March 27, 2017

Sanitary Survey Report
For
Oceano Community Services District – 401005
San Luis Obispo County

State Water Resources Control Board
Division of Drinking Water
Southern California Field Operations Branch
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I. INTRODUCTION

Purpose of Report

The purpose of this report is to document the findings of the recent Sanitary Survey conducted at Oceano Community Services District (OCSD). Sanitary Surveys are required every three years, at a minimum, and cover eight different elements: Source, Treatment, Distribution System, Finished Water Storage, Pumps/Pump Facilities/Controls, Monitoring/Reporting/Data Verification, System Management and Operation, and Operator Compliance with State Requirements. Each element is comprised of several components. The water system needs to comply with all regulations pertaining to each element. If the Division of Drinking Water (DDW) identifies a significant deficiency in any element category during a Sanitary Survey, the water system will be required to correct the significant deficiency in a specified time frame.

System Description and Information

The OCSD operates under a domestic water supply permit with permit number 05-06-02P-006, issued by the DDW on February 26, 2002. It is classified as a community public water system. OCSD provides potable water services to residential and commercial/institutional customers located within its service area. OCSD is located in southwest San Luis Obispo County between the Pacific Ocean and Highway 101.

OCSD operates three active groundwater wells, two domestic water storage reservoirs, a connection to the Lopez Project (LP)/Central Coast Water Authority (CCWA), a hydropneumatic tank, one booster pump station, and a distribution system. OCSD maintains an emergency interconnection with the City of Grover Beach. It has three inactive wells – Wells 3, 5 and 7. Well 3 and 5 had been destroyed. OCSD serves a population of approximately 8,125 as reported in its 2015 electronic Annual Report. OCSD has 2,196 active connections. The majority of the service connections are residential connections with a total of 2,034 connections. The remaining service connections include 128 commercial or institutional connections and 34 landscape irrigation connections. OCSD reports six inactive and four other service connections in its 2015 Annual Report.

DDW previously conducted a Sanitary Survey of OCSD on May 16, 2013. OCSD was last cited for a Lead and Copper Rule (LCR) violation in 2013 because it failed to collect the triennial LCR samples in 2012.

Source of Information
All information included in this report is from DDW files, OCSD personnel, and a site visit on February 21, 2017.

II. INVESTIGATION AND FINDINGS

II.a Element 1 – Sources

Surface Water
In the last few years, OCSD's main source of potable water was the treated surface water from the Lopez Project (LP) and CCWA. OCSD has 750 acre-feet annual allotment from CCWA.

Lopez Project
OCSD receives the LP water through an 8-inch metered connection. The connection has a 600 gallons per minute (gpm) capacity. The LP's water supply is from the Lopez Lake. The Lopez Lake is used for recreational activities including body contact sports, boating, fishing, picnicking and overnight camping. Water from the Lopez Lake is first released and stored at the Terminal Reservoir which provides an average of 30-40 days of detention time before treatment in the Lopez Project Water Treatment Plant (LPWTP).

The LPWTP is located adjacent to the Terminal Reservoir. It is a membrane filtration treatment plant. It has a 6 million-gallon per day (MGD) design capacity and a peak capacity of 7 MGD. The pre-treatment processes include injection of potassium permanganate for manganese control and oxidation with chlorine dioxide/free chlorine (if necessary). The treatment processes include coagulation, flocculation, dissolved air floatation (DAF) and membrane filtration. The finished water then moves through a 60-inch chlorine contact time pipe to meet the Surface Water Treatment Rule (SWTR) requirements. The SWTR compliant treated water is disinfected with chloramines and/or blended with chloraminated treated State Project Water (SPW) from the CCWA. That water is then sent to the LP clearwell for storage or to the transmission main for distribution to the participating water systems. The clearwell reservoir has a 2.25 million-gallon storage capacity.

Central Coast Water Authority
The CCWA is a wholesale supplier of treated surface water from the SPW. It supplies potable water to participating member agencies. The CCWA supply is a supplement to the local water sources and the participating member agencies have to maintain their own local sources. The Department of Water Resources (DWR) delivers raw SPW to three open raw water reservoirs located at CCWA's Polonio Pass Water Treatment Plant (PPWTP) site. DWR utilizes five pumping plants and 13 miles of raw water transmission lines to send water to the three open raw water reservoirs.

The raw SPW is treated at the PPWTP. PPWTP is a 43 MGD conventional water treatment plant. The pre-treatment process could include minimal chlorination. The treatment processes include coagulation, flocculation, sedimentation, filtration, chlorination and chloramination. The treated water is delivered to the participating member agencies through 126 miles of transmission mains and seven distribution storage reservoirs. The pressure in the transmission

mains is maintained by gravity. The seven reservoirs provide a total storage capacity of 23 million gallons (MG). The transmission main ends at the Sana Ynez Pump Station through an air gap. The water is dechlorinated and pumped to Lake Cachuma at the pump station.

Groundwater
OCSD has three active groundwater wells – Wells 4, 6 and 8 – and three inactive well (Wells 3, 5 and 7). Wells 3 and 5 were destroyed. There are no sewer lines or sewage disposal facilities located within 50 and 100 feet of well sites, respectively. All the wells are located more than 150 feet from surface water and are not subject to the SWTR.

When starting up, Wells 4 and 6 can discharge to waste to a green polyurethane tank through an air gap. OCSD can re-use that water for non-potable purposes or discharge that water to the sewage through another airgap.

OCSD conducted the drinking water source assessment of Wells 4, 6 and 8 back in January 2001. The following table lists the top possible contaminating activities for the wells.

Table 1: Possible Contaminating Activities

Well	Physical Barrier Effectiveness	Possible Contaminating Activities (top ranked)
Well 4	Low	Automobile gas station, historic gas station, automobile body shops, sewer collection systems, utility stations maintenance areas, high density housing, parking lots/malls, storm water detention facilities, automobile repair shops, fleet/truck/bus terminals, airports maintenance/fueling area, equipment storage yard, irrigated crops, food processing
Well 6	Moderate	Sewer collection system, utility stations maintenance areas, high density housing, storm water detention facilities, water supply wells, school
Well 8	Moderate	Automobile gas station, sewer collection systems, above ground storage tanks, irrigated crops, food processing, high density housing, parking lots/malls, storm water detention facilities, agricultural/irrigation wells, airports maintenance /fueling areas, historic gas stations, metal plating & finishing & fabricating, surface water

Well 4
The well was constructed in 1952 with a depth of 200 feet. It has no annular seal, but has a concrete surface seal. The well is equipped with a 14-inch steel casing. The highest perforations are 114 feet below the ground level. Two clay layers are located from 72 to 76 feet and 86 to 112 feet below the ground level. The well is housed in a metal building at OCSD's plant yard in a residential neighborhood. The well has a Berkeley deep water turbine pump which is power by a 40 horse power (hp) GE electric motor. The air vacuum release valve for the well is screened. The well discharges to the reservoirs.

The well has elevated nitrate levels, but has been below the maximum contaminant level (MCL) since 1992. The well exceeds the selenium MCL of 50 ug/l. OCSD blends Well 4 (when in used) and Well 6 with LP and CCWA water at Reservoir 2 prior to delivering water to the distribution system. The blended water complies with California drinking water standards.

Well 6
The well was constructed in 1979 with a depth of 606 feet. It is equipped with a 12-inch steel casing that reaches all the way to the well bottom. The well is surface sealed and has a 300 feet deep annular seal. Its highest perforations are 305 feet below the surface. There are two

clay layers which are located from 71 to 75 feet and 132 to 143 feet below the ground level. The well is housed in a wooden building on OCSD's plant site. It has a Peerless deep water turbine pump which is power by a 75-hp Yokawa electric motor. The air vacuum release valve for the well is screened. The well discharges to the reservoirs and blends with Well 4 and the LP/CCWA water for lowering of the nitrate and selenium level. The well exceeded the iron secondary standard during the August 2, 2016 sampling event.

Well 8

The well was constructed in 1984 with a depth of 540 feet. It is equipped with a 12-inch steel casing that extends to 525 feet below ground level. The well is surface sealed and has a 370 feet annular seal. The well's highest perforation is 380 feet below ground level. It has six clay layers above the highest perforations. The clay layers are located at the depths of 20 feet (3 feet thick), 40 feet (40 feet thick), 83 feet (6 feet thick), 94 feet (9 feet thick), 161 feet (16 feet thick) and 215 feet (5 feet thick). The well has an Aurora deep well turbine pump which is powered by a 125-hp U.S. electric motor. The air vacuum release valve for the well is screened.

A 1,000-gallon above ground diesel storage tank is located about 100 feet from the well site. The diesel tank is checked for leaks periodically. There is a secondary containment for the diesel tank.

Well 7 (Inactive)

The well was constructed in 1984 with a depth of 170 feet. It is equipped with a 162 feet long 10-inch steel casing. The well is surface sealed and has a 50 feet annular seal. The well is not housed, but is located in a fenced lot in a residential neighborhood. The highest perforations are located 90 feet below ground level. A clay layer is located at 42 feet deep which is about 29 feet thick. The well has an Aurora deep well turbine pump with a 25-hp U.S. electric motor. The well exceeds the iron and manganese secondary standards.

OCSD has never used the Well 7 as an active source. During the 2017 Sanitary Survey, OCSD requested the well be inactivated. DDW inactivated Well 7 per OCSD's request.

Table 2: Active Well Information

Source Name	PS Code	Well Yield (gpm)	Highest Perforations (ft)	Pump Type and Horse Power (hp)	Pump Capacity (gpm)
Well 4	4010005-002	300	114	Berkeley deep water turbine pump, 40-hp	300
Well 6	4010005-004	350	300	Peerless deep water turbine pump, 75-hp	350
Well 8	4010005-006	1,000	380	Aurora deep well turbine pump, 125-hp	1,000

Note: ft = feet, hp = horsepower, gpm = gallons per minute

Table 3: Water Demand Data

Year	Maximum Day		Maximum Month Demand		Annual Water Demand (AF)
	Date	Volume (AF*)	Month	Volume (AF)	
2006	---	8.08	July*	89.12*	882.18
2007	---	3.69	July*	86.85*	922.08
2008	---	3.90	July*	75.10*	933.71
2009	7/5	3.93	August	104.59	854.13
2010	---	3.62	July	89.58	814.36

Table 3: Water Demand Data					
Year	Maximum Day		Maximum Month Demand		Annual Water Demand (AF)
	Date	Volume (AF*)	Month	Volume (AF)	
2011	7/9	3.93	July	84.90	820.04
2012	---	---	March	164.52	962.32
2013	7/20	3.5	July	92.73	917.72
2014	4/7	2.83	June	80.34	796.32
2015	7/5	2.97	May	67.01	696.3

*AF = acre feet. For July of 2006 to 2008, the volumes were for surface water only.

The maximum day demand in the last 10 years was 8.08 AF or 2.63 million gallons (MG) of water in 2006. However, the maximum day demand from 2006 was not reflective of the water demand data over the last 10 years. Excluding the 2006 data, the next representative maximum day demand is 3.93 AF or 1.28 MG from the years 2009 and 2011. OCSD's three actives wells are capable of producing 1,650 gpm or 2.38 MG per day (MGD). The connection to the LP/CCWA water is 750 gpm or 1.08 MGD. The combined groundwater and purchased water sources is 3.46 MGD. The two potable water storage tanks can store up to 1.3 MG of water. Based on the maximum day demand of 1.28 MG of water from 2009 and 2011, OCSD has adequate source and storage capacity to meet the maximum day demand based on data from the last 10 years.

II.b Element 2 – Treatment

OCSD provides precautionary disinfection of the wells' water. It disinfects the wells' water using NSF 60 certified 12.5 percent sodium hypochlorite solution. The Wells 4 and 6 chlorinator is located at OCSD's plant yard. Well 8's chlorinator is located at its well site. The 12.5 percent sodium hypochlorite is stored in plastic drums. The chlorinators each are capable of 22 gallons per day (gpd). OCSD checks and records the chlorine residuals leaving the well sites every day. The free chlorine residual leaving the well sites typically ranges from 0.5 to 1.0 milligrams per liter (mg/L). The total chlorine residual of the LP/CCWA water ranges from 0.95 to 1.4 mg/L. The free-chlorinated water from the wells blends with the LP/CCWA chloraminated water in the reservoirs. The well water enters the reservoirs at the top. Some of the free chlorine seems to dissipate during the free fall; however, the chlorine residual in the blended water in the reservoirs and the distribution systems are stable, except in low flow areas. OCSD flushes the low flow areas on a routine basis to increase the chlorine residual in those areas.

Nitrate and Selenium Blending

Well 4 has exceeded the nitrate MCL of 10 mg/L nitrate as nitrogen in the past. It still has elevated nitrate results according to sampling data since 2014, which showed results above half the MCL and reached as high as 7.4 mg/L of nitrate as nitrogen in June 2016. Well 4 has also exceeded the selenium MCL of 50 mg/L in the past. Since 2015, the selenium levels have been fluctuating from below the MCL to above the MCL (with a range of 27 mg/L to 60 mg/L).

OCSD has a blending program for Well 4's water supply to comply with the nitrate MCL and the selenium MCL requirements. Well 4 (when in use) blends with Well 6 and LP/CCWA water at Reservoir 2 with a ratio of 10 percent well water and 90 percent LP/CCWA water. This blending ratio ensures the blended water reliably complies with the nitrate and selenium MCLs. **The monthly reports from 2014 to 2016 showed that the blended water met the selenium MCL; Nitrate levels in Well 4 were below the MCL during that same period.**

When Well 4 and/or any water sources exceed the nitrate and/or selenium MCL, they shall be sampled monthly for nitrate and/or selenium when in use. The blended water from Reservoir 2 shall be sampled weekly for nitrate and/or selenium when any source exceeded the nitrate and/or selenium MCL is used. OCSD shall submit a monthly report to DDW of the nitrate and/or selenium sampling results. OCSD has been submitting the monthly reports for selenium blending since only Well 4 exceeds selenium MCL (all the water supply sources comply with the nitrate MCL).

II.c Element 3 – Distribution System

OCSD's water distribution system consists of a single distribution pressure zone. The pressures in the distribution system range from 45 to 85 pounds per square inch (psi). The distribution mains consist of 6 to 12-inch Class 150 and 200 polyvinyl chloride (PVC), 3 to 12-inch asbestos cement, and 2 to 8-inch steel pipes. Mains under 4-inch are inadequate for the distribution system; OCSD has a plan to replace the inadequate size mains. OCSD uses at least 6-inch C900 PVC pipes to replace old or to install new mains. The mains have minimum depth of cover from 30 inches. It's OCSD's practice and policy to keep the potable water mains 10 feet horizontal and one foot vertical from sewers and/or sewage disposal pipelines.

For newly installed lines, OCSD will use HTH tablets to disinfect them with a 24-hour contact time and a final chlorine residual of at least 25 mg/L. Bacteriological tests are made after the disinfection. For fractured mains, repairs are made according to American Water Works Association (AWWA) specifications. OCSD shall use products that meet the NSF Standard 60 and 61 when disinfecting and or replacing new, repaired or replaced lines.

OCSD has 20 dead ends (with blowoffs) in its distribution system. The dead ends are flushed every six months. OCSD has 410 2 to 12-inch valves in its distribution system. The valves are exercised yearly. OCSD reported 135 backflow prevention devices in its domestic water system with 126 being tested in 2015. **All backflow prevention devices need to be tested every year and OCSD shall make sure the devices are tested.** The following table includes more information about the backflow prevention tests history since 2013.

Table 4: Backflow Prevention Device Testing Results

Year	Total # in System	# Installed	# Tested	# Failed	#Repaired
2013	131	3	128	3	3
2014	138	5	135	4	10
2015	135	6	126	12	11

II.d Element 4 – Finished Water Storage

OCSD maintains two distribution reservoirs that can store up to a total of 1.3 MG of water. Water from Wells 4 and 6, and LP/CCWA feeds the two reservoirs through inlets on top of the reservoirs. The two reservoirs float together.

Reservoir 1
The reservoir was constructed above ground and of welded steel in 1990. It has a storage capacity of 300,000 gallons. The reservoir is located at OCSD's fenced and locked plant yard. Water flows into the reservoir through an inlet located at the top. The outlet is located two feet above the bottom of the reservoir and 30 feet from the inlet. The reservoir is equipped with cathodic protection. It has an internal epoxy coating. The reservoir receives water from the wells and the LP/CCWA connection. It delivers water to the hydropneumatic tank through the

booster pump station. The reservoir's drain and overflow discharge to a sump which connects to a discharge point that leads the street. Its air vent and overflow/drain are screened. **There are corroded spots on top of the reservoir and OCSD should repair those corroded spots to prevent the corrosion from creating holes on the reservoir.**

Reservoir 2
The reservoir was constructed above ground and of welded steel in 1980 with epoxy internal lining. It has a capacity of 1,000,000 gallons. Water flows into the reservoir through an inlet located at the top. The outlet is located two feet from the bottom of the reservoir and 30 feet from the inlet. The reservoir receives water from the active wells and the LP/CCWA connection. It delivers water to the hydropneumatic reservoirs through the booster pump station. The reservoir's drain and overflow discharge to the same sump used by Reservoir 1 which connects to a discharge point that leads the street. The air vent is screened. **There are corroded spots on top of the reservoir and OCSD should repair those corroded spots to prevent the corrosion from creating holes on the reservoir.**

Hydropneumatic Tank
The hydropneumatic tank was built in 1985. The tank has a capacity of 5,000 gallons. The hydropneumatic tank is constructed of steel. It receives water from Reservoirs 1 and 2. It delivers water to the distribution system. The pressure in the tank is maintained at about 45 psi.

Table 5: Active Potable Water Storage Reservoir Information

Name	Type	Year Built	Capacity (gallons)	Comments
Reservoir 1	Welded Steel	1990	300,000	The tank was last inspected and cleaned in 2012.
Reservoir 2	Welded Steel	1980	1,000,000	The tank was inspected and cleaned in 2012.

II.e Element 5 – Pumps, Pump Facilities, and Control

OCSD operates one active booster pump facility to maintain pressure in its domestic water distribution system. The facility is located at OCSD's plant yard. The booster pump station helps to deliver water to the hydropneumatic tanks. A natural gas operated Waukesha power generator provides backup power to the pump station in emergency situations. The pump station also has a hook-up to an emergency generator.

Booster Pump Station
The Booster Pump Station has three pumps. The 20-hp variable frequency drives pump is used first. If it cannot meet the demand, the other two pumps will be turned on. The pump station receives water from the Storage Reservoirs 1 and 2. It delivers water to the hydropneumatic tank and from there to the distribution system.

Table 6: Booster Pump Stations

Name	Number of Pump	Pump power (hp)	Capacity (gpm)	Receive Water from	Delivers Water to
Booster Pump Station	3	20, 25 & 15	---	Reservoirs 1 and 2	Hydropneumatic Tank and Distribution System

II.f Element 6 – Monitoring, Reporting, and Data Verification

California laws and regulations require a public water system to routinely monitor its

groundwater sources for general physical parameters, general minerals, inorganic chemicals, radiological chemicals, volatile organic chemicals (VOCs), non-volatile synthetic organic chemicals (SOCs), total coliform bacteria, and fecal coliform bacteria (*E. coli*).

A public water system is also required to routinely monitor its distribution system for total coliform bacteria, fecal coliform bacteria, lead and copper, disinfection byproducts, chlorine residuals, and asbestos when the water has been determined to be aggressive.

II.f.1 Chemical Source Monitoring and Reporting

II.f.1.A Source Monitoring Schedule

The following tables show the previous monitoring dates, the monitoring frequencies and the next due dates for future monitoring for primary and secondary chemicals, general physicals and minerals of the source waters. OCSD was granted a waiver from asbestos monitoring and most of the SOCs, except atrazine and simazine, for the active wells.

Well 4, 6 and 8 were sampled for aggressive index on August 16, 2012 and the next sampling date is in August 2015. However, there's no aggressive index result for Wells 4, 6 and 8 in 2015. OCSD shall ask its laboratory to calculate the AI values for Wells 4, 6 and 8 based on the latest sampling results, and submit the results electronically to DDW's database. For Wells 4 and 6, selenium was last sampled on December 6, 2016 and therefore the next sampling date will be in December 2019.

Table 7A: Chemical Monitoring of Sources

Source Name & PS Code		General Physical & Minerals	Inorganic*	Radiological	VOCs	SOCs*
Well 4 4010005-002	Last Sample	8/2/2016	8/2/2016	1/6/209	10/11/2016	8/16/2012
	Frequency	3 Years	3 Years	9 Years	3 Years	9 years
	Next Sample	August 2019	August 2019	January 2018	October 2019	August 2021
Well 6 4010005-004	Last Sample	8/2/2016	8/2/2016	6/28/2012	10/11/2016	8/16/2012
	Frequency	3 years	3 years	9 years	3 years	9 years
	Next Sample	August 2019	August 2019	June 2021	October 2019	August 2021
Well 8 4010005-006	Last Sample	4/21/2015	4/21/2015	February 2017	10/11/2016	8/16/2012
	Frequency	3 years	3 years	Quarterly	3 years	9 years
	Next Sample	April 2018	April 2018	May 2017	October 2019	August 2021

*For Inorganics, see hexavalent chromium, perchlorate, nitrate and nitrite in Table 6B.

Table 7B: Chemical Monitoring of Sources

Source Name & PS Code		Nitrite (As N)	Nitrate (As N)	Perchlorate	Hexavalent Chromium
Well 4 4010005-002	Last Sample	8/2/2016	12/13/2016	8/2/2016	8/2/2016
	Frequency	3 Years	1 year	3 Years	3 Years

Table 7B: Chemical Monitoring of Sources					
Source Name & PS Code		Nitrite (As N)	Nitrate (As N)	Perchlorate	Hexavalent Chromium
	Next Sample	August 2019	December 2017	August 2019	August 2019
Well 6 4010005-004	Last Sample	8/2/2016	12/13/2016	8/2/2016	8/2/2016
	Frequency	3 years	1 year	3 years	3 years
	Next Sample	August 2019	December 2017	August 2019	August 2019
Well 8 4010005-006	Last Sample	4/21/2015	12/13/2016	4/21/2015	4/21/2015
	Frequency	3 years	1 year	3 years	3 years
	Next Sample	April 2018	December 2017	April 2018	April 2018

II.f.1.B Source Monitoring Results

General Physical and Minerals (Secondary Drinking Water Standard)

Table 8: General Physical and Minerals					
	MCL	DLR	Well 4	Well 6	Well 8
Aggressive Index‡			12.44	12.33	12.47
Bicarbonate Alkalinity (mg/L) ‡			310.0	490	450.0
Calcium (mg/L) ‡			95.0	110	110.0
Carbonated Alkalinity (mg/L) ‡			BDL	BDL	BDL
Hydroxide Alkalinity (mg/L) ‡			BDL	BDL	BDL
Magnesium (mg/L) ‡			42.0	58	50.0
pH‡			7.4	7.6	7.2
Sodium (mg/L) ‡			38.0	39	44.0
Total Hardness as $CaCO_3$ (mg/L) ‡			410.0	530	480.0
Aluminum (mg/L)	0.2		BDL	BDL	BDL
Color (Units)	15		BDL	4	8.0
Copper (mg/L)	1.0	0.05	0.089	BDL	BDL
Foaming Agents (MBAS) (mg/L)	0.5		BDL	BDL	BDL
Iron (mg/L)	0.3	0.1	BDL	**0.6**	**0.980**
Manganese (mg/L)	0.05	0.02	**0.054**	0.031	0.043
Methyl-tert-butyl ether (MTBE) (mg/L)*	0.005		BDL	DBL	BDL
Odor – Threshold (Units) at 60° Celsius	3	1	1	2	1.0
Silver (mg/L)	0.1	0.1	BDL	BDL	BDL
Thiobencarb (mg/L)†	0.001		BDL	BDL	BDL
Turbidity (Units)	5	0.1	0.13	0.43	3.13
Zinc (mg/L)	5.0	0.05	BDL	BDL	0.190
Total Dissolved Solids (mg/L)	1000*		600.0	650	670.0
Specific Conductance (uS/cm)	1,600*		960.0	1,000	1,000.0
Chloride (mg/L)	500*		44.0	24	41.0
Sulfate (mg/L)	500*	0.5	180.0	140	170.0

*The values for Total Dissolved Solids, Specific Conductance, Chloride, and Sulfate are upper values of MCL ranges for which No fixed MCL has been established.
†Thiobencarb and MTBE were waived from monitoring.

‡These constituents do not have any MCLs or DLRs.
MCL = maximum contaminant levels, DLR = Detection Limits for Purposes of Reporting
BDL = Below Detection Limit. The BDLs for the General Physical and Minerals are set at or below the DLR levels.

OCSD's wells met the general physical and minerals standards according to the latest sampling results, except for iron and manganese. Wells 6 and 8 have iron levels ranging from double to triple the secondary MCL. Well 4 exceeded the manganese secondary standard, while Well 6 had elevated manganese levels. Historically Well 4's manganese results were non-detect; this latest result from August 2, 2016 was the only one detected for manganese. Well 6 had levels of iron and manganese over the secondary standards in the pass, with iron concentration consistently over the secondary MCL; but the manganese level has been under the secondary MCL since November 2007. Well 8 had not exceeded the iron secondary MCL in the pass until the April 21, 2015 result. Well 8 had elevated levels of manganese which is approaching the secondary MCL.

All the wells are overdue for aggressive index sampling and OCSD shall ask its laboratory to calculate the AI from the latest sampling results and send the AI valves to DDW electronically. Well 4's latest sampling result was over the manganese secondary MCL; Well 6's latest iron result was over the secondary MCL. Wells 4 and 6 blend in Tank 1 and 2. OCSD plans to conduct monthly iron and manganese monitoring of the blended water when the wells are used.

Well 8 exceeded the iron secondary MCL. It serves the distribution system directly. OCSD shall sample the well quarterly for iron. OCSD could request the DDW for reduced monitoring frequency if the average of four consecutive quarterly results is below the secondary MCL.

Inorganic Chemicals

Table 9: Inorganic Chemicals

	MCL (mg/L)	DLR (mg/L)	Well 4	Well 6	Well 8
Aluminum	1.	0.05	BDL	BDL	BDL
Antimony	0.006	0.006	BDL	BDL	BDL
Arsenic	0.010	0.002	BDL	0.0023	0.0025
Asbestos*	7 MFL*	0.2 MFL > 10 um*	Waived	Waived	Waived
Barium	1.	0.1	0.0232	BDL	BDL
Beryllium	0.004	0.001	BDL	BDL	BDL
Cadmium	0.005	0.001	0.0014	BDL	BDL
Chromium (total)	0.05	0.01	BDL	BDL	BDL
Cyanide*	0.15	0.1	BDL	BDL	BDL
Fluoride	2.0	0.1	0.32	0.31	0.18
Hexavalent Chromium	0.010	0.001	BDL	BDL	BDL
Lead		0.005	**0.0065**	BDL	**0.0069**
Mercury	0.002	0.001	BDL	BDL	BDL
Nickel	0.1	0.01	BDL	BDL	BDL
Nitrate (as N)	10.	0.4	6.0	BDL	BDL
Nitrate + Nitrite (sum as N)	10.	---	7.1	BDL	BDL
Nitrite	1.	0.4	BDL	BDL	BDL
Perchlorate	0.006	0.004	BDL	BDL	BDL
Selenium	0.05	0.005	0.047	BDL	BDL
Thallium	0.002	0.001	BDL	BDL	BDL

*MFL = million fibers per liter, MCL for fibers exceeding 10 micro-meter (um) in length. BDL is set at or below the DLR levels.

OCSD's wells meet the inorganics drinking water standards. OCSD shall continue to monitor the active wells for inorganic chemicals according to the monitoring schedule. During the 2013 Sanitary Survey, Oceano determined that its wells are not constructed in asbestos rock formations based on well logs and geological information of the area. Therefore, OCSD was granted a waiver for asbestos sampling requirements for its sources.

Radioactivity

The following table has the latest radiological activities monitoring results for OCSD's wells. The active wells' latest sampling results met radiological activity standards. Well 8 exceeded the gross alpha (GA) MCL in samples collected on April 21, 2015 and June 30, 2016; the results were 30 and 17 pico-curies per liter (pCi/L), respectively. Well 8's latest gross alpha result from September 13, 2016 is above half the MCL (9.6 pCi/L). **Due to the August 2015 gross alpha result of 30.0 pCi/L, OCSD needed to take quarterly radiological activity samples for Well 8. OCSD had completed two consecutive quarters of radiological sampling, June and September of 2016; it missed the December 2016 sample. OCSD will start four quarters of radiological activity sampling again beginning February 2017.**

Table 10: Radiological Results

	GA†	GA CE†	Radium 226	Radium 228	Uranium
MCL (pCi/L)	15	---	Ra-226 + Ra-228 = 5		20
DLR (pCi/L)	3	---	1	1	1
Well 4	ND*	2.00	**GA+0.84xCE-Ur**: ¥ No further action is required for this sampling event	No further action is required for this sampling event	**GA+0.84xCE:** † No further action is required for this sampling event
Well 6	ND	1.90	No further action is required for this sampling event	No further action is required for this sampling event	No further action is required for this sampling event
Well 8	9.6	5.3	0.038	0.00	6.8

*ND = non-detect
†GA+0.84xCE is used to find out if further sampling is required for uranium and/or radium isotopes. GA=Gross Alpha result; CE is the gross alpha counting error.
¥GA+0.84xCE-Ur is used to determine if further sampling for radium isotopes. Ur is uranium concentration.

Volatile Organic Chemicals

The most recent sampling results showed OCSD's active wells comply with volatile organic chemicals (VOCs) MCLs (all the results were below the DLR). OCSD shall continue to monitor its sources for VOCs according to the monitoring schedule.

Non-Volatile Synthetic Organic Chemicals (SOCs)

DDW has previously granted waivers for SOCs sampling requirements. Currently, OCSD is required to just test for atrazine and simazine for the active and standby wells. The latest monitoring results for the wells were non-detect. OCSD shall continue to monitor its sources for SOCs according to the monitoring schedule.

Raw Water Bacteriological Monitoring and Reporting

OCSD has a Coliform and Groundwater Rule Sample Siting Plan (CGRSSP) with DDW which is dated May 15, 2013. The last time OCSD conducted the GWR monitoring was back in August 2015. On August 12, 2015, one of the OCSD's distribution samples was tested positive for total

coliform. OCSD took the repeat samples on the same day when it was notified of the positive total coliform result. Well 6 tested positive in the repeat sampling. OCSD resampled Well 6 on August 13, 18 and 20, the results were all positive for total coliform. A later sample taken on August 20 and two separate samples from August 25 tested negative for total coliform and *E. Coli*.

II.f.2 Distribution System Monitoring and Reporting

II.f.2.A Distribution System Monitoring Schedule

The Aggressive Index (AI) values for OCSD's active wells are above 11.5 and not considered corrosive to asbestos cement pipes. **Therefore, OCSD does not have to take any asbestos samples in its distribution systems. However, those AI results were not the most updated results. Depending on the updated monitoring AI results, OCSD might have to take an asbestos sample from its distribution system where there's asbestos pipes and is most vulnerable to the corrosive water.**

Lead and copper samples were last taken in July of 2016. The sampling frequency for lead and copper is three years. The next round of sampling is due in the summer months of 2019. The following table has the disinfection byproducts monitoring schedules. The monthly chlorine residual samples are taken along with the bacteriological samples.

Table 12: Distribution System Monitoring

Site Name & PS Code		HAA5*	TTHMs*
1649 Helena – Stage 2 DBP 4010005-016	Last Sample	1/10/2017	1/10/2017
	Frequency	Quarterly	Quarterly
	Next Sample	April 2017	April 2017
1316 18th St – Stage 2 DBP 4010005-017	Last Sample	1/10/2017	1/10/2017
	Frequency	Quarterly	Quarterly
	Next Sample	April 2017	April 2017

*HAA5 = Haloacetic Acids (5), TTHMs = Total Trihalomethanes

II.f.2.B Distribution System Monitoring Results

Disinfection Byproducts Monitoring Results
OCSD currently complies with the Stage 2 Disinfectants/Disinfection Byproducts (DBPs) Rule Monitoring. OCSD collects quarterly TTHMs and HAA5 sample sets from its distribution system for testing to comply with monitoring requirements for DBPs. The quarterly samples are taken in January, April, July and October. The following table has the quarterly monitoring results for HAA5 and TTHMs since 2014. OCSD complies with the DBPs requirements.

Table 13: HAA5 and TTHMs Results

		1649 Helena – Stage 2 DBP 4010005-016		1316 18th St – Stage 2 DBP 4010005-017	
DBPs MCL		HAA5 (0.060 mg/L)	TTHMs (0.080 mg/L)	HAA5 (0.060 mg/L)	TTHMs (0.080 mg/L)
2014	Q1*	0.018	0.028	0.014	0.025
	Q2	0.016	0.050	0.016	0.047
	Q3	0.013	0.064	0.019	0.066
	Q4	0.008	0.041	0.012	0.024

Table 13: HAA5 and TTHMs Results					
		1649 Helena – Stage 2 DBP 4010005-016		1316 18th St – Stage 2 DBP 4010005-017	
DBPs MCL		HAA5 (0.060 mg/L)	TTHMs (0.080 mg/L)	HAA5 (0.060 mg/L)	TTHMs (0.080 mg/L)
2015	Q1	0.013	0.027	0.015	0.036
	Q2	0.004	0.034	0.015	0.034
	Q3	0.006	0.047	0.013	0.046
	Q4	0.010	0.040	0.015	0.038
2016	Q1	0.010	0.040	0.015	0.038
	Q2	0.023	0.047	0.024	0.049
	Q3	0.005	0.030	0.014	0
	Q4	0.010	0.041	0.012	0.039
2017	Q1	0.007	0.029	0.014	0.038
	Q2				
	Q3				

*Q = Quarter

Chlorine Residual and Surface Water Treatment Rule (SWTR) Monitoring

To comply with the maximum residual disinfectant level of 4.0 mg/L for chlorine and SWTR monitoring, OCSD monitors its distribution systems for residual chlorine concentration. It collects weekly samples, along with the bacteriological samples, to analyze for the chlorine residual levels. The following table has the 2014 to present average monthly results for the chlorine residual levels from OCSD's distribution system. OCSD has been meeting the chlorine residual and SWTR monitoring requirements according to data reviewed since 2014.

Table 14: Distribution Chlorine Residuals Results (mg/L)												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2014	1.89	1.84	1.77	1.44	1.12	1.60	1.36	1.52	0.88	0.95	0.86	1.37
2015	1.55	1.72	1.47	1.14	1.15	1.38	1.38	1.23	1.81	1.64	1.79	1.77
2016	2.13	2.03	1.84	1.42	1.34	1.54	1.39	1.23	1.62	1.19	1.79	1.14
2017	1.62											

Lead and Copper Results

For compliance with the Lead and Copper Rule (LCR), OCSD collects and tests 20 LCR samples from its distribution system triennially. Recent results are summarized in the following table. The lead and copper 90th percentile results were under the action level for samples taken in 2012, 2013 and 2016. OCSD notified its customers of the LCR results.

Table 15: Lead and Copper Monitoring of Distribution System					
Sampling Date	# of Samples	90th% Lead (mg/l)		90th% Copper (mg/l)	
		Action Level	0.015	Action Level	1.3
		DLR	0.005	DLR	0.050
July 17, 2012	20	<0.005		0.44	
June 18, 2013	20	0.0054		0.62	
July 26, 2016	20	<0.005		0.33	

II.f.3 Bacteriological Monitoring and Reporting

OCSD has a Coliform and Groundwater Rule Sample Siting Plan (CGRSSP) with DDW dated May 15, 2013. According to the CGRSSP, OCSD conducts weekly monitoring of its distribution system for bacteriological quality and takes two samples from the distribution system per week. The following table summarizes the number of samples collected each month, the number of samples tested positive for total coliform bacteria and for *E. coli* from the distribution system. In August 2015, one distribution sample was tested positive for total coliform and triggered the Groundwater Rule monitoring for the influencing wells.

Table 16: Bacteriological Monitoring (Total Coliform and *E. coli*)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2014	10-0-0	8-0-0	8-0-0	10-0-0	9-0-0	8-0-0	11-0-0	8-0-0	8-0-0	8-0-0	8-0-0	10-0-0
2015	8-0-0	9-0-0	10-0-0	8-0-0	8-0-0	10-0-0	8-0-0	11-1-0	10-0-0	8-0-0	8-0-0	10-0-0
2016	8-0-0	8-0-0	10-0-0	8-0-0	10-0-0	11-0-0	8-0-0	11-0-0	8-0-0	8-0-0	10-0-0	9-0-0
2017												

Key: # of samples collected - # of total coliform positive results - # of *E. coli* positive results

II.g Element 7 – System Management and Operations

OCSD is a community public water system. Mr. Tony Marraccino is the Chief Operator and Utility Systems Supervisor. He is also OCSD's water quality contact. Mr. Paavo Ogren is the water system's General Manager.

DDW has a copy of OCSD's Emergency Notification Plan (ENP) on file which is dated April 26, 2013. **Some of the information in the ENP needs to be updated. OCSD shall send an updated ENP to DDW.** OCSD submitted its 2015 Annual Report to DDW through the Electronic Annual Reporting System. OCSD distributed a copy of its 2015 Consumer Confidence Report (CCR) to its customers on June 1, 2016. It submitted a copy of the CCR and CCR Certification Form on August 10, 2016, through the online Annual Report system. In future CCRs, **OCSD needs to identify "CU" (color unit) in the CCR; on page 5 the term "chloride" with the MRDL should be changed to chlorine residual, and the well water disinfection residual levels should be identified; and OCSD should include the blended water selenium level range and average from Reservoir 2.**

OCSD reported nine distribution system problems in 2015. Eight of the problems were service connection breaks or leaks, one was a main break. All the problems were fixed. OCSD received 16 complaints from its customers in 2015. Six of the complaints were related to taste and odor which was caused by algae bloom; four were regarding water color which were caused by dead end flushing and line breaks; six were related to water system pressure which was caused by old galvanized pipes in customers' homes. OCSD reported in the 2015 Annual Report that the wells' static water levels are declining.

II.h Element 8 – Operator Compliance with State Requirements

OCSD is classified as a Distribution 2 (D2) and Treatment 2 (T2) water system. Mr. Marraccino is the chief operator. He is a D3 and T3 certified water operator.

Table 17: Operator Certifications							
	Distribution				Treatment		
Name	Grade	Operator Number	Expiration Date		Grade	Operator Number	Expiration Date
Tony Marraccino	D3	41413	3/1/2018		T3	35052	4/1/2019
Casey Stewart	D2	41074	11/1/2017		T2	35059	1/1/2020
Jason Carlile	D2	43943	5/1/2019		T2	36934	1/1/2020

III. CONCLUSION

The review of OCSD's reports and routine water quality monitoring results indicates OCSD's treated potable water meets all the applicable primary maximum contaminant levels. OCSD's potable water also meets the secondary MCLs, except for iron (Wells 6 and 8) and manganese (Wells 4). Well 4 still occasionally exceeds the selenium MCL. Sampling results from Well 8 in 2015 and 2016 (June) showed that it exceeded the GA MCL, but the most recent sampling result from September 2016 showed that the GA has dropped below the MCL at 9.6 pCi/L. The high iron, manganese and GA concentrations might have been a result of drought conditions because the wells do not usually have those issues; Well 6 had historically high iron and manganese levels, but not in the years leading up to the drought. Under normal circumstance, OCSD is able to provide potable water to its customers that meet the California drinking water standards.

A site inspection of OCSD's wells, storage tanks, distribution system and water quality sampling sites shows OCSD manages its system properly and according to the California drinking water laws and regulations.