**State Water Resources Control Board**

**Division of Drinking Water**

**Southern California Field Operations Branch**

# Sanitary Survey Report

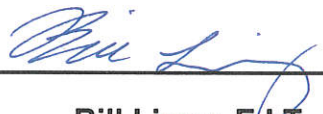
**Grover Beach Water Department**

**4010004**

**San Luis Obispo County**

**March 9, 2017**

**Prepared By:**



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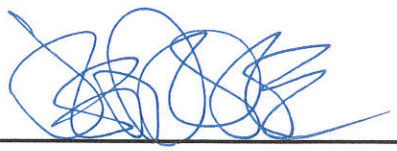

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State Water Resources Control Board
Division of Drinking Water

**March 9, 2017**

**Sanitary Survey Report**
**For**
**Grover Beach Water Department**
**(Public Water System No. 4010004)**
**San Luis Obispo County**

**State Water Resources Control Board**
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**Southern California Field Operations Branch**
**Bill Liang, Water Resource Control Engineer**

## I. INTRODUCTION

### 1.1 PURPOSE OF REPORT

The purpose of this report is to document the findings of the recent Sanitary Survey conducted at Grover Beach Water Department (hereinafter GBWD), located in the City of Grover Beach in San Luis Obispo County. Sanitary Surveys are required every three years, at a minimum, and consist of a discussion and survey of eight 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 public water system is required to comply with all regulations pertaining to each element. If the Division of Drinking Water (hereinafter DDW) identifies a *significant deficiency* in any element category during a Sanitary Survey, the public water system will be required to correct the *significant deficiency* in a specified time frame.

### 1.2 BRIEF DESCRIPTION OF SYSTEM

GBWD serves potable water to the residents of the City of Grover Beach. GBWD is classified as a community water system that provides potable water to a population of 13,156 people through 5,169 service connections. GBWD's domestic water system consists of four active groundwater wells, three finished water storage reservoirs, one booster pump station, and interconnections with the Lopez Project, Oceano Community Services District, and Arroyo Grande Water Department. The interconnections with Oceano Community Services District and Arroyo Grande Water Department are not included in the water supply permit. GBWD provides ion exchange, nitrate blending, precautionary chlorination through chloramines, and corrosion control treatment for its water supply. Ion exchange treatment has not been utilized since 2013. GBWD's distribution system consists of two pressure zones. GBWD operates under the authority of Water Permit No. 03-06-99P-003 that was issued by DDW on March 12, 1999. The previous Sanitary Survey was conducted in 2013.

### 1.3 SOURCES OF INFORMATION

All information included in this report was obtained from DDW files, GBWD personnel, Cesar Zarate and Pete Yracheta, and a site visit on January 30th, 2017.

### 1.4 WATER DEMAND DATA

Based on the previous ten years of available water use data, the maximum daily demand was in 2006 and was estimated to be approximately 3,190,000 gallons per day (gpd) or 2,215 gallons per minute (gpm). The maximum daily demand was a combination of locally produced groundwater and purchased water from the Lopez Project. The water demand data for the previous ten years are provided in Table 1.

**Table 1: Water Demand Data for the Previous 10 Years**

| Year | Maximum Daily Water Demand (Gallons) | Maximum Monthly Water Demand (Gallons) | Annual Water Demand (Gallons) |
|---|---|---|---|
| 2006 | 3,190,000 | 76,540,000 | 651,760,000 |
| 2007 | 3,026,000 | 74,015,000 | 671,491,000 |
| 2008 | 2,553,700 | 66,000,000 | 661,485,000 |
| 2009 | 2,105,050* | 42,101,000 | 632,126,000 |
| 2010 | 2,213,000 | 60,080,000 | 582,460,000 |
| 2011 | 2,472,100 | 60,098,000 | 585,696,000 |
| 2012 | 2,284,215 | 57,633,256 | 572,122,569 |
| 2013 | 2,395,004 | 56,183,220 | 585,414,029 |
| 2014 | 1,603,187 | 17,186,682 | 443,343,018 |
| 2015 | 2,173,426 | 37,342,518 | 407,984,932 |

*Estimated from annual or monthly demand data

### 1.5 ENFORCEMENT HISTORY

DDW has not issued any enforcement actions to GBWD since the previous Sanitary Survey that was conducted in 2013.

## *II. INVESTIGATION AND FINDINGS*

### 2.1 ELEMENT 1: SOURCES

GBWD's source of supply comes from purchased surface water from the Lopez Project and groundwater from four local wells. The water received from Lopez Project is GBWD's main source while the locally produced groundwater is GBWD's supplemental source.

#### 2.1.1 PURCHASED POTABLE WATER

GBWD purchases treated surface water from the Lopez Project through one interconnection. Lopez's interconnection provides a maximum capacity of 750 gpm, but is currently only providing GBWD with 500 to 530 gpm due to low water supply.

#### 2.1.1.A LOPEZ PROJECT

Lopez Project's source of water includes the Lopez Lake Watershed and a connection to Central Coast Water Authority. Water from Lopez Lake is piped to the Lopez Terminal Reservoir for holding and settling before the water is treated at the Lopez Water Treatment Plant. The treatment processes include pre-treatment chemicals such as powdered activated carbon for odor control and potassium permanganate for oxidation, coagulation, flocculation, dissolved air floatation, membrane filtration, and disinfection with the use of free chlorine, chlorine dioxide,

and chloramines. The treated surface water meets the requirements of the Surface Water Treatment Rule. The treated water from Lopez Lake is blended with treated CCWA water before it is delivered to Lopez's customers. GBWD is required to maintain a minimum disinfectant residual of 0.2 mg/L in the distribution system at all times.

### 2.1.2 INTERCONNECTION WITH OCEANO COMMUNITY SERVICES DISTRICT AND ARROYO GRANDE WATER DEPARTMENT

GBWD maintains an emergency interconnection with both Oceano Community Services District (hereinafter OCSD) and the City of Arroyo Grande Water Department (hereinafter AGWD). GBWD has the ability to supply water to OCSD, but does not have the ability to receive water from OCSD. GBWD has the ability to receive water from AGWD; however the interconnection with AGWD is not permitted by DDW. Both connections have not been used in the past 25 years. GBWD shall submit a permit amendment application to include the interconnection with AGWD as a permitted source to DDW and receive permission from DDW prior to using the interconnection.

### 2.1.3 GROUNDWATER SUPPLIES

GBWD operates four active groundwater wells: Wells 1, 2, 3, and 4. Wells 1 and 4 produce a majority of GBWD's groundwater supply while Wells 2 and 3 are maintained as emergency sources. Wells 1, 2, and 3 pump water from the Paso Robles formation groundwater basin while Well 4 pump water from the Careaga formation groundwater basin.

The four groundwater wells have the ability to blend with Lopez water at Reservoir 1 while only Wells 1, 2, and 3 have the ability to be treated at the ion exchange treatment plant if needed. GBWD treats its potable water supply with sodium hypochlorite and aqueous ammonia for precautionary chloramination, and sodium hydroxide and orthophosphate for corrosion control.

### 2.1.3.A WELL 1 (ACTIVE)

Well 1 is maintained as an active source. Well 1 was drilled in 1951 to a depth of 178 feet deep. The well head is housed and the well site is fenced. No sewer lines or sewage disposal facilities are located within 50 or 100 feet from the well site. A sewer line is located approximately 70 feet from the well. There are no abandoned wells within 100 feet from the well site. The well is equipped with a 16 inch steel casing, is gravel packed, and has a 25-inch conductor casing to a depth of 25 feet. The well is equipped with an annular seal to a depth of 25 feet and is surface sealed. A 5 feet thick partial clay layer is located at a depth of 22 feet. The well is equipped with a deep turbine pump that produces 620 gpm.

In the past, Well 1 had high levels of nitrate and is provided with either ion exchange treatment or blending treatment to comply with the nitrate drinking water standard of 10 mg/L as N. Well 1 currently meets with all applicable primary and secondary drinking water standards including nitrate, but is blended with Lopez water at Reservoir 1 as a precautionary measure to lower the nitrate concentration.

**Because the well has an annular seal which is less than 50 feet deep, when used, the well shall be sampled monthly for coliforms, prior to chlorination.**

### 2.1.3.B WELL 2 (ACTIVE)

Well 2 is maintained as an emergency source. Well 2 was drilled in 1951 to a depth of 180 feet. The well head is housed and the well site is fenced. No sewer lines or sewage disposal facilities are located within 50 or 100 feet from the well site. The nearest sewer line is located approximately 75 feet from the well site. There are no abandoned wells within 100 feet from the well site. The well is equipped with a 16-inch steel casing, is gravel packed, and has a 25-inch conductor casing to a depth of 25 feet. The well is equipped with an annular seal to a depth of 25 feet and is surface sealed. The perforations begin at a depth of 39 feet. A 7 feet thick partial clay layer is located at a depth of 20 feet. The well is equipped with a deep turbine pump that produces 530 to 550 gpm.

In the past, Well 2 had high levels of nitrate and is provided with either ion exchange treatment or blending treatment to comply with the nitrate drinking water standard of 10 mg/L as N. Well 2 currently meets with all applicable primary and secondary drinking water standards including nitrate, but is blended with Lopez water at Reservoir 1 as a precautionary measure to lower the nitrate concentration.

**Because the well has an annular seal which is less than 50 feet deep, when used, the well shall be sampled monthly for coliforms, prior to chlorination.**

### 2.1.3.C WELL 3 (ACTIVE)

Well 3 is maintained as an emergency source. Well 3 was drilled in 1959 to a depth of 178 feet. The well head is housed and the well site is fenced. No sewer lines or sewage disposal facilities are located within 50 or 100 feet from the well site. The nearest sewer line is located approximately 75 feet from the well site and there are no abandoned wells within 100 feet. The well is equipped with a 16-inch steel casing, is gravel packed, and has a 26-inch conductor casing to a depth of 26 feet. The well is equipped with an annular seal to a depth of 35 feet and is surface sealed. The perforations begin at a depth of 58 feet. A 6 feet thick partial clay layer is located at a depth of 22 feet. The well is powered by a natural gas engine. The well is equipped with a deep turbine pump that produces 750 gpm.

In the past, Well 3 had high levels of nitrate and is provided with either ion exchange treatment or blending treatment to comply with the nitrate drinking water standard of 10 mg/L as N. Well 3 currently meets with all applicable primary and secondary drinking water standards including nitrate, but is blended with Lopez water at Reservoir 1 as a precautionary measure to lower the nitrate concentration.

**Because the well has an annular seal which is less than 50 feet deep, when used, the well shall be sampled monthly for coliforms, prior to chlorination.**

### 2.1.3.D WELL 4 (ACTIVE)

Well 4 is maintained as an active source. Well 4 was drilled in 1978 to a depth of 549 feet. The well head is housed and the well site is fenced. No sewer lines or sewage disposal facilities are located within 50 or 100 feet from the well site. The nearest sewer line is located approximately 90 feet from the well site. There are no abandoned wells within 100 feet from the well site. The well is equipped with a 14-inch steel casing, is gravel packed, and has a 24-inch conductor casing to a depth of 190 feet. The well is equipped with an annular seal to a depth of 190 feet and is surface sealed. The perforations begin at a depth of 205 feet. A clay layer (9 feet thick)

is located at a depth of 62 feet. The well is equipped with a deep turbine pump that produces 710 gpm.

The water from Well 4 meets all applicable primary and secondary drinking water standards.

### 2.1.4 DRINKING WATER SOURCE ASSESSMENT PROGRAM (DWSAP)

The source assessments for the four groundwater wells were completed in April 2001 and updated in February 2010. A list of the activities that the sources are most vulnerable to that are not associated with any detected contaminants is provided in Table 2.

**Table 2: Active Well Source Assessment**

| Source | Report Date | Possible Contaminating Activities |
|---|---|---|
| Well 1 | February 2010 | Historic waste dumps / landfills |
| Well 2 | February 2010 | Historic waste dumps / landfills |
| Well 3 | February 2010 | Historic waste dumps / landfills |
| Well 4 | February 2010 | Historic waste dumps / landfills |

### 2.1.5 ADEQUACY OF SUPPLY

GBWD is required to have enough source and storage capacity at all times to meet its maximum daily demand (MDD), as determined from the past 10 years of water demand data. In addition, GBWD is a water system with more than 1,000 service connections and is required to be able to meet four hours of peak hourly demand (PHD) with source capacity, storage capacity, and/or emergency source connections. PHD is determined by calculating the average hourly rate of the MDD and multiplying the MDD by a peaking factor of 1.5. The MDD was determined to be 3,190,000 gallons. 4 hours of PHD is equivalent to 797,500 gallons. CWD maintains four active groundwater wells that provide a total source capacity of 2,610 gpm. In addition, Lopez's interconnection also provides GBWD with a maximum capacity of 750 gpm and a current yield of 500 to 530 gpm. GBWD's four groundwater wells and Lopez's inter-connection provides a total source capacity of 3,110 to 3,360 gpm. GBWD also maintains three finished water storage reservoirs that provide a total storage capacity of 4,500,000 gallons. GBWD has the ability to meet its MDD and PHD at all times and is therefore considered to have an adequate water supply.

## 2.2 ELEMENT 2: TREATMENT

GBWD provides nitrate blending and ion exchange treatment to its groundwater supply. The ion exchange treatment plant has not been operated since 2013. GBWD also provides precautionary chlorination and corrosion control treatment to its water supply. A list of the chemicals used by GBWD is provided in Table 3.

**Table 3: List of Direct Additives**

| Chemical | Manufacturer | Purpose of Chemical | NSF / ANSI 60 certified |
|---|---|---|---|
| Sodium hypochlorite | BCI / Pioneer | Disinfection | Yes |
| Ammonium sulfate | Simplot | Disinfection | Yes |
| Sodium hydroxide | BCI / Pioneer | Corrosion Control | Yes |
| Orthophosphate | Carus Chemical | Corrosion Control | Yes |

### 2.2.A ION EXCHANGE

Ion exchange treatment can be provided to Wells 1, 2, and 3. Well 4 do not have the ability to be treated at the ion exchange treatment plant. The treatment plant has not been operated since 2013. The treatment plant is located at the Well 1 site and consists of three ion exchange

vessels, one brine storage tank, one waste storage tank, and a control building. Only two vessels are in service at a time; the third vessel is in regeneration/standby mode. During operation, water passes through the resin beds and exits the finished water line. After the resin has been saturated which typically occurs after operating for three to four hours or producing water with nitrate levels above 6.67 mg/L as N, the vessel goes into regeneration mode. This consists of a backwash and brine wash for twenty minutes. The purpose of the brine wash is to exchange the nitrate ions on the resin bead with chloride ions. The backwash water and rinse water containing high nitrates are stored in the waste storage tank and sent to the sewer. The treatment plant is equipped with an online nitrate analyzer but it is non-operational.

The specifications and proof of ANSI/ANSI Standard 61 certification of the ion exchange resin and brine salt used at the ion exchange treatment plant was not determined during the inspection. GBWD shall provide the specifications and proof of NSF certification for the current ion exchange resin and brine salt.

The nitrate concentration of the treatment plant effluent is maintained below 6.67 mg/L as N when the plant is operating. Operators verify the nitrate levels leaving the treatment facility hourly using a HACH colorimeter kit. Duplicate nitrate samples are collected weekly and analyzed by a certified laboratory. The monthly nitrate report includes groundwater production, volume of purchased Lopez water, raw well water nitrate results and treatment plant effluent nitrate results.

### 2.2.B NITRATE BLENDING

In the past, Wells 1, 2 and 3 occasionally exceed the nitrate maximum contamination level (MCL) of 10 mg/L as N while Well 4 has low levels of nitrate. Wells 1, 2, and 3 currently meet the nitrate MCL and do not require blending treatment; however, blending is provided as a precautionary measure.

Wells 1 and 4 are maintained as GBWD's primary groundwater sources while Wells 2 and 3 are maintained as emergency sources. The blend occurs in Reservoir 1. When used, Wells 1, 2, 3, and 4 pump water to Reservoir 1 where it is blended with Lopez water before the water is delivered to GBWD's customers.

### 2.2.C PRECAUTIONARY CHLORINATION / CHLORAMINATION

GBWD provides precautionary chlorination for its groundwater sources. Chlorination facilities are only maintained at the Well 1 and Well 4 sites. GBWD injects a 12.5% sodium hypochlorite solution at the discharge pipe of Wells 1 and 4. Ammonia is also provided to create chloramines to match the disinfectant provided by the Lopez Project. Ammonia is stored at both the Well 1 and Well 4 sites, but only Well 4 is provided with ammonia treatment when GBWD is blending. Wells 2 and 3 do not have chlorination facilities. If Wells 2 and 3 are used during emergencies, GBWD increases the chlorine dosage at either Wells 1 or 4 to provide a sufficient chlorine residual in the finished water. The sodium hypochlorite is stored in a 350 gallon polyethylene tank at the Well 1 site and in a 1,200 gallon polyethylene tank at the Well 4 site. The ammonia is stored in a 100 gallon polyethylene tank at both well sites. GBWD aims for a target disinfectant residual of 1.3 to 1.4 mg/L.

### 2.2.D CORROSION CONTROL

Corrosion control treatment is provided to GBWD's potable water supply. The chemicals used are 33% sodium hydroxide and orthophosphate which are stored inside 500 gallon polyethylene tanks at the Well 1 site. The corrosion control chemicals are injected at the discharge pipeline of Well 1.

GBWD is currently monitoring ten different distribution system locations on a weekly basis for pH and phosphate. A monthly report is generated from this data which includes dosages, volume of treated water, and other operational water quality parameters.

## 2.3 ELEMENT 3: DISTRIBUTION SYSTEM

### 2.3.1 DISTRIBUTION LINES

GBWD's distribution system is comprised of two pressure zones; a gravity zone and a boosted zone. Mains consist of steel-cement lined, asbestos cement, and PVC. The gravity zone is pressurized between 60 to 80 psi and the boosted zone is pressurized between 30 to 65 psi.

GBWD is required to maintain adequate separation between its water supply lines and any pipelines conveying non-potable fluids and/or waste disposal or other potential sources of contamination, as described in the California Waterworks Standards. GBWD shall maintain a minimum distance of 10 feet horizontal and 1 foot vertical between its potable water and non-potable water lines.

### 2.3.2 CROSS CONNECTION PROGRAM

GBWD maintains 198 backflow prevention devices that are used to protect the water system from potential cross-connections. GBWD is required to ensure that all backflow prevention devices are tested annually. GBWD's cross connection program is coordinated by Jon Williams from San Luis Obispo County. The specifications of GBWD's Cross Connection Control Program according to the 2013 to 2015 Annual Reports are provided in Table 4. GBWD reported that 183 of 203 backflow devices were tested in 2014 and 184 of 198 backflow devices were tested in 2015. GBWD shall ensure that all backflow prevention devices are tested annually and reported to DDW on the Annual Report.

**Table 4: 2013-2015 Backflow Prevention Device Testing Results**

| Year | Number of Backflow Devices | Number Installed | Number Tested | Number Failed | Number Repaired / Replaced |
|---|---|---|---|---|---|
| 2013 | 194 | 3 | 215 | 15 | 15 |
| 2014 | 203 | 1 | 183 | 0 | 3 |
| 2015 | 198 | 1 | 184 | 12 | 10 |

## 2.4 ELEMENT 4: FINISHED WATER STORAGE

GBWD operates and maintains three finished water storage reservoirs with a total storage capacity of 4.5 million gallons (MG). The specifications of the storage reservoirs are provided in Table 5.

**Table 5: Finished Water Storage Reservoir Specifications**

| Name | Type | Year Built | Capacity (MG) | Inlet/Outlet |
|---|---|---|---|---|
| Reservoir 1 | Steel | 1963 | 1.5 | Separate |
| Reservoir 2 | Steel | 1978 | 1.5 | Separate |
| Reservoir 3 | Steel | 1987 | 1.5 | Separate |

### 2.4.1 RESERVOIR 1

Reservoir 1 was constructed in 1963 and provides a storage capacity of 1.5 MG. The reservoir is constructed of steel and is located above ground. The reservoir is internally coated with epoxy. The reservoir is equipped with cathodic protection, a separate inlet and outlet, three air vents, overflow, and drain. The three air vents are adequately screened. The overflow and drain of the three reservoirs tie into a common line which drains to a storm drain on a neighboring property. The common line is protected by a flapper gate valve.

The nitrate blending occurs in Reservoir 1. Reservoir 1 has separate inlets for the locally produced groundwater and the Lopez water. GBWD samples Reservoir 1 for nitrite, chlorine residual, and heterotrophic plate counts (HPC) to monitor for nitrification on a monthly basis.

### 2.4.2 RESERVOIR 2

Reservoir 2 was constructed in 1978 and provides a storage capacity of 1.5 MG. The reservoir is constructed of steel and is located above ground. The reservoir is internally coated with epoxy. The reservoir is equipped with cathodic protection, a separate inlet and outlet, air vent, overflow, and drain. The air vent is adequately screened. The overflow and drain of the three reservoirs tie into a common line which drains to a storm drain on a neighboring property. The common line is protected by a flapper gate valve. Reservoir 2 has the ability to receive Lopez water directly into the reservoir, but this feature is currently not in use.

### 2.4.3 RESERVOIR 3

Reservoir 3 was constructed in 1987 and provides a storage capacity of 1.5 MG. The reservoir is constructed of steel and is located above ground. The reservoir is internally coated with epoxy. The reservoir is equipped with cathodic protection, a separate inlet and outlet, air vent, overflow, and drain. The air vent is adequately screened. The overflow and drain of the three reservoirs tie into a common line which drains to a storm drain on a neighboring property. The common line is protected by a flapper gate valve. Reservoir 3 has the ability to receive Lopez water directly into the reservoir, but this feature is currently not in use.

There was corrosion observed on the roof of Reservoir 3. DDW recommends GBWD paint the corroded areas on the roof of Reservoir 3 to maintain a satisfactory coating on the steel reservoir which is critical in protecting the structural integrity of the reservoir and quality of the stored water.

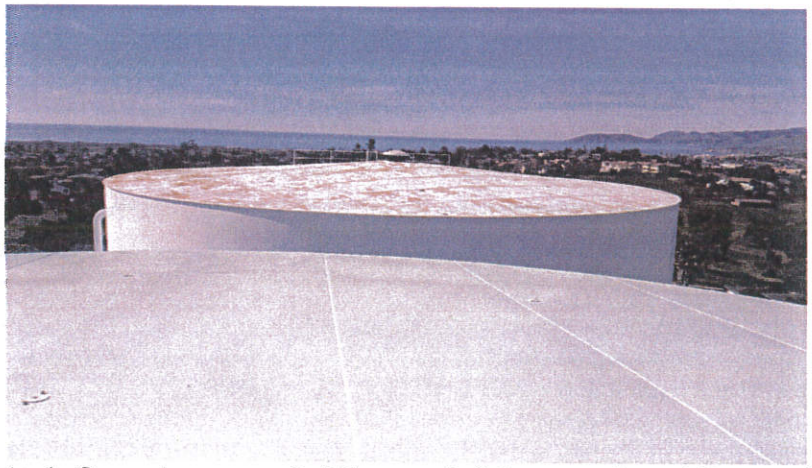

Photo 1: Corrosion on roof of Reservoir 3 (perspective of Reservoir 2)

## 2.5 ELEMENT 5: PUMPS, PUMP FACILITIES, AND CONTROLS

GBWD operates one booster stations to maintain adequate pressure in the distribution system.

### 2.5.1 PUMP STATION

The booster pump station is located in a residential area. The pump station is housed and fenced for security. The pump station is equipped with three pumps and one fire pump. Each of the three booster pumps have a capacity of 450 gpm. Two of the pumps have a horsepower of 20 hp and the remaining pump has a horsepower of 25 hp. The booster station was initially equipped with variable frequency drives, but this feature is currently not in use. The pump station receives water from the gravity pressure zone and delivers it to boosted pressure zone. A diesel generator is maintained at the booster pump station site to provide auxiliary power during emergencies.

## 2.6 ELEMENT 6: MONITORING, REPORTING, AND DATA VERIFICATION

### 2.6.1 SOURCE MONITORING

GBWD is required to routinely monitor its groundwater sources for general physical parameters, general minerals, inorganic chemicals, radiological chemicals, volatile organic compounds (VOC), synthetic organic compounds (SOC), total coliform bacteria, and fecal coliform bacteria (*E. coli*). Asbestos monitoring for the four wells is waived due to no presence of serpentine rock formations near the water system.

#### 2.6.1.1 CHEMICAL MONITORING IN RAW WATER

The results of previous monitoring and the due dates for future monitoring are provided in Table 6.

**Table 6: Chemical Monitoring Frequency of Wells**

| Source Name & PS Code | | General Physical & Minerals | Inorganics & Nitrite | Nitrate | Radiological | VOCs | SOCs: Atrazine, Simazine |
|---|---|---|---|---|---|---|---|
| Well 1 (4010004-002) | Last Sample | Dec 2014 | Dec 2014 | Jan 2017 | Jun 2012 | Dec 2014 | Dec 2005 |
| | Frequency | 3 Years | 3 Years | Quarterly | 9 Years | 3 Years | 9 Years |
| | Next Sample | Dec 2017 | Dec 2017 | Apr 2017 | Jun 2021 | Dec 2017 | Dec 2014 **(Overdue)** |
| Well 2 (4010004-003) | Last Sample | Jun 2016 | Jun 2016 | Nov 2016 | May 2014 | Jun 2016 | Jan 2008 |
| | Frequency | 3 Years | 3 Years | Quarterly | 9 Years | 3 Years | 9 Years |
| | Next Sample | Jun 2019 | Jun 2019 | Feb 2017 | May 2023 | Jun 2019 | Jan 2017 **(Overdue)** |
| Well 3 (4010004-004) | Last Sample | Jun 2014 | Jun 2014 | Nov 2016 | May 2014 | Jun 2014 | May 2008 |
| | Frequency | 3 Years | 3 Years | Quarterly | 9 Years | 3 Years | 9 Years |
| | Next Sample | Jun 2017 | Jun 2017 | Feb 2017 | May 2023 | Jun 2017 | May 2017 |
| Well 4 (4010004-005) | Last Sample | Aug 2014 | Aug 2014 | Aug 2016 | Jan 2013 | Aug 2014 | Aug 2008 |
| | Frequency | 3 Years | 3 Years | 1 Year | 9 Years | 3 Years | 9 Years |
| | Next Sample | Aug 2017 | Aug 2017 | Aug 2017 | Jan 2022 | Aug 2017 | Aug 2017 |

#### 2.6.1.1.1 OVERDUE CHEMICAL MONITORING

#### 2.6.1.1.1.A OVERDUE SOC MONITORING FOR WELLS 1 & 2

SOC (atrazine and simazine) monitoring is overdue for both Wells 1 and 2. SOC monitoring was last completed in December 2005 for Well 1 and in January 2008 for Well 2. SOC monitoring for groundwater sources is required every 9 years.

### 2.6.1.2 BACTERIOLOGICAL MONITORING IN RAW WATER

To monitor the bacteriological quality of its raw groundwater, GBWD tests each well in use quarterly for total coliform bacteria and *E. coli*. For compliance with the Groundwater Rule, GBWD is also required to test its groundwater sources for coliform when a routine distribution sample is positive for coliform bacteria. Table 7 summarizes how many samples were collected each quarter, how many were positive for total coliform bacteria, and how many were positive for *E. coli* for each well.

**Table 7: Source Bacteriological Monitoring (Total Coliform & *E. coli*)**

| Source | 1Q'14 | 2Q'14 | 3Q'14 | 4Q'14 | 1Q'15 | 2Q'15 | 3Q'15 | 4Q'15 | 1Q'16 | 2Q'16 | 3Q'16 | 4Q'16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Well 1 | 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 |
| Well 2 | 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 |
| Well 3 | 1-0-0 | 3-2-0 | 1-0-0 | 1-0-0 | 1-0-0 | 2-1-0 | 1-0-0 | 1-0-0 | 1-0-0 | 0-0-0 | 1-0-0 | 1-0-0 |
| Well 4 | 3-0-0 | 3-0-0 | 3-0-0 | 3-0-0 | 3-0-0 | 3-0-0 | 3-0-0 | 3-1-0 | 2-0-0 | 5-4-0 | 3-1-0 | 3-2-0 |

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

## 2.6.2 TREATMENT MONITORING

### 2.6.2.1 NITRATE BLENDING TREATMENT MONITORING

GBWD is required to monitor for nitrate in the groundwater wells: Wells 1, 2, 3, and 4, and in the blended water on a weekly basis. A blending report is submitted monthly which includes daily production numbers from each source, daily theoretical blended water nitrate concentrations, and weekly field kit blended water nitrate concentrations. The monitoring requirements are provided in Table 8.

**Table 8: Nitrate Blending Treatment Monitoring Requirements**

| Location | Sample Sites | PS-Codes | Chemical | Frequency |
|---|---|---|---|---|
| Source | Well 1 | 4010004-002 | Nitrate | Weekly |
| | Well 2 | 4010004-003 | Nitrate | Weekly |
| | Well 3 | 4010004-004 | Nitrate | Weekly |
| | Well 4 | 4010004-005 | Nitrate | Weekly |
| | Lopez Project - Treated | 4010004-006 | Nitrate | Quarterly (data generated by Lopez Project is sufficient) |
| Blended Effluent | Reservoir 1 Effluent | 4010004-008 | Nitrate | Daily theoretical blend calculation & Weekly lab and field kit |

### 2.6.2.2 ION EXCHANGE

Wells 1, 2, and 3 have the option to be treated at the ion exchange treatment plant. The ion exchange plant has not been used since 2013. If ion exchange treatment is provided to GBWD's groundwater wells, GBWD is required to submit a monthly report which shall include daily treated water production, daily treatment plant log which includes nitrate grab samples and regeneration information, weekly raw water and treated water nitrate analyses. The ion exchange treatment monitoring requirements are summarized in Table 9.

| Table 9: Ion Exchange Treatment Monitoring Requirements | | | | |
|---|---|---|---|---|
| Location | Sample Sites | PS-Codes | Chemical | Frequency |
| Sources | Well 1 | 4010004-002 | Nitrate | Weekly |
| | Well 2 | 4010004-003 | Nitrate | Weekly |
| | Well 3 | 4010004-004 | Nitrate | Weekly |
| Treated Effluent | $NO_3$ TP - Treated | 4010004-001 | Nitrate | Weekly (lab and field kit) |

#### 2.6.2.3 CORROSION CONTROL TREATMENT MONITORING

GBWD is required to maintain a pH of at least 7.8 in the finished water at all times. GBWD is also required to monitor for pH at five distribution system locations on a weekly basis. The five system samples are rotated between ten sample sites. GBWD is required to submit a monthly report which includes a graph of the average of the five weekly distribution samples on a 12 week moving graph, dosages at the source sites, amount of water treated, and operational water quality parameters.

### 2.6.3 DISTRIBUTION SYSTEM MONITORING

GBWD is required to routinely monitor its distribution system for total coliform bacteria, fecal coliform bacteria (*E. coli*), lead and copper, disinfection byproducts, chlorine residual, asbestos, and nitrification.

#### 2.6.3.1 BACTERIOLOGICAL MONITORING IN DISTRIBUTION SYSTEM

GBWD is required to test at least four samples for total coliform and *E. coli* bacteria every week from its distribution system. GBWD is currently collecting between 20 to 25 distribution system samples on a monthly basis. The 2012 to 2016 monthly bacteriological sampling results of the distribution system are provided in Table 10.

The federal Revised Total Coliform Rule (rTCR) went into effect on April 1, 2016. GBWD will need to comply with California's existing Total Coliform Rule (TCR) and the new requirements of the federal rTCR until California can complete the regulatory adoption process for the rTCR. Some of the major revisions include establishing a maximum contaminant level goal (MCLG) and maximum contaminant level (MCL) for *E. coli* for protection against fecal contamination, changing public notification requirements, and requiring Level 1 and Level 2 Treatment Technique Assessments for total coliform and *E. coli* exceedances. For more information regarding the federal rTCR, please visit:

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

If you need additional guidance to help comply with California's current TCR and the federal rTCR during this interim period, a summary of the actions to be taken in the event of a positive total coliform or *E. coli* result can be found at:

http://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/documents/rtcr/tcr-rtcr_interim.pdf

| Table 10: Distribution System Bacteriological Monitoring (Total Coliform and *E.coli*) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
| 2012 | 25-0-0 | 20-0-0 | 20-0-0 | 20-0-0 | 25-0-0 | 20-0-0 | 25-0-0 | 20-0-0 | 20-0-0 | 25-0-0 | 20-0-0 | 20-0-0 |
| 2013 | 25-0-0 | 20-0-0 | 20-0-0 | 25-0-0 | 20-0-0 | 20-0-0 | 25-0-0 | 20-0-0 | 20-0-0 | 25-0-0 | 20-0-0 | 25-0-0 |
| 2014 | 20-0-0 | 20-0-0 | 20-0-0 | 25-0-0 | 20-0-0 | 20-0-0 | 25-0-0 | 20-0-0 | 25-0-0 | 20-0-0 | 20-0-0 | 25-0-0 |

| Table 10: Distribution System Bacteriological Monitoring (Total Coliform and *E.coli*) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2015 | 20-0-0 | 20-0-0 | 25-0-0 | 20-0-0 | 20-0-0 | 25-0-0 | 20-0-0 | 20-0-0 | 25-0-0 | 20-0-0 | 20-0-0 | 25-0-0 |
| 2016 | 20-0-0 | 20-0-0 | 25-0-0 | 20-0-0 | 25-0-0 | 20-0-0 | 20-0-0 | 25-0-0 | 20-0-0 | 20-0-0 | 25-0-0 | 23-1-0 |

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

### 2.6.3.2 LEAD AND COPPER MONITORING IN DISTRIBUTION SYSTEM

For compliance with the Lead and Copper Rule, GBWD tests at least thirty (30) samples collected from its customers' taps triennially. Lead and copper monitoring will be due again during the summer months of 2018. The 2009 to 2015 monitoring results are provided in Table 11.

| Table 11: Lead and Copper Monitoring of Distribution System | | | | | |
|---|---|---|---|---|---|
| Sampling Date | Sample Set | # of Required Samples | # of Samples Collected | 90th Percentile Lead (µg/L) | 90th Percentile Copper (µg/L) |
| 6/8/2009 | Annual | 60 | 60 | <0.005 | 0.95 |
| 6/25/2012 | Triennial | 30 | 30 | 0.0027 | 0.89 |
| 8/18/2015 | Triennial | 30 | 30 | <0.005 | 0.47 |

### 2.6.3.3 DISINFECTION BYPRODUCTS AND DISINFECTANT RESIDUALS MONITORING IN DISTRIBUTION SYSTEM

GBWD tests four distribution system location for total trihalomethanes (TTHM) and haloacetic acids (HAA5) quarterly to comply with the monitoring requirements for disinfection byproducts. The 2016 quarterly TTHM and HAA5 results are provided in Table 12.

| Table 12: Disinfection Byproduct Monitoring of Distribution System | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sample Location | Constituents | Sample Date | | | | OEL | LRAA |
| | | 1/6/2016 | 4/7/2016 | 7/12/2016 | 10/3/2016 | | |
| Lopez Meter Station | TTHM (µg/L) | 27 | 38 | 49 | 33 | 38 | 37 |
| | HAA5 (µg/L) | 15 | 30 | 22 | 15 | 21 | 21 |
| 1602 Mentone | TTHM (µg/L) | 27 | 26 | 36 | 22 | 27 | 28 |
| | HAA5 (µg/L) | 15 | 17 | 13 | 6 | 10 | 13 |
| 765 N. 1st Street | TTHM (µg/L) | 28 | 28 | 39 | 22 | 28 | 29 |
| | HAA5 (µg/L) | 15 | 14 | 15 | 8 | 11 | 13 |
| 795 N. 8th Street | TTHM (µg/L) | 25 | 30 | 42 | 22 | 29 | 31 |
| | HAA5 (µg/L) | 12 | 8 | 15 | 5 | 8 | 11 |

### 2.6.3.4 CHLORINE RESIDUAL MONITORING IN DISTRIBUTION SYSTEM

For compliance with the maximum residual disinfectant level for chlorine of 4.0 mg/L, GBWD monitors its distribution system for chlorine residual when it collects its routine bacteriological samples. The 2013 to 2016 chlorine residual monitoring results are provided in Table 13.

| Table 13: Chlorine Residuals Monitoring of Distribution System | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
| 2013 | 0.69 | 0.74 | 1.29 | 1.43 | 1.95 | 1.40 | 1.26 | 1.28 | 1.24 | 1.36 | 1.45 | 0.93 |
| 2014 | 1.27 | 1.58 | 1.41 | 1.55 | 1.38 | 1.51 | 1.26 | 1.54 | 1.56 | 1.58 | 1.19 | 1.22 |
| 2015 | 0.93 | 1.42 | 1.72 | 1.20 | 1.33 | 1.02 | 1.20 | 1.06 | 1.26 | 1.58 | 1.49 | 1.56 |
| 2016 | 1.81 | 1.46 | 1.18 | 1.29 | 1.53 | 1.03 | 1.18 | 1.00 | 0.94 | 1.14 | 1.52 | 1.32 |

### 2.6.3.5 ASBESTOS MONITORING IN DISTRIBUTION SYSTEM

GBWD is required to monitor its distribution for asbestos if the water entering the distribution system is considered corrosive based on an aggressive index (AI) evaluation under worst-case conductions (aggressive index < 11.5). The most recent aggressive index results for GBWD's water supply are provided in Table 14.

Well 1 and Well 2 were sampled on December 9, 2014 and June 7, 2016, respectively, and have aggressive index monitoring results of 11.0. GBWD does not monitor the blended water in Reservoir 1 for aggressive index. If any asbestos cement pipe is located between the two wells and Reservoir 1 (blend location), GBWD is required to take a sample from the asbestos cement pipe and have it analyzed for asbestos. GBWD shall also determine the aggressive index of the blend as the water leaves the reservoirs. If the blended water has an aggressive index less than 11.5, a distribution sample shall be taken from a location served by asbestos cement pipe and be analyzed for asbestos.

**Table 14: Aggressive Index Monitoring Results**

| Source | Sample Date | AI Result |
|---|---|---|
| Well 1 | 12/9/2014 | 11.0 |
| Well 2 | 6/7/2016 | 11.0 |
| Well 3 | 6/10/2014 | 12.0 |
| Well 4 | 8/13/2014 | 13.0 |
| Lopez Project - Treated | 5/2/2016 | 13.0 |
| CCWA - Treated | 5/4/2016 | 12.0 |
| Reservoir 1 - Inlet | --- | --- |
| Blended Water (Reservoir 1 Outlet) | --- | --- |

### 2.6.3.6 NITRIFICATION MONITORING IN DISTRIBUTION SYSTEM

GBWD is recommended to monitor its three finished water storage reservoirs to identify possible nitrification problems associated with chloramines. DDW recommends monthly HPC, chlorine residual, and nitrite monitoring in the reservoir water. GBWD is required to take corrective action if nitrification occurs.

**Table 15: Nitrification Monitoring in Distribution System**

| Constituent | Monitoring Frequency |
|---|---|
| HPC | Monthly |
| Nitrite | |
| Chlorine Residual | |

## 2.7 ELEMENT 7: SYSTEM MANAGEMENT AND OPERATIONS

### 2.7.1 ORGANIZATION AND PERSONNEL

GBWD serves the residents of the City of Grover Beach. Greg Ray serves as Public Works Director, John Barclay as Public Works Superintendent, and Russell Garing as Chief Operator. GBWD charges its customers a variable base rate and variable usage rate to cover the cost of operations.

### 2.7.2 OPERATIONAL PLANS AND REPORTING

The following documents and plans are on file with DDW and listed in Table 14. GBWD does not have a Bacteriological Sample Siting Plan on file with DDW. GBWD shall submit a Bacteriological Sample Siting Plan to DDW.

| Table 16: List of Documents and Plans | | |
|---|---|---|
| Document | Document Date | Update Frequency |
| Bacteriological Sample Siting Plan | --- | Every 10 years or as needed |
| TCR Plan - Map | July 2009 | As needed |
| Groundwater Rule Monitoring Plan | July 30, 2009 | As needed |
| Emergency Notification Plan | March 24, 2009 | As needed |
| Nitrate Removal Water Treatment Plant Operations Plan | 1998 | As needed |
| 2015 Consumer Confidence Report | June 2016 | Annually |
| 2015 Annual Report | June 2016 | Annually |

### 2.7.3 RECORDKEEPING

GBWD is required to maintain records on all complaints received and corrective actions taken, water quality, violations and corrective actions taken, sanitary surveys, variances, or exemptions, public notices, and monitoring plans. The records are required to be retained for the lengths of time listed in Table 17.

| Table 17: Water System Recordkeeping Lengths of Retention | | |
|---|---|---|
| Subject | Documents | Length of Retention |
| Complaints | Documentation and Action | 5 Years |
| Microbial and Turbidity Analyses | Analyses Info and Results | 5 Years |
| Chemical Analyses | Analyses Info and Results | 10 Years |
| Violations | Documentation and Action | 3 Years |
| Sanitary Surveys | Reports and Communications | 10 Years |
| Variances or Exemptions | Documentation | 5 Years |
| Public Notices | Copies of Notices | 3 Years |
| Bacteriological Monitoring Plans | Copies of Plans | 5 Years |
| Chemical Monitoring Plans | Copies of Plans | 10 Years |
| Consumer Confidence Reports | Copies of Reports | 3 Years |
| Lead and Copper | Analyses, Reports, and Surveys | 18 Years |

## 2.8 ELEMENT 8: OPERATOR COMPLIANCE WITH STATE REQUIREMENTS

GBWD is classified as a T2 and D3 water system. Russell Garing serves as GBWD's designated chief operator and is certified as a T4 and D3 operator. Russell Garing's T4 and D3 certifications are current and valid. Therefore, GBWD meets the standards for operator compliance with state requirements. A list of the operators employed by GBWD is provided in Table 19.

| Table 18: Water System Facility Classification | |
|---|---|
| Facility | Classification |
| Nitrate Blending Treatment | T2 |
| Ion Exchange Treatment | T2 |
| Distribution System | D3 |

| Table 19: Water System Operator Certification Classifications | | |
|---|---|---|
| Operator Name | Treatment Classification | Distribution Classification |
| Russell Garing | T4 | D3 |
| John Barclay | T1 | D1 |
| Philli Solis | T1 | D1 |
| Pete Yracheta | T1 | D2 |
| Cesar Zarate | T2 | D3 |
| Adrian Arguilles | --- | D1 |
| Homero Flores | --- | D1 |
| Joseph Goldtree | --- | D1 |

| Table 20: List of Sampling Locations | | |
|---|---|---|
| Facility Name | Description | PS Code |
| **Groundwater Sources** | | |
| Well 1 | Raw Water Influent | 4010004-002 |
| Well 2 | Raw Water Influent | 4010004-003 |
| Well 3 | Raw Water Influent | 4010004-004 |
| Well 4 | Raw Water Influent | 4010004-005 |
| **Purchased Treated Surface Water** | | |
| Lopez Water - Treated | Treated Surface Water From Lopez Project | 4010004-006 |
| **Treatment Facility** | | |
| $NO_3$ – Treated | Ion Exchange TP – Treated Effluent | 4010004-001 |
| Reservoir # 1 – Inlet | Nitrate Blending Influent | 4010004-014 |
| Blended Water (Reservoir 1 Outlet) | Nitrate Blending Effluent | 4010004-008 |
| **Stage 2 Disinfection Byproducts Sample Location** | | |
| Distribution System | Stg. 2 – Lopez Meter Station | 4010004-010 |
| Distribution System | Stg. 2 – 1602 Mentone | 4010004-011 |
| Distribution System | Stg. 2 – 765 N. 1st St. | 4010004-012 |
| Distribution System | Stg. 2 – 795 N. 8th St. | 4010004-013 |

## III. CONCLUSION

The review of GBWD's water system indicates that it is designed, constructed, operated, and managed well. With few exceptions, the sources, storage reservoirs, booster station, and distribution system meet all state requirements. A review of the routine water quality monitoring results indicates that GBWD's water sources meet all applicable primary maximum contaminant levels after treatment. Deficiencies identified during the Sanitary Survey inspection include:

- The interconnection with Arroyo Grande Water Department is not included in the 1999 water supply permit.

- The specifications and proof of NSF certification for the ion exchange resin and brine salt used at the ion exchange treatment plant was not determined.

- GBWD reported that 183 of 203 backflow devices were tested in 2014 and 184 of 198 backflow devices were tested in 2015. GBWD shall ensure that all backflow prevention devices are tested annually and reported to DDW on the Annual Report.

- There was corrosion observed on the roof of Reservoir 3. DDW recommends GBWD paint the corroded areas on the roof of Reservoir 3 to maintain a satisfactory coating on the steel reservoir which is critical in protecting the structural integrity of the reservoir and the quality of the stored water.

- SOC (atrazine and simazine) monitoring is overdue for both Wells 1 and 2. SOC monitoring was last completed in December 2005 for Well 1 and in January 2008 for Well 2. SOC monitoring for groundwater sources is required every 9 years.

- GBWD is required to monitor its distribution for asbestos if the water entering the distribution system is considered corrosive based on an aggressive index (AI) evaluation under worst-case conductions (aggressive index < 11.5). Well 1 and Well 2 were sampled on December 9, 2014 and June 7, 2016, respectively, and have aggressive index monitoring results of 11.0. GBWD does not monitor the blended water in Reservoir 1 for aggressive index. If any asbestos cement pipe is located between the two wells and Reservoir 1 (blend point), GBWD is required to take a sample from the asbestos cement pipe and have it analyzed for asbestos. GBWD shall also determine the aggressive index of the blend as the water leaves the reservoirs. If the blended water has an aggressive index less than 11.5, a distribution sample shall be taken from a location served by asbestos cement pipe and be analyzed for asbestos.

- GBWD does not have a Bacteriological Sample Siting Plan on file with DDW. GBWD shall submit an updated Bacteriological Sample Siting Plan to DDW.