



**SAN LUIS OBISPO CSA10 – CAYUCOS
SYSTEM NO. CA4010025
2010 WATERSHED SANITARY SURVEY UPDATE**

**Prepared by:
COUNTY OF SAN LUIS OBISPO
DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION**

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Whale Rock Reservoir Watershed

**WHALE ROCK RESERVOIR
2010 WATERSHED SANITARY SURVEY UPDATE**

SYSTEM INFORMATION

CDPH System No.: 4010025

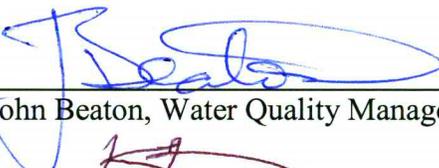
System Name: San Luis Obispo CSA No. 10 – Cayucos

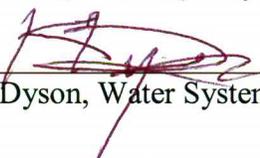
Survey Period: January 1, 2005 through December 31, 2010

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SURVEY DESCRIPTION

Name of Watershed: Whale Rock Reservoir

Total Watershed Size in acres: 13,000 acres

Location: San Luis Obispo County

Name(s) of water treatment plant using the watershed as a source:

Cayucos Water Treatment Plant
City of San Luis Obispo
California Mens Colony

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General Conditions Checklist Form

There were no changes to the general conditions of the Whale Rock Reservoir Watershed since the 2005 update.

B. Difficulty meeting drinking water standards		X	
General Conditions	Significant	Not Significant	Comments
I. GENERAL CONDITIONS			
A. Changes in available water quantity?		X	
B. Construction of water diversion or reservoir projects		X	
C. Relocation of intakes		X	
II. CONTAMINANT SOURCES			
A. Wastewater Treatment			
1. Treatment plant effluent discharges		X	
2. Storage, transport, treatment, disposal to land		X	
3. Residential septic systems		X	
4. Commercial/industrial septic systems		X	
B. Reclaimed Water			
C. Urban Areas			
D. Agricultural Crop Land Use			
E. Pesticide/Herbicide Use		X	~30 residential septic tanks located within the watershed ~5% of the watershed is agricultural.
F. Grazing Animals	X		Cattle grazing in watershed two miles upstream of dam
G. Concentrated Animal Facilities (feedlots, etc)		X	
H. Wild Animal Populations		X	
I. Mines			
1. Active		X	
2. Inactive		X	
J. Disposal Facilities			
1. Solid waste		X	
2. Hazardous waste		X	
K. Logging			
L. Recreation			
1. Reservoir body contact		X	
2. Reservoir non-body contact		X	
M. Unauthorized Activity			
1. Illegal dumping		X	
2. Underground storage tank leaks		X	
3. Other		X	
N. Traffic Accidents/Spills			
1. Transportation corridors		X	Minimal traffic on the roads.
2. History of accidents/spills		X	
O. Groundwater Discharges			
1. Natural discharge		X	
2. Gas, oil, geothermal wells		X	
P. Seawater Intrusion			
Q. Geologic Hazards			
1. Landslides	X		
2. Earthquakes	X		
3. Floods	X		
4. Other			
R. Fires			
	X		
III. GROWTH			
A. Population/General Urban Area Increase		X	
B. Land Use Changes		X	
C. Industrial Use Increase		X	
IV. WATER QUALITY			
A. Changes in Raw Water Quality		X	

Acronyms and Abbreviations

CAWO	Cayucos Area Water Organization (County Service Area 10A - Cayucos, Morro Rock Mutual Water Company, Paso Robles Beach Water Association)
CDHS	California Department of Health Services
CDPH	California Department of Public Health
CE	Counting error
CFU/mL	Colony forming units per milliliter
City	City of San Luis Obispo
County	County of San Luis Obispo
CSA10	County Service Area 10 - Cayucos Water Treatment Plant
CSA10A	County Service Area - Cayucos Distribution
CT	Concentration times time
D/DBP	Disinfectants and disinfection byproducts
DBP	Disinfection byproducts
E. coli	Escherichia coli
gal	Gallon
GrossA	Gross alpha radioactivity
HPC	Heterotrophic plate count
lb	Pound
LI-C	Langelier Index
LT2ESWTR	Long Term 2 Enhanced Surface Water Treatment Rule
MBAS	Methylene blue active substances (surfactants)
MCL	maximum contaminant level
MG	Million Gallon
mg/L	Milligrams per liter
MRMWC	Morro Rock Mutual Water Company
MPN	Most probable number
MPN/100mL	Most probable number per 100 milliliters
NTU	Nephelometric turbidity unit
°C	Degrees centigrade
oz	Ounce
pCi/L	pico Curies per liter
pH	pH measured in the lab
pH-Field	pH measured in the field
PRBWA	Paso Robles Beach Water Association
qt	Quart
Ra228	Radium 228
SOC	Synthetic organic compounds
SWTR	Surface Water Treatment Rule
TDS	Total dissolved solids
Temp	Temperature
TON	Threshold odor number
ug/L	Micrograms per liter
umhos/cm	Micromhos per centimeter
VOC	Volatile organic compound
WRC	Whale Rock Commission (City of San Luis Obispo, the California Men's Colony, and California Polytechnic State University)

1.0 Summary of 2010 Watershed Sanitary Survey Update

1.1 Whale Rock Reservoir Watershed

There have been **no significant changes to the Whale Rock Reservoir watershed since the 2005 survey.**

The majority of the 13,000 acre watershed is designated as grazing land. The remaining land uses are agricultural crops, rural land, and open space/recreational. The area is sparsely populated and minimally developed. The land surrounding the Whale Rock Reservoir is owned by the State of California and operated by the City of San Luis Obispo under the direction of the Whale Rock Commission. Restrictions on public access are maintained on the State land surrounding the Whale Rock Reservoir. A narrow portion of the east shoreline allows controlled fishing. No body contact is permitted anywhere on the reservoir.

Eroding sediments continue to be the most significant contaminants in the watershed. Erosion comes from both paved and unpaved roads, owned by San Luis Obispo County (County) or private parties. Additional erosion is a result of livestock trails, steep eroding terrain, and croplands. Erosion is more significant during the rainy season and can contribute sedimentation to the reservoir.

Cattle grazing occurs throughout the watershed and is a potential source of contaminants such as *Giardia* and *E. coli*. The County has been monitoring for total coliforms and *E. coli* weekly since the start up of the Cayucos Water Treatment Plant. Total coliform MPNs can be elevated in the warmer summer months. High total coliform levels have also been measured after large rain storms or unseasonably warm weather. Although total coliform MPNs have been high, *E. coli* (the indicator bacteria for fecal contamination) have been low. For the period of this report, there were 287 samples collected from the raw water for *E. coli*. The average MPN/100mL was 2 with a range of <1 to 98.

Cattle activity can contribute to increased turbidity and nutrient levels. Such conditions can stimulate excessive growth of nuisance algae which can have major effects on the filtration and treatment processes at the water treatment plant. The existing cattle controls in the watershed area, which include fencing to prevent cattle direct access to the reservoir and routine watershed patrol, are currently adequate to protect the water quality of the reservoir.

The County has had to comply with both the Stage 1 and Stage 2 Disinfectant/Disinfection Byproduct Rules since the last survey update. To comply with these rules, the County installed two 10,000 pound granular activated carbon (GAC) filters in the treatment train in 2006. The GAC filters have successfully provided TOC reduction as well as taste and odor control. Continued use of the GAC filters should allow the plant to meet TTHM and HAA5 requirements.

The new arsenic rule was effective in 2006, lowering the MCL from 50 to 10 ppb. Additional reporting requirements for the Consumer Confidence Reports are required when a system exceeds 5 ppb of arsenic. Both the Cayucos Water Treatment Plant raw and treated waters had acceptable levels of arsenic during the period of this survey update. All results were less than 5 ppb.

Evaluation of the watershed analytical data shows that the condition of the watershed remains very good and the treatment processes at the Cayucos Water Treatment Plant are sufficient to comply with the new regulations.

1.2 Cayucos Wells Watershed

In addition to the Whale Rock Reservoir, the Cayucos Water Treatment Plant (WTP) has the option of utilizing four additional wells. The wells are located adjacent to Old Creek below the Whale Rock Reservoir in the south-west end of the watershed. Only one of these wells, referred to as the “CAWO” well, is designated as “active”. This well is not under the influence of surface water. The CAWO well is chlorinated and pumped directly into the Cayucos WTP’s clearwell reservoir. The CAWO well does not require filtration treatment. The three other wells that could be utilized by the WTP are designated “standby” wells and are under the influence of surface water. Although these wells can be used as a water source, they must first receive full treatment through the Cayucos WTP. These wells have limited capacity and are dependent on water releases from the Whale Rock Reservoir.

Two additional standby wells located in this same well field (CSA10 Wells 02 and 03) were abandoned in March of 2005.

The standby wells have not been utilized for drinking water since the new water treatment plant was put on line in 1997. The wells are occasionally pumped for collection of CDPH required sampling. All standby well water is pumped to waste. No changes have occurred in the well’s watershed since the 2005 Sanitary Survey Update.

2.0 Purpose of the Watershed Sanitary Survey and History of Past Reports

The California Surface Water Treatment Regulation (SWTR) (Chapter 17, Sections 64650 through 64666) required domestic water suppliers using surface water or ground water under the influence of surface water for their source water, to conduct a sanitary survey of their watersheds by January, 1996. The survey is to be updated at least once every five years.

The Cayucos Water Treatment Plant was placed on-line in 1997. The initial sanitary survey of the Whale Rock Reservoir was prepared by Metcalf & Eddy, Inc. on behalf of the Whale Rock Commission (WRC). The WRC consisted of the City of San Luis Obispo, the California Men's Colony, and California Polytechnic State University.

The first update to the Whale Rock sanitary survey was completed by Boyle Engineering Corporation (Boyle) in January of 2001 in a joint effort by both the County of San Luis Obispo and the City of San Luis Obispo.

In 2002, the County of San Luis Obispo (County) and the Cayucos Area Water Organization (CAWO) contracted Boyle to complete a sanitary survey for their five standby wells. The survey covered the County of San Luis Obispo County Service Area 10 (CSA10) Cayucos Wells 02 and 03, Morro Rock Mutual Water Company (MRMWC) Wells 01 and 03, and Paso Robles Beach Water Association (PRBWA) Well 01. These five wells are located below Whale Rock Reservoir. In addition to this 2002 survey, the County and CAWO contracted Boyle to prepare a technical memorandum reviewing the Cayucos Water Treatment Plant's ability to meet enforced regulations applicable to surface water treatment.

In 2005, County staff completed its first update to the Cayucos Wells watershed sanitary survey. The Whale Rock Reservoir sanitary survey was completed by City of San Luis Obispo in 2005.

This 2010 update has been prepared by County staff for the Whale Rock Reservoir Watershed and the Cayucos Water Treatment Plant's ability to meet all drinking water requirements. The survey also includes a brief update of the three standby wells. The CSA10 standby wells, Well 02 and Well 03 were both abandoned in March, 2005. The other three standby wells, MRMWC Well 01, MRMWC Well 03, and PRBWA Well 01 are still considered standby wells but have never been utilized as a drinking water source. If they were required for emergency purposes, they would receive full treatment through the Cayucos Water Treatment Plant.

3.0 Description of Whale Rock Reservoir Watershed and Water Supply System

3.1 Whale Rock Reservoir and Watershed

The Whale Rock Reservoir is located on Old Creek Road approximately one half mile east of Cayucos. The reservoir project was planned, designed, and constructed under the supervision of the State Department of Water Resources (SDWR). Construction began in October, 1958 and was completed in April, 1961. The reservoir is jointly owned by the City of San Luis Obispo, the California Men’s Colony, and the California Polytechnic State University. Day to day operation of the reservoir is provided by the City of San Luis Obispo. In 1996, downstream water rights were granted to the Cayucos Area Water Organization (CAWO). The CAWO consists of the San Luis Obispo County Service Area 10A - Cayucos, the Paso Robles Beach Water Association, and the Morro Rock Mutual Water Company. The County built the Cayucos Water Treatment Plant in 1997 and continues to operate it for the CAWO water distribution. The reservoir has a maximum storage capacity of 40,000 acre-feet and a maximum surface area of 600 acres.

The Whale Rock Reservoir is part of the Old Creek watershed (See Appendix A-1: Cayucos Regional Watershed Areas). The total watershed area is approximately 13,000 acres and is located within the boundaries of the County’s Adelaida Planning Area (See Appendix A-2: Adelaida Planning Area Rural Land Use Category Map). The headwaters of Old Creek watershed basin rise in the upper elevations approximately 5 miles northeast of the Whale Rock Reservoir dam. Old Creek and its unnamed tributaries drain the east half of the watershed. Cottontail Creek and its unnamed tributaries drain the west half of the watershed.



Figure 1 - Where Cottontail Creek enters Whale Rock Reservoir

3.2 Whale Rock Reservoir Rainfall

The mean annual rainfall at the reservoir during the period of this survey was 14.31 inches. The most rainfall fell in the months of December through February. Water Year 2006 – 2007 had only 6.04 inches of rain. While the 2010 – 2011 Water Year had 23.35 inches of rain.

Table 1 – Precipitation Data

WHALE ROCK RESERVOIR PRECIPITATION 2005 - 2011

From the Volunteer Precipitation Gauge Station Whale Rock Dam #166.1

Water Year	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	Total
2010 - 2011	0.00	0.00	0.05	1.43	1.76	7.25	2.87	2.99	4.86	0.34	0.99	0.81	23.35
2009 - 2010	0.00	0.00	0.13	1.20	0.01	3.29	4.57	3.16	1.00	1.83	0.15	0.00	15.34
2008 - 2009	0.00	0.00	0.00	0.40	0.77	1.57	1.26	4.60	0.72	0.28	0.30	0.14	10.04
2007 - 2008	0.00	0.31	0.00	0.73	0.08	1.71	5.87	2.20	0.02	0.63	0.00	0.00	11.55
2006 - 2007	0.00	0.00	0.00	0.30	0.29	1.49	0.91	2.07	0.24	0.66	0.08	0.00	6.04
2005 - 2006	0.00	0.06	0.00	0.08	0.64	2.35	5.99	0.81	4.76	2.37	2.50	0.00	19.56
Monthly Averages	0.00	0.06	0.03	0.69	0.59	2.94	3.58	2.64	1.93	1.02	0.67	0.16	14.31

3.3 Cayucos Water Treatment Plant

The Cayucos Water Treatment Plant’s (WTP) primary source of supply water comes from the Whale Rock Reservoir. Treatment at the WTP consists of pre-chlorination with sodium hypochlorite, in-line coagulation, in-line static mixing, up-flow contact clarification and dual media direct filtration using three Trident filters. This is followed by granular activated carbon filtration (for control of total organic carbon, disinfection byproduct precursors, and taste and odor problems) and post chlorination using free chlorine for CT compliance. The Cayucos WTP reclaims its backwash water to the headworks of the treatment plant after settling and passing through a multi-media pressure filtration system.

The Cayucos WTP maintains an active ground water well, the CAWO Well to supplement the surface water supply as needed. The CAWO Well is not under the influence of surface water. It is chlorinated and blends with the treated surface water in a 0.25 MG baffled clearwell tank. The system also maintains one 0.25 MG distribution storage reservoir located on a hill above the WTP. A diagram of the WTP can be found in Appendix A-3.

4.0 Summaries and Recommendations of Previous Watershed Sanitary Surveys

4.1 1996 Whale Rock Reservoir Watershed Sanitary Survey

The initial Sanitary Survey for the Whale Rock Reservoir was completed in January, 1996. The survey was prepared by Metcalf & Eddy, Inc for the City of San Luis Obispo and the Whale Rock Commission. This survey was sufficient in satisfying the Watershed Sanitary Survey requirements for the Cayucos Water Treatment Plant, CSA10 and no survey was conducted by the County of San Luis Obispo.

4.1.1 Summary and Conclusion of 1996 Whale Rock Reservoir Watershed Sanitary Survey

The 1996 sanitary survey concluded:

1. Eroding sediments are the most significant contaminants in the watershed. Sources of eroding sediments include San Luis Obispo County and private roads (both paved and unpaved), livestock trails, croplands, and abandoned mines and quarries. Erosion at these sources occurs each rainy season, contributing to sedimentation of the Whale Rock Reservoir. The most significant erosion occurs as a result of major winter rainstorms.
2. Cattle are considered potentially significant sources of *Giardia lamblia* and enteric viruses regulated under the Surface Water Treatment Rule, since cattle have direct access to tributary streams in some areas, and because the period of record for bacteriological data is limited to a few years. Existing cattle control measures in the vicinity of the reservoir, which include fencing to keep cattle from direct access to reservoir water and routine watershed patrol, appear to be adequate to protect water quality. Also, the existing water quality data do not suggest current significant impacts to water quality from cattle.
3. Pesticide/herbicide use on croplands, which are predominantly located adjacent to watershed tributary streams, represents a potential source of organic compound contamination in the watershed. However, the amount of total cropland in the watershed is relatively small (approximately 5%) and no pesticide/herbicide compounds have been detected in raw or treated water by the City during the period of record.
4. Potential sources of contamination from wastewater treatment plants, concentrated animal facilities, solid/hazardous waste disposal facilities, and seawater intrusion are not present in the watershed.
5. The City of San Luis Obispo (City) and the Whale Rock Commission only have control over the reservoir and state lands immediately adjacent to the reservoir. Therefore, they cannot directly implement control measures in the majority of the watershed. They must rely on control measures of the major landowners in the watershed, as well as the government agencies that regulate land use and contaminant discharges.

6. Based on monitoring of raw water from the Whale Rock Reservoir conducted by the City, raw water has shown elevated levels, some exceeding U.S. Environmental Protection Agency Maximum Contaminant Levels (MCLs), for some general characteristic analytes and manganese in the past. Raw water has shown concentrations well below applicable MCLs for radionuclides, organic chemicals, pesticides, and PCBs. The City has consistently met the applicable drinking water standards for treated water delivered to customers.

4.1.2 Recommendations made in the 1996 Initial Whale Rock Reservoir Watershed Sanitary Survey and the 2001 Status

The January 1996 watershed sanitary survey report contained the following specific recommendations:

Recommendation 1

The City of San Luis Obispo should analyze Whale Rock Reservoir raw water for total and fecal coliforms on a monthly basis to provide data for further evaluation of temporal and seasonal trends in bacteriological contamination. An analysis and discussion of these monitoring results should be provided in the 5-year updates to this sanitary survey.

Status: The County of San Luis Obispo implemented weekly monitoring of total and fecal coliforms when the Cayucos Water Treatment Plant was put in to service in 1997.

Recommendation 2

The City should continue with its current level of effort to protect the watershed. In recognition of the small size and sparse population of the watershed, direct mailings would be the most effective way of addressing water quality issues as they arise.

Status: The County of San Luis Obispo conducts routine inspections of the Whale Rock Reservoir once a month by boat during reservoir sampling events. The inspections focus upon the general watershed conditions and any unusual occurrences.

The City of San Luis Obispo conducts daily inspections of the reservoir perimeter roads and the accessible portions of the creek's tributary to Whale Rock Reservoir as part of their daily watershed patrol program. In addition, several times per week, the City conducts routine inspection of the reservoir by boat.

4.2 2001 Whale Rock Reservoir Sanitary Survey

The 2001 sanitary survey update was completed by Boyle Engineering Corporation (Boyle) in January of 2001 in a joint effort by both the County and the City of San Luis Obispo.

4.2.1 Summary and Conclusion of 2001 Whale Rock Reservoir Watershed Sanitary Survey

Boyle made the following major conclusions:

1. There have been no significant changes in the watershed since the last report except for the addition of the new 1.7-MGD filtration plant owned by the Cayucos Area Water Organization (CAWO) and operated by the County of San Luis Obispo. The new plant was put on-line in 1997 and has been treating water from Whale Rock Reservoir. The new plant is also designed to treat the water from five nearby wells that have been classified by the California Department of Health Services (CDHS) as being under the direct influence of surface water.
2. The overall raw water quality of Whale Rock Reservoir is good, but at times the water indicates high levels of total coliform bacteria.
3. High turbidity has not been a major water quality concern.
4. Cattle grazing within the confines of the watershed continue to represent a potentially significant source of bacteriological contamination (including cysts) due to their ability to gain direct access to tributary streams within the privately owned portions of the watershed.
5. Pesticide/herbicide use in the croplands continues to represent a potential source of contamination within the watershed. Specific monitoring for the chemicals being used needs to be done.
6. The City and County of San Luis Obispo must continue their reliance upon the watershed management practices of the major landowners within the watershed and the government agencies that regulate land use and contaminant discharge within the Whale Rock Reservoir watershed.
7. The existing filtration plants are more than adequate to continue processing water from Whale Rock Reservoir to meet current surface water regulations. The County's Cayucos Water Treatment Plant, however, is unable to handle taste and odor problems created by MIB and hydrogen sulfide.

4.2.2 Recommendations made in the 2001 Whale Rock Reservoir Watershed Sanitary Survey and the 2005 Status

The January, 2001 watershed sanitary survey update contained specific recommendations for additional sampling. Some of the recommendations pertained primarily to the City's Water Treatment Plant since they were partners with the County's Cayucos Water Treatment Plant sanitary survey update.

Recommendation 1

The City and County of San Luis Obispo, together with the Whale Rock Commission, should continue with their current level of effort to protect the watershed and the reservoir from pollution and/or contamination.

Status: This recommendation was made in the initial 1996 survey. Both the City and County continue to monitor the watershed for contamination and/or pollution.

Recommendation 2 (Sampling and Analysis)

It is recommended that future testing for raw water for general physical analyses include apparent color. This should be done at the normally used reservoir intake level and performed at the same frequency as the existing sampling frequency for turbidity, pH, and odor testing.

The HPC bacteria testing on the raw water samples can be discontinued. The weekly sampling frequency for total/fecal coliform bacteria should be continued. During times when total coliform bacteria exceed 1000 MPN/100mL, the adequacy of the water disinfection process within the treatment plant needs to be closely monitored in terms of consistently meeting minimum CT disinfection requirements.

Iron and manganese should be sampled in both the plant influent and effluent at least monthly as the raw water at times contains significant levels of each.

In order to withdraw the best quality water from the reservoir, more frequent testing of physical water quality parameters should be considered as shown below:

Constituent	Whale Rock Reservoir Raw (Plant Influent)	Treatment Plant Effluent
Turbidity	Twice monthly	Continuously
pH	Twice monthly	Continuously
Temperature	Twice monthly	Daily
Apparent Color	Twice monthly	Daily

Future coliform/fecal coliform bacteria sampling should be as follows:

Constituent	Whale Rock Reservoir	Treatment Plant
Total coliform and Fecal	Monthly	Weekly

Iron and manganese testing should be conducted at the Whale Rock Reservoir outlet elevation and at the filter plant influent each month.

Major creek inflows into Whale Rock Reservoir should be sampled for the following parameters during all months of the year when inflow is occurring:

Parameter	Sampling Frequency
Total/Fecal coliform MPN	Monthly
Turbidity	Monthly
Color	Monthly
Total Nitrogen	Monthly
Total Phosphorus	Monthly

The Whale Rock Reservoir outlet line should be sampled in the future as shown below.

Parameter	Recommended Sampling Frequency	Concern
Bromide (ug/L)	Yearly	Bromate formation
Total Organic Carbon (mg/L)	Quarterly	Disinfection by-product formation
Algae Count	Monthly	Taste and odor control
Giardia/Cryptosporidium cysts	Quarterly ¹	Public health/safe water

¹ For at least the next two years beginning with the fall quarter of October-December, 2001.

The treated water from the City’s filtration plant should also be sampled quarterly for at least the next 2 years for viable Giardia/Cryptosporidium cyst levels if first-year sampling by the City indicated the raw water to contain cysts. Treated water sampling should also be initiated by the Cayucos Area Water Organization if first-year sampling by the City indicates the raw water to contain cysts.

Status: The County conducts general physical analyses (including apparent color) on the raw water twice per month. The County continues to sample for total/fecal coliform bacteria on a weekly basis. CT disinfection requirements are closely monitored to ensure adequate disinfection at all times. HPC bacteria were monitored for operational purposes and to evaluate seasonal trends up through 2010. HPC monitoring ceased in 2011 since total/fecal coliform monitoring is sufficient for ensuring adequate disinfection. The County increased the frequency of iron and manganese sampling at the plant influent and effluent to weekly in order to monitor the plant’s treatment ability. The County monitors turbidity from both the raw and treated waters continuously. Daily pH measurements are made from both raw and treated waters. The County monitors both the Cayucos Water Treatment Plant Raw and the Treatment Plant Effluent on a weekly basis for total and fecal coliform. The County monitors iron and manganese from all five intakes of the Whale Rock Reservoir twice per month. The Water Treatment Plant influent and effluent are monitored weekly. Neither the County nor the City conducts monitoring from the reservoir inflows. The quality of the Whale Rock raw water is carefully monitored and has been found to be more than adequate. If the quality of the water were to change, increased monitoring of the inflow creeks would be implemented.

Bromate is not an issue for the Cayucos Water Treatment Plant since it does not use ozone for disinfection treatment. Total Organic Carbon is monitored twice per month at the raw water entering the plant in preparation for the Stage 2 Disinfection Byproduct Rule. Algae counts are performed twice per month at the Whale Rock Reservoir at the surface and all five intakes. The County has opted to monitor for *E. coli* and turbidity to satisfy the Long Term 2 Enhanced Surface Treatment Rule. No Giardia/Cryptosporidium cysts were detected in the City’s raw water. Since no Giardia/Cryptosporidium cysts were detected in the City’s raw water, testing in the treated water is not necessary and would be costly.

4.3 2002 Initial Cayucos Wells Watershed Sanitary Survey

The initial Cayucos Wells Watershed Sanitary Survey was performed by Boyle Engineering and completed in September, 2002. The survey covered the County of San Luis Obispo County Service Area 10 (CSA10) Cayucos Wells 02 and 03, Morro Rock Mutual Water Company (MRMWC) Wells 01 and 03, and Paso Robles Beach Water Association (PRBWA) Well 01. These five wells are located below Whale Rock Reservoir. Well production is dependant on releases from the reservoir and percolation into a shallow aquifer via the percolation ponds located adjacent to the well field. The California Department of Health Services - CDHS (now the California Department of Public Health - CDPH) determined that these wells are under the direct influence of surface water and require treatment in conformance with the Surface Water Treatment Rule (SWTR) when used.

4.3.1 Summary and Conclusion of 2002 Cayucos Wells Watershed Sanitary Survey

Boyle's water quality review noted the following:

- Raw water samples collected from the five wells prior to chlorination were absent of total and fecal coliform bacteria.
- Water produced by the standby wells had elevated iron and manganese levels which would require treatment by the plant. The water was also very hard and high in alkalinity. No other specific comments were made concerning general physical or general mineral analyses.
- No recent water quality data was available for organic or inorganic chemical water quality for any of the five wells.
- No recent water quality data was available for radiological water quality.
- Testing for the presence of parasitic cysts (*Giardia* and *Cryptosporidium*) had not been performed.

When the Cayucos Water Treatment Plant went on-line in 1997, the five wells were placed on standby status and had not been used since that time.

If reactivated, Boyle recommended the five standby wells receive complete treatment by the Cayucos Water Treatment Plant. Boyle further recommended that the wells be sampled individually, rather than as a blend, in order to assess the adequacy and acceptability of each well.

Boyle concluded that the three major treatment requirements for the five wells were meeting SWTR objectives, acceptable manganese removal, and ensuring the treated well water blend was not corrosive.

4.3.2 2002 Survey Recommendations and Current Status

Below are the recommendations made by Boyle Engineering in the 2002 Cayucos Wells Watershed Sanitary Survey.

Recommendation 1

A chapter should be added to the 1997 Operations Plan, outlining all major changes to plant operations that will be needed if surface water is not available and the five standby wells are activated. The chapter should be sent to the CDHS for review and approval. It should describe how the groundwater will be treated to ensure adequate manganese oxidation, turbidity removal, and disinfection of the water. The chapter should address:

- Routine daily/weekly raw water sampling
- Pre-chlorination
- Use of chemical coagulants
- Method of oxidation to be used for manganese precipitation
- Post-chlorination
- Corrosion control
- Routine daily/weekly treated water sampling

Recommendation 2

Initiate the well water sampling outlined in the report if and when the five wells are reactivated. Recommendations included:

- Monthly bacteriological testing
- Annual general physical, general mineral, inorganic, and regulated organic chemical (including commonly used pesticides and herbicides) testing
- Raw well water blend testing for turbidity, manganese and total sulfides
- Parasitic cyst testing on each well

Status of recommendations 1 and 2

Water from the standby wells would be subjected to the same treatment processes in the Cayucos Water Treatment Plant as is currently used on Whale Rock Reservoir raw water. This includes coagulation, filtration and disinfection. The five standby wells have not been utilized since the treatment plant went on-line. Cayucos Wells 02 and 03 were officially abandoned in March, 2005. As the remaining standby wells would only be used in an emergency, and for a very limited time, updating the Operational Plan is not necessary at this time. If reactivation of the wells becomes necessary, the CDHS would be contacted and the well water would be sampled and treated per their requirements.

Recommendation 3

The San Luis Obispo County Health Department should be asked to inform the chief plant operator of the Cayucos Water Treatment Plant of any significant failures of private sewage treatment and disposal systems within the watershed.

Status of recommendation 3

The County of San Luis Obispo's Environmental Health Department was contacted by letter and requested to notify the County of San Luis Obispo Department of Public Works and Transportation Utilities Manager of any septic system failures or hazardous chemical spills within the Cayucos watershed.

4.4 2005 Cayucos Watershed Sanitary Survey Update

4.4.1 Summary and Conclusion of 2005 Cayucos Watershed Sanitary Survey Update

The update to the 2005 watershed sanitary survey was prepared by staff from the San Luis Obispo County Public Works Department. Except for the abandonment of the CSA10 Wells 02 and 03 in March, 2005, there were no significant changes in the Cayucos Wells Watershed since the initial report. None of the standby wells were utilized as a source of drinking water. If they had been utilized, PRBWC Well 01 and MRMWC Wells 01 and 03 would have received full treatment at the Cayucos Water Treatment Plant. The plant is able to provide effective “surface water treatment” as well as iron and manganese removal. No appreciable changes were noted in the water quality of the standby wells.

4.4.2 2005 Survey Recommendations and Current Status

Recommendation 1

The standby wells should continue to remain isolated from the water treatment plant entry point by use of the “pulled spool”.

Status: The main standby wells for CSA10, Wells 02 and 03 were abandoned in March, 2005. The other three standby wells (PRBWC Well 01 and MRMWC Wells 01 and 03) have never been utilized for emergency purposes and continue to remain isolated from the water treatment plant by a pulled spool.

Recommendation 2

The County should work with landowners in the watershed, providing them with information on potential contamination activities and the steps they can take to reduce the risk from these activities.

Status: The County’s Planning Department has set up a website with information on Land Use, Long Range Planning, and Environmental Impacts within the County. The website can be found at www.slocounty.ca.gov/planning. In addition, Section “22.10.180 – *Water Quality*” of the “*San Luis Obispo County Code – Title 22, Land Use Ordinance*” establishes a procedure for the notification to the California Central Coast Regional Water Quality Control Board of potential contaminating activities. Such activities include, when a new land use or modification to an existing use may affect groundwater quality because of proposed methods of disposal, or large volumes of wastewater, or because of the disturbance of natural soil contours.

Recommendation 3

The Public Works Department should continue working with the Planning Department in order to identify potential contamination activities in the area and assess the impact of these activities on the water quality. Both departments should work together in evaluating proposed developments or zoning changes that could impact water quality.

Status: The Public Works Department and Planning Department continue to work together to protect the County’s watersheds.

5.0 Whale Rock Reservoir Watershed Sanitary Survey – 2010 Update

The remainder of this report presents the findings of the Second Update to the San Luis Obispo CSA10 – Cayucos Watershed Sanitary Survey for the Whale Rock Reservoir. This survey update covers the period January, 2005 through June, 2011. **There have been no significant changes to the watershed since the 2005 Sanitary Survey Update.**

5.1 Watershed Land Use

The San Luis Obispo County Department of Planning and Building has designated several land uses within the watershed. These include agriculture, grazing, multi-use public land, and large lot rural residential. Approximately 85% of the land in the watershed is privately owned while the remaining 15% is publicly owned. Approximately 65% of the watershed has been designated “Agriculture” (predominantly grazing), 25% as “Rural Lands”, and the remaining 10% as “Open Space” or “Recreational”. Field observations of the watershed confirmed that the majority of the watershed is agricultural land.

5.2 Potential Contaminant Sources

There were no significant changes to the General Conditions Check List Form (located at the front of this report). The following items are present in the watershed but are not considered to be an extreme significant threat:

5.2.1 Wastewater - Residential Septic Systems

Approximately 30 residential septic systems are located within the watershed. Impacts from these septic systems are expected to be minor. There are no commercial or industrial septic systems within the Whale Rock watershed.

5.2.2 Agricultural Crop Land Use

Crops in the watershed include avocado and orange groves, wine grapes, beans, barley, peas, peppers, alfalfa, and summer squash as well as forage hay, pastureland, and rangeland. Pesticides and herbicides are used in the agricultural areas.

5.2.3 Pesticide/Herbicide Use

The County Agricultural Commission has identified the pesticide/herbicide usage in the watershed area. A summary of the chemical name, amount applied, acres treated, and the crop being treated can be found in Appendix B-1.

5.2.4 Grazing Animals

Cattle grazing can be seen throughout the watershed. Direct access to the watershed is prevented by fencing which is placed at least 250 feet from the reservoir’s shore. The majority of the land is further separated from the reservoir by public and private roads. Cattle grazing can be a major contributor to coliform levels in a reservoir. While certain times of the year high amounts of total coliforms have been seen in the reservoir, *E. coli* (an indicator for fecal contamination which could include *Cryptosporidium* and *Giardia*), has been extremely low (maximum 5 MPN/100mL, average 0.53 MPN/100mL). See Appendix B-2 for complete coliform data.



Figure 2 - Cattle grazing can be seen throughout the watershed.

5.2.5 Wild Animal Population

Wildlife in the area consists of deer, muskrat, coyote, resident and migratory birds, and various small animals. Wild boar, bear and bald eagles have also been sighted.

5.2.6 Inactive Mines

Inactive mines identified in the 1993 Regional Water Quality Control Board report “Surface Water Degradation by Inactive Metal Mines in Northwest San Luis Obispo County” include Maninni Nickel Property (nickel), Middlemast Ranch Deposit (chromium), Prodigal Son (copper), Zerfing Ranch Deposit (chromium) and Prospect Mine (commodity unknown). None of the mines were identified as potential polluters.

5.2.7 Reservoir Non-body Contact

Reservoir non-body contact activities consist of limited shoreline fishing. Fishing access is available along approximately 5000 feet of the southeast shoreline adjacent to Old Creek Road. Portable chemical toilets are located along the public trails in the accessible fishing area. No boating or other water activities are permitted at the reservoir.

5.2.8 Watershed Activities

Fishing and picnicking are limited to a designated area on the southeast shoreline. No other public recreational activities are conducted since the majority of the watershed is privately owned.

5.2.9 Transportation Corridors

Transportation corridors in the Whale Rock watershed consist of several improved and unimproved County roads. The major roads include Old Creek Road, Santa Rita Road, and Cottontail Creek Road. During extreme precipitation events, severe erosion can occur in portions of these roads. These roads are not considered to be primary routes for carrying hazardous materials. There are no railroad lines present within the watershed.



Figure 3 - Landslide along road



Figure 4 - Deterioration of road

5.2.10 Landslides

There is the potential for landslides and debris flows in the watershed. The potential is greatest in areas where the surface slopes exceed 25% or where geologic conditions such as locally sheared or weathered rocks, excessively steep slopes, or interbeds of clay, shale, or mudstone exist.

5.2.11 Earthquakes

According to the United States Geological Survey, the watershed region is crossed by many active and potentially active earthquake faults from the San Andreas Rift Zone on the east to the Hosgri and Santa Lucia Banks faults to the west. Active faults to the vicinity are capable of causing severe ground motion within the watershed. Potential impacts to the watershed include damage to the water supply system and contribution to increased turbidity and suspended solids to the reservoir.

5.2.12 Floods

Flood hazards exist for Old Creek and Cottontail Creek as well as their tributaries following significant precipitation events. The flood plains occur in steep hilly areas where the stream beds narrow and in flat portions of the watershed where the stream beds widen. Potential impacts of flooding include increased turbidity, suspended solids, chemical contamination, and interruption of raw water delivery. Failure of the Whale Rock Reservoir Dam could flood the CSA10 Water Treatment Plant, impacting its ability to produce potable water from its primary and secondary sources. Given the water treatment plant's proximity to the ocean, a severe tsunami could also impact the plant.

5.2.13 Fires

The California Department of Forestry has designated the foothill and flatland areas as "high" hazard areas and the mountainous areas as "very high" hazard areas.

5.3 System Compliance with New and Future Regulations

The Cayucos Water Treatment Plant is required to comply with the Long Term 2 Enhanced Surface Treatment Rule and the Stage 1 and Stage 2 Disinfection Byproduct Rules.

5.3.1 Long Term 2 Enhanced Surface Water Treatment Rule

In order to comply with the Long Term 2 Enhanced Surface Treatment Rule (LT2ESWTR), *E. coli* data of was submitted to the CDPH in June 2008. The data included weekly samples collected between June 5, 2007, and June 3, 2008. All the samples had been collected before treatment and were representative of the source water from Whale Rock Reservoir. *E. coli* was monitored using Standard Methods 9223 B, Colilert MPN. There were 53 samples collected during this evaluation. The highest *E. coli* value found was 5 MPN/100mL with an average value of 0.62 MPN/100mL. This average puts the Cayucos Water Treatment Plant in the "Bin 1" classification. Systems classified "Bin 1" are not required to provide additional treatment for log-inactivation. See Appendix 5.2 for LT2ESWTR *E. coli* data.

A second round of LT2ESWTR required *E. coli* monitoring is scheduled for 2017, nine years after the initial sampling. Whale Rock Reservoir total coliforms and *E. coli* have been monitored since the plant was put on-line in 1996. Based on that data, and assuming no significant changes occur in the watershed, the Cayucos WTP should continue to meet the requirements for 3-log *Giardia* removal/inactivation and 4-log virus removal/inactivation.

5.3.2 Stage 1 and Stage 2 Disinfectant/Disinfection Byproduct Rules

In order to ensure compliance with the Stage 1 Disinfectant/Disinfection Byproduct Rule (D/DBPR), the San Luis Obispo County Service Area No. 10 – Cayucos WTP added two 10,000 pound granular activated carbon (GAC) filters to its treatment process. The GAC filters provide TOC reduction and taste and odor control. The GAC filters were placed into service in June 2006. The Cayucos WTP has been collecting quarterly total trihalomethanes (TTHM) and haloacetic acids-5 (HAA5) samples from the Cemetery Road sample site. The sample site is located on the pipeline which provides CSA10 WTP treated water to the San Luis Obispo County Service Area No. 10A – Cayucos Distribution System and represents the maximum residence time in the Cayucos WTP’s pipeline. A graph of TOC reduction can be found in Appendix B-3.



Figure 5 - Granular activated carbon filters

Stage 1 D/DBPR monitoring is also performed in the San Luis Obispo County Service Area No. 10A – Cayucos Distribution System. The system is required to collect one distribution system sample per quarter, taken at a point reflecting the maximum residence time in the distribution system. After the addition of GAC filters to the WTP process, the monitoring and analysis

results for total TTHM and HAA5 have shown continuous compliance with the Stage 1 D/DBPR requirements.

The Stage 2 D/DBPR required an Initial Distribution System Evaluation (IDSE) to characterize DBP levels throughout the distribution system and identify locations for future compliance monitoring. Compliance with the Stage 2 DBPR is based on TTHM and HAA5 locational running annual averages (LRAA) calculated at each monitoring site. Standard Monitoring Plans for CSA10 and CSA10A were submitted to the California Department of Public Health in March 2008. Both systems were placed in “Schedule 4” for the IDSE requirements. Four quarters of samples were collected and analyzed. The running annual average maximum contaminant levels (MCL) are 80 ug/L for TTHM and 60 ug/L for HAA5. All samples met the MCL requirements. Quarterly monitoring is required and will continue. Complete data for TTHM and HAA5 can be found in Appendix B-4 and B-5. DBP trends are shown in the following graphs.

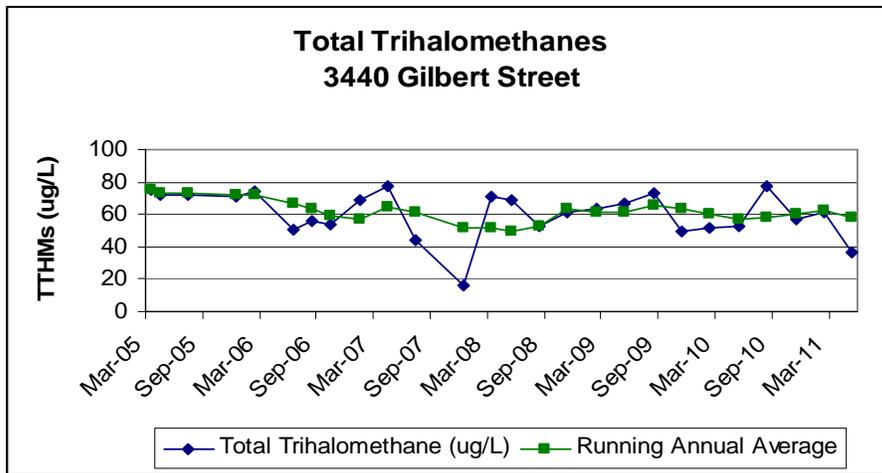


Figure 6 - Total trihalomethanes at 3440 Gilbert Street

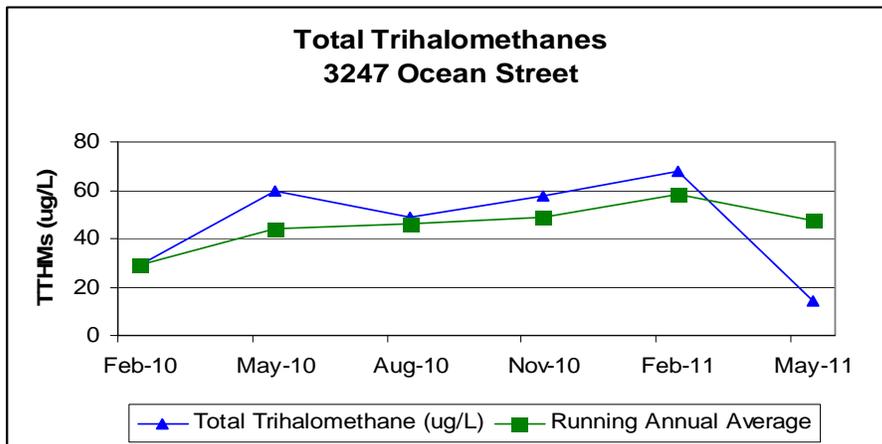


Figure 7 - Total trihalomethanes at 3247 Ocean Street

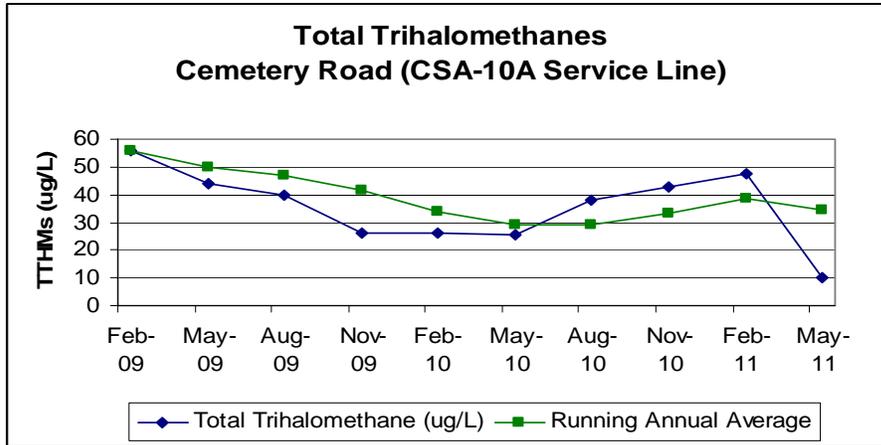


Figure 8 - Total trihalomethanes at Cemetery Road (CSA10A service line)

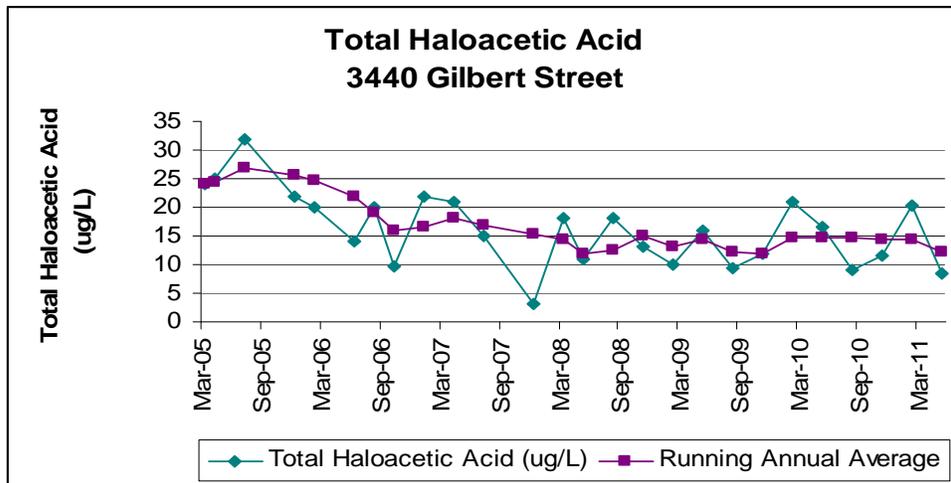


Figure 9 - Total haloacetic acids at 3440 Gilbert Street

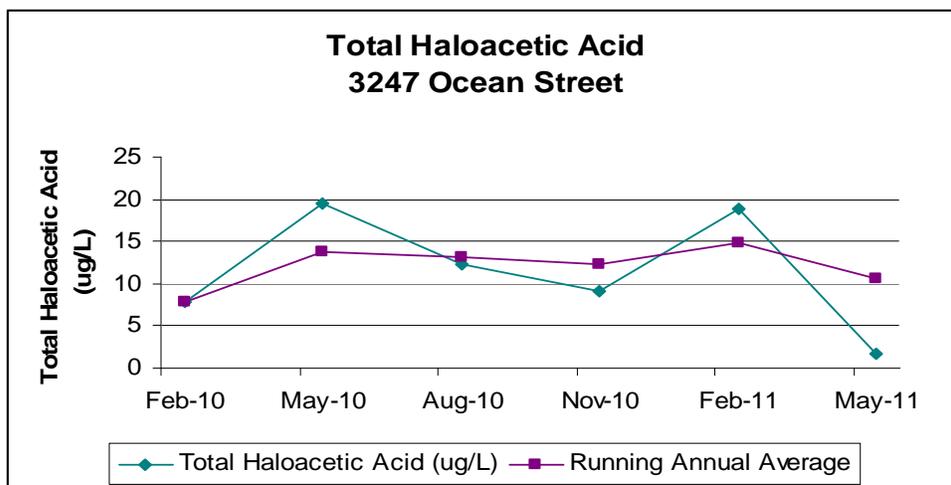


Figure 10 - Total haloacetic acids at 3247 Ocean Street

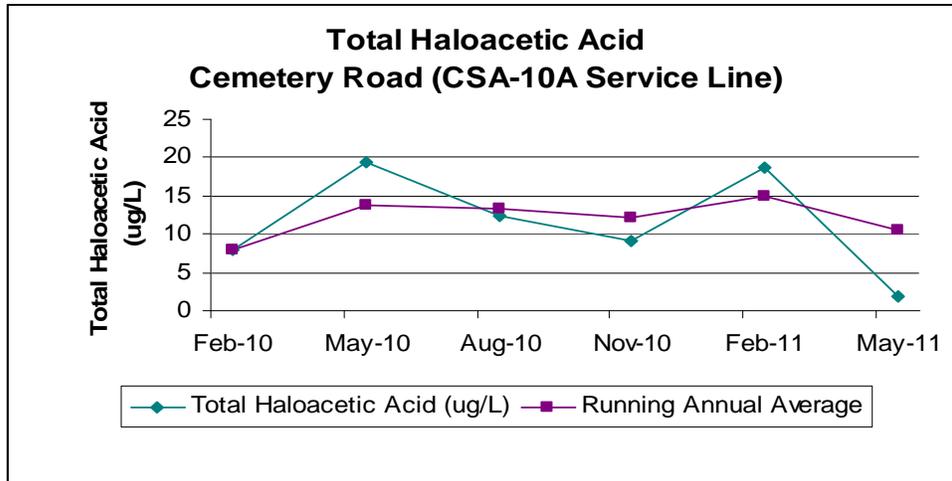


Figure 11 - Total haloacetic acids at Cemetery Road (CSA10A service line)

5.4 Arsenic Rule

The EPA set the new arsenic standard for drinking water at 10 ppb to protect consumers against the effects of long-term, chronic exposure to arsenic in drinking water. EPA is using its discretionary authority under the 1996 Amendments to the Safe Drinking Water Act to set the standard at a level that "maximizes health risk reduction benefits at a cost that is justified by the benefits."

In addition, the California Department of Public Health mandates that required language be used in a system's annual Consumer Confidence Report if arsenic levels are found to be greater than 5 ppb and up to 10 ppb. The CSA10 and CSA10A water systems have fully complied with the Arsenic Rule. Arsenic levels in both the raw and treated waters from the Cayucos Water Treatment Plant are well below the MCL.

Table 2 – Arsenic Data

Collected Date	Whale Rock Reservoir Raw	Cayucos Water Treatment Plant Treated Water
5/10/2006	1.6	1.6
5/15/2007	2.0	<2
5/6/2008	3.0	2.0
5/5/2009	2.1	2.2
5/4/2010	1.4	1.8
5/3/2011	1.7	1.7

Arsenic Treated Water Maximum Contaminant Level = 10 ug/L

6.0 Watershed Data Evaluation

6.1 Water Quality – Limnology

Limnology is the study of the chemical, physical, atmospheric, and biological conditions in freshwater. The County of San Luis Obispo routinely monitors Whale Rock reservoir and uses the limnological data to assess seasonal variability in water quality, determine the cause of objectionable odors or particulate matter, and evaluate the need (and recommended dosage) for algaecide treatment. The data is also used to select the Whale Rock Reservoir intake with the best quality water for delivery to the water treatment plants.

Desirable water quality is typified by adequate dissolved oxygen, pH in the range of 6.5 to 8.5, low algae, low odor and turbidity, low bacteria, low iron and manganese, and is free of contamination. Twice per month, samples are collected at each of the intake elevations. The samples are analyzed for algae (blue-green algae, diatoms, flagellates, and green algae), dissolved oxygen, pH, temperature, odor, turbidity, iron, and manganese. A summary of results can be found in Appendix C.

Profile data shows water temperature during the cooler months (December through April) is relatively uniform throughout the reservoir intake depths. Thermal stratification develops in the reservoir when the surface water begins to warm and decrease in density during the spring and summer months. During the summer months, a warmer, oxygen-rich layer (epilimnion) develops at the top of the reservoir. A colder, oxygen-deficient layer (hypolimnion) can be found at the lower depths of the reservoir. The layer of water that separates these two zones is the thermocline. Water from the epilimnion is generally preferred for delivery to the water treatment plants. During the 5 years covered by this survey, the thermocline developed at or below Intake #2, leaving Intake #1 (the highest intake) as the preferred intake for raw water delivery. From late November 2008 through March 2011, the reservoir surface water level dropped below Intake #1. Intakes #2 or #3 were then used. See Appendix C-1 for temperature and dissolved oxygen data.

6.2 Water Quality – Bacteriology

Raw and treated water bacteriological data is tabulated in Appendix C-2. A summary of the data is displayed below. Treated water data has been included to demonstrate the water treatment plant's ability to adequately disinfect the raw water. There were 287 bacteriological samples collected from each of the raw and treated waters between January, 2005 and June, 2011. The average total coliform MPN/100mL from the raw water was 970. Total coliform MPNs ranged from <1 to 25000. The average *E. coli* MPN/100mL was 2 and ranged from <1 to 98. The higher total coliform MPNs occur mostly in the warmer summer months. Other events of high total coliforms occur after large rain storms or unseasonably warm weather.

There was no total coliform or *E. coli* detected in the treated water during this 5-year survey. Heterotrophic Plate Counts ranged from <1 to 32 CFU/ml with an average of 2 CFU/ml. Chlorine residuals were recorded at the time the delivered water was collected for bacteriological analyses. During the period of this survey update, the average chlorine residual was 1.44 mg/L with a range of 0.76 to 2.50 mg/L. This data demonstrates that the treatment plant adequately

filters and disinfects the raw water, even during periods when the raw water is experiencing high coliform levels.

Table 3 - Summary of Bacteriology Data

For Period January 2006 to June 2011	RAW WATER DATA			DELIVERED WATER DATA			
	Total coliform MPN/100mL	E. coli MPN/100mL	Heterotrophic Plate Count CFU/mL	Total coliform	E. coli	Heterotrophic Plate Count CFU/mL	Chlorine Residual, mg/L
Average	970	2	346	Absent	Absent	3	1.44
Minimum	<1	<1	9	Absent	Absent	<1	0.76
Maximum	25000	98	2900	Absent	Absent	410	2.50
# of Samples	287	287	287	287	287	287	287
	RAW WATER DATA			DELIVERED WATER DATA			
Year	Total coliform MPN/100mL	E. coli MPN/100mL	Heterotrophic Plate Count CFU/mL	Total coliform	E. coli	Heterotrophic Plate Count CFU/mL	Chlorine Residual, mg/L
2006 - Average	1644	2	380	Absent	Absent	1	1.31
Minimum	5	<1	17	Absent	Absent	<1	0.84
Maximum	25000	29	1400	Absent	Absent	33	1.68
# of Samples	52	52	52	52	52	52	52
2007 - Average	298	<1	145	Absent	Absent	1	1.45
Minimum	1	<1	20	Absent	Absent	<1	0.76
Maximum	3700	3	1000	Absent	Absent	20	1.86
# of Samples	52	52	52	52	52	52	52
2008 - Average	1531	<1	293	Absent	Absent	2	1.45
Minimum	<1	<1	26	Absent	Absent	<1	1.13
Maximum	20000	7	2300	Absent	Absent	32	2.02
# of Samples	53	53	53	53	53	53	53
2009 - Average	1554	<1	636	Absent	Absent	1	1.46
Minimum	2	<1	72	Absent	Absent	<1	1.13
Maximum	12000	3	2900	Absent	Absent	10	2.03
# of Samples	52	52	52	52	52	52	52
2010 - Average	251	3	265	Absent	Absent	3	1.44
Minimum	1	<1	9	Absent	Absent	<1	1.11
Maximum	2500	59	1100	Absent	Absent	20	1.69
# of Samples	52	52	52	52	52	52	52
2011 - Average	146	8	373	Absent	Absent	2	1.62
Minimum	3	<1	54	Absent	Absent	<1	1.23
Maximum	1600	98	1200	Absent	Absent	32	2.50
# of Samples	26	26	26	26	26	26	26

6.3 Water Quality - Iron and Manganese

Iron and manganese are monitored weekly from the raw and delivered waters. At certain times during the year, both iron and/or manganese levels exceed drinking water secondary maximum contaminant levels in the raw water. Levels above the MCL can cause staining of fixtures and clothing and are aesthetically unacceptable to consumers. Cayucos WTP has been successful in the past in treating the delivered waters to acceptable levels. It is expected that the plant will continue to adequately treat in future events.

Intake valves at the Whale Rock Reservoir are routinely exercised for maintenance purposes by the City of San Luis Obispo. On several occasions during this 5-year survey update, some of the

valves were not completely closed after this operation. This resulted in delivery of water with high iron and/or manganese entering the raw water delivery line. This was most noticeable during months when a thermocline was present in the reservoir. Data collected from the raw water had higher values than the data collected from the “intake in use”. Although, this caused an increase in chlorine demand the Cayucos WTP was able to treat the water to acceptable levels.

Complete iron and manganese data can be found in Appendix C-3.

Table 4 - Summary of Iron and Manganese Data

2006-2011	Raw Water Data		Delivered Water Data	
	Iron (ug/L)	Manganese (ug/L)	Iron (ug/L)	Manganese (ug/L)
Average	160	55	6	<5
Minimum Value	19	<5	<5	<5
Maximum Value	1700	440	30	20
Number of Samples	286	286	286	286
Drinking Water Secondary Maximum Contaminant Level is 300 ug/L for Iron, 50 ug/L for Manganese				

6.4 Water Quality – General Physical

Physical samples are collected weekly from both the raw and delivered water. When the Cayucos WTP was initially placed into service, the raw water contained detectable amounts of 2-methylisoborneol (MIB) causing a few taste and odor complaints. Certain times of year, hydrogen sulfide odors could be detected as well. The two granular activated carbon (GAC) filters installed in June, 2006 greatly improved the taste and odor issues the plant was experiencing. In addition, the “musty” odor associated with MIB, has rarely been detected in the raw water in more recent years. General physical data can be found in Appendix C-4.

6.5 Water Quality - General Mineral

General mineral chemicals are general water quality indicators. If there is a change in these indicators this may indicate industrial, agricultural, or grazing runoff issues in the watershed. General mineral data is collected once per year from the Whale Rock Reservoir and the Water Treatment Plant Treated Water. The constituents in the raw and treated waters meet all the applicable treated water MCLs. General mineral data can be found in Appendix C-5.

6.6 Water Quality – Title 22 Metals

The County conducts analyses for Title 22 metals at the Whale Rock Reservoir raw and Cayucos Water Treatment Plant treated waters once per year. **All Title 22 metals monitored in the raw and treated waters met the applicable treated water MCLs.**

In past surveys, aluminum was a concern due to the use of aluminum sulfate (alum) in the treatment process. In 2006, the Cayucos Water Treatment Plant changed their coagulation/flocculation treatment from alum to an aluminum polymer blend. This change in chemicals reduced the amount of aluminum being added to the treated water. Aluminum in finished drinking water has a California primary MCL of 1000 ug/L and a secondary MCL of 200 ug/L. The **raw water** exceeded the aluminum secondary MCL for drinking water in 2010

(240 ug/L). The treated water however, complied with the MCL with a value of 86 ug/L. The results for metals can be found in Appendix C-6.

A new Arsenic Rule lowering the MCL from 50 ppb to 10 ppb took effect January 2006. Additional reporting requirements when a system exceeds 5 ppb of arsenic have been in effect for some time. The district has fully complied with the Arsenic Rule since implementation.

6.7 Water Quality – Additional Analyses

Results for additional analyses required during the time period of 2005 to 2010 are listed in Appendix C-7.

2-Methylisoborneal (MIB): Issues that the plant experienced with taste and odor complaints and the installation of GAC filters, prompted analysis for MIB. The “musty” odor associated with MIB has not been a challenge during this 2010 watershed survey.

Asbestos: Asbestos is required every nine years on surface waters. Asbestos was not detected in the sample collected in 2007.

Cyanide: Cyanide is analyzed yearly from the Whale Rock Reservoir. No cyanide was detected during the 2005-2010 sanitary survey update.

Radioactivity Monitoring for Gross Alpha and Radium 228: In order to comply with the CDPH radioactivity monitoring requirements, four quarters of gross alpha and radium 228 were to be collected. Since the first two sets of samples were less than 3 pCi/L for gross alpha and less than 1 pCi/L for radium 228, the remaining two quarters were not required to be collected. One sample will need to be collected for gross alpha in 2016. Radium 228 was a one time sampling event and no additional monitoring is required.

Volatile Organic Chemicals (VOC) and MTBE: Samples for VOC and MTBE (Methyl Tertiary Butyl Ether) are required to be collected every three years from the Whale Rock Reservoir. Samples were collected in 2007 and 2010. No VOC or MTBE were detected in either sample. For the complete VOC reports see Appendix C-8.

Synthetic Organic Chemicals (SOC): SOC analysis has been waived for the Whale Rock Reservoir.

Perchlorate: Five samples were collected from the Whale Rock Reservoir raw water for perchlorate during this 5-year watershed update. Perchlorate was not detected.

Total Organic Chemicals (TOC): TOCs were collected frequently from the GAC filters’ raw and effluent waters. TOC was monitored to assess THM formation potential and the ability of the GAC filters to remove the THM precursors. A graph showing TOC removal in the water treatment plant can be seen in Appendix C-9.

7.0 Reservoir Inspections

7.1 Inspection of Domestic Water Reservoir Facilities

Staff from the City of San Luis Obispo frequently inspect the areas surrounding the reservoir that are accessible to the public. The inspections include observations of the toilet/restroom facilities, picnic areas, shoreline fishing areas, refuse storage and collection, the number of patrol personnel and patrol boats on duty, and an inspection of the reservoir in the area. See Appendix E-1 for a sample inspection sheet.

7.2 Reservoir Inspections

County staff collect samples from the reservoir, by boat, twice per month. During these sampling events, the reservoir dam and intake location are inspected. Any unusual activity or events are documented and brought to the attention of City staff.

7.3 Watershed Inspections

Complete inspections of the upper watershed area are done less frequently. Since there is relatively little activity in the upper watershed and permits are required for any building or change to the environment, inspections have been conducted on a 5-year frequency. If a significant change were to occur in the water quality, inspections would be increased in to better detect the source of the contaminant or assess the impact from the change in water quality.

7.4 Quagga and Zebra Mussel Monitoring

The discovery of freshwater quagga mussels (*Dreissena bugensis*) and zebra mussels (*Dreissena polymorpha*) in California waterways has prompted the San Luis Obispo County to establish a monitoring and prevention program for freshwater mussels. The presence of these mussels would present an economic and water quality threat to the beneficial uses established for the Whale Rock Reservoir. San Luis Obispo County Public Works and the City of San Luis Obispo have implemented an invasive mussel monitoring program at Whale Rock Reservoir.

Since all boats (except County and City boats) are prohibited on the Whale Rock Reservoir, there is less of a chance for a mussel infestation at this reservoir. The boat(s) used for patrol/water collection are dedicated to the Whale Rock Reservoir and are not used in other waterways. All sample equipment entering the reservoir is dedicated to the Whale Rock Reservoir as well.

Despite the low risk of infestation, a lake monitoring site was established at the boat dock near the Whale Rock dam. An artificial substrate for the mussels attachment and growth was deployed at the monitoring location. The substrate and other infrastructure are inspected once per month for mussel growth. If mussel growth is suspected, a sample will be collected for examination at the San Luis Obispo County Water Quality Lab. If the presence of mussels is tentatively confirmed, the California Department of Fish and Game will be contacted for further investigation. Mussels have not been detected in the Whale Rock Reservoir. An Infestation Response Plan has been reviewed and finalized. The plan is available for City and County staff use as needed. A copy of the Whale Rock Reservoir Invasive Mussel Inspection form being used by County staff can be found in Appendix E-2.

INSPECTION
 **FOR** 
PROTECTION

SLOCountyWater.org  **DON'T MOVE A MUSSEL** 

CLEAN
 DRAIN
 DRY

Figure 12 - Mussel inspection notice

8.0 Standby Wells Watershed Sanitary Survey 2010 Update

In addition to the Whale Rock Reservoir, the Cayucos Water Treatment Plant (WTP) has the option of utilizing four additional wells. The wells are located adjacent to Old Creek below the Whale Rock Reservoir. Only one of these wells, referred to as the “CAWO” well, is designated as “active”. The CAWO well is located within the watershed but is not under the influence of surface water. This well has limited production and the only treatment required is disinfection. The water produced by this well can be pumped directly to the Clearwater reservoir at the Cayucos WTP.

The three other wells that could be utilized by the WTP are designated “standby” wells. These wells are referred to as Morro Rock Mutual Water Company Wells 01 and 03 and Paso Robles Beach Water Authority Well 01. Due to the shallow construction of the wells, their close proximity to Old Creek, and their lack of adequate annular seals, the CDPH has determined that these wells are under the influence of surface water. Although these wells can be used as a water source, they must first receive full treatment through the Cayucos WTP. These wells have limited capacity and are dependent on water releases from the Whale Rock Reservoir.

Two additional standby wells located in this same well field (CSA10 - Cayucos Wells 02 and 03) were abandoned in March of 2005.

The standby wells have not been utilized for drinking water since the new water treatment plant was put on line in 1997. The wells are occasionally pumped for collection of CDPH required sampling. All standby well water is pumped to waste.

No changes have occurred in the well’s watershed since the 2005 Sanitary Survey Update. Analytical data for the three standby wells can be found in Appendix D.

9.0 Security of Watershed and Treatment Facilities

An Emergency Response Plan (ERP) was updated in June, 2010. Disasters/emergencies that are likely to occur in the water system's service area were addressed. These include: earthquake, major fire emergencies, water outages due to loss of power, localized flooding, water contamination, and acts of sabotage. The ERP consists of four major sections:

1. Designated Responsible Personnel: This is a list of designated responsible personnel, their identified responsibilities, and work/home/cell phone numbers. It also includes additional mutual assistance and emergency resources phone numbers (Fire Dept, Sheriff's Dept, SLO County Emergency Services, FBI Office, DHS District office, County Environmental Health, SLO City Utilities Dept, and the office for Morro Rock Mutual/Paso Robles Beach).
2. Inventory of Resources: This section includes an inventory list of system resources that are used for normal operations and available for emergencies; maps and schematic diagrams of the water system, lists of emergency equipment, equipment suppliers, and emergency contract agreements that are kept at the water system office.
3. Action Plan: This section goes over specific possible or actual emergencies and how personnel should respond. These include:
 - contamination to water
 - structural damage from an explosive device
 - winter storm/flood
 - earthquake
 - wild land fire
 - employee assaulted by armed intruder
4. Maintaining Crime Scene Integrity: This section supplies personnel with instructions on how to maintain a crime scene. It also contains a "Suspect Description Form" for accurately documenting any observed suspects.

9.1 Emergency Operations Center

The San Luis Obispo County Operations Center, located on Kansas Avenue just north of San Luis Obispo city, has been designated as the communication network emergency operations center. The telephone and FAX will be the primary mode of communication in an emergency. In addition, San Luis Obispo County has a radio system that will be used to contact police, fire and other emergency response personnel should telephone communication be lost.

9.2 Watershed Security

The Whale Rock Reservoir itself, has restricted access on the south shore for hiking and fishing from the shore only. No public boats are allowed on the reservoir and no body contact is allowed. Signs are posted at the entrance and along the shoreline informing visitors of the reservoir's access limits. The majority of the land within the defined watershed is privately owned and is utilized for large lot residential homes and small agriculture. Due to the remoteness of the reservoir and its inaccessibility, threats to the reservoir are not likely.

Security at the water treatment plant is maintained by a SCADA (supervisory control and data acquisition) system. The system manages infrastructure processes within the water treatment plant. Overall the security at both the Whale Rock Reservoir and the Cayucos Water Treatment Plant are satisfactory.

10.0 2010 Watershed Sanitary Survey Update Recommendations

10.1 Monitoring

Maintain the current monitoring schedule. Current monitoring provides adequate data to assess the water quality of the Whale Rock Reservoir.

10.2 Watershed Inspections

The routine inspection of Whale Rock Reservoir by City of San Luis Obispo staff should continue. Inspections of the full watershed should be done on an annual basis. If a substantial change in potential contaminating activities is noted in any inspection, increased monitoring to assess the impact of the contaminating activity is recommended.



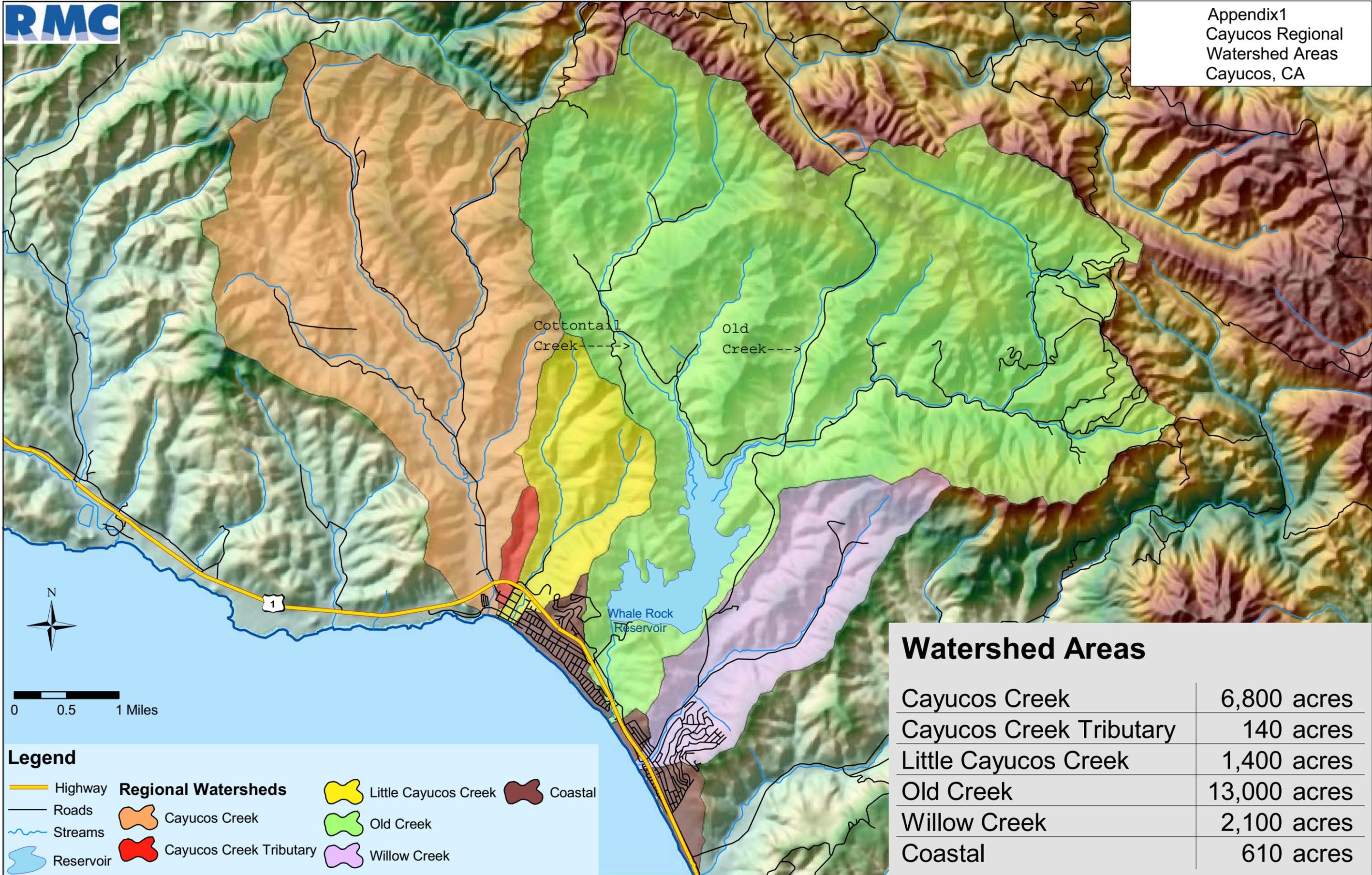
Figure 13 - Whale Rock Reservoir looking toward dam and Pacific Ocean

References

- Boyle Engineering, April 2001. Whale Rock Watershed Sanitary Survey Update
- Boyle Engineering, February, 2002. Technical Memorandum Cayucos Water Treatment Plant Review
- Boyle Engineering, July, 2002. Cayucos Wells Watershed Sanitary Survey
- California of Department Health website, <http://www.cdph.ca.gov>
- City of San Luis Obispo, November 2005. Whale Rock Reservoir Watershed Sanitary Survey Update
- County of San Luis Obispo, Revised January, 2003. Adelaida Planning Area
- County of San Luis Obispo, December, 2005. San Luis Obispo CSA10 – Cayucos Wells and Water Treatment Plant Watershed Sanitary Survey Update
- County of San Luis Obispo website, <http://www.slocounty.ca.gov>
- County of San Luis Obispo website, <http://www.slocountywater.org>
- Environmental Protection Agency website, <http://www.epa.gov/safewater>
- EPA, September 2006. Proposed Long Term 2 Enhanced Surface Water Treatment Rule fact sheet
- EPA, December 2005. Proposed Stage 2 Disinfectants and Disinfection Byproducts Rule fact sheet
- EPA, January 2001. Arsenic and Clarifications to Compliance and New Source Monitoring Rule: A Quick Reference Guide
- EPA, November 2202. Consumer Confidence Report Rule: A Quick Reference Guide
- Metcalf & Eddy, Inc., January, 1996. Whale Rock Watershed Sanitary Survey
- North Carolina State University (NCSU) Water Quality Group WATERSHEDSS website, <http://www.water.ncsu.edu/watershedss>
- Regional Water Quality Control Board, 1993. Surface Water Degradation by Inactive Metal Mines in Northwest San Luis Obispo County, California.
- U.S. Geological Survey, 1965. Cayucos and Morro Bay North Quadrangles
- U. S. Geological Survey, Ammended August, 1990. Cypress Mountain Quadrangles
- U.S. Geological Survey website, www.USGS.gov
- Whale Rock Operations Office, 1995. Fishing at Whale Rock pamphlet



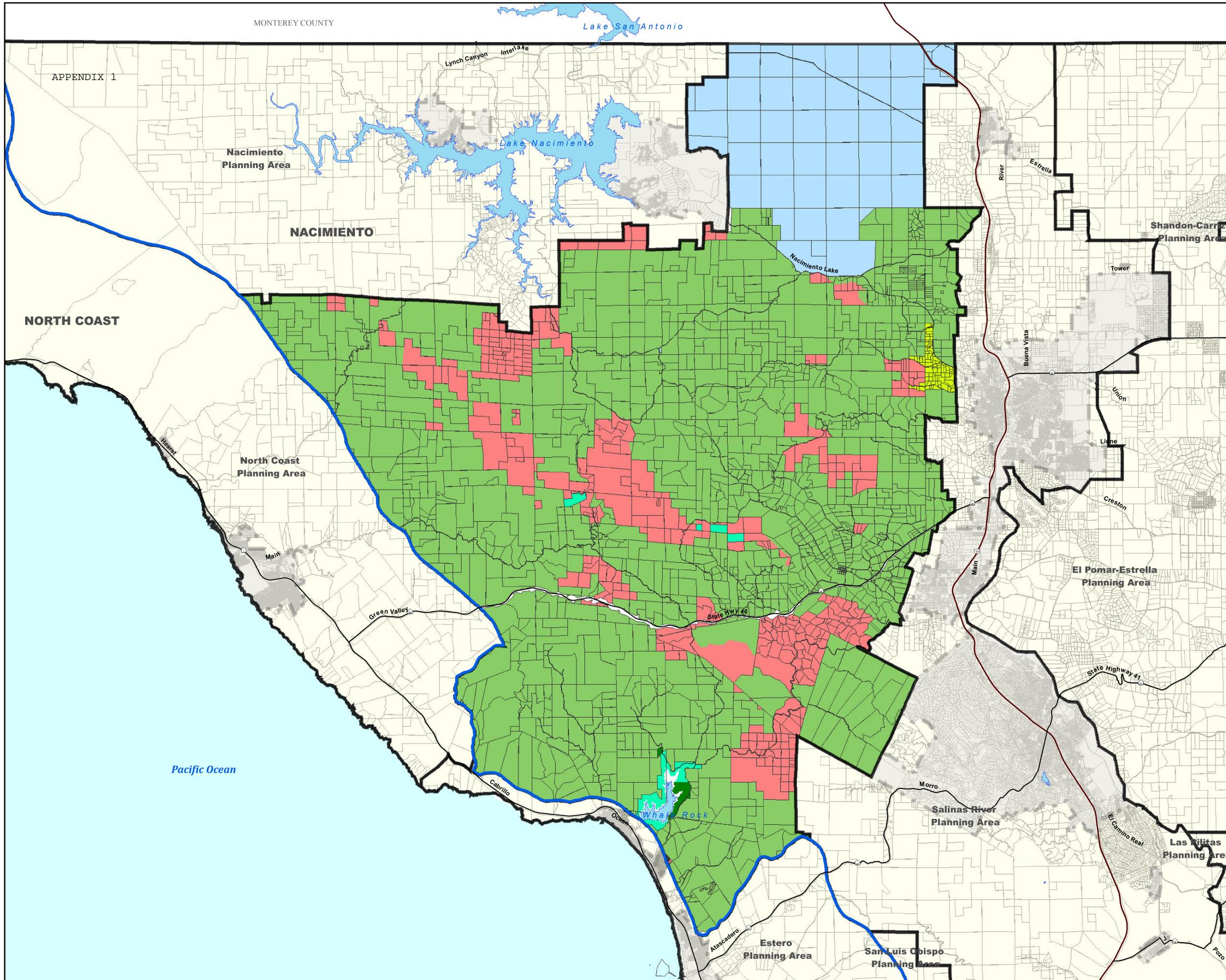
Appendix1
Cayucos Regional
Watershed Areas
Cayucos, CA



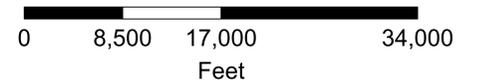
Watershed Areas	
Cayucos Creek	6,800 acres
Cayucos Creek Tributary	140 acres
Little Cayucos Creek	1,400 acres
Old Creek	13,000 acres
Willow Creek	2,100 acres
Coastal	610 acres

Legend

Highway	Regional Watersheds	Little Cayucos Creek	Coastal
Roads	Cayucos Creek	Old Creek	
Streams	Cayucos Creek Tributary	Willow Creek	
Reservoir			



DEPARTMENT OF PLANNING & BUILDING



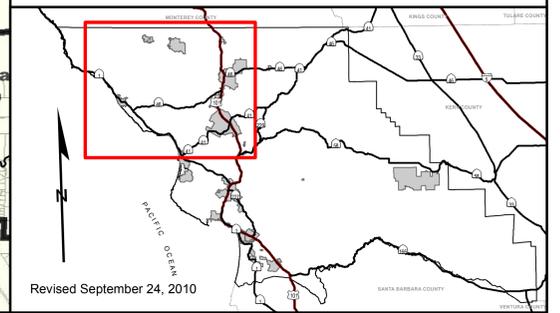
**ADELAIDA PLANNING AREA
RURAL LAND USE CATEGORY MAP**

LEGEND

- Lake or Pond
- Coastal Zone Boundary
- Planning Area Boundaries
- URL - VRL

Adelaida Planning Area

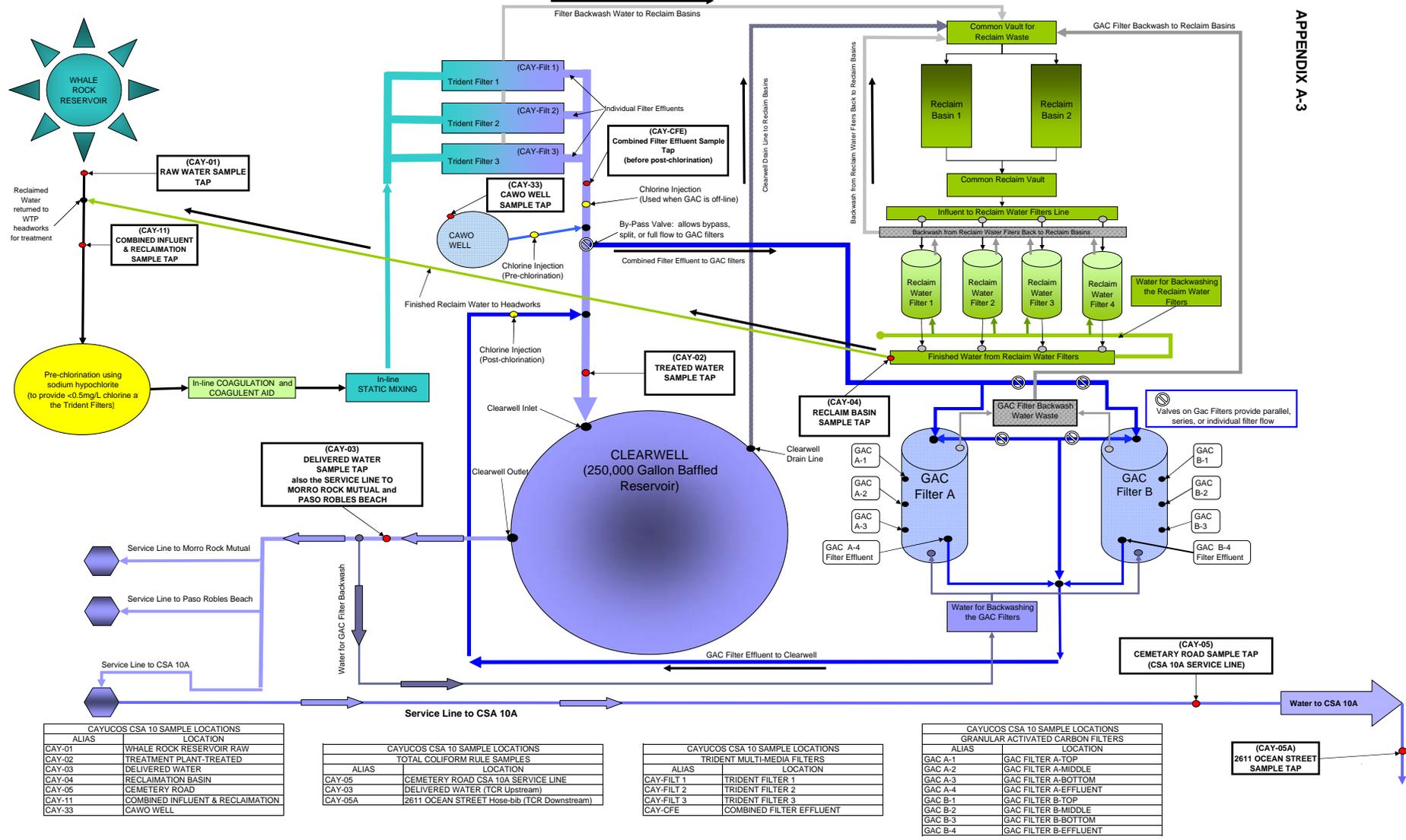
- Agriculture
- Commercial Retail
- Commercial Service
- City
- Industrial
- Multi-Land Use Category
- Office Professional
- Open Space
- Public Facility
- Recreation
- Rural Lands
- Residential Multi Family
- Residential Rural
- Residential Suburban
- Residential Single Family



Revised September 24, 2010

SAN LUIS OBISPO COUNTY SERVICE AREA NO. 10 - CAYUCOS WATER TREATMENT PLANT

APPENDIX A-3



CAYUCOS CSA 10 SAMPLE LOCATIONS	
ALIAS	LOCATION
CAY-01	WHALE ROCK RESERVOIR RAW
CAY-02	TREATMENT PLANT-TREATED
CAY-03	DELIVERED WATER
CAY-04	RECLAMATION BASIN
CAY-05	CEMETERY ROAD
CAY-11	COMBINED INFLUENT & RECLAMATION
CAY-33	CAWO WELL

CAYUCOS CSA 10 SAMPLE LOCATIONS	
TOTAL COLIFORM RULE SAMPLES	
ALIAS	LOCATION
CAY-05	CEMETERY ROAD CSA 10A SERVICE LINE
CAY-03	DELIVERED WATER (TCR Upstream)
CAY-05A	2611 OCEAN STREET Hose-bib (TCR Downstream)

CAYUCOS CSA 10 SAMPLE LOCATIONS	
TRIDENT MULTI-MEDIA FILTERS	
ALIAS	LOCATION
CAY-FILT 1	TRIDENT FILTER 1
CAY-FILT 2	TRIDENT FILTER 2
CAY-FILT 3	TRIDENT FILTER 3
CAY-CFE	COMBINED FILTER EFFLUENT

CAYUCOS CSA 10 SAMPLE LOCATIONS	
GRANULAR ACTIVATED CARBON FILTERS	
ALIAS	LOCATION
GAC A-1	GAC FILTER A-TOP
GAC A-2	GAC FILTER A-MIDDLE
GAC A-3	GAC FILTER A-BOTTOM
GAC A-4	GAC FILTER A-EFFLUENT
GAC B-1	GAC FILTER B-TOP
GAC B-2	GAC FILTER B-MIDDLE
GAC B-3	GAC FILTER B-BOTTOM
GAC B-4	GAC FILTER B-EFFLUENT

(CAY-05A)
2611 OCEAN STREET
SAMPLE TAP

**APPENDIX B-1
WHALE ROCK RESERVOIR WATERSHED PESTICIDE and HERBICIDE USE (2006 - 2011)**

Pesticide/Herbicide Name	Total Amount Applied	Units	Acres Treated	Crop			
ABBA 0.15 EC	7.13	Gallons	76	AVOCADO			
AGRI-MEK 0.15 EC MITICIDE/INSECTICIDE	74.5	Gallons	650.5	AVOCADO			
BANVEL	175	Gallons	1047	FORAGE HAY	PASTURELAND		
BANVEL HERBICIDE	160	Gallons	414	FORAGE HAY			
BFR 440 SUPREME SPRAY OIL	1517	Gallons	505.7	AVOCADO			
BONIDE SULFUR PLANT FUNGICIDE	13.6	Gallons	52.5	GRAPE, WINE			
BROAD SPRED	23.8	Gallons	1042.1	AVOCADO			
BUCCANEER GLYPHOSATE HERBICIDE	4.1	Gallons	66	AVOCADO	ORANGE	PEAS	PEPPERS
CLEAN CROP DIMETHOATE 400	15.9	Gallons	183	BEAN UNSPECIFIED	PEAS		
DELEGATE WG	4.98	Gallons	58.5	AVOCADO			
DU PONT GLEAN FERTILIZER COMPATIBLE HERB	16.5	Ounces	100	BARLEY			
DU PONT TELAR DF HERBICIDE	17.8	Ounces	56	PASTURELAND			
EATON'S ALL-WEATHER BAIT BLOCKS RODENTIC	62.6	Gallons	3	ORANGE			
ENTRUST	15.7	Pounds	84.8	AVOCADO			
EPI-MEK 0.15 EC MITICIDE/INSECTICIDE	270	Gallons	1552	AVOCADO			
FIRST CHOICE BREAK-THRU	7.85	Gallons	289	AVOCADO			
FIRST CHOICE NARROW RANGE 415 SPRAY OIL	1258	Gallons	629	AVOCADO			
FIRST CHOICE SPREADER STICKER	3.2	Gallons	100	BARLEY	PASTURELAND		
FREEWAY	26	Gallons	416	AVOCADO			
GALIGAN 2E OXYFLUORFEN HERBICIDE	6.4	Gallons	72	AVOCADO			
GLY STAR ORIGINAL	2.25	Gallons	36	AVOCADO			
GLY-4 HERBICIDE	34.8	Gallons	358.4	AVOCADO			
GLYFOS HERBICIDE	20.8	Gallons	195	ORANGE			
GLYPHOGAN HERBICIDE	3.5	Gallons	66	ORANGE			
GOAL 2XL	29.6	Gallons	353	AVOCADO			
GOAL 2XL HERBICIDE	3.9	Gallons	168	AVOCADO			
GRAMOXONE INTEON	3.75	Gallons	20	ALFALFA			
HONCHO PLUS HERBICIDE	1.25	Gallons	150	PASTURELAND			
IN-PLACE	49.7	Gallons	480	RANGELAND			
JMS STYLET-OIL	1.7	Gallons	1.32	GRAPE, WINE			
K-90 KNAPP NONIONIC ADJUVANT-SPREADER-AC	13.9	Gallons	1740	RANGELAND			

**APPENDIX B-1
WHALE ROCK RESERVOIR WATERSHED PESTICIDE and HERBICIDE USE (2006 - 2011)**

Pesticide/Herbicide Name	Total Amount Applied	Units	Acres Treated	Crop		
KALIGREEN	7.5	Pounds	2.5	GRAPE, WINE		
MICROTHIOL DISPERSS	22.6	Gallons	23.82	GRAPE, WINE		
MILESTONE	66.4	Gallons	1740	RANGELAND		
NUFARM WEEDAR 64 BROADLEAF HERBICIDE	155	Gallons	1084	PASTURELAND		
OMNI OIL 6-E	5064	Gallons	1859.1	AVOCADO		
OMNI SUPREME SPRAY	169	Gallons	60.5	AVOCADO	ORANGE	
ORTHENE 97	14	Gallons	29	PEPPERS		
ORTHENE TURF, TREE & ORNAMENTAL SPRAY 97	6.0	Pounds	12	BEAN UNSPECIFIED	PEPPERS	
ORYZALIN 4 A.S.	30	Pounds	185	AVOCADO		
OXYSTAR 2E	16.3	Gallons	285	AVOCADO		
PASADA 1.6 F FLOWABLE INSECTICIDE	0.88	Gallons	14	AVOCADO		
PRINCEP CALIBER 90 HERBICIDE	342	Pounds	156	AVOCADO	ORANGE	
QUINTEC	3.9	Gallons	4.5	GRAPE, WINE		
RALLY 40W AGRICULTURAL FUNGICIDE IN WATER	0.31	Gallons	10	GRAPE, WINE		
REAPER 0.15 EC	42.5	Gallons	615	AVOCADO		
REDEEM R & P	75	Gallons	300	RANGELAND		
RED-TOP DUSTING SULFUR	2435	Pounds	71	BEAN UNSPECIFIED	PEAS	SUMMER SQUASH
RED-TOP MOR-ACT ADJUVANT	6	Gallons	10	ORANGE		
ROUNDUP ORIGINAL MAX HERBICIDE	47	Gallons	585	AVOCADO		
ROUNDUP POWERMAX HERBICIDE	137.5	Gallons	400	RANGELAND		
ROUNDUP WEATHERMAX HERBICIDE	120	Gallons	370	AVOCADO		
SILWET L-77	2.00	Ounces	147	AVOCADO		
SIM-TROL 90DF	396	Pounds	162	ORANGE		
SLITHER	0.30	Gallons	12.5	AVOCADO		
TEBUSTAR 45 WSP	40	Ounces	10	GRAPE, WINE		
WEEDAR 64 BROADLEAF HERBICIDE	56.25	Gallons	180	RANGELAND		

Data Obtained from the San Luis Obispo County Agricultural Commission

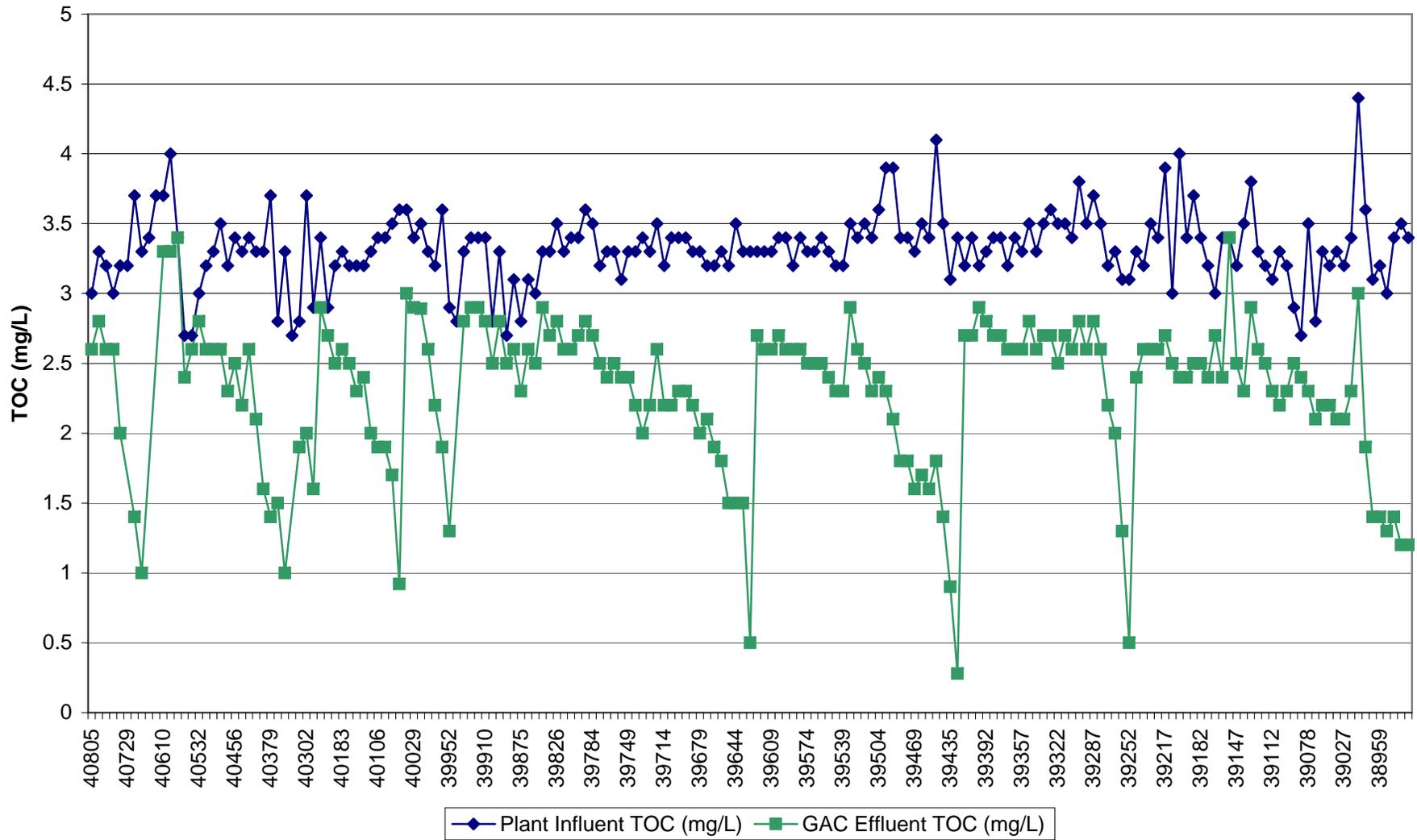
APPENDIX B-2
GRANDFATHERED E. coli DATA SUMMARY 6/05/2007 to 6/03/2008
LONG TERM 2 ENHANCED SURFACE WATER TREATMENT RULE
SAN LUIS OBISPO CSA NO. 10/10A - CAYUCOS
WHALE ROCK RESERVOIR RAW

Analysis Number

Analysis Number	Collected Date	Analysis ID	Result	Reporting Units	Method
20080603068	6/3/2008	<i>E. coli</i> MPN	<1	MPN/100 mL	SM 9223 B
20080527048	5/27/2008	<i>E. coli</i> MPN	<1	MPN/100 mL	SM 9223 B
20080520031	5/20/2008	<i>E. coli</i> MPN	<1	MPN/100 mL	SM 9223 B
20080513032	5/13/2008	<i>E. coli</i> MPN	<1	MPN/100 mL	SM 9223 B
20080506006	5/6/2008	<i>E. coli</i> MPN	<1	MPN/100 mL	SM 9223 B
20080429020	4/29/2008	<i>E. coli</i> MPN	<1	MPN/100 mL	SM 9223 B
20080422004	4/22/2008	<i>E. coli</i> MPN	<1	MPN/100 mL	SM 9223 B
20080415015	4/15/2008	<i>E. coli</i> MPN	<1	MPN/100 mL	SM 9223 B
20080408006	4/8/2008	<i>E. coli</i> MPN	<1	MPN/100 mL	SM 9223 B
20080401002	4/1/2008	<i>E. coli</i> MPN	<1	MPN/100 mL	SM 9223 B
20080325004	3/25/2008	<i>E. coli</i> MPN	<1	MPN/100 mL	SM 9223 B
20080318017	3/18/2008	<i>E. coli</i> MPN	<1	MPN/100 mL	SM 9223 B
20080311002	3/11/2008	<i>E. coli</i> MPN	1	MPN/100 mL	SM 9223 B
20080304008	3/4/2008	<i>E. coli</i> MPN	4	MPN/100 mL	SM 9223 B
20080226015	2/26/2008	<i>E. coli</i> MPN	<1	MPN/100 mL	SM 9223 B
20080219070	2/19/2008	<i>E. coli</i> MPN	<1	MPN/100 mL	SM 9223 B
20080213016	2/13/2008	<i>E. coli</i> MPN	<1	MPN/100 mL	SM 9223 B
20080205028	2/5/2008	<i>E. coli</i> MPN	7	MPN/100 mL	SM 9223 B
20080129019	1/29/2008	<i>E. coli</i> MPN	5	MPN/100 mL	SM 9223 B
20080122026	1/22/2008	<i>E. coli</i> MPN	< 1	MPN/100 mL	SM 9223 B
20080115020	1/15/2008	<i>E. coli</i> MPN	<1	MPN/100 mL	SM 9223 B
20080108026	1/8/2008	<i>E. coli</i> MPN	1	MPN/100 mL	SM 9223 B
20080102016	1/2/2008	<i>E. coli</i> MPN	1	MPN/100 mL	SM 9223 B
20071226045	12/26/2007	<i>E. coli</i> MPN	<1	MPN/100 mL	SM 9223 B
20071217045	12/17/2007	<i>E. coli</i> MPN	<1	MPN/100 mL	SM 9223 B
20071211036	12/11/2007	<i>E. coli</i> MPN	<1	MPN/100 mL	SM 9223 B
20071204016	12/4/2007	<i>E. coli</i> MPN	<1	MPN/100 mL	SM 9223 B
20071127010	11/27/2007	<i>E. coli</i> MPN	1	MPN/100 mL	SM 9223 B
20071119025	11/19/2007	<i>E. coli</i> MPN	<1	MPN/100 mL	SM 9223 B
20071113004	11/13/2007	<i>E. coli</i> MPN	1	MPN/100 mL	SM 9223 B
20071106060	11/6/2007	<i>E. coli</i> MPN	1	MPN/100 mL	SM 9223 B
20071030002	10/30/2007	<i>E. coli</i> MPN	<1	MPN/100 mL	SM 9223 B
20071023019	10/23/2007	<i>E. coli</i> MPN	1	MPN/100 mL	SM 9223 B
20071016003	10/16/2007	<i>E. coli</i> MPN	<1	MPN/100 mL	SM 9223 B
20071009040	10/9/2007	<i>E. coli</i> MPN	<1	MPN/100 mL	SM 9223 B
20071002034	10/2/2007	<i>E. coli</i> MPN	<1	MPN/100 mL	SM 9223 B
20070925004	9/25/2007	<i>E. coli</i> MPN	<1	MPN/100 mL	SM 9223 B
20070918015	9/18/2007	<i>E. coli</i> MPN	<1	MPN/100 mL	SM 9223 B
20070911014	9/11/2007	<i>E. coli</i> MPN	<1	MPN/100 mL	SM 9223 B
20070904020	9/4/2007	<i>E. coli</i> MPN	<1	MPN/100 mL	SM 9223 B
20070828007	8/28/2007	<i>E. coli</i> MPN	< 1	MPN/100 mL	SM 9223 B
20070821010	8/21/2007	<i>E. coli</i> MPN	<1	MPN/100 mL	SM 9223 B
20070814018	8/14/2007	<i>E. coli</i> MPN	<1	MPN/100 mL	SM 9223 B
20070807125	8/7/2007	<i>E. coli</i> MPN	<1	MPN/100 mL	SM 9223 B
20070731003	7/31/2007	<i>E. coli</i> MPN	1	MPN/100 mL	SM 9223 B
20070724026	7/24/2007	<i>E. coli</i> MPN	3	MPN/100 mL	SM 9223 B
20070717041	7/17/2007	<i>E. coli</i> MPN	2	MPN/100 mL	SM 9223 B
20070710001	7/10/2007	<i>E. coli</i> MPN	2	MPN/100 mL	SM 9223 B
20070703041	7/3/2007	<i>E. coli</i> MPN	1	MPN/100 mL	SM 9223 B
20070626018	6/26/2007	<i>E. coli</i> MPN	<1	MPN/100 mL	SM 9223 B
20070619036	6/19/2007	<i>E. coli</i> MPN	<1	MPN/100 mL	SM 9223 B
20070612005	6/12/2007	<i>E. coli</i> MPN	<1	MPN/100 mL	SM 9223 B
20070605020	6/5/2007	<i>E. coli</i> MPN	<1	MPN/100 mL	SM 9223 B

Total	53
Minimum	<1
Maximum	7
Average/Mean	<1

Appendix B-3 Cayucos WTP TOC Reduction



APPENDIX B-4
TRIHALOMETHANE DATA (January,2006 - June,2011)
WHALE ROCK RESERVOIR WATERSHED SANITARY SURVEY 2011
SAN LUIS OBISPO COUNTY SERVICE AREA 10 - CAYUCOS WATER TREATMENT DATA

	3440 Gilbert Street		3247 Ocean		Cemetery Road		Delivered Water	
	CSA-10A Distribution		CSA-10A Distribution		CSA-10A Service Line		Sevice Line to Morro Rock	
Date	Total Trihalomethane (ug/L)	Running Annual Average						
3/18/2005	75	75						
4/22/2005	72	74						
7/5/2005	72	73						
12/7/2005	71	73						
2/15/2006	74	72						
6/28/2006	51	67						
8/24/2006	56	63						
10/23/2006	54	59						
1/16/2007	69	58						
4/18/2007	77	64						
7/10/2007	44	61						
12/20/2007	16	52						
3/5/2008	71	52						
5/27/2008	69	50						
8/5/2008	53	52						
11/19/2008	61	64						
2/3/2009	63	62			56	56		
5/19/2009	67	61			44	50		
8/18/2009	73	66			40	47		
11/17/2009	49	63			26	42		
2/16/2010	52	60	29	29	26	34		
5/19/2010	52.4	57	59.5	44	25.5	29		
8/17/2010	77.5	58	48.8	46	38.0	29	31.8	32
11/16/2010	57.5	60	57.8	49	42.6	33	35.4	34
2/22/2011	60.8	62	67.8	58	47.4	38	38.8	35
5/24/2011	36.3	58	14.5	47	10.1	35	7.0	28

APPENDIX B-5
TOTAL HALOACETIC ACID DATA (January,2006 - June,2011)
WHALE ROCK RESERVOIR WATERSHED SANITARY SURVEY 2011
SAN LUIS OBISPO COUNTY SERVICE AREA 10 - CAYUCOS WATER TREATMENT DATA

	3440 Gilbert Street		3247 Ocean		Cemetery Road		Delivered Water	
	CSA-10A Distribution		CSA-10A Distribution		CSA-10A Service Line		Sevice Line to Morro	
Date	Total Haloacetic Acid (ug/L)	Running Annual Average	Total Haloacetic Acid (ug/L)	Running Annual Average	Total Haloacetic Acid (ug/L)	Running Annual Average	Total Haloacetic Acid (ug/L)	Running Annual Average
3/18/2005	24	24						
4/22/2005	25	25						
7/5/2005	32	27						
12/7/2005	22	26						
2/15/2006	20	25						
6/28/2006	14	22						
8/24/2006	20	19						
10/23/2006	9.7	16						
1/16/2007	22	16						
4/18/2007	21	18						
7/10/2007	15	17						
12/20/2007	3.2	15						
3/5/2008	18	14						
5/27/2008	11	12						
8/5/2008	18	13						
11/19/2008	13	15						
2/3/2009	9.9	13			8.3	8.3		
5/19/2009	16	14			11	10		
8/18/2009	9.5	12			13	11		
11/17/2009	12	12			8.9	10		
2/16/2010	21	15	7.9	7.9	12	11		
5/19/2010	16.5	15	19.5	14	8.4	11		
8/17/2010	9.1	15	12.3	13	10.4	10	8.7	8.7
11/16/2010	11.5	15	9.1	12	8.5	10	6.7	7.7
2/22/2011	20.2	14	18.8	15	19.9	12	16.8	11
5/24/2011	8.5	12	1.8	11	1.4	10	1.0	8.3

APPENDIX C-1
WHALE ROCK RESERVOIR TEMPERATURE and DISSOLVED OXYGEN PROFILE

Collected	WHALE ROCK RESERVOIR TEMPERATURE C						WHALE ROCK RESERVOIR DISSOLVED OXYGEN (mg/L)					
Date	SURFACE	INTAKE 1	INTAKE 2	INTAKE 3	INTAKE 4	INTAKE 5	SURFACE	INTAKE 1	INTAKE 2	INTAKE 3	INTAKE 4	INTAKE 5
2005 Totals												
Average	19.0	18.4	13.7	12.6	12.5	12.6	9.0	7.0	3.1	2.5	2.2	1.4
Maximum	23.3	22.9	17.2	14.1	13.3	12.9	12.4	11.3	10.3	10.1	10.0	8.0
Minimum	11.3	11.2	10.9	10.9	10.9	12.1	7.2	0.9	0.1	0.1	0.1	0.1
# of Samples	25	25	25	25	25	22	24	24	24	24	24	22
1/12/2005	11.3	11.3	11.2	11.2	11.2		11.7	10.5	10.3	10.1	10.0	
1/25/2005	12.4	11.2	10.9	10.9	10.9							
2/23/2005	12.9	12.4	11.5	11.5	11.5		11.0	10.3	10.0	9.6	9.1	
3/30/2005	15.5	15.0	12.5	12.2	12.1	12.1	10.4	9.6	8.3	7.7	7.0	6.5
4/13/2005	16.1	15.8	13.6	12.3	12.2	12.2	11.1	10.2	8.1	7.0	6.4	5.9
5/11/2005	19.2	18.5	13.4	12.7	12.5	12.4	12.4	11.3	3.6	4.1	4.7	4.0
5/25/2005	21.1	17.9	13.8	12.5	12.5	12.4	11.8	3.1	1.1	1.8	2.4	2.5
6/15/2005	21.5	19.9	13.9	12.7	12.6	12.5	9.4	2.9	0.3	0.5	0.6	0.6
6/21/2005	21.4	20.8	13.8	12.7	12.6	12.5	8.4	7.7	0.3	0.3	0.3	0.2
6/29/2005	21.1	20.7	13.8	12.8	12.6	12.5	7.7	5.1	0.2	0.2	0.1	0.1
7/6/2005	22.2	21.7	13.9	12.7	12.6	12.6	7.8	7.7	0.2	0.2	0.2	0.2
7/11/2005	22.6	21.2	14.1	12.8	12.7	12.6	8.0	1.7	0.2	0.1	0.1	0.1
7/19/2005	23.1	21.3	14.2	12.7	12.7	12.7	8.3	0.9	0.1	0.1	0.1	0.1
7/25/2005	23.3	22.0	14.1	12.8	12.7	12.6	7.7	1.2	0.2	0.2	0.2	0.1
8/2/2005	23.1	22.9	14.1	12.8	12.7	12.6	8.4	6.9	0.3	0.3	0.2	0.2
8/10/2005	23.1	22.7	14.1	12.8	12.7	12.6	8.1	8.1	0.1	0.1	0.1	0.1
8/16/2005	22.1	22.2	14.1	12.8	13.3	12.7	7.3	7.0	0.2	0.1	0.1	0.1
8/24/2005	22.1	22.1	14.0	12.8	12.7	12.7	8.0	7.4	0.4	0.3	0.2	0.1
9/14/2005	20.7	20.7	14.1	12.9	12.8	12.7	7.2	7.1	0.3	0.2	0.2	0.2
9/28/2005	20.1	19.9	14.1	12.9	12.8	12.7	8.1	7.8	0.4	0.4	0.4	0.3
10/12/2005	18.1	18.1	14.4	12.9	12.8	12.7	7.7	7.9	1.0	1.1	1.1	1.2
10/26/2005	17.8	17.6	17.2	13.0	12.8	12.8	8.6	8.5	3.1	0.5	0.5	0.6
11/16/2005	16.1	15.8	15.7	13.0	12.8	12.8	8.5	8.7	8.0	0.5	0.3	0.3
11/30/2005	14.4	14.3	14.3	14.1	12.9	12.9	8.4	8.2	8.1	6.1	0.2	0.2
12/14/2005	12.8	12.8	12.8	12.7	12.7	12.7	9.1	8.6	8.5	8.4	8.4	8.0

APPENDIX C-1
WHALE ROCK RESERVOIR TEMPERATURE and DISSOLVED OXYGEN PROFILE

Collected	WHALE ROCK RESERVOIR TEMPERATURE C						WHALE ROCK RESERVOIR DISSOLVED OXYGEN (mg/L)					
Date	SURFACE	INTAKE 1	INTAKE 2	INTAKE 3	INTAKE 4	INTAKE 5	SURFACE	INTAKE 1	INTAKE 2	INTAKE 3	INTAKE 4	INTAKE 5
2006 Totals												
Average	17.7	17.2	13.3	12.7	12.6	12.5	9.5	9.2	5.2	4.7	3.7	3.1
Maximum	23.0	22.9	15.6	14.1	13.1	12.9	11.2	12.6	11.0	10.4	10.2	10.1
Minimum	11.7	11.7	11.6	11.7	11.6	11.5	7.6	7.7	0.2	0.1	0.1	0.0
# of Samples	24	24	24	24	23	22	24	24	24	24	23	22
1/12/2006	12.7	12.5	12.4	12.4	12.4	12.3	9.9	9.8	9.8	9.8	9.8	9.6
1/25/2006	11.7	11.7	11.6	11.7	11.6	11.5	10.2	10.2	10.2	9.8	9.9	10.1
2/15/2006	12.8	12.6	12.3	12.2	12.2	12.0	11.2	11.1	10.6	10.4	10.2	9.8
2/28/2006	12.6	12.2	12.1	12.0	12.0	12.0	10.3	10.3	10.1	10.0	9.5	9.3
3/27/2006	12.9	13.2	12.4	12.0	12.1	12.2	10.2	10.0	9.5	8.9	8.1	8.0
4/12/2006	15.0	14.2	13.0	13.0			10.8	12.6	11.0	10.0		
4/25/2006	16.0	15.4	13.2	12.5	12.4	12.3	10.0	9.6	8.1	7.4	6.7	5.8
5/10/2006	18.0	14.9	13.1	12.7	12.6	12.5	10.4	8.5	8.1	7.8	6.7	4.8
5/24/2006	20.3	14.5	12.8	12.7	12.6	12.6	10.0	7.9	6.7	6.5	4.5	4.4
6/14/2006	21.1	20.6	13.2	12.8	12.4	12.7	10.2	9.8	4.9	4.7	3.1	2.4
6/28/2006	21.9	21.5	12.1	12.7	12.7	12.5	9.5	10.1	3.2	3.4	2.1	1.3
7/5/2016	22.2	21.9	13.4	12.7	12.7	12.7	9.3	9.4	2.1	2.6	1.6	1.0
7/18/2006	22.3	22.3	13.1	12.8	12.7	12.6	8.4	8.1	1.0	1.3	0.7	0.1
8/2/2006	23.0	22.9	13.3	12.6	12.7	12.7	9.7	10.1	0.5	0.8	0.2	0.1
8/16/2006	22.2	22.3	13.5	12.8	12.8	12.7	8.8	8.9	0.4	0.6	0.2	0.2
8/30/2006	22.1	21.8	13.5	12.9	12.8	12.7	8.5	8.2	0.4	0.2	0.1	0.1
9/13/2006	21.0	21.1	13.7	12.9	12.8	12.7	7.6	7.7	0.2	0.2	0.1	0.1
9/27/2006	20.1	20.0	13.7	12.9	12.8	12.7	8.2	8.0	0.4	0.1	0.1	0.0
10/10/2006	18.6	18.7	14.2	12.9	12.8	12.8	8.7	8.1	0.4	0.3	0.2	0.2
10/16/2006	18.2	18.0	14.6	12.9	12.8	12.8	8.0	7.9	0.5	0.2	0.2	0.2
10/25/2006	17.6	17.3	15.5	13.0	12.9	12.8	9.2	8.9	1.8	0.4	0.3	0.3
11/16/2006	15.8	15.6	15.6	13.1	12.9	12.8	9.0	8.7	8.6	0.4	0.4	0.3
11/30/2006	14.5	14.1	14.1	14.1	12.9	12.9	9.0	8.5	8.4	8.0	0.5	0.4
12/13/2006	13.0	13.2	13.1	13.1	13.1		9.8	9.4	9.0	9.0	8.9	

APPENDIX C-1
WHALE ROCK RESERVOIR TEMPERATURE and DISSOLVED OXYGEN PROFILE

Collected	WHALE ROCK RESERVOIR TEMPERATURE C						WHALE ROCK RESERVOIR DISSOLVED OXYGEN (mg/L)					
Date	SURFACE	INTAKE 1	INTAKE 2	INTAKE 3	INTAKE 4	INTAKE 5	SURFACE	INTAKE 1	INTAKE 2	INTAKE 3	INTAKE 4	INTAKE 5
2007 Totals												
Average	17.2	17.0	13.8	11.6	11.2	11.1	9.5	9.4	5.7	3.7	2.9	2.7
Maximum	22.5	22.5	19.6	14.2	12.4	12.4	11.5	11.9	10.7	10.5	10.5	10.6
Minimum	9.8	9.6	9.5	9.5	9.5	9.5	7.9	7.5	0.4	0.2	0.1	0.1
# of Samples	23	23	23	23	23	23	22	22	22	22	22	22
1/23/2007	9.8	9.6	9.5	9.5	9.5	9.5	10.8	10.6	10.3	10.5	10.5	10.6
2/13/2007	11.5	11.2	10.0	9.8	9.7	9.7	11.2	11.9	10.7	10.2	9.6	9.0
2/27/2007	12.0	11.7	11.0	10.2	9.9	10.0	11.0	11.0	10.0	9.2	8.9	8.7
3/13/2007	14.3	13.4	12.3	10.9	10.3	10.3	11.5	11.2	10.5	9.1	8.3	8.0
3/27/2007	15.0	15.0	12.1	11.3	10.8	10.6	11.2	11.4	8.7	7.6	6.8	6.2
4/10/2007	17.2	16.8	12.3	11.4	11.0	10.8	10.2	10.8	7.6	5.6	5.0	3.9
4/24/2007	16.2	15.7	13.1	11.3	11.1	11.0	10.4	10.5	6.8	3.5	2.8	1.6
5/15/2007	18.9	18.9	13.4	11.5	11.3	11.2	10.0	9.7	3.8	1.5	1.0	0.5
5/30/2007	19.3	19.2	13.8	11.5	11.3	11.2	10.1	9.9	1.8	0.5	0.3	0.3
6/12/2007	20.2	20.0	13.6	11.7	11.4	11.3	10.0	9.6	1.3	0.5	0.3	0.3
6/26/2007	21.6	21.4	14.1	11.6	11.5	11.4	9.1	9.0	0.8	0.3	0.1	0.1
7/10/2007	21.7	21.6	14.0	11.7	11.5	11.4	8.3	7.9	1.1	0.4	0.2	0.2
7/24/2007	22.5	22.5	14.0	11.7	11.5	11.5	8.9	8.8	0.8	0.4	0.2	0.2
8/14/2007	22.3	22.0	15.3	11.9	11.6	11.5	8.3	8.2	0.4	0.2	0.2	0.1
8/28/2007	21.8	21.7	14.6	11.8	11.6	11.6	8.2	8.1	0.6	0.3	0.2	0.1
9/11/2007	21.6	21.6	15.8	11.9	11.7	11.6	7.9	7.8	1.8	0.6	0.4	0.3
9/25/2007	20.2	20.0	19.6	11.8	11.7	11.6	8.4	8.3	8.1	1.0	0.4	0.3
10/9/2007	17.5	17.7	17.7	11.8	11.6	11.6	8.8	8.4	8.3	1.0	0.5	0.3
10/24/2007	17.2	17.2	16.7	11.9	11.7	11.6	8.5	8.4	8.4	0.7	0.3	0.2
11/13/2007	16.0	15.8	15.8	14.0	11.8	11.7	9.5	9.5	9.5	3.7	0.8	0.6
11/27/2007	14.2	14.2	14.2	14.2	11.9	11.8	8.5	8.3	8.0	7.9	0.6	0.3
12/11/2007	12.7	12.6	12.4	12.4	12.4	12.4	8.1	7.5	7.0	7.2	7.3	7.3
12/26/2007	11.3	11.2	11.2	11.2	11.2	11.1						

**APPENDIX C-1
WHALE ROCK RESERVOIR TEMPERATURE and DISSOLVED OXYGEN PROFILE**

Collected	WHALE ROCK RESERVOIR TEMPERATURE C						WHALE ROCK RESERVOIR DISSOLVED OXYGEN (mg/L)					
Date	SURFACE	INTAKE 1	INTAKE 2	INTAKE 3	INTAKE 4	INTAKE 5	SURFACE	INTAKE 1	INTAKE 2	INTAKE 3	INTAKE 4	INTAKE 5
2008 Totals												
Average	17.3	17.8	16.4	12.5	11.9	11.8	9.2	9.1	8.7	5.1	4.0	3.7
Maximum	22.8	22.8	22.4	15.5	13.9	13.9	11.9	11.6	11.2	11.0	10.9	10.7
Minimum	10.2	10.2	10.1	10.1	10.1	10.1	7.4	7.4	6.5	0.1	0.1	0.0
# of Samples	22	22	25	25	25	25	22	22	25	25	25	25
1/15/2008	10.7	10.7	10.6	10.6	10.6	10.7	11.2	11.3	11.2	11.0	10.9	10.7
1/29/2008	10.2	10.2	10.1	10.1	10.1	10.1	10.9	10.9	10.8	10.7	10.5	10.5
2/13/2008	10.9	10.8	10.5	10.5	10.4	10.2	11.9	11.6	10.9	10.7	10.0	9.9
2/28/2008	11.9	11.9	11.3	11.1	11.0	11.0	10.8	10.8	10.5	10.3	10.2	10.1
3/11/2008	13.5	13.4	12.7	11.3	11.0	11.1	10.4	10.4	10.0	9.5	8.7	8.6
3/25/2008	14.5	14.4	13.8	11.6	11.3	11.2	10.3	10.3	10.0	8.9	8.0	7.9
4/16/2008	16.3	16.1	14.7	11.8	11.5	11.5	9.9	9.8	9.0	7.3	6.8	6.3
4/29/2008	17.3	17.1	15.2	12.0	11.7	11.6	9.9	10.0	9.3	7.2	6.1	5.5
5/13/2008	18.0	18.0	15.3	12.2	11.8	11.7	8.9	9.1	7.6	5.5	4.7	4.4
5/27/2008	19.3	19.3	16.8	12.3	11.8	11.8	7.5	7.5	6.5	3.7	2.4	2.1
6/10/2008	20.5	20.5	18.0	12.5	12.0	11.9	8.4	8.6	7.7	3.5	2.2	2.1
6/23/2008	22.0	21.9	18.3	12.3	12.0	11.8	9.0	8.7	7.0	2.4	1.2	0.9
7/15/2008	22.8	22.8	18.6	12.8	12.0	12.0	8.0	8.1	6.5	0.7	0.1	0.0
7/29/2008	22.3	22.3	21.4	12.5	12.1	12.0	8.5	8.3	9.8	0.1	0.1	0.0
8/12/2008	22.4	22.5	22.4	12.6	12.1	12.0	8.4	8.4	8.4	0.1	0.1	0.1
8/27/2008	22.4	22.5	22.4	12.6	12.2	12.1	7.8	7.9	7.4	0.1	0.1	0.0
9/9/2008	22.1	22.1	22.2	13.1	12.2	12.1	7.4	7.4	7.5	0.2	0.1	0.1
9/23/2008	21.3	21.3	21.1	12.9	12.2	12.1	7.7	7.7	7.4	0.1	0.1	0.1
10/8/2008	21.4	21.4	20.7	13.1	12.3	12.2	8.0	8.0	7.7	0.3	0.1	0.1
10/14/2008		19.6	18.9	12.8	12.3	12.2		7.9	7.9	0.4	0.1	0.1
10/28/2008		17.3	17.5	14.4	12.4	12.2		8.2	7.9	1.0	0.2	0.1
11/19/2008		15.9	15.6	15.5	12.4	12.3		10.1	9.2	8.4	0.2	0.1
11/25/2008	15.2		15.2	15.1	13.2	12.3	9.0		8.6	7.8	0.5	0.1
12/9/2008	13.9		13.9	13.9	13.9	13.9	9.1		9.3	9.1	9.1	4.4
12/22/2008	12.4		12.4	12.4	12.3	12.3	8.9		8.6	8.5	8.3	8.2

**APPENDIX C-1
WHALE ROCK RESERVOIR TEMPERATURE and DISSOLVED OXYGEN PROFILE**

Collected	WHALE ROCK RESERVOIR TEMPERATURE C						WHALE ROCK RESERVOIR DISSOLVED OXYGEN (mg/L)					
Date	SURFACE	INTAKE 1	INTAKE 2	INTAKE 3	INTAKE 4	INTAKE 5	SURFACE	INTAKE 1	INTAKE 2	INTAKE 3	INTAKE 4	INTAKE 5
2009 Totals												
Average	17.3		17.0	13.2	11.8	11.6	9.5		9.1	4.3	3.0	2.8
Maximum	22.6		22.4	18.0	12.7	12.3	12.3		11.6	11.0	10.6	10.6
Minimum	10.9		10.7	10.7	10.6	10.6	7.7		6.7	0.3	0.1	0.1
# of Samples	22	0	22	22	22	21	22	0	22	22	22	20
1/13/2009	10.9		10.7	10.7	10.6	10.6	11.4		11.2	11.0	10.6	10.6
1/27/2009	10.9		10.9	10.8	10.8	10.8	11.0		10.8	10.7	10.2	5.4
2/10/2009	11.0		10.9	10.8	10.8	10.8	10.5		10.0	9.7	9.5	9.2
2/24/2009	12.1		11.7	11.1	10.9	10.9	12.3		11.6	9.9	9.6	8.9
3/10/2009	13.1		12.7	11.4	11.0	11.0	11.5		11.5	8.7	7.6	7.1
3/24/2009	14.3		14.2	11.6	11.2	11.2	10.5		10.3	6.9	5.0	4.7
4/14/2009	16.5		15.3	11.5	11.4	11.4	10.9		10.2	1.9	0.9	0.6
4/28/2009	16.5		16.4	12.5	11.7	11.7	10.1		9.9	1.5	0.5	0.4
5/12/2009	19.6		16.7	13.0	11.8	11.7	9.3		7.5	0.3	0.3	0.2
5/27/2009	20.0		19.6	12.9	11.8	11.7	10.0		11.1	0.3	0.2	0.1
6/9/2009	20.2		20.0	13.0	11.9	11.9	10.0		6.7	0.3	0.2	0.2
6/23/2009	20.9		20.7	13.0	12.0	11.9	7.7		6.8	0.3	0.2	0.1
7/14/2009	22.3		21.9	13.7	12.1	12.0	8.5		8.3	0.5	0.4	0.3
7/28/2009	22.0		22.3	14.0	12.2	12.0	8.1		7.9	0.3	0.2	0.1
8/11/2009	22.6		22.4	13.9	12.2	12.1	8.4		8.4	0.3	0.1	0.1
8/25/2009	21.6		21.6	13.7	12.2	12.1	8.5		8.6	0.3	0.2	0.1
9/15/2009	21.4		21.4	14.0	12.3	12.2	7.9		7.7	0.4	0.1	0.1
9/29/2009	21.1		21.1	14.3	12.4	12.2	7.7		7.7	0.7	0.3	0.2
10/15/2009	18.0		17.9	17.4	12.4	12.3	8.2		8.1	6.6	0.3	0.2
10/27/2009	18.1		18.1	18.0	12.7	12.0	8.8		8.7	8.1	0.5	
11/10/2009	16.1		16.0	16.0	12.6		7.8		7.8	7.7	1.6	
12/15/2009	12.4		12.2	12.2	12.2	12.0	9.9		8.5	8.1	8.0	7.6

APPENDIX C-1
WHALE ROCK RESERVOIR TEMPERATURE and DISSOLVED OXYGEN PROFILE

Collected	WHALE ROCK RESERVOIR TEMPERATURE C						WHALE ROCK RESERVOIR DISSOLVED OXYGEN (mg/L)					
Date	SURFACE	INTAKE 1	INTAKE 2	INTAKE 3	INTAKE 4	INTAKE 5	SURFACE	INTAKE 1	INTAKE 2	INTAKE 3	INTAKE 4	INTAKE 5
2010 Totals												
Average	17.2		17.0	14.9	13.1	12.9	9.4		9.1	5.7	4.2	3.8
Maximum	21.9		21.8	19.7	14.3	13.7	11.0		12.4	10.0	9.5	9.3
Minimum	11.5		11.5	11.4	11.4	11.3	7.4		6.5	0.4	0.2	0.0
# of Samples	24	0	24	24	24	24	24	0	24	24	24	24
1/12/2010	12.0		11.6	11.4	11.4	11.3	9.9		9.8	9.6	9.4	9.3
1/27/2010	11.5		11.5	11.4	11.4	11.3	10.0		9.8	9.6	9.5	9.0
2/9/2010	12.0		11.8	11.5	11.5	11.4	10.4		10.2	9.1	8.7	8.1
2/23/2010	13.2		13.0	12.8	11.9	11.6	10.3		10.0	9.7	9.0	7.2
3/8/2010	13.7		13.1	12.7	12.1	12.0	9.2		8.8	8.4	7.6	7.1
3/23/2010	16.1		15.0	13.3	12.6	12.3	10.8		10.4	9.5	7.8	6.9
4/13/2010	15.0		14.9	14.6	12.9	12.9	10.6		7.9	7.0	5.2	4.9
4/27/2010	17.4		17.2	14.4	13.3	13.0	9.5		8.2	6.5	4.9	4.3
5/11/2010	18.4		18.2	14.7	13.4	13.1	9.1		9.2	6.0	3.9	2.5
5/25/2010	18.5		18.3	14.6	13.6	13.2	8.6		8.7	4.3	2.7	1.4
6/8/2010	21.4		20.4	15.4	13.5	13.3	9.6		12.4	1.7	0.7	0.2
6/22/2010	20.9		20.9	15.2	13.5	13.4	10.1		10.0	0.7	0.3	0.2
7/13/2010	21.5		21.3	15.9	13.7	13.4	9.9		10.3	1.8	2.5	3.6
7/27/2010	21.4		21.4	15.9	13.7	13.4	9.0		8.8	1.0	0.3	0.1
8/11/2010	21.3		21.3	16.2	13.7	13.4	7.8		8.2	0.9	0.5	0.3
8/24/2010	21.9		21.8	16.3	13.8	13.4	8.4		8.1	1.5	0.6	0.3
9/14/2010	20.6		20.5	17.4	13.7	13.5	7.7		8.0	0.4	0.2	0.1
9/27/2010	20.7		20.5	19.7	13.9	13.7	7.4		6.5	3.9	0.2	0.0
10/13/2010	19.6		19.5	18.8	13.8	13.5	8.6		8.2	5.3	0.7	0.6
10/26/2010	19.6		19.5	18.8	13.8	13.5	9.1		8.0	6.8	0.7	0.1
11/9/2010	16.7		16.7	16.6	14.3	13.6	11.0		9.0	6.2	1.2	0.8
11/30/2010	13.6		13.6	13.6	13.6	13.6	8.5		8.3	6.8	6.2	6.2
12/14/2010	13.4		13.3	13.2	13.1	13.1	10.9		10.6	10.0	9.2	9.0
12/28/2010	12.9		12.9	12.9	12.9	12.8	9.4		9.1	8.9	8.8	8.7

APPENDIX C-1
WHALE ROCK RESERVOIR TEMPERATURE and DISSOLVED OXYGEN PROFILE

Collected	WHALE ROCK RESERVOIR TEMPERATURE C						WHALE ROCK RESERVOIR DISSOLVED OXYGEN (mg/L)					
Date	SURFACE	INTAKE 1	INTAKE 2	INTAKE 3	INTAKE 4	INTAKE 5	SURFACE	INTAKE 1	INTAKE 2	INTAKE 3	INTAKE 4	INTAKE 5
2011 Totals	(January - June)											
Average	15.5	17.8	13.0	12.0	11.7	11.7	10.1	10.2	8.2	8.0	7.6	7.3
Maximum	21.1	21.1	15.2	12.6	12.4	12.4	10.8	10.6	10.2	10.1	10.2	9.8
Minimum	11.0	13.4	11.0	10.9	10.9	10.9	8.3	9.4	2.6	3.7	3.5	2.3
# of Samples	12	7	12	12	12	12	12	7	12	12	12	12
1/11/2011	11.0		11.0	10.9	10.9	10.9	10.0		9.5	10.1	9.9	9.8
1/25/2011	11.6		11.5	11.4	11.2	11.2	8.3		6.9	5.9	5.4	5.2
2/15/2011	11.9		11.6	11.5	11.4	11.4	10.8		9.7	9.8	9.6	9.5
3/1/2011	11.4		11.2	11.2	11.2	11.2	10.2		10.1	10.0	10.2	9.8
3/15/2011	14.2		13.8	11.6	11.3	11.3	10.6		10.2	9.3	9.0	8.9
3/29/2011	14.1	13.4	12.6	12.0	11.6	11.5	10.4	10.3	10.2	9.7	9.2	8.9
4/12/2011	15.4	15.3	13.5	12.4	11.9	11.8	10.4	10.6	9.6	9.0	8.3	8.0
4/26/2011	17.7	17.6	13.5	12.3	12.1	12.1	10.7	10.5	9.8	9.1	8.1	8.0
5/10/2011	18.9	18.7	13.7	12.4	12.2	12.1	10.4	10.4	9.0	8.4	7.6	7.4
5/26/2011	19.2	19.1	14.0	12.5	12.3	12.3	9.3	9.5	6.4	6.4	6.1	5.8
6/14/2011	20.0	19.7	15.2	12.6	12.4	12.3	9.5	9.4	4.7	4.9	4.6	4.2
6/28/2011	21.1	21.1	14.3	12.6	12.4	12.4	10.7	10.5	2.6	3.7	3.5	2.3

APPENDIX C-2
WHALE ROCK RESERVOIR WATERSHED SANITARY SURVEY 2011
SAN LUIS OBISPO COUNTY SERVICE AREA 10 - CAYUCOS WATER TREATMENT DATA
BACTERIOLOGICAL DATA (January,2006 - June,2011)

	RAW WATER DATA			DELIVERED WATER DATA			
	Total coliform MPN/100mL	E. coli MPN/100 mL	Heterotrophic Plate Count CFU/mL	Total coliform	E. coli	Heterotrophic Plate Count CFU/mL	Chlorine Residual, mg/L
2006							
Average	1644	2	380	Absent	Absent	1	1.31
Minimum Value	5	<1	17	Absent	Absent	<1	0.84
Maximum Value	25000	29	1400	Absent	Absent	33	1.68
Number of Samples	52	52	52	52	52	52	52
1/4/2006	290	29	1400	Absent	Absent	1	1.45
1/11/2006	54	1	570	Absent	Absent	<1	1.58
1/18/2006	64	<1	700	Absent	Absent	2	1.35
1/25/2006	20	<1	600	Absent	Absent	6	1.52
2/1/2006	17	<1	630	Absent	Absent	<1	1.44
2/8/2006	20	1	250	Absent	Absent	<1	1.42
2/15/2006	12	1	680	Absent	Absent	<1	1.30
2/22/2006	14	<1	140	Absent	Absent	<1	1.36
2/28/2006	21	<1	110	Absent	Absent	<1	1.53
3/8/2006	22	<1	230	Absent	Absent	<1	1.41
3/15/2006	23	<1	230	Absent	Absent	<1	1.40
3/22/2006	5	<1	210	Absent	Absent	33	1.12
3/27/2006	13	1	210	Absent	Absent	1	1.50
4/4/2006	130	24	240	Absent	Absent	<1	1.38
4/12/2006	67	3	250	Absent	Absent	<1	0.84
4/19/2006	1300	2	170	Absent	Absent	<1	1.54
4/25/2006	180	2	210	Absent	Absent	<1	1.68
5/3/2006	24	2	130	Absent	Absent	<1	1.47
5/10/2006	16	<1	69	Absent	Absent	<1	1.50
5/17/2006	5	<1	340	Absent	Absent	<1	1.48
5/24/2006	78	1	720	Absent	Absent	2	1.49
5/31/2006	64	1	460	Absent	Absent	<1	1.08
6/7/2006	22	<1	1200	Absent	Absent	<1	1.45
6/14/2006	14	3	730	Absent	Absent	<1	1.26
6/21/2006	34	1	850	Absent	Absent	<1	1.12
6/28/2006	76	<1	460	Absent	Absent	<1	1.08
7/5/2006	99	<1	570	Absent	Absent	<1	1.15
7/12/2006	220	<1	510	Absent	Absent	<1	1.33
7/18/2006	550	<1	640	Absent	Absent	<1	1.41
7/24/2006	1600	1	1100	Absent	Absent	<1	1.04
8/2/2006	1400	<1	320	Absent	Absent	<1	1.06
8/9/2006	550	<1	220	Absent	Absent	<1	1.11
8/16/2006	280	5	270	Absent	Absent	<1	1.24
8/21/2006	260	2	270	Absent	Absent	<1	1.05
8/30/2006	17000	1	342	Absent	Absent	< 1	0.86
9/6/2006	25000	3	320	Absent	Absent	2	1.06
9/13/2006	14000	3	150	Absent	Absent	<1	1.24
9/20/2006	410	3	150	Absent	Absent	1	1.36
9/27/2006	2000	2	76	Absent	Absent	<1	1.30
10/4/2006	1600	9	17	Absent	Absent	<1	0.97
10/10/2006	1400	5	170	Absent	Absent	<1	1.32
10/16/2006	5500	4	140	Absent	Absent	< 1	1.33
10/23/2006	4900	3	185	Absent	Absent	< 1	1.21
11/1/2006	2400	2	110	Absent	Absent	3	1.36
11/6/2006	1700	3	300	Absent	Absent	8	1.19
11/15/2006	1000	2	170	Absent	Absent	<1	1.48
11/20/2006	730	<1	1400	Absent	Absent	1	1.30
11/30/2006	190	3	78	Absent	Absent	<1	1.42
12/5/2006	73	<1	170	Absent	Absent	<1	1.15
12/12/2006	24	<1	82	Absent	Absent	1	1.35
12/20/2006	14	1	100	Absent	Absent	<1	1.52
12/27/2006	16	<1	97	Absent	Absent	<1	1.42

APPENDIX C-2
WHALE ROCK RESERVOIR WATERSHED SANITARY SURVEY 2011
SAN LUIS OBISPO COUNTY SERVICE AREA 10 - CAYUCOS WATER TREATMENT DATA
BACTERIOLOGICAL DATA (January,2006 - June,2011)

2007	Total coliform MPN/100mL	E. coli MPN/100 mL	Heterotrophic Plate Count CFU/mL	Total coliform	E. coli	Heterotrophic Plate Count CFU/mL	Chlorine Residual, mg/L
Average	298	<1	145	Absent	Absent	1	1.45
Minimum Value	1	<1	20	Absent	Absent	<1	0.76
Maximum Value	3700	3	1000	Absent	Absent	20	1.86
Number of Samples	52	52	52	52	52	52	52
1/2/2007	8	<1	130	Absent	Absent	<1	1.48
1/9/2007	16	<1	98	Absent	Absent	<1	1.43
1/16/2007	10	1	39	Absent	Absent	<1	1.66
1/23/2007	6	<1	43	Absent	Absent	<1	1.31
1/30/2007	12	<1	28	Absent	Absent	<1	1.55
2/6/2007	<1	<1	40	Absent	Absent	<1	1.52
2/13/2007	12	<1	44	Absent	Absent	2	1.31
2/20/2007	2	<1	80	Absent	Absent	<1	1.57
2/27/2007	<1	<1	60	Absent	Absent	1	1.44
3/6/2007	1	<1	60	Absent	Absent	<1	1.52
3/13/2007	5	<1	34	Absent	Absent	<1	1.36
3/20/2007	3	<1	20	Absent	Absent	1	1.50
3/27/2007	2	<1	71	Absent	Absent	<1	1.35
4/3/2007	1	<1	140	Absent	Absent	<1	1.48
4/10/2007	1	<1	62	Absent	Absent	4	1.44
4/17/2007	<1	<1	110	Absent	Absent	4	1.40
4/24/2007	<1	<1	87	Absent	Absent	<1	1.38
5/1/2007	6	<1	40	Absent	Absent	<1	1.27
5/8/2007	11	<1	33	Absent	Absent	3	1.45
5/15/2007	7	<1	130	Absent	Absent	<1	1.26
5/22/2007	11	<1	63	Absent	Absent	<1	1.46
5/29/2007	6	<1	280	Absent	Absent	20	1.24
6/5/2007	7	<1	250	Absent	Absent	1	1.30
6/12/2007	28	<1	160	Absent	Absent	<1	1.58
6/19/2007	160	<1	170	Absent	Absent	<1	1.49
6/26/2007	980	<1	240	Absent	Absent	1	1.28
7/3/2007	1300	1	67	Absent	Absent	2	0.76
7/10/2007	2000	2	81	Absent	Absent	<1	1.46
7/17/2007	3700	2	250	Absent	Absent	3	1.63
7/24/2007	2000	3	160	Absent	Absent	<1	1.86
7/31/2007	1100	1	1000	Absent	Absent	<1	1.68
8/7/2007	730	<1	470	Absent	Absent	<1	1.82
8/14/2007	580	<1	400	Absent	Absent	<1	1.65
8/21/2007	91	<1	200	Absent	Absent	<1	0.84
8/28/2007	290	<1	210	Absent	Absent	<1	1.32
9/4/2007	690	<1	360	Absent	Absent	1	1.67
9/11/2007	130	<1	460	Absent	Absent	3	1.47
9/18/2007	690	<1	220	Absent	Absent	1	1.42
9/25/2007	730	<1	130	Absent	Absent	<1	1.38
10/2/2007	110	<1	90	Absent	Absent	<1	1.32
10/9/2007	24	<1	110	Absent	Absent	<1	1.49
10/16/2007	6	<1	98	Absent	Absent	<1	1.72
10/23/2007	11	1	110	Absent	Absent	<1	1.32
10/30/2007	4	<1	83	Absent	Absent	<1	1.29
11/6/2007	4	1	120	Absent	Absent	<1	1.40
11/13/2007	2	1	69	Absent	Absent	<1	1.24
11/19/2007	6	<1	62	Absent	Absent	<1	1.41
11/27/2007	4	1	72	Absent	Absent	1	1.69
12/4/2007	1	<1	70	Absent	Absent	<1	1.75
12/11/2007	2	<1	46	Absent	Absent	<1	1.71
12/17/2007	3	<1	36	Absent	Absent	2	1.42
12/26/2007	2	<1	52	Absent	Absent	2	1.56

APPENDIX C-2
WHALE ROCK RESERVOIR WATERSHED SANITARY SURVEY 2011
SAN LUIS OBISPO COUNTY SERVICE AREA 10 - CAYUCOS WATER TREATMENT DATA
BACTERIOLOGICAL DATA (January,2006 - June,2011)

2008	Total coliform MPN/100mL	E. coli MPN/100 mL	Heterotrophic Plate Count CFU/mL	Total coliform	E. coli	Heterotrophic Plate Count CFU/mL	Chlorine Residual, mg/L
Average	1531	<1	293	Absent	Absent	2	1.45
Minimum Value	<1	<1	26	Absent	Absent	<1	1.13
Maximum Value	20000	7	2300	Absent	Absent	32	2.02
Number of Samples	53	53	53	53	53	53	53
1/2/2008	1	1	130	Absent	Absent	5	1.60
1/8/2008	27	1	140	Absent	Absent	<1	1.40
1/15/2008	1	<1	120	Absent	Absent	1	1.52
1/22/2008	<1	<1	43	Absent	Absent	< 1	1.35
1/29/2008	66	5	160	Absent	Absent	<1	1.51
2/5/2008	220	7	400	Absent	Absent	<1	1.54
2/13/2008	16	<1	130	Absent	Absent	1	1.25
2/19/2008	4	<1	58	Absent	Absent	<1	1.33
2/26/2008	91	4	220	Absent	Absent	<1	1.40
3/4/2008	15	1	610	Absent	Absent	<1	1.47
3/11/2008	7	1	55	Absent	Absent	2	1.46
3/18/2008	2	<1	86	Absent	Absent	2	1.50
3/25/2008	9	<1	48	Absent	Absent	<1	1.27
4/1/2008	6	<1	34	Absent	Absent	<1	1.62
4/8/2008	<1	<1	77	Absent	Absent	<1	1.53
4/15/2008	9	<1	67	Absent	Absent	2	1.21
4/22/2008	1	<1	32	Absent	Absent	<1	1.33
4/29/2008	2	<1	26	Absent	Absent	<1	1.38
5/6/2008	5	<1	48	Absent	Absent	<1	1.13
5/13/2008	10	<1	53	Absent	Absent	<1	1.27
5/20/2008	9	<1	290	Absent	Absent	<1	1.40
5/27/2008	10	<1	120	Absent	Absent	5	1.14
6/3/2008	11	<1	2300	Absent	Absent	9	1.25
6/10/2008	29	<1	87	Absent	Absent	<1	1.28
6/17/2008	19	<1	200	Absent	Absent	1	1.35
6/23/2008	33	<1	231	Absent	Absent	< 1	1.36
7/1/2008	260	<1	270	Absent	Absent	<1	1.40
7/8/2008	2500	<1	510	Absent	Absent	<1	1.70
7/15/2008	6100	<1	500	Absent	Absent	<1	1.57
7/22/2008	1600	<1	460	Absent	Absent	1	1.78
7/29/2008	3000	<1	140	Absent	Absent	<1	1.43
8/5/2008	2200	<1	340	Absent	Absent	1	1.70
8/12/2008	20000	<1	380	Absent	Absent	1	1.17
8/19/2008	1900	<1	500	Absent	Absent	32	1.64
8/26/2008	2000	<1	360	Absent	Absent	4	1.31
9/3/2008	1700	<1	500	Absent	Absent	<1	1.17
9/9/2008	1400	1	550	Absent	Absent	<1	1.44
9/17/2008	1700	<1	440	Absent	Absent	<1	1.33
9/23/2008	1400	<1	230	Absent	Absent	<1	1.40
9/30/2008	12000	<1	110	Absent	Absent	<1	1.26
10/7/2008	8200	1	210	Absent	Absent	<1	1.66
10/14/2008	3100	1	180	Absent	Absent	3	1.33
10/21/2008	2100	<1	540	Absent	Absent	1	2.02
10/28/2008	3100	2	170	Absent	Absent	<1	1.63
11/4/2008	3400	1	730	Absent	Absent	<1	1.43
11/12/2008	1200	<1	470	Absent	Absent	<1	1.68
11/19/2008	770	<1	160	Absent	Absent	<1	1.45
11/25/2008	340	<1	330	Absent	Absent	4	1.49
12/2/2008	330	<1	210	Absent	Absent	<1	1.65
12/9/2008	140	<1	240	Absent	Absent	2	1.42
12/16/2008	54	1	380	Absent	Absent	8	1.45
12/22/2008	27	<1	320	Absent	Absent	<1	1.67
12/30/2008	15	1	530	Absent	Absent	<1	1.68

APPENDIX C-2
WHALE ROCK RESERVOIR WATERSHED SANITARY SURVEY 2011
SAN LUIS OBISPO COUNTY SERVICE AREA 10 - CAYUCOS WATER TREATMENT DATA
BACTERIOLOGICAL DATA (January,2006 - June,2011)

2009	Total coliform MPN/100mL	E. coli MPN/100 mL	Heterotrophic Plate Count CFU/mL	Total coliform	E. coli	Heterotrophic Plate Count CFU/mL	Chlorine Residual, mg/L
Average	1554	<1	636	Absent	Absent	1	1.46
Minimum Value	2	<1	72	Absent	Absent	<1	1.13
Maximum Value	12000	3	2900	Absent	Absent	10	2.03
Number of Samples	52	52	52	52	52	52	52
1/6/2009	2	<1	1900	Absent	Absent	2	1.87
1/13/2009	29	<1	110	Absent	Absent	<1	1.57
1/20/2009	330	<1	90	Absent	Absent	<1	1.53
1/27/2009	9800	<1	96	Absent	Absent	<1	1.41
2/3/2009	7300	<1	290	Absent	Absent	4	1.30
2/10/2009	1200	<1	190	Absent	Absent	1	1.38
2/17/2009	330	<1	280	Absent	Absent	1	1.46
2/24/2009	190	1	160	Absent	Absent	1	1.53
3/3/2009	730	<1	1000	Absent	Absent	<1	1.61
3/10/2009	1700	<1	140	Absent	Absent	1	1.70
3/17/2009	490	<1	230	Absent	Absent	<1	1.57
3/24/2009	260	<1	72	Absent	Absent	<1	1.35
3/31/2009	2400	3	310	Absent	Absent	<1	1.28
4/7/2009	610	<1	1300	Absent	Absent	<1	1.47
4/14/2009	130	<1	160	Absent	Absent	10	1.41
4/21/2009	200	<1	280	Absent	Absent	2	1.64
4/28/2009	3300	1	240	Absent	Absent	1	1.63
5/5/2009	2400	<1	2100	Absent	Absent	2	1.49
5/12/2009	12000	<1	460	Absent	Absent	2	1.53
5/19/2009	2800	<1	290	Absent	Absent	<1	1.67
5/27/2009	1700	<1	150	Absent	Absent	1	1.45
6/2/2009	730	<1	240	Absent	Absent	2	1.53
6/9/2009	300	1	190	Absent	Absent	1	1.26
6/16/2009	340	<1	120	Absent	Absent	<1	1.51
6/23/2009	260	<1	100	Absent	Absent	<1	1.42
6/30/2009	260	<1	1300	Absent	Absent	<1	1.54
7/7/2009	1400	<1	890	Absent	Absent	<1	1.47
7/14/2009	410	<1	1400	Absent	Absent	<1	1.42
7/22/2009	330	<1	950	Absent	Absent	<1	1.38
7/28/2009	490	<1	1300	Absent	Absent	<1	1.38
8/4/2009	730	<1	2900	Absent	Absent	5	1.16
8/11/2009	1600	<1	1100	Absent	Absent	<1	1.55
8/18/2009	2500	<1	670	Absent	Absent	1	1.18
8/25/2009	3100	<1	720	Absent	Absent	1	1.29
9/1/2009	3700	<1	1100	Absent	Absent	<1	1.22
9/8/2009	4900	<1	1500	Absent	Absent	<1	1.41
9/15/2009	3700	<1	1000	Absent	Absent	<1	1.13
9/22/2009	2000	<1	1100	Absent	Absent	3	1.34
9/29/2009	2400	<1	910	Absent	Absent	<1	1.39
10/6/2009	870	1	1100	Absent	Absent	1	1.20
10/13/2009	870	<1	410	Absent	Absent	<1	1.29
10/20/2009	1400	3	1500	Absent	Absent	<1	1.47
10/27/2009	390	1	220	Absent	Absent	<1	1.32
11/3/2009	120	<1	380	Absent	Absent	1	1.35
11/10/2009	62	<1	400	Absent	Absent	<1	1.31
11/17/2009	23	<1	460	Absent	Absent	<1	1.66
11/23/2009	15	2	400	Absent	Absent	<1	1.50
12/1/2009	5	2	200	Absent	Absent	<1	1.59
12/8/2009	3	<1	250	Absent	Absent	<1	1.52
12/15/2009	10	2	210	Absent	Absent	3	1.61
12/22/2009	8	1	130	Absent	Absent	<1	1.79
12/29/2009	6	1	84	Absent	Absent	<1	2.03

APPENDIX C-2
WHALE ROCK RESERVOIR WATERSHED SANITARY SURVEY 2011
SAN LUIS OBISPO COUNTY SERVICE AREA 10 - CAYUCOS WATER TREATMENT DATA
BACTERIOLOGICAL DATA (January,2006 - June,2011)

2010	Total coliform MPN/100mL	E. coli MPN/100 mL	Heterotrophic Plate Count CFU/mL	Total coliform	E. coli	Heterotrophic Plate Count CFU/mL	Chlorine Residual, mg/L
Average	251	3	265	Absent	Absent	3	1.44
Minimum Value	1	<1	9	Absent	Absent	<1	1.11
Maximum Value	2500	59	1100	Absent	Absent	20	1.69
Number of Samples	52	52	52	52	52	52	52
1/5/2010	7	<1	130	Absent	Absent	<1	1.67
1/12/2010	1	<1	120	Absent	Absent	<1	1.48
1/19/2010	13	3	120	Absent	Absent	<1	1.33
1/27/2010	390	25	570	Absent	Absent	<1	1.55
2/2/2010	45	2	330	Absent	Absent	4	1.48
2/9/2010	20	<1	200	Absent	Absent	3	1.68
2/16/2010	10	<1	91	Absent	Absent	<1	1.26
2/23/2010	7	1	80	Absent	Absent	4	1.57
3/1/2010	490	29	510	Absent	Absent	<1	1.38
3/8/2010	250	4	180	Absent	Absent	<1	1.34
3/16/2010	78	2	190	Absent	Absent	4	1.69
3/23/2010	79	1	140	Absent	Absent	<1	1.36
3/30/2010	39	<1	89	Absent	Absent	<1	1.54
4/6/2010	140	<1	280	Absent	Absent	18	1.53
4/13/2010	120	<1	39	Absent	Absent	1	1.47
4/21/2010	57	<1	130	Absent	Absent	<1	1.64
4/27/2010	200	<1	120	Absent	Absent	1	1.37
5/4/2010	27	<1	170	Absent	Absent	<1	1.51
5/11/2010	40	1	110	Absent	Absent	<1	1.32
5/19/2010	29	<1	76	Absent	Absent	<1	1.46
5/25/2010	17	<1	140	Absent	Absent	<1	1.40
6/2/2010	43	<1	160	Absent	Absent	20	1.36
6/8/2010	44	<1	140	Absent	Absent	5	1.23
6/15/2010	72	<1	180	Absent	Absent	<1	1.56
6/22/2010	80	<1	170	Absent	Absent	4	1.40
6/29/2010	58	<1	160	Absent	Absent	<1	1.59
7/7/2010	56	1	88	Absent	Absent	4	1.36
7/13/2010	96	<1	120	Absent	Absent	<1	1.33
7/20/2010	460	<1	240	Absent	Absent	<1	1.58
7/27/2010	130	<1	170	Absent	Absent	<1	1.11
8/3/2010	120	1	250	Absent	Absent	7	1.34
8/11/2010	180	<1	420	Absent	Absent	2	1.41
8/17/2010	120	<1	740	Absent	Absent	17	1.59
8/24/2010	120	<1	750	Absent	Absent	1	1.45
8/31/2010	2500	<1	340	Absent	Absent	<1	1.22
9/8/2010	200	<1	570	Absent	Absent	2	1.44
9/14/2010	220	<1	740	Absent	Absent	11	1.27
9/20/2010	720	<1	320	Absent	Absent	14	1.48
9/28/2010	2400	<1	250	Absent	Absent	4	1.55
10/5/2010	360	2	210	Absent	Absent	2	1.42
10/13/2010	240	<1	130	Absent	Absent	<1	1.60
10/19/2010	180	1	150	Absent	Absent	<1	1.44
10/26/2010	38	<1	150	Absent	Absent	1	1.30
11/2/2010	42	2	140	Absent	Absent	2	1.26
11/9/2010	31	<1	180	Absent	Absent	<1	1.52
11/16/2010	34	<1	210	Absent	Absent	<1	1.34
11/23/2010	80	<1	1100	Absent	Absent	1	1.40
11/30/2010	62	<1	410	Absent	Absent	<1	1.43
12/7/2010	1300	<1	9	Absent	Absent	2	1.19
12/14/2010	12	3	380	Absent	Absent	2	1.44
12/21/2010	440	59	700	Absent	Absent	1	1.52
12/28/2010	550	31	410	Absent	Absent	<1	1.51

APPENDIX C-3
WHALE ROCK RESERVOIR WATERSHED SANITARY SURVEY 2011
SAN LUIS OBISPO COUNTY SERVICE AREA 10 - CAYUCOS WATER TREATMENT DATA
IRON and MANGANESE DATA (January,2006 - June,2011)

Date	RAW WATER DATA		DELIVERED WATER DATA	
	Iron (ug/L)	Manganese (ug/L)	Iron (ug/L)	Manganese (ug/L)
Average	143	25	8	<5
Minimum Value	19	<5	<5	<5
Maximum Value	580	190	30	6
Number of Samples	52	52	52	52
Drinking Water Secondary Maximum Contaminant Levels			300	50
1/4/2006	580	24	<5	<5
1/11/2006	330	18	7	<5
1/18/2006	220	21	14	<5
1/25/2006	350	16	14	<5
2/1/2006	180	6	9	<5
2/8/2006	270	9	5	<5
2/15/2006	180	8	7	<5
2/22/2006	260	10	7	<5
2/28/2006	350	13	<5	<5
3/8/2006	220	14	5	<5
3/15/2006	330	14	<5	<5
3/22/2006	270	9	<5	<5
3/27/2006	150	8	8	<5
4/4/2006	360	10	8	<5
4/12/2006	180	9	5	<5
4/19/2006	340	12	14	<5
4/25/2006	300	8	<5	<5
5/3/2006	140	<5	8	<5
5/10/2006	97	<5	7	<5
5/17/2006	99	5	11	<5
5/24/2006	100	<5	12	<5
5/31/2006	45	<5	8	<5
6/7/2006	40	<5	<5	<5
6/14/2006	27	<5	9	<5
6/21/2006	21	<5	7	<5
6/28/2006	22	<5	11	<5
7/5/2006	41	5	10	<5
7/12/2006	19	6	9	5
7/18/2006	24	<5	8	<5
7/24/2006	31	5	6	<5
8/2/2006	49	42	13	<5
8/9/2006	49	67	24	<5
8/16/2006	50	40	30	<5
8/21/2006	32	54	12	<5
8/30/2006	33	60	16	<5
9/6/2006	32	99	11	<5
9/13/2006	29	100	12	<5
9/20/2006	150	180	16	<5
9/27/2006	52	190	14	6
10/4/2006	65	<5	8	<5
10/10/2006	61	<5	<5	<5
10/16/2006	57	<5	10	<5
10/23/2006	72	7	<5	<5
11/1/2006	53	5	6	<5
11/6/2006	92	6	<5	<5
11/15/2006	95	15	7	<5
11/20/2006	110	13	10	<5
11/30/2006	130	24	<5	<5
12/5/2006	130	80	7	<5
12/12/2006	190	47	13	<5
12/20/2006	190	20	7	<5
12/27/2006	140	12	8	<5

APPENDIX C-3
WHALE ROCK RESERVOIR WATERSHED SANITARY SURVEY 2011
SAN LUIS OBISPO COUNTY SERVICE AREA 10 - CAYUCOS WATER TREATMENT DATA
IRON and MANGANESE DATA (January,2006 - June,2011)

Date	Iron (ug/L)	Manganese (ug/L)	Iron (ug/L)	Manganese (ug/L)
Average	125	27	6	<5
Minimum Value	50	<5	<5	<5
Maximum Value	360	150	13	9
Number of Samples	52	52	52	52
Drinking Water Secondary Maximum Contaminant Levels			300	50
1/2/2007	130	10	<5	<5
1/9/2007	190	12	7	<5
1/16/2007	360	33	7	<5
1/23/2007	180	8	7	<5
1/30/2007	120	6	5	<5
2/6/2007	170	6	7	<5
2/13/2007	59	<5	5	<5
2/20/2007	59	6	11	<5
2/27/2007	84	<5	8	<5
3/6/2007	89	<5	<5	<5
3/13/2007	100	<5	<5	<5
3/20/2007	57	<5	<5	<5
3/27/2007	330	15	<5	<5
4/3/2007	150	6	8	<5
4/10/2007	160	5	<5	<5
4/17/2007	200	11	9	<5
4/24/2007	150	8	<5	<5
5/1/2007	120	13	7	<5
5/8/2007	160	25	<5	<5
5/15/2007	130	23	8	<5
5/22/2007	85	26	6	<5
5/29/2007	69	24	8	<5
6/5/2007	50	48	10	<5
6/12/2007	110	63	9	<5
6/19/2007	98	89	11	<5
6/26/2007	130	100	5	<5
7/3/2007	120	150	8	<5
7/10/2007	150	150	8	6
7/17/2007	89	7	7	<5
7/24/2007	92	6	<5	<5
7/31/2007	250	24	<5	7
8/7/2007	54	5	<5	<5
8/14/2007	72	7	10	<5
8/21/2007	77	8	6	<5
8/28/2007	92	8	5	<5
9/4/2007	130	11	12	<5
9/11/2007	92	10	13	<5
9/18/2007	130	10	9	<5
9/25/2007	160	12	<5	<5
10/2/2007	100	8	<5	<5
10/9/2007	92	8	9	<5
10/16/2007	92	8	8	<5
10/23/2007	120	19	6	6
10/30/2007	63	11	6	<5
11/6/2007	110	23	7	<5
11/13/2007	57	10	6	<5
11/19/2007	95	25	<5	<5
11/27/2007	96	38	10	<5
12/4/2007	100	99	5	<5
12/11/2007	190	100	6	7
12/17/2007	200	85	11	<5
12/26/2007	160	44	7	9

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WHALE ROCK RESERVOIR WATERSHED SANITARY SURVEY 2011
SAN LUIS OBISPO COUNTY SERVICE AREA 10 - CAYUCOS WATER TREATMENT DATA
IRON and MANGANESE DATA (January,2006 - June,2011)

Date	Iron (ug/L)	Manganese (ug/L)	Iron (ug/L)	Manganese (ug/L)
Average	147	51	6	<5
Minimum Value	50	<5	<5	<5
Maximum Value	700	290	27	20
Number of Samples	53	53	53	53
Drinking Water Secondary Maximum Contaminant Levels			300	50
1/2/2008	260	30	5	<5
1/8/2008	140	11	8	<5
1/15/2008	200	12	12	<5
1/22/2008	140	7	<5	<5
1/29/2008	300	8	<5	<5
2/5/2008	400	11	6	<5
2/13/2008	320	9	<5	<5
2/19/2008	230	12	7	<5
2/26/2008	280	9	11	<5
3/4/2008	190	6	15	<5
3/11/2008	140	6	<5	<5
3/18/2008	170	<5	9	<5
3/25/2008	150	6	13	<5
4/1/2008	110	<5	14	<5
4/8/2008	81	6	<5	<5
4/15/2008	82	<5	7	<5
4/22/2008	92	7	<5	<5
4/29/2008	110	7	6	<5
5/6/2008	63	<5	5	<5
5/13/2008	79	<5	<5	<5
5/20/2008	81	10	6	<5
5/27/2008	82	11	10	<5
6/3/2008	88	13	6	<5
6/10/2008	53	10	8	<5
6/17/2008	68	13	8	<5
6/23/2008	76	16	8	<5
7/1/2008	65	22	27	20
7/8/2008	62	23	<5	<5
7/15/2008	50	22	7	<5
7/22/2008	130	43	<5	<5
7/29/2008	200	82	<5	<5
8/5/2008	200	99	6	<5
8/12/2008	180	62	<5	<5
8/19/2008	180	160	9	<5
8/26/2008	130	160	9	<5
9/3/2008	150	190	10	<5
9/9/2008	130	180	6	<5
9/17/2008	93	190	7	<5
9/23/2008	110	280	9	<5
9/30/2008	62	55	6	<5
10/7/2008	110	27	<5	<5
10/14/2008	110	28	<5	<5
10/21/2008	98	28	<5	<5
10/28/2008	80	26	5	<5
11/4/2008	85	33	7	<5
11/12/2008	100	44	9	<5
11/19/2008	120	58	8	<5
11/25/2008	110	60	13	<5
12/2/2008	82	77	9	<5
12/9/2008	140	130	8	<5
12/16/2008	110	44	<5	<5
12/22/2008	200	50	<5	<5
12/30/2008	700	290	5	<5

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WHALE ROCK RESERVOIR WATERSHED SANITARY SURVEY 2011
SAN LUIS OBISPO COUNTY SERVICE AREA 10 - CAYUCOS WATER TREATMENT DATA
IRON and MANGANESE DATA (January,2006 - June,2011)

Date	Iron (ug/L)	Manganese (ug/L)	Iron (ug/L)	Manganese (ug/L)
Average	153	97	5	<5
Minimum Value	42	8	<5	<5
Maximum Value	340	440	12	8
Number of Samples	52	52	52	52
Drinking Water Secondary Maximum Contaminant Levels			300	50
1/6/2009	190	17	7	<5
1/13/2009	340	24	<5	<5
1/20/2009	200	15	8	<5
1/27/2009	180	10	<5	<5
2/3/2009	150	8	<5	<5
2/10/2009	280	21	<5	<5
2/17/2009	190	16	12	<5
2/24/2009	230	12	<5	<5
3/3/2009	220	18	<5	<5
3/10/2009	270	18	6	<5
3/17/2009	320	54	7	<5
3/24/2009	190	50	<5	<5
3/31/2009	210	79	9	<5
4/7/2009	180	60	8	<5
4/14/2009	100	97	6	<5
4/21/2009	150	79	6	<5
4/28/2009	77	71	9	8
5/5/2009	110	99	<5	<5
5/12/2009	97	100	7	<5
5/19/2009	170	240	8	<5
5/27/2009	230	330	6	<5
6/2/2009	190	170	6	<5
6/9/2009	230	190	7	<5
6/16/2009	210	100	7	<5
6/23/2009	260	290	9	<5
6/30/2009	47	63	12	<5
7/7/2009	43	65	<5	<5
7/14/2009	74	83	7	<5
7/22/2009	87	75	<5	<5
7/28/2009	66	75	<5	<5
8/4/2009	68	440	6	<5
8/11/2009	69	69	6	<5
8/18/2009	80	90	7	<5
8/25/2009	62	68	6	<5
9/1/2009	90	82	<5	<5
9/8/2009	83	87	11	<5
9/15/2009	99	86	8	<5
9/22/2009	90	78	<5	<5
9/29/2009	120	90	6	<5
10/6/2009	140	160	10	<5
10/13/2009	97	110	6	<5
10/20/2009	150	110	<5	<5
10/27/2009	97	120	5	<5
11/3/2009	110	180	6	<5
11/10/2009	150	180	<5	<5
11/17/2009	170	180	<5	<5
11/23/2009	170	170	<5	<5
12/1/2009	230	70	5	<5
12/8/2009	160	46	5	<5
12/15/2009	240	38	11	<5
12/22/2009	42	24	10	<5
12/29/2009	140	21	5	<5

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WHALE ROCK RESERVOIR WATERSHED SANITARY SURVEY 2011
SAN LUIS OBISPO COUNTY SERVICE AREA 10 - CAYUCOS WATER TREATMENT DATA
IRON and MANGANESE DATA (January,2006 - June,2011)

Date	Iron (ug/L)	Manganese (ug/L)	Iron (ug/L)	Manganese (ug/L)
Average	173	82	<5	<5
Minimum Value	41	<5	<5	<5
Maximum Value	670	390	13	14
Number of Samples	52	52	52	52
Drinking Water Secondary Maximum Contaminant Levels			300	50
1/5/2010	320	61	<5	<5
1/12/2010	220	16	<5	<5
1/19/2010	670	41	<5	<5
1/27/2010	290	35	8	<5
2/2/2010	300	27	<5	<5
2/9/2010	260	26	6	<5
2/16/2010	240	15	6	<5
2/23/2010	150	22	<5	<5
3/1/2010	370	18	<5	<5
3/8/2010	130	16	<5	<5
3/16/2010	300	28	<5	<5
3/23/2010	200	20	<5	<5
3/30/2010	130	12	8	5
4/6/2010	110	7	6	<5
4/13/2010	180	12	12	<5
4/21/2010	310	33	7	5
4/27/2010	370	52	<5	<5
5/4/2010	140	54	<5	<5
5/11/2010	300	110	5	<5
5/19/2010	220	68	7	6
5/25/2010	200	120	6	6
6/2/2010	170	240	<5	<5
6/8/2010	160	390	<5	<5
6/15/2010	140	390	<5	14
6/22/2010	51	370	5	<5
6/29/2010	59	340	5	<5
7/7/2010	54	340	9	<5
7/13/2010	74	350	8	<5
7/20/2010	41	71	<5	<5
7/27/2010	45	<5	<5	<5
8/3/2010	65	36	<5	<5
8/11/2010	84	22	8	<5
8/17/2010	53	350	11	10
8/24/2010	98	16	8	6
8/31/2010	95	15	<5	<5
9/8/2010	44	<5	<5	<5
9/14/2010	71	5	12	<5
9/20/2010	88	37	<5	<5
9/28/2010	110	29	7	<5
10/5/2010	120	40	<5	<5
10/13/2010	75	7	<5	<5
10/19/2010	110	30	<5	6
10/26/2010	190	14	<5	<5
11/2/2010	160	38	13	<5
11/9/2010	280	43	11	<5
11/16/2010	120	73	<5	<5
11/23/2010	65	85	<5	<5
11/30/2010	86	51	8	<5
12/7/2010	75	15	7	<5
12/14/2010	99	13	7	<5
12/21/2010	200	10	5	<5
12/28/2010	520	27	<5	<5

APPENDIX C-3
WHALE ROCK RESERVOIR WATERSHED SANITARY SURVEY 2011
SAN LUIS OBISPO COUNTY SERVICE AREA 10 - CAYUCOS WATER TREATMENT DATA
IRON and MANGANESE DATA (January,2006 - June,2011)

Date	Iron (ug/L)	Manganese (ug/L)	Iron (ug/L)	Manganese (ug/L)
Average	272	36	5	<5
Minimum Value	83	<5	<5	<5
Maximum Value	1700	360	13	<5
Number of Samples	25	25	25	25
Drinking Water Secondary Maximum Contaminant Levels			300	50
1/4/2011	1700	360	10	<5
1/11/2011	370	40	<5	<5
1/19/2011	370	26	9	<5
1/25/2011	170	12	6	<5
2/8/2011	260	17	10	<5
2/15/2011	250	6	9	<5
2/22/2011	160	25	<5	<5
3/1/2011	200	8	<5	<5
3/8/2011	200	7	8	<5
3/14/2011	140	6	<5	<5
3/23/2011	610	53	8	<5
3/29/2011	290	10	<5	<5
4/5/2011	300	8	<5	<5
4/12/2011	220	8	9	<5
4/19/2011	130	6	<5	<5
4/26/2011	120	9	<5	<5
5/3/2011	110	<5	6	<5
5/10/2011	260	14	13	<5
5/18/2011	150	5	13	<5
5/24/2011	150	6	9	<5
5/31/2011	120	12	<5	<5
6/7/2011	200	53	5	<5
6/14/2011	120	31	<5	<5
6/21/2011	83	26	<5	<5
6/28/2011	110	150	9	<5

Average for 2006 - 2011

Date	Iron (ug/L)	Manganese (ug/L)	Iron (ug/L)	Manganese (ug/L)
Average	160	55	6	<5
Minimum Value	19	<5	<5	<5
Maximum Value	1700	440	30	20
Number of Samples	286	286	286	286
Drinking Water Secondary Maximum Contaminant Levels			300	50

APPENDIX C-4
WHALE ROCK RESERVOIR WATERSHED SANITARY SURVEY 2011
SAN LUIS OBISPO COUNTY SERVICE AREA 10 - CAYUCOS WATER TREATMENT DATA
PHYSICAL DATA (January,2006 - June,2011)

Date	RAW WATER DATA				DELIVERED WATER DATA			
	Temperature °C	Threshold Odor @ 60°C	True Color (Color Unit)	Turbidity (NTU)	Temperature °C	Threshold Odor @ 60°C	True Color (Color Unit)	Turbidity (NTU)
Average	15	4.7	4	2.5	17	1.6	1	0.09
Minimum Value	10	1.2	3	0.75	12	1.0	<1	0.04
Maximum Value	23	15	8	9.1	24	3.0	3	0.19
1/4/2006	12	2.5	5	4.0	14	1.4	1	0.13
1/11/2006	14	3.0	5	3.0	14	1.4	1	0.11
1/18/2006	14	2.5	6	6.5	13	1.7	1	0.12
1/25/2006	15	1.7	8	6.3	14	1.4	1	0.19
2/1/2006	16	3.0	8	6.4	13	1.4	1	0.14
2/8/2006	16	3.0	8	5.0	16	1.2	1	0.10
2/15/2006	16	3.0	6	2.4	15	1.2	1	0.11
2/22/2006	16	6.0	6	2.1	14	1.4	1	0.13
2/28/2006	17	5.0	6	2.4	15	1.4	1	0.09
3/8/2006	18	6.0	5	2.1	14	1.0	<1	0.11
3/15/2006	20	3.0	5	2.0	14	1.2	1	0.12
3/22/2006	18	4.0	5	2.0	15	1.4	1	0.10
3/27/2006	21	3.0	4	1.1	15	1.4	1	0.12
4/4/2006	22	5.0	4	1.3	15	1.2	1	0.10
4/12/2006	21	4.0	4	1.3	15	1.4	1	0.10
4/19/2006	22	5.0	4	1.8	19	1.4	1	0.11
4/25/2006	22	4.0	3	3.2	17	1.2	1	0.12
5/3/2006	21	6.0	3	0.98	17	1.7	1	0.09
5/10/2006	23	2.5	3	2.1	19	1.4	1	0.11
5/17/2006	14	1.4	4	1.3	19	1.2	1	0.08
5/24/2006	15	3.0	5	3.1	20	1.7	1	0.09
5/31/2006	14	5.0	5	0.79	20	1.7	1	0.10
6/7/2006	14	3.0	4	1.0	21	1.7	1	0.09
6/14/2006	15	2.5	4	0.75	20	1.7	1	0.09
6/21/2006	14	5.0	5	3.3	21	1.7	1	0.11
6/28/2006	17	5.0	5	1.1	21	1.4	<1	0.10
7/5/2006	13	5.0	5	0.83	22	2.0	1	0.10
7/12/2006	13	5.0	5	2.3	22	3.0	1	0.11
7/18/2006	19	4.0	3	1.4	20	1.7	<1	0.09
7/24/2006	19	6.0	3	1.1	24	1.4	<1	0.08
8/2/2006	19	15	3	0.80	18	1.2	<1	0.08
8/9/2006	19	1.2	3	1.1	18	1.7	1	0.10
8/16/2006	16	5.0	3	1.2	17	1.7	1	0.10
8/21/2006	17	3.0	3	1.0	16	2.0	1	0.11
8/30/2006	16	2.0	3	1.5	16	1.7	1	0.11
9/6/2006	16	15	3	2.3	15	1.7	1	0.07
9/13/2006	15	2.0	4	1.9	16	1.7	1	0.06
9/20/2006	14	10	4	4.1	15	1.4	1	0.06
9/27/2006	14	3.0	4	2.8	19	1.7	1	0.06
10/4/2006	11	4.0	4	2.3	18	2.5	1	0.08
10/10/2006	12	5.0	4	1.9	19	2.0	1	0.05
10/16/2006	12	10	4	3.8	19	1.7	1	0.05
10/23/2006	12	2.5	3	3.5	19	1.2	<1	0.06
11/1/2006	11	6.0	4	9.1	17	1.4	3	0.06
11/6/2006	10	6.0	4	2.9	18	1.7	<1	0.06
11/15/2006	11	2.5	3	2.1	17	1.7	<1	0.07
11/20/2006	10	5.0	4	3.1	17	1.4	<1	0.06
11/30/2006	11	3.0	4	1.2	15	1.2	1	0.05
12/5/2006	12	15	5	3.4	14	1.2	1	0.05
12/12/2006	10	1.7	3	1.6	15	2.0	<1	0.04
12/20/2006	12	4.0	3	2.3	12	1.2	<1	0.04
12/27/2006	14	4.0	3	2.1	14	1.7	1	0.05

APPENDIX C-4
WHALE ROCK RESERVOIR WATERSHED SANITARY SURVEY 2011
SAN LUIS OBISPO COUNTY SERVICE AREA 10 - CAYUCOS WATER TREATMENT DATA
PHYSICAL DATA (January,2006 - June,2011)

Date	RAW WATER DATA				DELIVERED WATER DATA			
	Temperature °C	Threshold Odor @ 60°C	True Color (Color Unit)	Turbidity (NTU)	Temperature °C	Threshold Odor @ 60°C	True Color (Color Unit)	Turbidity (NTU)
Average	15	5.2	3	3.6	17	1.6	1	0.06
Minimum Value	11	1.4	2	0.84	11	1.0	<1	0.04
Maximum Value	23	15	7	11	23	2.5	1	0.12
1/2/2007	13	4.0	3	1.7	12	1.4	<1	0.06
1/9/2007	12	4.0	4	6.7	14	1.7	<1	0.06
1/16/2007	12	5.0	3	3.8	11	1.7	1	0.05
1/23/2007	14	3.0	3	2.9	11	2.0	1	0.08
1/30/2007	12	7.0	4	7.9	12	1.4	1	0.06
2/6/2007	13	4.0	3	3.3	12	1.2	<1	0.07
2/13/2007	12	5.0	4	4.3	13	1.4	1	0.06
2/20/2007	12	1.4	4	11	13	1.4	1	0.06
2/27/2007	13	3.0	4	3.5	13	1.7	<1	0.06
3/6/2007	12	12	4	7.1	14	1.7	1	0.06
3/13/2007	12	4.0	3	1.2	17	1.7	<1	0.06
3/20/2007	13	6.0	6	2.5	14	1.7	1	0.05
3/27/2007	12	5.0	3	1.8	14	1.4	<1	0.05
4/3/2007	12	5.0	3	2.3	13	1.7	1	0.05
4/10/2007	13	4.0	3	2.3	16	2.0	1	0.06
4/17/2007	13	10	4	5.9	14	1.7	1	0.06
4/24/2007	13	9.0	3	2.3	16	1.4	1	0.06
5/1/2007	23	15	2	2.1	14	1.7	1	0.07
5/8/2007	23	12	3	1.2	15	1.7	<1	0.07
5/15/2007	22	6.0	2	2.9	16	2.0	<1	0.06
5/22/2007	22	12	2	3.9	12	1.7	<1	0.06
5/29/2007	23	5.0	2	2.3	15	1.7	<1	0.05
6/5/2007	23	6.0	2	1.7	14	1.4	<1	0.06
6/12/2007	22	6.0	2	2.1	16	1.4	<1	0.04
6/19/2007	22	6.0	2	3.3	14	2.0	<1	0.06
6/26/2007	22	4.0	2	1.8	16	2.0	<1	0.05
7/3/2007	21	2.5	2	1.4	16	1.7	<1	0.05
7/10/2007	21	2.0	2	2.2	15	1.7	<1	0.11
7/17/2007	20	6.0	2	2.1	23	1.4	<1	0.08
7/24/2007	19	2.5	2	1.1	23	1.4	<1	0.05
7/31/2007	18	5.0	2	1.4	21	2.5	<1	0.06
8/7/2007	18	2.0	2	1.2	22	1.4	<1	0.06
8/14/2007	17	7.0	3	1.9	23	2.0	<1	0.07
8/21/2007	16	7.0	3	6.4	22	1.4	<1	0.06
8/28/2007	18	2.0	2	0.84	23	1.7	<1	0.05
9/4/2007	18	8.0	2	2.2	22	2.5	<1	0.04
9/11/2007	15	3.0	3	1.3	23	1.2	<1	0.05
9/18/2007	13	5.0	3	4.5	21	1.4	<1	0.05
9/25/2007	13	4.0	3	2.9	22	1.2	<1	0.07
10/2/2007	13	3.0	3	2.8	20	1.2	<1	0.07
10/9/2007	12	3.0	3	2.8	20	1.2	<1	0.06
10/16/2007	11	7.0	3	8.4	18	1.2	<1	0.05
10/23/2007	11	3.0	3	4.6	21	1.4	<1	0.05
10/30/2007	12	2.5	3	2.8	17	1.7	1	0.06
11/6/2007	11	6.0	7	4.9	16	1.4	<1	0.06
11/13/2007	11	3.0	4	4.2	19	1.2	<1	0.06
11/19/2007	11	5.0	5	8.8	18	1.7	<1	0.07
11/27/2007	11	2.5	4	5.7	17	1.0	<1	0.06
12/4/2007	12	4.0	4	4.5	15	1.7	1	0.04
12/11/2007	13	2.5	5	5.6	14	1.4	<1	0.12
12/17/2007	13	6.0	5	7.1	14	1.4	<1	0.06
12/26/2007	15	5.0	3	1.8	13	1.0	<1	0.06

APPENDIX C-4
WHALE ROCK RESERVOIR WATERSHED SANITARY SURVEY 2011
SAN LUIS OBISPO COUNTY SERVICE AREA 10 - CAYUCOS WATER TREATMENT DATA
PHYSICAL DATA (January,2006 - June,2011)

Date	RAW WATER DATA				DELIVERED WATER DATA			
	Temperature °C	Threshold Odor @ 60°C	True Color (Color Unit)	Turbidity (NTU)	Temperature °C	Threshold Odor @ 60°C	True Color (Color Unit)	Turbidity (NTU)
Average	15	5.8	3	4.2	16	1.7	1	0.09
Minimum Value	11	2	2	1	11	1	<1	0.05
Maximum Value	21	25	5	21	22	2	1	0.62
1/2/2008	13	5.0	4	4.0	12	1.4	<1	0.06
1/8/2008	17	2.5	3	2.4	12	1.7	<1	0.07
1/15/2008	13	4.0	3	2.5	14	1.4	<1	0.06
1/22/2008	15	3.0	2	1.2	11	1.4	<1	0.05
1/29/2008	17	3.0	3	1.8	12	1.4	<1	0.12
2/5/2008	16	4.0	3	4.5	12	1.7	1	0.06
2/13/2008	17	2.0	3	1.9	14	2.0	1	0.10
2/19/2008	17	6.0	3	2.8	13	1.7	<1	0.07
2/26/2008	18	2.0	3	1.4	14	1.7	1	0.06
3/4/2008	16	6.0	4	3.4	14	1.4	1	0.08
3/11/2008	17	4.0	3	2.6	17	2.0	<1	0.08
3/18/2008	18	7.0	3	4.4	14	1.2	<1	0.07
3/25/2008	19	2.5	3	2.0	16	1.2	<1	0.10
4/1/2008	18	6.5	3	5.6	14	1.7	1	0.06
4/8/2008	21	6.5	3	1.8	15	2.0	<1	0.05
4/15/2008	20	4.0	3	1.6	18	1.4	<1	0.06
4/22/2008	20	25	3	7.7	16	1.4	<1	0.05
4/29/2008	21	11	3	2.3	19	1.7	<1	0.09
5/6/2008	13	18	4	7.2	17	1.7	<1	0.06
5/13/2008	14	3.0	4	4.4	19	2.0	<1	0.06
5/20/2008	13	6.0	4	8.6	17	1.7	<1	0.05
5/27/2008	14	6.5	4	3.6	19	1.4	1	0.07
6/3/2008	13	6.0	4	7.0	18	2.0	<1	0.05
6/10/2008	14	5.5	4	3.7	20	2.3	1	0.62
6/17/2008	14	3.0	4	4.1	19	1.9	1	0.05
6/23/2008	14	3.0	4	1.8	21	1.6	<1	0.05
7/1/2008	14	4.7	5	5.0	20	1.3	1	0.21
7/8/2008	14	4.0	4	2.0	20	1.2	<1	0.10
7/15/2008	20	2.5	3	2.6	22	1.2	<1	0.08
7/22/2008	21	6.0	2	2.6	16	1.6	1	0.06
7/29/2008	20	2.3	3	2.1	16	2.0	1	0.10
8/5/2008	18	5.5	3	5.5	15	1.5	1	0.10
8/12/2008	18	2.5	3	1.5	17	2.3	<1	0.07
8/19/2008	17	8.0	4	5.8	15	1.6	<1	0.09
8/26/2008	16	3.0	3	2.3	18	2.0	<1	0.10
9/3/2008	17	5.0	3	2.0	16	2.3	1	0.13
9/9/2008	16	6.0	3	2.1	17	1.7	1	0.12
9/17/2008	15	10	3	5.1	16	1.6	1	0.12
9/23/2008	15	3.0	3	3.0	16	1.6	1	0.11
9/30/2008	14	6.0	3	3.7	17	1.7	1	0.13
10/7/2008	13	3.0	3	5.4	21	1.9	<1	0.06
10/14/2008	12	5.5	5	21	21	2.3	<1	0.05
10/21/2008	12	13	3	6.7	18	1.6	<1	0.05
10/28/2008	13	2.5	3	5.5	19	1.5	<1	0.08
11/4/2008	12	9.0	3	4.0	18	1.6	<1	0.06
11/12/2008	12	7.0	3	3.6	18	1.7	<1	0.07
11/19/2008	11	4.0	3	3.2	18	1.2	<1	0.06
11/25/2008	12	3.5	3	4.8	18	1.3	<1	0.06
12/2/2008	11	11	4	8.7	15	1.5	<1	0.06
12/9/2008	13	6.0	3	4.9	17	1.9	<1	0.11
12/16/2008	13	8.0	4	5.6	14	1.7	<1	0.05
12/22/2008	13	7.0	3	4.4	14	1.9	<1	0.05
12/30/2008	14	4.0	3	5.2	13	1.5	<1	0.08

APPENDIX C-4
WHALE ROCK RESERVOIR WATERSHED SANITARY SURVEY 2011
SAN LUIS OBISPO COUNTY SERVICE AREA 10 - CAYUCOS WATER TREATMENT DATA
PHYSICAL DATA (January,2006 - June,2011)

Date	RAW WATER DATA				DELIVERED WATER DATA			
	Temperature °C	Threshold Odor @ 60°C	True Color (Color Unit)	Turbidity (NTU)	Temperature °C	Threshold Odor @ 60°C	True Color (Color Unit)	Turbidity (NTU)
Average	16	8.1	3	5.0	16	1.5	1	0.07
Minimum Value	12	2.3	2	1.10	12	1.1	<1	0.05
Maximum Value	21	83	6	17	21	2.3	1	0.22
1/6/2009	14	4.0	3	3.4	12	1.1	<1	0.07
1/13/2009	14	25	3	5.6	14	1.2	<1	0.07
1/20/2009	14	6.5	3	5.7	13	1.5	<1	0.06
1/27/2009	16	2.5	3	2.6	13	1.3	<1	0.08
2/3/2009	15	10	3	6.5	13	1.7	<1	0.06
2/10/2009	16	6.5	3	2.4	12	1.4	1	0.22
2/17/2009	15	83	3	3.3	12	1.5	<1	0.05
2/24/2009	17	59	3	4.1	15	1.3	<1	0.07
3/3/2009	13	8.5	3	4.4	14	1.3	<1	0.07
3/10/2009	14	3.0	3	4.0	15	1.6	<1	0.06
3/17/2009	13	8.0	4	7.5	14	1.4	<1	0.08
3/24/2009	16	6.0	3	3.2	16	1.5	<1	0.07
3/31/2009	13	3.0	3	6.8	15	1.5	<1	0.05
4/7/2009	14	10	3	4.0	14	1.2	<1	0.06
4/14/2009	19	4.5	3	5.3	17	1.7	<1	0.06
4/21/2009	19	11	3	9.2	17	1.5	<1	0.06
4/28/2009	20	7.0	2	1.2	18	1.3	<1	0.06
5/5/2009	19	3.5	2	1.2	17	1.6	<1	0.07
5/12/2009	20	3.5	2	1.2	18	1.6	<1	0.10
5/19/2009	19	4.3	3	4.6	15	1.7	<1	0.09
5/27/2009	21	4.3	3	1.2	16	1.2	<1	0.06
6/2/2009	19	9.0	3	2.6	15	1.9	<1	0.05
6/9/2009	20	4.0	2	1.3	17	1.8	<1	0.05
6/16/2009	19	11	4	15	15	2.0	<1	0.06
6/23/2009	19	18	4	17	16	1.6	<1	0.06
6/30/2009	20	3.0	3	1.1	19	1.3	<1	0.06
7/7/2009	20	4.0	3	1.3	20	1.7	1	0.07
7/14/2009	20	3.0	2	1.9	20	1.5	<1	0.08
7/22/2009	17	4.0	3	3.7	20	1.7	1	0.06
7/28/2009	18	3.0	2	1.5	21	1.6	<1	0.09
8/4/2009	17	3.5	5	14	20	1.7	<1	0.06
8/11/2009	18	4.5	3	2.3	21	2.0	<1	0.06
8/18/2009	16	3.5	3	2.7	19	1.9	<1	0.05
8/25/2009	17	7.0	3	2.1	20	1.3	<1	0.05
9/1/2009	15	6.0	3	5.8	19	1.7	<1	0.06
9/8/2009	15	5.0	3	2.7	19	1.6	<1	0.08
9/15/2009	13	9.0	6	15	21	1.6	<1	0.09
9/22/2009	14	3.5	5	13	20	1.7	<1	0.07
9/29/2009	13	3.0	3	3.8	20	1.3	<1	0.07
10/6/2009	13	2.3	3	3.3	17	1.6	<1	0.06
10/13/2009	12	4.0	3	5.0	18	1.3	<1	0.06
10/20/2009	12	5.5	3	7.8	18	1.6	<1	0.05
10/27/2009	13	2.5	3	3.4	18	1.6	<1	0.06
11/3/2009	12	4.0	3	7.2	17	1.2	<1	0.06
11/10/2009	13	2.5	4	6.8	18	1.3	<1	0.06
11/17/2009	13	3.5	4	5.7	15	1.2	<1	0.05
11/23/2009	13	2.3	3	4.4	14	1.7	<1	0.05
12/1/2009	13	3.5	3	4.2	14	1.6	<1	0.08
12/8/2009	14	4.0	3	3.3	12	1.9	<1	0.06
12/15/2009	14	3.8	4	5.6	14	2.3	<1	0.06
12/22/2009	14	2.5	4	3.7	13	1.5	<1	0.11
12/29/2009	14	2.5	4	4.6	12	1.6	<1	0.05

APPENDIX C-4
WHALE ROCK RESERVOIR WATERSHED SANITARY SURVEY 2011
SAN LUIS OBISPO COUNTY SERVICE AREA 10 - CAYUCOS WATER TREATMENT DATA
PHYSICAL DATA (January,2006 - June,2011)

Date	RAW WATER DATA				DELIVERED WATER DATA			
	Temperature °C	Threshold Odor @ 60°C	True Color (Color Unit)	Turbidity (NTU)	Temperature °C	Threshold Odor @ 60°C	True Color (Color Unit)	Turbidity (NTU)
Average	17	8.4	4	5.0	18	1.6	1	0.07
Minimum Value	12	1.9	2	0.90	12	1.1	<1	0.04
Maximum Value	23	100	11	21	24	2.3	1	0.20
1/5/2010	16	4.0	4	2.8	13	1.7	<1	0.06
1/12/2010	14	2.5	4	3.1	14	1.3	<1	0.07
1/19/2010	15	3.0	4	1.5	12	1.5	<1	0.06
1/27/2010	17	4.0	4	2.7	13	1.6	<1	0.07
2/2/2010	16	2.8	4	5.4	14	1.6	<1	0.06
2/9/2010	17	3.0	5	6.4	14	1.4	<1	0.07
2/16/2010	15	4.0	6	12	15	1.5	<1	0.06
2/23/2010	17	3.3	5	7.4	14	1.4	<1	0.20
3/1/2010	15	20	6	21	15	2.3	<1	0.06
3/8/2010	17	6.0	5	5.6	15	1.3	<1	0.06
3/16/2010	15	14	5	16	17	1.4	<1	0.06
3/23/2010	17	7.0	4	2.8	17	1.1	<1	0.06
3/30/2010	16	5.0	3	1.9	16	1.2	<1	0.06
4/6/2010	18	7.0	3	1.1	15	1.6	<1	0.10
4/13/2010	17	5.0	3	1.4	18	1.5	<1	0.05
4/21/2010	16	9.0	3	1.2	18	1.6	<1	0.06
4/27/2010	19	100	4	1.9	18	1.2	<1	0.04
5/4/2010	19	6.0	3	1.3	17	1.6	<1	0.05
5/11/2010	23	4.5	2	1.1	18	1.2	<1	0.08
5/19/2010	21	5.5	2	1.4	17	1.7	<1	0.09
5/25/2010	22	7.0	2	1.4	18	1.6	<1	0.06
6/2/2010	21	4.3	3	6.5	17	1.7	<1	0.05
6/8/2010	23	2.3	2	1.6	19	2.0	<1	0.04
6/15/2010	21	6.5	3	6.5	17	1.9	1	0.14
6/22/2010	20	2.8	2	2.9	18	2.1	<1	0.04
6/29/2010	21	2.8	2	0.9	17	1.7	<1	0.16
7/7/2010	21	5.0	3	1.2	17	2.3	<1	0.07
7/13/2010	22	1.9	3	1.5	19	1.9	<1	0.06
7/20/2010	20	8.0	4	12	21	1.7	<1	0.08
7/27/2010	20	3.5	2	1.3	22	1.6	<1	0.06
8/3/2010	18	4.0	3	2.0	22	1.7	<1	0.06
8/11/2010	19	7.0	2	1.9	22	1.7	<1	0.06
8/17/2010	18	20	3	4.4	22	1.6	<1	0.06
8/24/2010	17	8.0	3	2.4	23	1.7	<1	0.07
8/31/2010	16	50	5	11	22	1.7	1	0.06
9/8/2010	17	2.5	3	1.3	21	1.6	<1	0.06
9/14/2010	15	3.0	3	1.1	21	1.8	<1	0.05
9/20/2010	14	8.5	3	1.6	22	1.9	<1	0.08
9/28/2010	16	8.0	3	2.1	24	1.9	<1	0.07
10/5/2010	15	12	4	3.6	20	1.7	<1	0.05
10/13/2010	13	4.3	5	7.8	20	1.6	<1	0.06
10/19/2010	12	11	11	18	19	1.6	<1	0.05
10/26/2010	15	4.5	9	9.0	20	1.6	<1	0.06
11/2/2010	12	6.5	10	19	18	1.4	<1	0.06
11/9/2010	12	2.5	8	5.0	17	1.7	<1	0.08
11/16/2010	12	3.0	7	4.1	17	1.6	<1	0.09
11/23/2010	12	6.0	6	8.2	16	1.6	<1	0.06
11/30/2010	12	3.3	5	2.7	15	2.0	<1	0.06
12/7/2010	12	5.0	7	12	14	1.7	<1	0.05
12/14/2010	12	3.0	6	4.0	16	1.5	<1	0.05
12/21/2010	13	2.3	6	2.7	15	1.4	<1	0.08
12/28/2010	13	2.5	5	1.9	14	1.4	<1	0.05

APPENDIX C-4
WHALE ROCK RESERVOIR WATERSHED SANITARY SURVEY 2011
SAN LUIS OBISPO COUNTY SERVICE AREA 10 - CAYUCOS WATER TREATMENT DATA
PHYSICAL DATA (January,2006 - June,2011)

Date	RAW WATER DATA				DELIVERED WATER DATA			
	Temperature °C	Threshold Odor @ 60°C	True Color (Color Unit)	Turbidity (NTU)	Temperature °C	Threshold Odor @ 60°C	True Color (Color Unit)	Turbidity (NTU)
Average	13	5.3	8	6.1	14	1.8	1	0.07
Minimum Value	12	2.3	5	1.9	12	1.3	1	0.04
Maximum Value	16	14	11	18	16	3.2	2	0.13
1/4/2011	13	4.5	9	12	12	1.5	<1	0.07
1/11/2011	14	5.0	8	4.9	16	1.5	<1	0.07
1/19/2011	14	5.0	11	18	14	1.3	<1	0.07
1/25/2011	14	2.5	8	3.7	15	1.3	1	0.12
2/1/2011	12	3.0	7	4.1	13	1.3	<1	0.06
2/8/2011	12	6.0	6	8.2	13	1.7	<1	0.06
2/15/2011	12	3.3	5	2.7	14	1.8	<1	0.07
2/22/2011	12	5.0	7	12	13	1.7	<1	0.06
3/1/2011	12	3.0	6	4.0	12	1.6	1	0.05
3/8/2011	13	2.3	6	2.7	14	2.0	<1	0.10
3/14/2011	13	2.5	9	1.9	14	2.1	<1	0.07
3/23/2011	13	4.5	9	12	13	1.4	1	0.08
3/29/2011	14	5.0	8	4.9	15	1.6	1	0.05
4/5/2011	14	5.0	11	18	15	2.3	2	0.07
4/12/2011	14	2.5	8	3.7	14	1.9	1	0.05
4/19/2011	14	2.3	7	4.6	15	2.0	1	0.05
4/26/2011	14	2.5	7	4.8	16	2.0	1	0.04
5/10/2011	14	4.0	8	5.8	15	3.2	2	0.13
5/18/2011	13	14	7	2.9	14	2.0	<1	0.07
5/24/2011	13	11	10	2.6	16	2.0	1	0.13
5/31/2011	15	10	7	4.6	16	2.8	1	0.07
6/7/2011	13	2.8	7	3.3	15	1.6	1	0.06
6/14/2011	13	6	7	5.1	16	1.5	1	0.07
6/21/2011	16	12	8	4.5	16	1.9	1	0.05
6/28/2011	14	8.0	7	2.5	16	2.0	1	0.05

APPENDIX C-5
WHALE ROCK RESERVOIR WATERSHED SANITARY SURVEY 2011
SAN LUIS OBISPO COUNTY SERVICE AREA 10 - CAYUCOS WATER TREATMENT DATA
GENERAL MINERALS DATA (2006 - 2011)

WHALE ROCK RESERVOIR RAW

Date	Bicarbonate as CaCO3	Calcium	Calculated Aggressive Index	Calculated Langelier Index	Carbonate as CaCO3	Chloride	Electrical Conductivity or Specific Conductance	Fluoride, Without Predistillation	Hydroxide as CaCO3	Magnesium	Methylene Blue Active Substances	Nitrate as Nitrogen	Nitrate as NO3	Nitrite as Nitrogen	pH (measured in field)	pH (measured in the Lab)	Sodium	Sulfate	Temperature	Total Alkalinity as CaCO3	Total Dissolved Solids	Total Hardness as CaCO3
Units	mg/L	mg/L			mg/L	mg/L	umhos/cm	mg/L	mg/L	mg/L	mg/L	ug/L	mg/L	ug/L			mg/L	mg/L	°C	mg/L	mg/L	mg/L
Treated Water MCLs					*500	*1600	2.0				*0.5	10000	45	1000				*500			*1000	
5/10/2006	210	44	12.7	0.7	20	22	590	0.34	0	37	<0.1	<100	<0.44	<100	8.28	8.34	29	71	16.2	230	420	260
5/15/2007	240	42	12.2	0.1	0	23	610	0.42	0	39	<0.1	<100	<0.44	<100	7.28	7.78	30	67	12.5	240	320	270
5/6/2008	240	43	13.0	1.0	0	25	620	0.33	0	41	<0.1	<100	<0.44	<100	8.46	8.63	32	73	17	240	360	280
5/5/2009	230	39	12.7	0.62	0	26.4	640	0.362	0	41	<0.1	<100	<0.44	<100	7.96	8.32	34	77	15	230	370	270
5/4/2010	180	49	12.8	0.74	60	26.6	660	0.357	0	42	<0.1	147	0.651	<100	8.32	8.33	35	77.9	15	240	390	290
5/3/2011	190	40	12.6	0.57	30	21.9	620	0.280	0	40	<0.1	358	1.59	<100	8.52	8.21	31	75.3	18	220	340	260
Average	215	43	12.7	0.62	18	24	623	0.35	0	40	<0.1	<100	<0.44	<100	8.14	8.27	32	74	16	233	367	272

*Indicates a Secondary Maximum Contaminant Level

CAYUCOS WATER TREATMENT PLANT TREATED WATER

Date	Bicarbonate as CaCO3	Calcium	Calculated Aggressive Index	Calculated Langelier Index	Carbonate as CaCO3	Chloride	Electrical Conductivity or Specific Conductance	Fluoride, Without Predistillation	Hydroxide as CaCO3	Magnesium	Methylene Blue Active Substances	Nitrate as Nitrogen	Nitrate as NO3	Nitrite as Nitrogen	pH (measured in field)	pH (measured in the Lab)	Sodium	Sulfate	Temperature	Total Alkalinity as CaCO3	Total Dissolved Solids	Total Hardness as CaCO3
Units	mg/L	mg/L			mg/L	mg/L	umhos/cm	mg/L	mg/L	mg/L	mg/L	ug/L	mg/L	ug/L			mg/L	mg/L	°C	mg/L	mg/L	mg/L
Treated Water MCLs					*500	*1600	2.0				*0.5	10000	45	1000				*500			*1000	
5/10/2006	230	47	12.7	0.60	0	27	620		0	38	<0.1	120	0.53	<100	8.26	8.22	35	69	18.2	230	430	270
5/15/2007	240	42	12.2	0.20	0	27	640	0.38	0	39	<0.1	110	0.49	<100	7.39	7.81	34	74	15.6	240	360	270
5/6/2008	230	43	12.7	0.69	0	29	640	0.35	0	37	<0.1	<100	<0.44	<100	8.40	8.30	34	72	17	230	370	260
5/5/2009	230	40	12.4	0.41	0	31.6	650	0.382	0	40	<0.1	<100	<0.443	<100	8.33	8.05	38	75.9	17	230	380	260
5/4/2010	260	50	12.8	0.78	0	33.9	710	0.357	0	42	<0.1	273	1.21	<100	8.08	8.30	41	74.2	17	260	420	300
5/3/2011	210	43	12.6	0.52	20	28.1	650	0.299	0	39	<0.1	367	1.63	<100	8.60	8.16	35	73.7	16	230	340	270
Average	233	44	12.6	0.53	3	29	652	0.35	0	39	<0.1	145	0.64	<100	8.18	8.14	36	73	17	237	383	272

*Indicates a Secondary Maximum Contaminant Level

**APPENDIX C-6
 WHALE ROCK RESERVOIR WATERSHED SANITARY SURVEY 2011
 SAN LUIS OBISPO COUNTY SERVICE AREA 10 - CAYUCOS WATER TREATMENT DATA
 METALS (2006 - 2011)**

WHALE ROCK RESERVOIR RAW

Date	Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Zinc
Treated Water MCL	1000	6	10	1000	4	5	50	1000	Action Level 15	2	100	50	100	2	5000
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
5/10/2006	<25	<1.0	1.6	79	<1.0	<0.50	<1.0	<25	<0.50	<0.2	6.5	<5.0	<0.50	<1.0	<25
5/15/2007	<20	<1.0	2.0	76	<1.0	<0.2	<1.0	<25	<5	<0.2	<2.5	<5	<1	<1.0	<25
5/6/2008	<50	<6	3.0	98	<1.0	<0.2	<1.0	<5	<5	<0.2	<2.5	<2	<1	<1.0	<25
5/5/2009	51	<1.0	2.1	84	<1.0	<0.50	<1.0	<25	<0.50	<0.2	<5.0	<5.0	<0.50	<1.0	<25
5/4/2010	240	<1	1.4	76	<1	<0.5	2.0	<25	1.4	<0.2	5.8	<5	<0.5	<1	<25
5/3/2011	41	<1	1.7	74	<1	<0.5	<1	<25	<0.5	<0.2	<5	<5	<0.5	<1	<25
Average	55	ND	2.0	81	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

CAYUCOS WATER TREATMENT PLANT TREATED WATER

Date	Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Zinc
Treated Water MCL	1000	6	10	1000	4	5	50	1000	Action Level 15	2	100	50	100	2	5000
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
1/11/2006	60														
2/8/2006	74														
3/15/2006	76														
4/12/2006	86														
5/10/2006	94	<1.0	1.6	75	<1.0	<0.50	<1.0	<25	<0.50	<0.2	<5.0	<5.0	<0.50	<1.0	<25
6/14/2006	130														
7/12/2006	110														
8/16/2006	32														
5/15/2007	80	<1.0	<2	80	<1.0	<0.2	<1.0	<25	<5	<0.2	<2.5	<5	<1	<1.0	<25
5/6/2008	130	<6	2.0	100	<1.0	<0.2	<1.0	<5	<5	<0.2	<2.5	<2	<1	<1.0	<25
5/5/2009	80	<1.0	2.2	73	<1.0	<0.50	<1.0	<25	<0.50	<0.2	<5.0	<5.0	<0.50	<1.0	<25
5/4/2010	86	<1	1.8	86	<1	<0.5	<1	<25	<0.5	<0.2	<5	<5	<0.5	<1	<25
5/3/2011	57	<1	1.7	76	<1	<0.5	<1	<25	<0.5	<0.2	<5	<5	<0.5	<1	<25
Average	84	ND	1.6	82	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

ND = Not Detected

APPENDIX C-7
WHALE ROCK RESERVOIR WATERSHED SANITARY SURVEY 2011
SAN LUIS OBISPO COUNTY SERVICE AREA 10 - CAYUCOS WATER TREATMENT PLANT
ADDITIONAL ANALYSES (2006 - 2011)

WHALE ROCK RESERVOIR RAW											TREATMENT PLANT - TREATED				
Date	2-Methylisoborneol	Asbestos	Cyanide	Gross Alpha Counting Error	Gross Alpha Radioactivity	Methyl Tertiary Butyl Ether	Perchlorate	Radium 228	Radium 228 Counting Error	Total Organic Carbon	Date	Cyanide	Radium 228	Radium 228 Counting Error	Total Organic Carbon
Treated Water MCL			150		15	5	6					150			
Units	ng/L	MFL	ug/L	pCi/L	pCi/L	ug/L	ug/L	pCi/L	pCi/L	mg/L	Units	ug/L	pCi/L	pCi/L	mg/L
1/11/2006						<1					1/11/2006				
5/10/2006			<25								5/10/2006	<25			
5/31/2006	<5.0										5/31/2006				
6/28/2006	<5.0									3.8	6/28/2006				<0.30
3/20/2007		<0.2		± 1.2	<3.00						3/20/2007				
5/15/2007			<25								5/15/2007	<25			
6/5/2007				± 1.5	<3.00						6/5/2007				
9/4/2007				± 1.7	<3.00						9/4/2007				
11/13/2007							<4.0				11/13/2007				
5/6/2008			<100								5/6/2008	<100			
5/20/2008							<4.0				5/20/2008				
3/24/2009								<1.00	± 0.37		3/24/2009		<1.00	± 0.49	
5/5/2009			<25								5/5/2009	<25			
5/19/2009							<4.0				5/19/2009				
6/23/2009								<1.00	± 0.376		6/23/2009				
3/1/2010				± 1.9	<3.0						3/1/2010				
5/4/2010			<25								5/4/2010	<25			
5/19/2010							<4.0				5/19/2010				
5/3/2011			<25								5/3/2011	<25			
5/18/2011							<4.0				5/18/2011				

**MWH Laboratories**

A Division of MWH Americas, Inc.

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1 800 566 LABS (1 800 566 5227)San Luis Obispo, County of
Ken Pang
Department of Public Works
County Govt Center, Rm. 207
San Luis Obispo, CA 93408-2180Samples Received
08/08/07

Prepared	Analyzed	QC Ref#	Method	Analyte	Result	Units	MRL	Dilution
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WHALE ROCK RESERVOIR RAW (2708080335)				Sampled on 08/07/07 10:00				
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Regulated VOCs plus Lists 1&3

08/15/07 22:26	381301	(EPA 524.2) 1,1,1,2-Tetrachloroethane	ND	ug/l	0.5	1
08/15/07 22:26	381301	(EPA 524.2	) 1,1,1-Trichloroethane	ND	ug/l	0.5	1
08/15/07 22:26	381301	(EPA 524.2	) 1,1,2,2-Tetrachloroethane	ND	ug/l	0.5	1
08/15/07 22:26	381301	(EPA 524.2	) 1,1,2-Trichloroethane	ND	ug/l	0.5	1
08/15/07 22:26	381301	(EPA 524.2	) 1,1-Dichloroethane	ND	ug/l	0.5	1
08/15/07 22:26	381301	(EPA 524.2	) 1,1-Dichloroethylene	ND	ug/l	0.5	1
08/15/07 22:26	381301	(EPA 524.2	) 1,1-Dichloropropene	ND	ug/l	0.5	1
08/15/07 22:26	381301	(EPA 524.2	) 1,2,3-Trichlorobenzene	ND	ug/l	0.5	1
08/15/07 22:26	381301	(EPA 524.2	) 1,2,3-Trichloropropane	ND	ug/l	0.5	1
08/15/07 22:26	381301	(EPA 524.2	) 1,2,4-Trichlorobenzene	ND	ug/l	0.5	1
08/15/07 22:26	381301	(EPA 524.2	) 1,2,4-Trimethylbenzene	ND	ug/l	0.5	1
08/15/07 22:26	381301	(EPA 524.2	) 1,2-Dichloroethane	ND	ug/l	0.5	1
08/15/07 22:26	381301	(EPA 524.2	) 1,2-Dichloropropane	ND	ug/l	0.5	1
08/15/07 22:26	381301	(EPA 524.2	) 1,3,5-Trimethylbenzene	ND	ug/l	0.5	1
08/15/07 22:26	381301	(EPA 524.2	) 1,3-Dichloropropane	ND	ug/l	0.5	1
08/15/07 22:26	381301	(EPA 524.2	) p-Dichlorobenzene (1,4-DCB)	ND	ug/l	0.5	1
08/15/07 22:26	381301	(EPA 524.2	) 2,2-Dichloropropane	ND	ug/l	0.5	1
08/15/07 22:26	381301	(EPA 524.2	) 2-Butanone (MEK)	ND	ug/l	5.0	1
08/15/07 22:26	381301	(EPA 524.2	) o-Chlorotoluene	ND	ug/l	0.5	1
08/15/07 22:26	381301	(EPA 524.2	) p-Chlorotoluene	ND	ug/l	0.5	1
08/15/07 22:26	381301	(EPA 524.2	) 4-Methyl-2-Pentanone (MIBK)	ND	ug/l	5.0	1
08/15/07 22:26	381301	(EPA 524.2	) Benzene	ND	ug/l	0.5	1
08/15/07 22:26	381301	(EPA 524.2	) Bromobenzene	ND	ug/l	0.5	1
08/15/07 22:26	381301	(EPA 524.2	) Bromomethane (Methyl Bromide)	ND	ug/l	0.5	1
08/15/07 22:26	381301	(EPA 524.2	) Bromoethane	ND	ug/l	0.5	1
08/15/07 22:26	381301	(EPA 524.2	) cis-1,2-Dichloroethylene	ND	ug/l	0.5	1
08/15/07 22:26	381301	(EPA 524.2	) Chlorobenzene	ND	ug/l	0.5	1
08/15/07 22:26	381301	(EPA 524.2) Carbon Tetrachloride	ND	ug/l	0.5	1
08/15/07 22:26	381301	(EPA 524.2) cis-1,3-Dichloropropene	ND	ug/l	0.5	1



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San Luis Obispo, County of
 (continued)

Prepared	Analyzed	QC Ref#	Method	Analyte	Result	Units	MRL	Dilution
	08/15/07 22:26	381301	(EPA 524.2)	Bromoform	ND	ug/l	0.5	1
	08/15/07 22:26	381301	(EPA 524.2)	Chloroform (Trichloromethane)	ND	ug/l	0.5	1
	08/15/07 22:26	381301	(EPA 524.2)	Bromochloromethane	ND	ug/l	0.5	1
	08/15/07 22:26	381301	(EPA 524.2)	Chloroethane	ND	ug/l	0.5	1
	08/15/07 22:26	381301	(EPA 524.2)	Chloromethane (Methyl Chloride)	ND	ug/l	0.5	1
	08/15/07 22:26	381301	(EPA 524.2)	Chlorodibromomethane	ND	ug/l	0.5	1
	08/15/07 22:26	381301	(EPA 524.2)	Dibromomethane	ND	ug/l	0.5	1
	08/15/07 22:26	381301	(EPA 524.2)	Bromodichloromethane	ND	ug/l	0.5	1
	08/15/07 22:26	381301	(EPA 524.2)	Dichloromethane	ND	ug/l	0.5	1
	08/15/07 22:26	381301	(EPA 524.2)	Di-isopropyl ether	ND	ug/l	3.0	1
	08/15/07 22:26	381301	(EPA 524.2)	Ethyl benzene	ND	ug/l	0.5	1
	08/15/07 22:26	381301	(EPA 524.2)	Dichlorodifluoromethane	ND	ug/l	0.5	1
	08/15/07 22:26	381301	(EPA 524.2)	Fluorotrichloromethane-Freon11	ND	ug/l	0.5	1
	08/15/07 22:26	381301	(EPA 524.2)	Hexachlorobutadiene	ND	ug/l	0.5	1
	08/15/07 22:26	381301	(EPA 524.2)	Isopropylbenzene	ND	ug/l	0.5	1
	08/15/07 22:26	381301	(EPA 524.2)	m-Dichlorobenzene (1,3-DCB)	ND	ug/l	0.5	1
	08/15/07 22:26	381301	(EPA 524.2)	m,p-Xylenes	ND	ug/l	1.0	1
	08/15/07 22:26	381301	(EPA 524.2)	Methyl Tert-butyl ether (MTBE)	ND	ug/l	0.5	1
	08/15/07 22:26	381301	(EPA 524.2)	Naphthalene	ND	ug/l	0.5	1
	08/15/07 22:26	381301	(EPA 524.2)	n-Butylbenzene	ND	ug/l	0.5	1
	08/15/07 22:26	381301	(EPA 524.2)	n-Propylbenzene	ND	ug/l	0.5	1
	08/15/07 22:26	381301	(EPA 524.2)	o-Xylene	ND	ug/l	0.5	1
	08/15/07 22:26	381301	(EPA 524.2)	o-Dichlorobenzene (1,2-DCB)	ND	ug/l	0.5	1
	08/15/07 22:26	381301	(EPA 524.2)	Tetrachloroethylene (PCE)	ND	ug/l	0.5	1
	08/15/07 22:26	381301	(EPA 524.2)	p-Isopropyltoluene	ND	ug/l	0.5	1
	08/15/07 22:26	381301	(EPA 524.2)	sec-Butylbenzene	ND	ug/l	0.5	1
	08/15/07 22:26	381301	(EPA 524.2)	Styrene	ND	ug/l	0.5	1
	08/15/07 22:26	381301	(EPA 524.2)	trans-1,2-Dichloroethylene	ND	ug/l	0.5	1
	08/15/07 22:26	381301	(EPA 524.2)	tert-amyl Methyl Ether	ND	ug/l	3.0	1
	08/15/07 22:26	381301	(EPA 524.2)	tert-Butyl Ethyl Ether	ND	ug/l	3.0	1
	08/15/07 22:26	381301	(EPA 524.2)	tert-Butylbenzene	ND	ug/l	0.5	1
	08/15/07 22:26	381301	(EPA 524.2)	Trichloroethylene (TCE)	ND	ug/l	0.5	1
	08/15/07 22:26	381301	(EPA 524.2)	Trichlorotrifluoroethane (Freon	ND	ug/l	0.5	1
	08/15/07 22:26	381301	(EPA 524.2)	trans-1,3-Dichloropropene	ND	ug/l	0.5	1
	08/15/07 22:26	381301	(EPA 524.2)	Toluene	ND	ug/l	0.5	1
	08/15/07 22:26	381301	(EPA 524.2)	Total 1,3-Dichloropropene	ND	ug/l	0.5	1



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San Luis Obispo, County of
 (continued)

Prepared	Analyzed	QC Ref#	Method	Analyte	Result	Units	MRL	Dilution
	08/15/07 22:26	381301	(EPA 524.2)	Total THM	ND	ug/l	0.5	1
	08/15/07 22:26	381301	(EPA 524.2)	Total xylenes	ND	ug/l	1.5	1
	08/15/07 22:26	381301	(EPA 524.2)	Vinyl chloride (VC)	ND	ug/l	0.3	1
			(EPA 524.2)	4-Bromofluorobenzene (70-130)	97	% Rec		
			(EPA 524.2)	1,2-Dichloroethane-d4 (70-130)	109	% Rec		
			(EPA 524.2)	Toluene-d8 (70-130)	97	% Rec		

WHALE ROCK WELL(1989)-CAWO (2708080336)

Sampled on 08/07/07 11:05

Regulated VOCs plus Lists 1&3

08/15/07 22:48	381301	(EPA 524.2)	1,1,1,2-Tetrachloroethane	ND	ug/l	0.5	1
08/15/07 22:48	381301	(EPA 524.2)	1,1,1-Trichloroethane	ND	ug/l	0.5	1
08/15/07 22:48	381301	(EPA 524.2)	1,1,2,2-Tetrachloroethane	ND	ug/l	0.5	1
08/15/07 22:48	381301	(EPA 524.2)	1,1,2-Trichloroethane	ND	ug/l	0.5	1
08/15/07 22:48	381301	(EPA 524.2)	1,1-Dichloroethane	ND	ug/l	0.5	1
08/15/07 22:48	381301	(EPA 524.2)	1,1-Dichloroethylene	ND	ug/l	0.5	1
08/15/07 22:48	381301	(EPA 524.2)	1,1-Dichloropropene	ND	ug/l	0.5	1
08/15/07 22:48	381301	(EPA 524.2)	1,2,3-Trichlorobenzene	ND	ug/l	0.5	1
08/15/07 22:48	381301	(EPA 524.2)	1,2,3-Trichloropropane	ND	ug/l	0.5	1
08/15/07 22:48	381301	(EPA 524.2)	1,2,4-Trichlorobenzene	ND	ug/l	0.5	1
08/15/07 22:48	381301	(EPA 524.2)	1,2,4-Trimethylbenzene	ND	ug/l	0.5	1
08/15/07 22:48	381301	(EPA 524.2)	1,2-Dichloroethane	ND	ug/l	0.5	1
08/15/07 22:48	381301	(EPA 524.2)	1,2-Dichloropropane	ND	ug/l	0.5	1
08/15/07 22:48	381301	(EPA 524.2)	1,3,5-Trimethylbenzene	ND	ug/l	0.5	1
08/15/07 22:48	381301	(EPA 524.2)	1,3-Dichloropropane	ND	ug/l	0.5	1
08/15/07 22:48	381301	(EPA 524.2)	p-Dichlorobenzene (1,4-DCB)	ND	ug/l	0.5	1
08/15/07 22:48	381301	(EPA 524.2)	2,2-Dichloropropane	ND	ug/l	0.5	1
08/15/07 22:48	381301	(EPA 524.2)	2-Butanone (MEK)	ND	ug/l	5.0	1
08/15/07 22:48	381301	(EPA 524.2)	o-Chlorotoluene	ND	ug/l	0.5	1
08/15/07 22:48	381301	(EPA 524.2)	p-Chlorotoluene	ND	ug/l	0.5	1
08/15/07 22:48	381301	(EPA 524.2)	4-Methyl-2-Pentanone (MIBK)	ND	ug/l	5.0	1
08/15/07 22:48	381301	(EPA 524.2)	Benzene	ND	ug/l	0.5	1
08/15/07 22:48	381301	(EPA 524.2)	Bromobenzene	ND	ug/l	0.5	1
08/15/07 22:48	381301	(EPA 524.2)	Bromomethane (Methyl Bromide)	ND	ug/l	0.5	1
08/15/07 22:48	381301	(EPA 524.2)	Bromoethane	ND	ug/l	0.5	1
08/15/07 22:48	381301	(EPA 524.2)	cis-1,2-Dichloroethylene	ND	ug/l	0.5	1


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 (continued)

Prepared	Analyzed	QC Ref#	Method	Analyte	Result	Units	MRL	Dilution
08/15/07	22:48	381301	(EPA 524.2	) Chlorobenzene	ND	ug/l	0.5	1
08/15/07	22:48	381301	(EPA 524.2	) Carbon Tetrachloride	ND	ug/l	0.5	1
08/15/07	22:48	381301	(EPA 524.2	) cis-1,3-Dichloropropene	ND	ug/l	0.5	1
08/15/07	22:48	381301	(EPA 524.2	) Bromoform	ND	ug/l	0.5	1
08/15/07	22:48	381301	(EPA 524.2	) Chloroform (Trichloromethane)	ND	ug/l	0.5	1
08/15/07	22:48	381301	(EPA 524.2	) Bromochloromethane	ND	ug/l	0.5	1
08/15/07	22:48	381301	(EPA 524.2	) Chloroethane	ND	ug/l	0.5	1
08/15/07	22:48	381301	(EPA 524.2	) Chloromethane (Methyl Chloride)	ND	ug/l	0.5	1
08/15/07	22:48	381301	(EPA 524.2	) Chlorodibromomethane	ND	ug/l	0.5	1
08/15/07	22:48	381301	(EPA 524.2	) Dibromomethane	ND	ug/l	0.5	1
08/15/07	22:48	381301	(EPA 524.2	) Bromodichloromethane	ND	ug/l	0.5	1
08/15/07	22:48	381301	(EPA 524.2	) Dichloromethane	ND	ug/l	0.5	1
08/15/07	22:48	381301	(EPA 524.2	) Di-isopropyl ether	ND	ug/l	3.0	1
08/15/07	22:48	381301	(EPA 524.2	) Ethyl benzene	ND	ug/l	0.5	1
08/15/07	22:48	381301	(EPA 524.2	) Dichlorodifluoromethane	ND	ug/l	0.5	1
08/15/07	22:48	381301	(EPA 524.2	) Fluorotrichloromethane-Freon11	ND	ug/l	0.5	1
08/15/07	22:48	381301	(EPA 524.2	) Hexachlorobutadiene	ND	ug/l	0.5	1
08/15/07	22:48	381301	(EPA 524.2	) Isopropylbenzene	ND	ug/l	0.5	1
08/15/07	22:48	381301	(EPA 524.2	) m-Dichlorobenzene (1,3-DCB)	ND	ug/l	0.5	1
08/15/07	22:48	381301	(EPA 524.2	) m,p-Xylenes	ND	ug/l	1.0	1
08/15/07	22:48	381301	(EPA 524.2	) Methyl Tert-butyl ether (MTBE)	ND	ug/l	0.5	1
08/15/07	22:48	381301	(EPA 524.2	) Naphthalene	ND	ug/l	0.5	1
08/15/07	22:48	381301	(EPA 524.2	) n-Butylbenzene	ND	ug/l	0.5	1
08/15/07	22:48	381301	(EPA 524.2	) n-Propylbenzene	ND	ug/l	0.5	1
08/15/07	22:48	381301	(EPA 524.2	) o-Xylene	ND	ug/l	0.5	1
08/15/07	22:48	381301	(EPA 524.2	) o-Dichlorobenzene (1,2-DCB)	ND	ug/l	0.5	1
08/15/07	22:48	381301	(EPA 524.2	) Tetrachloroethylene (PCE)	ND	ug/l	0.5	1
08/15/07	22:48	381301	(EPA 524.2	) p-Isopropyltoluene	ND	ug/l	0.5	1
08/15/07	22:48	381301	(EPA 524.2	) sec-Butylbenzene	ND	ug/l	0.5	1
08/15/07	22:48	381301	(EPA 524.2	) Styrene	ND	ug/l	0.5	1
08/15/07	22:48	381301	(EPA 524.2	) trans-1,2-Dichloroethylene	ND	ug/l	0.5	1
08/15/07	22:48	381301	(EPA 524.2	) tert-amyl Methyl Ether	ND	ug/l	3.0	1
08/15/07	22:48	381301	(EPA 524.2	) tert-Butyl Ethyl Ether	ND	ug/l	3.0	1
08/15/07	22:48	381301	(EPA 524.2	) tert-Butylbenzene	ND	ug/l	0.5	1
08/15/07	22:48	381301	(EPA 524.2	) Trichloroethylene (TCE)	ND	ug/l	0.5	1
08/15/07	22:48	381301	(EPA 524.2) Trichlorotrifluoroethane (Freon	ND	ug/l	0.5	1


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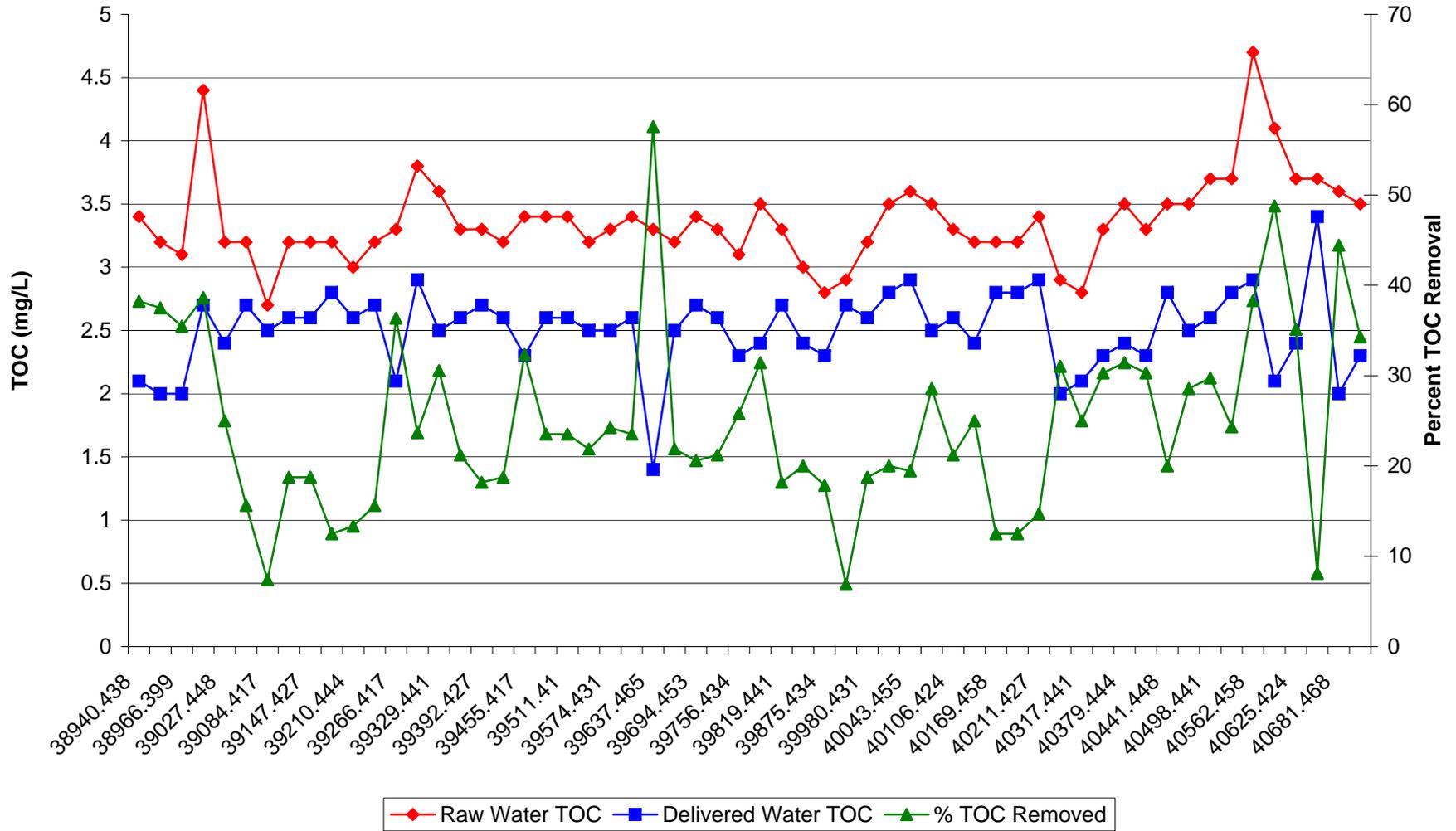
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Prepared	Analyzed	QC Ref#	Method	Analyte	Result	Units	MRL	Dilution
08/15/07	22:48	381301	(EPA 524.2)	trans-1,3-Dichloropropene	ND	ug/l	0.5	1
08/15/07	22:48	381301	(EPA 524.2)	Toluene	ND	ug/l	0.5	1
08/15/07	22:48	381301	(EPA 524.2)	Total 1,3-Dichloropropene	ND	ug/l	0.5	1
08/15/07	22:48	381301	(EPA 524.2)	Total THM	ND	ug/l	0.5	1
08/15/07	22:48	381301	(EPA 524.2)	Total xylenes	ND	ug/l	1.5	1
08/15/07	22:48	381301	(EPA 524.2)	Vinyl chloride (VC)	ND	ug/l	0.3	1
			(EPA 524.2)	1,2-Dichloroethane-d4 (70-130)	108	% Rec		
			(EPA 524.2)	Toluene-d8 (70-130)	92	% Rec		
			(EPA 524.2)	4-Bromofluorobenzene (70-130)	98	% Rec		

Appendix C-9 Cayucos Water Treatment Plant TOC Reduction



APPENDIX D-3
 WHALE ROCK RESERVOIR WATERSHED SANITARY SURVEY 2011
 PASO ROBLES BEACH WATER ASSOC - CAYUCOS
 WELL 01 - STANDBY

Collected Date

Analysis ID	Units	7/11/2006	7/25/2007	7/8/2008	8/12/2008	10/14/2008	7/14/2009	8/17/2010	5/16/2011	5/18/2011	5/26/2011	5/26/2011
Aggressive Index										12.6		
Alkalinity	mg/L									380		
Aluminum	ug/L								<20			
Apparent Color	CU									12		
Arsenic	ug/L								1.8			
Atrazine	ug/L											<0.05
Barium	ug/L								140			
Beryllium	ug/L								<1			
Bicarbonate	mg/L									380		
Cadmium	ug/L								<0.5			
Calcium	mg/L									60		
Carbonate	mg/L									0		
Chloride	mg/L									57.3		
Chromium	ug/L								<1			
Copper	ug/L									<25		
Cyanide	ug/L								<25			
Electrical Conductivity	umhos/cm									950		
Fluoride	mg/L									0.33		
Gross Alpha	pCi/L								<4.4			
Hardness	mg/L									390		
Hydroxide Alkalinity	mg/L									0		
Iron	ug/L									1400		
Langelier Index										0.54		
Lead	ug/L								<0.5			
Magnesium	mg/L									59		
Manganese	ug/L									200		
Mercury	ug/L								<0.2			
Methylene blue activated substances	mg/L									<0.10		
Nickel	ug/L								<5			
Nitrate	mg/L	2.6	1.2	1.0			<0.443	2.15	4.08			
Nitrate as N	ug/L	580	270	230			<100	485		921		
Nitrite as N	ug/L									< 100		
Odor	TON									2.1		
Perchlorate	ug/L				<4.0	<4.0			<4.0			
pH										7.80		
Selenium	ug/L								9.2			
Silver	ug/L								<0.5			
Simazine	ug/L										<0.05	
Sodium	mg/L									62		
Sulfate	mg/L									47		
Temperature	degrees C									18.2		
Thallium	ug/L								<1			
Total Dissolved Solids	mg/L									530		
True Color	CU									1		
Turbidity	NTU									11		
Volatile Organic Chemicals	ug/L								Not Detected			
Zinc	ug/L									77		

WHALE RESERVOIR SANITARY SURVEY 2010 UPDATE
INSPECTION OF DOMESTIC WATER RESERVOIR FACILITIES

Reservoir Inspected Whale Rock ReservoirDate 10/19/111. Inspected by Bob Hamilton

2. Extent of Use

- a. Total marked campsites N/A
- b. Number of marked campsites occupied _____
- c. Total overflow campsites _____
- d. Overflow campsites occupied _____
- e. Park attendance during inspection _____
- f. Use of Lake: _____ Heavy Moderate Light
- g. Maximum daily attendance previous month _____ Date

3. Toilet and Restroom Facilities

- a. Number/condition in use
1. Vault toilets 13
 2. Chemical toilets 0
 3. Waterflush toilets 0
 4. Floating toilets 0
- b. Approximate number of toilets inspected:
1. Campgrounds 0
 2. Shoreline areas 13
 3. Floating toilets 0
- c. Adequacy of service good
- d. Cleanliness and odor good
- e. Health hazards none
- f. Corrections required/made none

4. Campgrounds and Picnic Areas

- a. Percent of campgrounds and picnic areas inspected 20%
- b. Cleanliness and general conditions excellent
- c. Waste disposal
1. Number of violations
 - (a) Buckets overflowing (waste discharging to ground) 0
 - (b) Garbage and refuse 0
 - (c) Health hazards and comments 0
 - (d) Insect or rodent problems 0
 - (e) Corrections recommended/made 0

5. Shoreline Fishing Areas

- a. Cleanliness and general conditions good
- b. Number of vehicles too near water's edge 0
- c. Waste disposal
1. Number/types of violations 0
- d. Corrections required/made 0 Date

6. Refuse Storage and Collection

- a. Adequacy of service good
- b. Location of disposal sites access trail receptacles
- c. Cleanliness and odor good
- d. Insects and flies none
- e. Health hazards and comments none
- f. Corrections required/made none

7. Fish Cleaning Facilities

- a. Cleanliness and general conditions N/A
- b. Location of waste disposal _____
- c. Insect problems _____
- d. Corrections required/made _____

8. Patrol

- a. Number of patrolmen on duty in park 2
- b. Number of patrol boats on lake 1

9. Lake Inspection

- a. Clarity of water clear
- b. Intake areas restricted to public access yes
- c. Means of controlling storm debris patrol
- d. Evidence of algae growth none
- e. Evidence of floating and shoreline debris none
- f. Adequacy of fencing to control animal intrusion good

10. Emergency Plan on file in office

11. Comments - _____

**COUNTY of SAN LUIS OBISPO
ZEBRA/QUAGGA MUSSEL SURFACE SURVEY WORKSHEET**

Reservoir: WHALE ROCK (CAYUCOS) An. No. (WQL use): 20110215032
 Inspection Site: BOAT HOUSE DOCK Survey Date/Tlme: 2/15/11 1105
 Water temp (°C), visibility: 11.9°c; 6' Inspector: BISHOP

Quagga and zebra mussels can attach to hard and soft substrates. They can detach from one place and move to another. They prefer low light areas - juveniles especially. Prime areas to search are listed below.

Visual search: When possible, visually inspect surface for mussels. They may be very small (< 1/4 inch). A hand lens is recommended. Look for anything suspicious - especially a striped "D" shaped shell.

Tactile search: Lightly run hand along surface, note observations, especially a feeling like seeds, pebbles, or rough sandpaper.

Sample collection/followup: If you have a question about anything you see or feel, please collect a sample for examination in the lab, and/or call the lab (805-781-5111) for additional field inspection support.

General notes/observations: BOAT HOUSE (WITH SUBSTRATE DRAGGING BEHIND) WAS TOWED TO OLD (STEEP) LOCATION BEFORE TODAY. WATER AND WIND VERY CALM. SUBSTRATES COVERED WITH DARK GREEN ALGAE; SCRUBBY WAS VERY MUDDY; I TRIED TO SCRAPE SUBSTRATES, NOTHING SUSPICIOUS DETECTED.

Area Surveyed	Special instructions	# of feet examined	Observations		
Artificial substrate (Quagga condo)	Pull up sampler, perform visual and tactile search	7	Depth (ft): <u>2½</u>	Are mussels present?	Surfaces are:
			<u>4½</u> PVC	<input type="checkbox"/> Didn't inspect (explain above)	<input checked="" type="checkbox"/> Slimy <u>VERY DARK GREEN ALGAE</u>
			<u>2½</u> Plexiglas	<input checked="" type="checkbox"/> Not as far as I can tell	<input checked="" type="checkbox"/> Silty (<u>MUDDY</u>)
			<u>7</u> Concrete	<input type="checkbox"/> Maybe? Let's talk	<input type="checkbox"/> Other (describe)
Dock Flotation	Run hand across surface below water line, feel for seed or pebble-like objects	<u>N/A</u>	Are mussels present? <input checked="" type="checkbox"/> Not as far as I can tell <input type="checkbox"/> Didn't inspect <input type="checkbox"/> Maybe? Let's talk	Conditions on surface & observations: <u>LESS DARK GREEN ALGAE ON BOAT HOUSE FLOTATION</u>	
Boat Ramp & Concrete Structures	Look in shady areas; perform visual and tactile search	(100') <u>N/A</u>	Are mussels present? <input type="checkbox"/> Not as far as I can tell <input type="checkbox"/> Didn't inspect <input type="checkbox"/> Maybe? Let's talk	Conditions on surface & observations:	
Dock & Mooring Lines etc	Pull up lines hanging in water; perform visual and tactile search	(200')	Are mussels present? <input checked="" type="checkbox"/> Not as far as I can tell <input type="checkbox"/> Didn't inspect <input type="checkbox"/> Maybe? Let's talk	Conditions on surface & observations: <u>NO ALGAE ON LINES</u>	
Shoreline	Search shaded areas, turn over rocks, lightly fan silt with fingers	(100-200')	Are mussels present? <input type="checkbox"/> Not as far as I can tell <input checked="" type="checkbox"/> Didn't inspect <input type="checkbox"/> Maybe? Let's talk	Conditions on surface & observations: <u>STEEP SLOPE</u>	
Buoys	Pull up buoy, perform visual and tactile search		Are mussels present? <input checked="" type="checkbox"/> Not as far as I can tell <input type="checkbox"/> Didn't inspect <input type="checkbox"/> Maybe? Let's talk	Conditions on surface & observations: <u>BUOY & LINES ARE COVERED WITH DARK GREEN STRING, SLIMY ALGAE; NOTHING SUSPICIOUS FELT OR OBSERVED</u>	
Logs & Wood Debris	Tactile and visual inspection	(100')	Are mussels present? <input type="checkbox"/> Not as far as I can tell <input checked="" type="checkbox"/> Didn't inspect <input type="checkbox"/> Maybe? Let's talk	Conditions on surface & observations: <u>NONE IN AREA</u>	

Please fax completed forms to the SLO County Water Quality Lab at (805) 781-1088