

State Water Resources Control Board

Division of Drinking Water

June 29, 2016

**Sanitary Survey Report
For
San Luis Obispo County Service Area No. 16 - Shandon
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 San Luis Obispo County Service Area No. 16 - Shandon (SLOCSA No. 16 - Shandon). 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 SLOCSA No. 16 - Shandon operates under a domestic water supply permit, permit number 05-06-02P-016, issued by the DDW on July 24, 2002. SLOCSA No. 16 - Shandon is classified as a community water system. It is located in north-eastern San Luis Obispo County along Highway 41/46. SLOCSA No. 16 - Shandon provides potable water to the residents in the town of Shandon. It serves residential housing, commercial and institutional customers.

SLOCSA No. 16 - Shandon operates two active wells, one domestic water storage reservoir, and a distribution system. SLOCSA No. 16 - Shandon serves 1,295 residential people through 344 metered connections. It has a total of 344 active connections reported for 2015. Of the 344 active connections: 331 connections are for residential, and 13 are for commercial or institutional (mainly a school and a fire station). DDW database has a total number of 342 active connections. There are no inactive connections reported by SLOCSA No. 16 - Shandon for 2015. There is no reported information regarding the number of transient and non-transient population served by SLOCSA No. 16 - Shandon for 2015.

DDW previously conducted a Sanitary Survey of SLOCSA No. 16 - Shandon on October 26, 2012. No enforcement action has been taken or violations been cited against the water system since the previous Sanitary Survey.

Source of Information

All information included in this report is from DDW files, SLOCSA No. 16 - Shandon personnel, and a site visit on May 26, 2016.

II. INVESTIGATION AND FINDINGS

II.a Element 1 – Sources

SLOCSA No. 16 - Shandon has two active groundwater wells as its potable water sources. The active wells are Well 4 and Well 5. There are no sewer lines and sewage disposal facilities located within 50 and 100 feet of the wells, respectively. The water from the wells is chlorinated before going into the storage reservoir and/or the distribution system. The water system is located in the eastern end of the Paso Robles Groundwater Basin. SLOCSA No. 16 - Shandon conducted the drinking water source assessment of its active wells in August 2002. The wells are operated based on the tank levels. The wells go on when the tank level is below 8 feet and stop when the tank level reaches 13.5 feet. The water system’s operators conduct weekly inspection of the wells. The following table lists the top possible contaminating activities for the well.

Table 1: Possible Contaminating Activities		
Well	Physical Barrier Effectiveness	Possible Contaminating Activities (top ranked)
Well 4	Moderate	Septic systems, utility stations, parks, fire station, animal grazing, underground storage tank, above ground storage tank
Well 5	Moderate	Animal grazing, utility stations, historic gas station, parks, fire station, fertilizer/pesticide/herbicide application, above ground storage tank

SLOCSA No. 16 – Shandon submitted a permit amendment application to DDW on May 3, 2015 for adding the State Project Water as a new source. The connection is expected to complete in July 2016. DDW has reviewed and commented on the chloramines notification flyer and insert. DDW requires the water system to conduct quarterly disinfectant/disinfection byproducts (DBPs) sampling and two rounds of lead and copper sampling. The DBPs sampling location should be at a site with the maximum water detention time. If the first two rounds of DBPs sampling results are low, the last two rounds can be waived. The lead and copper sampling shall be done in December 2016/January 2017 and the summer of 2017, assuming the State Project Water connection is made in July 2016.

Well 4

The well was constructed in 1984 with a depth of 461 feet. It is located in a rural area near the C.W. Clarke Park. A fire station is located nearby which has two above ground fuel storage tanks. The well’s chlorination system, SCADA controls and chlorine residual analyzer are housed in a building with a concrete floor. The well is located outside of the building. The well site is surrounded by a fence. The well is equipped with a 10-inch steel casing and packed with gravel. The well is sealed at the surface and has a 50 feet deep annular seal. The depth of the highest perforations is 297 feet. The well has seven impervious clay layers above the highest perforations. The seven brown clay layers are located at the depth of eight feet (13 feet thick),

25 feet (28 feet thick), 55 feet (8 feet thick), 80 feet (5 feet thick), 111 feet (80 feet thick), 195 feet (56 feet thick) and 269 feet (14 feet thick). The well's air release valve is screened. **The well's pump to waste pipe's screen is partially torn. SLOCSA No. 16 – Shandon shall install a new screen for the pipe.** The pump to waste water and water from the continuous chlorine residual analyzer discharges through an air gap to a sump located adjacent to the well. It has an electrical motor and a submersible pump with a capacity of about 450 gallons per minute (gpm).

Well 5

Well 5 was constructed in 2002 with a depth of 440 feet. It is located in a rural area near the C.W. Clarke Park. The well's chlorination system, SCADA controls and chlorine residual analyzer are housed in a building with a concrete floor. The well is located outside the building. The well site is fenced. The well has a 10-inch polyvinyl chloride (PVC) casing and is packed with gravel. It is surface sealed with an annular seal of 50 feet. **The concrete pad for the surface seal has a visible crack. SLOCSA No. 16 – Shandon should repair that concrete pad before it compromises the surface seal.** The well's sounding tube is screened. The water from the continuous chlorine residual analyzer discharges through an air gap to a sump located on the well site. The well's highest perforations begin at 300 feet below the surface. It has a submersible pump powered by an electric motor which is capable of producing 280 gpm. There are 10 different yellow or sandy yellow clay layers located above the highest perforations. The clay layers are located at 15 feet (15 feet thick), 35 feet (8 feet thick), 45 feet (15 feet thick), 72 feet (8 feet thick), 95 feet (20 feet thick), 120 feet (30 feet thick), 170 feet (40 thick brown), 235 feet (20 thick), 260 feet (15 thick) and 295 feet (10 feet thick). SLOCSA No. 16 - Shandon has an emergency generator as a backup power source at the well site. The generator is exercised quarterly and serviced annually. The water system's Chief Operator demonstrated the generator operation by turning on the generator during the site visit.

Table 2: Active Well Information					
Source Name	PS Code	Well Yield (gpm)	Highest Perforations (ft)	Pump Type	Pump Capacity (gpm)
Well 4	4010028-002	450	297	submersible	297
Well 5	4010028-004	250	300	submersible	300

Note: ft = feet, gpm = gallons per minute

Table 3: Water Demand Data					
Year	Maximum Day Demand		Maximum Month Demand		Annual Water Demand (MG)
	Day	Volume (MG)	Month	Volume (MG)	
2012	August 1	0.372	August	6.381	47.957
2013	September 3	0.246	July	5.562	49.005
2014	June 2	0.2435	June	5.042	41.924
2015	---	---	June	3.835	34.3

*MG – million gallons.

The capacity of the active wells is 730 gpm or 1.05 MG per day. The potable water reservoir can store up to 212,000 gallons of water. Based on the highest maximum day demand from August 1, 2012 of 0.372 MG, SLOCSA No. 16 - Shandon's wells are capable of meeting the maximum day demand, but its storage reservoirs' storage capacity is below that of the maximum day demand.

II.b Element 2 – Treatment

SLOCSA No. 16 - Shandon provides precautionary chlorination for its well water using a 12.5 percent sodium hypochlorite solution. Each well has its own chlorinator at the well site for the injection of the chlorine into the potable water in the well discharge lines. The chlorinators each have a capacity of 12 gallons per day. The sodium hypochlorite solution is contained in 30-gallon plastic drums. SLOCSA No. 16 – Shandon operators refill the sodium hypochlorite drums before they are empty. A static inline mixer was installed after the chlorine injection point to improve the chlorine and raw water mixing for the wells. SLOCSA No. 16 - Shandon operators visits the wells weekly to check on the chlorination system.

The chlorination systems are housed to prevent vandalism. The well water is chlorinated inline before entering the storage reservoir and/or the distribution system. The chlorination systems are equipped with on-line chlorine analyzers for measuring the chlorine residual. An auto alarm dialer will call the operators when the chlorine residual level goes down to 1.0 mg/L. The wells will shut off automatically if the chlorine residuals are detected below 0.5 milligrams per liter. SLOCSA No. 16 - Shandon uses online HACH residual analyzers to continuously monitor the chlorine residuals. Ideally, the chlorine residual is maintained at 1.0 to 1.5 mg/L in the water leaving the well sites.

II.c Element 3 – Distribution System

SLOCSA No. 16 - Shandon’s water distribution consists of one distribution pressure zone. The pressures in the distribution zone range from 65 to 72 pounds per square inch (psi) and is maintained by the distribution reservoir. SLOCSA No. 16 - Shandon’s water mains consist of 4 to 8-inch asbestos cement pipes (90 percent), 10-inch PVC pipes (9 percent), and ductile iron pipes. SLOCSA No. 16 - Shandon maintains adequate distance between the potable water mains and the septic systems. SLOCSA No. 16 - Shandon has a main replacement program to replace inadequate mains with at least a 6-inch PVC pipes with a cover of 30 inches.

For newly installed lines, SLOCSA No. 16 - Shandon will use HTH tablets or chlorine gas for disinfection 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 under partial pressure or if a section is replaced, the line is swabbed with a chlorine solution and flushed according to American Water Works Association (AWWA) disinfection procedures. SLOCSA No. 16 - Shandon shall use products that meet the NSF Standard 60 and 61 when disinfecting and or replacing the new, repaired or replaced lines.

SLOCSA No. 16 - Shandon has three dead ends. The dead ends are flushed every year in the spring. SLOCSA No. 16 - Shandon exercises the distribution system valves at least once a year. SLOCSA No. 16 - Shandon maintains 12 backflow prevention devices to protect its water system from cross connection due to private wells in its service area. SLOCSA No. 16 - Shandon has an ongoing program of surveying the backflow devices. Mr. Jon Williams from San Luis Obispo County Environmental Health Services is the Cross Connection Program Coordinator. SLOCSA No. 16 - Shandon is required to test all the backflow prevention devices every year. New services shall be evaluated for any cross connections and backflow hazards. SLOCSA No. 16 - Shandon should also periodically survey existing service connections, for potential backflow hazards or cross connections. The water system’s operators conduct weekly inspection of the distribution system.

Table 4: Backflow Prevention Device Testing Results					
Year	Total Number in System	Number Installed	Number Tested	Number Failed	Number Repaired
2012	13	---	16	3	4

Table 4: Backflow Prevention Device Testing Results					
Year	Total Number in System	Number Installed	Number Tested	Number Failed	Number Repaired
2013	12	0	13	2	1
2014	12	0	12	3	1
2015	12	0	11	1	0

II.d Element 4 – Finished Water Storage

SLOCSA No. 16 - Shandon maintains one potable water storage reservoir for the distribution system: Reservoir 1. The reservoir has a capacity of 212,000 gallons. Reservoir 1 was constructed above ground in 2001 using bolted steel. The reservoir has an epoxy coating. It drains to the ground. The reservoir is located in a rural area on a hillside southeast of Shandon. It is fenced with a locked gate access. The reservoir has a separate inlet and outlet but they are only a few feet apart. The reservoir's drain and air vent are screened. **The air vent screen mesh needs to have a smaller mesh to prevent insects or other animals from entering the reservoir.** The water system's operators conduct weekly inspection of the tank.

Table 5: Active Reservoir Info				
Name	Type	Year Built	Capacity (gallons)	Comments
Reservoir 1	Bolted Steel	2001	212,000	---

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

SLOCSA No. 16 - Shandon does not operate any booster pump facilities for its 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 (*E. coli*), lead and copper, disinfection byproducts, chlorine residuals, and asbestos when the water has been determined to be aggressive and there are asbestos containing mains in the distribution system.

II.f.1 Chemical Source Monitoring and Reporting

II.f.1.A Source Monitoring Schedule

The following table shows 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.

Table 6A: Chemical Monitoring of Sources						
Source Name & PS Code		General Physical & Minerals	Inorganic	Radio-logical	VOCs	SOCs*

Table 6A: Chemical Monitoring of Sources						
Source Name & PS Code		General Physical & Minerals	Inorganic	Radio-logical	VOCs	SOCs*
Well 4 - 4010028-002	Last Sample	5/5/2014	5/5/2014	1/4/2016	4/7/2014	9/14/2009
	Frequency	3 Years	3 Years	6 Years	6 Years	9 years
	Next Sample	May 2017	May 2017	January 2022	April 2020	September 2018
Well 5 4010028-004	Last Sample	5/5/2014	5/5/2014	1/4/2016	4/7/2014	6/27/2011
	Frequency	3 Years	3 Years	9 years	6 Years	9 years
	Next Sample	May 2017	May 2017	January 2025	April 2020	June 2020

* For General Physical and Mineral constituents, specific conductance and total dissolved solids were last sampled on 4/6/2015 for both wells. For Inorganics, asbestos is overdue for both wells. SOC's are for atrazine and simazine only.

Table 6B: Chemical Monitoring of Sources					
Source Name & PS Code		Nitrite (As N)*	Nitrate (As N)*	Perchlorate	Hexavalent Chromium
Well 4 4010028-002	Last Sample	5/5/2014	11/16/2015	5/5/2014	8/4/2014
	Frequency	3 Years	1 year	3 Years	3 Years
	Next Sample	May 2017	November 2016	May 2017	August 2017
Well 5 4010028-004	Last Sample	5/5/2014	11/16/2015	5/5/2014	8/4/2014
	Frequency	3 Years	1 year	3 Years	3 Years
	Next Sample	May 2017	November 2016	May 2017	August 2017

II.f.1.B Source Monitoring Results

General Physical and Minerals (Secondary Drinking Water Standard)

Table 7: General Physical and Minerals				
	MCL	DLR	Well 4	Well 5
Aggressive Index‡			11.8	12.0
Bicarbonate Alkalinity (mg/L) ‡			121.268	139.08
Calcium (mg/L) ‡			85.1	64.4
Carbonated Alkalinity (mg/L) ‡			BDL	BDL
Hydroxide Alkalinity (mg/L) ‡			BDL	BDL
Magnesium (mg/L) ‡			7.8	6.3
pH‡			7.51	7.69
Sodium (mg/L) ‡			48.0	47.0
Total Hardness as CaCO ₃ (mg/L) ‡			244.0	187.0
Aluminum (mg/L)	0.2		BDL	BDL
Color (Units)	15		1.0	1.0
Copper (mg/L)	1.0	0.05	BDL	BDL
Foaming Agents (MBAS) (mg/L)	0.5		BDL	BDL

Table 7: General Physical and Minerals				
	MCL	DLR	Well 4	Well 5
Iron (mg/L)	0.3	0.1	0.023	BDL
Manganese (mg/L)	0.05	0.02	BDL	BDL
Methyl-tert-butyl ether (MTBE) (mg/L)*	0.005		BDL	BDL
Odor – Threshold (Units) at 60 degree Celsius	3	1	1.0	2.0
Silver (mg/L)	0.1	0.1	BDL	BDL
Thiobencarb (mg/L)†	0.001		BDL	---
Turbidity (Units)	5	0.1	0.31	0.06
Zinc (mg/L)	5.0	0.05	BDL	BDL
Total Dissolved Solids (mg/L)				
	1000*		530.0	390.0
Specific Conductance (uS/cm)				
	1,600*		760.0	588.0
Chloride (mg/L)				
	500*		111.0	62.2
Sulfate (mg/L)				
	500*	0.5	98.0	76.1

*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 is 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.

SLOCSA No. 16 - Shandon's active wells met the general physical and minerals MCLs. It shall continue to monitor its potable water wells according to the monitoring schedule for general physical and mineral constituents.

Inorganic Chemicals

Table 8: Inorganic Chemicals				
	MCL (mg/L)	DLR (mg/L)	Well 4	Well 5
Aluminum	1.	0.05	BDL	BDL
Antimony	0.006	0.006	BDL	BDL
Arsenic	0.010	0.002	0.0024	0.0022
Asbestos*	7 MFL*	0.2 MFL > 10 um*	Waived	Waived
Barium	1.	0.1	0.14	0.12
Beryllium	0.004	0.001	BDL	BDL
Cadmium	0.005	0.001	BDL	BDL
Chromium (total)	0.05	0.01	0.0015	0.0014
Cyanide*	0.15	0.1	BDL	BDL
Fluoride	2.0	0.1	0.049	0.048
Hexavalent Chromium	0.010	0.001	0.00047	0.00073
Lead		0.005	BDL	BDL
Mercury	0.002	0.001	BDL	BDL
Nickel	0.1	0.01	BDL	BDL
Nitrate (as N)	10.	0.4	3.3	4.4
Nitrate + Nitrite (sum as N)	10.	---	3.07	4.22
Nitrite	1.	0.4	BDL	BDL
Perchlorate	0.006	0.004	BDL	BDL
Selenium	0.05	0.005	BDL	BDL
Thallium	0.002	0.001	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.

SLOCSA No. 16 - Shandon Wells 4 and 5 meet the inorganics drinking water standards. SLOCSA No. 16 - Shandon shall continue to monitor its sources for inorganics according to the monitoring schedule.

Radioactivity

The following table has the latest monitoring results for radiological activities for SLOCSA No. 16 - Shandon's active wells. SLOCSA No. 16 - Shandon has completed this round of radiological activity sampling.

Table 9: Radiological Results					
	Gross Alpha (GA)	GA Counting Error	Radium 226	Radium 228	Uranium
MCL (pCi/L)	15	---	Ra-226 + Ra-228 = 5		20
DLR (pCi/L)	3	---	1	1	1
Well 4	2.07	1.70	GA+0.84xCE-Ur: ¥ This single sampling event is completed.		GA+0.84xCE: † $2.07+0.84 \times 1.70=3.50 < 5$ This single sampling event is completed.
Well 5	1.69	1.48	This single sampling event is completed.		$1.69+0.84 \times 1.48=2.93 < 5$ This single sampling event is completed.

†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 SLOCSA No. 16 - Shandon's active wells' volatile organic chemicals (VOCs) levels were below the DLR levels. SLOCSA No. 16 - Shandon shall continue to monitor its sources for VOCs according to the monitoring schedule.

Table 10: Volatile Organic Chemicals Results				
	MCL (mg/L)	DLR (mg/L)	Well 4	Well 5
Benzene	0.001	0.0005	BDL	BDL
Carbon Tetrachloride	0.0005	0.0005	BDL	BDL
1,2-Dichlorobenzene	0.6	0.0005	BDL	BDL
1,4-Dichlorobenzene	0.005	0.0005	BDL	BDL
1,1-Dichloroethane	0.005	0.0005	BDL	BDL
1,2-Dichloroethane	0.0005	0.0005	BDL	BDL
1,1-Dichloroethylene	0.006	0.0005	BDL	BDL
cis-1,2-Dichloroethylene	0.006	0.0005	BDL	BDL
trans-1,2-Dichloroethylene	0.01	0.0005	BDL	BDL
Dichloromethane	0.005	0.0005	BDL	BDL
1,2-Dichloropropane	0.005	0.0005	BDL	BDL
1,3-Dichloropropene	0.0005	0.0005	BDL	BDL
Ethylbenzene	0.3	0.0005	BDL	BDL
Methyl-tert-butyl ether (MTBE)	0.013	0.003	BDL	BDL
Monochlorobenzene	0.07	0.0005	BDL	BDL
Styrene	0.1	0.0005	BDL	BDL
1,1,2,2-Tetrachloroethane	0.001	0.0005	BDL	BDL
Tetrachloroethylene	0.005	0.0005	BDL	BDL
Toluene	0.15	0.0005	BDL	BDL
1,2,4-Trichlorobenzene	0.005	0.0005	BDL	BDL
1,1,1-Trichloroethane	0.200	0.0005	BDL	BDL

Table 10: Volatile Organic Chemicals Results				
	MCL (mg/L)	DLR (mg/L)	Well 4	Well 5
1,1,2-Trichloroethane	0.005	0.0005	BDL	BDL
Trichloroethylene	0.005	0.0005	BDL	BDL
Trichlorofluoromethane	0.15	0.005	BDL	BDL
1,1,2-Trichloro-1,2,2-Trifluoroethane	1.2	0.01	BDL	BDL
Vinyl Chloride	0.0005	0.0005	BDL	BDL
Xylenes	1.750*	0.0005	BDL	BDL

*MCL is for either a single isomer or the sum of the isomers.
BDL is set at or below the DLR levels.

Non-Volatile Synthetic Organic Chemicals (SOCs)

SLOCSA No. 16 - Shandon is required to test its active wells for atrazine and simazine. The following table has the latest results for the active wells.

Table 11: Non-Volatile Synthetic Organic Chemicals				
	MCL (mg/L)	DLR (mg/L)	Well 4	Well 5
Atrazine	0.001	0.0005	BDL	BDL
Simazine	0.004	0.001	BDL	BDL

Raw Water Bacteriological Monitoring and Reporting

SLOCSA No. 16 - Shandon is monitoring its wells monthly for bacteriological activity. The following table has the bacteriological results since 2014 for active wells. Well 5 tested positive for total coliform on August 3, 2015. Well 5 was sampled again on August 5, 2015 five different times in the morning. The earliest sample came back with a most probable number (MPN) 6 for total coliform, but less than 1 for *E. Coli*. The other four samples all had MPN less than 1. Well 5 was again sampled for coliform on August 11, 2015, all results came back with MPNs less than 1.

Table 12: Active Wells Bacteriological Monitoring Results (Total Coliform and <i>E. Coli</i>)												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Well 4												
2014	1-0-0	1-0-0	1-0-0	1-0-0	1-0-0	1-0-0	1-0-0	1-0-0	1-0-0	1-0-0	1-0-0	1-0-0
2015	1-0-0	1-0-0	1-0-0	1-0-0	1-0-0	1-0-0	1-0-0	1-0-0	1-0-0	1-0-0	1-0-0	1-0-0
2016	1-0-0	1-0-0	1-0-0									
Well 5												
2014	1-0-0	1-0-0	1-0-0	1-0-0	1-0-0	1-0-0	1-0-0	1-0-0	1-0-0	1-0-0	1-0-0	1-0-0
2015	1-0-0	1-0-0	1-0-0	1-0-0	1-0-0	1-0-0	1-0-0	1-1-0	<1,<1	<1,<1	1-0-0	1-0-0
2016	1-0-0	1-0-0	1-0-0									

Key: # of samples collected - # of total coliform positive results - # of *E. coli* positive results; numbers are the MPNs.
<1,<1 = total coliform and *E. Coli* most probable number by Colilert is less than 1.

II.f.2 Distribution System Monitoring and Reporting

II.f.2.A Distribution System Monitoring Schedule

The Aggressive Index (AI) values for SLOCSA No. 16 - Shandon's Wells 4 and 5 are 11.8 and 12.0, respectively. Since the AI values for active wells are over 11.5, the water is not considered corrosive towards asbestos cement pipes. SLOCSA No. 16 - Shandon does not need to take any asbestos samples in its distribution systems.

SLOCSA No. 16 - Shandon chlorinates its potable water, at the wellhead, prior to entering the storage reservoir and/or the distribution system. It is required to monitor the chlorine residual in its distribution system. SLOCSA No. 16 - Shandon needs to monitor for disinfection by-products – haloacetic acids (HAA5) and total trihalomethanes (TTHMs) – in the distribution system.

SLOCSA No. 16 - Shandon took lead and copper samples between August and November of 2014. The next round of sampling will be due in the summer months of 2017. The following table has the monitoring schedules for the distribution system.

Table 13: Distribution System Monitoring				
Site Name & PS Code		HAA5	TTHMs	Residual Chlorine
STG 2 – 341 South 1 st Street 4010028-006	Last Sample	8/3/2015	8/3/2015	***
	Frequency	1 year	1 year	Monthly
	Next Sample	August 2016	August 2016	***

II.f.2.B Distribution System Monitoring Results

Disinfection Byproducts Monitoring Results

SLOCSA No. 16 - Shandon currently complies with the reduced Stage 2 DBPs monitoring requirements. It collects one dual routine sample at a location from its distribution system to test for HAA5 and TTHMs to comply with monitoring requirements for DBPs. The following table has the monitoring results for HAA5 and TTHMs since 2013.

Table 14: HAA5 and TTHMs Results					
Site Name & PS Code	DBPs	MCL (mg/L)	2013 (mg/L)	2014 (mg/L)	2015 (mg/L)
STG 2 – 341 South 1 st Street 4010028-006	HAA5	0.060	BDL	BDL	0.0016
	TTHMs	0.080	BDL	BDL	BDL

BDL is set below 1 microgram per liter.

Chlorine Results

To comply with the maximum residual disinfectant level (MRDL) for chlorine of 4.0 mg/L, SLOCSA No. 16 - Shandon monitors its distribution system for total chlorine residual. It collects at least one monthly sample to analyze for the chlorine residual. The following table has the monthly chlorine residual level results from 2013 to present from SLOCSA No. 16 - Shandon's distribution system. The Location Running Annual Average (LRAA) for 2013, 2014 and 2015 are 1.29, 1.28 and 1.28 mg/L, respectively.

Table 15: Distribution Chlorine Residuals Results (mg/L)												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2013	1.11	1.29	1.29	1.52	1.42	1.35	0.99	1.16	1.32	1.31	1.34	1.38
2014	0.96	1.42	1.27	1.52	1.02	1.32	1.41	1.28	1.54	1.22	1.15	1.21
2015	1.23	1.22	1.21	1.41	1.38	1.49	1.24	1.27	1.11	1.22	1.31	1.23
2016	1.31	1.36	1.73									

Lead and Copper Results

To comply with the Lead and Copper Rule (LCR), SLOCSA No. 16 - Shandon collects and tests 10 LCR samples from its customers' taps in the reduced LCR monitoring. Recent results are summarized in the following table. The lead and copper 90th percentile results were under the action level for samples taken in 2008, 2011 and 2014. SLOCSA No. 16 - Shandon notified its

customers of the latest Lead and Copper testing results.

Table 16: Lead and Copper Monitoring of Distribution System					
Sampling Date	# of Samples	90 th % Lead (mg/l)		90 th % Copper (mg/l)	
		Action Level	0.015	Action Level	1.3
		DLR	0.005	DLR	0.050
August 2008	11	<0.005		0.22	
August – October 2011	12	<0.005		0.12	
August - November 2014	10	<0.005		0.17	

II.f.3 Bacteriological Monitoring and Reporting

SLOCSA No. 16 - Shandon has a Bacteriological Sample Siting Plan (BSSP) date March 30, 2016 which is not in DDW files. **SLOCSA No. 16 – Shandon shall send a copy of the most recent BSSP to DDW.** The BSSP shall be updated when necessary or at least every 10 years. DDW has a copy of the water system’s Groundwater Rule Monitoring Form dated September 1, 2009. SLOCSA No. 16 - Shandon conducts monthly monitoring of its distribution system and the active wells for bacteriological quality. SLOCSA No. 16 - Shandon has two distribution sampling locations for bacteriological monitoring purpose and collects two bacteriological samples per month.

The United States Environmental Protection Agency’s (US/EPA) revised Total Coliform Rule (rTCR) went into effect on April 1, 2016. Currently public water systems in California have to comply with both the state’s Total Coliform Rule and the Federal’s rTCR. Some major revisions in the Federal rTCR include bacteria to be monitored, notification requirements, Levels 1 and 2 Treatment Technique assessments for monitoring and MCL violations. More information regarding compliance with the Federal rTCR and state Total Coliform Rule can be found in the State Water Resources Control Boards rTCR website at:

http://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/rtr.shtml

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* for SLOCSA No. 16 - Shandon’s distribution system since 2013.

Table 17: Bacteriological Monitoring (Total Coliform and <i>E. coli</i>)												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2013	2-0-0	2-0-0	2-0-0	2-0-0	2-0-0	2-0-0	2-0-0	2-0-0	2-0-0	2-0-0	2-0-0	2-0-0
2014	2-0-0	2-0-0	2-0-0	2-0-0	2-0-0	2-0-0	2-0-0	2-0-0	2-0-0	2-0-0	2-0-0	2-0-0
2015	2-0-0	2-0-0	2-0-0	2-0-0	2-0-0	2-0-0	2-0-0	2-0-0	2-0-0	2-0-0	2-0-0	2-0-0
2016	2-0-0	2-0-0	2-0-0									

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

II.g Element 7 – System Management and Operations

SLOCSA No. 16 - Shandon is a community water system. It is owned and operated by the County of San Luis Obispo. Mr. Charles Berna is the Assistant Water Systems Superintendent.

Mr. Chris Summers is the Chief Operator. Ms. Faith Zenker is the Water Quality Manager. SLOCSA No. 16 - Shandon charges its customers a monthly rate based on three different tiers of usage.

DDW has an Emergency Notification Plan (ENP) on file for SLOCSA No. 16 – Shandon dated January 7, 2016. DDW has a copy of the water system’s 2002 Emergency Response Plan. SLOCSA No. 16 - Shandon has submitted its 2015 Annual Report to DDW through the Electronic Annual Reporting System. SLOCSA No. 16 - Shandon distributed a copy of its 2014 Consumer Confidence Report (CCR) to its customers and plans to send out the 2015 CCR on May 31, 2016.

SLOCSA No. 16 - Shandon reported and investigated 15 distribution system problems in 2015 regarding service line leaks. It did not receive any complaints from its customers in 2015. SLOCSA No. 16 - Shandon reported that its wells’ water levels are declining in 2015.

II.h Element 8 – Operator Compliance with State Requirements

SLOCSA No. 16 - Shandon is classified as a D2 and TD water system. Mr. Summers is the treatment and distribution Chief Operator. Mr. Summers has a T3 and D3 operator certification. The following table has the SLOCSA No. 16 - Shandon operators’ certifications information. All the operators’ certifications are current.

Table 18: Operator Certifications			
Name	Grade	Operator Number	Expiration Date
Charles Berna	T3	11780	6/1/2017
	D3	17210	2/1/2019
Chris Summers	T3	30634	10/1/2017
	D3	36322	2/1/2018
Sharon Siebert	T1	14697	6/1/2017
	D1	34012	3/1/2017

III. CONCLUSION

The review of SLOCSA No. 16 - Shandon’s reports and routine water quality monitoring results indicates the water system’s potable water meets all the applicable primary maximum contaminant levels. SLOCSA No. 16 - Shandon’s active wells also meet the secondary maximum contaminant levels. SLOCSA No. 16 - Shandon is capable of providing safe potable water to its customers that meet the California drinking water standards.

A site inspection of SLOCSA No. 16 - Shandon’s wells, storage tanks and distribution system shows SLOCSA No. 16 - Shandon manages its system properly and according to the California drinking water laws and regulations.