flow: 12.9 MGD

Sample Time: 0715

	RPM	Time
FM	100	1 min
Flocculation	30	30 min
Settling	-	60 min

Alum Source: LC346

Jar Sample Size: 2000 ml

Polymer Source: LC347

Starting Temperature (°C): 20.5 °C

Ending Temperature (°C): 21.1 °C

Alum Dose (mg/l as Alum)	Polymer Dose (mg/l as neat polymer)	JC9450 (mg/l)	pH	Alkalinity (mg/l)	Calcium (mg/l)	Chloride (mg/l)	Iron (µg/l)	Manganese (µg/l)	TTHM (µg/l)	TOC (mg/l)	TTHMMP (µg/l)	Notes
Control	---	---	7.40	140	81	29	<0.02	0.014	45	4.7	140	3 mg/L Cl_2
40	1.0	5	7.34	150	78	27	<0.02	0.014	2.2	4.6	110	30
40	1.0	10	7.36	150	79	28	<0.02	0.013	6.2	4.5	130	
40	1.0	15	7.40	140	79	28	<0.02	0.013	12	4.5	140	
40	1.0	20	7.44	140	78	29	<0.02	0.012	26	4.5	140	
40	1.0	25	7.47	150	80	31	<0.02	0.011	41	4.4	150	

Attachment 5 – JC9450 Jar Test Results From Eurofins

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)

ilac-MRA

ANAB ACCREDITED ISO/IEC 17025 TESTING LABORATORY
AT-1807

Laboratory Report

for

Goleta Water District
4699 Hollister Avenue
Goleta, CA 93117
Attention: Dale Armstrong
Fax: 805-968-1844

Date of Issue
11/03/2017
Alicia DelCarlo
EUROFINS EATON ANALYTICAL, INC.

MP6E: Alicia Del Carlo
Project Manager

NELAP ACCREDITED LABORATORY
ORELAP 4034

Report: 695546
Project: SPECIAL
Group: JC 9450 Jar Test
PO#: 091213 exp 063014 NTE 75K

* Accredited in accordance with TNI 2009 and ISO/IEC 17025:2005.
* Laboratory certifies that the test results meet all TNI 2009 and ISO/IEC 17025:2005 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.

Page 1 of 28 pages

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STATE CERTIFICATION LIST

State	Certification Number	State	Certification Number
Alabama	41060	Michigan	9906
Arizona	AZ0778	Mississippi	Certified
Arkansas	Certified	Montana	Cert 0035
California-Monrovia-ELAP	2813	Nebraska	Certified
California-Colton- ELAP	2812	Nevada	CA00006-2016
California-Folsom- ELAP	2820	New Hampshire *	2959
California-Fresno- ELAP	2966	New Jersey *	CA 008
Colorado	Certified	New Mexico	Certified
Connecticut	PH-0107	New York *	11320
Delaware	CA 006	North Carolina	06701
Florida *	E871024	North Dakota	R-009
Georgia	947	Oregon (Primary AB) *	ORELAP 4034
Guam	17-005R	Pennsylvania *	68-565
Hawaii	Certified	Puerto Rico	Certified
Idaho	Certified	Rhode Island	LAO00326
Illinois *	200033	South Carolina	87016
Indiana	C-CA-01	South Dakota	Certified
Iowa - Asbestos	413	Tennessee	TN02839
Kansas *	E-10268	Texas *	T104704230-16-11
Kentucky	90107	Utah *	CA000062017-11
Louisiana *	LA170009	Vermont	VT0114
Maine	CA0006	Virginia *	460260
Maryland	224	Washington	C838
Commonwealth of Northern Marianas Is.	MP0004	EPA Region 5	Certified
Massachusetts	M-CA006	Los Angeles County Sanitation Districts	10264

* NELAP/TNI Recognized Accreditation Bodies

Eurofins Eaton Analytical, Inc.
750 Royal Oaks Drive, Suite 100
Monrovia, CA 91016-3629
T | 626-386-1100
F | 626-386-1101
www.EatonAnalytical.com

ISO 17025 Accredited Method List

The tests listed below are accredited and meet the requirements of ISO 17025 as verified by the ANSI-ASQ National Accreditation Board/ANAB.
Refer to Certificate and scope of accreditation (AT 1807) found at: http://www.eatonanalytical.com

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
1,4-Dioxane	EPA 522	x		x
2,3,7,8-TCDD	Modified EPA 1613B	x		x
Acrylamide	In House Method (2440)	x		x
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	
Bicarbonate Alkalinity as HCO3	SM 2320B	x	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	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
Cryptosporidium	EPA 1623	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
Cynogen 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
Giardia	EPA 1623	x		x
Glyphosate	EPA 547	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

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
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	CDC Legionella	x		x
Mercury	EPA 245.1	x	x	x
Metals	EPA 200.7 / 200.8	x	x	x
Microcystin LR	ELISA (2360)	x		x
NDMA	EPA 521	x		x
NDMA	TQ In house method based on EPA 521 (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 Phosphate	SM 4500P E			x
Ortho Phosphorous	SM 4500P E	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
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
Semi-VOC	EPA 625		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^{2}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	
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/EPA 524.3	x		x
VOC	EPA 624		x	x
VOC	EPA SW 846 8260	x		x
VOC	In House Method (2411)	x		x
Yeast and Mold	SM 9610	x		x

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Acknowledgement of Samples Received

Addr: **Goleta Water District**
4699 Hollister Avenue
Goleta, CA 93117

Attn: Dale Armstrong
Phone: 805-879-4678

Client ID: GOLETAWA
Folder #: 695546
Project: SPECIAL
Sample Group: JC 9450 Jar Test

Project Manager: Alicia Del Carlo
Phone: 559-797-1931
PO #: 091213 exp 063014 NTE 75K

The following samples were received from you on **October 26, 2017** at **1228**. 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, Inc..

Sample #	Sample ID			Sample Date
201710260329	JC Control			10/25/2017 0946
	Variable ID: 17-1025-1			
	@ML551.1	Alkalinity in CaCO3 units	Calcium Total ICAP	
	Chloride	Iron Total ICAP	Manganese Total ICAP	
	Total Organic Carbon			
201710260330	JC1			10/25/2017 1000
	Variable ID: 17-1025-2			
	@ML551.1	Alkalinity in CaCO3 units	Calcium Total ICAP	
	Chloride	Iron Total ICAP	Manganese Total ICAP	
	Total Organic Carbon			
201710260331	JC2			10/25/2017 1004
	Variable ID: 17-1025-3			
	@ML551.1	Alkalinity in CaCO3 units	Calcium Total ICAP	
	Chloride	Iron Total ICAP	Manganese Total ICAP	
	Total Organic Carbon			
201710260332	JC3			10/25/2017 0955
	Variable ID: 17-1025-4			
	@ML551.1	Alkalinity in CaCO3 units	Calcium Total ICAP	
	Chloride	Iron Total ICAP	Manganese Total ICAP	
	Total Organic Carbon			
201710260333	JC4			10/25/2017 0946
	Variable ID: 17-1025-5			
	@ML551.1	Alkalinity in CaCO3 units	Calcium Total ICAP	
	Chloride	Iron Total ICAP	Manganese Total ICAP	
	Total Organic Carbon			
201710260334	JC5			10/25/2017 0939
	Variable ID: 17-1025-6			
	@ML551.1	Alkalinity in CaCO3 units	Calcium Total ICAP	
	Chloride	Iron Total ICAP	Manganese Total ICAP	
	Total Organic Carbon			
201710260335	JCPC			10/25/2017 1024
	Variable ID: 17-1025-7			

Reported: 11/03/2017

Page 1 of 3

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

Page 4 of 28 pages

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Acknowledgement of Samples Received

Addr: **Goleta Water District**
4699 Hollister Avenue
Goleta, CA 93117

Attn: Dale Armstrong
Phone: 805-879-4678

Client ID: GOLETAWA
Folder #: 695546
Project: SPECIAL
Sample Group: JC 9450 Jar Test

Project Manager: Alicia Del Carlo
Phone: 559-797-1931
PO #: 091213 exp 063014 NTE 75K

The following samples were received from you on **October 26, 2017** at **1228**. 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, Inc..

Sample #	Sample ID			Sample Date
	@ML551.1	Alkalinity in CaCO3 units	Calcium Total ICAP	
	Chloride	Iron Total ICAP	Manganese Total ICAP	
	Total Organic Carbon			
201710260336	JCPC1			10/25/2017 1038
	Variable ID: 17-1025-8			
	@ML551.1	Alkalinity in CaCO3 units	Calcium Total ICAP	
	Chloride	Iron Total ICAP	Manganese Total ICAP	
	Total Organic Carbon			
201710260337	JCPC2			10/25/2017 1045
	Variable ID: 17-1025-9			
	@ML551.1	Alkalinity in CaCO3 units	Calcium Total ICAP	
	Chloride	Iron Total ICAP	Manganese Total ICAP	
	Total Organic Carbon			
201710260338	JCPC3			10/25/2017 1048
	Variable ID: 17-1025-10			
	@ML551.1	Alkalinity in CaCO3 units	Calcium Total ICAP	
	Chloride	Iron Total ICAP	Manganese Total ICAP	
	Total Organic Carbon			
201710260339	JCPC4			10/25/2017 1043
	Variable ID: 17-1025-11			
	@ML551.1	Alkalinity in CaCO3 units	Calcium Total ICAP	
	Chloride	Iron Total ICAP	Manganese Total ICAP	
	Total Organic Carbon			
201710260340	JCPC5			10/25/2017 1029
	Variable ID: 17-1025-12			
	@ML551.1	Alkalinity in CaCO3 units	Calcium Total ICAP	
	Chloride	Iron Total ICAP	Manganese Total ICAP	
	Total Organic Carbon			
201710270316	RUSH			10/25/2017 10:29
	RUSH			

Test Description

@ML551.1 -- EPA Method 551.1 Trihalomethanes

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Acknowledgement of Samples Received

Addr: **Goleta Water District**
4699 Hollister Avenue
Goleta, CA 93117

Attn: Dale Armstrong
Phone: 805-879-4678

Client ID: GOLETAWA
Folder #: 695546
Project: SPECIAL
Sample Group: JC 9450 Jar Test

Project Manager: Alicia Del Carlo
Phone: 559-797-1931
PO #: 091213 exp 063014 NTE 75K

The following samples were received from you on **October 26, 2017** at **1228**. 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, Inc..

Sample #	Sample ID	Sample Date

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CHAIN OF CUSTODY RECORD

750 Royal Oaks Drive, Suite 100
Monrovia, CA 91016-3629
Phone: 626 386 1100
Fax: 626 386 1101
800 566 LABS (800 566 5227)
Website: www.EatonAnalytical.com

EUROFINS EATON ANALYTICAL USE ONLY: 695544

LOGIN COMMENTS: _____ SAMPLES CHECKED AGAINST COC BY: _____

SAMPLES LOGGED IN BY: _____

SAMPLE TEMP RECEIVED AT: SAMPLES REC'D DAY OF COLLECTION? ☐ (check for yes)

☐ _____ (Other) IR Gun ID = _____ (Observation= _____ °C) (Corr.Factor _____ °C) (Final = _____ °C)

☑ Monrovia IR Gun ID = 4/61A (Observation= 4.2 °C) (Corr.Factor -0.2 °C) (Final = 4.0 °C)

Compliance Acceptance Criteria: (Chemistry: 4 ± 2 °C) (Microbiology: < 10°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: _____

TO BE COMPLETED BY SAMPLER:

COMPANY/AGENCY NAME:		System Number:	COMPLIANCE SAMPLES (check for yes) ☐	NON-COMPLIANCE SAMPLES (check for yes) ☒
GOLETA WATER DISTRICT		CA 4210004	- Requires state forms ☐	REGULATION INVOLVED:
EEA CLIENT CODE:	COC ID:	SAMPLE GROUP:	Type of samples (circle one): ROUTINE *SPECIAL* CONFIRMATION	(eg. SDWA, NPDES, etc.)
		Jar Test	*SEE ATTACHED KIT ORDER FOR ANALYSES* ☐ (check for yes), *OR*	
TAT requested: rush by adv notice only		STD __ *1 wk* X 3 day ___ 2 day ___ 1 day ___	List ALL ANALYSES REQUIRED (enter number of bottles sent for each test for each sample)	

SAMPLE DATE	SAMPLE TIME	SAMPLE ID	CLIENT LAB ID	MATRIX *	Grab	Composite	Alk	Ca, Fe, Mn	TOC	TTHM	Chloride	SAMPLER COMMENTS
10/25/17	0946	JC Control	17-1025-1	other	X		X	X	X	X	X	Please Note: 1 week TAT requested.
10/25/17	1000	JC1	17-1025-2	other	X		X	X	X	X	X	
10/25/17	1004	JC2	17-1025-3	other	X		X	X	X	X	X	
10/25/17	0955	JC3	17-1025-4	other	X		X	X	X	X	X	
10/25/17	0946	JC4	17-1025-5	other	X		X	X	X	X	X	
10/25/17	0939	JC5	17-1025-6	other	X		X	X	X	X	X	
10/25/17	1024	JCPC	17-1025-7	other	X		X	X	X	X	X	
10/25/17	1038	JCPC1	17-1025-8	other	X		X	X	X	X	X	
10/25/17	1045	JCPC2	17-1025-9	other	X		X	X	X	X	X	
10/25/17	1048	JCPC3	17-1025-10	other	X		X	X	X	X	X	

* MATRIX TYPES: RSW = Raw Surface Water; RGW = Raw Ground Water; CFW = Chlor(am)inated Finished Water; FW = Other Finished Water; SEAW = Sea Water; WW = Waste Water; BW = Bottled Water; SW = Storm Water; SO = Soil; SL = Sludge; O = Other - Please Identify

	SIGNATURE	PRINT NAME	COMPANY/TITLE	DATE	TIME
SAMPLED BY:		Dale Armstrong	Goleta Water District/Laboratory Supervisor	10/25/17	1400
RELINQUISHED BY:		Dale Armstrong	Goleta Water District/Laboratory Supervisor	10/25/17	1400
RECEIVED BY:		Viet Pham	EEA	10/26/17	1224
RELINQUISHED BY:					
RECEIVED BY:					

QA FO 0029.2 (Version 2) (08/28/2014)

PAGE 1 OF 2

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CHAIN OF CUSTODY RECORD

750 Royal Oaks Drive, Suite 100
Monrovia, CA 91016-3629

Phone: 626 386 1100
Fax: 626 386 1101

800 566 LABS (800 566 5227)

Website: www.EatonAnalytical.com

EUROFINS EATON ANALYTICAL USE ONLY:

LOGIN COMMENTS: _____ SAMPLES CHECKED AGAINST COC BY: _____

SAMPLES LOGGED IN BY: _____

SAMPLE TEMP RECEIVED AT: SAMPLES REC'D DAY OF COLLECTION? ☐ (check for yes)

☐ _____ (Other) IR Gun ID = _____ (Observation= _____ °C) (Corr.Factor _____ °C) (Final = _____ °C)

☑ Monrovia IR Gun ID = 461A (Observation=4.2 °C) (Corr.Factor +0.2 °C) (Final = 4.0 °C)

Compliance Acceptance Criteria: (Chemistry: 4 ± 2 °C) (Microbiology: < 10°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: _____

TO BE COMPLETED BY SAMPLER:

COMPANY/AGENCY NAME:	System Number:	COMPLIANCE SAMPLES (check for yes) ☐	NON-COMPLIANCE SAMPLES (check for yes) ☒
GOLETA WATER DISTRICT	CA 4210004	- Requires state forms ☐	REGULATION INVOLVED:
EEA CLIENT CODE: / COC ID:	SAMPLE GROUP: Jar Test	Type of samples (circle one): ROUTINE *SPECIAL* CONFIRMATION	(eg. SDWA, NPDES, etc.)
TAT requested: rush by adv notice only	STD __ *1 wk* X 3 day __ 2 day __ 1 day __	*SEE ATTACHED KIT ORDER FOR ANALYSES* ☐ (check for yes), *OR*	
		List ALL ANALYSES REQUIRED (enter number of bottles sent for each test for each sample)	

SAMPLE DATE	SAMPLE TIME	SAMPLE ID	CLIENT LAB ID	MATRIX*	Grab	Composite	Alk	Ca, Fe, Mn	TOC	TTHM	Chloride	SAMPLER COMMENTS
10/25/17	1043	JCPC 4	17-1025-11	other	☒		☒	☒	☒	☒	☒	Please Note: 1 week TAT requested.
10/25/17	1029	JCPC 5	17-1025-12	other	☒		☒	☒	☒	☒	☒	

* MATRIX TYPES: RSW = Raw Surface Water; RGW = Raw Ground Water; CFW = Chlor(am)inated Finished Water; FW = Other Finished Water; SEAW = Sea Water; WW = Waste Water; BW = Bottled Water; SW = Storm Water; SO = Soil; SL = Sludge; O = Other - Please Identify

	SIGNATURE	PRINT NAME	COMPANY/TITLE	DATE	TIME
SAMPLED BY:		Dale Armstrong	Goleta Water District/Laboratory Supervisor	10/25/17	1400
RELINQUISHED BY:		Dale Armstrong	Goleta Water District/Laboratory Supervisor	10/25/17	1400
RECEIVED BY:		Victor Plascencia	EEA	10/26/17	1228
RELINQUISHED BY:					
RECEIVED BY:					

QA FO 0020.2 (Version 2) (08/28/2014)

PAGE 2 OF 2

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Laboratory Comments

Report: 695546
Project: SPECIAL
Group: JC 9450 Jar Test

Goleta Water District
Dale Armstrong
4699 Hollister Avenue
Goleta, CA 93117

Flags Legend:

B4 - Target analyte detected in blank at or above method acceptance criteria.

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

Page 9 of 28 pages

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Tel: (626) 386-1100
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Laboratory Hits

Report: 695546
Project: SPECIAL
Group: JC 9450 Jar Test

Goleta Water District
Dale Armstrong
4699 Hollister Avenue
Goleta, CA 93117

Samples Received on:
10/26/2017 1228

Analyzed	Analyte	Sample ID	Result	Federal MCL	Units	MRL
	201710260329	**JC Control**				
10/27/2017 22:57	Alkalinity in CaCO3 units		140		mg/L	2
10/30/2017 23:59	Bromodichloromethane		15		ug/L	0.5
10/27/2017 12:44	Calcium Total ICAP		81		mg/L	1
10/26/2017 23:29	Chloride		29	250	mg/L	2
10/30/2017 23:59	Chloroform		26		ug/L	0.5
10/30/2017 23:59	Dibromochloromethane		4.2		ug/L	0.5
10/27/2017 12:44	Manganese Total ICAP		0.014	0.05	mg/L	0.002
11/01/2017 17:34	Total Organic Carbon		4.7		mg/L	0.3
10/30/2017 23:59	Total Trihalomethanes		45	80	ug/L	0.5
	201710260330	**JC1**				
10/28/2017 01:09	Alkalinity in CaCO3 units		150		mg/L	2
10/31/2017 00:50	Bromodichloromethane		0.74		ug/L	0.5
10/27/2017 12:47	Calcium Total ICAP		78		mg/L	1
10/26/2017 19:50	Chloride		27	250	mg/L	2
10/31/2017 00:50	Chloroform		1.5		ug/L	0.5
10/27/2017 12:47	Manganese Total ICAP		0.014	0.05	mg/L	0.002
11/01/2017 17:56	Total Organic Carbon		4.6		mg/L	0.3
10/31/2017 00:50	Total Trihalomethanes		2.2	80	ug/L	0.5
	201710260331	**JC2**				
10/27/2017 23:13	Alkalinity in CaCO3 units		150		mg/L	2
10/31/2017 01:40	Bromodichloromethane		2.0		ug/L	0.5
10/27/2017 12:50	Calcium Total ICAP		79		mg/L	1
10/26/2017 20:29	Chloride		28	250	mg/L	2
10/31/2017 01:40	Chloroform		3.6		ug/L	0.5
10/31/2017 01:40	Dibromochloromethane		0.61		ug/L	0.5
10/27/2017 12:50	Manganese Total ICAP		0.013	0.05	mg/L	0.002
11/01/2017 18:18	Total Organic Carbon		4.5		mg/L	0.3
10/31/2017 01:40	Total Trihalomethanes		6.2	80	ug/L	0.5
	201710260332	**JC3**				
10/27/2017 23:05	Alkalinity in CaCO3 units		140		mg/L	2
10/31/2017 02:06	Bromodichloromethane		4.1		ug/L	0.5
10/27/2017 12:51	Calcium Total ICAP		79		mg/L	1
10/26/2017 20:42	Chloride		28	250	mg/L	2
10/31/2017 02:06	Chloroform		6.9		ug/L	0.5
10/31/2017 02:06	Dibromochloromethane		1.2		ug/L	0.5

SUMMARY OF POSITIVE DATA ONLY

Page 10 of 28 pages

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Laboratory Hits

Report: 695546
Project: SPECIAL
Group: JC 9450 Jar Test

Goleta Water District
Dale Armstrong
4699 Hollister Avenue
Goleta, CA 93117

Samples Received on:
10/26/2017 1228

Analyzed	Analyte	Sample ID	Result	Federal MCL	Units	MRL
10/27/2017 12:51	Manganese Total ICAP		0.013	0.05	mg/L	0.002
11/01/2017 18:42	Total Organic Carbon		4.5		mg/L	0.3
10/31/2017 02:06	Total Trihalomethanes		12	80	ug/L	0.5
	201710260333	**JC4**				
10/27/2017 20:50	Alkalinity in CaCO3 units		140		mg/L	2
10/31/2017 02:31	Bromodichloromethane		9.4		ug/L	0.5
10/27/2017 12:52	Calcium Total ICAP		78		mg/L	1
10/26/2017 20:55	Chloride		29	250	mg/L	2
10/31/2017 02:31	Chloroform		14		ug/L	0.5
10/31/2017 02:31	Dibromochloromethane		3.1		ug/L	0.5
10/27/2017 12:52	Manganese Total ICAP		0.012	0.05	mg/L	0.002
11/01/2017 19:04	Total Organic Carbon		4.5		mg/L	0.3
10/31/2017 02:31	Total Trihalomethanes		26	80	ug/L	0.5
	201710260334	**JC5**				
10/27/2017 21:05	Alkalinity in CaCO3 units		150		mg/L	2
10/31/2017 02:56	Bromodichloromethane		14		ug/L	0.5
10/27/2017 13:11	Calcium Total ICAP		80		mg/L	1
10/26/2017 21:07	Chloride		31	250	mg/L	2
10/31/2017 02:56	Chloroform		23		ug/L	0.5
10/31/2017 02:56	Dibromochloromethane		4.1		ug/L	0.5
10/27/2017 13:11	Manganese Total ICAP		0.011	0.05	mg/L	0.002
11/01/2017 19:27	Total Organic Carbon		4.4		mg/L	0.3
10/31/2017 02:56	Total Trihalomethanes		41	80	ug/L	0.5
	201710260335	**JCPC**				
10/28/2017 01:33	Alkalinity in CaCO3 units		150		mg/L	2
10/31/2017 03:21	Bromodichloromethane		10		ug/L	0.5
10/27/2017 12:53	Calcium Total ICAP		79		mg/L	1
10/26/2017 22:51	Chloride		30	250	mg/L	2
10/31/2017 03:21	Chloroform		18		ug/L	0.5
10/31/2017 03:21	Dibromochloromethane		2.8		ug/L	0.5
10/27/2017 12:53	Manganese Total ICAP		0.0057	0.05	mg/L	0.002
11/01/2017 21:19	Total Organic Carbon		4.8		mg/L	0.3
10/31/2017 03:21	Total Trihalomethanes		31	80	ug/L	0.5
	201710260336	**JCPC1**				
10/27/2017 20:19	Alkalinity in CaCO3 units		150		mg/L	2

SUMMARY OF POSITIVE DATA ONLY

Page 11 of 28 pages

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Laboratory Hits

Report: 695546
Project: SPECIAL
Group: JC 9450 Jar Test

Goleta Water District
Dale Armstrong
4699 Hollister Avenue
Goleta, CA 93117

Samples Received on:
10/26/2017 1228

Analyzed	Analyte	Sample ID	Result	Federal MCL	Units	MRL
10/31/2017 03:46	Bromodichloromethane		0.59		ug/L	0.5
10/27/2017 12:54	Calcium Total ICAP		79		mg/L	1
10/26/2017 21:20	Chloride		28	250	mg/L	2
10/31/2017 03:46	Chloroform		1.5		ug/L	0.5
10/27/2017 12:54	Manganese Total ICAP		0.014	0.05	mg/L	0.002
11/01/2017 21:41	Total Organic Carbon		4.7		mg/L	0.3
10/31/2017 03:46	Total Trihalomethanes		2.1	80	ug/L	0.5
	201710260337	**JCPC2**				
10/27/2017 23:21	Alkalinity in CaCO3 units		150		mg/L	2
10/31/2017 04:12	Bromodichloromethane		1.8		ug/L	0.5
10/27/2017 12:55	Calcium Total ICAP		79		mg/L	1
10/26/2017 21:33	Chloride		28	250	mg/L	2
10/31/2017 04:12	Chloroform		3.5		ug/L	0.5
10/27/2017 12:55	Manganese Total ICAP		0.015	0.05	mg/L	0.002
11/01/2017 22:03	Total Organic Carbon		4.7		mg/L	0.3
10/31/2017 04:12	Total Trihalomethanes		5.3	80	ug/L	0.5
	201710260338	**JCPC3**				
10/27/2017 21:13	Alkalinity in CaCO3 units		150		mg/L	2
10/31/2017 04:37	Bromodichloromethane		2.3		ug/L	0.5
10/31/2017 10:58	Calcium Total ICAP		83		mg/L	1
10/26/2017 21:46	Chloride		28	250	mg/L	2
10/31/2017 04:37	Chloroform		4.3		ug/L	0.5
10/31/2017 04:37	Dibromochloromethane		0.59		ug/L	0.5
10/31/2017 10:58	Iron Total ICAP		0.057	0.3	mg/L	0.02
10/31/2017 10:58	Manganese Total ICAP		0.016	0.05	mg/L	0.002
11/01/2017 22:25	Total Organic Carbon		4.6		mg/L	0.3
10/31/2017 04:37	Total Trihalomethanes		7.2	80	ug/L	0.5
	201710260339	**JCPC4**				
10/27/2017 22:49	Alkalinity in CaCO3 units		150		mg/L	2
10/31/2017 05:27	Bromodichloromethane		3.1		ug/L	0.5
10/27/2017 12:56	Calcium Total ICAP		81		mg/L	1
10/26/2017 21:59	Chloride		29	250	mg/L	2
10/31/2017 05:27	Chloroform		6.0		ug/L	0.5
10/31/2017 05:27	Dibromochloromethane		0.74		ug/L	0.5
10/27/2017 12:56	Manganese Total ICAP		0.014	0.05	mg/L	0.002
11/01/2017 22:46	Total Organic Carbon		4.6		mg/L	0.3

SUMMARY OF POSITIVE DATA ONLY

Page 12 of 28 pages

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Laboratory Hits

Report: 695546
Project: SPECIAL
Group: JC 9450 Jar Test

Goleta Water District
Dale Armstrong
4699 Hollister Avenue
Goleta, CA 93117

Samples Received on:
10/26/2017 1228

Analyzed	Analyte	Sample ID	Result	Federal MCL	Units	MRL
10/31/2017 05:27	Total Trihalomethanes		9.8	80	ug/L	0.5
	201710260340	**JCPC5**				
10/27/2017 20:58	Alkalinity in CaCO3 units		150		mg/L	2
10/31/2017 06:18	Bromodichloromethane		4.8		ug/L	0.5
10/27/2017 12:57	Calcium Total ICAP		80		mg/L	1
10/26/2017 22:12	Chloride		30	250	mg/L	2
10/31/2017 06:18	Chloroform		8.7		ug/L	0.5
10/31/2017 06:18	Dibromochloromethane		1.2		ug/L	0.5
10/27/2017 12:57	Manganese Total ICAP		0.011	0.05	mg/L	0.002
11/01/2017 23:08	Total Organic Carbon		4.6		mg/L	0.3
10/31/2017 06:18	Total Trihalomethanes		15	80	ug/L	0.5

SUMMARY OF POSITIVE DATA ONLY

Page 13 of 28 pages

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Laboratory Data

Report: 695546
Project: SPECIAL
Group: JC 9450 Jar Test

Goleta Water District
Dale Armstrong
4699 Hollister Avenue
Goleta, CA 93117

Samples Received on:
10/26/2017 1228

Prepped	Analyzed	Prep Batch	Analytical Batch	Method	Analyte	Result	Units	MRL	Dilution
JC Control (201710260329)							**Sampled on 10/25/2017 0946**		
	Variable ID: 17-1025-1								
			EPA 200.7 - ICP Metals						
10/26/17	10/27/17 12:44	1038371	1038551	(EPA 200.7)	Calcium Total ICAP	81	mg/L	1	1
10/26/17	10/27/17 12:44	1038371	1038551	(EPA 200.7)	Iron Total ICAP	ND	mg/L	0.02	1
10/26/17	10/27/17 12:44	1038371	1038551	(EPA 200.7)	Manganese Total ICAP	0.014	mg/L	0.002	1
			SM 5310C - Total Organic Carbon						
	11/01/17 17:34		1039846	(SM 5310C)	Total Organic Carbon	4.7	mg/L	0.3	1
			EPA 551.1 - EPA Method 551.1 Trihalomethanes						
10/30/17	10/30/17 23:59	1039098	1039158	(EPA 551.1)	Bromodichloromethane	15	ug/L	0.5	1
10/30/17	10/30/17 23:59	1039098	1039158	(EPA 551.1)	Bromoform	ND	ug/L	0.5	1
10/30/17	10/30/17 23:59	1039098	1039158	(EPA 551.1)	Chloroform	26	ug/L	0.5	1
10/30/17	10/30/17 23:59	1039098	1039158	(EPA 551.1)	Dibromochloromethane	4.2	ug/L	0.5	1
10/30/17	10/30/17 23:59	1039098	1039158	(EPA 551.1)	Total Trihalomethanes	45	ug/L	0.5	1
10/30/17	10/30/17 23:59	1039098	1039158	(EPA 551.1)	1,2-Dibromopropane	106	%		1
10/30/17	10/30/17 23:59	1039098	1039158	(EPA 551.1)	4-Bromofluorobenzene	102	%		1
			EPA 300.0 - Chloride, Sulfate by EPA 300.0						
	10/26/17 23:29		1038403	(EPA 300.0)	Chloride	29	mg/L	2	2
			SM 2320B - Alkalinity in CaCO3 units						
	10/27/17 22:57		1038919	(SM 2320B)	Alkalinity in CaCO3 units	140	mg/L	2	1
JC1 (201710260330)							**Sampled on 10/25/2017 1000**		
	Variable ID: 17-1025-2								
			EPA 200.7 - ICP Metals						
10/26/17	10/27/17 12:47	1038371	1038551	(EPA 200.7)	Calcium Total ICAP	78	mg/L	1	1
10/26/17	10/27/17 12:47	1038371	1038551	(EPA 200.7)	Iron Total ICAP	ND	mg/L	0.02	1
10/26/17	10/27/17 12:47	1038371	1038551	(EPA 200.7)	Manganese Total ICAP	0.014	mg/L	0.002	1
			SM 5310C - Total Organic Carbon						
	11/01/17 17:56		1039846	(SM 5310C)	Total Organic Carbon	4.6	mg/L	0.3	1
			EPA 551.1 - EPA Method 551.1 Trihalomethanes						
10/30/17	10/31/17 00:50	1039098	1039158	(EPA 551.1)	Bromodichloromethane	0.74	ug/L	0.5	1
10/30/17	10/31/17 00:50	1039098	1039158	(EPA 551.1)	Bromoform	ND	ug/L	0.5	1
10/30/17	10/31/17 00:50	1039098	1039158	(EPA 551.1)	Chloroform	1.5	ug/L	0.5	1
10/30/17	10/31/17 00:50	1039098	1039158	(EPA 551.1)	Dibromochloromethane	ND	ug/L	0.5	1
10/30/17	10/31/17 00:50	1039098	1039158	(EPA 551.1)	Total Trihalomethanes	2.2	ug/L	0.5	1
10/30/17	10/31/17 00:50	1039098	1039158	(EPA 551.1)	1,2-Dibromopropane	98	%		1
10/30/17	10/31/17 00:50	1039098	1039158	(EPA 551.1)	4-Bromofluorobenzene	103	%		1
			EPA 300.0 - Chloride, Sulfate by EPA 300.0						
	10/26/17 19:50		1038403	(EPA 300.0)	Chloride	27	mg/L	2	2
			SM 2320B - Alkalinity in CaCO3 units						

Rounding on totals after summation.
(c) - Indicates calculated results

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Laboratory Data

Report: 695546
Project: SPECIAL
Group: JC 9450 Jar Test

Goleta Water District
Dale Armstrong
4699 Hollister Avenue
Goleta, CA 93117

Samples Received on:
10/26/2017 1228

Prepped	Analyzed	Prep Batch	Analytical Batch	Method	Analyte	Result	Units	MRL	Dilution
	10/28/17 01:09		1038920	(SM 2320B)	Alkalinity in CaCO3 units	150	mg/L	2	1
JC2 (201710260331)							**Sampled on 10/25/2017 1004**		
	Variable ID: 17-1025-3								
			EPA 200.7 - ICP Metals						
10/26/17	10/27/17 12:50	1038371	1038551	(EPA 200.7)	Calcium Total ICAP	79	mg/L	1	1
10/26/17	10/27/17 12:50	1038371	1038551	(EPA 200.7)	Iron Total ICAP	ND	mg/L	0.02	1
10/26/17	10/27/17 12:50	1038371	1038551	(EPA 200.7)	Manganese Total ICAP	0.013	mg/L	0.002	1
			SM 5310C - Total Organic Carbon						
	11/01/17 18:18		1039846	(SM 5310C)	Total Organic Carbon	4.5	mg/L	0.3	1
			EPA 551.1 - EPA Method 551.1 Trihalomethanes						
10/30/17	10/31/17 01:40	1039098	1039158	(EPA 551.1)	Bromodichloromethane	2.0	ug/L	0.5	1
10/30/17	10/31/17 01:40	1039098	1039158	(EPA 551.1)	Bromoform	ND	ug/L	0.5	1
10/30/17	10/31/17 01:40	1039098	1039158	(EPA 551.1)	Chloroform	3.6	ug/L	0.5	1
10/30/17	10/31/17 01:40	1039098	1039158	(EPA 551.1)	Dibromochloromethane	0.61	ug/L	0.5	1
10/30/17	10/31/17 01:40	1039098	1039158	(EPA 551.1)	Total Trihalomethanes	6.2	ug/L	0.5	1
10/30/17	10/31/17 01:40	1039098	1039158	(EPA 551.1)	1,2-Dibromopropane	92	%		1
10/30/17	10/31/17 01:40	1039098	1039158	(EPA 551.1)	4-Bromofluorobenzene	102	%		1
			EPA 300.0 - Chloride, Sulfate by EPA 300.0						
	10/26/17 20:29		1038403	(EPA 300.0)	Chloride	28	mg/L	2	2
			SM 2320B - Alkalinity in CaCO3 units						
	10/27/17 23:13		1038919	(SM 2320B)	Alkalinity in CaCO3 units	150	mg/L	2	1
JC3 (201710260332)							**Sampled on 10/25/2017 0955**		
	Variable ID: 17-1025-4								
			EPA 200.7 - ICP Metals						
10/26/17	10/27/17 12:51	1038371	1038551	(EPA 200.7)	Calcium Total ICAP	79	mg/L	1	1
10/26/17	10/27/17 12:51	1038371	1038551	(EPA 200.7)	Iron Total ICAP	ND	mg/L	0.02	1
10/26/17	10/27/17 12:51	1038371	1038551	(EPA 200.7)	Manganese Total ICAP	0.013	mg/L	0.002	1
			SM 5310C - Total Organic Carbon						
	11/01/17 18:42		1039846	(SM 5310C)	Total Organic Carbon	4.5	mg/L	0.3	1
			EPA 551.1 - EPA Method 551.1 Trihalomethanes						
10/30/17	10/31/17 02:06	1039098	1039158	(EPA 551.1)	Bromodichloromethane	4.1	ug/L	0.5	1
10/30/17	10/31/17 02:06	1039098	1039158	(EPA 551.1)	Bromoform	ND	ug/L	0.5	1
10/30/17	10/31/17 02:06	1039098	1039158	(EPA 551.1)	Chloroform	6.9	ug/L	0.5	1
10/30/17	10/31/17 02:06	1039098	1039158	(EPA 551.1)	Dibromochloromethane	1.2	ug/L	0.5	1
10/30/17	10/31/17 02:06	1039098	1039158	(EPA 551.1)	Total Trihalomethanes	12	ug/L	0.5	1
10/30/17	10/31/17 02:06	1039098	1039158	(EPA 551.1)	1,2-Dibromopropane	98	%		1
10/30/17	10/31/17 02:06	1039098	1039158	(EPA 551.1)	4-Bromofluorobenzene	103	%		1
			EPA 300.0 - Chloride, Sulfate by EPA 300.0						
	10/26/17 20:42		1038403	(EPA 300.0)	Chloride	28	mg/L	2	2

Rounding on totals after summation.
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Laboratory Data

Report: 695546
Project: SPECIAL
Group: JC 9450 Jar Test

Goleta Water District
Dale Armstrong
4699 Hollister Avenue
Goleta, CA 93117

Samples Received on:
10/26/2017 1228

Prepped	Analyzed	Prep Batch	Analytical Batch	Method	Analyte	Result	Units	MRL	Dilution
			SM 2320B - Alkalinity in CaCO3 units						
	10/27/17 23:05		1038919	(SM 2320B)	Alkalinity in CaCO3 units	140	mg/L	2	1
JC4 (201710260333)						**Sampled on 10/25/2017 0946**			
	Variable ID: 17-1025-5								
			EPA 200.7 - ICP Metals						
10/26/17	10/27/17 12:52	1038371	1038551	(EPA 200.7)	Calcium Total ICAP	78	mg/L	1	1
10/26/17	10/27/17 12:52	1038371	1038551	(EPA 200.7)	Iron Total ICAP	ND	mg/L	0.02	1
10/26/17	10/27/17 12:52	1038371	1038551	(EPA 200.7)	Manganese Total ICAP	0.012	mg/L	0.002	1
			SM 5310C - Total Organic Carbon						
	11/01/17 19:04		1039846	(SM 5310C)	Total Organic Carbon	4.5	mg/L	0.3	1
			EPA 551.1 - EPA Method 551.1 Trihalomethanes						
10/30/17	10/31/17 02:31	1039098	1039158	(EPA 551.1)	Bromodichloromethane	9.4	ug/L	0.5	1
10/30/17	10/31/17 02:31	1039098	1039158	(EPA 551.1)	Bromoform	ND	ug/L	0.5	1
10/30/17	10/31/17 02:31	1039098	1039158	(EPA 551.1)	Chloroform	14	ug/L	0.5	1
10/30/17	10/31/17 02:31	1039098	1039158	(EPA 551.1)	Dibromochloromethane	3.1	ug/L	0.5	1
10/30/17	10/31/17 02:31	1039098	1039158	(EPA 551.1)	Total Trihalomethanes	26	ug/L	0.5	1
10/30/17	10/31/17 02:31	1039098	1039158	(EPA 551.1)	1,2-Dibromopropane	93	%		1
10/30/17	10/31/17 02:31	1039098	1039158	(EPA 551.1)	4-Bromofluorobenzene	102	%		1
			EPA 300.0 - Chloride, Sulfate by EPA 300.0						
	10/26/17 20:55		1038403	(EPA 300.0)	Chloride	29	mg/L	2	2
			SM 2320B - Alkalinity in CaCO3 units						
	10/27/17 20:50		1038919	(SM 2320B)	Alkalinity in CaCO3 units	140	mg/L	2	1
JC5 (201710260334)						**Sampled on 10/25/2017 0939**			
	Variable ID: 17-1025-6								
			EPA 200.7 - ICP Metals						
10/26/17	10/27/17 13:11	1038371	1038562	(EPA 200.7)	Calcium Total ICAP	80	mg/L	1	1
10/26/17	10/27/17 13:11	1038371	1038562	(EPA 200.7)	Iron Total ICAP	ND	mg/L	0.02	1
10/26/17	10/27/17 13:11	1038371	1038562	(EPA 200.7)	Manganese Total ICAP	0.011	mg/L	0.002	1
			SM 5310C - Total Organic Carbon						
	11/01/17 19:27		1039846	(SM 5310C)	Total Organic Carbon	4.4	mg/L	0.3	1
			EPA 551.1 - EPA Method 551.1 Trihalomethanes						
10/30/17	10/31/17 02:56	1039098	1039158	(EPA 551.1)	Bromodichloromethane	14	ug/L	0.5	1
10/30/17	10/31/17 02:56	1039098	1039158	(EPA 551.1)	Bromoform	ND	ug/L	0.5	1
10/30/17	10/31/17 02:56	1039098	1039158	(EPA 551.1)	Chloroform	23	ug/L	0.5	1
10/30/17	10/31/17 02:56	1039098	1039158	(EPA 551.1)	Dibromochloromethane	4.1	ug/L	0.5	1
10/30/17	10/31/17 02:56	1039098	1039158	(EPA 551.1)	Total Trihalomethanes	41	ug/L	0.5	1
10/30/17	10/31/17 02:56	1039098	1039158	(EPA 551.1)	1,2-Dibromopropane	93	%		1
10/30/17	10/31/17 02:56	1039098	1039158	(EPA 551.1)	4-Bromofluorobenzene	103	%		1
			EPA 300.0 - Chloride, Sulfate by EPA 300.0						

Rounding on totals after summation.
(c) - indicates calculated results

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Laboratory Data

Report: 695546
Project: SPECIAL
Group: JC 9450 Jar Test

Goleta Water District
Dale Armstrong
4699 Hollister Avenue
Goleta, CA 93117

Samples Received on:
10/26/2017 1228

Prepped	Analyzed	Prep Batch	Analytical Batch	Method	Analyte	Result	Units	MRL	Dilution
	10/26/17 21:07		1038403	(EPA 300.0)	Chloride	31	mg/L	2	2
		SM 2320B - Alkalinity in CaCO3 units							
	10/27/17 21:05		1038919	(SM 2320B)	Alkalinity in CaCO3 units	150	mg/L	2	1
JCPC (201710260335)						**Sampled on 10/25/2017 1024**			
	Variable ID: 17-1025-7								
		EPA 200.7 - ICP Metals							
10/26/17	10/27/17 12:53	1038371	1038551	(EPA 200.7)	Calcium Total ICAP	79	mg/L	1	1
10/26/17	10/27/17 12:53	1038371	1038551	(EPA 200.7)	Iron Total ICAP	ND	mg/L	0.02	1
10/26/17	10/27/17 12:53	1038371	1038551	(EPA 200.7)	Manganese Total ICAP	0.0057	mg/L	0.002	1
		SM 5310C - Total Organic Carbon							
	11/01/17 21:19		1039846	(SM 5310C)	Total Organic Carbon	4.8 (B4)	mg/L	0.3	1
		EPA 551.1 - EPA Method 551.1 Trihalomethanes							
10/30/17	10/31/17 03:21	1039098	1039158	(EPA 551.1)	Bromodichloromethane	10	ug/L	0.5	1
10/30/17	10/31/17 03:21	1039098	1039158	(EPA 551.1)	Bromoform	ND	ug/L	0.5	1
10/30/17	10/31/17 03:21	1039098	1039158	(EPA 551.1)	Chloroform	18	ug/L	0.5	1
10/30/17	10/31/17 03:21	1039098	1039158	(EPA 551.1)	Dibromochloromethane	2.8	ug/L	0.5	1
10/30/17	10/31/17 03:21	1039098	1039158	(EPA 551.1)	Total Trihalomethanes	31	ug/L	0.5	1
10/30/17	10/31/17 03:21	1039098	1039158	(EPA 551.1)	1,2-Dibromopropane	89	%		1
10/30/17	10/31/17 03:21	1039098	1039158	(EPA 551.1)	4-Bromofluorobenzene	102	%		1
		EPA 300.0 - Chloride, Sulfate by EPA 300.0							
	10/26/17 22:51		1038403	(EPA 300.0)	Chloride	30	mg/L	2	2
		SM 2320B - Alkalinity in CaCO3 units							
	10/28/17 01:33		1038920	(SM 2320B)	Alkalinity in CaCO3 units	150	mg/L	2	1
JCPC1 (201710260336)						**Sampled on 10/25/2017 1038**			
	Variable ID: 17-1025-8								
		EPA 200.7 - ICP Metals							
10/26/17	10/27/17 12:54	1038371	1038551	(EPA 200.7)	Calcium Total ICAP	79	mg/L	1	1
10/26/17	10/27/17 12:54	1038371	1038551	(EPA 200.7)	Iron Total ICAP	ND	mg/L	0.02	1
10/26/17	10/27/17 12:54	1038371	1038551	(EPA 200.7)	Manganese Total ICAP	0.014	mg/L	0.002	1
		SM 5310C - Total Organic Carbon							
	11/01/17 21:41		1039846	(SM 5310C)	Total Organic Carbon	4.7 (B4)	mg/L	0.3	1
		EPA 551.1 - EPA Method 551.1 Trihalomethanes							
10/30/17	10/31/17 03:46	1039098	1039158	(EPA 551.1)	Bromodichloromethane	0.59	ug/L	0.5	1
10/30/17	10/31/17 03:46	1039098	1039158	(EPA 551.1)	Bromoform	ND	ug/L	0.5	1
10/30/17	10/31/17 03:46	1039098	1039158	(EPA 551.1)	Chloroform	1.5	ug/L	0.5	1
10/30/17	10/31/17 03:46	1039098	1039158	(EPA 551.1)	Dibromochloromethane	ND	ug/L	0.5	1
10/30/17	10/31/17 03:46	1039098	1039158	(EPA 551.1)	Total Trihalomethanes	2.1	ug/L	0.5	1
10/30/17	10/31/17 03:46	1039098	1039158	(EPA 551.1)	1,2-Dibromopropane	94	%		1
10/30/17	10/31/17 03:46	1039098	1039158	(EPA 551.1)	4-Bromofluorobenzene	103	%		1

Rounding on totals after summation.
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Laboratory Data

Report: 695546
Project: SPECIAL
Group: JC 9450 Jar Test

Goleta Water District
Dale Armstrong
4699 Hollister Avenue
Goleta, CA 93117

Samples Received on:
10/26/2017 1228

Prepped	Analyzed	Prep Batch	Analytical Batch	Method	Analyte	Result	Units	MRL	Dilution
			EPA 300.0 - Chloride, Sulfate by EPA 300.0						
	10/26/17 21:20		1038403	(EPA 300.0)	Chloride	28	mg/L	2	2
			SM 2320B - Alkalinity in CaCO3 units						
	10/27/17 20:19		1038919	(SM 2320B)	Alkalinity in CaCO3 units	150	mg/L	2	1
JCPC2 (201710260337)						**Sampled on 10/25/2017 1045**			
	Variable ID: 17-1025-9								
			EPA 200.7 - ICP Metals						
10/26/17	10/27/17 12:55	1038371	1038551	(EPA 200.7)	Calcium Total ICAP	79	mg/L	1	1
10/26/17	10/27/17 12:55	1038371	1038551	(EPA 200.7)	Iron Total ICAP	ND	mg/L	0.02	1
10/26/17	10/27/17 12:55	1038371	1038551	(EPA 200.7)	Manganese Total ICAP	0.015	mg/L	0.002	1
			SM 5310C - Total Organic Carbon						
	11/01/17 22:03		1039846	(SM 5310C)	Total Organic Carbon	4.7 (B4)	mg/L	0.3	1
			EPA 551.1 - EPA Method 551.1 Trihalomethanes						
10/30/17	10/31/17 04:12	1039098	1039158	(EPA 551.1)	Bromodichloromethane	1.8	ug/L	0.5	1
10/30/17	10/31/17 04:12	1039098	1039158	(EPA 551.1)	Bromoform	ND	ug/L	0.5	1
10/30/17	10/31/17 04:12	1039098	1039158	(EPA 551.1)	Chloroform	3.5	ug/L	0.5	1
10/30/17	10/31/17 04:12	1039098	1039158	(EPA 551.1)	Dibromochloromethane	ND	ug/L	0.5	1
10/30/17	10/31/17 04:12	1039098	1039158	(EPA 551.1)	Total Trihalomethanes	5.3	ug/L	0.5	1
10/30/17	10/31/17 04:12	1039098	1039158	(EPA 551.1)	1,2-Dibromopropane	91	%		1
10/30/17	10/31/17 04:12	1039098	1039158	(EPA 551.1)	4-Bromofluorobenzene	101	%		1
			EPA 300.0 - Chloride, Sulfate by EPA 300.0						
	10/26/17 21:33		1038403	(EPA 300.0)	Chloride	28	mg/L	2	2
			SM 2320B - Alkalinity in CaCO3 units						
	10/27/17 23:21		1038919	(SM 2320B)	Alkalinity in CaCO3 units	150	mg/L	2	1
JCPC3 (201710260338)						**Sampled on 10/25/2017 1048**			
	Variable ID: 17-1025-10								
			EPA 200.7 - ICP Metals						
10/26/17	10/31/17 10:58	1038371	1039188	(EPA 200.7)	Calcium Total ICAP	83	mg/L	1	1
10/26/17	10/31/17 10:58	1038371	1039188	(EPA 200.7)	Iron Total ICAP	0.057	mg/L	0.02	1
10/26/17	10/31/17 10:58	1038371	1039188	(EPA 200.7)	Manganese Total ICAP	0.016	mg/L	0.002	1
			SM 5310C - Total Organic Carbon						
	11/01/17 22:25		1039846	(SM 5310C)	Total Organic Carbon	4.6 (B4)	mg/L	0.3	1
			EPA 551.1 - EPA Method 551.1 Trihalomethanes						
10/30/17	10/31/17 04:37	1039098	1039158	(EPA 551.1)	Bromodichloromethane	2.3	ug/L	0.5	1
10/30/17	10/31/17 04:37	1039098	1039158	(EPA 551.1)	Bromoform	ND	ug/L	0.5	1
10/30/17	10/31/17 04:37	1039098	1039158	(EPA 551.1)	Chloroform	4.3	ug/L	0.5	1
10/30/17	10/31/17 04:37	1039098	1039158	(EPA 551.1)	Dibromochloromethane	0.59	ug/L	0.5	1
10/30/17	10/31/17 04:37	1039098	1039158	(EPA 551.1)	Total Trihalomethanes	7.2	ug/L	0.5	1
10/30/17	10/31/17 04:37	1039098	1039158	(EPA 551.1)	1,2-Dibromopropane	97	%		1

Rounding on totals after summation.
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Laboratory Data

Report: 695546
Project: SPECIAL
Group: JC 9450 Jar Test

Goleta Water District
Dale Armstrong
4699 Hollister Avenue
Goleta, CA 93117

Samples Received on:
10/26/2017 1228

Prepped	Analyzed	Prep Batch	Analytical Batch	Method	Analyte	Result	Units	MRL	Dilution
10/30/17	10/31/17 04:37	1039098	1039158	(EPA 551.1)	4-Bromofluorobenzene	99	%		1
		EPA 300.0 - Chloride, Sulfate by EPA 300.0							
	10/26/17 21:46		1038403	(EPA 300.0)	Chloride	28	mg/L	2	2
		SM 2320B - Alkalinity in CaCO3 units							
	10/27/17 21:13		1038919	(SM 2320B)	Alkalinity in CaCO3 units	150	mg/L	2	1
JCPC4 (201710260339)						**Sampled on 10/25/2017 1043**			
	Variable ID: 17-1025-11								
		EPA 200.7 - ICP Metals							
10/26/17	10/27/17 12:56	1038371	1038551	(EPA 200.7)	Calcium Total ICAP	81	mg/L	1	1
10/26/17	10/27/17 12:56	1038371	1038551	(EPA 200.7)	Iron Total ICAP	ND	mg/L	0.02	1
10/26/17	10/27/17 12:56	1038371	1038551	(EPA 200.7)	Manganese Total ICAP	0.014	mg/L	0.002	1
		SM 5310C - Total Organic Carbon							
	11/01/17 22:46		1039846	(SM 5310C)	Total Organic Carbon	4.6 (B4)	mg/L	0.3	1
		EPA 551.1 - EPA Method 551.1 Trihalomethanes							
10/30/17	10/31/17 05:27	1039098	1039158	(EPA 551.1)	Bromodichloromethane	3.1	ug/L	0.5	1
10/30/17	10/31/17 05:27	1039098	1039158	(EPA 551.1)	Bromoform	ND	ug/L	0.5	1
10/30/17	10/31/17 05:27	1039098	1039158	(EPA 551.1)	Chloroform	6.0	ug/L	0.5	1
10/30/17	10/31/17 05:27	1039098	1039158	(EPA 551.1)	Dibromochloromethane	0.74	ug/L	0.5	1
10/30/17	10/31/17 05:27	1039098	1039158	(EPA 551.1)	Total Trihalomethanes	9.8	ug/L	0.5	1
10/30/17	10/31/17 05:27	1039098	1039158	(EPA 551.1)	1,2-Dibromopropane	90	%		1
10/30/17	10/31/17 05:27	1039098	1039158	(EPA 551.1)	4-Bromofluorobenzene	102	%		1
		EPA 300.0 - Chloride, Sulfate by EPA 300.0							
	10/26/17 21:59		1038403	(EPA 300.0)	Chloride	29	mg/L	2	2
		SM 2320B - Alkalinity in CaCO3 units							
	10/27/17 22:49		1038919	(SM 2320B)	Alkalinity in CaCO3 units	150	mg/L	2	1
JCPC5 (201710260340)						**Sampled on 10/25/2017 1029**			
	Variable ID: 17-1025-12								
		EPA 200.7 - ICP Metals							
10/26/17	10/27/17 12:57	1038371	1038551	(EPA 200.7)	Calcium Total ICAP	80	mg/L	1	1
10/26/17	10/27/17 12:57	1038371	1038551	(EPA 200.7)	Iron Total ICAP	ND	mg/L	0.02	1
10/26/17	10/27/17 12:57	1038371	1038551	(EPA 200.7)	Manganese Total ICAP	0.011	mg/L	0.002	1
		SM 5310C - Total Organic Carbon							
	11/01/17 23:08		1039846	(SM 5310C)	Total Organic Carbon	4.6 (B4)	mg/L	0.3	1
		EPA 551.1 - EPA Method 551.1 Trihalomethanes							
10/30/17	10/31/17 06:18	1039098	1039158	(EPA 551.1)	Bromodichloromethane	4.8	ug/L	0.5	1
10/30/17	10/31/17 06:18	1039098	1039158	(EPA 551.1)	Bromoform	ND	ug/L	0.5	1
10/30/17	10/31/17 06:18	1039098	1039158	(EPA 551.1)	Chloroform	8.7	ug/L	0.5	1
10/30/17	10/31/17 06:18	1039098	1039158	(EPA 551.1)	Dibromochloromethane	1.2	ug/L	0.5	1
10/30/17	10/31/17 06:18	1039098	1039158	(EPA 551.1)	Total Trihalomethanes	15	ug/L	0.5	1

Rounding on totals after summation.
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Laboratory Data

Report: 695546
Project: SPECIAL
Group: JC 9450 Jar Test

Goleta Water District
Dale Armstrong
4699 Hollister Avenue
Goleta, CA 93117

Samples Received on:
10/26/2017 1228

Prepped	Analyzed	Prep Batch	Analytical Batch	Method	Analyte	Result	Units	MRL	Dilution
10/30/17	10/31/17 06:18	1039098	1039158	(EPA 551.1)	1,2-Dibromopropane	93	%		1
10/30/17	10/31/17 06:18	1039098	1039158	(EPA 551.1)	4-Bromofluorobenzene	104	%		1
EPA 300.0 - Chloride, Sulfate by EPA 300.0									
	10/26/17 22:12		1038403	(EPA 300.0)	Chloride	30	mg/L	2	2
SM 2320B - Alkalinity in CaCO3 units									
	10/27/17 20:58		1038919	(SM 2320B)	Alkalinity in CaCO3 units	150	mg/L	2	1

Rounding on totals after summation.
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Laboratory QC Summary

Report: 695546
Project: SPECIAL
Group: JC 9450 Jar Test

Goleta Water District

Chloride, Sulfate by EPA 300.0

Analytical Batch: 1038403 — **Analysis Date: 10/26/2017**

201710260329	JC Control	Analyzed by: O2TX
201710260330	JC1	Analyzed by: O2TX
201710260331	JC2	Analyzed by: O2TX
201710260332	JC3	Analyzed by: O2TX
201710260333	JC4	Analyzed by: O2TX
201710260334	JC5	Analyzed by: O2TX
201710260335	JCPC	Analyzed by: O2TX
201710260336	JCPC1	Analyzed by: O2TX
201710260337	JCPC2	Analyzed by: O2TX
201710260338	JCPC3	Analyzed by: O2TX
201710260339	JCPC4	Analyzed by: O2TX
201710260340	JCPC5	Analyzed by: O2TX

ICP Metals

Prep Batch: 1038371 **Analytical Batch: 1038551** — **Analysis Date: 10/27/2017**

201710260329	JC Control	Analyzed by: 6Q4
201710260330	JC1	Analyzed by: 6Q4
201710260331	JC2	Analyzed by: 6Q4
201710260332	JC3	Analyzed by: 6Q4
201710260333	JC4	Analyzed by: 6Q4
201710260335	JCPC	Analyzed by: 6Q4
201710260336	JCPC1	Analyzed by: 6Q4
201710260337	JCPC2	Analyzed by: 6Q4
201710260339	JCPC4	Analyzed by: 6Q4
201710260340	JCPC5	Analyzed by: 6Q4

ICP Metals

Prep Batch: 1038371 **Analytical Batch: 1038562** — **Analysis Date: 10/27/2017**

201710260334	JC5	Analyzed by: 6Q4

Alkalinity in CaCO3 units

Analytical Batch: 1038919 — **Analysis Date: 10/27/2017**

201710260329	JC Control	Analyzed by: G6PC
201710260331	JC2	Analyzed by: G6PC
201710260332	JC3	Analyzed by: G6PC
201710260333	JC4	Analyzed by: G6PC
201710260334	JC5	Analyzed by: G6PC
201710260336	JCPC1	Analyzed by: G6PC
201710260337	JCPC2	Analyzed by: G6PC
201710260338	JCPC3	Analyzed by: G6PC
201710260339	JCPC4	Analyzed by: G6PC
201710260340	JCPC5	Analyzed by: G6PC

Alkalinity in CaCO3 units

Analytical Batch: 1038920 — **Analysis Date: 10/28/2017**

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Laboratory QC Summary

Report: 695546
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Goleta Water District

201710260330	JC1	Analyzed by: G6PC
201710260335	JCPC	Analyzed by: G6PC

EPA Method 551.1 Trihalomethanes

Prep Batch: 1039098 Analytical Batch: 1039158 — **Analysis Date: 10/30/2017**

201710260329	JC Control	Analyzed by: YIV3
201710260330	JC1	Analyzed by: YIV3
201710260331	JC2	Analyzed by: YIV3
201710260332	JC3	Analyzed by: YIV3
201710260333	JC4	Analyzed by: YIV3
201710260334	JC5	Analyzed by: YIV3
201710260335	JCPC	Analyzed by: YIV3
201710260336	JCPC1	Analyzed by: YIV3
201710260337	JCPC2	Analyzed by: YIV3
201710260338	JCPC3	Analyzed by: YIV3
201710260339	JCPC4	Analyzed by: YIV3
201710260340	JCPC5	Analyzed by: YIV3

ICP Metals

Prep Batch: 1038371 Analytical Batch: 1039188 — **Analysis Date: 10/31/2017**

201710260338	JCPC3	Analyzed by: 6Q4

Total Organic Carbon

Analytical Batch: 1039846 — **Analysis Date: 11/01/2017**

201710260329	JC Control	Analyzed by: LUPE
201710260330	JC1	Analyzed by: LUPE
201710260331	JC2	Analyzed by: LUPE
201710260332	JC3	Analyzed by: LUPE
201710260333	JC4	Analyzed by: LUPE
201710260334	JC5	Analyzed by: LUPE
201710260335	JCPC	Analyzed by: LUPE
201710260336	JCPC1	Analyzed by: LUPE
201710260337	JCPC2	Analyzed by: LUPE
201710260338	JCPC3	Analyzed by: LUPE
201710260339	JCPC4	Analyzed by: LUPE
201710260340	JCPC5	Analyzed by: LUPE

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Laboratory QC

Report: 695546
Project: SPECIAL
Group: JC 9450 Jar Test

Goleta Water District

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPDLimit (%)	RPD%
Chloride, Sulfate by EPA 300.0 by EPA 300.0									
Analytical Batch: 1038403							**Analysis Date: 10/26/2017**		
LCS1	Chloride		25	25.9	mg/L	104	(90-110)		
LCS2	Chloride		25	25.9	mg/L	104	(90-110)	20	0.0
MBLK	Chloride			<0.25	mg/L				
MRL_CHK	Chloride		0.5	0.439	mg/L	88	(50-150)		
MS_201710260330	Chloride	27	26	54.0	mg/L	107	(80-120)		
MS_201710260335	Chloride	30	26	56.6	mg/L	106	(80-120)		
MSD_201710260330	Chloride	27	26	53.9	mg/L	107	(80-120)	20	0.19
MSD_201710260335	Chloride	30	26	56.6	mg/L	106	(80-120)	20	0.081
ICP Metals by EPA 200.7									
Analytical Batch: 1038551							**Analysis Date: 10/27/2017**		
LCS1	Calcium Total ICAP		50	50.2	mg/L	100	(85-115)		
LCS2	Calcium Total ICAP		50	49.2	mg/L	99	(85-115)	20	2.0
MBLK	Calcium Total ICAP			<0.5	mg/L				
MRL_CHK	Calcium Total ICAP		1	0.942	mg/L	94	(50-150)		
MS_201710260193	Calcium Total ICAP	50	50	92.4	mg/L	84	(70-130)		
MS2_201710260329	Calcium Total ICAP	81	50	117	mg/L	73	(70-130)		
MSD_201710260193	Calcium Total ICAP	50	50	93.5	mg/L	86	(70-130)	20	1.1
MSD2_201710260329	Calcium Total ICAP	81	50	121	mg/L	82	(70-130)	20	3.1
LCS1	Iron Total ICAP		5	5.00	mg/L	100	(85-115)		
LCS2	Iron Total ICAP		5	4.91	mg/L	98	(85-115)	20	1.8
MBLK	Iron Total ICAP			<0.01	mg/L				
MRL_CHK	Iron Total ICAP		0.02	0.0197	mg/L	99	(50-150)		
MS_201710260193	Iron Total ICAP	0.71	5	5.58	mg/L	97	(70-130)		
MS2_201710260329	Iron Total ICAP	ND	5	4.98	mg/L	99	(70-130)		
MSD_201710260193	Iron Total ICAP	0.71	5	5.54	mg/L	97	(70-130)	20	0.70
MSD2_201710260329	Iron Total ICAP	ND	5	5.08	mg/L	101	(70-130)	20	2.3
LCS1	Manganese Total ICAP		0.5	0.500	mg/L	100	(85-115)		
LCS2	Manganese Total ICAP		0.5	0.491	mg/L	98	(85-115)	20	1.8
MBLK	Manganese Total ICAP			<0.001	mg/L				
MRL_CHK	Manganese Total ICAP		0.002	0.00205	mg/L	103	(50-150)		
MS_201710260193	Manganese Total ICAP	0.027	0.5	0.520	mg/L	99	(70-130)		
MS2_201710260329	Manganese Total ICAP	0.014	0.5	0.510	mg/L	99	(70-130)		
MSD_201710260193	Manganese Total ICAP	0.027	0.5	0.520	mg/L	99	(70-130)	20	0.027
MSD2_201710260329	Manganese Total ICAP	0.014	0.5	0.521	mg/L	101	(70-130)	20	2.1

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(S) - Indicates surrogate compound.
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Page 23 of 28 pages

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Laboratory QC

Report: 695546
Project: SPECIAL
Group: JC 9450 Jar Test

Goleta Water District

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPDLimit (%)	RPD%
ICP Metals by EPA 200.7									
Analytical Batch: 1038562							**Analysis Date: 10/27/2017**		
LCS1	Calcium Total ICAP		50	48.6	mg/L	97	(85-115)		
LCS2	Calcium Total ICAP		50	49.6	mg/L	99	(85-115)	20	2.2
MBLK	Calcium Total ICAP			<0.5	mg/L				
MRL_CHK	Calcium Total ICAP		1	0.965	mg/L	97	(50-150)		
MS_201710190244	Calcium Total ICAP	70	50	111	mg/L	82	(70-130)		
MS2_201710260311	Calcium Total ICAP	14	50	62.5	mg/L	97	(70-130)		
MSD_201710190244	Calcium Total ICAP	70	50	112	mg/L	83	(70-130)	20	0.82
MSD2_201710260311	Calcium Total ICAP	14	50	59.1	mg/L	90	(70-130)	20	5.6
LCS1	Iron Total ICAP		5	4.88	mg/L	98	(85-115)		
LCS2	Iron Total ICAP		5	4.96	mg/L	99	(85-115)	20	1.6
MBLK	Iron Total ICAP			<0.01	mg/L				
MRL_CHK	Iron Total ICAP		0.02	0.0198	mg/L	99	(50-150)		
MS_201710190244	Iron Total ICAP	ND	5	5.00	mg/L	100	(70-130)		
MS2_201710260311	Iron Total ICAP	ND	5	5.12	mg/L	102	(70-130)		
MSD_201710190244	Iron Total ICAP	ND	5	5.05	mg/L	101	(70-130)	20	0.97
MSD2_201710260311	Iron Total ICAP	ND	5	4.83	mg/L	97	(70-130)	20	5.9
LCS1	Manganese Total ICAP		0.5	0.492	mg/L	98	(85-115)		
LCS2	Manganese Total ICAP		0.5	0.499	mg/L	100	(85-115)	20	1.4
MBLK	Manganese Total ICAP			<0.001	mg/L				
MRL_CHK	Manganese Total ICAP		0.002	0.00159	mg/L	80	(50-150)		
MS_201710190244	Manganese Total ICAP	ND	0.5	0.502	mg/L	100	(70-130)		
MS2_201710260311	Manganese Total ICAP	0.0021	0.5	0.514	mg/L	102	(70-130)		
MSD_201710190244	Manganese Total ICAP	ND	0.5	0.508	mg/L	101	(70-130)	20	1.3
MSD2_201710260311	Manganese Total ICAP	0.0021	0.5	0.484	mg/L	96	(70-130)	20	6.0
Alkalinity in CaCO3 units by SM 2320B									
Analytical Batch: 1038919							**Analysis Date: 10/27/2017**		
LCS1	Alkalinity in CaCO3 units		100	101	mg/L	101	(90-110)		
LCS2	Alkalinity in CaCO3 units		100	101	mg/L	101	(90-110)	20	0.0
MBLK	Alkalinity in CaCO3 units			<1	mg/L				
MRL_CHK	Alkalinity in CaCO3 units		2	2.53	mg/L	126	(50-150)		
MS_201709220455	Alkalinity in CaCO3 units	300	100	376	mg/L	75	(80-120)		
MS_201710260610	Alkalinity in CaCO3 units	160	100	216	mg/L	54	(80-120)		
MSD_201709220455	Alkalinity in CaCO3 units	300	100	377	mg/L	76	(80-120)	20	0.27
MSD_201710260610	Alkalinity in CaCO3 units	160	100	213	mg/L	51	(80-120)	20	1.4

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Laboratory QC

Report: 695546
Project: SPECIAL
Group: JC 9450 Jar Test

Goleta Water District

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPDLimit (%)	RPD%
Alkalinity in CaCO3 units by SM 2320B									
Analytical Batch: 1038920							**Analysis Date: 10/27/2017**		
LCS1	Alkalinity in CaCO3 units		100	101	mg/L	101	(90-110)		
LCS2	Alkalinity in CaCO3 units		100	101	mg/L	101	(90-110)	20	0.0
MBLK	Alkalinity in CaCO3 units			<1	mg/L				
MRL_CHK	Alkalinity in CaCO3 units		2	2.39	mg/L	120	(50-150)		
MS_201710180315	Alkalinity in CaCO3 units	230	100	234	mg/L	6	(80-120)		
MS_201710260577	Alkalinity in CaCO3 units	150	100	165	mg/L	19	(80-120)		
MSD_201710180315	Alkalinity in CaCO3 units	230	100	235	mg/L	7.3	(80-120)	20	0.47
MSD_201710260577	Alkalinity in CaCO3 units	150	100	166	mg/L	20	(80-120)	20	0.33
EPA Method 551.1 Trihalomethanes by EPA 551.1									
Analytical Batch: 1039158							**Analysis Date: 10/30/2017**		
CCCH	1,2-Dibromopropane (S)			104	%	104	(80-120)		
CCCH	1,2-Dibromopropane (S)			104	%	104	(80-120)		
CCCM	1,2-Dibromopropane (S)			95.3	%	95	(80-120)		
CCCM	1,2-Dibromopropane (S)			96.1	%	96	(80-120)		
DUP1_201710260330	1,2-Dibromopropane (S)			101	%	101	(80-120)		
DUP2_201710260340	1,2-Dibromopropane (S)			101	%	101	(80-120)		
LCS1	1,2-Dibromopropane (S)			100	%	100	(80-120)		
MBLK	1,2-Dibromopropane (S)			102	%	102	(80-120)		
MRL_CHK	1,2-Dibromopropane (S)			109	%	109	(80-120)		
MS1_201710260329	1,2-Dibromopropane (S)			100	%	100	(80-120)		
MS2_201710260339	1,2-Dibromopropane (S)			106	%	106	(80-120)		
CCCH	4-Bromofluorobenzene (I)			98.8	%	99	(80-120)		
CCCH	4-Bromofluorobenzene (I)			104	%	104	(80-120)		
CCCM	4-Bromofluorobenzene (I)			100	%	100	(80-120)		
CCCM	4-Bromofluorobenzene (I)			101	%	101	(80-120)		
DUP1_201710260330	4-Bromofluorobenzene (I)			102	%	102	(80-120)		
DUP2_201710260340	4-Bromofluorobenzene (I)			102	%	102	(80-120)		
LCS1	4-Bromofluorobenzene (I)			102	%	102	(80-120)		
MBLK	4-Bromofluorobenzene (I)			100	%	101	(80-120)		
MRL_CHK	4-Bromofluorobenzene (I)			101	%	101	(80-120)		
MS1_201710260329	4-Bromofluorobenzene (I)			103	%	103	(80-120)		
MS2_201710260339	4-Bromofluorobenzene (I)			101	%	101	(80-120)		
CCCH	Bromodichloromethane		40	38.3	ug/L	96	(80-120)		
CCCH	Bromodichloromethane		40	37.8	ug/L	94	(80-120)		
CCCM	Bromodichloromethane		20	19.1	ug/L	95	(80-120)		

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Laboratory QC

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Goleta Water District

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPDLimit (%)	RPD%
CCCM	Bromodichloromethane		20	19.6	ug/L	98	(80-120)		
DUP1_201710260330	Bromodichloromethane	0.74		0.754	ug/L		(0-20)		
DUP2_201710260340	Bromodichloromethane	4.8		4.74	ug/L		(0-20)	20	1.5
LCS1	Bromodichloromethane		20	18.6	ug/L	93	(80-120)		
MBLK	Bromodichloromethane			<0.5	ug/L				
MRL_CHK	Bromodichloromethane		0.5	0.520	ug/L	104	(50-150)		
MS1_201710260329	Bromodichloromethane	15	20	32.9	ug/L	91	(80-120)		
MS2_201710260339	Bromodichloromethane	3.1	40	42.1	ug/L	98	(80-120)		
CCCH	Bromoform		40	39.9	ug/L	100	(80-120)		
CCCH	Bromoform		40	39.7	ug/L	99	(80-120)		
CCCM	Bromoform		20	20.5	ug/L	102	(80-120)		
CCCM	Bromoform		20	20.6	ug/L	103	(80-120)		
DUP1_201710260330	Bromoform	ND		ND	ug/L		(0-20)		
DUP2_201710260340	Bromoform	ND		ND	ug/L		(0-20)		
LCS1	Bromoform		20	20.2	ug/L	101	(80-120)		
MBLK	Bromoform			<0.5	ug/L				
MRL_CHK	Bromoform		0.5	0.645	ug/L	129	(50-150)		
MS1_201710260329	Bromoform	ND	20	19.7	ug/L	97	(80-120)		
MS2_201710260339	Bromoform	ND	40	40.3	ug/L	101	(80-120)		
CCCH	Chloroform		40	38.8	ug/L	97	(80-120)		
CCCH	Chloroform		40	38.0	ug/L	95	(80-120)		
CCCM	Chloroform		20	19.5	ug/L	98	(80-120)		
CCCM	Chloroform		20	20.1	ug/L	101	(80-120)		
DUP1_201710260330	Chloroform	1.5		1.53	ug/L		(0-20)	20	1.4
DUP2_201710260340	Chloroform	8.7		8.61	ug/L		(0-20)	20	1.5
LCS1	Chloroform		20	19.4	ug/L	97	(80-120)		
MBLK	Chloroform			<0.5	ug/L				
MRL_CHK	Chloroform		0.5	0.602	ug/L	120	(50-150)		
MS1_201710260329	Chloroform	26	20	44.7	ug/L	93	(80-120)		
MS2_201710260339	Chloroform	6.0	40	45.8	ug/L	100	(80-120)		
CCCH	Dibromochloromethane		40	39.2	ug/L	98	(80-120)		
CCCH	Dibromochloromethane		40	38.9	ug/L	97	(80-120)		
CCCM	Dibromochloromethane		20	19.9	ug/L	99	(80-120)		
CCCM	Dibromochloromethane		20	20.2	ug/L	101	(80-120)		
DUP1_201710260330	Dibromochloromethane	ND		ND	ug/L		(0-20)		
DUP2_201710260340	Dibromochloromethane	1.2		1.16	ug/L		(0-20)		
LCS1	Dibromochloromethane		20	20.0	ug/L	100	(80-120)		
MBLK	Dibromochloromethane			<0.5	ug/L				

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Laboratory QC

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Goleta Water District

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPDLimit (%)	RPD%
MRL_CHK	Dibromochloromethane		0.5	0.539	ug/L	108	(50-150)		
MS1_201710260329	Dibromochloromethane	4.2	20	23.0	ug/L	94	(80-120)		
MS2_201710260339	Dibromochloromethane	0.74	40	40.5	ug/L	99	(80-120)		
ICP Metals by EPA 200.7									
Analytical Batch: 1039188							**Analysis Date: 10/31/2017**		
LCS1	Calcium Total ICAP		50	50.5	mg/L	101	(85-115)		
LCS2	Calcium Total ICAP		50	50.3	mg/L	101	(85-115)	20	0.40
MBLK	Calcium Total ICAP			<0.5	mg/L				
MRL_CHK	Calcium Total ICAP		1	1.12	mg/L	112	(50-150)		
MS_201710260164	Calcium Total ICAP	1.9	50	53.0	mg/L	102	(70-130)		
MS2_201710270013	Calcium Total ICAP	2.7	50	55.6	mg/L	106	(70-130)		
MSD_201710260164	Calcium Total ICAP	1.9	50	53.2	mg/L	103	(70-130)	20	0.46
MSD2_201710270013	Calcium Total ICAP	2.7	50	53.7	mg/L	102	(70-130)	20	3.5
LCS1	Iron Total ICAP		5	5.02	mg/L	100	(85-115)		
LCS2	Iron Total ICAP		5	5.00	mg/L	100	(85-115)	20	0.40
MBLK	Iron Total ICAP			<0.01	mg/L				
MRL_CHK	Iron Total ICAP		0.02	0.0265	mg/L	133	(50-150)		
MS_201710260164	Iron Total ICAP	ND	5	5.07	mg/L	101	(70-130)		
MS2_201710270013	Iron Total ICAP	0.2	5	5.47	mg/L	105	(70-130)		
MSD_201710260164	Iron Total ICAP	ND	5	5.10	mg/L	102	(70-130)	20	0.59
MSD2_201710270013	Iron Total ICAP	0.2	5	5.26	mg/L	101	(70-130)	20	3.9
LCS1	Manganese Total ICAP		0.5	0.503	mg/L	101	(85-115)		
LCS2	Manganese Total ICAP		0.5	0.500	mg/L	100	(85-115)	20	0.60
MBLK	Manganese Total ICAP			<0.001	mg/L				
MRL_CHK	Manganese Total ICAP		0.002	0.00176	mg/L	88	(50-150)		
MS_201710260164	Manganese Total ICAP	ND	0.5	0.505	mg/L	101	(70-130)		
MS2_201710270013	Manganese Total ICAP	0.0063	0.5	0.535	mg/L	106	(70-130)		
MSD_201710260164	Manganese Total ICAP	ND	0.5	0.509	mg/L	102	(70-130)	20	0.75
MSD2_201710270013	Manganese Total ICAP	0.0063	0.5	0.516	mg/L	102	(70-130)	20	3.7
Total Organic Carbon by SM 5310C									
Analytical Batch: 1039846							**Analysis Date: 11/01/2017**		
LCS1	Total Organic Carbon		5	5.13	mg/L	103	(90-110)		
MBLK	Total Organic Carbon			<0.3	mg/L				
MRL_CHK	Total Organic Carbon		0.2	0.245	mg/L	122	(50-150)		
MS_201710260334	Total Organic Carbon	4.4	4	8.54	mg/L	102	(80-120)		
MS2_201710250673	Total Organic Carbon	6.3	2	8.34	mg/L	100	(80-120)		
MSD_201710260334	Total Organic Carbon	4.4	4	8.52	mg/L	102	(80-120)	20	0.18

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 QC

Report: 695546
Project: SPECIAL
Group: JC 9450 Jar Test

Goleta Water District

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPDLimit (%)	RPD%
MSD2_201710250673	Total Organic Carbon	6.3	2	8.42	mg/L	105	(80-120)	20	0.96

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.

Page 28 of 28 pages

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Monrovia, California 91016-3629
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ilac-MRA

ANAB ACCREDITED ISO/IEC 17025 TESTING LABORATORY
AT-1807

Laboratory Report

for

Goleta Water District
4699 Hollister Avenue
Goleta, CA 93117
Attention: Dale Armstrong
Fax: 805-968-1844

Date of Issue
11/14/2017
Alicia Del Carlo
EUROFINS EATON ANALYTICAL, INC.

MP6E: Alicia Del Carlo
Project Manager

NELAP ACCREDITED LABORATORY
ORELAP 4034

Report: 696879
Project: SPECIAL
Group: Jar Test
PO#: 091213 exp 063014 NTE 75K

* Accredited in accordance with TNI 2009 and ISO/IEC 17025:2005.
* Laboratory certifies that the test results meet all **TNI 2009 and ISO/IEC 17025:2005** 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.

Page 1 of 20 pages

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STATE CERTIFICATION LIST

State	Certification Number	State	Certification Number
Alabama	41060	Michigan	9906
Arizona	AZ0778	Mississippi	Certified
Arkansas	Certified	Montana	Cert 0035
California-Monrovia-ELAP	2813	Nebraska	Certified
California-Colton- ELAP	2812	Nevada	CA00006-2016
California-Folsom- ELAP	2820	New Hampshire *	2959
California-Fresno- ELAP	2966	New Jersey *	CA 008
Colorado	Certified	New Mexico	Certified
Connecticut	PH-0107	New York *	11320
Delaware	CA 006	North Carolina	06701
Florida *	E871024	North Dakota	R-009
Georgia	947	Oregon (Primary AB) *	ORELAP 4034
Guam	17-005R	Pennsylvania *	68-565
Hawaii	Certified	Puerto Rico	Certified
Idaho	Certified	Rhode Island	LAO00326
Illinois *	200033	South Carolina	87016
Indiana	C-CA-01	South Dakota	Certified
Iowa - Asbestos	413	Tennessee	TN02839
Kansas *	E-10268	Texas *	T104704230-16-11
Kentucky	90107	Utah *	CA000062017-11
Louisiana *	LA170009	Vermont	VT0114
Maine	CA0006	Virginia *	460260
Maryland	224	Washington	C838
Commonwealth of Northern Marianas Is.	MP0004	EPA Region 5	Certified
Massachusetts	M-CA006	Los Angeles County Sanitation Districts	10264

* NELAP/TNI Recognized Accreditation Bodies

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Monrovia, CA 91016-3629
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ISO 17025 Accredited Method List

The tests listed below are accredited and meet the requirements of ISO 17025 as verified by the ANSI-ASQ National Accreditation Board/ANAB.
Refer to Certificate and scope of accreditation (AT 1807) found at: http://www.eatonanalytical.com

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
1,4-Dioxane	EPA 522	x		x
2,3,7,8-TCDD	Modified EPA 1613B	x		x
Acrylamide	In House Method (2440)	x		x
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	
Bicarbonate Alkalinity as HCO3	SM 2320B	x	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	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
Cryptosporidium	EPA 1623	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
Giardia	EPA 1623	x		x
Glyphosate	EPA 547	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

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
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	CDC Legionella	x		x
Mercury	EPA 245.1	x	x	x
Metals	EPA 200.7 / 200.8	x	x	x
Microcystin LR	ELISA (2360)	x		x
NDMA	EPA 521	x		x
NDMA	TQ In house method based on EPA 521 (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 Phosphate	SM 4500P E			x
Ortho Phosphorous	SM 4500P E	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
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
Semi-VOC	EPA 625		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	
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/EPA 524.3	x		x
VOC	EPA 624		x	x
VOC	EPA SW 846 8260	x		x
VOC	In House Method (2411)	x		x
Yeast and Mold	SM 9610	x		x

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Version 002 Issued: 09/21/2016

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Acknowledgement of Samples Received

Addr: **Goleta Water District**
4699 Hollister Avenue
Goleta, CA 93117

Attn: Dale Armstrong
Phone: 805-879-4678

Client ID: GOLETAWA
Folder #: 696879
Project: SPECIAL
Sample Group: Jar Test

Project Manager: Alicia Del Carlo
Phone: 559-797-1931
PO #: 091213 exp 063014 NTE 75K

The following samples were received from you on **November 02, 2017** at **12:01**. 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, Inc..

Sample #	Sample ID	Sample Date
201711020233	JC Control	10/25/2017 0946
	Variable ID: 17-1025-1	
	@ML551.1	
201711020234	JC1	10/25/2017 1000
	Variable ID: 17-1025-2	
	@ML551.1	
201711020235	JC2	10/25/2017 1004
	Variable ID: 17-1025-3	
	@ML551.1	
201711020236	JC3	10/25/2017 0955
	Variable ID: 17-1025-4	
	@ML551.1	
201711020237	JC4	10/25/2017 0946
	Variable ID: 17-1025-5	
	@ML551.1	
201711020238	JC5	10/25/2017 0939
	Variable ID: 17-1025-6	
	@ML551.1	
201711020239	JCPC	10/25/2017 1024
	Variable ID: 17-1025-7	
	@ML551.1	
201711020240	JCPC1	10/25/2017 1038
	Variable ID: 17-1025-8	
	@ML551.1	
201711020241	JCPC2	10/25/2017 1045
	Variable ID: 17-1025-9	
	@ML551.1	
201711020242	JCPC3	10/25/2017 1048
	Variable ID: 17-1025-10	
	@ML551.1	
201711020243	JCPC4	10/25/2017 1043

Reported: 11/14/2017

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Acknowledgement of Samples Received

Addr: **Goleta Water District**
4699 Hollister Avenue
Goleta, CA 93117

Attn: Dale Armstrong
Phone: 805-879-4678

Client ID: GOLETAWA
Folder #: 696879
Project: SPECIAL
Sample Group: Jar Test

Project Manager: Alicia Del Carlo
Phone: 559-797-1931
PO #: 091213 exp 063014 NTE 75K

The following samples were received from you on **November 02, 2017** at **12:01**. 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, Inc..

Sample #	Sample ID	Sample Date
	Variable ID: 17-1025-11	
	@ML551.1	
201711020244	JCPC5	10/25/2017 1029
	Variable ID: 17-1025-12	
	@ML551.1	

Test Description

@ML551.1 -- EPA Method 551.1 Trihalomethanes

Reported: 11/14/2017 Page 2 of 2

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CHAIN OF CUSTODY RECORD

696879

750 Royal Oaks Drive, Suite 100
Monrovia, CA 91016-3629
Phone: 626 386 1100
Fax: 626 386 1101
800 566 LABS (800 566 5227)
Website: www.EatonAnalytical.com

EUROFINS EATON ANALYTICAL USE ONLY:

LOGIN COMMENTS: _____ SAMPLES CHECKED AGAINST COC BY: _____

SAMPLES LOGGED IN BY: _____

SAMPLE TEMP RECEIVED AT: SAMPLES REC'D DAY OF COLLECTION? ☐ (check for yes)

☐ _____ (Other) IR Gun ID = _____ (Observation= _____ °C) (Corr.Factor _____ °C) (Final = _____ °C)

☑ Monrovia IR Gun ID = 570A (Observation= 0.5 °C) (Corr.Factor +.02 °C) (Final = 0.7 °C)

Compliance Acceptance Criteria: (Chemistry: 4 ± 2 °C) (Microbiology: < 10°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: _____

TO BE COMPLETED BY SAMPLER:

COMPANY/AGENCY NAME: GOLETA WATER DISTRICT

System Number: CA 4210004

EEA CLIENT CODE: COC ID:

SAMPLE GROUP: Jar Test

TAT requested: rush by adv notice only STD __ 1 wk X 3 day __ 2 day __ 1 day __

(check for yes) COMPLIANCE SAMPLES ☐ - Requires state forms ☐

(check for yes) NON-COMPLIANCE SAMPLES ☒ REGULATION INVOLVED: _____ (eg. SDWA, NPDES, etc.)

Type of samples (circle one): ROUTINE SPECIAL CONFIRMATION

SEE ATTACHED KIT ORDER FOR ANALYSES ☐ (check for yes), OR

List ALL ANALYSES REQUIRED (enter number of bottles sent for each test for each sample)

SAMPLE DATE	SAMPLE TIME	SAMPLE ID	CLIENT LAB ID	MATRIX *	Grab	Composite	6010/551.1	SAMPLER COMMENTS
10/25/17	0946	JC Control	17-1025-1	other	X		X	Please Note: 1 week TAT requested.
10/25/17	1000	JC1	17-1025-2	other	X		X	
10/25/17	1004	JC2	17-1025-3	other	X		X	
10/25/17	0955	JC3	17-1025-4	other	X		X	
10/25/17	0946	JC4	17-1025-5	other	X		X	
10/25/17	0939	JC5	17-1025-6	other	X		X	
10/25/17	1024	JCPC	17-1025-7	other	X		X	
10/25/17	1038	JCPC1	17-1025-8	other	X		X	
10/25/17	1045	JCPC2	17-1025-9	other	X		X	
10/25/17	1048	JCPC3	17-1025-10	other	X		X	

* MATRIX TYPES: RSW = Raw Surface Water; RGW = Raw Ground Water; CFW = Chlor(am)inated Finished Water; FW = Other Finished Water; SEAW = Sea Water; WW = Waste Water; BW = Bottled Water; SW = Storm Water; SO = Soil; SL = Sludge; O = Other - Please Identify

	SIGNATURE	PRINT NAME	COMPANY/TITLE	DATE	TIME
SAMPLED BY:		Dale Armstrong	Goleta Water District/Laboratory Supervisor	11/1/17	1400
RELINQUISHED BY:		Dale Armstrong	Goleta Water District/Laboratory Supervisor	11/1/17	1400
RECEIVED BY:		Paul Merrills	EEA	11/02/17	12:01
RELINQUISHED BY:					
RECEIVED BY:					

QA FO 0029.2 (Version 2) (08/28/2014)

PAGE 1 OF 1

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CHAIN OF CUSTODY RECORD

750 Royal Oaks Drive, Suite 100
Monrovia, CA 91016-3629
Phone: 626 386 1100
Fax: 626 386 1101
800 566 LABS (800 566 5227)
Website: www.EatonAnalytical.com

EUROFINS EATON ANALYTICAL USE ONLY:

LOGIN COMMENTS: _____ SAMPLES CHECKED AGAINST COC BY: _____

SAMPLES LOGGED IN BY: JS

SAMPLE TEMP RECEIVED AT:

☐ _____ (Other) IR Gun ID = _____ (Observation= _____ °C) (Corr.Factor _____ °C) (Final = _____ °C)

☑ Monrovia IR Gun ID = 570A (Observation= 0.5 °C) (Corr.Factor +0.2 °C) (Final = 0.7 °C)

SAMPLES REC'D DAY OF COLLECTION? ☐ (check for yes)

Compliance Acceptance Criteria: (Chemistry: 4 ± 2 °C) (Microbiology: < 10°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: _____

TO BE COMPLETED BY SAMPLER:

COMPANY/AGENCY NAME:	System Number:	COMPLIANCE SAMPLES (check for yes) ☐	NON-COMPLIANCE SAMPLES (check for yes) ☒
GOLETA WATER DISTRICT	CA 4210004	- Requires state forms ☐	REGULATION INVOLVED: _____
EEA CLIENT CODE: / COC ID:	SAMPLE GROUP: Jar Test	Type of samples (circle one): ROUTINE *SPECIAL* CONFIRMATION	(eg. SDWA, NPDES, etc.)
		SEE ATTACHED KIT ORDER FOR ANALYSES ☐ (check for yes), *OR*	
TAT requested: rush by adv notice only	STD _ f wk X 3 day ___ 2 day ___ 1 day ___	List ALL ANALYSES REQUIRED (enter number of bottles sent for each test for each sample)	

SAMPLE DATE	SAMPLE TIME	SAMPLE ID	CLIENT LAB ID	MATRIX *	Grab	Composite	w/NELS51.1	SAMPLER COMMENTS
10/25/17	1043	JCPC 4	17-1025-11	other	X		X	Please Note: 1 week TAT requested.
10/25/17	1029	JCPC 5	17-1025-12	other	X		X	

* MATRIX TYPES: RSW = Raw Surface Water; RGW = Raw Ground Water; CFW = Chlor(am)inated Finished Water; FW = Other Finished Water; SEAW = Sea Water; WW = Waste Water; BW = Bottled Water; SW = Storm Water; SO = Soil; SL = Sludge; O = Other - Please Identify

	SIGNATURE	PRINT NAME	COMPANY/TITLE	DATE	TIME
SAMPLED BY:		Dale Armstrong	Goleta Water District/Laboratory Supervisor	11/1/17	1400
RELINQUISHED BY:		Dale Armstrong	Goleta Water District/Laboratory Supervisor	11/1/17	1400
RECEIVED BY:		Paul Merillat	EEA	11/02/17	12:01
RELINQUISHED BY:					
RECEIVED BY:					

QA FO 0029.2 (Version 2) (08/28/2014)

PAGE 2 OF 2

After printing this label:
1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

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Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com.FedEx will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery,misdelivery,or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim.Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental,consequential, or special is limited to the greater of $100 or the authorized declared value. Recovery cannot exceed actual documented loss.Maximum for items of extraordinary value is $1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our ServiceGuide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

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Laboratory Comments

Report: 696879
Project: SPECIAL
Group: Jar Test

Goleta Water District
Dale Armstrong
4699 Hollister Avenue
Goleta, CA 93117

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 Hits

Report: 696879
Project: SPECIAL
Group: Jar Test

Goleta Water District
Dale Armstrong
4699 Hollister Avenue
Goleta, CA 93117

Samples Received on:
11/02/2017 12:01

Analyzed	Analyte	Sample ID	Result	Federal MCL	Units	MRL
	201711020233	**JC Control**				
11/03/2017 15:08	Bromodichloromethane		24		ug/L	0.5
11/04/2017 13:30	Chloroform		110		ug/L	1
11/03/2017 15:08	Dibromochloromethane		6.2		ug/L	0.5
11/03/2017 15:08	Total Trihalomethanes		140	80	ug/L	0.5
	201711020234	**JC1**				
11/03/2017 00:49	Bromodichloromethane		29		ug/L	0.5
11/03/2017 00:49	Bromoform		0.73		ug/L	0.5
11/04/2017 00:51	Chloroform		74		ug/L	1
11/03/2017 00:49	Dibromochloromethane		9.5		ug/L	0.5
11/03/2017 00:49	Total Trihalomethanes		110	80	ug/L	0.5
	201711020235	**JC2**				
11/03/2017 01:39	Bromodichloromethane		30		ug/L	0.5
11/03/2017 01:39	Bromoform		0.56		ug/L	0.5
11/04/2017 01:42	Chloroform		93		ug/L	1
11/03/2017 01:39	Dibromochloromethane		9.1		ug/L	0.5
11/03/2017 01:39	Total Trihalomethanes		130	80	ug/L	0.5
	201711020236	**JC3**				
11/03/2017 02:29	Bromodichloromethane		29		ug/L	0.5
11/03/2017 02:29	Bromoform		0.50		ug/L	0.5
11/04/2017 02:32	Chloroform		99		ug/L	1
11/03/2017 02:29	Dibromochloromethane		8.4		ug/L	0.5
11/03/2017 02:29	Total Trihalomethanes		140	80	ug/L	0.5
	201711020237	**JC4**				
11/03/2017 02:55	Bromodichloromethane		28		ug/L	0.5
11/04/2017 02:58	Chloroform		110		ug/L	2.5
11/03/2017 02:55	Dibromochloromethane		7.4		ug/L	0.5
11/03/2017 02:55	Total Trihalomethanes		140	80	ug/L	0.5
	201711020238	**JC5**				
11/03/2017 03:20	Bromodichloromethane		28		ug/L	0.5
11/04/2017 03:23	Chloroform		120		ug/L	2.5
11/03/2017 03:20	Dibromochloromethane		6.5		ug/L	0.5
11/03/2017 03:20	Total Trihalomethanes		150	80	ug/L	0.5
	201711020239	**JCPC**				

SUMMARY OF POSITIVE DATA ONLY

Page 10 of 20 pages

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Laboratory Hits

Report: 696879
Project: SPECIAL
Group: Jar Test

Goleta Water District
Dale Armstrong
4699 Hollister Avenue
Goleta, CA 93117

Samples Received on:
11/02/2017 12:01

Analyzed	Analyte	Sample ID	Result	Federal MCL	Units	MRL
11/03/2017 03:45	Bromodichloromethane		27		ug/L	0.5
11/04/2017 03:48	Chloroform		140		ug/L	2.5
11/03/2017 03:45	Dibromochloromethane		5.7		ug/L	0.5
11/03/2017 03:45	Total Trihalomethanes		170	80	ug/L	0.5
	201711020240	**JCPC1**				
11/03/2017 04:10	Bromodichloromethane		28		ug/L	0.5
11/03/2017 04:10	Bromoform		0.50		ug/L	0.5
11/04/2017 04:13	Chloroform		89		ug/L	1
11/03/2017 04:10	Dibromochloromethane		8.1		ug/L	0.5
11/03/2017 04:10	Total Trihalomethanes		120	80	ug/L	0.5
	201711020241	**JCPC2**				
11/03/2017 06:17	Bromodichloromethane		28		ug/L	0.5
11/03/2017 06:17	Bromoform		0.68		ug/L	0.5
11/04/2017 06:20	Chloroform		81		ug/L	2.5
11/03/2017 06:17	Dibromochloromethane		9.2		ug/L	0.5
11/03/2017 06:17	Total Trihalomethanes		120	80	ug/L	0.5
	201711020242	**JCPC3**				
11/03/2017 07:07	Bromodichloromethane		28		ug/L	0.5
11/03/2017 07:07	Bromoform		0.64		ug/L	0.5
11/04/2017 07:10	Chloroform		82		ug/L	1
11/03/2017 07:07	Dibromochloromethane		8.8		ug/L	0.5
11/03/2017 07:07	Total Trihalomethanes		120	80	ug/L	0.5
	201711020243	**JCPC4**				
11/03/2017 13:26	Bromodichloromethane		28		ug/L	0.5
11/03/2017 13:26	Bromoform		0.66		ug/L	0.5
11/04/2017 11:49	Chloroform		90		ug/L	1
11/03/2017 13:26	Dibromochloromethane		8.9		ug/L	0.5
11/03/2017 13:26	Total Trihalomethanes		130	80	ug/L	0.5
	201711020244	**JCPC5**				
11/03/2017 14:17	Bromodichloromethane		27		ug/L	0.5
11/03/2017 14:17	Bromoform		0.63		ug/L	0.5
11/04/2017 12:39	Chloroform		96		ug/L	1
11/03/2017 14:17	Dibromochloromethane		8.3		ug/L	0.5
11/03/2017 14:17	Total Trihalomethanes		130	80	ug/L	0.5

SUMMARY OF POSITIVE DATA ONLY

Page 11 of 20 pages

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Laboratory Data

Report: 696879
Project: SPECIAL
Group: Jar Test

Goleta Water District
Dale Armstrong
4699 Hollister Avenue
Goleta, CA 93117

Samples Received on:
11/02/2017 12:01

Prepped	Analyzed	Prep Batch	Analytical Batch	Method	Analyte	Result	Units	MRL	Dilution
JC Control (201711020233)							**Sampled on 10/25/2017 0946**		
Variable ID: 17-1025-1									
EPA 551.1 - EPA Method 551.1 Trihalomethanes									
11/02/17	11/03/17 15:08	1040021	1040257	(EPA 551.1)	Bromodichloromethane	24	ug/L	0.5	1
11/02/17	11/03/17 15:08	1040021	1040257	(EPA 551.1)	Bromoform	ND	ug/L	0.5	1
11/02/17	11/04/17 13:30	1040021	1040257	(EPA 551.1)	Chloroform	110	ug/L	1	2
11/02/17	11/03/17 15:08	1040021	1040257	(EPA 551.1)	Dibromochloromethane	6.2	ug/L	0.5	1
11/02/17	11/03/17 15:08	1040021	1040257	(EPA 551.1)	Total Trihalomethanes	140	ug/L	0.5	1
11/02/17	11/03/17 15:08	1040021	1040257	(EPA 551.1)	1,2-Dibromopropane	105	%		1
11/02/17	11/03/17 15:08	1040021	1040257	(EPA 551.1)	4-Bromofluorobenzene	99	%		1
JC1 (201711020234)							**Sampled on 10/25/2017 1000**		
Variable ID: 17-1025-2									
EPA 551.1 - EPA Method 551.1 Trihalomethanes									
11/02/17	11/03/17 00:49	1040014	1040255	(EPA 551.1)	Bromodichloromethane	29	ug/L	0.5	1
11/02/17	11/03/17 00:49	1040014	1040255	(EPA 551.1)	Bromoform	0.73	ug/L	0.5	1
11/02/17	11/04/17 00:51	1040014	1040255	(EPA 551.1)	Chloroform	74	ug/L	1	2
11/02/17	11/03/17 00:49	1040014	1040255	(EPA 551.1)	Dibromochloromethane	9.5	ug/L	0.5	1
11/02/17	11/03/17 00:49	1040014	1040255	(EPA 551.1)	Total Trihalomethanes	110	ug/L	0.5	1
11/02/17	11/03/17 00:49	1040014	1040255	(EPA 551.1)	1,2-Dibromopropane	103	%		1
11/02/17	11/03/17 00:49	1040014	1040255	(EPA 551.1)	4-Bromofluorobenzene	99	%		1
JC2 (201711020235)							**Sampled on 10/25/2017 1004**		
Variable ID: 17-1025-3									
EPA 551.1 - EPA Method 551.1 Trihalomethanes									
11/02/17	11/03/17 01:39	1040014	1040255	(EPA 551.1)	Bromodichloromethane	30	ug/L	0.5	1
11/02/17	11/03/17 01:39	1040014	1040255	(EPA 551.1)	Bromoform	0.56	ug/L	0.5	1
11/02/17	11/04/17 01:42	1040014	1040255	(EPA 551.1)	Chloroform	93	ug/L	1	2
11/02/17	11/03/17 01:39	1040014	1040255	(EPA 551.1)	Dibromochloromethane	9.1	ug/L	0.5	1
11/02/17	11/03/17 01:39	1040014	1040255	(EPA 551.1)	Total Trihalomethanes	130	ug/L	0.5	1
11/02/17	11/03/17 01:39	1040014	1040255	(EPA 551.1)	1,2-Dibromopropane	101	%		1
11/02/17	11/03/17 01:39	1040014	1040255	(EPA 551.1)	4-Bromofluorobenzene	99	%		1
JC3 (201711020236)							**Sampled on 10/25/2017 0955**		
Variable ID: 17-1025-4									
EPA 551.1 - EPA Method 551.1 Trihalomethanes									
11/02/17	11/03/17 02:29	1040014	1040255	(EPA 551.1)	Bromodichloromethane	29	ug/L	0.5	1
11/02/17	11/03/17 02:29	1040014	1040255	(EPA 551.1)	Bromoform	0.50	ug/L	0.5	1
11/02/17	11/04/17 02:32	1040014	1040255	(EPA 551.1)	Chloroform	99	ug/L	1	2
11/02/17	11/03/17 02:29	1040014	1040255	(EPA 551.1)	Dibromochloromethane	8.4	ug/L	0.5	1
11/02/17	11/03/17 02:29	1040014	1040255	(EPA 551.1)	Total Trihalomethanes	140	ug/L	0.5	1
11/02/17	11/03/17 02:29	1040014	1040255	(EPA 551.1)	1,2-Dibromopropane	96	%		1

Rounding on totals after summation.
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Laboratory Data

Report: 696879
Project: SPECIAL
Group: Jar Test

Goleta Water District
Dale Armstrong
4699 Hollister Avenue
Goleta, CA 93117

Samples Received on:
11/02/2017 12:01

Prepped	Analyzed	Prep Batch	Analytical Batch	Method	Analyte	Result	Units	MRL	Dilution
11/02/17	11/03/17 02:29	1040014	1040255	(EPA 551.1)	4-Bromofluorobenzene	99	%		1
JC4 (201711020237)							**Sampled on 10/25/2017 0946**		
	Variable ID: 17-1025-5								
			EPA 551.1 - EPA Method 551.1 Trihalomethanes						
11/02/17	11/03/17 02:55	1040014	1040255	(EPA 551.1)	Bromodichloromethane	28	ug/L	0.5	1
11/02/17	11/03/17 02:55	1040014	1040255	(EPA 551.1)	Bromoform	ND	ug/L	0.5	1
11/02/17	11/04/17 02:58	1040014	1040255	(EPA 551.1)	Chloroform	110	ug/L	2.5	5
11/02/17	11/03/17 02:55	1040014	1040255	(EPA 551.1)	Dibromochloromethane	7.4	ug/L	0.5	1
11/02/17	11/03/17 02:55	1040014	1040255	(EPA 551.1)	Total Trihalomethanes	140	ug/L	0.5	1
11/02/17	11/03/17 02:55	1040014	1040255	(EPA 551.1)	1,2-Dibromopropane	94	%		1
11/02/17	11/03/17 02:55	1040014	1040255	(EPA 551.1)	4-Bromofluorobenzene	99	%		1
JC5 (201711020238)							**Sampled on 10/25/2017 0939**		
	Variable ID: 17-1025-6								
			EPA 551.1 - EPA Method 551.1 Trihalomethanes						
11/02/17	11/03/17 03:20	1040014	1040255	(EPA 551.1)	Bromodichloromethane	28	ug/L	0.5	1
11/02/17	11/03/17 03:20	1040014	1040255	(EPA 551.1)	Bromoform	ND	ug/L	0.5	1
11/02/17	11/04/17 03:23	1040014	1040255	(EPA 551.1)	Chloroform	120	ug/L	2.5	5
11/02/17	11/03/17 03:20	1040014	1040255	(EPA 551.1)	Dibromochloromethane	6.5	ug/L	0.5	1
11/02/17	11/03/17 03:20	1040014	1040255	(EPA 551.1)	Total Trihalomethanes	150	ug/L	0.5	1
11/02/17	11/03/17 03:20	1040014	1040255	(EPA 551.1)	1,2-Dibromopropane	103	%		1
11/02/17	11/03/17 03:20	1040014	1040255	(EPA 551.1)	4-Bromofluorobenzene	100	%		1
JCPC (201711020239)							**Sampled on 10/25/2017 1024**		
	Variable ID: 17-1025-7								
			EPA 551.1 - EPA Method 551.1 Trihalomethanes						
11/02/17	11/03/17 03:45	1040014	1040255	(EPA 551.1)	Bromodichloromethane	27	ug/L	0.5	1
11/02/17	11/03/17 03:45	1040014	1040255	(EPA 551.1)	Bromoform	ND	ug/L	0.5	1
11/02/17	11/04/17 03:48	1040014	1040255	(EPA 551.1)	Chloroform	140	ug/L	2.5	5
11/02/17	11/03/17 03:45	1040014	1040255	(EPA 551.1)	Dibromochloromethane	5.7	ug/L	0.5	1
11/02/17	11/03/17 03:45	1040014	1040255	(EPA 551.1)	Total Trihalomethanes	170	ug/L	0.5	1
11/02/17	11/03/17 03:45	1040014	1040255	(EPA 551.1)	1,2-Dibromopropane	96	%		1
11/02/17	11/03/17 03:45	1040014	1040255	(EPA 551.1)	4-Bromofluorobenzene	99	%		1
JCPC1 (201711020240)							**Sampled on 10/25/2017 1038**		
	Variable ID: 17-1025-8								
			EPA 551.1 - EPA Method 551.1 Trihalomethanes						
11/02/17	11/03/17 04:10	1040014	1040255	(EPA 551.1)	Bromodichloromethane	28	ug/L	0.5	1
11/02/17	11/03/17 04:10	1040014	1040255	(EPA 551.1)	Bromoform	0.50	ug/L	0.5	1
11/02/17	11/04/17 04:13	1040014	1040255	(EPA 551.1)	Chloroform	89	ug/L	1	2
11/02/17	11/03/17 04:10	1040014	1040255	(EPA 551.1)	Dibromochloromethane	8.1	ug/L	0.5	1
11/02/17	11/03/17 04:10	1040014	1040255	(EPA 551.1)	Total Trihalomethanes	120	ug/L	0.5	1

Rounding on totals after summation.
(c) - indicates calculated results

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Laboratory Data

Report: 696879
Project: SPECIAL
Group: Jar Test

Goleta Water District
Dale Armstrong
4699 Hollister Avenue
Goleta, CA 93117

Samples Received on:
11/02/2017 12:01

Prepped	Analyzed	Prep Batch	Analytical Batch	Method	Analyte	Result	Units	MRL	Dilution
11/02/17	11/03/17 04:10	1040014	1040255	(EPA 551.1)	1,2-Dibromopropane	99	%		1
11/02/17	11/03/17 04:10	1040014	1040255	(EPA 551.1)	4-Bromofluorobenzene	100	%		1
JCPC2 (201711020241)							**Sampled on 10/25/2017 1045**		
Variable ID: 17-1025-9									
EPA 551.1 - EPA Method 551.1 Trihalomethanes									
11/02/17	11/03/17 06:17	1040014	1040255	(EPA 551.1)	Bromodichloromethane	28	ug/L	0.5	1
11/02/17	11/03/17 06:17	1040014	1040255	(EPA 551.1)	Bromoform	0.68	ug/L	0.5	1
11/02/17	11/04/17 06:20	1040014	1040255	(EPA 551.1)	Chloroform	81	ug/L	2.5	5
11/02/17	11/03/17 06:17	1040014	1040255	(EPA 551.1)	Dibromochloromethane	9.2	ug/L	0.5	1
11/02/17	11/03/17 06:17	1040014	1040255	(EPA 551.1)	Total Trihalomethanes	120	ug/L	0.5	1
11/02/17	11/03/17 06:17	1040014	1040255	(EPA 551.1)	1,2-Dibromopropane	104	%		1
11/02/17	11/03/17 06:17	1040014	1040255	(EPA 551.1)	4-Bromofluorobenzene	101	%		1
JCPC3 (201711020242)							**Sampled on 10/25/2017 1048**		
Variable ID: 17-1025-10									
EPA 551.1 - EPA Method 551.1 Trihalomethanes									
11/02/17	11/03/17 07:07	1040014	1040255	(EPA 551.1)	Bromodichloromethane	28	ug/L	0.5	1
11/02/17	11/03/17 07:07	1040014	1040255	(EPA 551.1)	Bromoform	0.64	ug/L	0.5	1
11/02/17	11/04/17 07:10	1040014	1040255	(EPA 551.1)	Chloroform	82	ug/L	1	2
11/02/17	11/03/17 07:07	1040014	1040255	(EPA 551.1)	Dibromochloromethane	8.8	ug/L	0.5	1
11/02/17	11/03/17 07:07	1040014	1040255	(EPA 551.1)	Total Trihalomethanes	120	ug/L	0.5	1
11/02/17	11/03/17 07:07	1040014	1040255	(EPA 551.1)	1,2-Dibromopropane	97	%		1
11/02/17	11/03/17 07:07	1040014	1040255	(EPA 551.1)	4-Bromofluorobenzene	101	%		1
JCPC4 (201711020243)							**Sampled on 10/25/2017 1043**		
Variable ID: 17-1025-11									
EPA 551.1 - EPA Method 551.1 Trihalomethanes									
11/02/17	11/03/17 13:26	1040021	1040257	(EPA 551.1)	Bromodichloromethane	28	ug/L	0.5	1
11/02/17	11/03/17 13:26	1040021	1040257	(EPA 551.1)	Bromoform	0.66	ug/L	0.5	1
11/02/17	11/04/17 11:49	1040021	1040257	(EPA 551.1)	Chloroform	90	ug/L	1	2
11/02/17	11/03/17 13:26	1040021	1040257	(EPA 551.1)	Dibromochloromethane	8.9	ug/L	0.5	1
11/02/17	11/03/17 13:26	1040021	1040257	(EPA 551.1)	Total Trihalomethanes	130	ug/L	0.5	1
11/02/17	11/03/17 13:26	1040021	1040257	(EPA 551.1)	1,2-Dibromopropane	111	%		1
11/02/17	11/03/17 13:26	1040021	1040257	(EPA 551.1)	4-Bromofluorobenzene	100	%		1
JCPC5 (201711020244)							**Sampled on 10/25/2017 1029**		
Variable ID: 17-1025-12									
EPA 551.1 - EPA Method 551.1 Trihalomethanes									
11/02/17	11/03/17 14:17	1040021	1040257	(EPA 551.1)	Bromodichloromethane	27	ug/L	0.5	1
11/02/17	11/03/17 14:17	1040021	1040257	(EPA 551.1)	Bromoform	0.63	ug/L	0.5	1
11/02/17	11/04/17 12:39	1040021	1040257	(EPA 551.1)	Chloroform	96	ug/L	1	2
11/02/17	11/03/17 14:17	1040021	1040257	(EPA 551.1)	Dibromochloromethane	8.3	ug/L	0.5	1

Rounding on totals after summation.
(c) - indicates calculated results

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Laboratory Data

Report: 696879
Project: SPECIAL
Group: Jar Test

Goleta Water District
Dale Armstrong
4699 Hollister Avenue
Goleta, CA 93117

Samples Received on:
11/02/2017 12:01

Prepped	Analyzed	Prep Batch	Analytical Batch	Method	Analyte	Result	Units	MRL	Dilution
11/02/17	11/03/17 14:17	1040021	1040257	(EPA 551.1)	Total Trihalomethanes	130	ug/L	0.5	1
11/02/17	11/03/17 14:17	1040021	1040257	(EPA 551.1)	1,2-Dibromopropane	109	%		1
11/02/17	11/03/17 14:17	1040021	1040257	(EPA 551.1)	4-Bromofluorobenzene	98	%		1

Rounding on totals after summation.
(c) - Indicates calculated results

Page 15 of 20 pages

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Laboratory QC Summary

Report: 696879
Project: SPECIAL
Group: Jar Test

Goleta Water District

EPA Method 551.1 Trihalomethanes

Prep Batch: 1040014 Analytical Batch: 1040255 — **Analysis Date: 11/04/2017**

201711020234	JC1	Analyzed by: YIV3
201711020234	JC1	Analyzed by: YIV3
201711020235	JC2	Analyzed by: YIV3
201711020235	JC2	Analyzed by: YIV3
201711020236	JC3	Analyzed by: YIV3
201711020236	JC3	Analyzed by: YIV3
201711020237	JC4	Analyzed by: YIV3
201711020237	JC4	Analyzed by: YIV3
201711020238	JC5	Analyzed by: YIV3
201711020238	JC5	Analyzed by: YIV3
201711020239	JCPC	Analyzed by: YIV3
201711020239	JCPC	Analyzed by: YIV3
201711020240	JCPC1	Analyzed by: YIV3
201711020240	JCPC1	Analyzed by: YIV3
201711020241	JCPC2	Analyzed by: YIV3
201711020241	JCPC2	Analyzed by: YIV3
201711020242	JCPC3	Analyzed by: YIV3
201711020242	JCPC3	Analyzed by: YIV3

EPA Method 551.1 Trihalomethanes

Prep Batch: 1040021 Analytical Batch: 1040257 — **Analysis Date: 11/04/2017**

201711020233	JC Control	Analyzed by: YIV3
201711020233	JC Control	Analyzed by: YIV3
201711020243	JCPC4	Analyzed by: YIV3
201711020243	JCPC4	Analyzed by: YIV3
201711020244	JCPC5	Analyzed by: YIV3
201711020244	JCPC5	Analyzed by: YIV3

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Laboratory QC

Report: 696879
Project: SPECIAL
Group: Jar Test

Goleta Water District

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPDLimit (%)	RPD%
EPA Method 551.1 Trihalomethanes by EPA 551.1									
Analytical Batch: 1040255							**Analysis Date: 11/02/2017**		
CCCH	1,2-Dibromopropane (S)			100	%	100	(80-120)		
CCCH	1,2-Dibromopropane (S)			92.5	%	92	(80-120)		
CCCH	1,2-Dibromopropane (S)			100	%	100	(80-120)		
CCCM	1,2-Dibromopropane (S)			97.7	%	98	(80-120)		
CCCM	1,2-Dibromopropane (S)			98.0	%	98	(80-120)		
DUP1_201711020235	1,2-Dibromopropane (S)			104	%	104	(80-120)		
DUP2_201711020242	1,2-Dibromopropane (S)			98.1	%	98	(80-120)		
LCS1	1,2-Dibromopropane (S)			97.2	%	97	(80-120)		
MBLK	1,2-Dibromopropane (S)			98.3	%	98	(80-120)		
MRL_CHK	1,2-Dibromopropane (S)			98.8	%	99	(80-120)		
MS1_201711020234	1,2-Dibromopropane (S)			108	%	108	(80-120)		
MS2_201711020241	1,2-Dibromopropane (S)			93.4	%	93	(80-120)		
CCCH	4-Bromofluorobenzene (I)			101	%	101	(80-120)		
CCCH	4-Bromofluorobenzene (I)			100	%	100	(80-120)		
CCCH	4-Bromofluorobenzene (I)			101	%	101	(80-120)		
CCCM	4-Bromofluorobenzene (I)			101	%	101	(80-120)		
CCCM	4-Bromofluorobenzene (I)			103	%	103	(80-120)		
DUP1_201711020235	4-Bromofluorobenzene (I)			99.8	%	100	(80-120)		
DUP2_201711020242	4-Bromofluorobenzene (I)			99.6	%	100	(80-120)		
LCS1	4-Bromofluorobenzene (I)			99.7	%	100	(80-120)		
MBLK	4-Bromofluorobenzene (I)			99.6	%	100	(80-120)		
MRL_CHK	4-Bromofluorobenzene (I)			100	%	100	(80-120)		
MS1_201711020234	4-Bromofluorobenzene (I)			100	%	100	(80-120)		
MS2_201711020241	4-Bromofluorobenzene (I)			98.0	%	98	(80-120)		
CCCH	Bromodichloromethane		40	38.8	ug/L	97	(80-120)		
CCCH	Bromodichloromethane		40	38.2	ug/L	96	(80-120)		
CCCH	Bromodichloromethane		40	38.9	ug/L	97	(80-120)		
CCCM	Bromodichloromethane		20	18.6	ug/L	93	(80-120)		
CCCM	Bromodichloromethane		20	18.5	ug/L	92	(80-120)		
DUP1_201711020235	Bromodichloromethane	30		32.0	ug/L		(0-20)	20	4.8
DUP2_201711020242	Bromodichloromethane	28		27.1	ug/L		(0-20)	20	3.6
LCS1	Bromodichloromethane		20	18.5	ug/L	93	(80-120)		
MBLK	Bromodichloromethane			<0.5	ug/L				
MRL_CHK	Bromodichloromethane		0.5	0.494	ug/L	99	(50-150)		
MS1_201711020234	Bromodichloromethane	29	20	49.6	ug/L	103	(80-120)		

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 QC

Report: 696879
Project: SPECIAL
Group: Jar Test

Goleta Water District

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPDLimit (%)	RPD%
MS2_201711020241	Bromodichloromethane	28	40	70.8	ug/L	106	(80-120)		
CCCH	Bromoform		40	40.3	ug/L	101	(80-120)		
CCCH	Bromoform		40	39.6	ug/L	99	(80-120)		
CCCH	Bromoform		40	40.2	ug/L	101	(80-120)		
CCCM	Bromoform		20	20.2	ug/L	101	(80-120)		
CCCM	Bromoform		20	20.2	ug/L	101	(80-120)		
DUP1_201711020235	Bromoform	0.56		0.574	ug/L		(0-20)		
DUP2_201711020242	Bromoform	0.64		0.631	ug/L		(0-20)		
LCS1	Bromoform		20	20.2	ug/L	101	(80-120)		
MBLK	Bromoform			<0.5	ug/L				
MRL_CHK	Bromoform		0.5	0.622	ug/L	124	(50-150)		
MS1_201711020234	Bromoform	0.73	20	20.5	ug/L	99	(80-120)		
MS2_201711020241	Bromoform	0.68	40	40.1	ug/L	99	(80-120)		
CCCH	Chloroform		40	39.6	ug/L	99	(80-120)		
CCCH	Chloroform		40	39.0	ug/L	98	(80-120)		
CCCH	Chloroform		40	39.8	ug/L	99	(80-120)		
CCCM	Chloroform		20	19.2	ug/L	96	(80-120)		
CCCM	Chloroform		20	18.9	ug/L	95	(80-120)		
DUP1_201711020235	Chloroform	93		97.8	ug/L		(0-20)	20	5.1
DUP2_201711020242	Chloroform	82		80.2	ug/L		(0-20)	20	2.7
LCS1	Chloroform		20	19.6	ug/L	98	(80-120)		
MBLK	Chloroform			<0.5	ug/L				
MRL_CHK	Chloroform		0.5	0.586	ug/L	117	(50-150)		
MS1_201711020234	Chloroform	74	40	94.6	ug/L	104	(80-120)		
MS2_201711020241	Chloroform	81	200	119	ug/L	94	(80-120)		
CCCH	Dibromochloromethane		40	39.6	ug/L	99	(80-120)		
CCCH	Dibromochloromethane		40	38.9	ug/L	97	(80-120)		
CCCH	Dibromochloromethane		40	39.6	ug/L	99	(80-120)		
CCCM	Dibromochloromethane		20	19.3	ug/L	96	(80-120)		
CCCM	Dibromochloromethane		20	19.2	ug/L	96	(80-120)		
DUP1_201711020235	Dibromochloromethane	9.1		9.53	ug/L		(0-20)	20	5.0
DUP2_201711020242	Dibromochloromethane	8.8		8.52	ug/L		(0-20)	20	3.1
LCS1	Dibromochloromethane		20	19.8	ug/L	99	(80-120)		
MBLK	Dibromochloromethane			<0.5	ug/L				
MRL_CHK	Dibromochloromethane		0.5	0.512	ug/L	102	(50-150)		
MS1_201711020234	Dibromochloromethane	9.5	20	28.4	ug/L	94	(80-120)		
MS2_201711020241	Dibromochloromethane	9.2	40	48.3	ug/L	98	(80-120)		

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 QC

Report: 696879
Project: SPECIAL
Group: Jar Test

Goleta Water District

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPDLimit (%)	RPD%
EPA Method 551.1 Trihalomethanes by EPA 551.1									
Analytical Batch: 1040257							**Analysis Date: 11/02/2017**		
CCCH	1,2-Dibromopropane (S)			92.5	%	92	(80-120)		
CCCH	1,2-Dibromopropane (S)			100	%	100	(80-120)		
CCCM	1,2-Dibromopropane (S)			94.9	%	95	(80-120)		
CCCM	1,2-Dibromopropane (S)			95.0	%	95	(80-120)		
DUP1_201711020244	1,2-Dibromopropane (S)			102	%	102	(80-120)		
DUP2_201710260392	1,2-Dibromopropane (S)			105	%	105	(80-120)		
LCS1	1,2-Dibromopropane (S)			97.2	%	97	(80-120)		
MBLK	1,2-Dibromopropane (S)			106	%	106	(80-120)		
MRL_CHK	1,2-Dibromopropane (S)			102	%	102	(80-120)		
MS1_201711020243	1,2-Dibromopropane (S)			92.1	%	92	(80-120)		
MS2_201710260391	1,2-Dibromopropane (S)			96.0	%	96	(80-120)		
CCCH	4-Bromofluorobenzene (I)			100	%	100	(80-120)		
CCCH	4-Bromofluorobenzene (I)			101	%	101	(80-120)		
CCCM	4-Bromofluorobenzene (I)			99.7	%	100	(80-120)		
CCCM	4-Bromofluorobenzene (I)			100	%	101	(80-120)		
DUP1_201711020244	4-Bromofluorobenzene (I)			99.8	%	100	(80-120)		
DUP2_201710260392	4-Bromofluorobenzene (I)			99.0	%	99	(80-120)		
LCS1	4-Bromofluorobenzene (I)			99.7	%	100	(80-120)		
MBLK	4-Bromofluorobenzene (I)			99.1	%	99	(80-120)		
MRL_CHK	4-Bromofluorobenzene (I)			99.0	%	99	(80-120)		
MS1_201711020243	4-Bromofluorobenzene (I)			100	%	100	(80-120)		
MS2_201710260391	4-Bromofluorobenzene (I)			102	%	102	(80-120)		
CCCH	Bromodichloromethane		40	38.2	ug/L	96	(80-120)		
CCCH	Bromodichloromethane		40	38.9	ug/L	97	(80-120)		
CCCM	Bromodichloromethane		20	18.6	ug/L	93	(80-120)		
CCCM	Bromodichloromethane		20	18.6	ug/L	93	(80-120)		
DUP1_201711020244	Bromodichloromethane	27		26.6	ug/L		(0-20)	20	0.87
DUP2_201710260392	Bromodichloromethane	8.2		8.18	ug/L		(0-20)	20	0.13
LCS1	Bromodichloromethane		20	18.5	ug/L	93	(80-120)		
MBLK	Bromodichloromethane			<0.5	ug/L				
MRL_CHK	Bromodichloromethane		0.5	0.490	ug/L	98	(50-150)		
MS1_201711020243	Bromodichloromethane	28	20	48.4	ug/L	101	(80-120)		
MS2_201710260391	Bromodichloromethane	7.6	40	46.9	ug/L	98	(80-120)		
CCCH	Bromoform		40	39.6	ug/L	99	(80-120)		
CCCH	Bromoform		40	40.2	ug/L	101	(80-120)		

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 QC

Report: 696879
Project: SPECIAL
Group: Jar Test

Goleta Water District

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPDLimit (%)	RPD%
CCCM	Bromoform		20	20.3	ug/L	102	(80-120)		
CCCM	Bromoform		20	20.3	ug/L	101	(80-120)		
DUP1_201711020244	Bromoform	0.63		0.613	ug/L		(0-20)		
DUP2_201710260392	Bromoform	3.6		3.75	ug/L		(0-20)	20	2.4
LCS1	Bromoform		20	20.2	ug/L	101	(80-120)		
MBLK	Bromoform			<0.5	ug/L				
MRL_CHK	Bromoform		0.5	0.623	ug/L	125	(50-150)		
MS1_201711020243	Bromoform	0.66	20	20.8	ug/L	101	(80-120)		
MS2_201710260391	Bromoform	2.7	40	41.6	ug/L	97	(80-120)		
CCCH	Chloroform		40	39.0	ug/L	98	(80-120)		
CCCH	Chloroform		40	39.8	ug/L	99	(80-120)		
CCCM	Chloroform		20	19.2	ug/L	96	(80-120)		
CCCM	Chloroform		20	19.2	ug/L	96	(80-120)		
DUP1_201711020244	Chloroform	96		95.3	ug/L		(0-20)	20	0.40
DUP2_201710260392	Chloroform	7.7		7.67	ug/L		(0-20)	20	0.44
LCS1	Chloroform		20	19.6	ug/L	98	(80-120)		
MBLK	Chloroform			<0.5	ug/L				
MRL_CHK	Chloroform		0.5	0.582	ug/L	117	(50-150)		
MS1_201711020243	Chloroform	90	40	108	ug/L	92	(80-120)		
MS2_201710260391	Chloroform	7.4	40	46.1	ug/L	97	(80-120)		
CCCH	Dibromochloromethane		40	38.9	ug/L	97	(80-120)		
CCCH	Dibromochloromethane		40	39.6	ug/L	99	(80-120)		
CCCM	Dibromochloromethane		20	19.3	ug/L	97	(80-120)		
CCCM	Dibromochloromethane		20	19.3	ug/L	97	(80-120)		
DUP1_201711020244	Dibromochloromethane	8.3		8.22	ug/L		(0-20)	20	0.70
DUP2_201710260392	Dibromochloromethane	8.0		8.10	ug/L		(0-20)	20	0.76
LCS1	Dibromochloromethane		20	19.8	ug/L	99	(80-120)		
MBLK	Dibromochloromethane			<0.5	ug/L				
MRL_CHK	Dibromochloromethane		0.5	0.508	ug/L	102	(50-150)		
MS1_201711020243	Dibromochloromethane	8.9	20	28.2	ug/L	96	(80-120)		
MS2_201710260391	Dibromochloromethane	7.3	40	45.8	ug/L	96	(80-120)		

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.

Attachment 6 – Daily Treatment Parameters Monitoring Sheet

Goleta Water District
Corona Del Mar Water Treatment Plant
Daily Water Quality Record

Date:_____

Perform all analyses except greyed boxes when plant offline

Peak Flow (0800-0800):_____
Time:_____
WQS Met (Y/N):_____

		Conductivity		Color		pH		Temp		Alkalinity RAW		Alkalinity EFF		Titrant: 0.02N H_2SO_4 V_____
Time	An	RAW	EFF	RAW	EFF	RAW	CW	RAW	CW	$ml_{titrant}$	Alk	$ml_{titrant}$	Alk	
		Dup:												

		Chlorine Residual (mg/L)					Turbidity (NTU)					pH		Temp	
Time	An	RAW	FM2	CEC	CW	EFF	RAW	FM2	CEC	CW	EFF	RAW	CW	RAW	CW
0800															

Titrant: 0.02N
EDTA V_____

		$Hardness_{Total}$ RAW		$Hardness_{Total}$ EFF	
Time	An	$ml_{titrant}$	Hd_{Total}	$ml_{titrant}$	Hd_{Total}

		T.O.N.			
Time	An	RAW	FM2	CEC	CW

For Filter Turbidity Grab Samples, use reverse side of sheet

For Method List see reverse side of sheet

CDMWTP Raw (pre-Cl_2) and Clearwell pH and temperature must be performed daily

DailyWaterQualityRecord rev033116da

Goleta Water District
Corona Del Mar Water Treatment Plant
Daily Water Quality Record

Side 2

Filter Turbidity Grab Sample Analysis

Date:_____

		Filter Effluent Turbidity (NTU)						
Time	Analyst	Filter #1	Filter #2	Filter #3	Filter #4	Filter #5	Filter #6	CW

Reason(s) for grab sample analysis: _____

_____

_____

_____

Be sure to grab sample at exactly 4 hours after backwashed filter put into service if problem occurs within those 4 hours

Analysis	Method	Units
Alkalinity	SM 2320 B	mg/L as $CaCO_3$
Chlorine Residual	SM 4500-Cl D	mg L
Color	SM 2120 B	color units
Conductivity	SM 2510 B	µmhos/cm
pH	SM 4500-H^+ B	pH units
Temperature	SM 2550 B	°C
Threshold Odor	SM 2150 B	T.O.N.
Total Hardness	SM 2340 C	mg/L as $CaCO_3$
Turbidity	EPA 180.1	NTU

*Standard Methods for the Examination of Water and Wastewater, 20th Ed., 1998

Attachment 7 – Chemical Feed Plusafeeder Dosing Chart 2 – 10 mg/L

JC 9450 oxidant 2.00 mg/L

FORMULA IS: 8.34 x (Flow) MGD x (Dose) ppm = lb/day / 9.84 lb/gal = gal/day / 76 gal/day = % pump speed

(weight JC9450) (Pump Max)

Example: Flow is 3 MGD
Dose is 5 ppm

8.34 x 3 MGD x 5 ppm = 125.1 lb/day / 9.84 lb/gal =12.7 gal/day / 76 gal/day = .167 or 16.7% pump speed

GPD

GPH	HR/DAY	PUMP MAX CAP.	STROKE %	ACT CAP
3.13	24	**75**	100	**75**

specific gravity =1.18
1.18
8.34
9.84 LBS / GAL

PUMP MAX **75** gal/day @ 100% speed & 100% stroke

FLOW (MGD)	Dose (ppm)	Feed in lb/day	Feed in lb/hr	Feed in gal/day	**Pump Speed**	Pump Stroke	Draw Down (ml/min)
3	2.00	50.04	2.09	5.09	**7**	100	13.4
3.5	2.00	58.38	2.43	5.93	**8**	100	15.6
4	2.00	66.72	2.78	6.78	**9**	100	17.8
4.5	2.00	75.06	3.13	7.63	**10**	100	20.1
5	2.00	83.4	3.48	8.48	**11**	100	22.3
5.5	2.00	91.74	3.82	9.32	**12**	100	24.5
6	2.00	100.08	4.17	10.17	**14**	100	26.7
6.5	2.00	108.42	4.52	11.02	**15**	100	29.0
7	2.00	116.76	4.87	11.87	**16**	100	31.2
7.5	2.00	125.1	5.21	12.71	**17**	100	33.4
8	2.00	133.44	5.56	13.56	**18**	100	35.6
8.5	2.00	141.78	5.91	14.41	**19**	100	37.9
9	2.00	150.12	6.26	15.26	**20**	100	40.1
9.5	2.00	158.46	6.60	16.10	**21**	100	42.3
10	2.00	166.8	6.95	16.95	**23**	100	44.6
11	2.00	183.48	7.65	18.65	**25**	100	49.0
12	2.00	200.16	8.34	20.34	**27**	100	53.5
13	2.00	216.84	9.04	22.04	**29**	100	57.9
14	2.00	233.52	9.73	23.73	**32**	100	62.4
15	2.00	250.2	10.43	25.43	**34**	100	66.8
16	2.00	266.88	11.12	27.12	**36**	100	71.3
17	2.00	283.56	11.82	28.82	**38**	100	75.7
18	2.00	300.24	12.51	30.51	**41**	100	80.2

JC 9450 oxidant 3.00 mg/L

FORMULA IS: 8.34 x (Flow) MGD x (Dose) ppm = lb/day / 9.84 lb/gal = gal/day / 76 gal/day = % pump speed

(weight JC9450) (Pump Max)

Example: Flow is 3 MGD
Dose is 5 ppm

8.34 x 3 MGD x 5 ppm = 125.1 lb/day / 9.84 lb/gal =12.7 gal/day / 76 gal/day = .167 or 16.7% pump speed

GPD

GPH	HR/DAY	PUMP MAX CAP.	STROKE %	ACT CAP
3.13	24	**75**	100	**75**

specific gravity =1.18

1.18
8.34
9.84 LBS / GAL

PUMP MAX **75** gal/day @ 100% speed & 100% stroke

FLOW (MGD)	Dose (ppm)	Feed in lb/day	Feed in lb/hr	Feed in gal/day	**Pump Speed**	Pump Stroke	Draw Down (ml/min)
3	3.00	75.06	3.13	7.63	**10**	100	20.1
3.5	3.00	87.57	3.65	8.90	**12**	100	23.4
4	3.00	100.08	4.17	10.17	**14**	100	26.7
4.5	3.00	112.59	4.69	11.44	**15**	100	30.1
5	3.00	125.1	5.21	12.71	**17**	100	33.4
5.5	3.00	137.61	5.73	13.98	**19**	100	36.8
6	3.00	150.12	6.26	15.26	**20**	100	40.1
6.5	3.00	162.63	6.78	16.53	**22**	100	43.4
7	3.00	175.14	7.30	17.80	**24**	100	46.8
7.5	3.00	187.65	7.82	19.07	**25**	100	50.1
8	3.00	200.16	8.34	20.34	**27**	100	53.5
8.5	3.00	212.67	8.86	21.61	**29**	100	56.8
9	3.00	225.18	9.38	22.88	**31**	100	60.2
9.5	3.00	237.69	9.90	24.16	**32**	100	63.5
10	3.00	250.2	10.43	25.43	**34**	100	66.8
11	3.00	275.22	11.47	27.97	**37**	100	73.5
12	3.00	300.24	12.51	30.51	**41**	100	80.2
13	3.00	325.26	13.55	33.05	**44**	100	86.9
14	3.00	350.28	14.60	35.60	**47**	100	93.6
15	3.00	375.3	15.64	38.14	**51**	100	100.3
16	3.00	400.32	16.68	40.68	**54**	100	106.9
17	3.00	425.34	17.72	43.23	**58**	100	113.6
18	3.00	450.36	18.77	45.77	**61**	100	120.3

JC 9450 oxidant 4.00 mg/L

FORMULA IS: 8.34 x (Flow) MGD x (Dose) ppm = lb/day / 9.84 lb/gal = gal/day / 76 gal/day = % pump speed

(weight JC9450) (Pump Max)

Example: Flow is 3 MGD
Dose is 5 ppm

8.34 x 3 MGD x 5 ppm = 125.1 lb/day / 9.84 lb/gal =12.7 gal/day / 76 gal/day = .167 or 16.7% pump speed

GPD

GPH	HR/DAY	PUMP MAX CAP.	STROKE %	ACT CAP
3.13	24	**75**	100	**75**

specific gravity =1.18

1.18

8.34

9.84 LBS / GAL

PUMP MAX **75** gal/day @ 100% speed & 100% stroke

FLOW (MGD)	Dose (ppm)	Feed in lb/day	Feed in lb/hr	Feed in gal/day	**Pump Speed**	Pump Stroke	Draw Down (ml/min)
3	4.00	100.08	4.17	10.17	**14**	100	26.7
3.5	4.00	116.76	4.87	11.87	**16**	100	31.2
4	4.00	133.44	5.56	13.56	**18**	100	35.6
4.5	4.00	150.12	6.26	15.26	**20**	100	40.1
5	4.00	166.8	6.95	16.95	**23**	100	44.6
5.5	4.00	183.48	7.65	18.65	**25**	100	49.0
6	4.00	200.16	8.34	20.34	**27**	100	53.5
6.5	4.00	216.84	9.04	22.04	**29**	100	57.9
7	4.00	233.52	9.73	23.73	**32**	100	62.4
7.5	4.00	250.2	10.43	25.43	**34**	100	66.8
8	4.00	266.88	11.12	27.12	**36**	100	71.3
8.5	4.00	283.56	11.82	28.82	**38**	100	75.7
9	4.00	300.24	12.51	30.51	**41**	100	80.2
9.5	4.00	316.92	13.21	32.21	**43**	100	84.7
10	4.00	333.6	13.90	33.90	**45**	100	89.1
11	4.00	366.96	15.29	37.29	**50**	100	98.0
12	4.00	400.32	16.68	40.68	**54**	100	106.9
13	4.00	433.68	18.07	44.07	**59**	100	115.8
14	4.00	467.04	19.46	47.46	**63**	100	124.8
15	4.00	500.4	20.85	50.85	**68**	100	133.7
16	4.00	533.76	22.24	54.24	**72**	100	142.6
17	4.00	567.12	23.63	57.63	**77**	100	151.5
18	4.00	600.48	25.02	61.02	**81**	100	160.4

JC 9450 oxidant 5.00 mg/L

FORMULA IS: 8.34 x (Flow) MGD x (Dose) ppm = lb/day / 9.84 lb/gal = gal/day / 76 gal/day = % pump speed

(weight JC9450) (Pump Max)

Example: Flow is 3 MGD
Dose is 5 ppm

8.34 x 3 MGD x 5 ppm = 125.1 lb/day / 9.84 lb/gal =12.7 gal/day / 76 gal/day = .167 or 16.7% pump speed

GPD

GPH	HR/DAY	PUMP MAX CAP.	STROKE %	ACT CAP
3.13	24	**75**	100	**75**

specific gravity =1.18
1.18
8.34
9.84 LBS / GAL

PUMP MAX **75** gal/day @ 100% speed & 100% stroke

FLOW (MGD)	Dose (ppm)	Feed in lb/day	Feed in lb/hr	Feed in gal/day	**Pump Speed**	Pump Stroke	Draw Down (ml/min)
3	5.00	125.1	5.21	12.71	**17**	100	33.4
3.5	5.00	145.95	6.08	14.83	**20**	100	39.0
4	5.00	166.8	6.95	16.95	**23**	100	44.6
4.5	5.00	187.65	7.82	19.07	**25**	100	50.1
5	5.00	208.5	8.69	21.19	**28**	100	55.7
5.5	5.00	229.35	9.56	23.31	**31**	100	61.3
6	5.00	250.2	10.43	25.43	**34**	100	66.8
6.5	5.00	271.05	11.29	27.55	**37**	100	72.4
7	5.00	291.9	12.16	29.66	**40**	100	78.0
7.5	5.00	312.75	13.03	31.78	**42**	100	83.5
8	5.00	333.6	13.90	33.90	**45**	100	89.1
8.5	5.00	354.45	14.77	36.02	**48**	100	94.7
9	5.00	375.3	15.64	38.14	**51**	100	100.3
9.5	5.00	396.15	16.51	40.26	**54**	100	105.8
10	5.00	417	17.38	42.38	**57**	100	111.4
11	5.00	458.7	19.11	46.62	**62**	100	122.5
12	5.00	500.4	20.85	50.85	**68**	100	133.7
13	5.00	542.1	22.59	55.09	**73**	100	144.8
14	5.00	583.8	24.33	59.33	**79**	100	155.9
15	5.00	625.5	26.06	63.57	**85**	100	167.1
16	5.00	667.2	27.80	67.80	**90**	100	178.2
17	5.00	708.9	29.54	72.04	**96**	100	189.4
18	5.00	750.6	31.28	76.28	**102**	100	200.5

JC 9450 oxidant 6.00 mg/L

FORMULA IS: 8.34 x (Flow) MGD x (Dose) ppm = lb/day / 9.84 lb/gal = gal/day / 76 gal/day = % pump speed

(weight JC9450) (Pump Max)

Example: Flow is 3 MGD
Dose is 5 ppm

8.34 x 3 MGD x 5 ppm = 125.1 lb/day / 9.84 lb/gal =12.7 gal/day / 76 gal/day = .167 or 16.7% pump speed

GPD

GPH	HR/DAY	PUMP MAX CAP.	STROKE %	ACT CAP
3.13	24	**75**	100	**75**

specific gravity =1.18

1.18

8.34

9.84 LBS / GAL

PUMP MAX **75** gal/day @ 100% speed & 100% stroke

FLOW (MGD)	Dose (ppm)	Feed in lb/day	Feed in lb/hr	Feed in gal/day	**Pump Speed**	Pump Stroke	Draw Down (ml/min)
3	6.00	150.12	6.26	15.26	**20**	100	40.1
3.5	6.00	175.14	7.30	17.80	**24**	100	46.8
4	6.00	200.16	8.34	20.34	**27**	100	53.5
4.5	6.00	225.18	9.38	22.88	**31**	100	60.2
5	6.00	250.2	10.43	25.43	**34**	100	66.8
5.5	6.00	275.22	11.47	27.97	**37**	100	73.5
6	6.00	300.24	12.51	30.51	**41**	100	80.2
6.5	6.00	325.26	13.55	33.05	**44**	100	86.9
7	6.00	350.28	14.60	35.60	**47**	100	93.6
7.5	6.00	375.3	15.64	38.14	**51**	100	100.3
8	6.00	400.32	16.68	40.68	**54**	100	106.9
8.5	6.00	425.34	17.72	43.23	**58**	100	113.6
9	6.00	450.36	18.77	45.77	**61**	100	120.3
9.5	6.00	475.38	19.81	48.31	**64**	100	127.0
10	6.00	500.4	20.85	50.85	**68**	100	133.7
11	6.00	550.44	22.94	55.94	**75**	100	147.0
12	6.00	600.48	25.02	61.02	**81**	100	160.4
13	6.00	650.52	27.11	66.11	**88**	100	173.8
14	6.00	700.56	29.19	71.20	**95**	100	187.1
15	6.00	750.6	31.28	76.28	**102**	100	200.5
16	6.00	800.64	33.36	81.37	**108**	100	213.9
17	6.00	850.68	35.45	86.45	**115**	100	227.2
18	6.00	900.72	37.53	91.54	**122**	100	240.6

JC 9450 oxidant 7.00 mg/L

FORMULA IS: 8.34 x (Flow) MGD x (Dose) ppm = lb/day / 9.84 lb/gal = gal/day / 76 gal/day = % pump speed

(weight JC9450) (Pump Max)

Example: Flow is 3 MGD
Dose is 5 ppm

8.34 x 3 MGD x 5 ppm = 125.1 lb/day / 9.84 lb/gal =12.7 gal/day / 76 gal/day = .167 or 16.7% pump speed

GPD

GPH	HR/DAY	PUMP MAX CAP.	STROKE %	ACT CAP
3.13	24	**75**	100	**75**

specific gravity =1.18

1.18
8.34
9.84 LBS / GAL

PUMP MAX **75** gal/day @ 100% speed & 100% stroke

FLOW (MGD)	Dose (ppm)	Feed in lb/day	Feed in lb/hr	Feed in gal/day	**Pump Speed**	Pump Stroke	Draw Down (ml/min)
3	7.00	175.14	7.30	17.80	**24**	100	46.8
3.5	7.00	204.33	8.51	20.77	**28**	100	54.6
4	7.00	233.52	9.73	23.73	**32**	100	62.4
4.5	7.00	262.71	10.95	26.70	**36**	100	70.2
5	7.00	291.9	12.16	29.66	**40**	100	78.0
5.5	7.00	321.09	13.38	32.63	**44**	100	85.8
6	7.00	350.28	14.60	35.60	**47**	100	93.6
6.5	7.00	379.47	15.81	38.56	**51**	100	101.4
7	7.00	408.66	17.03	41.53	**55**	100	109.2
7.5	7.00	437.85	18.24	44.50	**59**	100	117.0
8	7.00	467.04	19.46	47.46	**63**	100	124.8
8.5	7.00	496.23	20.68	50.43	**67**	100	132.6
9	7.00	525.42	21.89	53.40	**71**	100	140.4
9.5	7.00	554.61	23.11	56.36	**75**	100	148.1
10	7.00	583.8	24.33	59.33	**79**	100	155.9
11	7.00	642.18	26.76	65.26	**87**	100	171.5
12	7.00	700.56	29.19	71.20	**95**	100	187.1
13	7.00	758.94	31.62	77.13	**103**	100	202.7
14	7.00	817.32	34.06	83.06	**111**	100	218.3
15	7.00	875.7	36.49	88.99	**119**	100	233.9
16	7.00	934.08	38.92	94.93	**127**	100	249.5
17	7.00	992.46	41.35	100.86	**134**	100	265.1
18	7.00	1050.84	43.79	106.79	**142**	100	280.7

JC 9450 oxidant 8.00 mg/L

FORMULA IS: 8.34 x (Flow) MGD x (Dose) ppm = lb/day / 9.84 lb/gal = gal/day / 76 gal/day = % pump speed

(weight JC9450) (Pump Max)

Example: Flow is 3 MGD
Dose is 5 ppm

8.34 x 3 MGD x 5 ppm = 125.1 lb/day / 9.84 lb/gal =12.7 gal/day / 76 gal/day = .167 or 16.7% pump speed

GPD

GPH	HR/DAY	PUMP MAX CAP.	STROKE %	ACT CAP
3.13	24	**75**	100	**75**

specific gravity =1.18

1.18

8.34

9.84 LBS / GAL

PUMP MAX **75** gal/day @ 100% speed & 100% stroke

FLOW (MGD)	Dose (ppm)	Feed in lb/day	Feed in lb/hr	Feed in gal/day	**Pump Speed**	Pump Stroke	Draw Down (ml/min)
3	8.00	200.16	8.34	20.34	**27**	100	53.5
3.5	8.00	233.52	9.73	23.73	**32**	100	62.4
4	8.00	266.88	11.12	27.12	**36**	100	71.3
4.5	8.00	300.24	12.51	30.51	**41**	100	80.2
5	8.00	333.6	13.90	33.90	**45**	100	89.1
5.5	8.00	366.96	15.29	37.29	**50**	100	98.0
6	8.00	400.32	16.68	40.68	**54**	100	106.9
6.5	8.00	433.68	18.07	44.07	**59**	100	115.8
7	8.00	467.04	19.46	47.46	**63**	100	124.8
7.5	8.00	500.4	20.85	50.85	**68**	100	133.7
8	8.00	533.76	22.24	54.24	**72**	100	142.6
8.5	8.00	567.12	23.63	57.63	**77**	100	151.5
9	8.00	600.48	25.02	61.02	**81**	100	160.4
9.5	8.00	633.84	26.41	64.41	**86**	100	169.3
10	8.00	667.2	27.80	67.80	**90**	100	178.2
11	8.00	733.92	30.58	74.59	**99**	100	196.0
12	8.00	800.64	33.36	81.37	**108**	100	213.9
13	8.00	867.36	36.14	88.15	**118**	100	231.7
14	8.00	934.08	38.92	94.93	**127**	100	249.5
15	8.00	1000.8	41.70	101.71	**136**	100	267.3
16	8.00	1067.52	44.48	108.49	**145**	100	285.2
17	8.00	1134.24	47.26	115.27	**154**	100	303.0
18	8.00	1200.96	50.04	122.05	**163**	100	320.8

JC 9450 oxidant 9.00 mg/L

FORMULA IS: 8.34 x (Flow) MGD x (Dose) ppm = lb/day / 9.84 lb/gal = gal/day / 76 gal/day = % pump speed

(weight JC9450) (Pump Max)

Example: Flow is 3 MGD
Dose is 5 ppm

8.34 x 3 MGD x 5 ppm = 125.1 lb/day / 9.84 lb/gal =12.7 gal/day / 76 gal/day = .167 or 16.7% pump speed

GPD

GPH	HR/DAY	PUMP MAX CAP.	STROKE %	ACT CAP
3.13	24	**75**	100	**75**

specific gravity =1.18

1.18

8.34

9.84 LBS / GAL

PUMP MAX **75** gal/day @ 100% speed & 100% stroke

FLOW (MGD)	Dose (ppm)	Feed in lb/day	Feed in lb/hr	Feed in gal/day	**Pump Speed**	Pump Stroke	Draw Down (ml/min)
3	9.00	225.18	9.38	22.88	**31**	100	60.2
3.5	9.00	262.71	10.95	26.70	**36**	100	70.2
4	9.00	300.24	12.51	30.51	**41**	100	80.2
4.5	9.00	337.77	14.07	34.33	**46**	100	90.2
5	9.00	375.3	15.64	38.14	**51**	100	100.3
5.5	9.00	412.83	17.20	41.95	**56**	100	110.3
6	9.00	450.36	18.77	45.77	**61**	100	120.3
6.5	9.00	487.89	20.33	49.58	**66**	100	130.3
7	9.00	525.42	21.89	53.40	**71**	100	140.4
7.5	9.00	562.95	23.46	57.21	**76**	100	150.4
8	9.00	600.48	25.02	61.02	**81**	100	160.4
8.5	9.00	638.01	26.58	64.84	**86**	100	170.4
9	9.00	675.54	28.15	68.65	**92**	100	180.5
9.5	9.00	713.07	29.71	72.47	**97**	100	190.5
10	9.00	750.6	31.28	76.28	**102**	100	200.5
11	9.00	825.66	34.40	83.91	**112**	100	220.6
12	9.00	900.72	37.53	91.54	**122**	100	240.6
13	9.00	975.78	40.66	99.16	**132**	100	260.7
14	9.00	1050.84	43.79	106.79	**142**	100	280.7
15	9.00	1125.9	46.91	114.42	**153**	100	300.8
16	9.00	1200.96	50.04	122.05	**163**	100	320.8
17	9.00	1276.02	53.17	129.68	**173**	100	340.9
18	9.00	1351.08	56.30	137.30	**183**	100	360.9

JC 9450 oxidant 10.00 mg/L

FORMULA IS: 8.34 x (Flow) MGD x (Dose) ppm = lb/day / 9.84 lb/gal = gal/day / 76 gal/day = % pump speed

(weight JC9450) (Pump Max)

Example: Flow is 3 MGD
Dose is 5 ppm

8.34 x 3 MGD x 5 ppm = 125.1 lb/day / 9.84 lb/gal =12.7 gal/day / 76 gal/day = .167 or 16.7% pump speed

GPD

GPH	HR/DAY	PUMP MAX CAP.	STROKE %	ACT CAP
3.13	24	**75**	100	**75**

specific gravity =1.18

1.18

8.34

9.84 LBS / GAL

PUMP MAX **75** gal/day @ 100% speed & 100% stroke

FLOW (MGD)	Dose (ppm)	Feed in lb/day	Feed in lb/hr	Feed in gal/day	**Pump Speed**	Pump Stroke	Draw Down (ml/min)
3	10.00	250.2	10.43	25.43	**34**	100	66.8
3.5	10.00	291.9	12.16	29.66	**40**	100	78.0
4	10.00	333.6	13.90	33.90	**45**	100	89.1
4.5	10.00	375.3	15.64	38.14	**51**	100	100.3
5	10.00	417	17.38	42.38	**57**	100	111.4
5.5	10.00	458.7	19.11	46.62	**62**	100	122.5
6	10.00	500.4	20.85	50.85	**68**	100	133.7
6.5	10.00	542.1	22.59	55.09	**73**	100	144.8
7	10.00	583.8	24.33	59.33	**79**	100	155.9
7.5	10.00	625.5	26.06	63.57	**85**	100	167.1
8	10.00	667.2	27.80	67.80	**90**	100	178.2
8.5	10.00	708.9	29.54	72.04	**96**	100	189.4
9	10.00	750.6	31.28	76.28	**102**	100	200.5
9.5	10.00	792.3	33.01	80.52	**107**	100	211.6
10	10.00	834	34.75	84.76	**113**	100	222.8
11	10.00	917.4	38.23	93.23	**124**	100	245.1
12	10.00	1000.8	41.70	101.71	**136**	100	267.3
13	10.00	1084.2	45.18	110.18	**147**	100	289.6
14	10.00	1167.6	48.65	118.66	**158**	100	311.9
15	10.00	1251	52.13	127.13	**170**	100	334.2
16	10.00	1334.4	55.60	135.61	**181**	100	356.4
17	10.00	1417.8	59.08	144.09	**192**	100	378.7
18	10.00	1501.2	62.55	152.56	**203**	100	401.0

Attachment 8 – Filter Preparation Procedures

Filter Preparation

The filters will need to be pre-conditioned, this will be achieved via super chlorination of the filter units. Three filters will be used for the test, this will consist of filters 1-3 at the Corona Del Mar Treatment Plant. Each filter will be super chlorinated to 100mg/L using sodium hypochlorite. The example calculation for the super chlorination is detailed below:

Filter area = 702 ft^2 X (Depth of media 3.5 ft. + Depth of water over media= 3.7 ft.)= 5055 ft^3

Filter Volume (Gallons) = 5055 ft^3 x 7.48 gal /ft^3 = 37,810 gallons/1,000,000= 0.0378MG

Gallons of Chemical Needed = *(0.0378 * 8.34 * 100) = 31.5 Lbs. of 100% ÷ 1.21 Lbs./gal*

= 26 gallons of 12.5 % Sodium Hypochlorite.

Filter Super Chlorination Procedure

Expected to commence week beginning: Tuesday, December 26, 2017

Expected Duration: 3 Days

Step	Task	Description
Task 1. Filter Analysis Baseline		
1.01	Day 0 - Collect Water Quality Samples of Filter Influent (as detailed in Table 5)	Collect water samples of the filter influent, samples will be taken once before commencement of super chlorination
1.02	Day 0 - Collect water quality samples of Filter effluent (as detailed in Table 5)	Collect water samples of the filter effluent, samples will be taken once before commencement of super chlorination
Task 2. Filter Backwash Procedure		
2.01	Close Filter Influent Valve	At Filter Control Console (FCC) turn Filter Influent switch from AUTO to CLOSE. Leave switch in close position for 15-20 seconds, then turn switch to HOLD. Repeat until the Filter Influent valve is fully closed (light will come on)
2.02	PLC Filter Drain	Note: At this point the SCADA control will automatically change the filter operating mode to 3=DRAIN MODE. In this mode the PLC will automatically ramp the Filter Effluent Flow to the Drain Mode set point, monitor the water level in the filter.
2.03	PLC Filter Effluent Valve Close	Open the WW Drain VLV (when water is at the top of the wash water launders). The filter will continue to drain until it's at the 0.5 ft level. At this point the PLC will shut the Filter Effluent Valve.
2.04	Wash filter with hose.	Wash the filter with a hose. Remove all material from launders and air scourers.

Step	Task	Description
2.06	Open Air Scour Valve	Open the Filter Air Scour Valve (Scour VLV), wait for the green indicator light for valve to come on.
2.08	Air Blower to manual Control	Turn Air Blower to HAND (filter air compressor), there will be a delay for the compressor to start. When the compressor has started and air is coming up through the media, allow this to run for 1 minute. Then turn back to AUTO.
2.09	Air Scour valve to close	Turn Air Scour to CLOSE, wait until light comes on.
2.08	Wash Water Valve to Open	Turn WW VLV to OPEN, wait for it to fully open.
2.10	Backwash Flow Control to Manual	Locate the Backwash Flow Controller on the FCC, switch from HOST to MANUAL.
2.11	Increase Backwash Water Flows	Push the UP arrow button to open valve to 15% (screen is hard to see, second line of small numbers is the % line) (5 gpm/ft2). After flow increases (give it a minute or so) increase opening to 23% (10 gpm/ft2).
2.13	Backwash Polymer Feed to Manual	Turn Polymer BW to HAND.
2.14	Increase Backwash Water Flows to Max Value	Continue to ramp up the flow to 35% valve opening. (15 gpm/ft2 minimum to 17 gpm/ft2 maximum depending on water temperature, check current high flow set point).
2.15	Completion of Backwash Water Cycle, Backwash Polymer to Auto	Wait for 5 minutes. When you see the large stainless steel support beam under the launder, then put Polymer BW to AUTO.
2.16	Decrease the Backwash Water Flows	On the Backwash Flow Controller press the Down arrow to decrease valve position to 23% (10 gpm/ft2).
2.17	Close Wash Water Drain Valve	CLOSE WW Drain VLV.
2.18	Set Up Filter for Super Chlorination	The filter should be isolated from the (CEC) Clarifier Effluent Channel, all filter valves should be closed and in manual on the (FCC) Filter Control Console) and the water level in the filter should be at the crest of the wash water troughs.
Task 3. Filter Super Chlorination Procedure		
3.01	Super Chlorination Setup	Using the chlorine transfer tote and the portable diaphragm chemical transfer pump, add the proper amount of Sodium Hypochlorite to dose the filter and water to 100 ppm = 26 gallons of 12.5 % Hypochlorite (1.21 Lbs./ gal)
3.02	Open Air Scour Valve, Run Air Scour for 90 Seconds	At the FCC, open the air scour valve. When valve is open place Blower manual run switch to the RUN position. Run the air scour for 90 seconds, then place switch in STOP and close the air scour valve.
3.03	24 Hour Hold	*Let filter stand for 24 hours*

Step	Task	Description
3.04	Follow Step 2.08 – 2.16	*Follow the manual filter backwash procedure*
3.05	STOP – Chlorine Residual Check 	*Allow the filter to rinse at the low flow rate until grab samples from the surface of the water in the filter has a free residual of <.2 ppm.*
3.06	Close Wash Water Drain Valve	CLOSE WW Drain VLV.
Task 4. Placing Filter Back in Service		
4.01	Wash Water Polymer to Hand	Place Polymer WW in HAND
4.02	Slow backwash Filter	Set Backwash Flow Controller to 15% (5 gpm/ft2). Down Arrow again.
4.03	Wash Water Polymer to Auto	When filter gets to 5.5 feet (or level with the other filters) place Polymer WW in AUTO.
4.04	Backwash Controller to HOST	Reset Backwash Flow Controller to HOST (this will set flow to zero).
4.05	Open Filter Influent Valve	Open the Filter Influent Valve by placing it in OPEN for approximately 20 seconds then HOLD for approximately 1 minute. Repeat until valve is opened and leave in OPEN.
4.06	Wash Water Valve Remain Open	Leave Wash Water valve OPEN (valve Number ends in 13) examples (113, 213, 313, etc)
4.07	Filter To Waste Valve to Manual	At SCADA on Filter to Waste (FTW) screen Click the FTW Valve 116 to open the valve control screen. Select “MAN” and set the valve % to achieve the desired flow rate (.8 MGD is good)
4.08	Set FTW timer	Set a timer for 15 minutes. You should carefully monitor the FTW flow rate and keep it smooth at 0.8 mgd.
4.09	Close Wash Water Valve, Set all Valves to Auto	After fifteen minutes on the filter table close the Wash Water Valve that was left open in step 4.06. Also insure that all valves at table are in auto except the filter influent valve.
4.10	Close FTW valve	Back at SCADA close the FTW valve by entering a 0% manual valve position. FTW flow should be ZERO.
4.11	STOP - Filter Control Mode Set to 0 	Go back to the “Filter Valve Control” screen on SCADA. Verify that the “Filter Control mode” is set to “0”. If not, set to “0”.

Step	Task	Description
4.12	STOP - Check Plant Influent Valve Control 	IF PLANT IS IN INFLUENT VALVE CONTROL= AFTER 40 MINUTES RETYPE THE INFLUENT FLOW SETPOINT AND THE FILTER WILL BE PLACED AT THE APPROPRIATE FLOW BY THE PLC.(SKIP STEPS 4.13 , 4.14)
4.13	Filter Mode Setpoint at 0.8MGD	Verify that in the line above this, labeled “Filter Mode Set point”, is set at desired startup flow (0.8 MGD).
4.14	Filter to Flow Mode	Back to the “Filter Control Mode” highlight the “0” and click to bring up the change box, enter a “2” for the filter to operate in FLOW mode, hit ENTER.
4.15	STOP - Verify All Valves in Auto 	Return to the FCC and verify that all valves are in the AUTO position. PLACE THE FILTER INFLUENT VALVE IN AUTO
4.16	Check for Turbidity Spikes and then return filter to level mode	The filter is now online and will ramp slowly up to the flow set point. After 25-30 minutes and after any turbidity spike has started subsiding, in the “Filter Control Mode” line, reset the value to “1” for LEVEL control, hit ENTER
4.17	Reset Polymer Pumps	Go to Polymer pumps and flip switches from AUTO to HAND and then back to AUTO to reset them
4.18	Filter Backwash Paperwork	Complete all monitoring and associated filter Backwash paper work as necessary. (Appendix x)

Attachment 9 – Chemical Addition Troubleshooting

Chemical Addition Problems Procedure

Filter Turbidity Too High

If the filter turbidity is too high and is looking as though the filters will be passing too much turbidity, the following procedure will be undertaken.

Step	Task	Description
Task 1. High Filter Turbidity		
1.01	Turbidity above 0.15 NTU	Potential for turbidity to pass through the filters, will cause health goals not to be met.
1.02	Is the Issue Isolated to One Filter	If it is isolated to one filter then it may be a small turbidity spike, look at the flow rates on each of the filters to determine if higher flows are being experienced by just one filter
1.03	Take grab sample from turbidity meter	Taking a grab sample and this will immediately be run through the HACH 2100AN bench top turbidity meter. If the grab is within normal range <0.1 NTU, the turbidity meter is likely to have an issue. If so grab samples must be taken every 4 hours until the instrument is repaired. If the turbidity is confirmed, continue the procedure
1.02	One filter issue – Complete filter isolation and backwash	Take filter offline then open the wash water drain valve, do not allow the filter to continue filtering water as this will cause a larger turbidity pass through. Complete backwash on filter and then return to service monitoring the turbidity on startup. If turbidity is shows a climbing trend then the filter must be taken offline.
1.03	Turbidity Spike happening on All filters	If a turbidity spike is being seen on all filters, the JC9450 test will cease, all filters will be taken offline and the plant will be shutdown to allow the change over to the non JC9450 treatment trains.
1.03	Start Treatment Train on Non JC9450 Treatment Trains and Non JC9450 Filters	Use the standby treatment train and the standby filtration units so that production can still continue, this process should switch back to chlorine as the disinfectant at the head of the plant.
1.04	The remaining water in the JC9450 treatment train shall be sent to waste and will be reclaimed through the normal plant process	
1.07	Monitor treatment parameters	Treatment operator to monitor the filter stability on standby filters

Chemical No Feed/Under Feed/Over Feed

The JC9450 chemical feed will be monitored via a Rosemont mag meter, which is linked directly to the plant SCADA system. As such, alarms for no feed or under feed will be audible and visual on the SCADA operator screen. This will allow the operator to assess the situation and switch pumps if necessary to continue feeding the chemical.