Santa Clara Valley Water District

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December 31, 2015

Mr. Bruce H. Wolfe, Executive Officer
California Regional Water Quality Control Board
San Francisco Region
1515 Clay Street, Suite 1400
Oakland, CA 94612

Subject: 2015 Progress Report on Methyl Mercury Production and Control Studies

Dear Mr. Wolfe:

Attached is the 2015 progress report on Methyl Mercury Production and Control Studies (Report). The Report provides an update of activities conducted by the Santa Clara Valley Water District (District), to address the Total Maximum Daily Load (TMDL) Implementation Plan for Mercury in the Guadalupe River Watershed. The Report also describes the District's ongoing projects to evaluate treatment methods for reducing methyl mercury production in three reservoirs and one lake impacted by past mining activities in the Guadalupe River Watershed. The District voluntarily initiated these projects in 2005 and the current status is:

1. The solar-powered circulation device continued to suppress methyl mercury production in the water column of Lake Almaden.
2. Similar solar-powered circulation devices were found to be ineffective at improving water quality at Almaden and Guadalupe Reservoirs.
3. The hypolimnetic oxygenation system installed in the Calero Reservoir in November 2011, but was not operated until April 2013, operated on a full time basis in 2014 and almost full time in 2015.
4. A similar hypolimnetic oxygenation system was installed at Guadalupe Reservoir in May 2013, and was operated on a limited basis (50 hours per week) from July to October using temporary power. Permanent electric power was provided at the site in 2014, but the system could not be operated due to low water levels. The system was operated intermittently in 2015 due to equipment malfunctions.
5. Another hypolimnetic oxygenation system was installed at Almaden Reservoir in April 2014 but was not operated due to low water levels. Permanent electric power was provided to this site in June 2015, and the system operated intermittently in 2015.

In this reporting period (2014-2015), the drought and new equipment startup had made the operation of methyl mercury control systems and the interpretation of data difficult. One clearer conclusion is that the successful and continuous operation of the oxygenation system in the Calero Reservoir in 2014 resulted in methyl mercury concentrations near the target control level. This shows opportunity for the control measures that are currently being investigated. The District will continue to digest the data collected and may update the report at a later time. We will also set up meetings with your staff in the coming year to discuss the results and coordinate for future activities to achieve the goal of the first 10-year phase of the implementation plan.

If you have any questions, please contact Shree Dharasker at sdharasker@valleywater.org or (408) 630-3037, or myself at llee@valleywater.org or (408) 630-2927.

Sincerely,

Liang Lee
Deputy Operating Officer
Watersheds Stewardship and Planning Division

Enclosure: Progress Report Methyl Mercury Production and Control in Lakes and Reservoirs Contaminated by Historic Mining Activities in the Guadalupe River Watershed, dated December 31, 2015

By Electronic Mail

cc/enc: Carrie Austin caustin@waterboards.ca.gov, California Regional Water Quality Control Board San Francisco Region, 1515 Clay Street, Suite 1400 Oakland, CA 94612

cc: B. Goldie, L. Lee, S. Dharasker, B. Cabral, F. Brewster, B. Calhoun

PROGRESS REPORT

METHYL MERCURY PRODUCTION AND CONTROL IN LAKES AND RESERVOIRS CONTAMINATED BY HISTORIC MINING ACTIVITIES IN THE GUADALUPE RIVER WATERSHED

Prepared by

Watershed Stewardship Division
Santa Clara Valley Water District

December 31, 2015

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KEY
ng/L = Nano Grams per Liter (10^{-9}g/L)
ng/g = Nano Grams per Gram (10^{-9}g/g)
mg/L = Miligrams per Liter (10^{-3} g/L)
Total Hg = Total Mercury
Total MeHg = Total Methyl Mercury
Hg Diss = Dissolved Mercury
MeHg Diss = Dissolved Methyl Mercury
Mn = Manganese
Fe = Iron
Chl a = Chlorophyl A
TP = Total Phosphorus
NH4 = Ammonia
NO2 = Nitrogen Dioxide
NO3 = Nitrate
* = check notes
b = at time of analysis the sub contract lab found the sample to be broken and no analysis preformed as a result.
Sample Depth = Depth at which the sample was taken.
Total Depth = The total depth from the surface of the water to the bottom of the reservoir.
Sample ID = (Reservoir Name + Depth Name)
NA = Not Analyzed
NS = Not Sampled
NC*= Not Counted
NC = Not Collected
RL = Reporting Limit
(> number)= Indicates a non detect and the number is the Detection Limit
EPI = Epilimnion (2 meters below the surface of the water)
EPIMID = Depth between EPI and MID
MID= Depth between EPI and HYP
MIDHYP= Depth between MID and HYP
HYP= Hypolimnion (within 1 meter of bottom), however, if a DEEP sample was taken during that sampling event (Calero or Guadalupe only), it would be 1 meter less than the DEEP depth.
DEEP= Depth within 1 meter from the bottom (Calero and Guadalupe ONLY have deep spots)
DUP = Duplicate Sample
The DATE indicates the day the sample was actually collected.
Chlorophyl A is only collected at the EPI Depth (2 Meters from surface of water)

EXECUTIVE SUMMARY

This document presents a description and interim findings of applied studies to reduce methyl mercury concentrations in three reservoirs and one lake in the Guadalupe River Watershed. These studies were voluntarily initiated in 2005 by the Santa Clara Valley Water District (District) as part of early implementation of actions by the District to restore these water bodies that have been identified as impaired due to mercury concentrations in fish that exceed applicable criteria. In October 2008, the Regional Water Quality Control Board (Regional Board) adopted a Total Maximum Daily Load (TMDL) for Mercury in the Guadalupe River Watershed into its San Francisco Bay Basin Water Quality Control Plan. This TMDL recognizes the District's voluntary efforts and requires only that the District provide periodic progress reports regarding its studies of methyl mercury production and controls. The District voluntarily agreed to submit this progress report to the Regional Board by December 31, 2015.

The data interpretation, data analysis, and conclusions in this report are preliminary and subject to change as the study progresses.

In 2003, the District contracted with Tetra Tech, Inc. to collect data and prepare several technical reports regarding mercury contamination, fate and transport in the Guadalupe River Watershed. These reports, produced from 2003 through 2005, were voluntarily funded solely by the District to support the development of a science-based TMDL, to ensure that remedial actions would be cost-effective. A key finding of the effort relevant to this document was that methyl mercury concentrations in reservoirs and lakes achieved seasonal maxima during the summer months and these maxima appeared to coincide with anoxic conditions in the hypolimnia. In 2005, the District voluntarily initiated a monitoring program in the three reservoirs and one lake in the Guadalupe River Watershed that confirmed this finding.

After confirmation that methyl mercury concentrations varied with anoxia in the hypolimnia, the District reviewed various treatment alternatives available to reduce the extent and duration of anoxic conditions. In 2006, the District conducted a pilot test of a treatment device in one lake to demonstrate whether or not methyl mercury concentrations could be affected by mechanical means. A solar-powered circulator was operated for approximately nine months to treat a portion of the lake, achieving reductions of methyl mercury concentrations as high as 90% in the water column as compared to the previous year. Additional deployments of these circulators in the lake and in Almaden and Guadalupe reservoirs occurred in 2007 and 2008 to evaluate this method on a larger scale. As reported in the District's December 31, 2013 Progress Report, this method is ineffective at controlling methyl mercury production in the reservoirs and the circulators were removed.

During this reporting period (January 1, 2014 – December 31, 2015), the District continued its monitoring and sampling program of the applied studies to test the hypotheses presented in the December 2013 Progress Report. The hypothesis for Almaden Reservoir was changed to "Hypolimnetic oxygenation will reduce methyl mercury production and accelerate digestion of historic organic matter". The District completed installation of a full scale oxygenation system in Almaden Reservoir in 2015. Due to a delay in providing permanent power to the remote sites, start up problems, and low water levels, oxygenation systems operated for a few month of 2015 in Almaden reservoir and Guadalupe Reservoir. The oxygenation system at Calero Reservoir was operated for most of the stratification period in 2014 and 2015. In 2015, the District decided not to operate systems with temporary (diesel) power due to the difficulty in supplying fuel, air pollution and safety considerations.

The hypotheses being tested in these applied studies are:

- Hypolimnetic circulation will reduce methyl mercury concentrations in Lake Almaden to meet the seasonal maximum concentration specified in the TMDL, which is expected to result in fish tissue concentrations that meet the objectives specified in the TMDL.

- Oxygenation of the hypolimnion in the three reservoirs will result in seasonal maximum concentrations of methyl mercury that meet the criterion specified in the TMDL and fish tissue concentrations that meet the targets specified in the TMDL.

The applied studies are scheduled to continue until the best available technology is identified for each water body. Monitoring of water quality parameters was initiated in 2005 and continues Treatment systems installed in the water bodies occurred or is planned as follows:

- In 2006, one circulator was installed in Lake Almaden; in 2007, a second circulator was installed; in 2009, two circulators were installed. The four circulators are sufficient to provide treatment of the entire lake.

- In 2007, three circulators were installed in Almaden Reservoir; one circulator provides hypolimnetic circulation of the deepest portion of the reservoir, and the other two provide epilimnetic circulation of the entire reservoir.

- In 2007, three circulators were installed in Guadalupe Reservoir; all of these together provided epilimnetic circulation of the entire reservoir.

- In 2011, a pilot hypolimnetic oxygenation system was purchased for use in Almaden Reservoir; the pilot tests were scheduled to begin in July 2012. However, deployment of this system was found to be infeasible at this site.

- In 2011, a full scale hypolimnetic oxygenation system was purchased for installation in Calero Reservoir. Site preparation difficulties delayed operation until late May 2013, when the system was operated on temporary power (diesel generator) for two weeks at 52 hours per week. Conversion from temporary to permanent electric power interrupted operation of the system for most of the month of June. The system was operated 100 hours per week in July and August, then continuously in September 2013. For most of the stratification period in 2014 and 2015 the system operated.

- In May 2013, a full scale hypolimnetic oxygenation system was installed in Guadalupe Reservoir, but due to vandalism operation was delayed until July 2013. The system was operated 52 hours per week on temporary power (diesel generator) for the months of July, August, and September 2013. Permanent Power was installed in July 2014. The system operated for a few months in 2014. The system operated intermittently from March 2015 to May 2015, then operated continuously till October 2015 when the reservoir ceased to be oxygen stratified.

- In 2014, a full scale hypolimnetic oxygenation system was installed in Almaden Reservoir Power was connected to the system in May 2015. The system was operated from July through October 2015.

Key findings presented in this progress report are as follows:

- Methyl mercury production in hypolimnetic sediments are the main source of methyl mercury in water and, presumably, fish.
- Low levels of methyl mercury persist in the water column of all of the water bodies year round, although concentrations at Calero Reservoir are substantially lower than those observed at the other water bodies. This may be due to the fact that Calero Reservoir receives imported water for storage and Almaden and Guadalupe reservoirs only receive natural drainage from the upper watershed.
- Bottom releases at the Almaden and Calero reservoirs result in lower concentrations of methyl mercury in the hypolimnion as compared to Lake Almaden and Guadalupe Reservoir with an outlet located about three meters above the bottom. Flow circulation in the hypolimnion generated by the low-level-outlet release facilitates the oxygenation process.
- Hypolimnetic circulation significantly reduces concentrations of methyl mercury in the metalimnion and hypolimnion at Lake Almaden.
- Outlet works do not alter methyl mercury concentrations in releases as compared to concentrations in the hypolimnion.
- Lake Almaden discharges less methyl mercury than it receives from Alamitos Creek.
- Flow and suspended sediment monitoring at the inlets to the reservoirs, especially those that drain historic mercury mines, should be conducted to help assess the effectiveness of the treatment method.
- Hypolimnetic oxygenation should begin prior to the establishment of anoxic conditions in the hypolimnion.
- Sensitivity studies to vary the oxygenation system loading to improve dissolve oxygen concentration in the hypolimnion will be conducted in the future

1.0 INTRODUCTION

Santa Clara County is located at the southern end of San Francisco Bay, and includes the largest producing mercury mines in North America (New Almaden Mining District) which ceased operations circa 1970 (Figure 1). The Santa Clara Valley Water District (District) provides wholesale water supply and flood protection services to the communities in the county. The District owns three reservoirs and one lake impacted by the mercury mines. These water bodies were listed as impaired in 1999, and a Total Maximum Daily Load (TMDL) was adopted by the San Francisco Bay Regional Water Quality Control Board (Regional Board) in 2008 for these water bodies as part of the Guadalupe River Watershed TMDL. In the TMDL, it is recognized that the District initiated voluntary applied studies in these water bodies prior to its adoption, and that continuation of these studies is one means of compliance with regulatory enforceable portions of the TMDL applicable to the District. As specified in the TMDL, this progress report from the District regarding these studies is due December 31, 2015. This report covers the reporting period of January 2014 through December 2015. However, the analysis in this report is limited to the data available at the time this report was written. This study is intended to respond to the Special Studies 1 and 2 described in the TMDL and articulated as the following questions: "How do the reservoirs and lakes in the Guadalupe River watershed differ from one another?" and, "Is it possible to increase the assimilative capacity for methyl mercury in reservoirs and lakes?" The data collected to date do not fully address these questions, and the conclusions presented in this report are preliminary and subject to change as the study progresses.

Mercury toxicity increases from water up the food chain. This concept is called biomagnification. The biomagnification of methyl mercury is increased by 100,000 times from the water to algae, whereas the biomagnification factor is 2 to 5 times from algae to zooplankton, zooplankton to prey fish, and prey fish to predator fish (Figure 2). This study considers how to decrease biomagnification, via a reduction in anoxic conditions where mercury becomes methylated.

Almaden, Calero and Guadalupe Reservoirs were constructed in the 1930's for the purpose of water conservation, with design capacities of 1,780, 10,050, and 3,723 acre-feet, respectively. All three reservoirs are located in the Guadalupe River Watershed that drains to San Francisco Bay and all are impacted by mercury mining operations that began in the 1840's and ended in the 1970's. Lake Almaden was created by in- and off-stream gravel quarry operations circa 1950-1960. The lake is fed by Los Alamitos Creek (drains Almaden and Calero Reservoirs) and its outlet is the confluence with Guadalupe Creek (drains Guadalupe Reservoir) that forms the main stem of Guadalupe River. See Figure 3. The lake is approximately 40 acres in area, with a maximum depth of 13 meters (43 feet), and is used for recreation, including boating, swimming, and fishing. Only Almaden Reservoir exhibits extensive macroscopic vegetation. Fish in these water bodies are contaminated with mercury at concentrations that exceed applicable criteria.

Solar-powered circulators have been installed in Almaden and Guadalupe Reservoirs and in Lake Almaden to evaluate the effect of circulation on methyl mercury production and methyl mercury concentrations in fish tissue. Three circulators in Almaden Reservoir provided both hypolimnetic (one device) and epilimnetic (two devices) circulation. In April 2014, the Almaden Reservoir circulators were removed at the same time two oxygen diffuser lines were installed.

Three circulators (epilimnetic) were also installed in Guadalupe Reservoir, in July 2007. The circulators did not have any observable effect on any of the measured parameters (SCVWD, 2013) and were removed by June 2013. A full scale hypolimnetic oxygenation system was installed in June 2013. Four circulators in Lake Almaden provide hypolimnetic circulation.

This report examines the similarities and differences of methyl mercury production in these water bodies before, during, and after seasonal thermal stratification, and evaluates the effects of circulation and hypolimnetic oxygenation on methyl mercury production. Correlations and comparisons of other water quality parameters to methyl mercury production are also evaluated. The effects of circulation and hypolimnetic oxygenation are expected to reduce seasonal methyl mercury maximum concentrations while improving the ecology of the water bodies, leading to a more robust fishery. In this context, assimilative capacity is to be increased by reducing the amount of methyl mercury available for bioaccumulation and increasing the biomass that hosts the distributed methyl mercury.

2.0 BASELINE CONDITIONS

In 2003, the District contracted with Tetra Tech. Inc. to conduct a study of mercury fate and transport in the Guadalupe River Watershed. In the Tetra Tech, Inc. February 8, 2005 Data Collection Report, Volume I, page 4–31, a key finding was "[t]he most significant production of methylmercury occurred when the hypolimnion [of Almaden and Guadalupe Reservoirs] was largely anoxic (dissolved oxygen levels less than 1 mg/l), as expected for microbial transformations by sulfate reducers that require anoxia." Fish tissue concentrations in target species were also presented in this report.

In 2005, the District initiated a comprehensive monitoring program to develop a database of seasonal changes in concentrations of nutrients, physical parameters, and mercury species in three reservoirs (Almaden, Calero, Guadalupe) and Lake Almaden confirmed the seasonal production of methyl mercury associated with anoxia in the hypolimnion. These data are collected annually and serve as comparator data to similar data collected following the installation and operation of solar-powered circulators and/or hypolimnetic oxygenation systems in the reservoirs and in Lake Almaden.

In 2012 and 2013, the District and others conducted fish tissue sampling of the lake and reservoirs to establish baseline conditions for the Guadalupe River Watershed Mercury TMDL (SCVWD, 2013). The results are recorded elsewhere in Coordinated Monitoring Program reports submitted to the Regional Board. The District also:

- Independently conducted sampling of zooplankton in the reservoirs and measured mercury and methyl mercury concentrations to evaluate food web effects of hypolimnetic oxygenation,

- Conducted fish surveys to document fish assemblages present and fish populations (as a measurement of assimilative capacity), and to assess the body burden of mercury levels of target fish species.

3.0 STUDY DESCRIPTIONS

3.1 THEORETICAL BASIS

The basic premise of these applied studies is to determine the following:

- Can anoxia in the hypolimnion be mechanically influenced in a manner that reduces methyl mercury production?
- Does reduction in methyl mercury production result in reduced concentrations of methyl mercury in fish?
- Does the method used to influence anoxia result in improved ecological conditions that supports a more robust fishery, thereby improving assimilative capacity of the water body?

The District has empirically shown the coincidence of methyl mercury production with seasonal anoxia in each of the water bodies. Numerous techniques are available for mechanically influencing anoxia in the hypolimnion, including aeration or oxygenation with bubblers, Speece cones, and circulation. Bubbler and Speece cone systems are energy intensive, requiring energy to produce and deliver oxygen or air to the delivery system and, in the case of the Speece cone, to operate the circulating pump. Circulation systems are less energy intensive, requiring energy only for pump circulation.

In (Stewart, et al. 2008) the authors state that the results of their study "suggest an important role for plankton dynamics in driving the MeHg content of zooplankton and ultimately MeHg bioaccumulation in top predators in pelagic-based food webs." In the Tetra Tech, Inc. June 7, 2004, Draft Final Conceptual Model Report, pages 4-5 and 4-6, it is stated that "the largest single jump in concentration [of methyl mercury in the food web] occurs from the water to algae." In the figure on page 4-6 of that report, it is shown that the biomagnification of methyl mercury is increased by 100,000 times from the water to algae, whereas the biomagnification factor is 2 to 5 times from algae to zooplankton, zooplankton to prey fish, and prey fish to predator fish (Figure 2). If these factors are correct, influencing methyl mercury concentrations in the water column is the most efficient method of reducing mercury in the food web.

The question posed in the TMDL (*Is it possible to increase the assimilative capacity for methyl mercury in reservoirs and lakes?*) relevant to these studies is being approached from the perspective of improving the water body to support a more robust fishery. The intent of this approach is to couple improved fish populations with less methyl mercury, in effect comparatively spreading less mercury amongst more fish so that each fish has less mercury than current measured concentrations. Additional approaches may be considered (including fish management) that might shift the balance of and distribution of methyl mercury in the biomass of each water body.

In this study, the solar-powered circulators and hypolimnetic oxygenation were chosen to provide the dual benefits of delivering oxygen to the hypolimnion and improving the ecology of the water bodies in a way that would improve the fisheries. The manufacturer of the solar-powered devices suggests that circulation of the Epilimnion eliminates the competitive advantage of Cyanobacteria (blue-green algae) over green algae and diatoms. Unfortunately, there has been no observable effect on Cyanobacteria blooms attributable to the operation of

the circulators in any of the water bodies; in particular, the Lake Almaden blooms became worse over the time period and have prevented contact swimming; the cause of the blooms was attributed to increased nutrient input from an infestation of gulls.

Anoxia in the hypolimnion is primarily caused by digestion of organic matter, or utilization of nutrients in the water column, during naturally-occurring periods of stratification. Typically after many years of operation of a reservoir, there is a build-up of organic matter at the bottom (sometimes termed sediment oxygen demand) that would continue to cause anoxia even if all inputs of new organic matter and nutrients were eliminated. After dissolved oxygen is utilized, anaerobic digestion of organic matter produces ammonia, which is an important nutrient for the production of algae. This is why late season blooms of Cyanobacteria are common. The ammonia is near the thermocline and the Cyanobacteria can take advantage of this nutrient source using buoyancy control. In some water bodies, the seasonal production of Cyanobacteria becomes the dominant source of organic matter that settles to the bottom and is available for digestion. In this study, hypolimnetic oxygenation may prevent or reduce Cyanobacteria blooms by preventing or reducing the production of ammonia.

3.2 STUDY APPROACH

Circulation was chosen as the preferred method of improving water quality conditions in the two reservoirs and the lake because it is a method that somewhat mimics nature and can be implemented using solar power. The short term benefits of circulation include reduced nutrient cycling, improved planktonic assemblages, and reduced methyl mercury production. The long term benefits include improved fish assemblages and lower concentrations of mercury in fish. With respect to the TMDL, circulation is expected to achieve seasonal maximum concentrations of methyl mercury in the hypolimnion that approach target concentrations, and fish tissue concentrations that approach water quality objectives. The only benefit that has been realized is methyl mercury in the water column of Lake Almaden is reduced compared to the uncirculated condition.

Oxygenation of the hypolimnion was chosen to prevent the establishment of reducing conditions that result in the production of methyl mercury. The method chosen (bubble diffuser) is intended to maintain cold water temperatures in the hypolimnion (to comply with regulatory requirements to maintain cold water flows to support downstream fisheries) while achieving benefits of reduced nutrient cycling and reduced methyl mercury production. The goal is to achieve seasonal maximum concentrations of methyl mercury in the hypolimnion that approach target concentrations, and fish tissue concentrations that approach water quality objectives.

3.3 HYPOTHESES TESTED

The deployment of circulators was implemented in three ways: hypolimnetic-only circulation; epilimnetic-only circulation; and a combination of both. All three deployments were tested, along with additional supplemental activities to enhance the effects of circulation. Hypolimnetic oxygenation systems are now installed in all three reservoirs listed in the TMDL.

3.3.1 Almaden Reservoir—Hypolimnetic and Epilimnetic Circulation, Source Control and Hypolimnetic Oxygenation

The hypothesis tested in this reservoir is multi-faceted:

- Epilimnetic circulation will improve planktonic assemblages and reduce organic load to the bottom of the reservoir.

- Hypolimnetic circulation will reduce methyl mercury production and accelerate digestion of historic organic matter.

- Source control will eliminate sediment-derived input of mercury to the reservoir, resulting in reduced methyl mercury production.

- Hypolimnetic oxygenation will reduce methyl mercury production and accelerate digestion of historic organic matter.

- As a result of these actions, fish tissue concentrations of methyl mercury will decrease as compared to present data.

In this reservoir, three circulators were deployed in April 2007. Two circulators provide epilimnetic circulation to improve the ecology (described above) while one provides hypolimnetic circulation to address anoxia and reduce methyl mercury production. In August-October 2009, the only source of mining waste mercury to the reservoir was removed by a creek restoration project conducted by the District and reported elsewhere (see Jacques Gulch Restoration at http://www.valleywater.org/Mercury/JacquesGulch.aspx). The circulators and source control actions did not have any observable effect on any of these parameters (SCVWD, 2013). In April 2014 the hypolimnetic oxygenation diffuser line was installed and the circulators were removed. After PG&E provided power and the trailer mounted oxygen generation system was connected in May 2015 the system operated from July 2015 till October 2015 when the reservoir ceased to be stratified.

3.3.2 Guadalupe Reservoir—Epilimnetic Circulation and Hypolimnetic Oxygenation

The hypothesis tested in this reservoir is as follows:

- Epilimnetic circulation will improve planktonic assemblages and reduce organic load to the bottom of the reservoir.

- Hypolimnetic oxygenation will reduce methyl mercury production and accelerate digestion of historic organic matter.

- As a result of these actions, fish tissue concentrations of methyl mercury will decrease as compared to present data.

In this reservoir, three epilimnetic circulators were deployed in July 2007. The circulators actions did not have any observable effect on any of these parameters (SCVWD, 2013) and were removed in June 2013. An oxygenation system was installed in June 2013 and operated on a limited basis using a diesel generator from July to October. Electric power was brought up to the site in July 2014. The oxygenation system was not operated for a few months in 2014 due to low water levels. The system operated intermittently from March 2015 to May 2015, then operated continuously till October 2015 when the reservoir ceased to be oxygen stratified.

3.3.3 Lake Almaden—Hypolimnetic Circulation

The hypothesis tested in this water body is:

- Hypolimnetic circulation will reduce methyl mercury production and accelerate digestion of accumulated organic matter.

- As a result of this action, fish tissue concentrations of methyl mercury will decrease as compared to previous data.

In this lake, four circulators have been deployed. The first was installed in 2006, and was later modified in October 2007 to improve performance. The second device was installed in March 2007; the other two devices were installed in January 2009. Although methyl mercury production has been reduced, reductions in fish tissue concentrations have not been observed.

3.3.4 Calero Reservoir—Hypolimnetic Oxygenation

The hypothesis tested in this reservoir is:

- Hypolimnetic oxygenation will reduce methyl mercury production and seasonal maxima to meet the target concentration in the TMDL.

- As a result of this action, fish tissue concentrations of methyl mercury will decrease as compared to present data.

The hypolimnetic oxygenation system installed in 2011 was operated in the reporting period. The system operated from May 2014 through October 2014. The system was turned on again in February 2015 and operated through most of August and restarted after maintenance in October. It was shut down for the season in November 2015 after stratification ceased

4.0 MATERIALS AND METHODS

4.1 RESERVOIR MONITORING SITES

One location in each reservoir was selected to obtain data profiles at depth intervals of ¼- to 1-meter. Sampling locations corresponded with the deepest portion of the reservoir generally near the outlet works (all reservoirs are bottom-release penstocks), and located using one or more of the following methods: a handheld sounding device, a handheld GPS device and landmarks. Sampling was also conducted at the outlet works downstream of the reservoirs.

4.2 LAKE MONITORING SITES

The bathymetry of Lake Almaden has been developed using echo sounding equipment (Figure 3). The information indicates that there are four distinct areas of significant depth. The two deepest areas (maximum depths of 13 [Site 1] and 11 meters [Site 2], respectively) are separated from each other and from the portion of the lake through which Los Alamitos Creek enters and exits by remnant dike material that ranges 1 to 2 meters below the surface. Seven monitoring locations were established, five of which are in the deepest areas of the lake, and one at each of the inlet and the outlet of the lake.

4.3 WATER QUALITY MONITORING

Outlet samples generally were collected on the same day that lake or reservoir sampling was conducted if the outlet was discharging. Outlet field parameters were measured on additional days when the personnel visited the reservoirs to check on or operate oxygen systems. However, the frequency of the outlet measurements decreased beginning in May 2015 due to reduced staffing. Field data collected at the reservoir outlets (beginning 2008) with a Horiba U-10 Water Quality Checker (replaced in September 2010 with Hanna Instruments HI 93414 Turbidity Meter and YSI Incorporated Professional *Plus* multi-parameter data collector) included pH, specific conductivity, turbidity, dissolved oxygen and temperature logged by hand.

Field data collected with a Hydro-Lab DS5 Sonde included depth profiles of pH, temperature, ORP (beginning 2006), specific conductivity, dissolved oxygen, chlorophyll *a,* and phycocyanin (beginning 2006) logged into a portable computer. Profile data were generally logged at ¼-meter intervals to a depth of 1 meter, at 1-meter intervals through the Epilimnion, at ¼-meter intervals through the thermocline, and at ½ or 1 meter intervals through the hypolimnion. Secchi Transparency Depth measurements were also recorded by hand at each sampling event.

Water samples were collected using a Wildco beta-type Van Dorn sampling device (2.2 liter) at discrete depths. In the Epilimnion, water samples were collected at a depth of 2 meters. In the hypolimnion, water samples were collected at 1 meter or less above the bottom and at a mid-depth between the Epilimnion and hypolimnion sample depths. During the methyl mercury production season, additional sample depths were utilized to collect samples for methyl mercury analyses to develop a more comprehensive profile of methyl mercury concentrations in the water column.

Profile data is always collected when the reservoir or lake is sampled. In addition profile measurements were made twice a month when anoxic conditions existed (about March to

October) on the weeks between those when sampling was conducted. The frequency of profile data collection was reduced beginning in May 2015 due to reduced staffing.

Water sampling was conducted twice a month when anoxic conditions existed (about March to October) and once a month in rest of the year (about October through February); however in May and June 2015 few samples were collected from the reservoirs due to reduced staffing.

Lake Almaden was not profiled or sampled from June 2014 through June 2015 when water levels were low.

Samples were dispensed using “Clean Hands-Dirty Hands” procedures of EPA Method 1669 into:

- 0.25-liter volume FPE containers preserved with HCl for analyses for methyl mercury (all depths).
- Unpreserved 0.25-liter polypropylene containers for low level total mercury analyses (Epilimnion, hypolimnion and inlet/outlet all specified locations) and for low level dissolved mercury analyses (Epilimnion, Hypolimnion and outlets).
- 0.5-liter and 0.25-liter volume polypropylene containers preserved with H_2SO_4 for analyses for ammonia and total phosphorus, respectively (Epilimnion and Hypolimnion only).
- Unpreserved 1-liter volume amber glass containers for analyses for chlorophyll *a* (Epilimnion only).
- Unpreserved 0.5-liter volume polypropylene containers for analyses for sulfate, nitrate, and nitrite (Epilimnion and Hypolimnion only).
- 0.25-liter volume polypropylene container preserved with nitric acid for iron and manganese analyses (Hypolimnion and outlet only).

4.4.1 Laboratory Analysis Methods

- Unfiltered (Total) Methyl Mercury was determined using EPA Method 1630, with a Practical Quantification Limit of 0.050 ng/l.
- Unfiltered (Total) and Filtered (Dissolved) Mercury was determined using EPA Method 1631E, with a Reporting Limit of 0.500 ng/l.
- Ammonia as Nitrogen was determined using EPA Method 350.1, with a Reporting Limit of 0.100 mg/l. Prior to April 2009, lower Reporting Limits were sometimes achieved, as reported in the December 31, 2013 Progress report.
- Total Phosphorus was determined using EPA Method 365.3, with a Reporting Limit of 0.050 mg/l.
- Chlorophyll a was determined using SM 10200 H.

- Nitrate as NO3, Nitrite as NO2, and Sulfate as SO4 were determined using EPA Method 300.0, with Reporting Limits of 1.0 mg/l. Prior to April 2009, lower Reporting Limits were sometimes achieved, as reported in the December 31, 2013 Progress report.

- Iron and manganese were determined using EPA Method 6010B with reporting limits of 0.20 and 0.020 mg/l, respectively.

Duplicate samples were periodically taken during the reporting period and tested for any of the following: methyl mercury, mercury, iron and manganese.

4.5 Zooplankton Monitoring

The collection of zooplankton was conducted up to 3 times a year from each of the three reservoirs. Zooplankton are collected with a special net. The net is lowered in the water column and then retrieved. The net content is then emptied into the sample bottle. This process continues to a prescribed number of tows, typically 20 to 30 tows or an observed density of zooplankton. The volume of water that the net passes through is calculated based on the diameter at the top of the net and the length of the tow. The collection site is the same as the water sampling site at each reservoir. Zooplankton are collected in unpreserved 1-liter volume polypropylene bottle using the “Clean Hands-Dirty Hands” procedures of EPA Method 1669.

4.5.1 Laboratory Analysis Methods

Zooplankton were tested for mercury and methyl mercury at Brooks Rand Laboratory via cold-vapor atomic fluorescence spectroscopy (CVAFS) using EPA Method 1631 and 1630.

Zooplankton speciation was conducted by the Santa Clara Valley Water District or Brooks Rand Laboratory or both.

4.6 Fish Monitoring

Fish were collected and classified for the species assemblage, size and weight. Some of the fish were tested for mercury content. Historically fish sampling frequency was once to three times a year from up to four reservoirs. In this reporting period, low water levels prohibited safe launching of the electro fishing boat and limited the number of samplings. In 2014 fish were collected in April, August and November from Calero Reservoir only. In 2015 (October) Calero, Guadalupe and Stevens Creek Reservoirs were sampled via electro fishing. Almaden reservoir was sampled by hook and line since the electrofishing boat could not be safely launched due to low water levels. A summary of the fish collection is presented in Appendix C.

4.6.1 Laboratory Analysis Methods

Three species of fish, largemouth bass, bluegill and black crappie, were submitted to Test America. Test America subcontracted and shipped the samples to Brooks Rand Laboratories. Fish were tested for mercury using EPA method 1631E and total solids using Total Solids EPA method SM 2540.

5.0 RESULTS AND DISCUSSION

The analysis of water parameters and sample test results in the reporting period is limited as the boat could not be launched in some water bodies during all or portions of 2014. Exceptionally low water levels in Almaden and Guadalupe reservoirs made boat access unsafe. The Progress Report covers 2013 through 2015; however the data analyzed and presented in the report does not include the last several months of data collection as there is a delay in receiving and recording data. Water quality data are from before September or October 2015, but zooplankton and fish data are current.

5.1 DISSOLVED OXYGEN

Oxygen depletion in the hypolimnia of lakes and reservoirs following thermal stratification is a well documented phenomenon. Subsequent microbial digestion of other available forms of oxygen (e.g. nitrate, sulfate, carbon dioxide) leads to the production of nuisance chemical species and methyl mercury, as discussed below.

Almaden Reservoir seasonal maximum hypolimnion methyl mercury concentrations coincide with annual anoxia in the hypolimnion. Historically the duration of anoxia (DO less than 1) ranges from one to four months. Due to low water level in the reservoir, water samples could not be collected in 2014. In 2015 anoxia occurred from April to the middle of August. The July data show DO at 4 in the hypolimnion. This may be attributed to the effect of the oxygenation operation, but more data are needed. Merthyl mercury concentration in the same July data also show reduction in the hypolimnion. This may be partial prove that the treatment is working. The August data show low DO and high MeHg in the hypolimnion, this may be because the oxygenation system was down the prior 2 weeks for maintenance.

Calero Reservoir has a longer duration of stratification, ranging from four to five months, than the Almaden Reservoir. In 2014 the reservoir became stratified between February 24th and March 25th with oxygen below 1 mg/l in the Hypolimnion. In the first couple of weeks in October 2014 anoxia appeared to cease. The oxygenation system was run through the period of May to October. The DO was maintained above the anoxia range and the MeHg level was kept low. In 2015, the oxygenation system was shutdown in early August, and the anoxia condition existed through the hypolimnion column, with elevated MeHg levels. This type of data began to show the effect of the oxygenation system. The oxygen system was restarted in October and shut down for the season in November.

Guadalupe Reservoir historically has a duration of stratification rangeing from six to seven months. Unlike Calero and Almaden reservoirs, the outlet works for Guadalupe is located approximately 3 meters above the bottom of the reservoir. This tends to result in a stagnant hypolimnetic pool that persists for several months. Due to low water level in 2014, the samples were not taken until 2015. In 2015, anoxia was first observed on March 9th. The end of the anoxia-period is likely to be late September. The oxygenation system had equipment problems and ran intermittently between March and July. It ran continuously from late August through September. Because of the intermittent operation, the DO level close to the bottom was aoxic and elevated MeHg level existed through most of the stratified period.

For Lake Almaden the historic oxygen and methyl mercury cycles can be seen in the Dec 31, 2013 progress report's figures 29, 30 33, and 34. Indicators of anoxia, as DO and ORP,

decreased with depth and as stratification progressed coupled with an increase in methyl mercury. During this reporting period a hiatus in sampling from May 2014 to July 2015, due to low water level, makes interpretation of anoxia and methyl mercury more difficult. The profiles from both monitoring stations, Sites 1 and 2, appear similar.

5.2 NUTRIENT CYCLING

5.2.1 Nitrogen

Nutrients required for living cells, in order of abundance, include carbon, hydrogen, oxygen, nitrogen and phosphorous (Horne, A.J., Course Materials: Ecology and Management of Lakes and Reservoirs, Continuing Education in Business and Technology, University Extension, University of California, Berkeley 2004). Nitrate (NO_3) is the most common form of this nutrient in lakes and streams, and its concentration and rate of supply is directly related to land use practices in the watershed. Nitrate ions are easily soluble and move easily through soils. Ammonia (NH_4) is the preferred form of nitrogen for phytoplankton and plant growth, and is produced by decay of organic material under anoxic conditions. Generally in the reservoirs and lake of this study, Nitrate is the predominant form of nitrogen during the fall and winter and Ammonia is the predominant form of nitrogen during the summer (Figures 5 through 9).

In the reporting period (2013-2015) Almaden Reservoir nitrate concentrations (Figure 5) above the laboratory analysis reporting limit occurred only once in the epilimnion and twice in the hypolimnion in early 2015. Ammonia concentrations in both the epilimnion and hypolimnion exhibit relatively low concentrations (particularly as compared to Lake Almaden, see below), similar to Calero Reservoir. These results are generally similar to previous years.

In Calero Reservoir (Figure 6), nitrate concentrations above the laboratory analysis reporting limit did not occur in the epilimnion, but did occur several times in the hypolimnion. This was similar to results from 2011 and 2012 in the epilimnion, and slightly more frequent in the hypolimnion. Ammonia concentrations in the epilimnion were consistently near the reporting limit, whereas, in the hypolimnion a slight increase was observed in the summer of 2015. Overall, the concentrations were at or close to the reporting limit.

In Guadalupe Reservoir (Figure 7) nitrate concentrations above the laboratory reporting limit occurred several times in the hypolimnion and twice in the epilimnion. This was similar to observation seen in 2008. Ammonia concentrations in the hypolimnion did not exhibit a seasonal pattern, with higher concentrations in the summer months, unlike previous years. Ammonia concentrations in the Epilimnion remained near the reportable limit throughout the year, also similar to previous years.

Concentrations of ammonia and nitrate in Lake Almaden (Figures 8 & 9) remain significantly higher than those measured in the three reservoirs, which may reflect the relatively small size and urban surroundings of the lake. The lake was not sampled from June 2014 to June 2015 due to low water levels, which limits observation of expected seasonal patterns. Nitrate concentrations in previous years exhibited a strong

seasonal pattern in the epilimnion and hypolimnion at both sampling sites, and appear to be unaffected by circulation. Ammonia concentrations in previous years exhibited strong seasonal patterns in the hypolimnion at both sampling sites prior to installation and operation of the circulators (2005 at Site 1 and 2005-2006 at Site 2), before modification of the device near Site 1 (2006-2007), and during the malfunction of the device near Site 2 (2009), and were suppressed during the previous reporting period (2012-2013) due to effects of the circulators. Ammonia concentrations in the Epilimnion remained near the laboratory analysis reporting limit year-round at both sites.

5.2.2 Summary-Nitrogen

Solar-powered circulators were installed in Almaden Reservoir (April 2007), Guadalupe Reservoir (July 2007), and Lake Almaden (2006 near Site 1, 2007 near Site 2), as described above. The circulators in Lake Almaden appear to have affected the seasonal cycling of Ammonia, particularly when the intake is set at the bottom. The intake of the circulator near Site 1 was originally set at one meter above the bottom for operation in 2006 and 2007; it was reset at the bottom in early 2008. The intake of the circulator near Site 2 is set at the bottom; in 2009 the circulator at Site 2 malfunctioned and did not provide sufficient circulation to affect Ammonia concentrations, which reverted to the pre-circulator seasonal pattern. The circulators functioned regularly during the reporting period and suppressed ammonia cycling in the hypolimnia as compared to uncirculated conditions in previous years. The circulators do not appear to have had any effect on nitrogen concentrations in the reservoirs (Almaden and Guadalupe). Note the circulators at Almaden and Guadalupe Reservoirs were removed during the reporting period based on their lack of effectiveness in preventing anoxia.

5.2.3 Phosphorus and Sulfate

Phosphorus is an essential nutrient for living systems, as a structural link in genetic material, as a component of cell walls, and as a component in the energy system of cells (Horne, A.J., Course Materials: Ecology and Management of Lakes and Reservoirs, Continuing Education in Business and Technology, University Extension, University of California, Berkeley, 2004). It is naturally occurring in sediment and most of this form is inorganic and inert. The usable phosphorus is the organic form of phosphorus (PO4). Measurement of unfiltered samples for Total Phosphorus (TP) includes both inorganic and organic forms. Generally, in lake and river systems Total Phosphorus concentrations are high during winter when sediment is mobilized by runoff; organic phosphorus may also be important in urban or rural areas where excessive or improper use of fertilizers occurs. During the summer, phosphorus is bound in the sediment and becomes a limiting nutrient for phytoplankton; however, under anoxic conditions the organic form of phosphorus is released from the sediment into the hypolimnion.

Sulfate (SO4) is the oxygen source for sulfate-reducing bacteria, which are generally known to be associated with the production of methyl mercury in the hypolimnia of lakes. These bacteria convert sulfate into the acid hydrogen sulfide (HS^-) and the gas hydrogen sulfide (H_2S). The latter is associated with taste and odor problems for treated water, and is a potential factor in fish kills. Measurements of sulfate throughout the year provide a means of tracking the activity of these bacteria to supplement physical measurements of oxygen and oxidation reduction potential, and to observe the effects of circulation.

In Almaden Reservoir during the reporting period (Figure 10), sulfate concentrations vary in a narrow range, around 15 mg/l, throughout the year in both the hypolimnion and epilimnion, except in early 2015 when concentrations were 26 mg/l in both depth zones. Also in the reporting period, Total phosphorus concentrations rarely exceed the laboratory analysis reporting limit (0.050 mg/l) in the epilimnion. In the hypolimnion, Total Phosphorus concentrations vary within a narrow range near the reporting limit.

In Calero Reservoir (Figure 11), sulfate concentrations vary over a range between 15 and 45mg/l throughout the year in the epilimnion and hypolimnion. The seasonal effect is exhibited in both the epilimnion and the hypolimnion, with seasonal minima corresponding with seasonal maximum Total Phosphorus concentrations in the hypolimnion. Total Phosphorus concentrations rarely exceed the laboratory reporting limit in the epilimnion. In the hypolimnion, Total Phosphorus concentrations vary within a narrow range near the reporting limit except after June 2015 when concentrations were as high as 0.30 mg/l. A summer seasonal effect is observed.

In Guadalupe Reservoir (Figure 12), sulfate concentrations vary over a range between 5 and 30 mg/l throughout the year in the Epilimnion and hypolimnion. Data from the reporting period appears consistent with past data that shows a seasonal pattern, with seasonal minima corresponding with seasonal maximum Total Phosphorus concentrations. This effect was profound in 2011, where sulfate concentrations in the hypolimnion approached the laboratory reporting limit of 1 mg/l. The seasonal effect in the Epilimnion is present, but is not as pronounced as observed in the hypolimnion. Total Phosphorus concentrations rarely exceed the laboratory analysis reporting limit in the Epilimnion. In the Hypolimnion, Total Phosphorus concentrations vary within a narrow range near the reporting limit (+/- 0.1 mg/l), which in the past exhibited a summer seasonal effect, but not observed in the reporting period.

Concentrations of Sulfate in Lake Almaden (Figures 13 and 14) were significantly higher than measured in Almaden and Guadalupe Reservoirs. Limited sampling of the lake in the reporting period makes the comparison between conditions in this reporting period to the past more difficult. Sulfate concentrations were somewhat higher than those observed in Calero. Historically, concentrations of both species exhibited seasonal patterns in the hypolimnion at both sampling sites, varying widely (+/- 45 mg/l for Sulfate, and +/- 0.3 mg/l for Total Phosphorus). In the reporting period concentrations of both species in the Epilimnion ranged from (+/- 20 mg/l for Sulfate, and +/- 0.15 mg/l for Total Phosphorus).

At both sampling sites prior to installation and operation of the circulators (2005 at Site 1 and 2005-2006 at Site 2), before modification of the device near Site 1 (2006-2007), and during the malfunction of the device near Site 2 (2009) concentrations of total phosphorus in the hypolimnion were elevated.

Lastly, sulfate appears to have become more concentrated at both sites and depths in 2015, at a concentration of around 60 mg/l.

5.2.4 Summary–Phosphorus and Sulfate

Solar-powered circulators were installed in Almaden Reservoir (April 2007), Guadalupe Reservoir (July 2007), and Lake Almaden (2006 near Site 1, 2007 near Site 2), as described above. The circulators in Lake Almaden appear to have affected the

seasonal cycling of Total Phosphorus, but only when the intake is set at the bottom. The intake of the circulator near Site 1 was originally set at one meter above the bottom for operation in 2006 and 2007; it was reset at the bottom in early 2008. The intake of the circulator near Site 2 is set at the bottom; in 2009 the circulator at Site 2 malfunctioned and did not provide sufficient circulation to affect Total Phosphorus concentrations, which reverted to the pre-circulator seasonal pattern. Suppression of the cycling of total phosphate resumed during the reporting period. Oxygen system operation does not appear to have had any effect on Sulfate or Total Phosphorus concentrations in the reservoirs. Results from Lake Almaden Site 1 and Site 2 indicate sulfate has become more concentrated in 2015, at a concentration of around 60 mg/l.

5.3 MERCURY/METHYL MERCURY CYCLING

Methyl mercury concentrations vary seasonally in the reservoirs and the lake of this study, corresponding with anoxia in the hypolimnia. Methyl mercury increases in the water column are generally associated with areas of anoxia; however, Oxidation Reduction Potential (ORP) may be a more specific indicator for methylation, as methyl mercury concentrations tend to increase as ORP values decrease below 100 millivolts (mV). The intent of this study is to evaluate the effects of circulation and diffusion of oxygen on the methyl mercury concentrations in the water column.

5.3.1 Almaden Reservoir

Methyl mercury concentrations measured in Almaden Reservoir (Figures 16) indicate a production season that typically lasts approximately three months from July September. Methyl mercury increases in the water column are generally associated with areas of anoxia; and ORP values below 100 millivolts (mV). During the reporting period, maximum concentrations in the hypolimnion, mid-depth and epilimnion were consistent with previous years.

Since 2009 after the Jacques Gulch project the peak methylmercury concentration had dropped between 2010 and 2013. Sampling in this reservoir was not conducted in 2014 due to low water levels. Then in 2015 the methylmercury levels rose again. Operation of the oxygen system provided oxygen at depth beginning in June 2015. The system operated intermittently from June through mid August. No noticeable decrease in methyl mercury concentrations was observed in this period. In the September sample collected on 9/2/2015, after half a month of continuous oxygenation operation, the DO was significantly improved and the methyl mercury level was dropped. This sign of the effectiveness of the oxygenation system is beginning to show in several isolated cases.

Sample results for both unfiltered (total) and filtered (dissolved) species are shown in Figure 17. Total mercury peaks in the winter months, opposite to the methyl mercury pattern which peaks in the summer months. This suggests that more source control to reduce inflow of mercury into the reservoirs needs to be part of the long term solution.

5.3.2 Calero Reservoir

Samples taken in Calero Reservoir show methyl mercury remained at a low level through 2014 (Figures 18, 20). The oxygenation system was operated with few interruptions during the spring and summer months of 2014. This was a good sign of the

effectiveness of the oxygenation system. The total mercury level was also low. This may be because Calero Reservoir receives imported water for storage, unlike the Almaden and Guadalupe reservoirs which receive only natural drainage.

During the reporting period, maximum concentrations in the hypolimnion, mid-depth and epilimnion were consistent with previous years since operation of the oxygenation system. The TMDL target concentration (1.5 ng/l) for hypolimnetic seasonal maximum concentration is typically exceeded for 5-8 months between April and November annually (Figure 21 & 22). The target was exceeded for two only months (July and August) in 2015 and not at all in 2014.

Total mercury in the epilimnion and hypolimnion exhibit relatively little variation in concentration (Figure 21). These concentrations are significantly lower than the other two reservoirs and Lake Almaden.

5.3.3 Guadalupe Reservoir

Methyl mercury concentrations measured in Guadalupe Reservoir (Figures 22,23 and 24) show a production season that lasts from six to eight months from April or May through October or November annually. Methyl mercury increases in the water column are generally associated with areas of anoxia; and ORP values below 100 millivolts (mV). Results from 2015 are consistent with past results. Sampling in this reservoir was reduced for part of the reporting period due to low water levels effecting access. This hiatus makes the comparison between conditions in this reporting period to the past more difficult. During the reporting period, maximum concentrations in the hypolimnion, mid-depth and Epilimnion were consistent with 2012 and 2013. In Figure 22, the effects of oxygenation operation are evident as inflections in the Dissolved Oxygen and ORP curves for the months of May, August and September of 2015. The TMDL target concentration (1.5 ng/l) for hypolimnetic seasonal maximum concentration was exceeded for 6 months between March and September (Figure 23). The epilimnion concentration in May 2015 exceeded the mid-depth concentration. This is not typical and may indicate that the methyl mercury is being displaced under certain circulation condition. The circulators installed in this reservoir in 2007 do not appear to have had any effect on methyl mercury concentrations in the water column, and were removed in June 2013.

Total mercury concentrations in the epilimnion and hypolimnion exhibit seasonal effects of peaking in the winter months (Figure 24).

5.3.4 Lake Almaden

Methyl mercury concentrations measured in Lake Almaden at Site 1 (Figures 25, 26, 27 and 28) show a production season that lasts approximately seven months from April through November annually. Methyl mercury increases in the water column are generally associated with areas of anoxia; Annual maximum concentrations in the Hypolimnion vary, and were obviously affected by the circulator after it was set at the bottom in 2008 (Figure 27). In 2005-2007 the maximum concentration in the hypolimnion was about 70 ng/l; in 2008 through 2011, the maximum concentration ranged from 15 to 30 ng/l, and in 2014-2015 the maximum concentration was 2.3 ng/l. Mid-depth seasonal

maximum concentrations were immediately affected by the circulator following installation in 2006, and have ranged from 1 to 5 ng/l from 2010-2013. Hypolimnetic seasonal maxima concentrations above the target concentration (1.5 ng/l) are generally exceeded for 5-6 months in May through November annually. In the reporting period it was exceeded in April and May 2014 and again in August, and September 2015. The hiatus in water sampling from the lake limits interpretation of mercury concentrations during 2015. Given that hiatus, maxima in mid-depth and Hypolimnion were atypically low.

Total mercury concentrations in the epilimnion and hypolimnion exhibit seasonal effects of peaking during the wet season (Figure 28 & 32), and are significantly higher than the three reservoirs, with seasonal maxima in the epilimnion above 50 ng/l since 2009, and ranging above 150 ng/l in the hypolimnion.

Methyl mercury concentrations measured in Lake Almaden at Site 2 (Figures 29, 30, 31 and 32) show a production season that lasts approximately seven months from April through November annually, similar to Site 1. Annual maximum concentrations in the Hypolimnion vary, and were obviously affected by the circulator after it was installed in 2007 (Figure 31) and malfunctioned in 2009. In 2005 and 2006 the maximum concentration in the hypolimnion was about 60 and 70 ng/l, respectively; in 2007 and 2008, the maximum concentration was about 17 ng/l; in 2009, the maximum concentration was 48 ng/l; from 2012-2013 the maximum concentration ranged from 10 to 17 ng/l. Mid-depth seasonal maximum concentration was immediately affected by the circulator following installation in 2007, but was unaffected by the malfunction in 2009. The maximum concentration at mid-depth in 2005 and 2006 was 78 and 112 ng/l, respectively; in 2014-2015 the maximum concentration ranged from 0.92 to 4.6 ng/l, for 2014 and 2015, respectively. Hypolimnetic seasonal maxima concentrations above the target concentration (1.5 ng/l) are generally exceeded for 5-6months in May- October or November annually. This reporting period was consistent with the past, based on limited data. The hiatus in water sampling from the lake limits interpretation of mercury concentrations during 2015. Given that hiatus, maxima in mid-depth and hypolimnion were atypically low.

Mercury concentrations at Lake Almaden Site 2, in the epilimnion and hypolimnion exhibit seasonal effects for unfiltered (total) mercury (Figure 32). Generally, seasonal maximum concentrations of total mercury are observed during the wet season in both the epilimnion and hypolimnion, and are significantly higher than the three reservoirs, with seasonal maxima in the epilimnion above 50 ng/l since 2009, and ranging above 150 ng/l in the hypolimnion. In the reporting period the results from the hypolimnion appear consistent with the past.

Methyl mercury concentrations, during the reporting period measured in the Hypolimnion of Lake Almaden at Sites 3, 4 and 5 (Figure 33) do not show a production season that in past lasted six months from May to November. Only a partial background season of data were obtained at Site 3 in 2010-2011 and Site 5 in 2008. In 2008, prior to the installation of the circulator in this area, the maximum concentration measured in the hypolimnion at Site 5 was 38 ng/l. Since then, the maximum concentration measured in the hypolimnion has ranged from 4 to 8 ng/l. The circulator installed at Site 3 in 2010 was used to circulate the Epilimnion only, and methyl mercury concentrations in the hypolimnion were around 50 ng/l. Since then, the maximum concentration measured in the hypolimnion has ranged from 5 to 8 ng/l. Hypolimnetic seasonal maxima

concentrations above the target concentration (1.5 ng/l) are generally exceeded for 5-6 months in May-November annually. The hiatus in water sampling from the lake limits interpretation of mercury concentrations during 2015. Given that hiatus, maxima in mid-depth and Hypolimnion were atypically low.

5.4 SUMMARY—MERCURY/METHYL MERCURY CYCLING

The circulators in Lake Almaden appear to have affected the seasonal cycling of methyl mercury most effectively when the intake is set at the bottom. The intake of the circulator near Site 1 was originally set at one meter above the bottom for operation in 2006 and 2007; it was reset at the bottom in early 2008. The intake of the circulator near Site 3 and Site 4 was originally set to circulate the Epilimnion but was changed after two years and now circulators near Site 2, Site 3 and Site 5 are set at the bottom; in 2009 the circulator at Site 2 malfunctioned and did not provide sufficient circulation to affect methyl mercury concentrations in the hypolimnion, which reverted to the pre-circulator seasonal maxima, but did maintain mid-depth concentrations at low levels compared to pre-circulation data.

The introduction of oxygen has led to an obvious reduction in methyl mercury at the Hypolimnion in Calero Reservoir in 2014, but was not confirmed in 2015. The coincidence of oxygenation at Almaden and Guadalupe Reservoirs with concurrent sampling is limited and therefore more data should be collected prior to drawing conclusions.

Mercury concentrations in the water column are significantly lower in Calero than in the other two reservoirs and Lake Almaden. Mercury concentrations are significantly higher in Lake Almaden than the three reservoirs.

5.5 MERCURY/METHYL MERCURY LOADING

In the September 2008 Guadalupe River Watershed Mercury TMDL Staff Report (Staff Report, page 9-31), the Regional Board stated that the District would be “required to quantify dry season loads of methyl mercury discharged from reservoirs and lakes” using a method proposed in Section 4.4 of the Staff Report. The method proposed in Section 4.4 made a variety of assumptions, each of which would add and compound to error in estimating the load of methyl mercury. The District proposes the more direct and conventional method of sampling outlet flows and using concentration and gauged flow data to estimate loads.

In 2007 through 2011, the District collected samples from the outlet of the three reservoirs, and from the inlet and outlet of Lake Almaden, at the sampling frequency described in section 4.3 of this Progress Report. As shown in Figure 34, the hypolimnion and outlet concentrations of methyl mercury for Almaden Reservoir are about the same; there is no loss of methyl mercury in the outlet works.

In Figure 35, the Hypolimnion and outlet concentrations of methyl mercury for Guadalupe Reservoir differ widely during the methyl mercury production season. This is not due to any losses in the outlet works; rather, it is due to the difference between the elevation of the outlet works sill (approximately three meters above the bottom of the reservoir) and the sample collection depth (within one meter above the bottom). The concentrations of methyl mercury in samples collected at the sill elevation and the outlet are essentially the same as shown in Figure 39 of the previous progress report [SCVWD 2013].

As shown in Figure 36, the historic hypolimnion and outlet concentrations of methyl mercury for Calero Reservoir are about the same; there is no loss of methyl mercury in the outlet works. During the reporting period the reservoir was rarely discharged. Hence, no outlet samples were collected. As shown in Figure 37, the inlet and outlet concentrations of methyl mercury for Lake Almaden indicate that the lake was previously a sink for methyl mercury (discharges less methyl mercury than it receives). Inlet methyl mercury concentrations during the reporting period were lower than previous highs, but slightly elevated from previous years. Total mercury concentrations for the inlet and outlet (Figure 37) are generally similar.

5.5.1 Outlet Load Calculations

Using Santa Clara Valley Water District gauge data, and mercury (Hg) and methyl mercury (MeHg) concentrations in the outlet discharge, wet season and annual loads were calculated for the Almaden, Calero, and Guadalupe Reservoirs. Daily flow rates were multiplied by the measured concentrations to determine the amounts of Hg and MeHg discharged. Calculated loads are presented in Tables 4 and 5 of Appendix B on monthly basis for water years 2013, 2014, and 2015. The water year is from October 1 through September 30 and the wet season is defined as the period between October 1 and April 30. These data are summarized below:

	Hg Discharged						MeHg Discharged					
Reservoir	g/wet season			g/year			g/wet season			g/year		
	2013	2014	2015	2013	2014	2015	2013	2014	2015	2013	2014	2015
Almaden	35.7	5.5	15.0	43.7	10.3	21.4	1.0	0.1	1.7	3.5	0.9	3.4
Guadalupe	47.8	27.4	14.3	76.2	40.2	24.8	0.7	0.5	1.0	5.0	1.3	4.0
Calero	31.7	10.6	2.0	45.7	10.7	2.0	1.2	0.2	0.2	8.0	0.2	0.2
TOTAL	115	44	31	166	61	48	3	1	3	17	2	8

Because of the drought, reservoir releases were significantly reduced in 2014 and 2015. Consequently, the total mercury loading from these reservoirs were 48 grams in 2015 and 61 grams in 2014. These numbers are in the same order of magnitude of the nonurban stormwater runoff allocation of 0.5 kg/yr in the San Francisco Bay mercury TMDL.

These results are similar to those reported by Tetra Tech, Inc. in their *Final Conceptual Model Report*, May 20, 2005. These reservoirs do not appear to be significant sources of Hg to the Guadalupe River or San Francisco Bay as compared to other local sources. The Guadalupe River annual discharge as stated in the San Francisco Bay TMDL is 92 kg Hg per year, whereas these three reservoirs in total discharged less than 0.2 kg Hg in each of the past three years.

5.6 Mercury Bioaccumulation

The TMDL targets are set for methylmercury concentrations in fish. If the fish are 5-15 cm in length the target is 0.05 mg/Kg and if the fish are 15-35 cm in length the target is 0.1 mg/Kg. Methyl mercury bioaccumulation begins with algae intake of dissolved methyl mercury in the

water then progresses to zooplankton, followed by small fish and culminates in the highest level trophic fish (Figure 2). The District tested zooplankton and fish for mercury for several years. Zooplankton data are summarized in Tables 1 & 2. Fish data are summarized in Tables 6-19.

Low water levels in 2014 meant only Calero Reservoir was sampled for zooplankton. The 2012 concentrations of methyl mercury and of mercury in Almaden and Guadalupe Reservoir were noticeably higher than later samples. Results from Calero show less variation. Zooplankton life spans are likely less than three months.

The oxygen system operated from July through October 2015 at Almaden Reservoir therefore the August 2015 zooplankton could conceivably reflect an oxygenated condition. Guadalupe oxygenation was not run in 2014, and no zooplankton were sampled that year. Guadalupe operated intermittently from March to May 2015 and consistently from June to October 2015. Therefore the May and August 2015 zooplankton results might be affected by the respective methylation process. Oxygenation at Calero started 2013 intermittently in May, July and August and then continuously in September 2013, then again in the spring of 2014 through October 2014. The system was turned for the season in February 2015 and operated through most of August and restarted after maintenance in October until November 2015. Given the timing of the oxygenation it is possible that 2014 and 2015 zooplankton samples may have reduced mercury loads.

It is of interest to compare concentrations of methyl mercury in water and zooplankton as this is a step in the bioaccumulation process. Approximately contemporaneous paired water and zooplankton data are presented in Table 2. The correlation between mercury in zooplankton and water methyl mercury is poor (R square of 0.071). Zooplankton live at depths shallower than the Hypolimnion therefore comparison to epi, mid or whole depth concentrations may show a stronger relationship. More data analysis will be conducted in 2016.

The District collected and tested fish for total mercury once a year in Almaden, and Guadalupe Reservoirs in 2012, 2013 and 2015. The low water levels in 2014 meant fishing was conducted only from Calero Reservoir. Calero was sampled twice in 2012, twice in 2013, three times in 2014 and once in 2015. 2012 results include mercury as dry weight, wet weight and total solids, in 2013 through 2015 the results from the laboratory are as mercury dry weight and total solids. Wet weight mercury concentrations are calculated from the product of the percent solids and the dry weight mercury concentration. A week correlation between mercury in fish (wet weight) and mercury in zooplankton (wet weight) can be seen in Table 3 (R square of 0.242). Several important considerations for this comparison are:

1) Fish accumulate mercury over their life
2) Drought and low reservoir water levels affected the mercury life cycle and the monitoring results
3) The total mercury concentrations in fish collected in this period are in the same range of values presented in the 2011 report of the Guadalupe River Watershed Coordinated Monitoring Program
4) To limit cost, the fish samples were only tested for total mercury. Based on lab data, approximately 90% of the mercury in fish is methyl mercury. Hence, the mercury data would be slightly conservative when compared to the TMDL target.

6.0 CONCLUSIONS

The data interpretation, data analysis, and conclusions in this report are preliminary and subject to change as the study progresses.

The Hypothesis being tested for Lake Almaden is:

> *Hypolimnetic circulation will reduce methyl mercury concentrations in Lake Almaden to meet the seasonal maximum concentration specified in the TMDL, which is expected to result in fish tissue concentrations that meet the objectives specified in the TMDL.*

To date, it has been demonstrated that the solar-powered circulators have significantly reduced methyl mercury concentrations in the water column as compared to pre-circulated conditions. With proper deployment and operation, near-bottom concentrations of methyl mercury in the water column are significantly reduced as well; however, the target concentrations in the TMDL have not yet been achieved.

The first Hypothesis being tested for Guadalupe Reservoir is:

> *Epilimnetic circulation will reduce blue green algae production in Guadalupe Reservoir in favor of green algae production, eventually reducing the extent and duration of anoxia in the hypolimnion while improving the fishery, resulting in lower seasonal maximum methyl mercury concentrations (due to less anoxia) and lower methyl mercury concentrations in fish (due to biodilution).*

To date, the data indicate that current blooms of blue green algae are low to modest in this reservoir. There is no background data for comparison, and collection and quantification of algae production is problematic, so it is not possible to quantifiably demonstrate if the circulators have had any effect on the blue green algae blooms; however, there has been no visual change observed. The data indicate that there has been no effect of circulation on hypolimnetic anoxia or water column concentrations of methyl mercury. This method has failed to achieve any observable or measurable improvement and was abandoned in June 2013.

The new Hypothesis being tested for Guadalupe Reservoir is:

> *Oxygenation of the hypolimnion will result in seasonal maximum concentrations of methyl mercury that meet the criterion specified in the TMDL and fish tissue concentrations that meet the targets specified in the TMDL.*

An oxygenation system was operated on a limited basis using a diesel generator from June to October in 2013. Electric power was brought up to the site in July 2014. The system operated intermittently from March 2015 to May 2015, then operated continuously till October 2015 when the reservoir ceased to be oxygen stratified. Methyl mercury concentrations from sampling during and after the oxygenation of the system did not vary significantly from past observations.

The Hypothesis being tested for Almaden Reservoir is:

> *Epilimnetic and hypolimnetic circulation in Almaden Reservoir combined with source reduction will reduce mercury available for methylation, reduce blue green*

algae production in favor of green algae production, eventually reduce the extent and duration of anoxia in the hypolimnion while improving the fishery, resulting in lower seasonal maximum methyl mercury concentrations (due to less anoxia and less mercury available for methylation) and lower methyl mercury concentrations in fish (due to biodilution).

The restoration of Jacques Gulch in the summer and fall of 2009 has partially removed the source of mining waste to this reservoir. While annual maximum total mercury concentrations in the water column appear to be lower than those measured prior to 2009, the annual maximum methyl mercury concentrations measured in the water column seem to correlate to the operation of the oxygenation system. Seasonal blooms of Cyanobacteria were visually observed annually each November, indicating that the epilimnetic circulation has not substantially affected the composition of phytoplankton in the reservoir.

A hypolimnetic oxygenation system was installed in May 2015. Continuous operation was from July 2015 to October 2015. The new Hypothesis is: *Oxygenation of the hypolimnion in Almaden Reservoir combined with source reduction will result in seasonal maximum concentrations of methyl mercury that meet the criterion specified in the TMDL and fish tissue concentrations that meet the targets specified in the TMDL*.

The oxygenation started late in the season after stratification after months of mehtylation production. To better infer the relationship the system should operate continuously at the onset of stratification.

The Hypothesis being tested for Calero Reservoir is:

Oxygenation of the hypolimnion in Calero Reservoir will result in seasonal maximum concentrations of methyl mercury that meet the criterion specified in the TMDL and fish tissue concentrations that meet the targets specified in the TMDL.

The hypolimnetic oxygenation system installed in 2011 was operated in the reporting period. The system operated from May 2014 through October 2014. The system was turned on again in February 2015 and operated through most of August and restarted after maintenance in October until it was shut down for the season in November 2015 after stratification ceased.

The dataset of water, zooplankton and fish sampling is the most complete among the reservoirs for Calero Reservoir. Meythlmercury for the summer of 2014 appears to be reduced compared to past years. An apparent decrease can be seen in the hypolimnion from 2009. Oxygenation may be the cause of the decrease, however longer operation data will be needed to draw this conclusion.

7.0 RECOMMENDATIONS

Coordinate with the Coordinated Monitoring Program to conduct monitoring of inflows of mercury into the reservoirs.

Profile in the winter once a month till temperatures rise in February or March then resume profiling twice a month. The observed change in water conditions is minimal in the winter.

Investigate the oxygenation system operation to raise the dissolved oxygen level in the hypolimnion in the summer months.

Start the oxygenation systems at the beginning of stratification and maintain them until stratification weakens or disappears. Once anoxic conditions set up methylation production will begin and likely persist for weeks or months even after operation of the system.

8.0 IMPLEMENTATION TIMELINE

To date, the District has conducted the following activities:

2003–2009	Source removal on all known source areas on District-owned property on Alamitos Creek.
2005–present	Monitoring and Sampling Program for three reservoirs and one lake.
2006–present	Installation and operation of a circulator at Site 1 in Lake Almaden, with modifications to deployment in 2008.
2007–present	Installation and operation of a circulator at Site 2 in Lake Almaden; Installation and operation of three circulators in Almaden Reservoir and three circulators in Guadalupe Reservoir; source removal of mining waste to Almaden Reservoir (Jacques Gulch Restoration).
2009–2014	Installation and operation of two additional circulators in Lake Almaden; application for grant funding for oxygenation system for Calero Reservoir; application for grant funding for feasibility study for Alamitos Creek Restoration/Lake Almaden Bypass; application for grant funding for source reduction on private property on Alamitos Creek; application for grant funding to enhance the current studies at four reservoirs. All grant applications were unsuccessful.
2011	Installation of oxygenation system in Calero Reservoir; equipment procurement for oxygenation of Almaden Reservoir; completion of internal opportunities and constraints document for remediation of Lake Almaden.
2013	Installation and limited operation of oxygenation system in Guadalupe Reservoir. Limited operation of oxygenation system in Calero Reservoir.
2014-2015	Installation and operation of oxygenation system in Almaden Reservoir. Operation of oxygenation systems in Calero reservoir and Guadalupe Reservoir.

Planned activities for the next reporting period:

2015–2017	Monitoring and Sampling Program for three reservoirs and one lake, continued operation of existing circulators in the lake and oxygenation systems in three reservoirs.
2016–2018	Further evaluation of alternatives for remediation of Lake Almaden.
2018	Proposed initiation of Lake Almaden project construction to separate Alamitos Creek from ponds.

9.0 REFERENCES

SCVWD, 2013, Progress Report, Methyl Mercury Production and Control in Lakes and Reservoirs Contaminated by Historic Mining Activities in the Guadalupe River Watershed, December 31, 2013.

Stewart, A. Robin; Saiki, Michael K.; Kuwabara, James S.; Alpers, Charles N.; Marvin-DiPasquale, Mark; and Krabbenhoft, David P., 2008, Influence of plankton mercury dynamics and trophic pathways on mercury concentrations of top predator fish of a mining-impacted reservoir, *USGS Staff -- Published Research.* Paper 474. http://digitalcommons.unl.edu/usgsstaffpub/474

Tetra Tech, 2004, Technical Memorandum 4.3 Draft Final Conceptual Model Report Guadalupe River Watershed Mercury TMDL Project. Prepared for Santa Clara Valley Water District, June 7, 2004.

APPENDIX A

Figures

Figure 1: Location of Santa Clara County

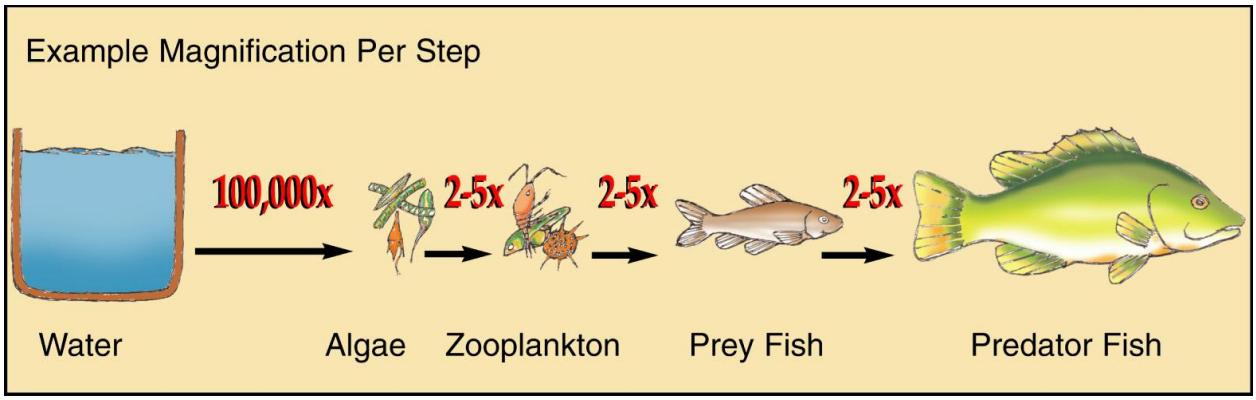


Image from Guadalupe River Watershed Mercury TMDL Project Final Conceptual Model Report, Tetra Tech Inc., May 20, 2005

Figure 2: Biomagnification

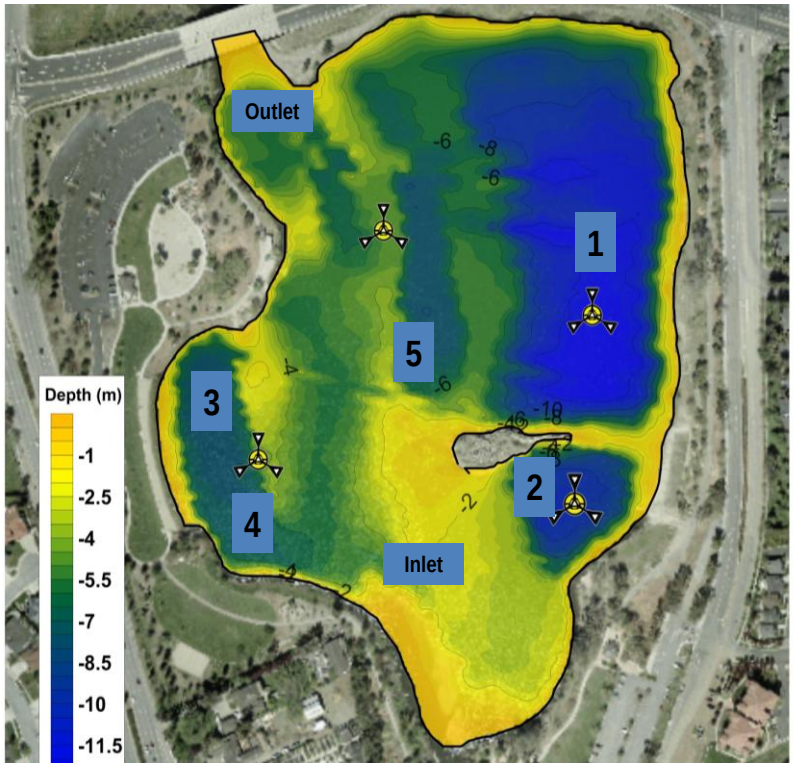


Figure 3: Lake Almaden Bathymetry and Site Map

= Sampling/Monitoring Location

= Solar-powered Circulator Location

Figure 3: Lake Almaden Bathymetry and Site Map

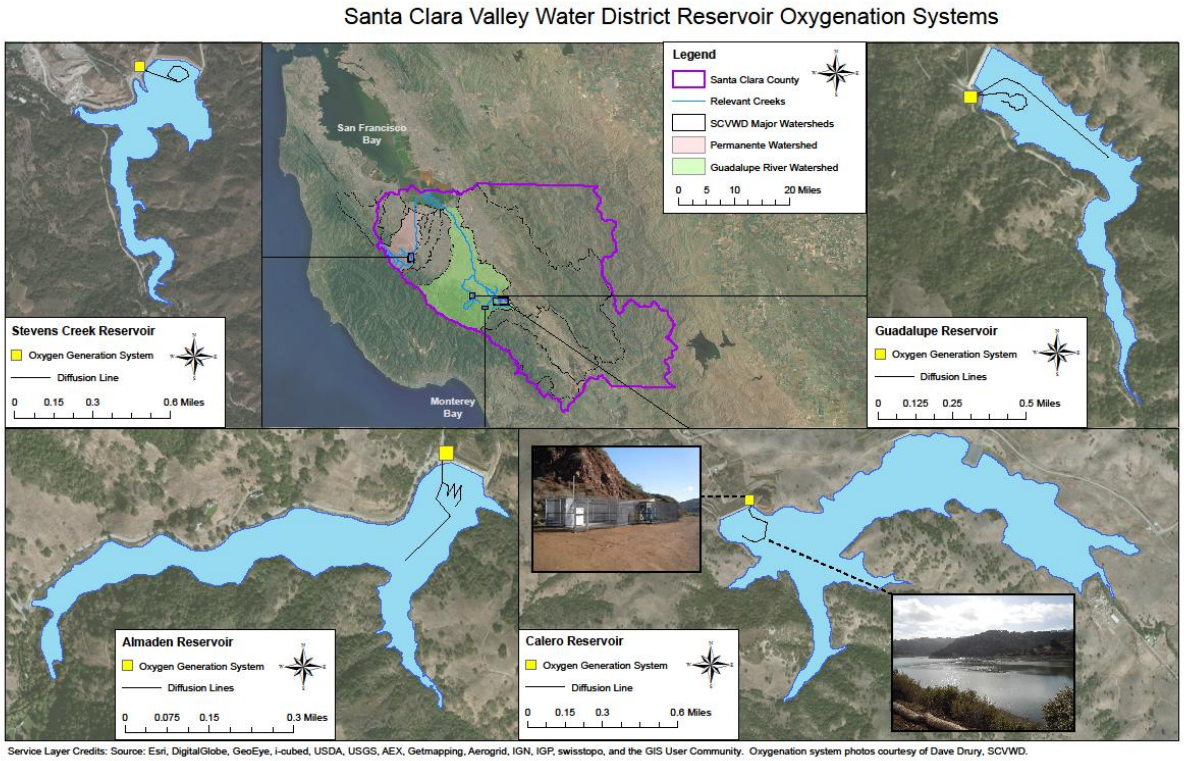
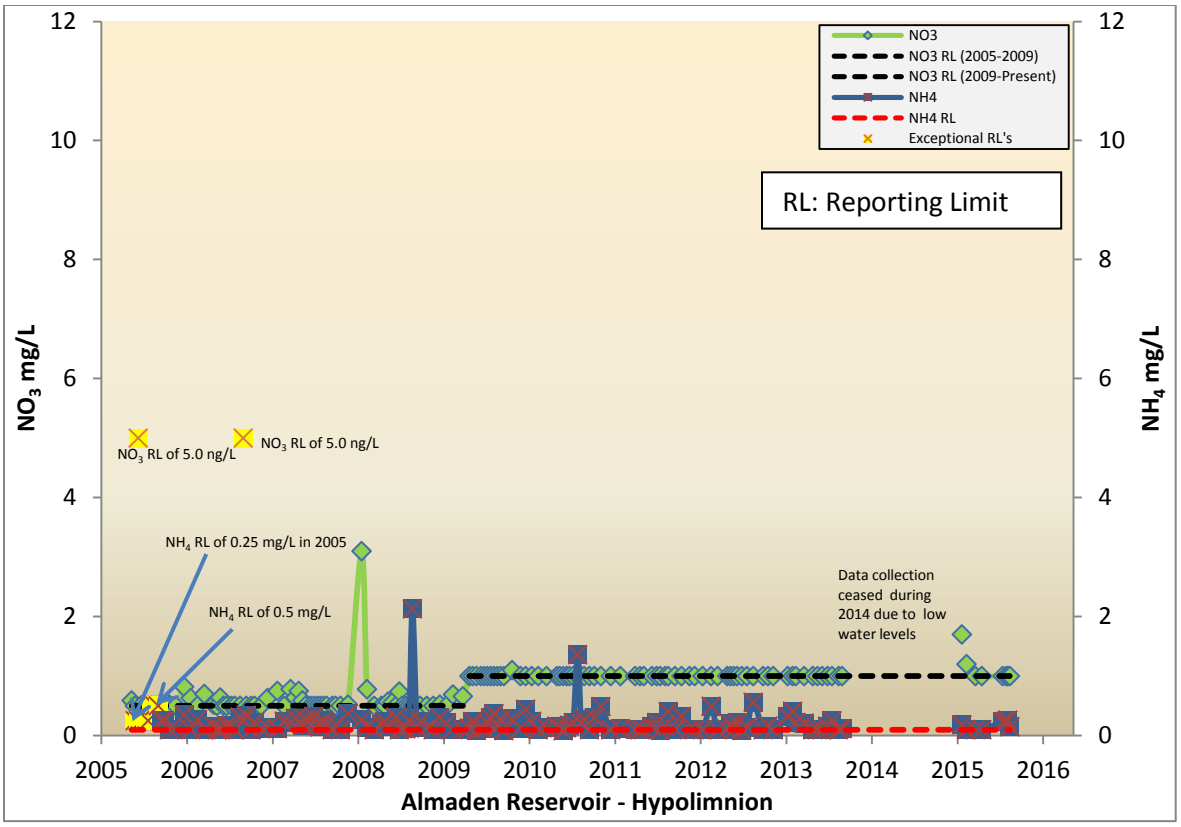


Figure 4: Reservoirs and layout of Oxygen Distribution System



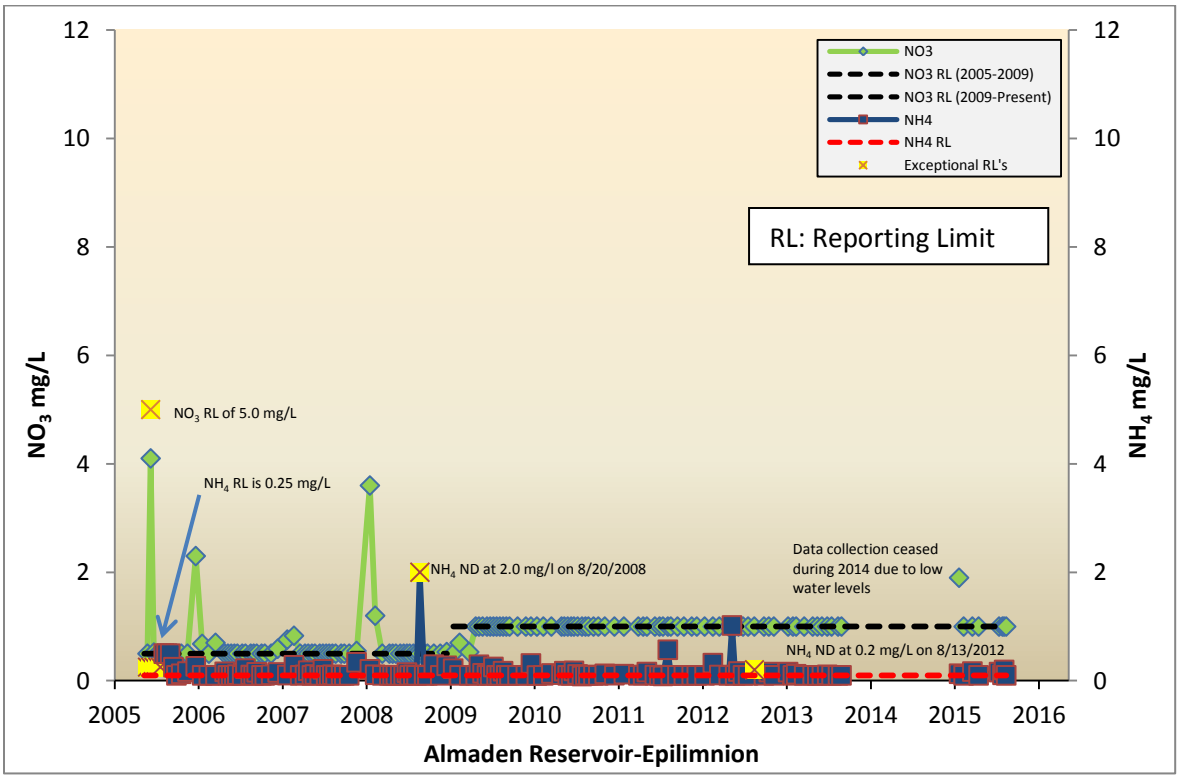
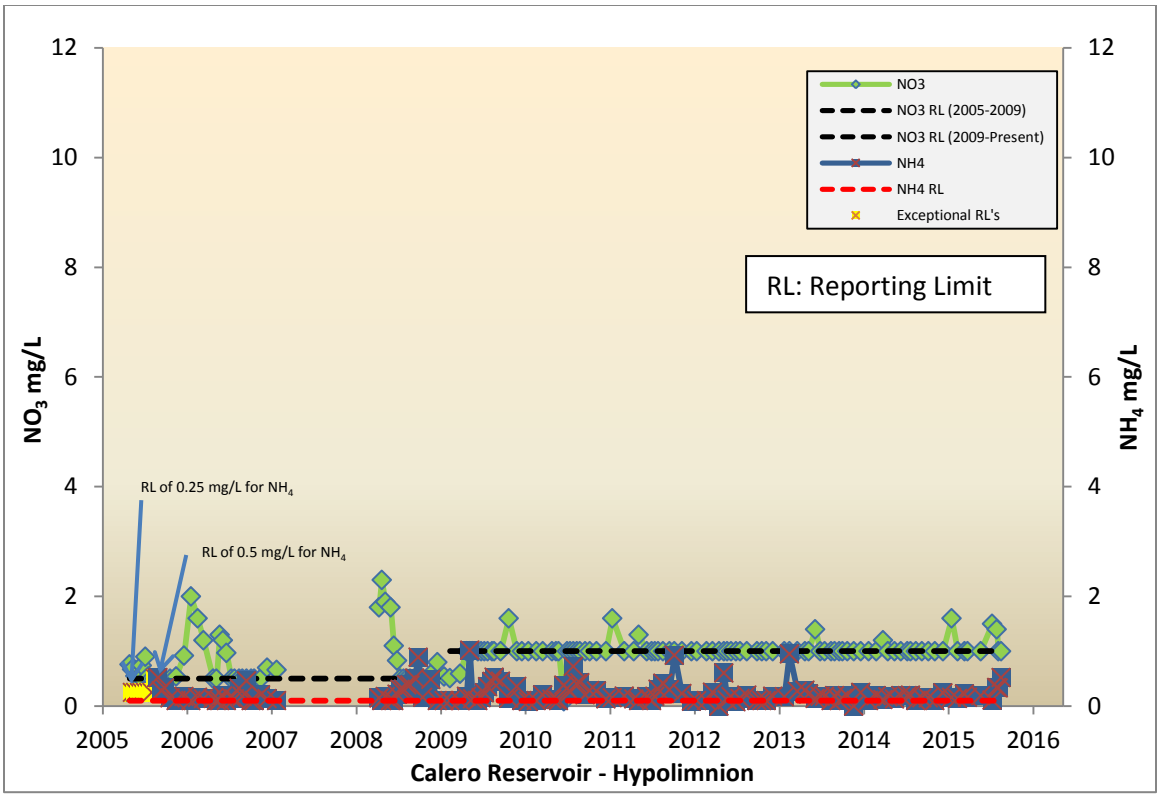


Figure 5: Nitrate (NO_3) and Ammonia (NH_4) Concentrations in Almaden Reservoir



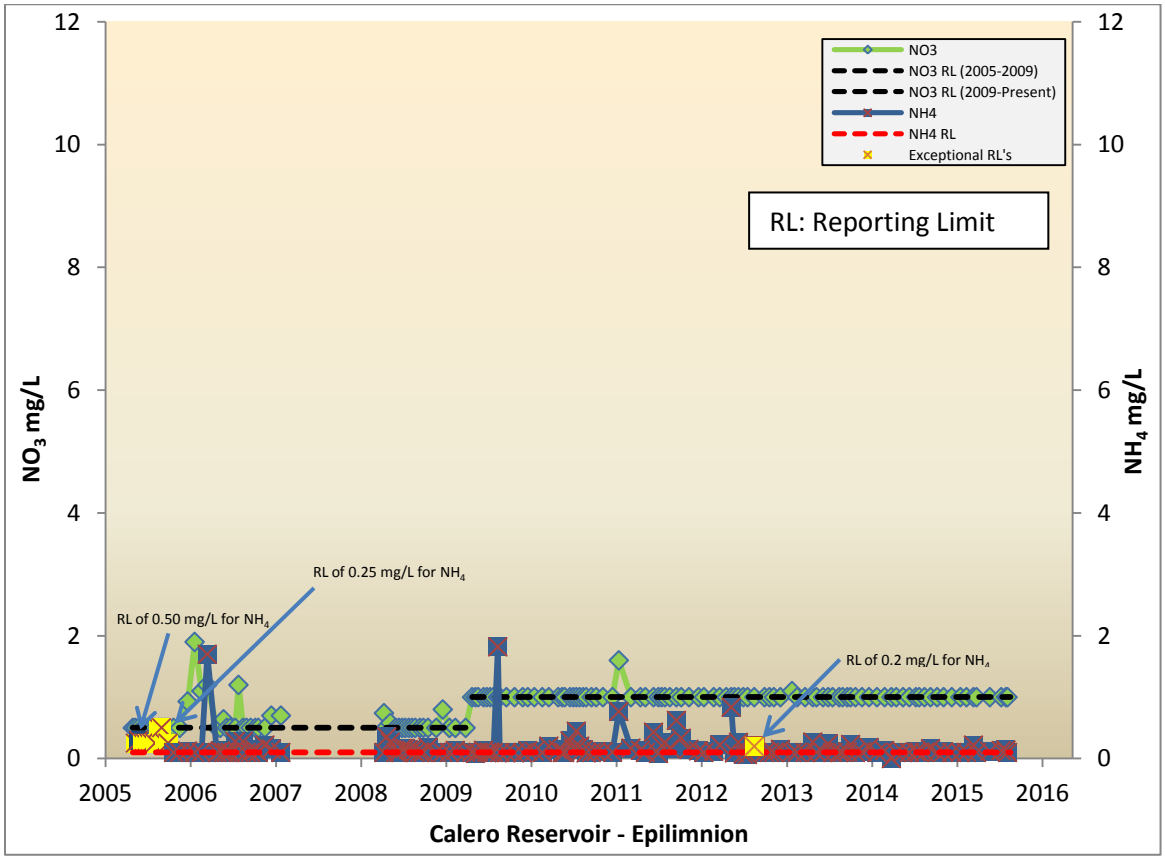
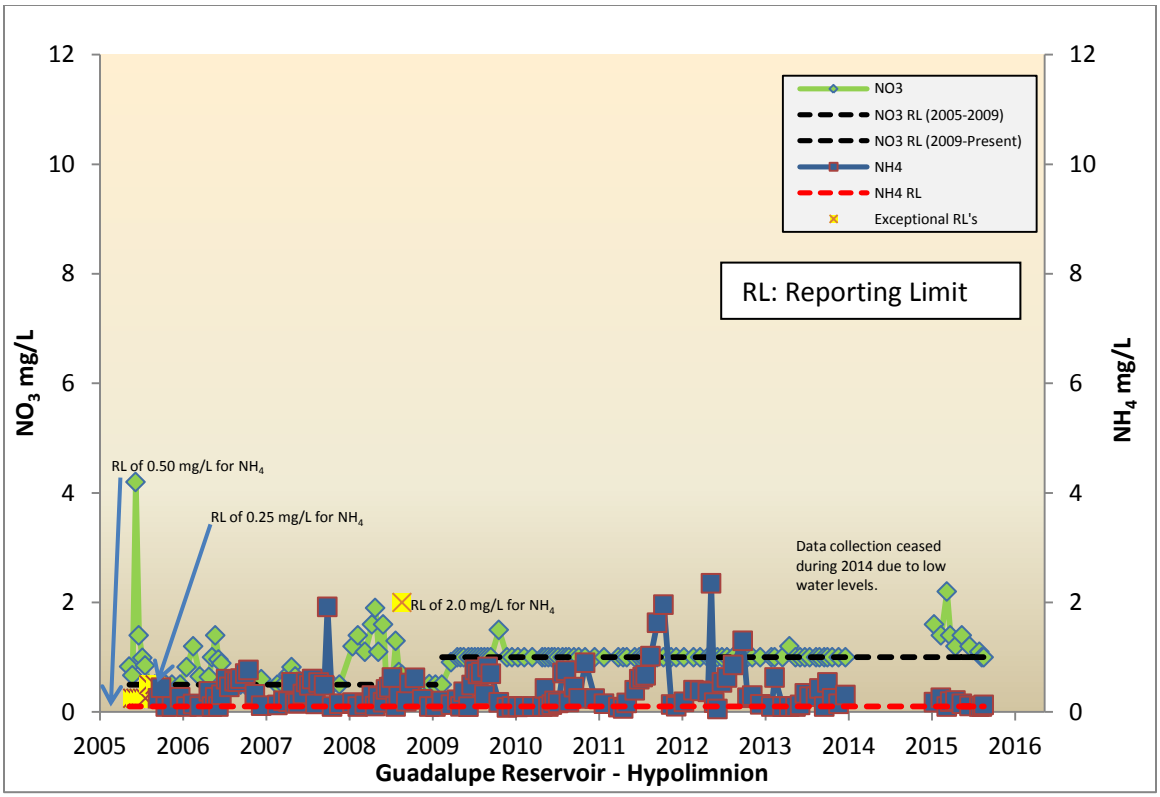


Figure 6: Nitrate (NO_3) and Ammonia (NH_4) Concentrations in Calero Reservoir



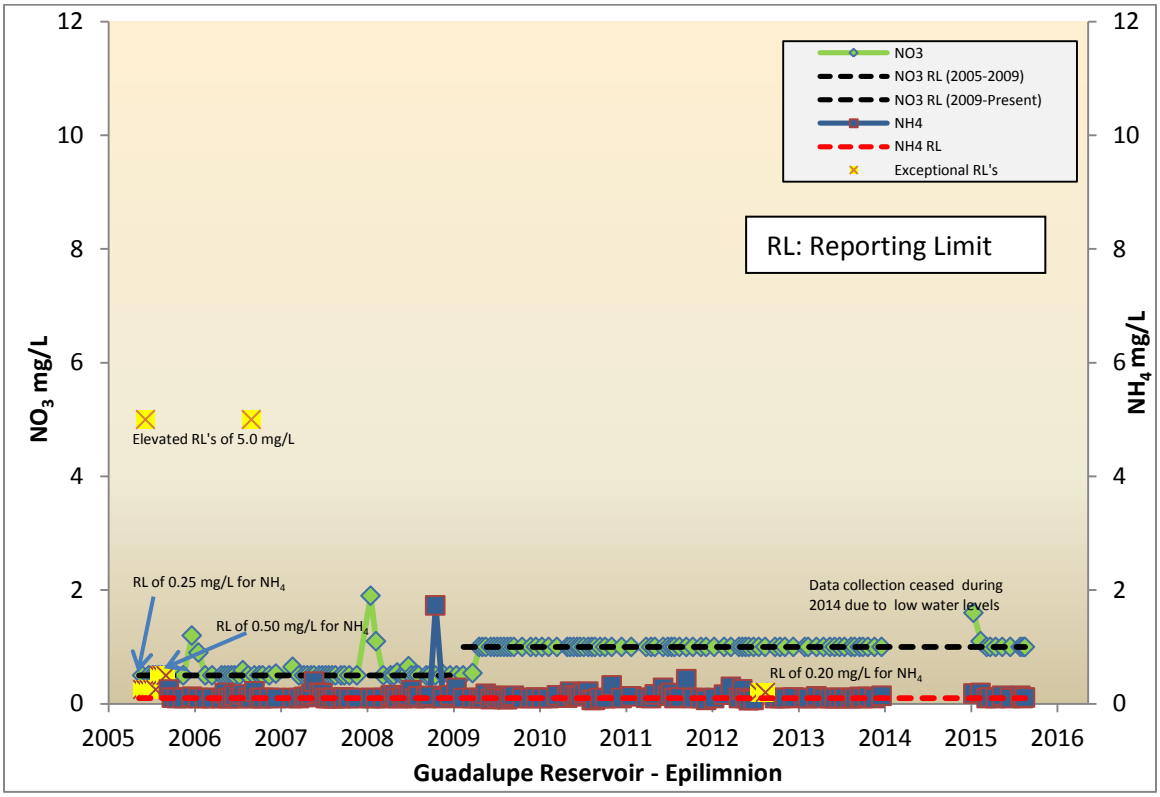
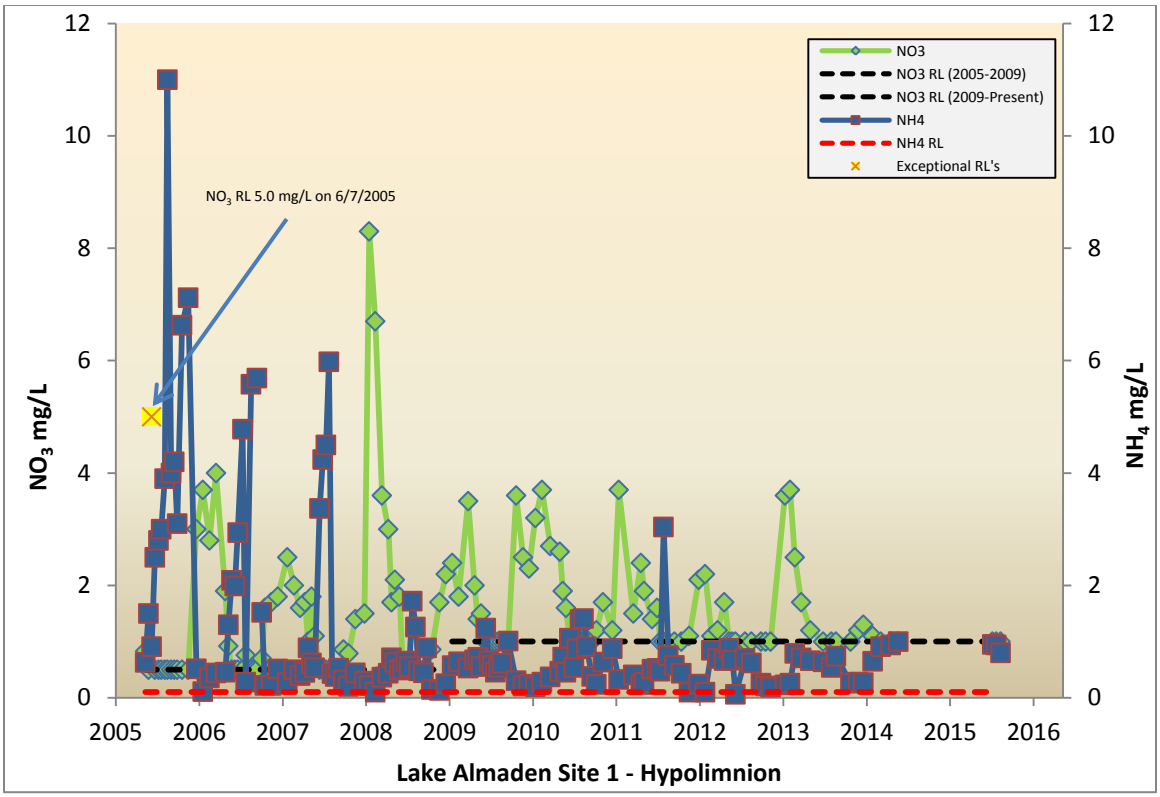


Figure 7: Nitrate (NO_3) and Ammonia (NH_4) Concentrations in Guadalupe Reservoir



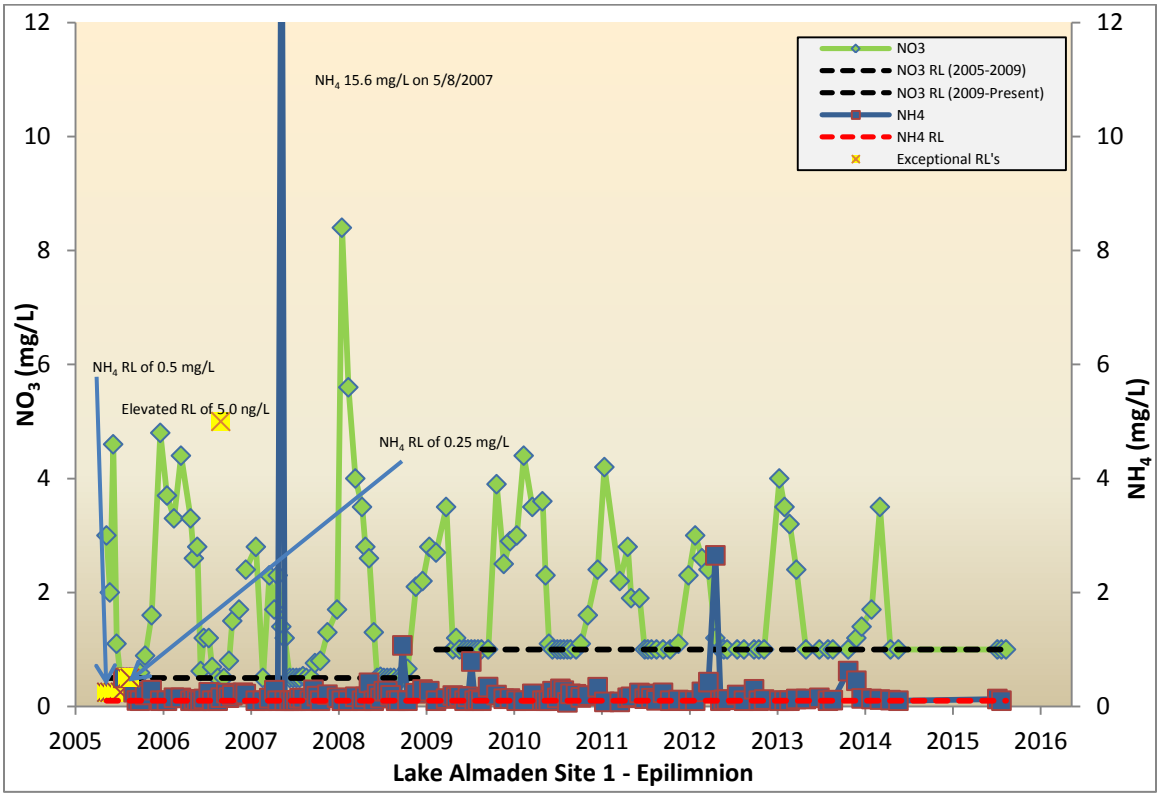
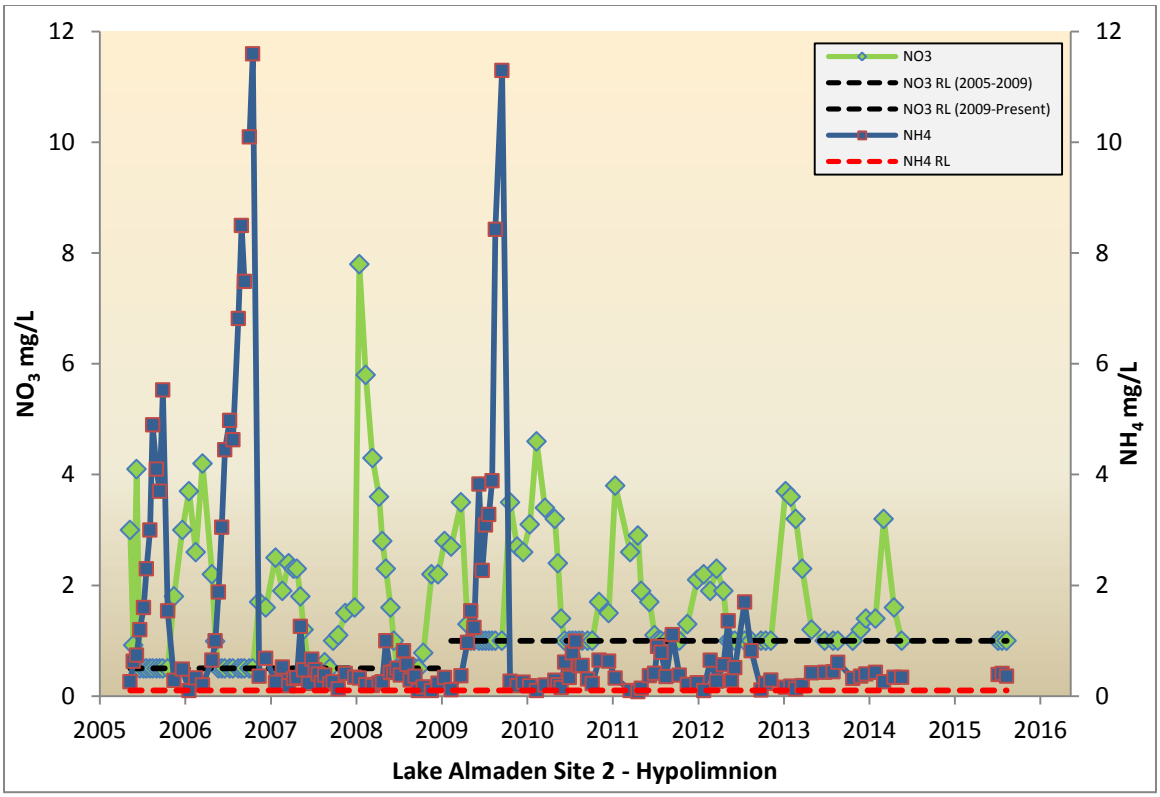


Figure 8: Nitrate (NO_3) and Ammonia (NH_4) Concentrations in Lake Almaden (Site 1 – Monitoring Location 1 on Figure 3)



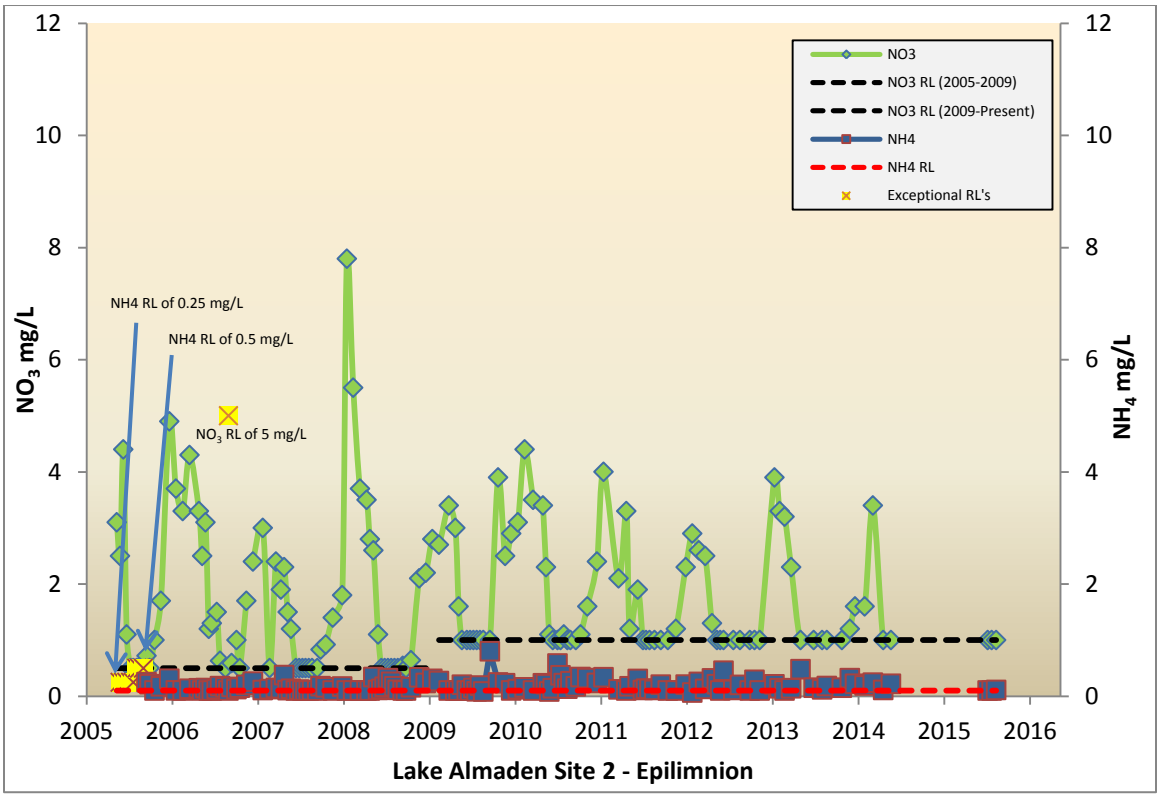
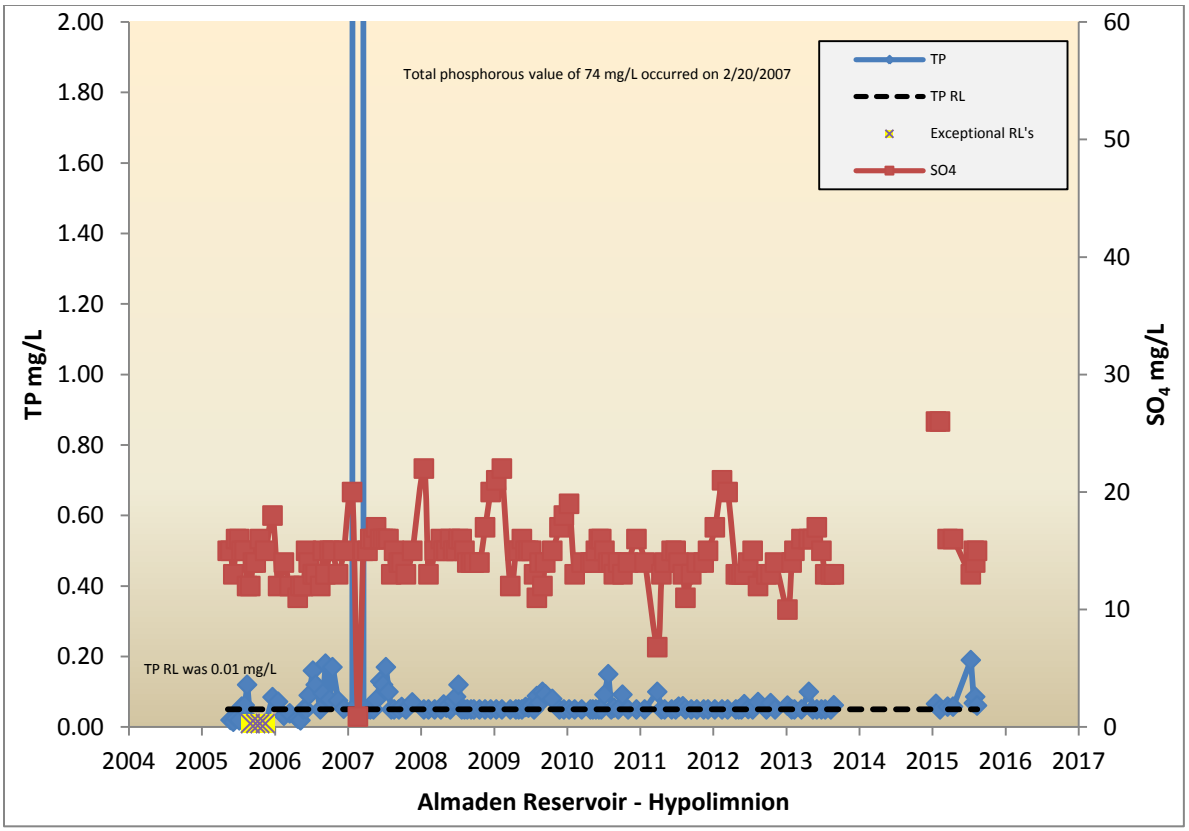


Figure 9: Nitrate (NO_3) and Ammonia (NH_4) Concentrations in Lake Almaden (Site 2 – Monitoring Location 2 on Figure 3)



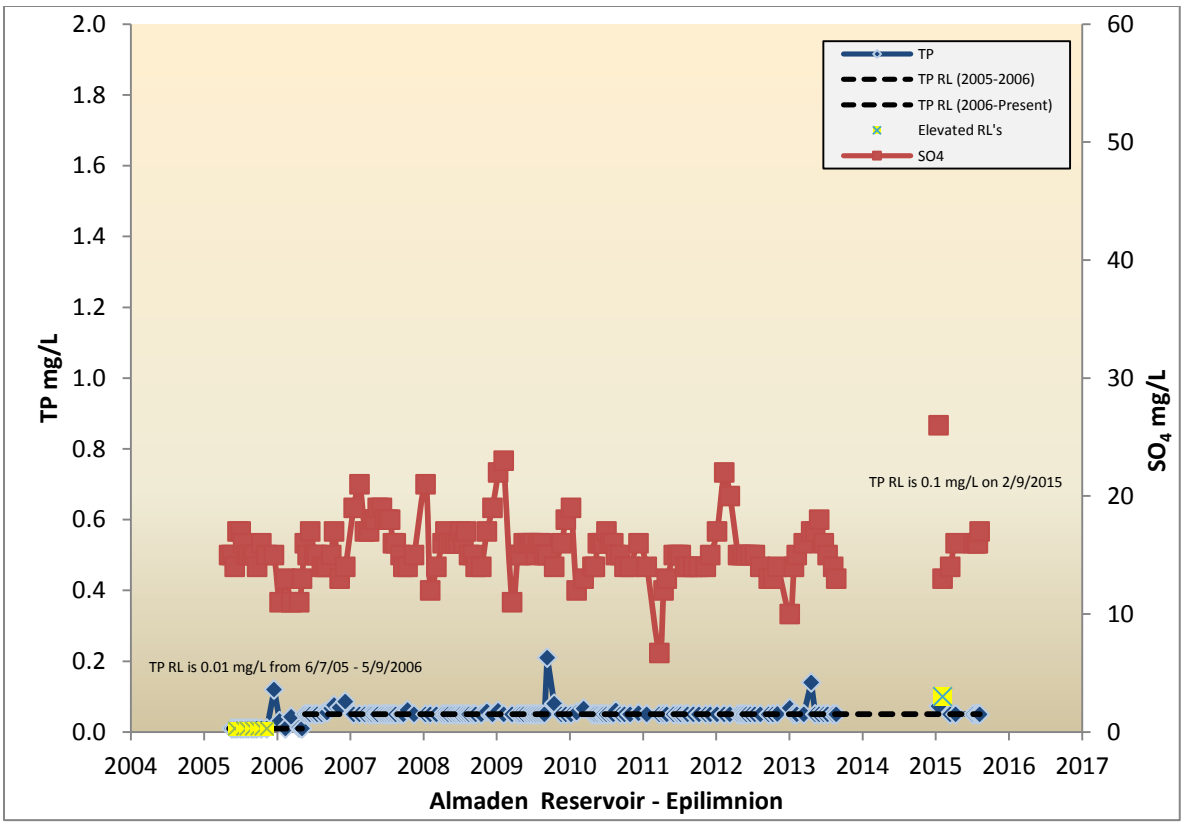
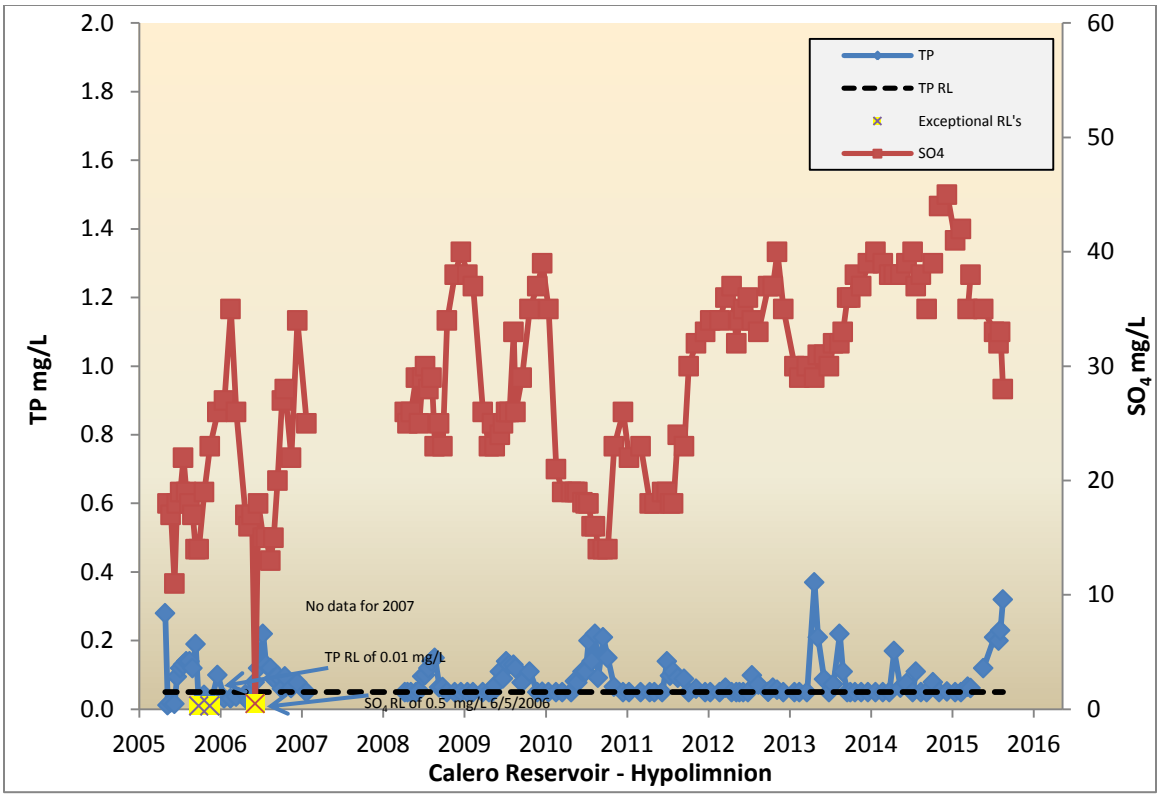


Figure 10: Total Phosphorus (TP) and Sulfate (SO_4) Concentrations in Almaden Reservoir



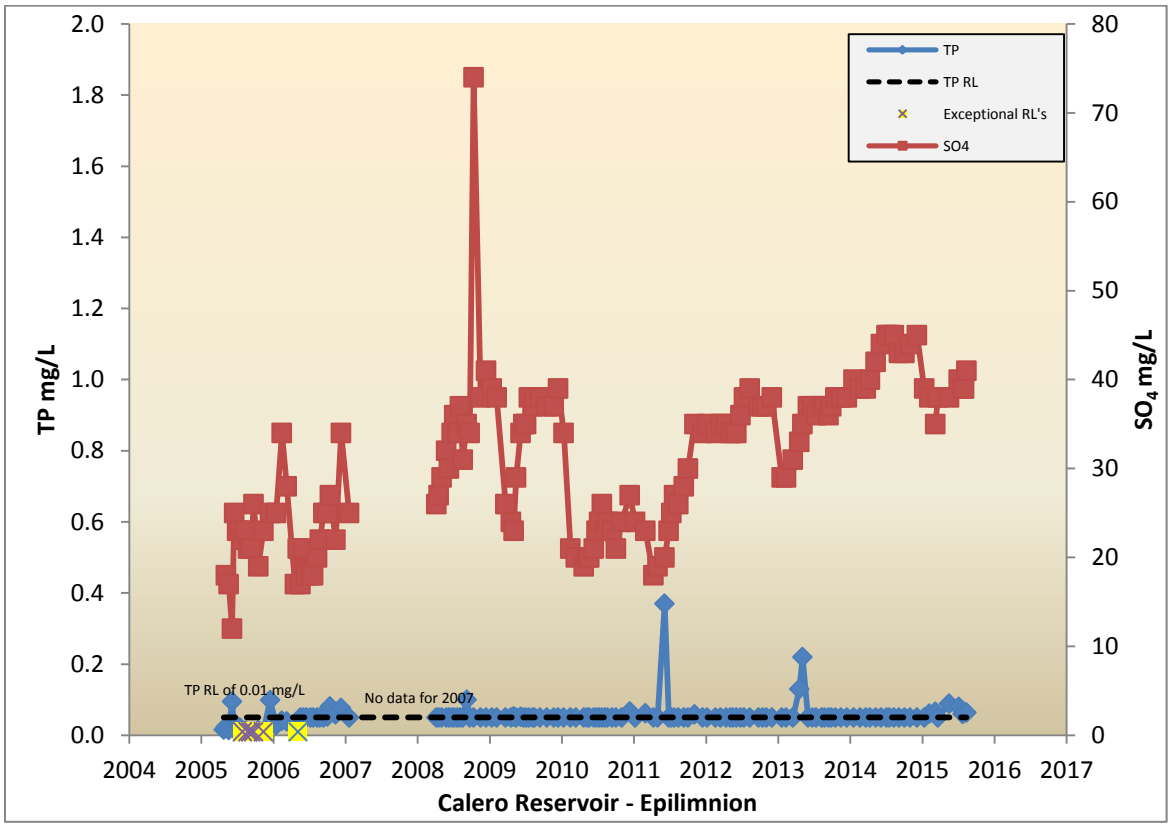
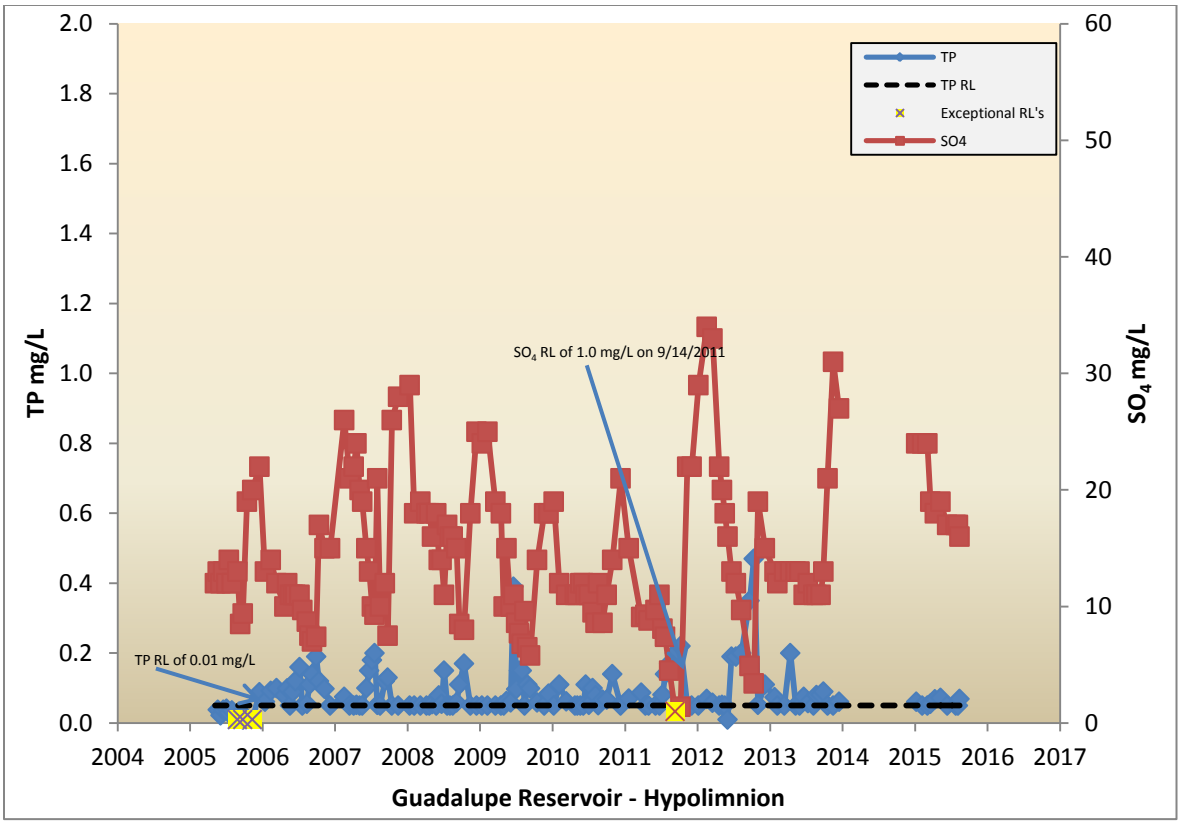


Figure 11: Total Phosphorus (TP) and Sulfate (SO_4) Concentrations in Calero Reservoir



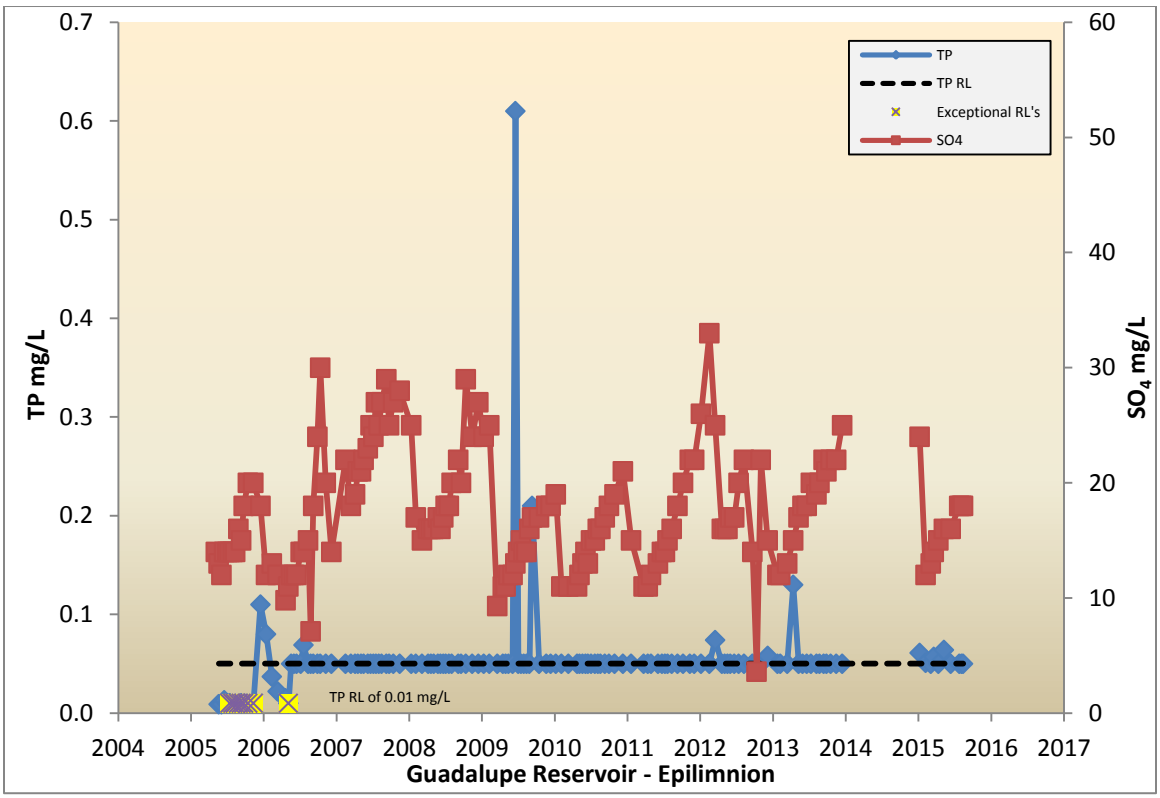
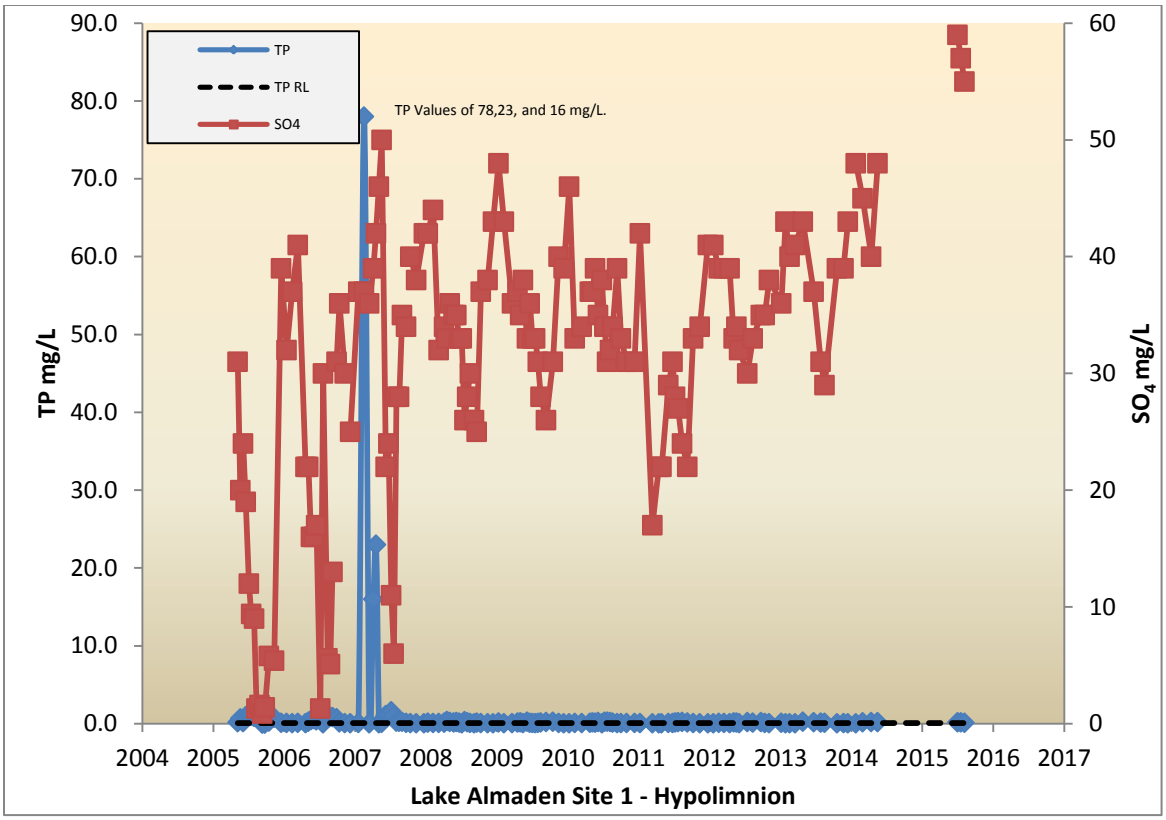


Figure 12: Total Phosphorus (TP) and Sulfate (SO_4) Concentrations in Guadalupe Reservoir



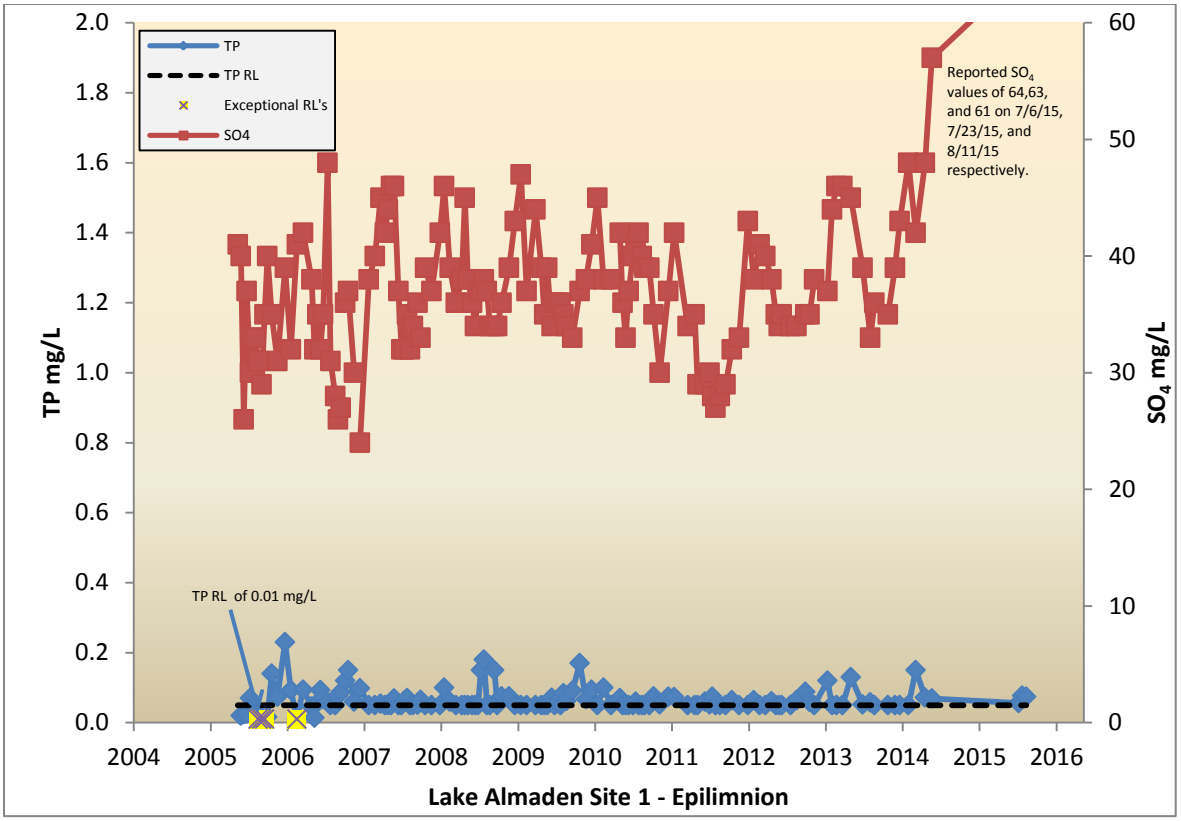
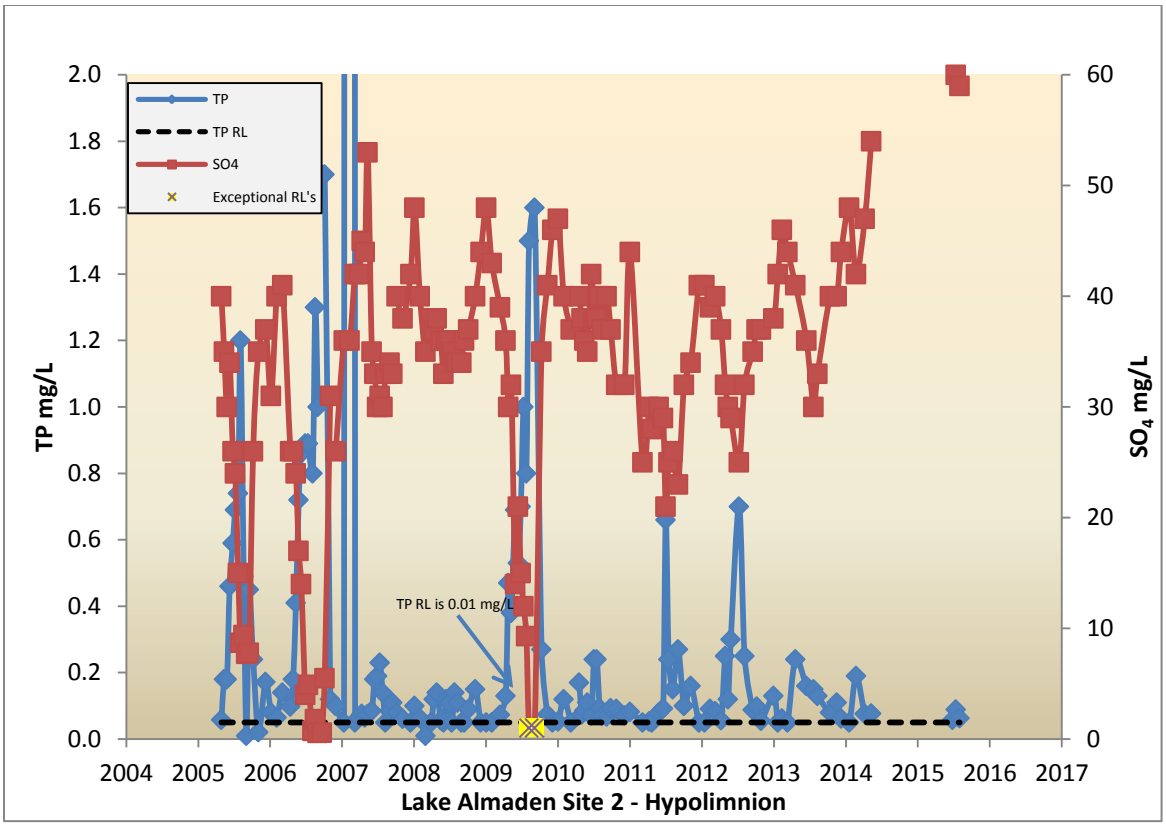


Figure 13: Total Phosphorus (TP) and Sulfate (SO_4) Concentrations in Lake Almaden (Site 1)



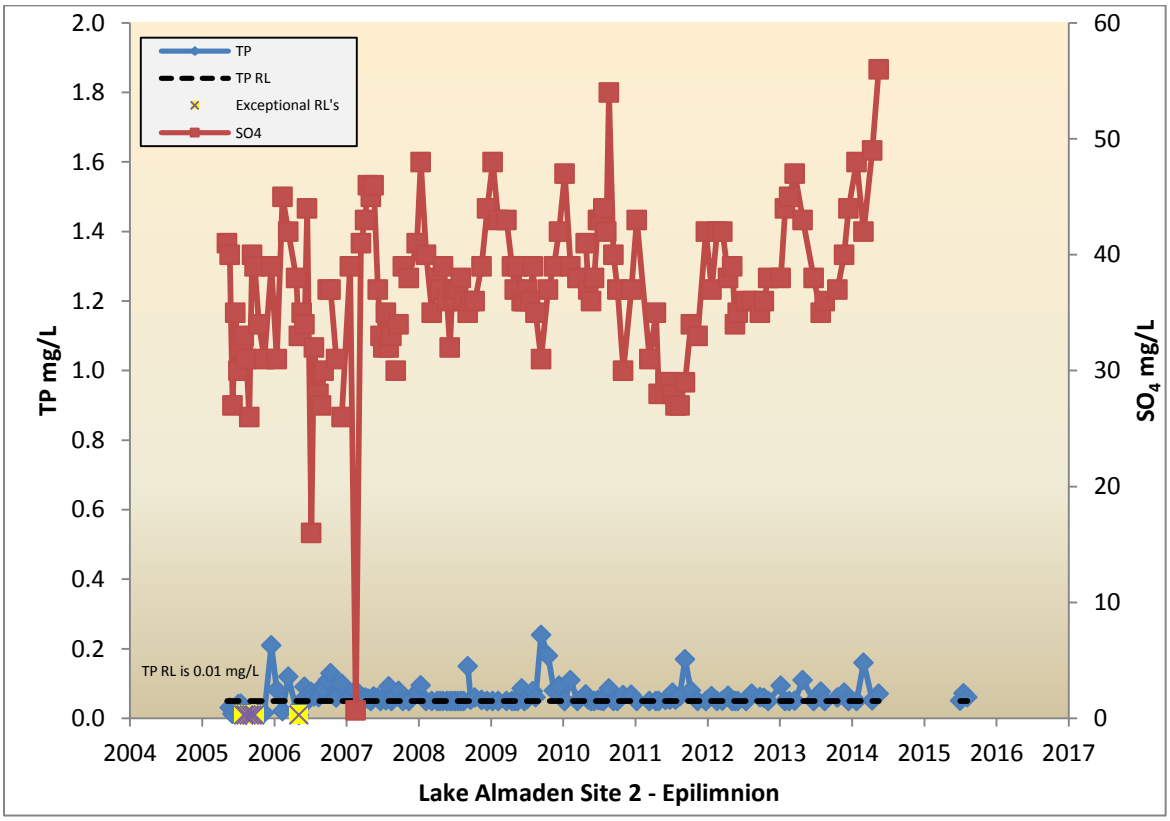


Figure 14: Total Phosphorus (TP) and Sulfate (SO_4) Concentrations in Lake Almaden (Site 2)

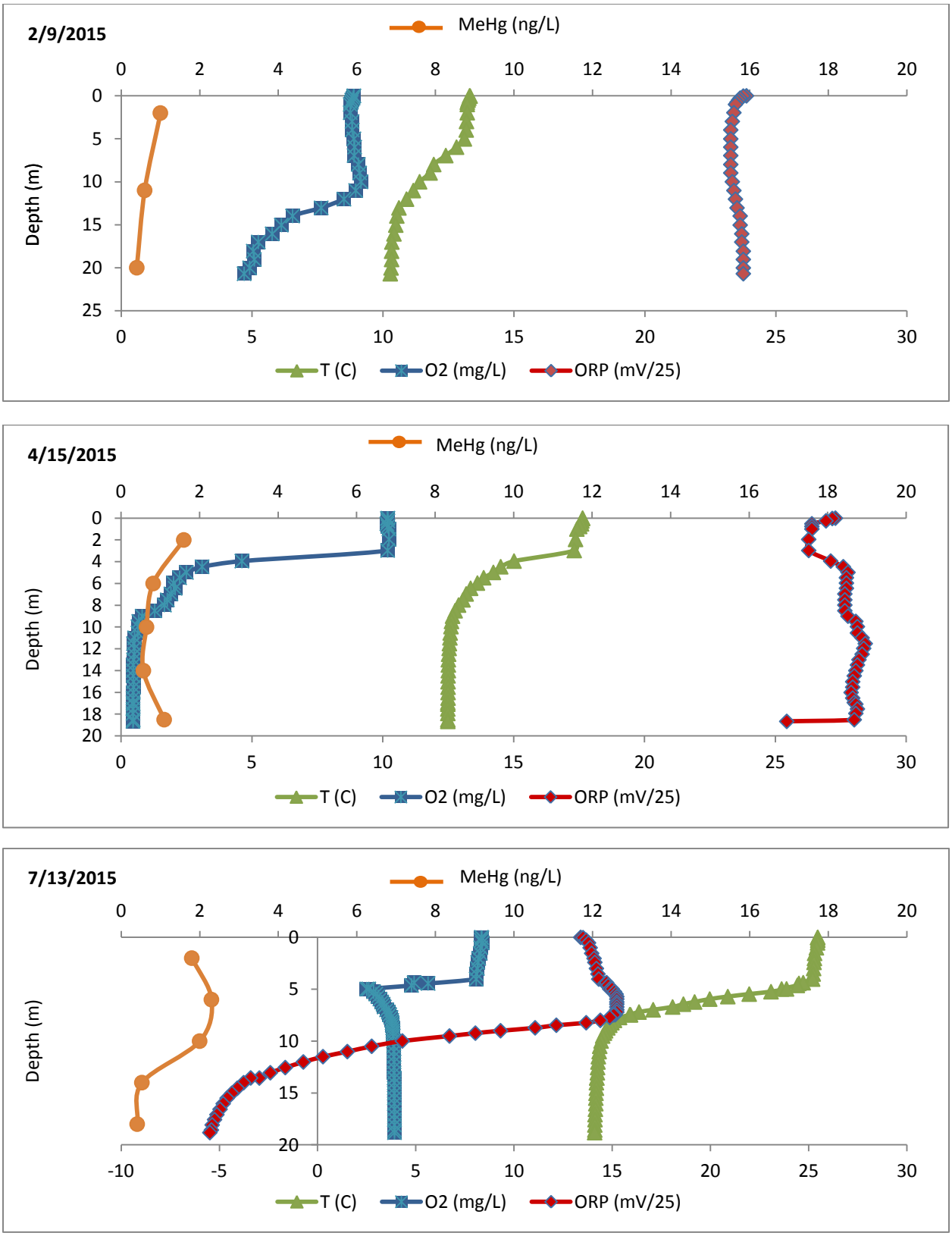
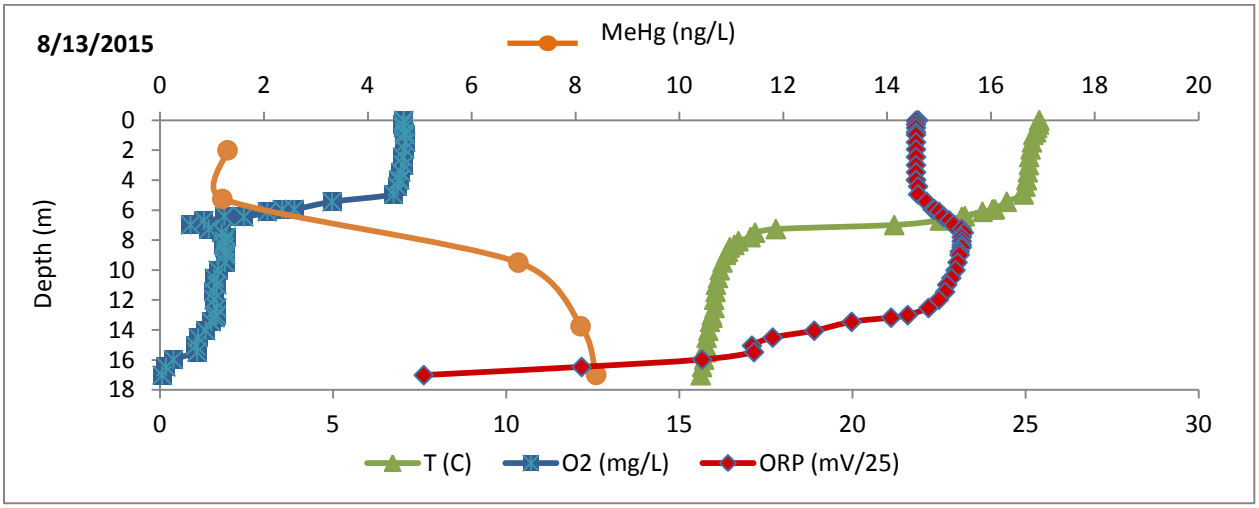


Figure 15: Vertical Profile of Methyl Mercury, Dissolved Oxygen, Temperature and Oxygen Reduction Potential for Almaden Reservoir in 2015



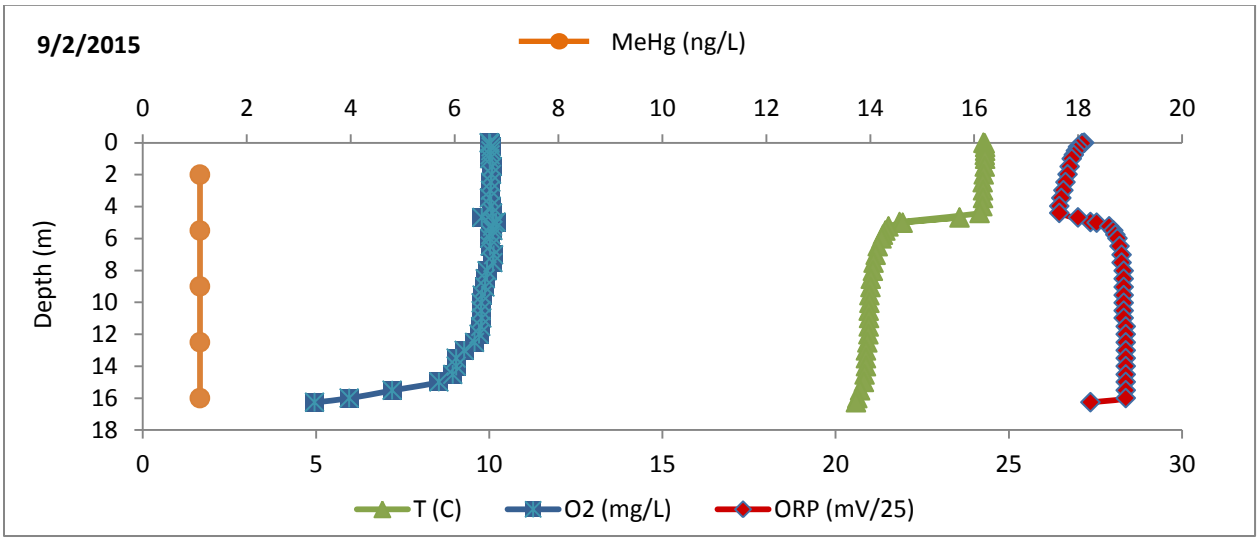


Figure 15 Continued: Vertical Profile of Methyl Mercury, Dissolved Oxygen, Temperature and Oxygen Reduction Potential for Almaden Reservoir in 2015

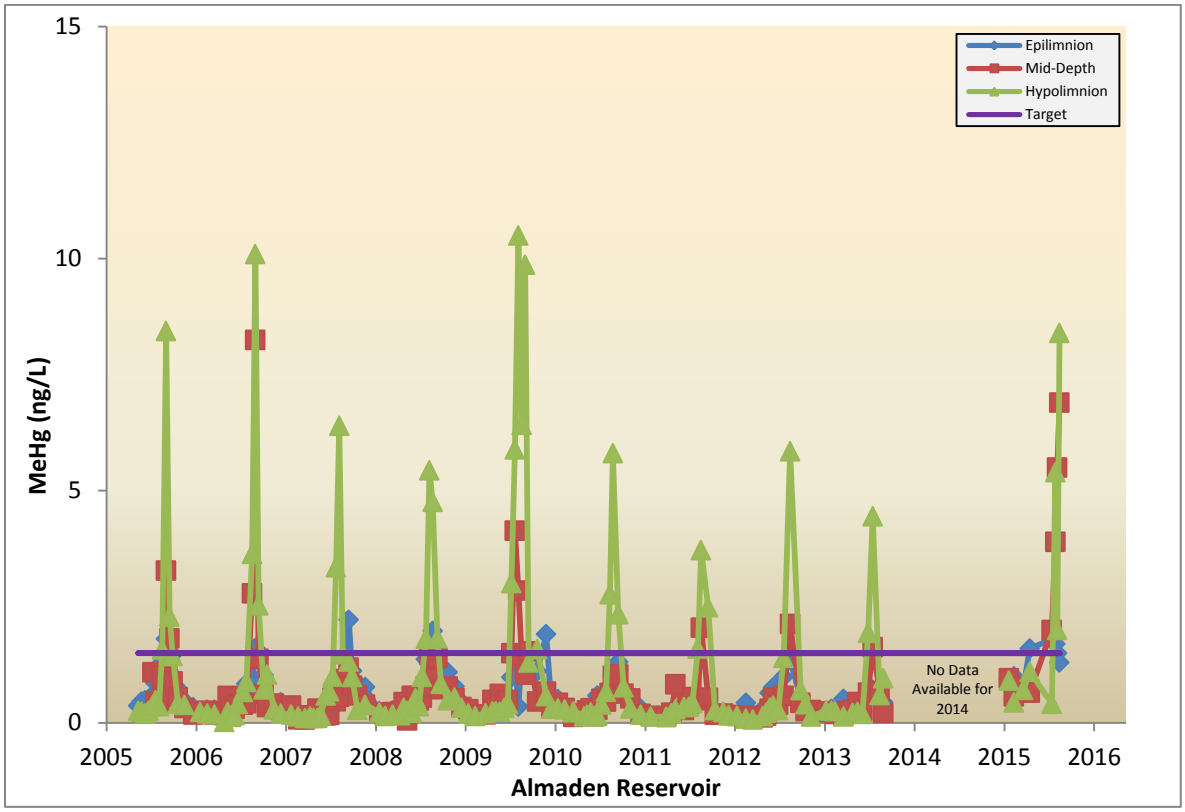
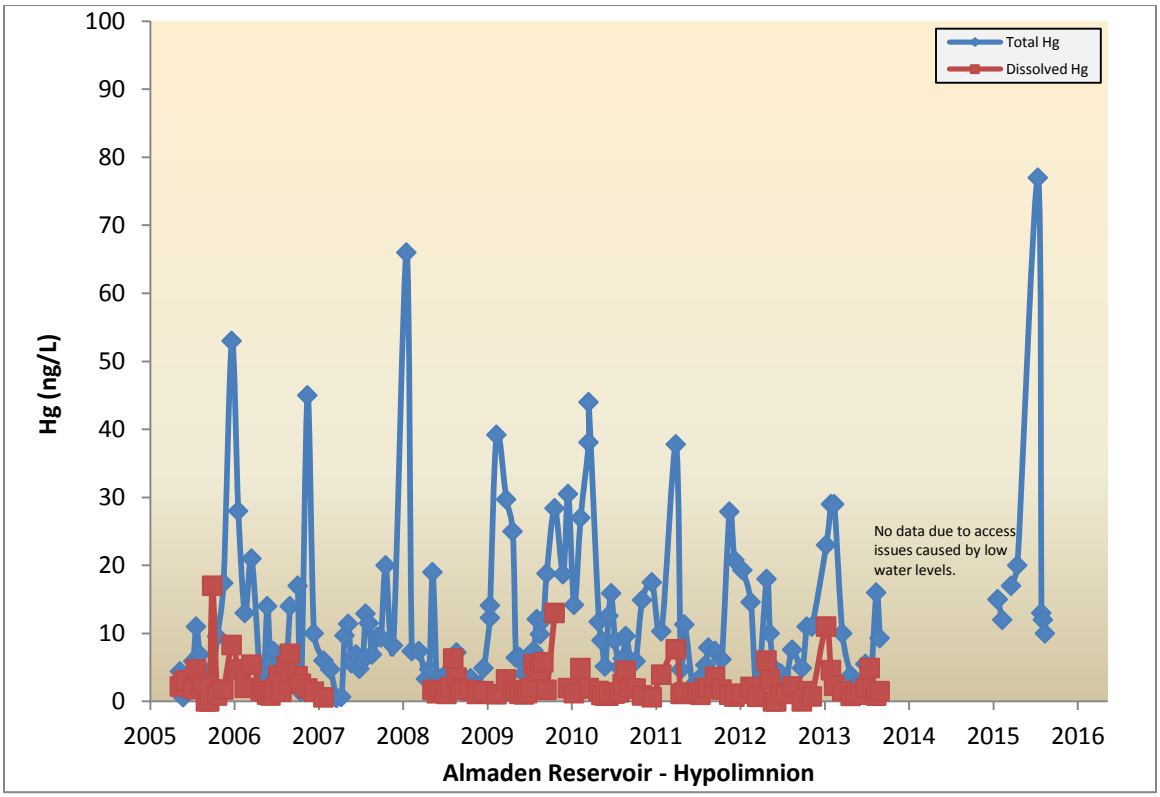


Figure 16: Unfiltered Methyl Mercury (Total MeHg) Concentrations in Almaden Reservoir



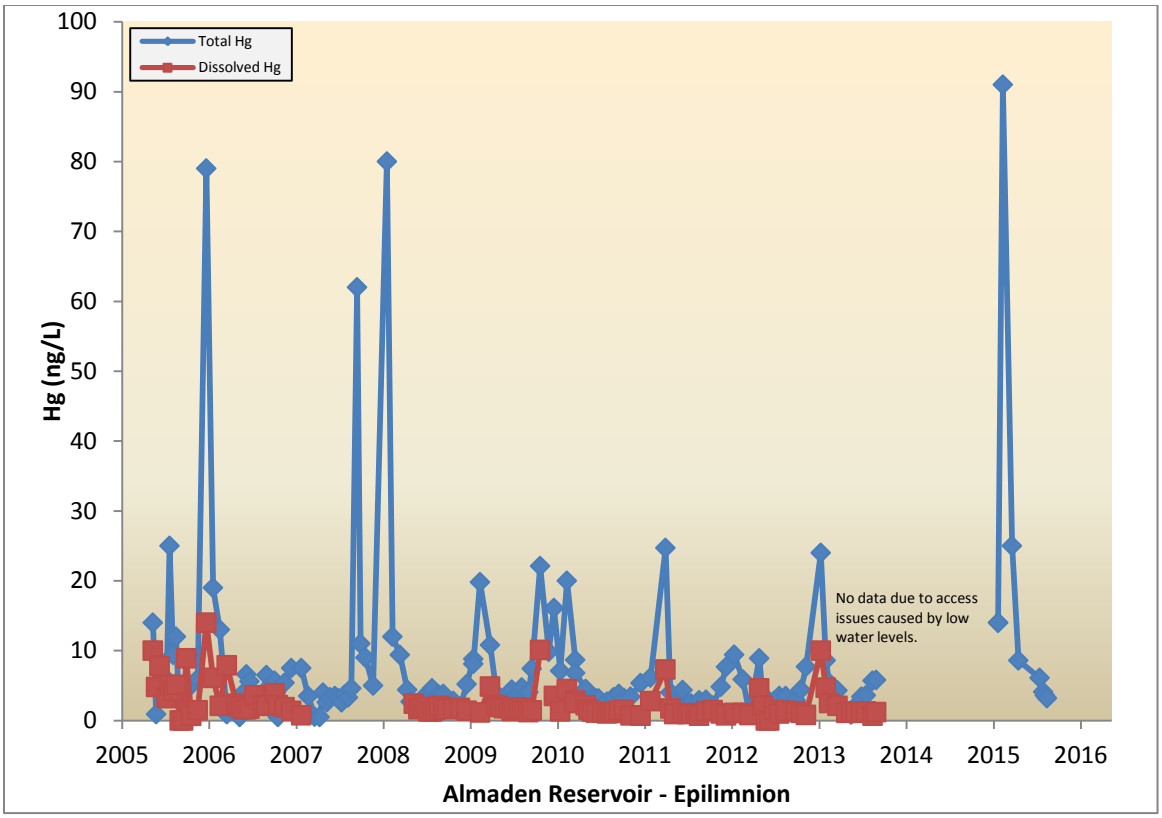
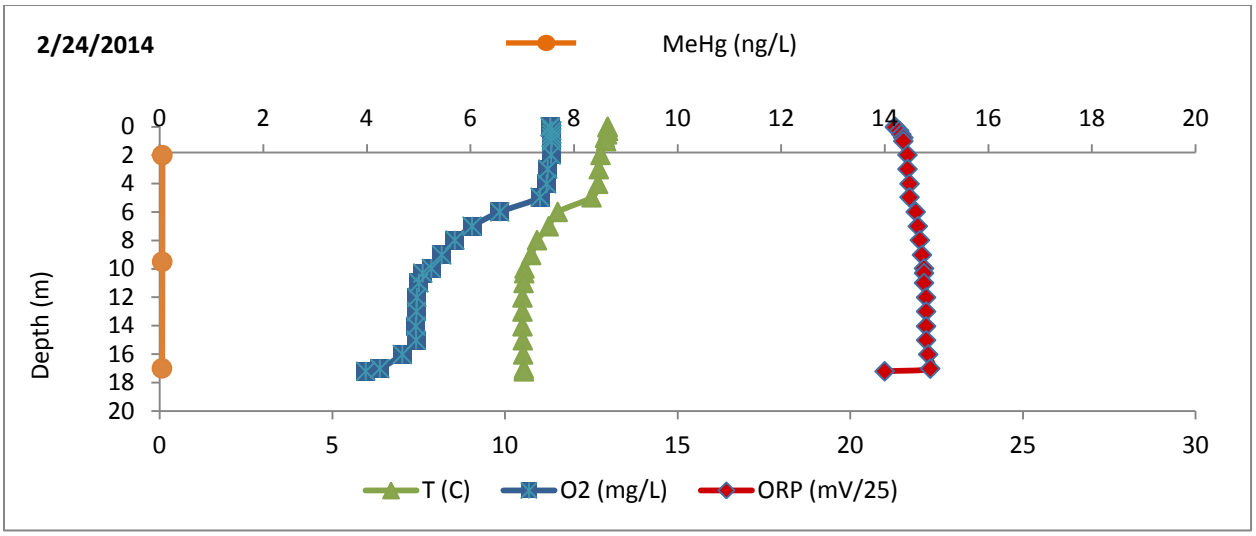
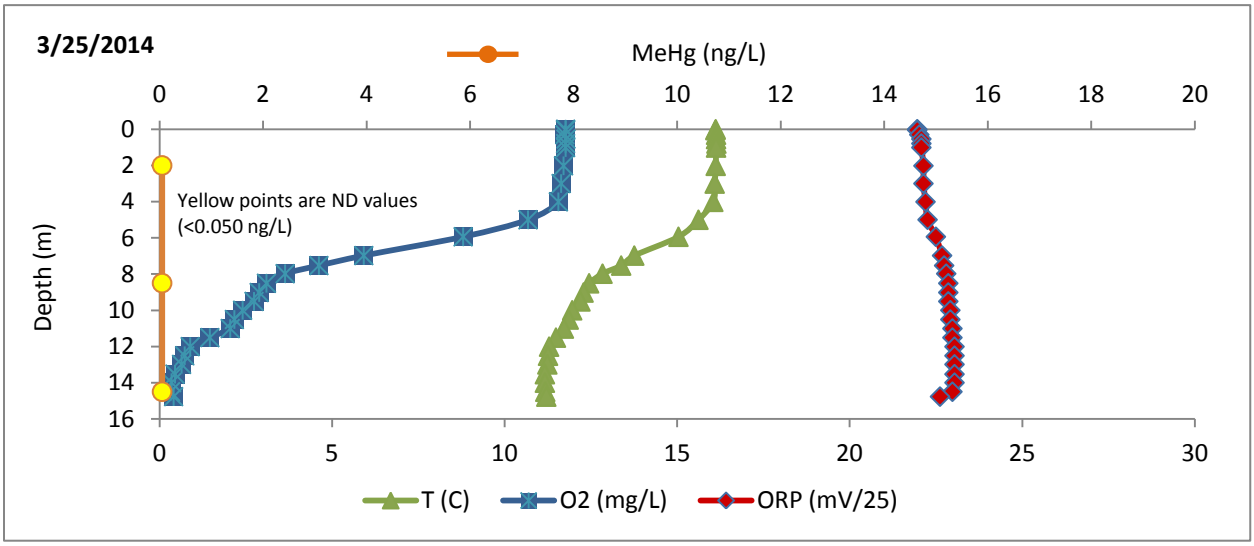


Figure 17: Unfiltered (Total) and Filtered (Dissolved) Mercury (Hg) in Almaden Reservoir





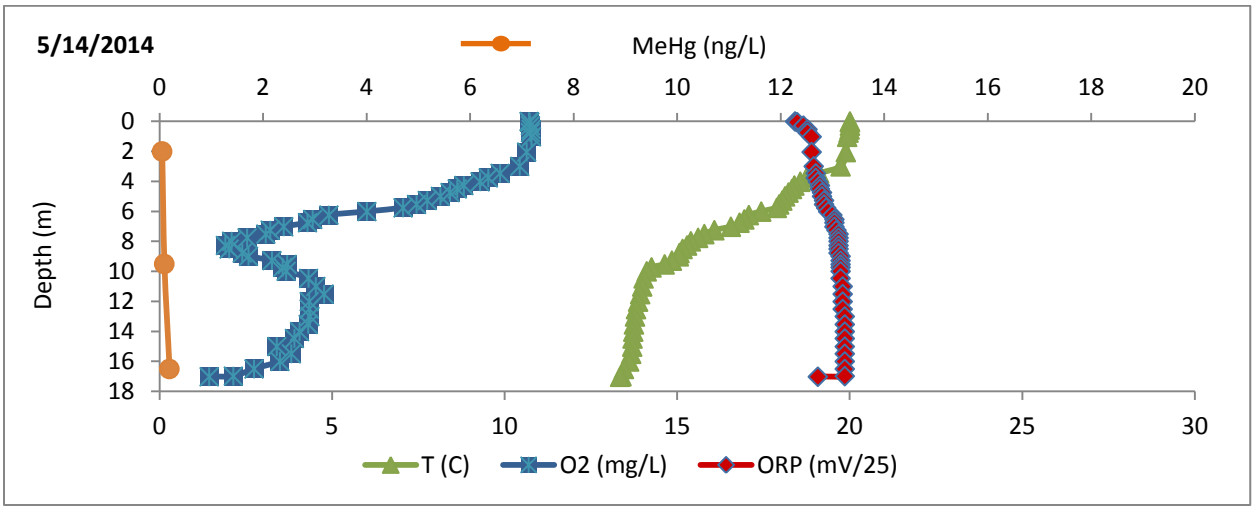


Figure 18: Vertical Profile of Methyl Mercury, Dissolved Oxygen, Temperature and Oxygen Reduction Potential for Calero Reservoir in 2014

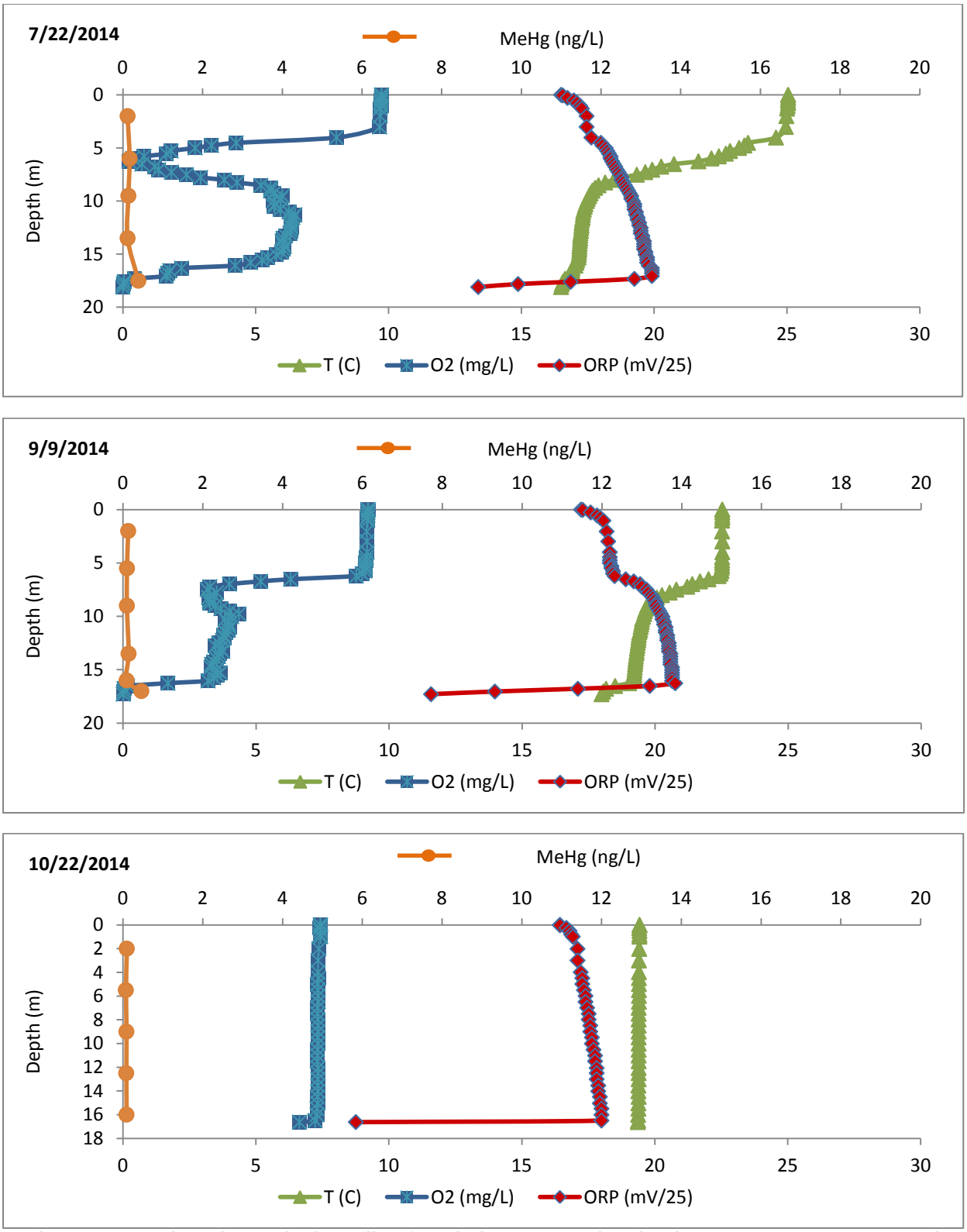


Figure 18 Continued: Vertical Profile of Methyl Mercury, Dissolved Oxygen, Temperature and Oxygen Reduction Potential for Calero Reservoir in 2014

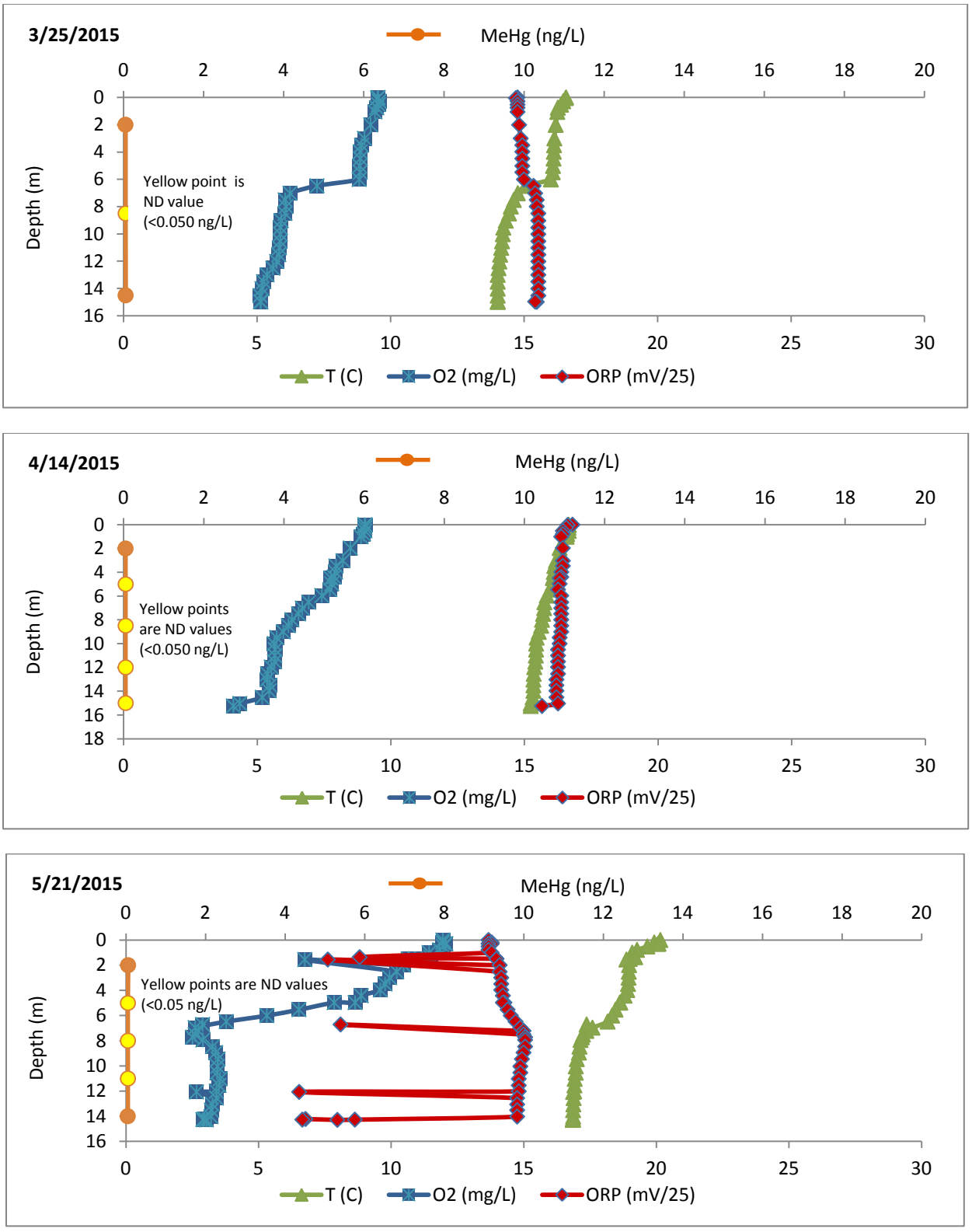
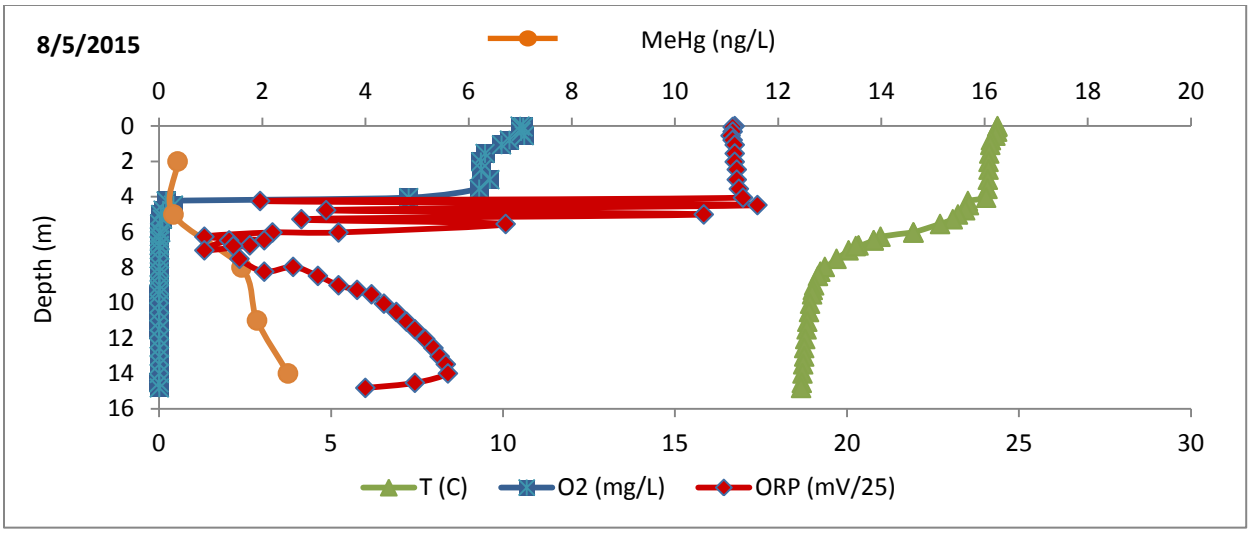


Figure 19: Vertical Profile of Methyl Mercury, Dissolved Oxygen, Temperature and Oxygen Reduction Potential for Calero Reservoir in 2015



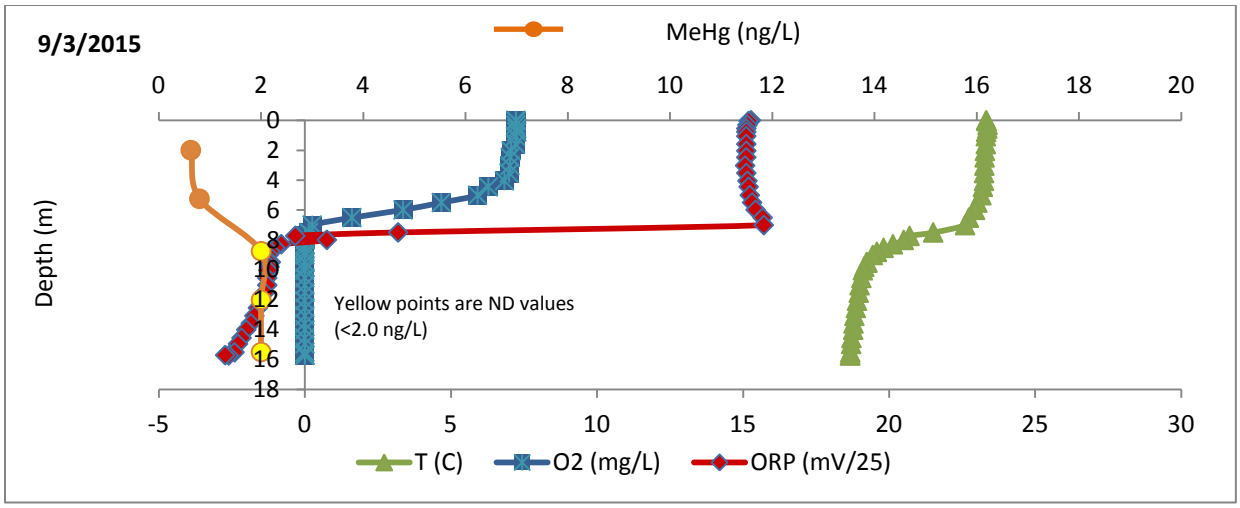


Figure 19 Continued: Vertical Profile of Methyl Mercury, Dissolved Oxygen, Temperature and Oxygen Reduction Potential for Calero Reservoir in 2015

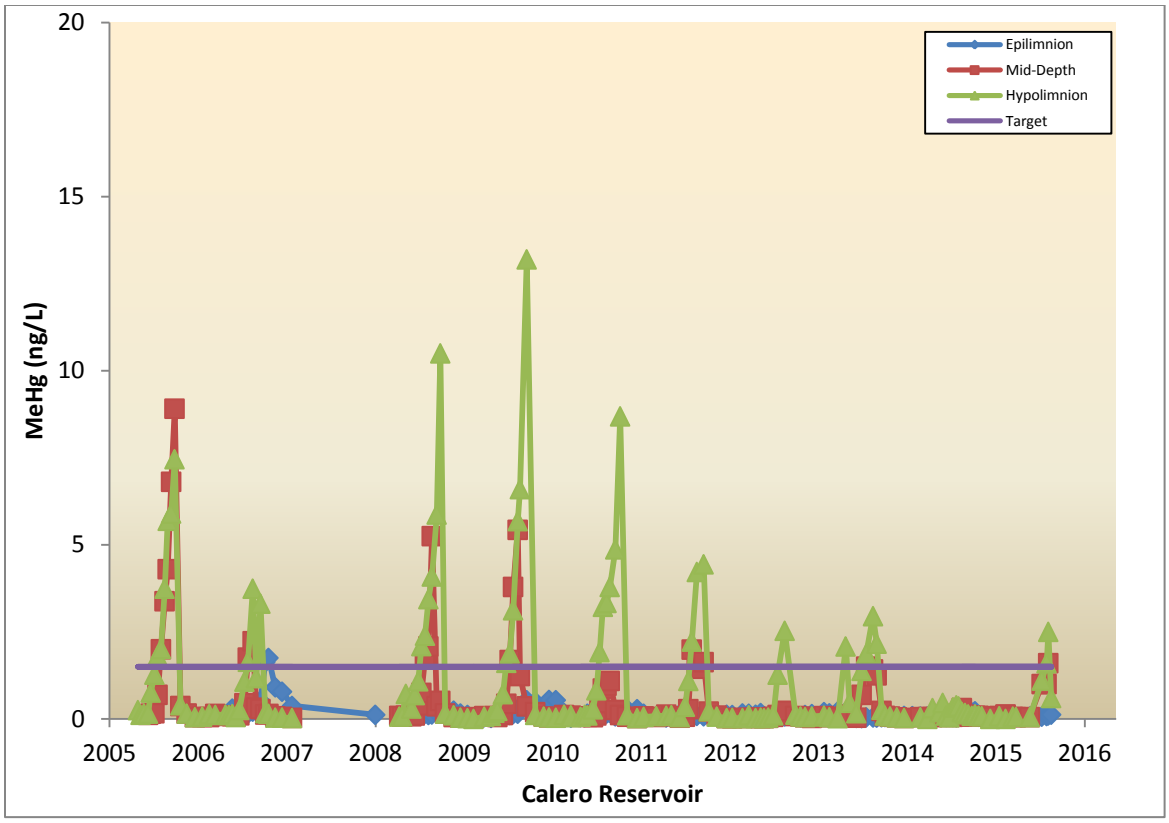
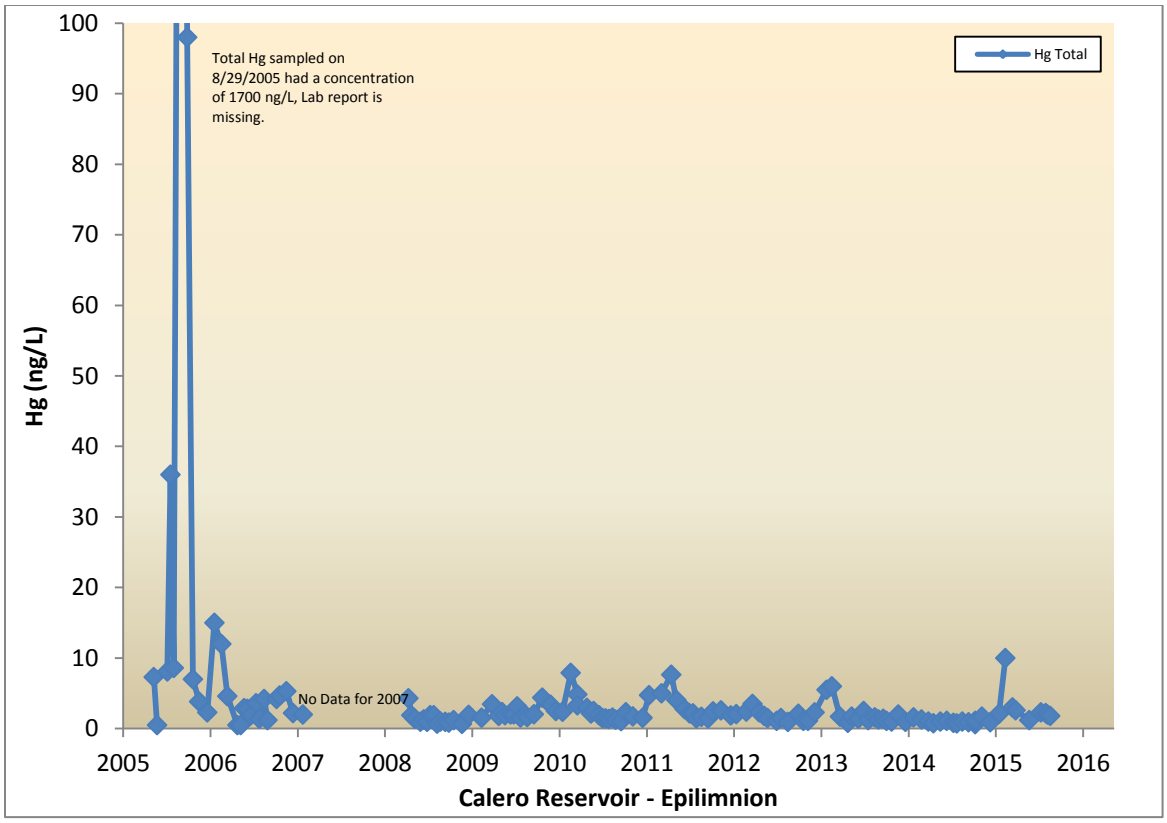


Figure 20: Unfiltered Methyl Mercury (Total MeHg) Concentrations in Calero Reservoir



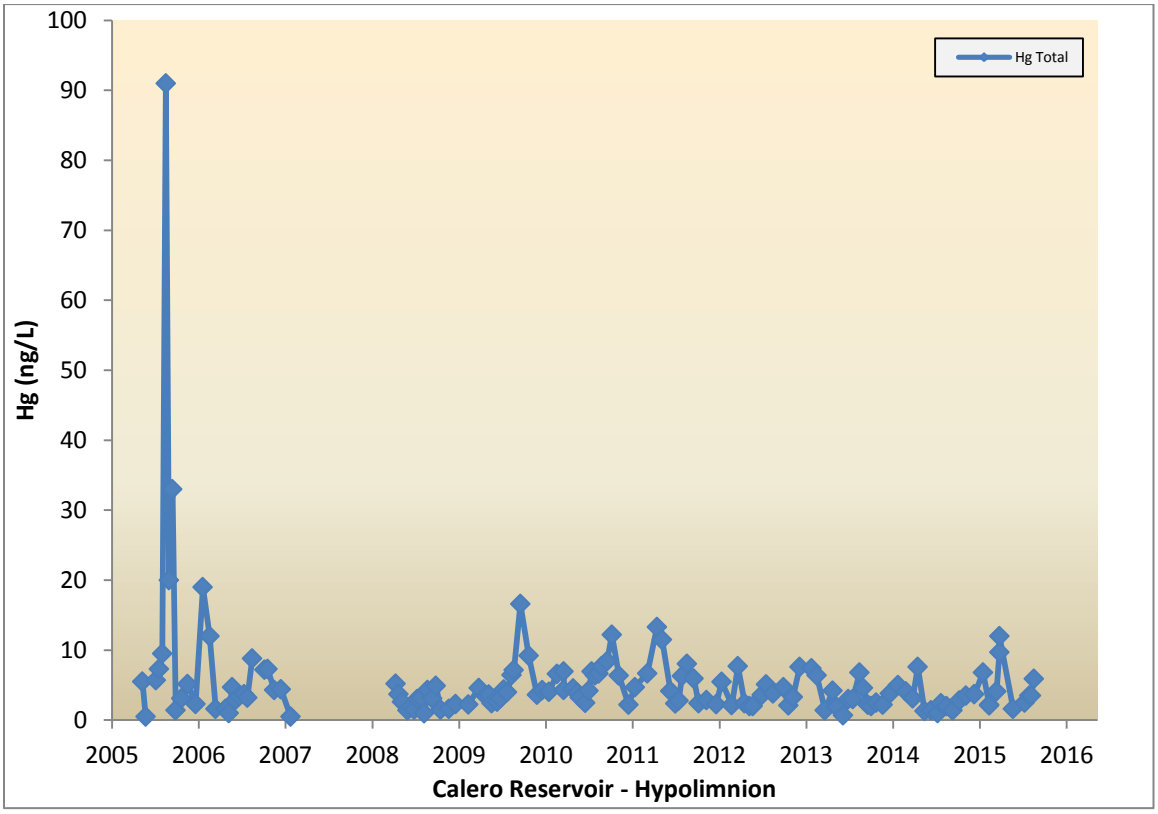


Figure 21: Unfiltered Mercury (Total Hg) Concentrations in Calero Reservoir

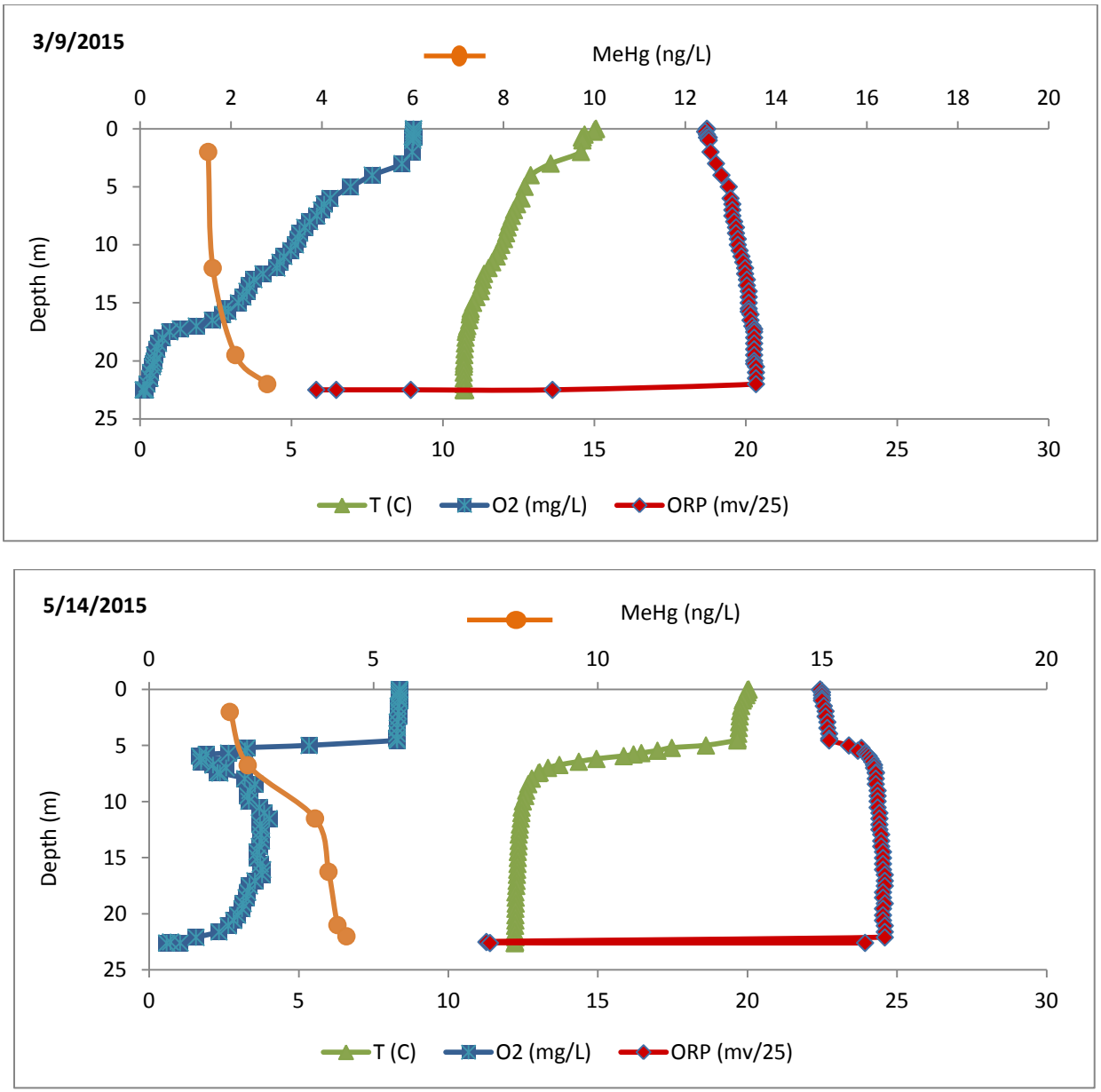
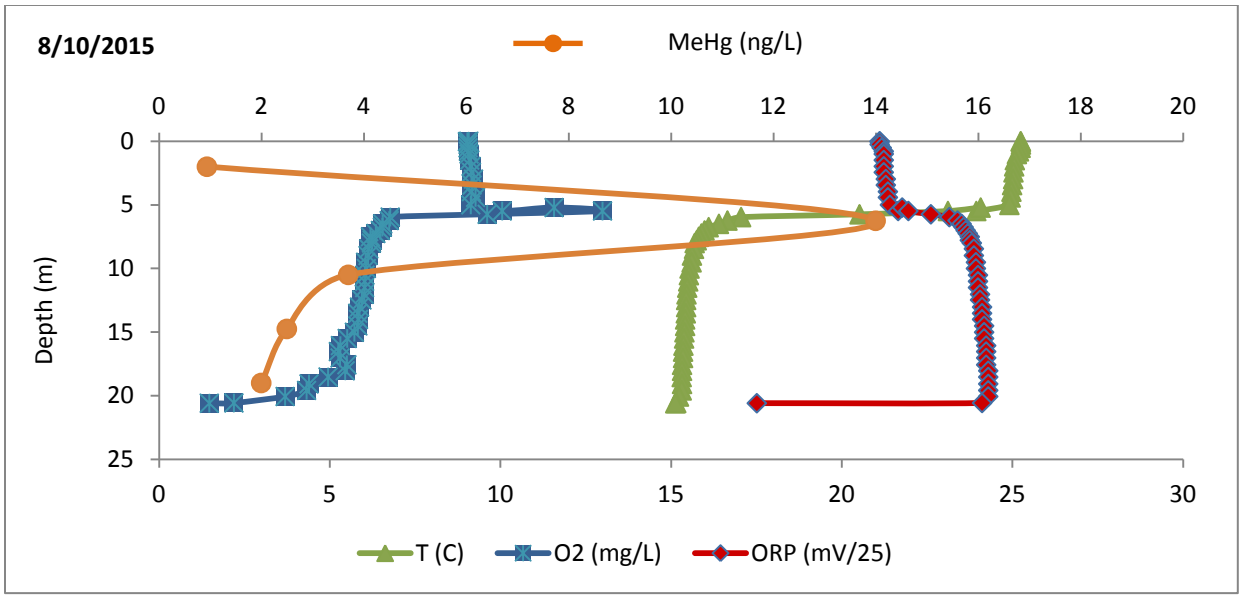


Figure 22: Vertical Profile of Methyl Mercury, Dissolved Oxygen, Temperature and Oxygen Reduction Potential for Guadalupe Reservoir in 2015



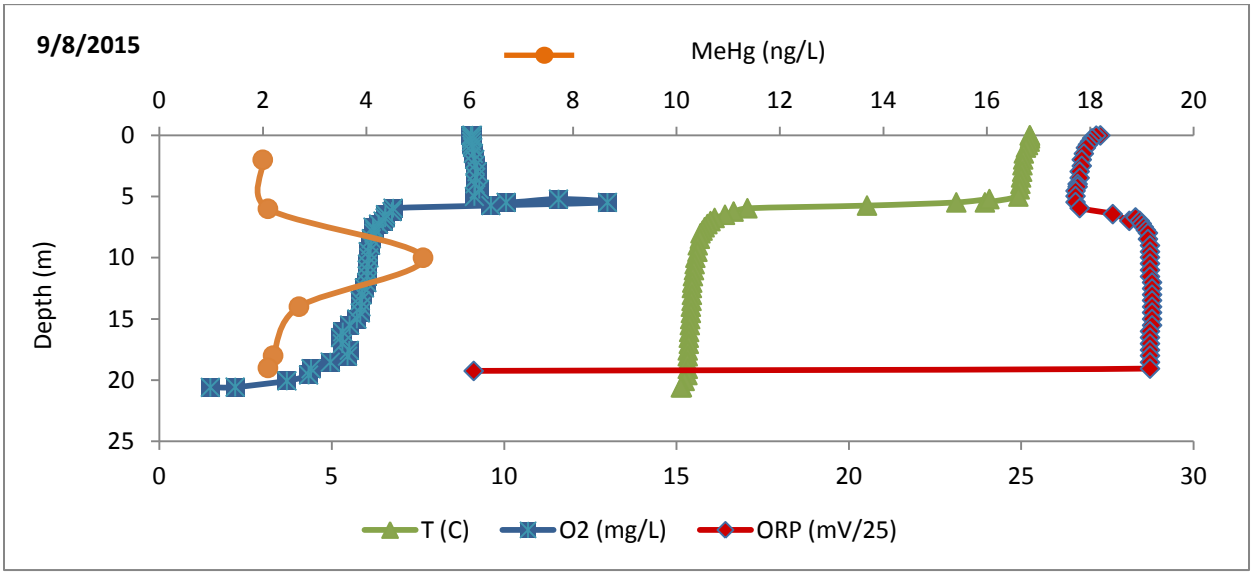


Figure 22 Continued: Vertical Profile of Methyl Mercury, Dissolved Oxygen, Temperature and Oxygen Reduction Potential for Guadalupe Reservoir in 2015

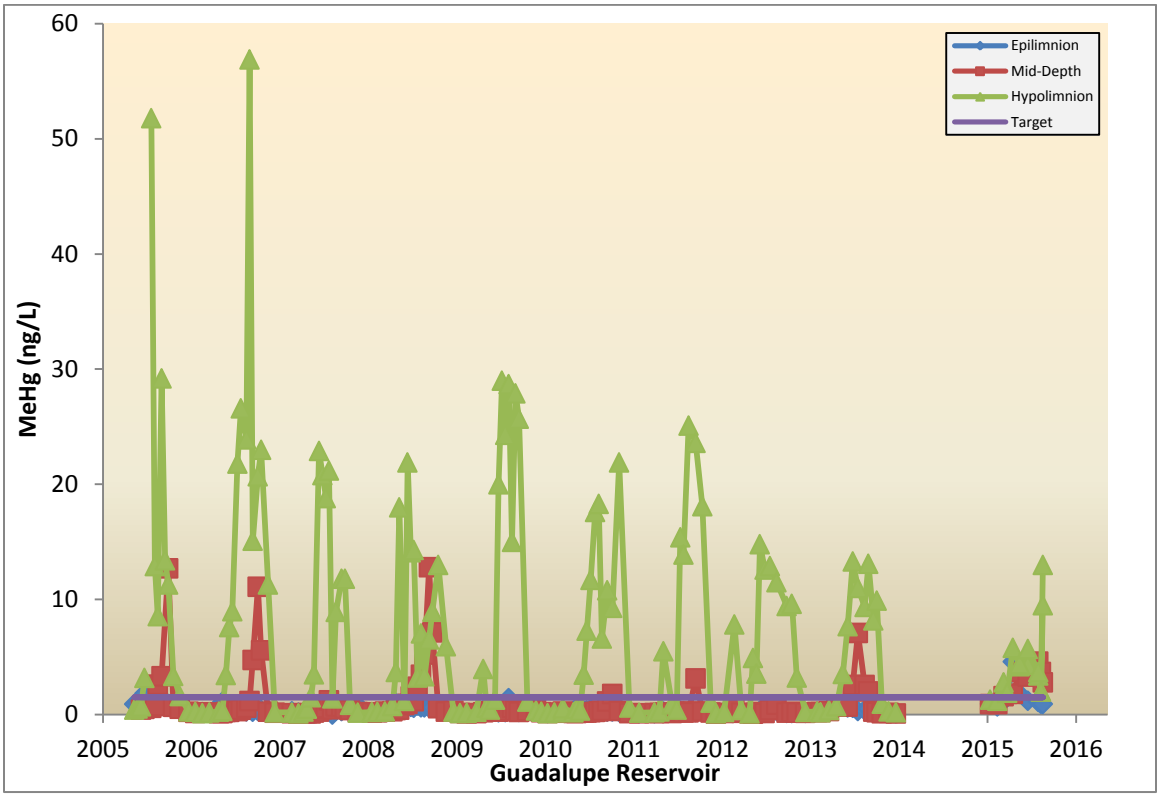
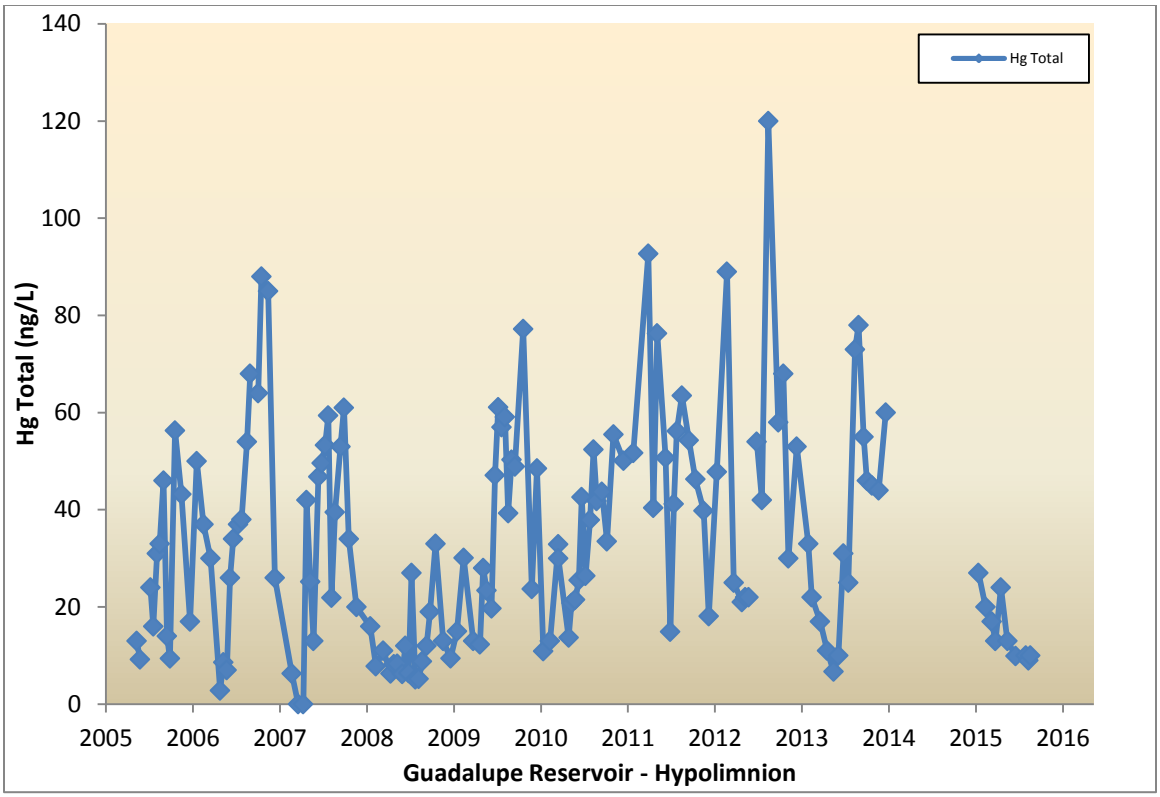


Figure 23: Unfiltered Methyl Mercury (Total MeHg) Concentrations in Guadalupe Reservoir



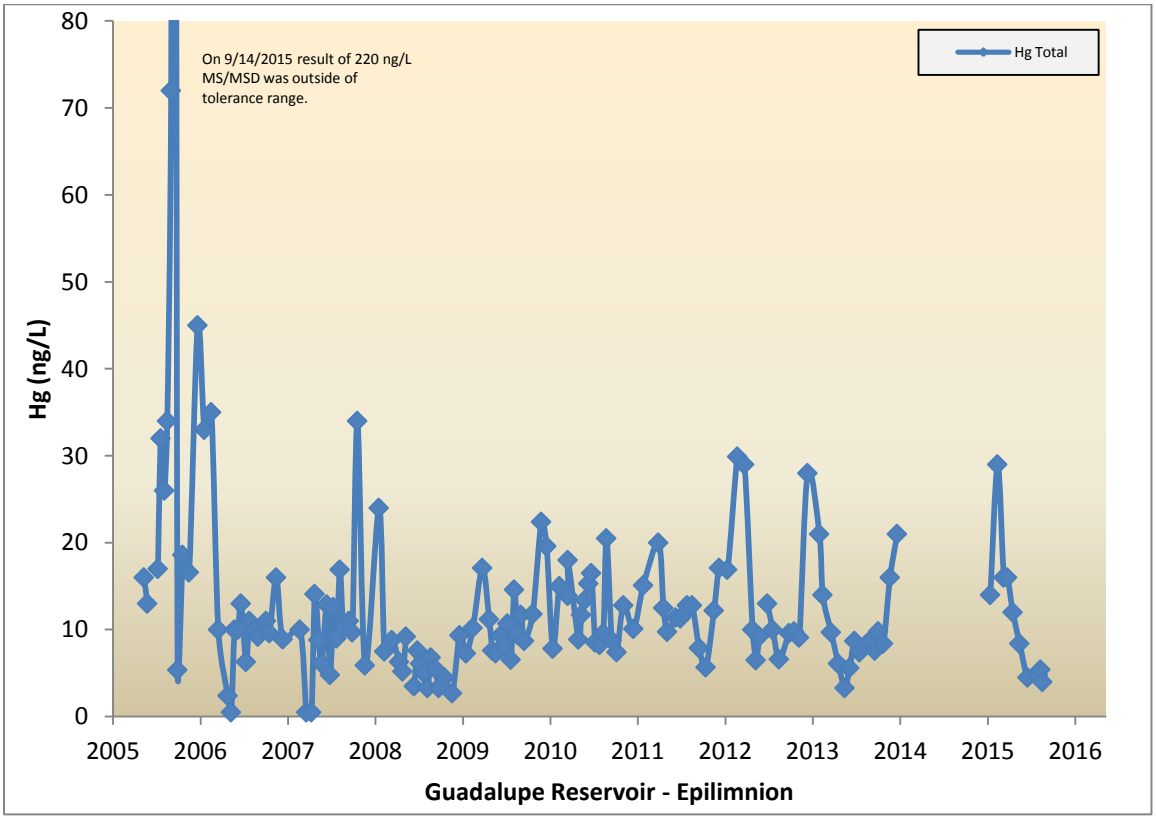


Figure 24: Unfiltered Mercury (Total Hg) Concentrations in Guadalupe Reservoir

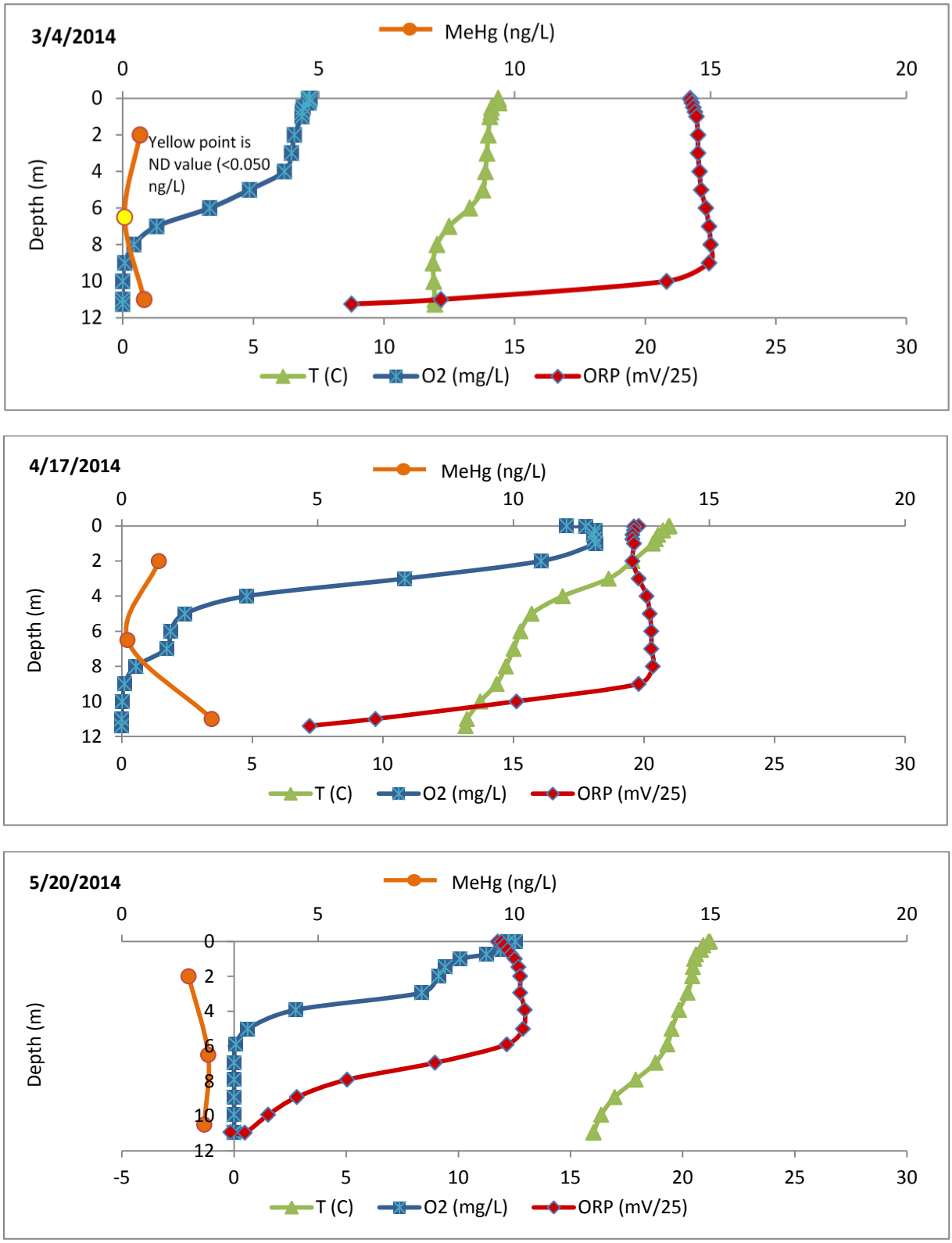
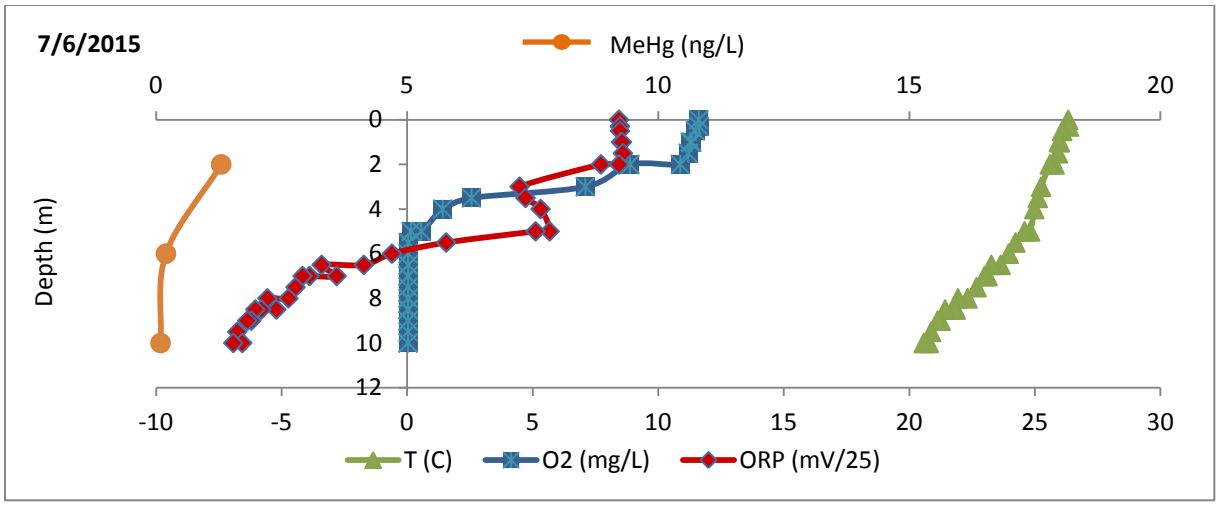
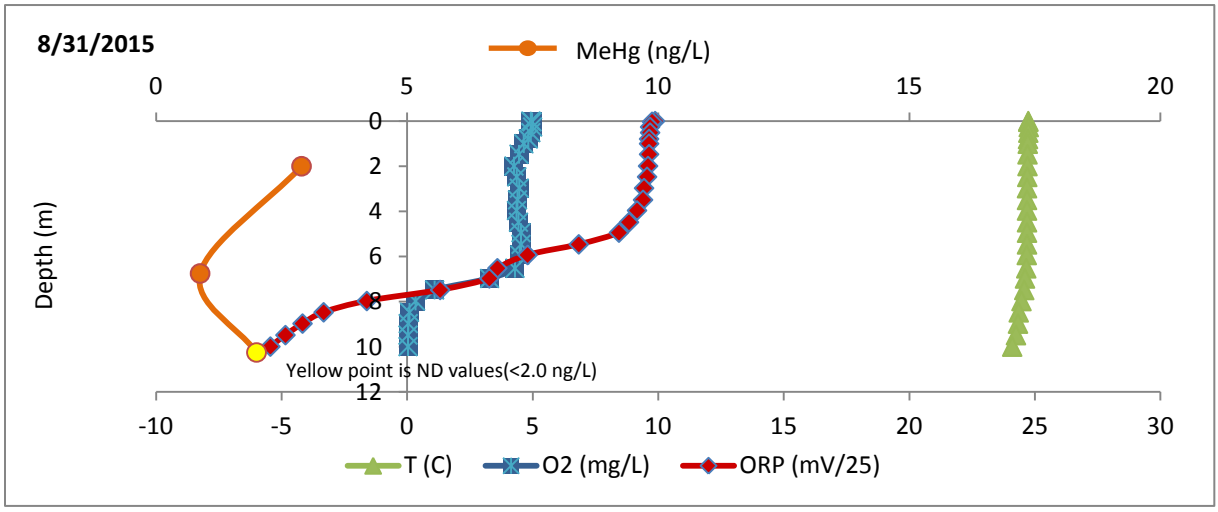


Figure 25: Vertical Profile of Methyl Mercury, Dissolved Oxygen, Temperature and Oxygen Reduction Potential for Lake Almaden (Site 1) in 2014





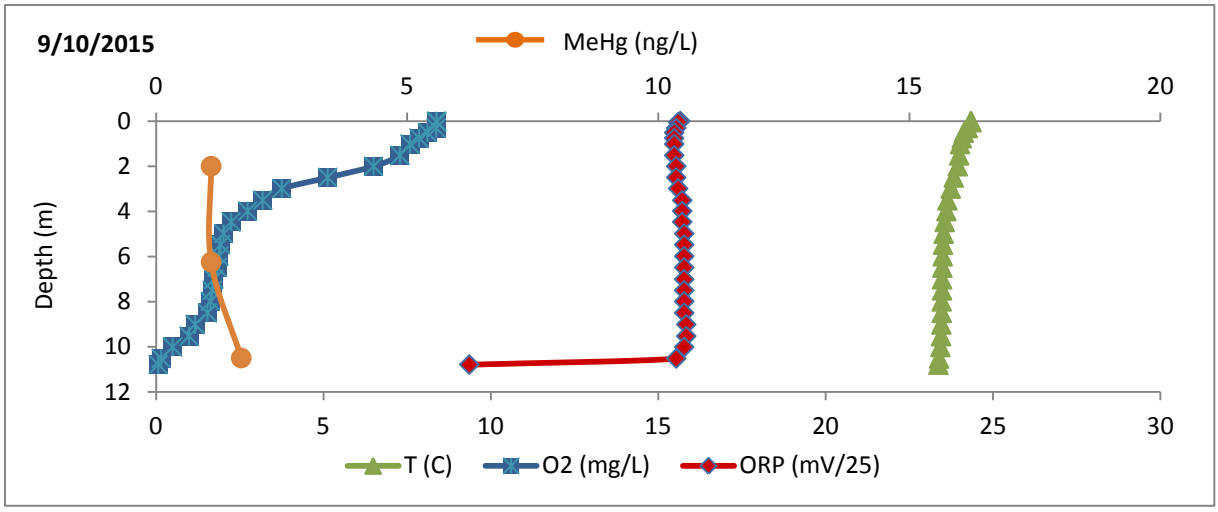


Figure 26: Vertical Profile of Methyl Mercury, Dissolved Oxygen, Temperature and Oxygen Reduction Potential for Lake Almaden (Site 1) in 2015

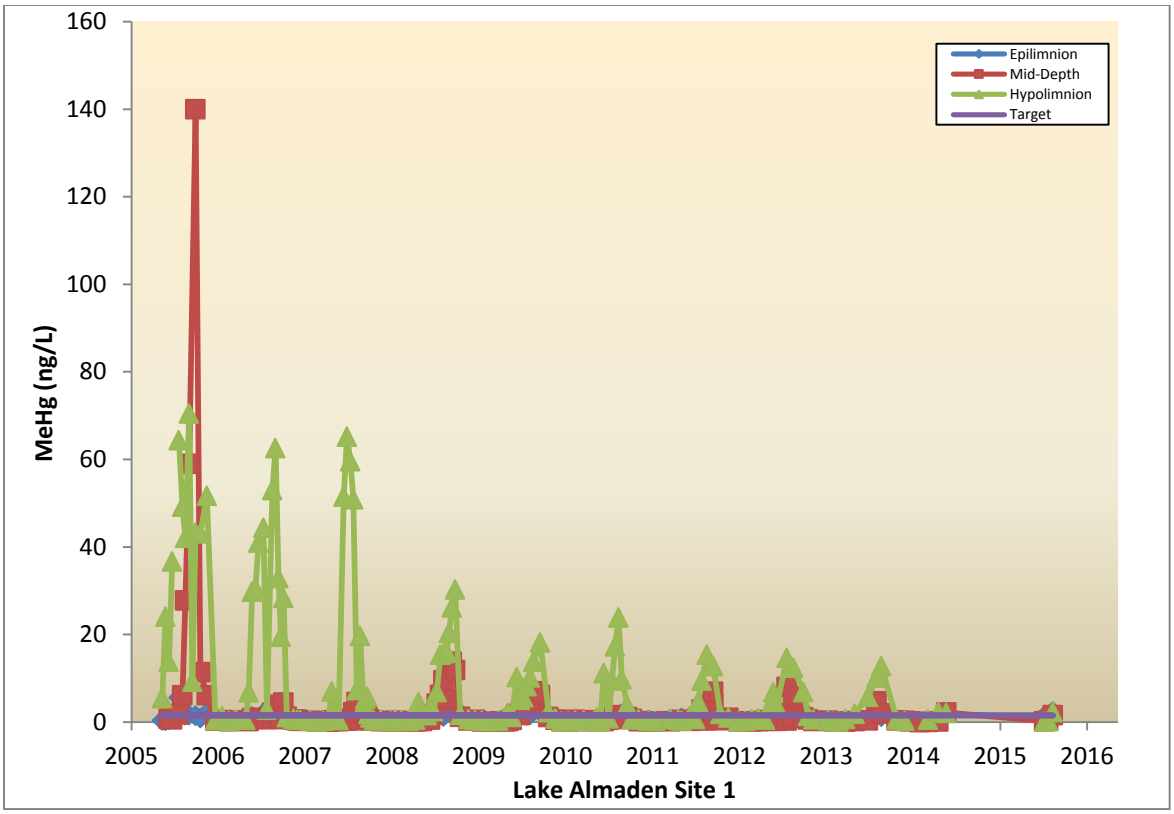
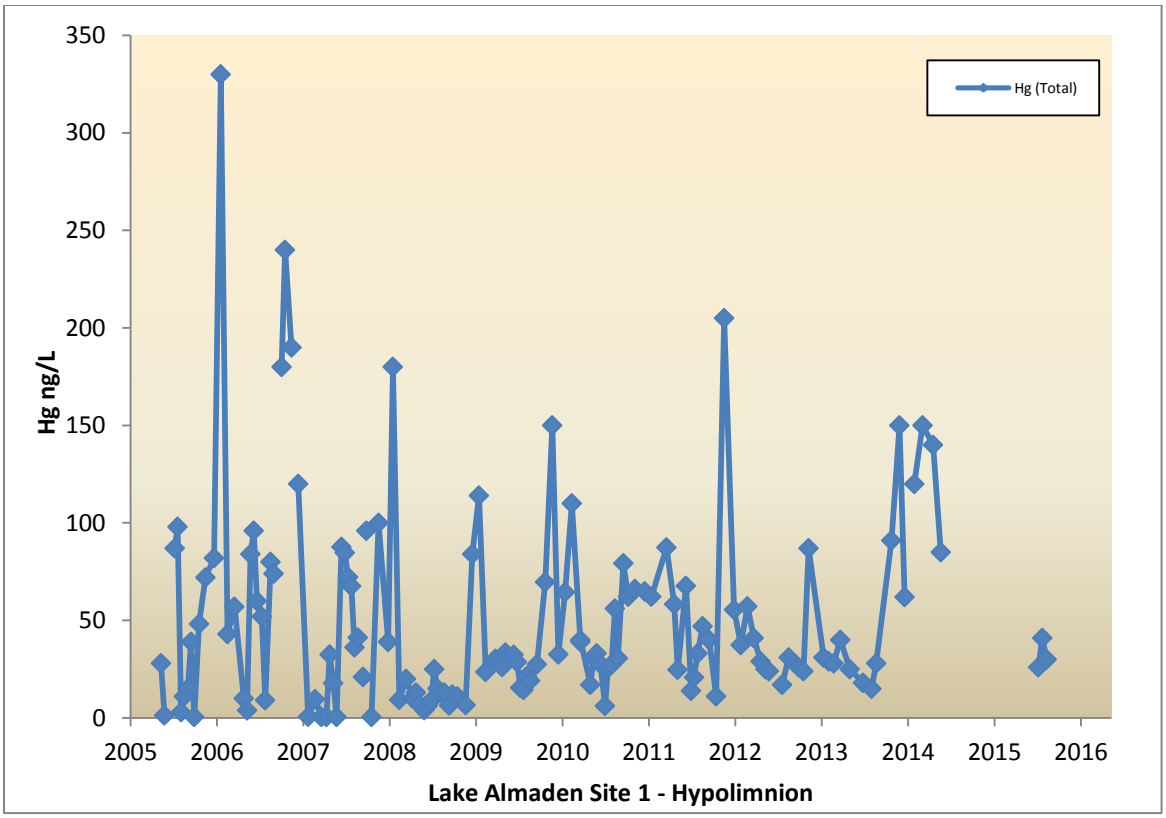


Figure 27: Unfiltered Methyl Mercury (Total MeHg) Concentrations in Lake Almaden (Site 1)



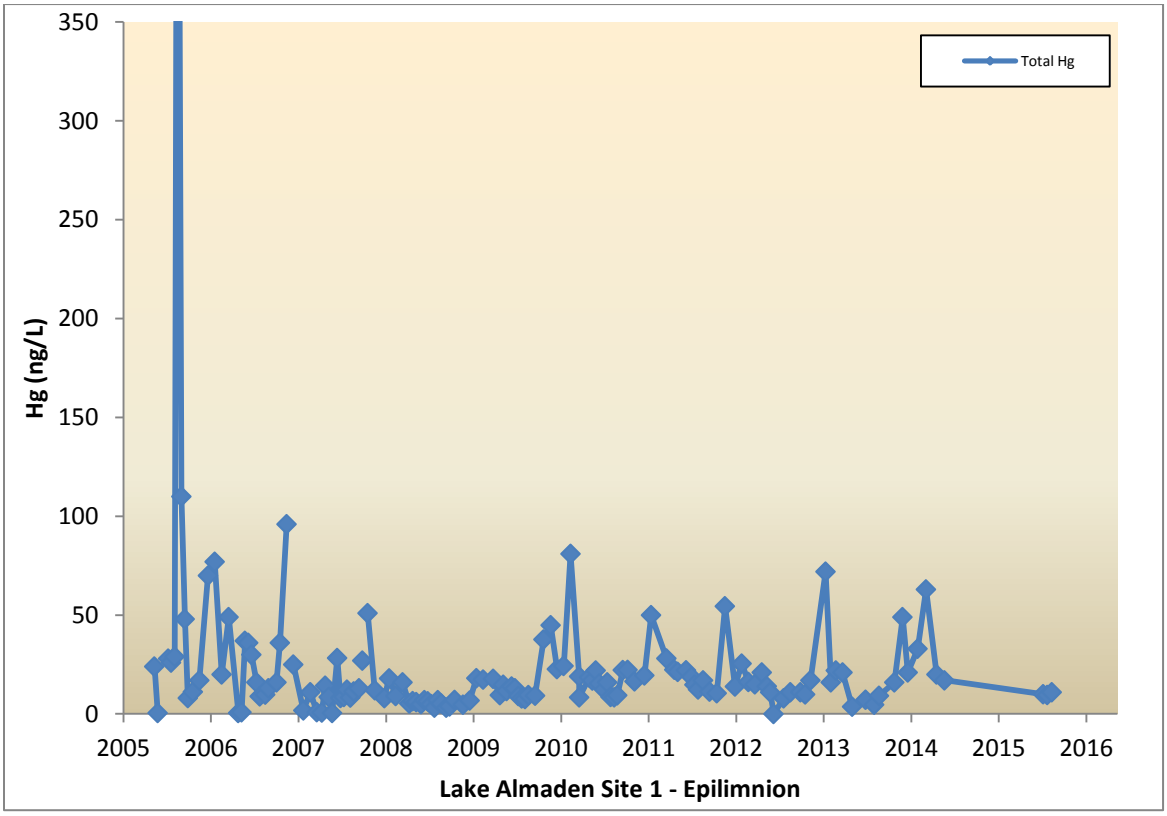
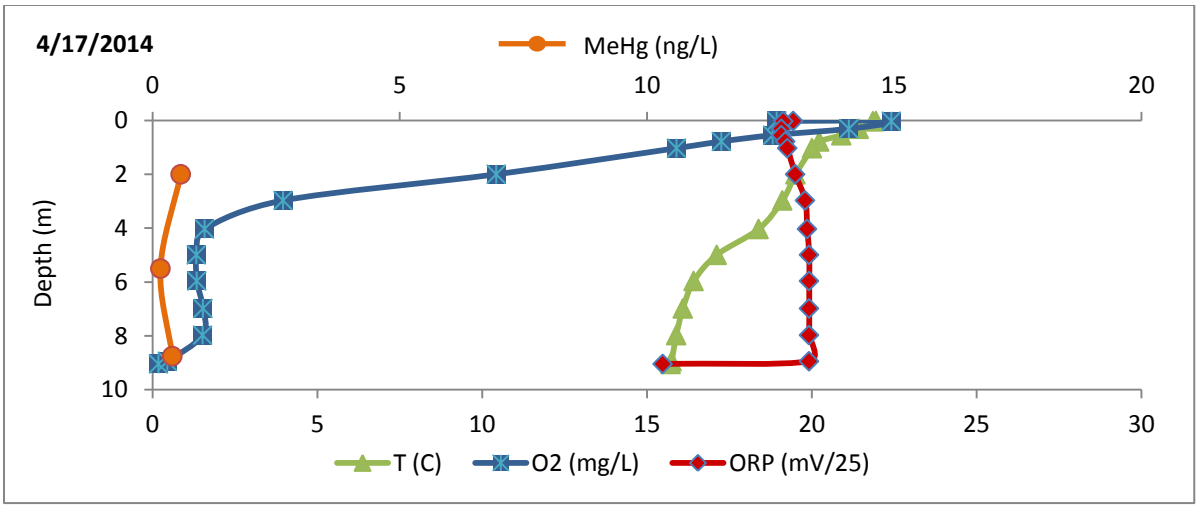
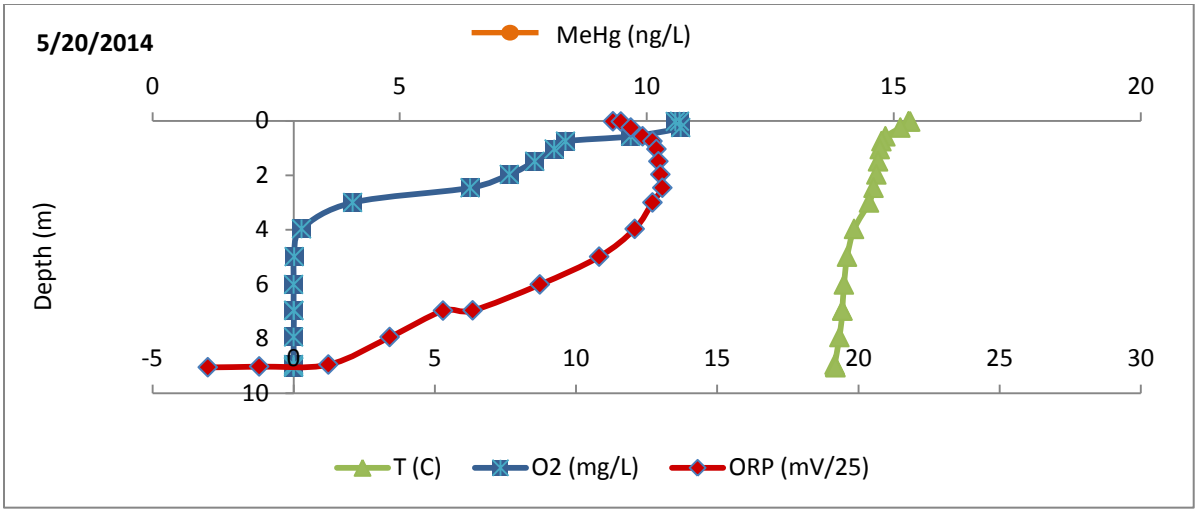


Figure 28: Unfiltered Mercury (Total Hg) Concentrations in Lake Almaden (Site 1)





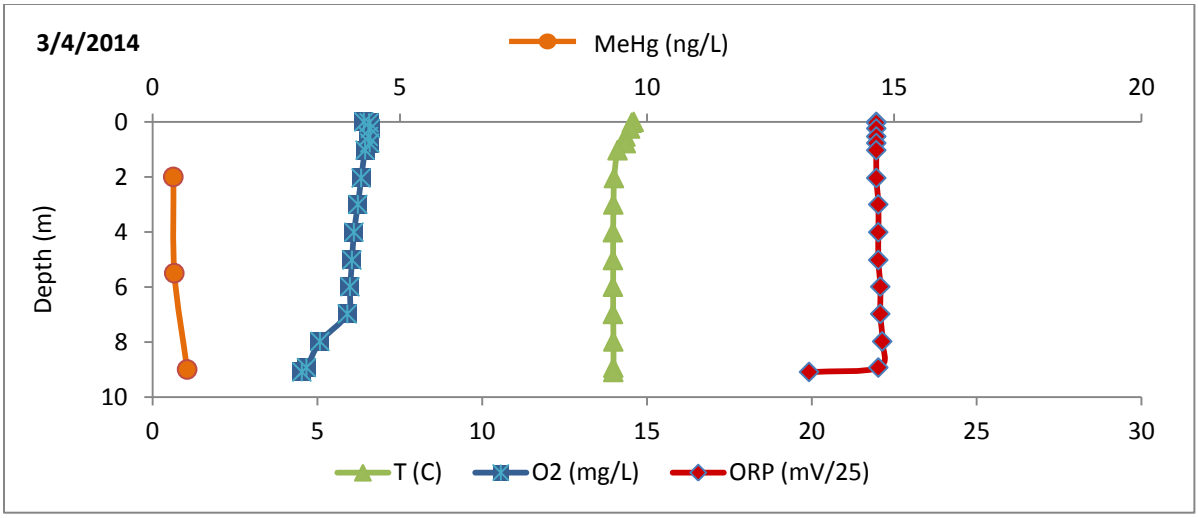


Figure 29: Vertical Profile of Methyl Mercury, Dissolved Oxygen, Temperature and Oxygen Reduction Potential for Lake Almaden (Site 2) in 2014

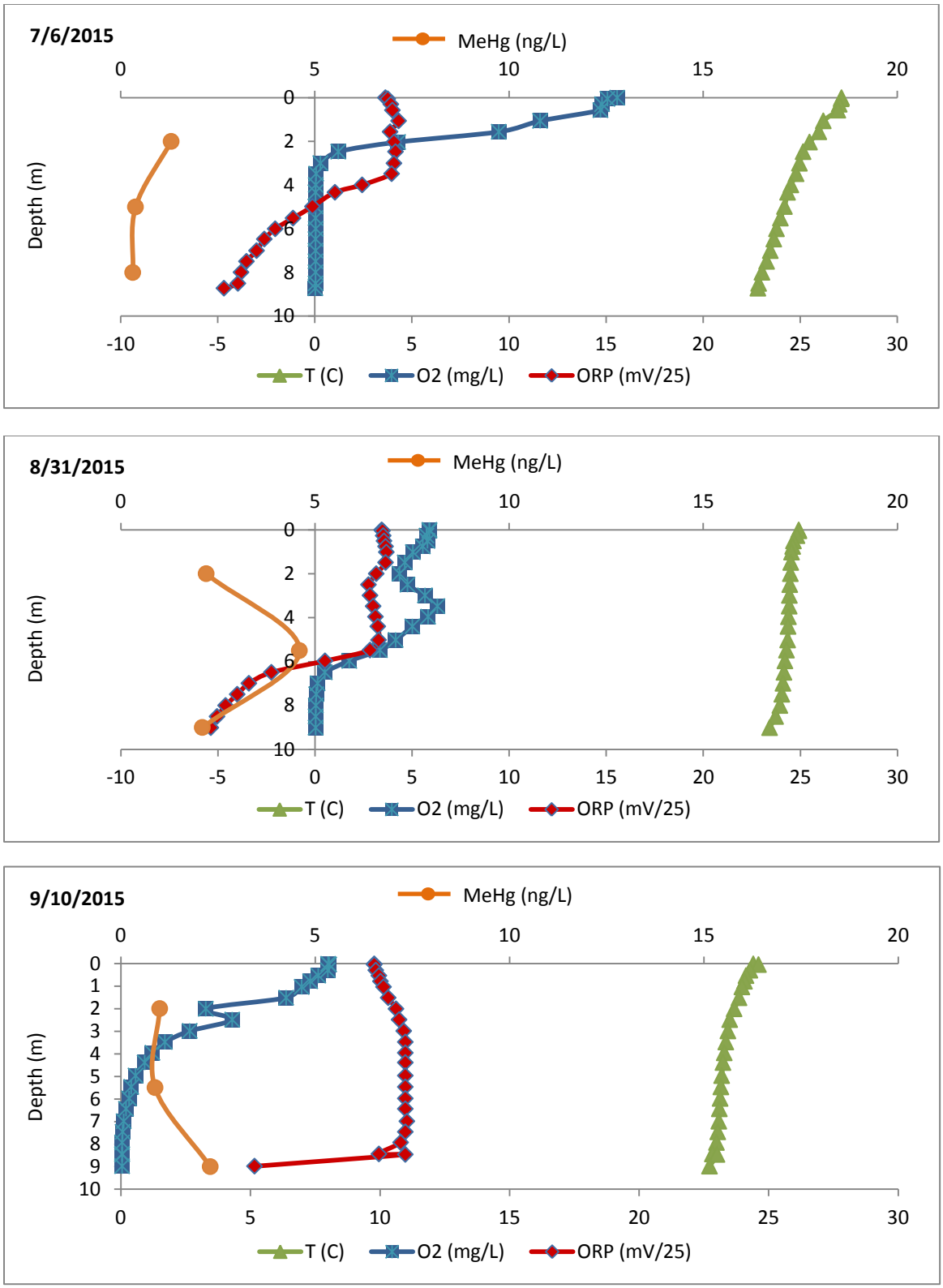


Figure 30: Vertical Profile of Methyl Mercury, Dissolved Oxygen, Temperature and Oxygen Reduction Potential for Lake Almaden (Site 2) in 2015

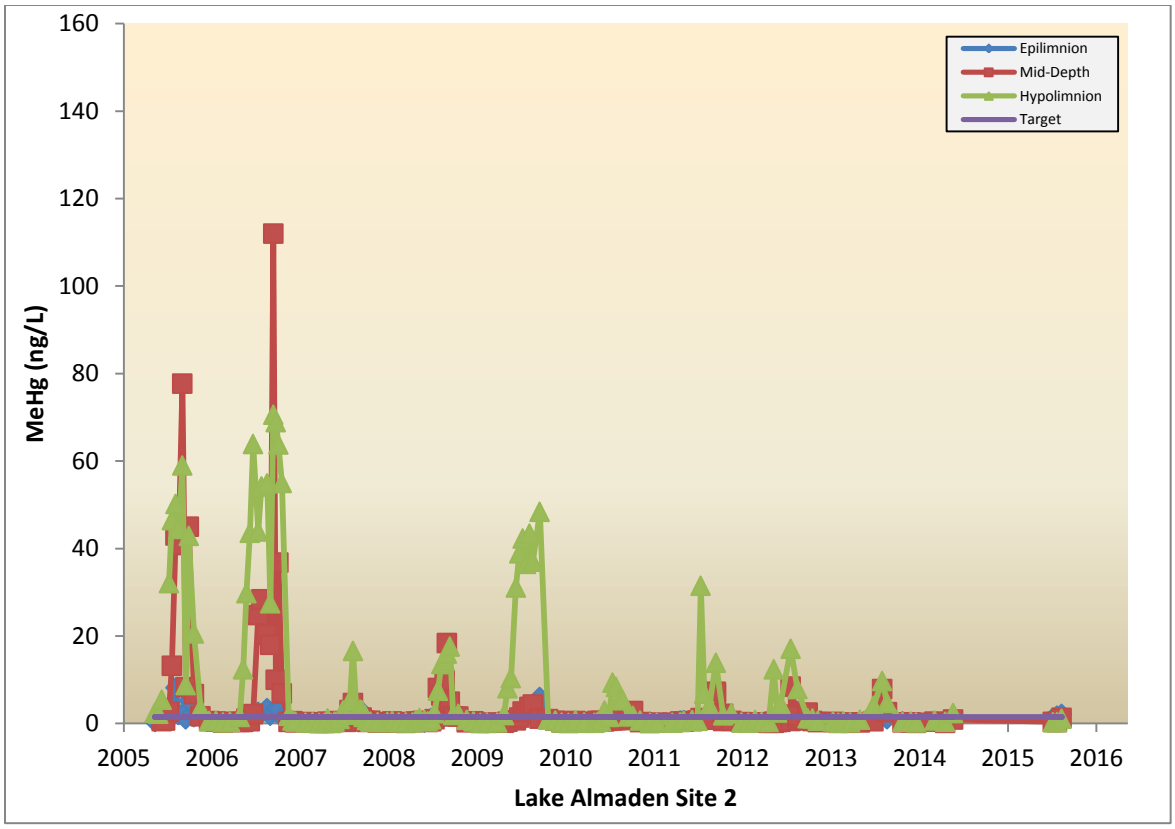
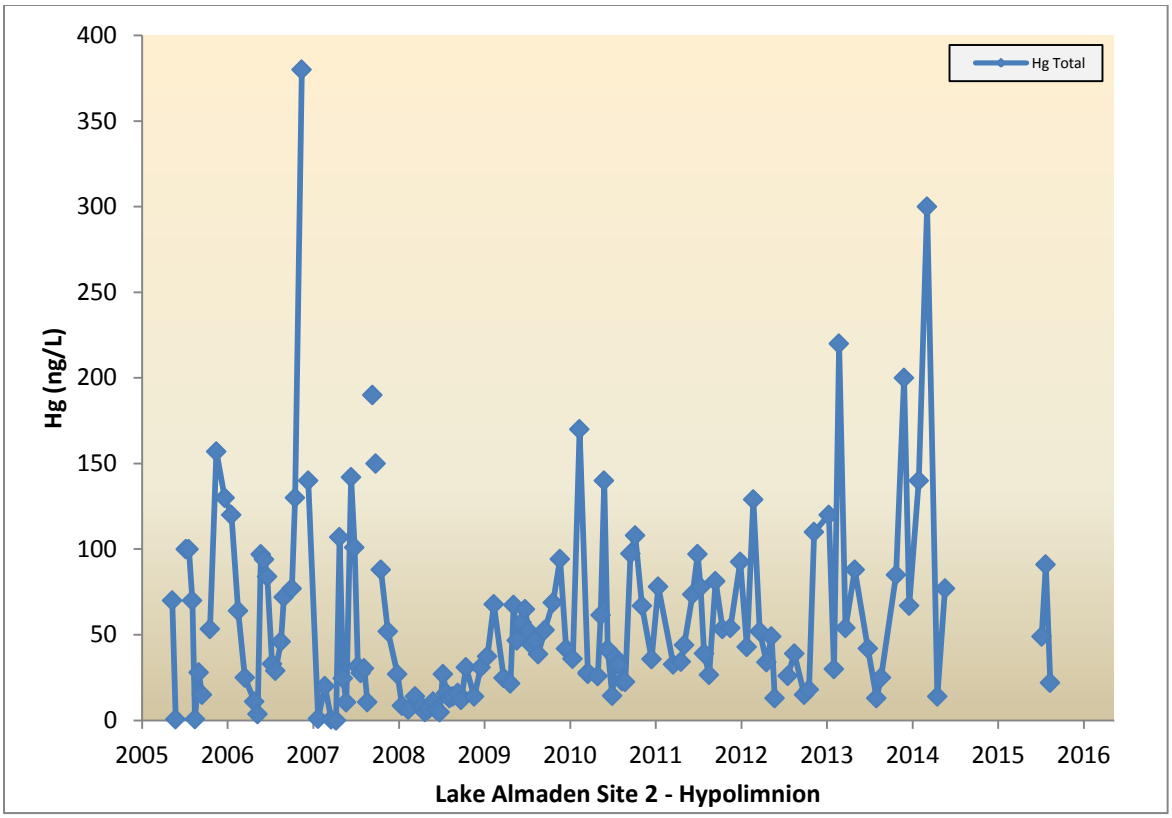


Figure 31: Unfiltered Methyl Mercury (Total MeHg) Concentrations in Lake Almaden (Site 2)



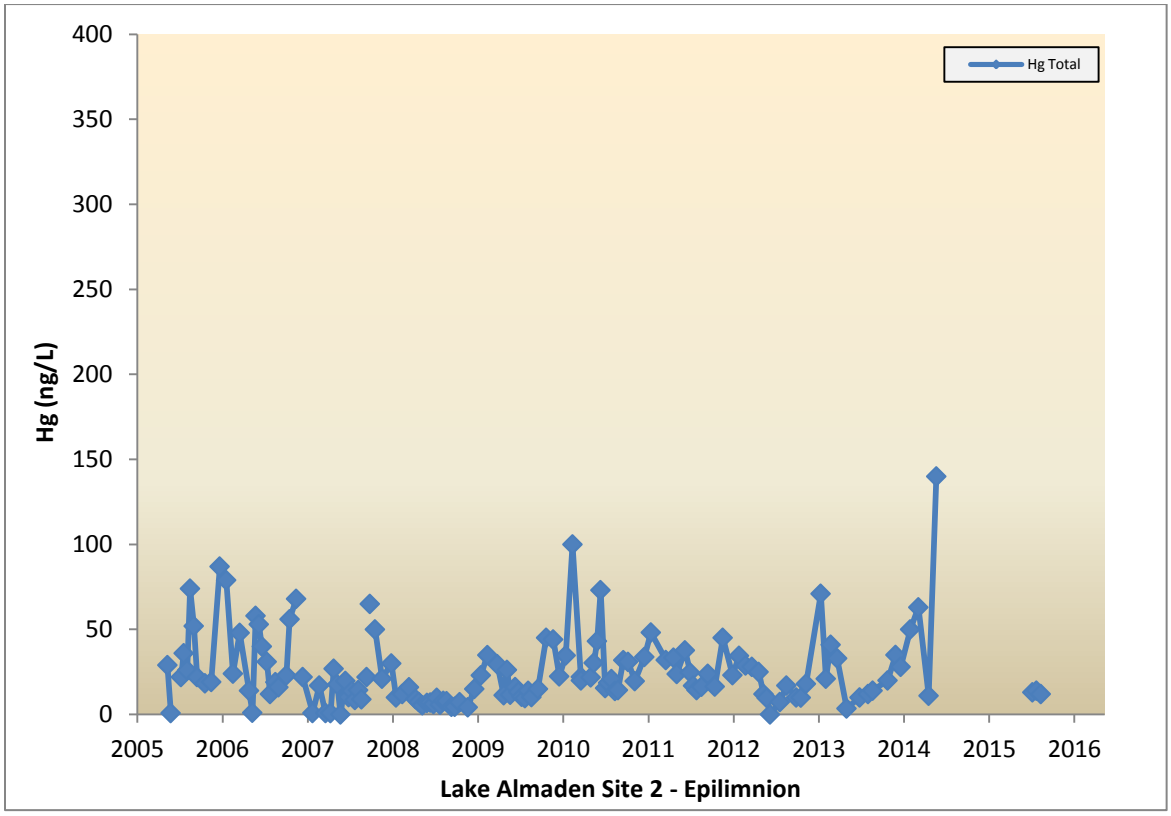
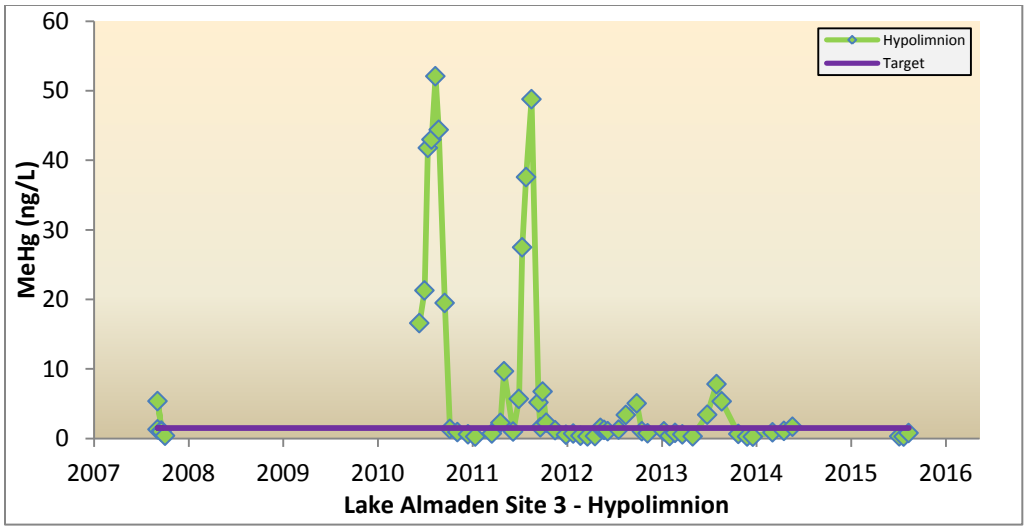
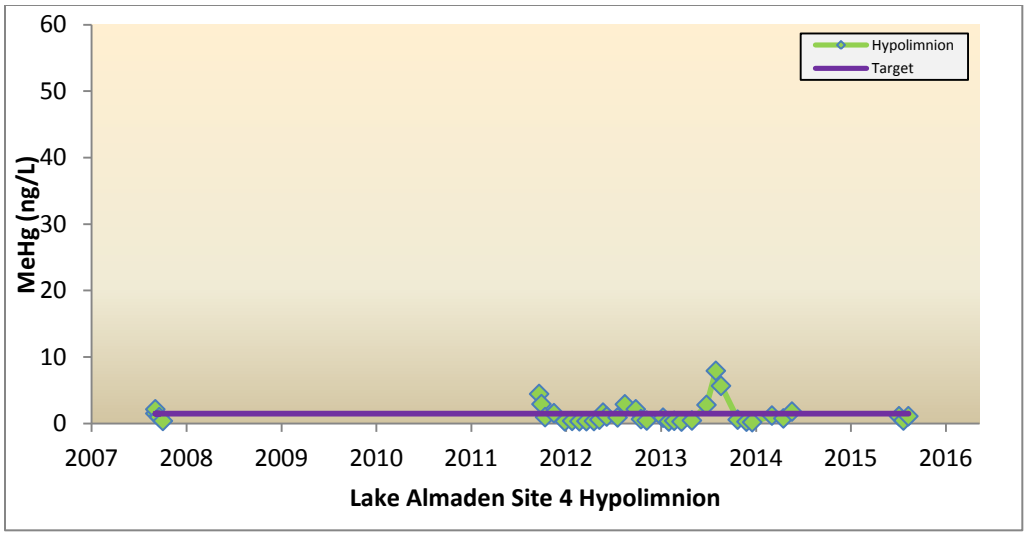


Figure 32: Unfiltered Mercury (Total Hg) Concentrations in Lake Almaden (Site 2)





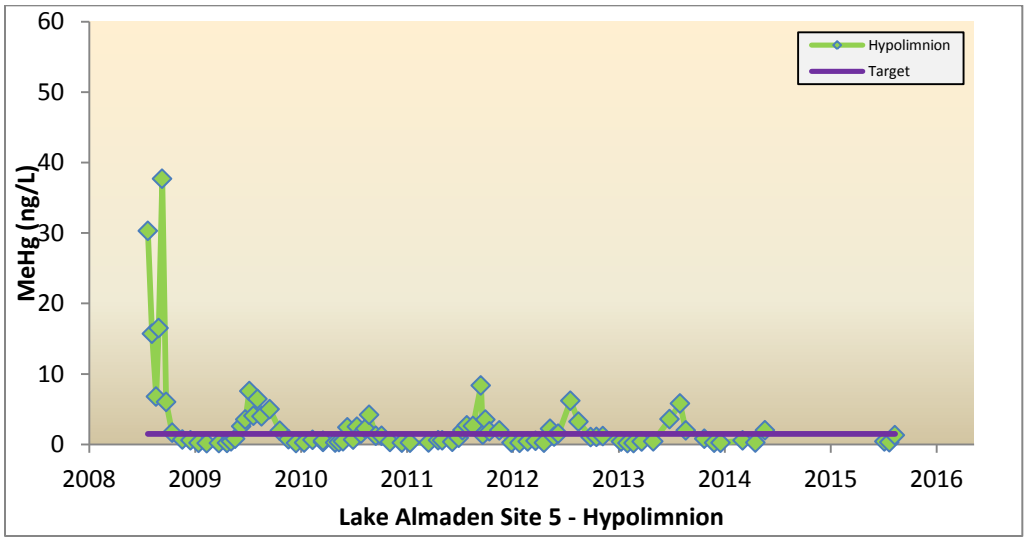


Figure 33: Unfiltered Methyl Mercury (Total MeHg) Concentrations in Lake Almaden (Sites 3, 4, 5)

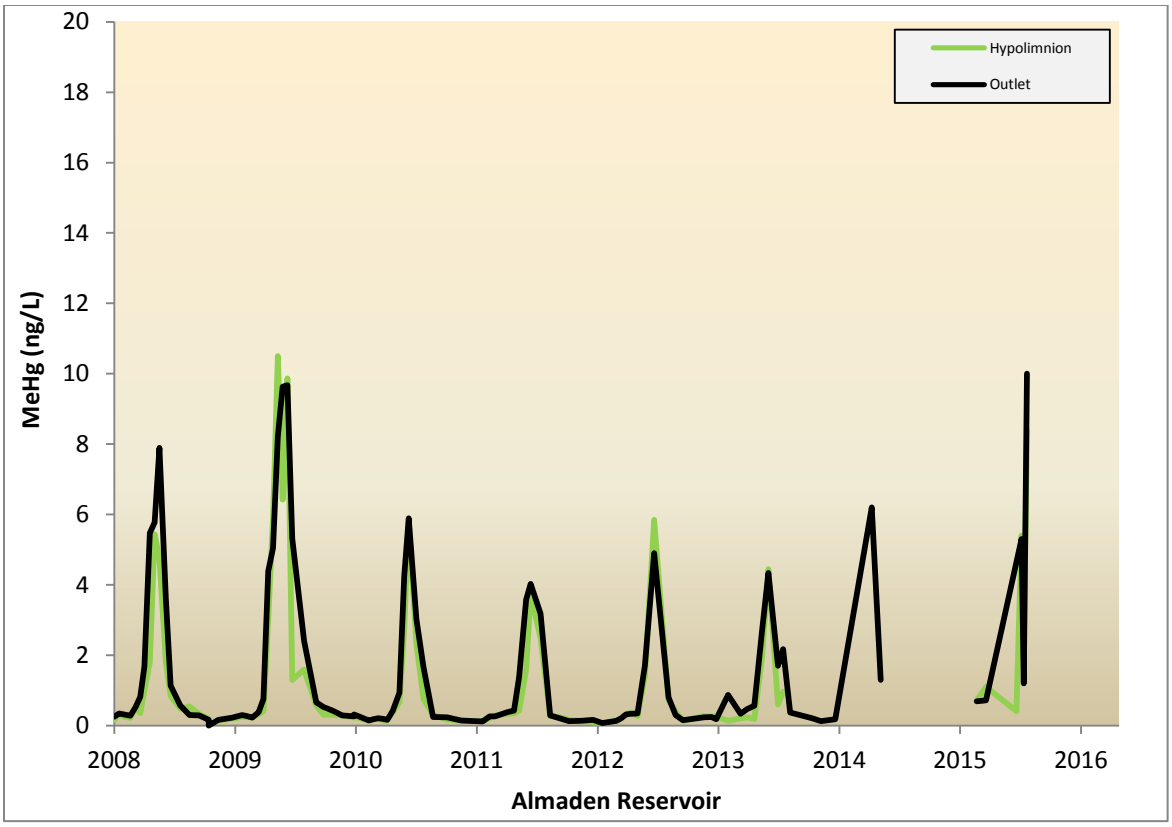


Figure 34: Comparison of Hypolimnion and Outlet Unfiltered Methyl Mercury (Total MeHg) Concentrations in Almaden Reservoir

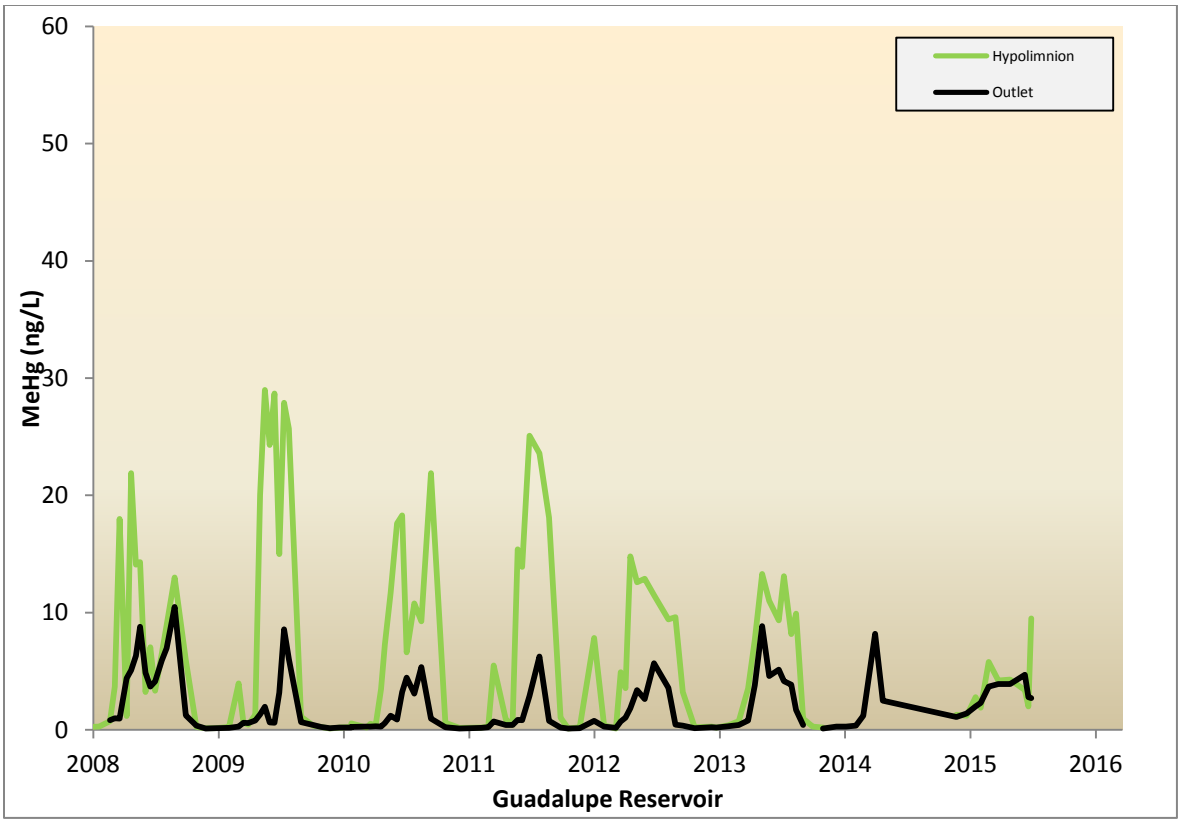


Figure 35: Comparison of Hypolimnion, and Outlet Unfiltered Methyl Mercury (Total MeHg) Concentrations in Guadalupe Reservoir

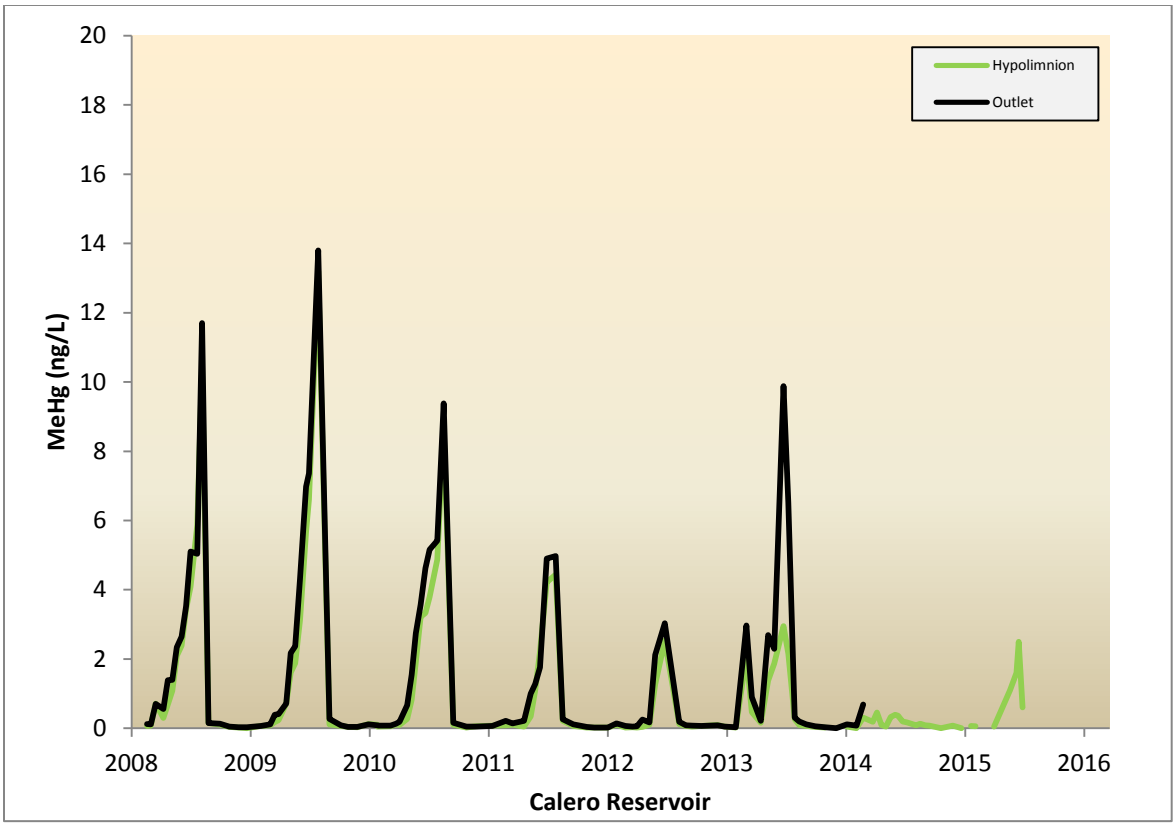


Figure 36: Comparison of Hypolimnion and Outlet Unfiltered Methyl Mercury (Total MeHg) Concentrations in Calero Reservoir

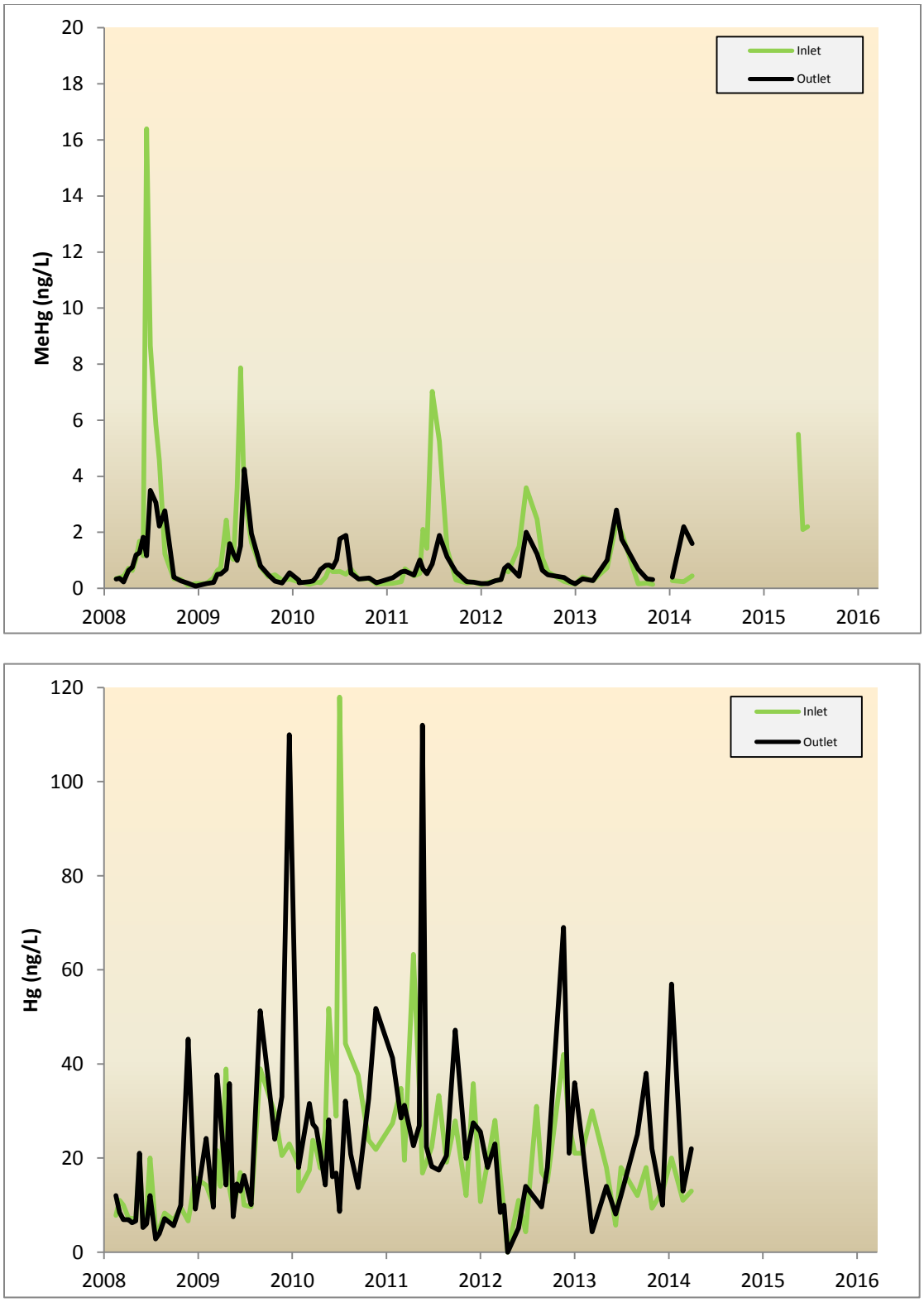


Figure 37: Comparison of Inlet and Outlet Unfiltered Methyl Mercury (Total MeHg) [Top] and Unfiltered Mercury (Total Hg) [Bottom] Concentrations in Lake Almaden

APPENDIX B

Tables

Zooplankton Hg and MeHg Results Table

Sample Results							Detection Limits									
Water Body	Date	Hg Dry (ng/g)	Hg Wet (ng/g)	MeHg Dry (ng/g)	MeHg Wet (ng/g)	%TS	%TS MDL	%TS MRL	MeHg Wet MDL (ng/g)	Hg Wet MDL (ng/g)	MeHg Dry MDL (ng/g)	Hg Dry MDL (ng/g)	MeHg Wet MRL (ng/g)	Hg Wet MRL (ng/g)	MeHg Dry MRL (ng/g)	Hg Dry MRL (ng/g)
Almaden	7/24/12		852.00		626.00				0.0003	0.005						
Almaden	10/1/12		655.60		566.70				0.0003	0.005						
Almaden	4/24/13		59.80		60.30				0.9800	0.120			2.94	0.39		
Almaden	4/21/15	2740	128.00	2420	114.00	4.69	0.48	1.60	1.0000	0.120	21.1	2.62	3.00	0.41	63.3	8.75
Almaden	8/20/15	3760	179.00	4080	194.00	4.76	0.02	0.08	1.0000	0.130	20.6	2.72	2.90	0.43	61.7	9.08
Guadalupe	7/27/12		400.00		241.00				0.0003	0.005						
Guadalupe	10/2/12		493.00		336.00				0.0003	0.005						
Guadalupe	5/14/13		71.30		106.00				3.1500	1.020			3.05	10.50		
Guadalupe	5/5/15	1620	97.30	1410	85.10	6.02	0.11	0.38	0.9000	1.260	15.6	20.90	2.80	4.20	46.7	69.8
Guadalupe	8/26/15		211.00		198.00				1.0000	0.590			2.90	1.96		
Calero	7/10/12		49.80		26.70				0.0003	0.005						
Calero	10/3/12		69.40		56.00				0.0003	0.005						
Calero	4/22/13		5.51		5.32				0.8300	0.110			2.86	0.37		
Calero	7/23/14		10.90		7.00				0.8000	0.120			2.50	0.39		
Calero	10/23/14		5.82		7.00				0.9000	0.110			2.60	0.38		
Calero	4/22/15	627	58.40	499	46.50	9.32	0.22	0.73	0.9000	0.860	9.7	9.26	2.70	2.88	29.2	30.9
Calero	8/24/15				7.80				3.4000				10.10			

NOTE: For Calero Date 8/24/2015, the sample was limited in mass. The entire sample mass was first prepared and analyzed for MeHg. Once completed, sample preparation should have been used for the Hg analysis. Inadvertently however, the sample preparation was discarded by the lab prior to Hg analysis. Only the MeHg result was available for reporting.

Table 1: Mercury and Methyl Mercury Concentrations found in Zooplankton

Zooplankton Hg Wet vs. Water MeHg Wet				
Water Body	Zooplankton Date	Water Date	Zooplankton Hg Wet (ng/g)	Water Total MeHg (ng/L)
Almaden	7/24/2012	7/17/2012	852.00	1.400
Almaden	10/1/2012	9/24/2012	655.60	0.705
Almaden	4/24/2013	4/24/2013	59.80	0.209
Almaden	4/21/2015	4/15/2015	128.00	1.100
Almaden	8/20/2015	8/13/2015	179.00	8.400
Calero	7/10/2012	7/16/2012	49.80	1.270
Calero	10/3/2012	9/27/2012	69.40	0.121
Calero	4/22/2013	4/22/2013	5.51	2.080
Calero	7/23/2014	7/22/2014	10.90	0.390
Calero	10/23/2014	10/22/2014	5.82	0.089
Calero	4/22/2015	3/25/2015	58.40	0.054
Guadalupe	7/27/2012	7/17/2012	400.00	12.900
Guadalupe	10/2/2012	9/24/2012	493.00	9.430
Guadalupe	5/14/2013	5/14/2013	71.30	3.530
Guadalupe	5/5/2015	5/14/2015	97.30	4.200
Guadalupe	8/26/2015	8/18/2015	211.00	9.500

Table 2: Mercury in Zooplankton versus Methyl Mercury in Water

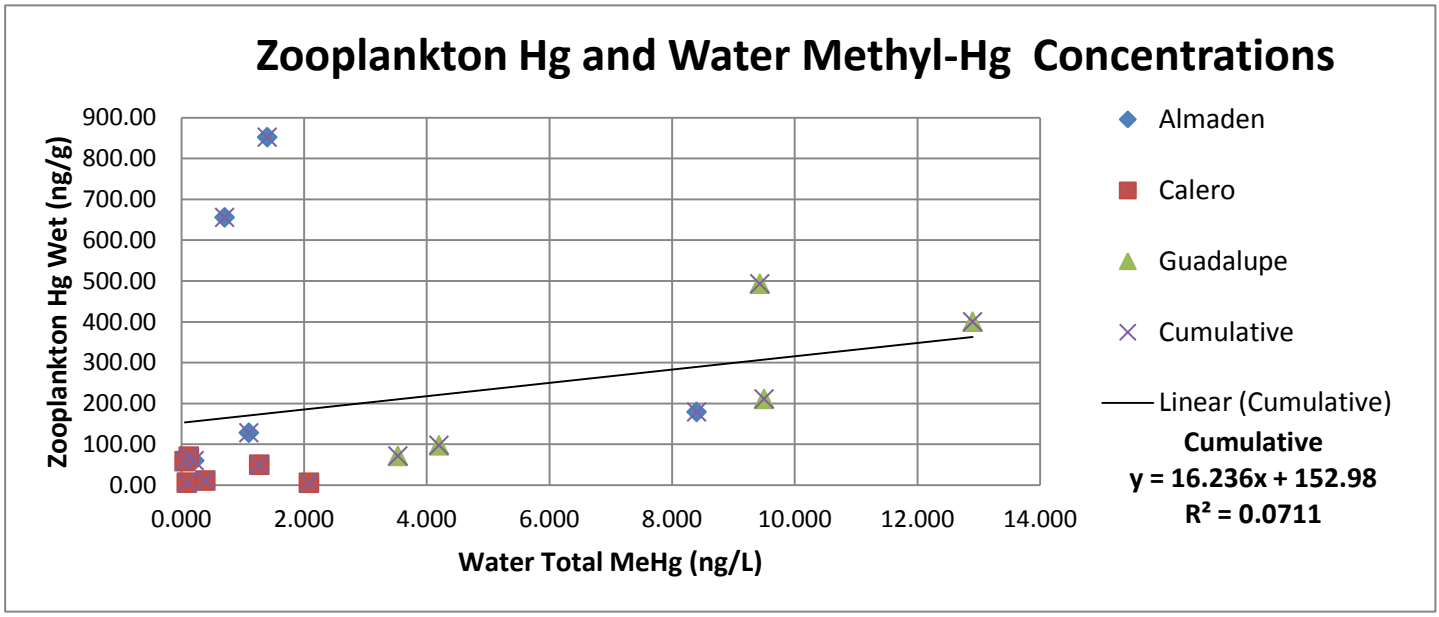


Table 2 Graph: Mercury in Zooplankton versus Methyl Mercury in Water

Zooplankton Hg Wet vs. Fish (LMB) Hg Wet				
Water Body	**Zooplankton Date**	**Fish Date**	**Zooplankton Hg Wet (ng/g)**	**Fish (LMB) Hg ww (ng/g)**
Almaden	7/24/2012	8/23/2012	852.00	1210.95
Almaden	4/24/2013	8/7/2013	59.80	814.49
Almaden	8/20/2015	10/15/2015	179.00	1414.95
Calero	7/10/2012	8/23/2012	49.80	97.76
Calero	10/3/2012	11/7/2012	69.40	228.28
Calero	4/22/2013	7/31/2013	5.51	117.72
Calero	7/23/2014	8/7/2014	10.90	105.52
Calero	10/23/2014	11/4/2014	5.82	170.39
Calero	4/22/2015	10/15/2015	58.40	200.70
Guadalupe	7/27/2012	8/23/2012	400.00	770.30
Guadalupe	5/14/2013	7/17/2013	71.30	1418.91
Guadalupe	8/26/2015	10/6/2015	211.00	1649.43

Table 3: Mercry in Zooplankton versus Mercury in Fish

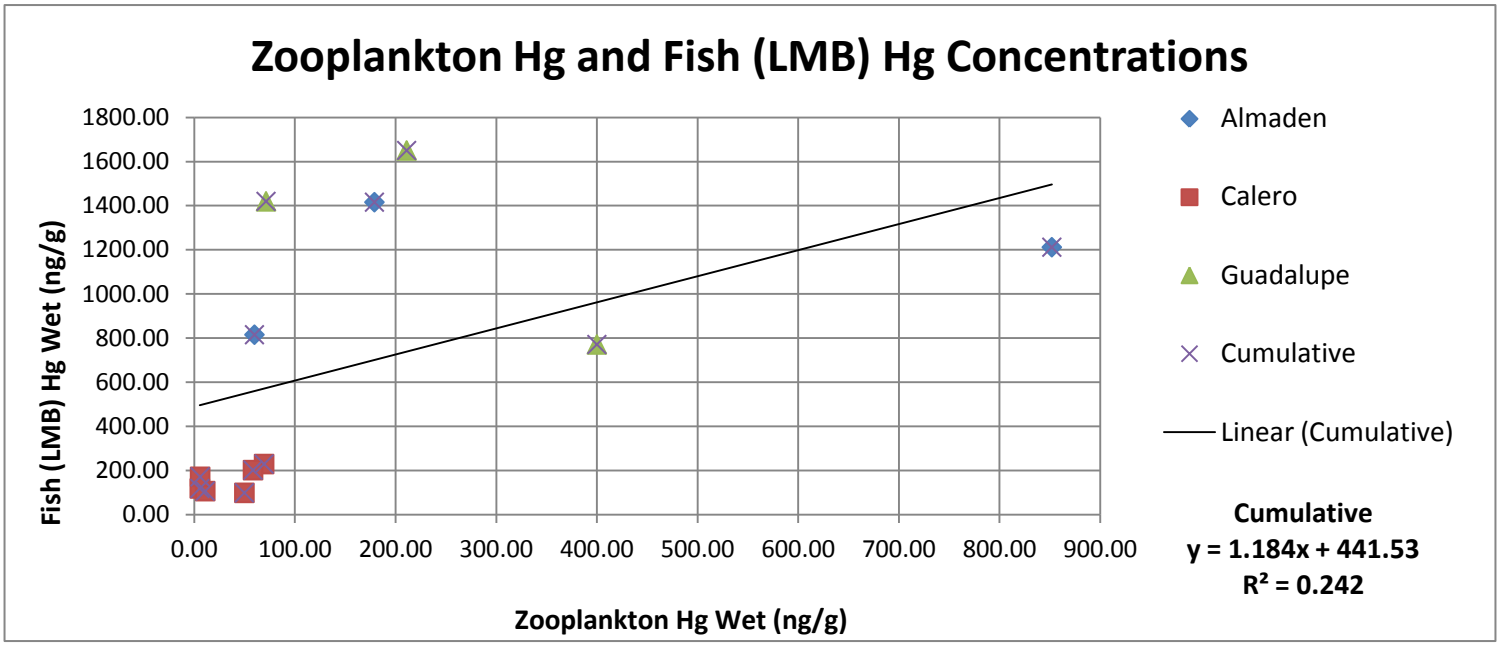


Table 3 Graph: Mercry in Zooplankton versus Mercury in Fish

OUTLET FLOW: Total Hg Load Water Years 2012-2015

Water Year 2013: October 1 2012 - September 30 2013

Water Body	October 2012 (g/month)	November 2012 (g/month)	December 2012 (g/month)	January 2013 (g/month)	February 2013 (g/month)	March 2013 (g/month)	April 2013 (g/month)	May 2013 (g/month)	June 2013 (g/month)	July 2013 (g/month)	August 2013 (g/month)	September 2013 (g/month)	Wet Season Total October 1 2012 - April 30 2013 (g/wet season)	Water Year Total (g/water year)
Almaden:	1.72	2.1	**21.2**	4.63	2.57	2.16	1.35	0.5	0.82	2.47	2.87	1.29	35.7	43.68
Calero:	**11.6**	7.2	4.7	1.84	1.66	1.43	3.31	1.61	1.91	4.87	3.13	2.47	31.7	45.73
Guadalupe:	4.66	2.96	**19.3**	7.33	5.2	5.27	3.07	1.02	2.09	3.89	7.37	14	47.8	76.16

BOLD = Water Year Max

Water Year 2014: October 1 2013 - September 30 2014

Water Body	October 2013 (g/month)	November 2013 (g/month)	December 2013 (g/month)	January 2014 (g/month)	February 2014 (g/month)	March 2014 (g/month)	April 2014 (g/month)	May 2014 (g/month)	June 2014 (g/month)	July 2014 (g/month)	August 2014 (g/month)	September 2014 (g/month)	Wet Season Total October 1 2012 - April 30 2013 (g/wet season)	Water Year Total (g/water year)
Almaden:	0.76	1	**1.64**	1.59	0.35	0.11	0.1	1.24	0.88	0.91	0.91	0.78	5.54	10.27
Calero:	1.77	**5.9**	1.26	1.4	0.063	0.058	0.11	0.02	0.019	0.022	0.029	0.022	10.6	10.67
Guadalupe:	**10.3**	6.02	4.79	3.2	1.15	1.05	0.95	2.22	2.97	2.53	2.52	2.52	27.4	40.22

BOLD = Water Year Max

Water Year 2015: October 1 2014 - September 30 2015

Water Body	October 2014 (g/month)	November 2014 (g/month)	December 2014 (g/month)	January 2015 (g/month)	February 2015 (g/month)	March 2015 (g/month)	April 2015 (g/month)	May 2015 (g/month)	June 2015 (g/month)	July 2015 (g/month)	August 2015 (g/month)	September 2015 (g/month)	Wet Season Total October 1 2012 - April 30 2013 (g/wet season)	Water Year Total (g/water year)
Almaden:	0.78	0.79	0.88	0.84	**9.32**	1.35	1.08	0.82	1.14	1.54	1.98	0.86	15.0	21.38
Calero:	0.015	0.0041	**1.34**	0.0026	0.65	0	0	0	0	0	0	0	2.01	2.01
Guadalupe:	2.33	2.31	3.58	1.98	1.49	1.25	1.32	1.35	0.86	1.34	3.25	**3.7**	14.3	24.76

BOLD = Water Year Max

Table 4: OUTLET FLOW: Total Mercury Load for Water Years 2012-2015

OUTLET FLOW: Total MeHg Load Water Years 2012-2015

Water Year 2013: October 1 2012 - September 30 2013

Water Body	October 2012 (g/month)	November 2012 (g/month)	December 2012 (g/month)	January 2013 (g/month)	February 2013 (g/month)	March 2013 (g/month)	April 2013 (g/month)	May 2013 (g/month)	June 2013 (g/month)	July 2013 (g/month)	August 2013 (g/month)	September 2013 (g/month)	Wet Season Total October 1 2012 - April 30 2013 (g/wet season)	Water Year Total (g/water year)
Almaden:	0.16	0.048	0.4	0.051	0.041	0.12	0.17	0.1	0.24	**1.1**	0.82	0.29	0.99	3.54
Calero:	0.16	0.07	0.042	0.017	0.013	0.0097	0.9	0.5	0.7	**2.77**	1.89	0.96	1.21	8.03
Guadalupe:	0.26	0.049	0.12	0.043	0.046	0.062	0.075	0.12	0.89	**1.42**	1.06	0.88	0.65	5.03

BOLD = Water Year Max

Water Year 2014: October 1 2013 - September 30 2014

Water Body	October 2013 (g/month)	November 2013 (g/month)	December 2013 (g/month)	January 2014 (g/month)	February 2014 (g/month)	March 2014 (g/month)	April 2014 (g/month)	May 2014 (g/month)	June 2014 (g/month)	July 2014 (g/month)	August 2014 (g/month)	September 2014 (g/month)	Wet Season Total October 1 2013 - April 30 2014 (g/wet season)	Water Year Total (g/water year)
Almaden:	0.058	0.039	0.015	0.0085	0.0027	0.00083	0.00079	**0.29**	0.2	0.11	0.11	0.093	0.12	0.93
Calero:	0.043	**0.084**	0.013	0.0081	0.00043	0.00067	0.0019	0.0016	0.0015	0.0017	0.0023	0.0017	0.15	0.16
Guadalupe:	**0.29**	0.077	0.049	0.018	0.015	0.015	0.035	0.19	0.21	0.13	0.13	0.13	0.50	1.29

BOLD = Water Year Max

Water Year 2015: October 1 2014 - September 30 2015

Water Body	October 2014 (g/month)	November 2014 (g/month)	December 2014 (g/month)	January 2015 (g/month)	February 2015 (g/month)	March 2015 (g/month)	April 2015 (g/month)	May 2015 (g/month)	June 2015 (g/month)	July 2015 (g/month)	August 2015 (g/month)	September 2015 (g/month)	Wet Season Total October 1 2013 - April 30 2014 (g/wet season)	Water Year Total (g/water year)
Almaden:	0.092	0.094	0.1	0.099	**1.1**	0.11	0.063	0.067	0.093	0.19	1.01	0.35	1.66	3.37
Calero:	0.0012	0.00032	**0.11**	0.00021	0.051	0	0	0	0	0	0	0	0.16	0.16
Guadalupe:	0.12	0.12	0.18	0.095	0.091	0.14	0.24	0.33	0.28	0.56	**0.95**	0.92	0.99	4.03

BOLD = Water Year Max

Table 5: OUTLET FLOW: Total Methyl Mercury Load for Water Years 2012-2015

Almaden Reservoir: Mercury in Fish 2012						
8/23/2012	**Species Code**	**Hgng/g dw**	**Wtg**	**FLcm**	**Hgmg/kg ww**	**TMDL Hg mg/kg for whole trophic level 3 fish 5–15 cm in length**
ARLMB-03	LMBA	5830	4.4	7.0	**1.24**	**0.05**
ARLMB-04	LMBA	7620	6.1	7.6	**1.59**	**0.05**
ARLMB-05	LMBA	7730	6.8	7.9	**1.75**	**0.05**
ARLMB-06	LMBA	5880	3.4	6.6	**1.20**	**0.05**
ARLMB-07	LMBA	5350	2.6	6.4	**1.12**	**0.05**
ARLMB-08	LMBA	6570	9.7	7.0	**1.43**	**0.05**
ARLMB-09	LMBA	6410	8.9	8.8	**1.30**	**0.05**
ARLMB-10	LMBA	4680	3.8	6.8	**1.04**	**0.05**
ARLMB-11	LMBA	6200	2.8	6.2	**1.30**	**0.05**
ARLMB-12	LMBA	4850	3.1	6.4	**1.02**	**0.05**
ARLMB-13	LMBA	6110	2.7	6.2	**1.32**	**0.05**
ARLMB-14	LMBA	3830	3.2	6.1	**0.80**	**0.05**
ARLMB-15	LMBA	5800	2.6	6.0	**1.22**	**0.05**
ARLMB-16	LMBA	4000	4.0	6.4	**0.84**	**0.05**
ARLMB-17	LMBA	5200	2.6	6.0	**1.19**	**0.05**
ARLMB-18	LMBA	5640	2.3	6.0	**1.14**	**0.05**
ARLMB-19	LMBA	6700	6.3	7.7	**1.43**	**0.05**
ARLMB-20	LMBA	5210	7.4	8.2	**1.09**	**0.05**
ARLMB-21	LMBA	4950	6.2	7.5	**1.02**	**0.05**
ARLMB-22	LMBA	5870	10.0	8.8	**1.18**	**0.05**
Averages:				7.0	**1.21**	

Table 6 : Mercury in Fish Almaden Reservoir August 2012

Almaden Reservoir: Mercury in Fish 2013							
8/7/2013	**Species Code**	**Hg ng/g dw**	**Wt g**	**FL cm**	**Hg mg/kg ww**	**TMDL Hg mg/kg for whole trophic level 3 fish 5–15 cm in length**	**%TS**
ALMR 1	LMBA	4680	21.3	11.9	**1.01**	**0.05**	21.47
ALMR 2	LMBA	5330	22.3	11.6	**1.12**	**0.05**	21.05
ALMR 3	LMBA	5220	20.7	11.2	**1.11**	**0.05**	21.26
ALMR 4	LMBA	3930	25.9	12.2	**0.83**	**0.05**	21.22
ALMR 5	LMBA	4280	24.8	11.9	**0.95**	**0.05**	22.26
ALMR 6	LMBA	2880	16.4	10.7	**0.64**	**0.05**	22.13
ALMR 7	LMBA	3100	16.2	10.4	**0.69**	**0.05**	22.23
ALMR 8	LMBA	4860	19.5	11.1	**1.00**	**0.05**	20.47
ALMR 9	LMBA	2990	7.3	8.2	**0.63**	**0.05**	21.21
ALMR 10	LMBA	2970	13.0	9.8	**0.64**	**0.05**	21.58
ALMR 11	LMBA	4940	20.5	11.5	**1.04**	**0.05**	21.05
ALMR 12	LMBA	3480	12.3	9.9	**0.78**	**0.05**	22.39
ALMR 13	LMBA	3580	14.9	10.6	**0.77**	**0.05**	21.57
ALMR 14	LMBA	2450	4.6	7.2	**0.54**	**0.05**	21.92
ALMR 15	LMBA	5530	19.8	11.6	**1.14**	**0.05**	20.69
ALMR 16	LMBA	2930	7.6	8.5	**0.64**	**0.05**	21.77
ALMR 17	LMBA	2120	5.7	7.2	**0.51**	**0.05**	23.91
ALMR 18	LMBA	3090	10.7	9.5	**0.65**	**0.05**	21.03
ALMR 19	LMBA	3470	11.1	9.5	**0.75**	**0.05**	21.70
ALMR 20	LMBA	3390	10.1	9.5	**0.80**	**0.05**	23.63
ALMR 21	LMBA	3880	13.4	9.9	**0.86**	**0.05**	22.26
Averages:				10.2	**0.81**		

Table 7: Mercury in Fish Almaden Reservoir August 2013

Almaden Reservoir: Mercury in Fish 2015								
10/15/2015	Species Code	Hg ng/g dw	Wt g	FL cm	Hg mg/kg ww	TMDL Hg mg/kg for whole trophic level 3 fish 5–15 cm in length	%TS	TMDL Hg mg/kg for whole trophic level 3 fish >15–35 cm in length
AR001	LMBA	4940	32.0	12.8	1.31	0.05	26.56	
AR002	LMBA	6450	35.0	13.1	1.58	0.05	24.55	
AR003	LMBA	4850	13.0	9.5	1.15	0.05	23.73	
AR004	LMBA	3790	20.0	10.8	1.00	0.05	26.48	
AR005	LMBA	3330	12.0	9.4	0.80	0.05	24.07	
AR006	LMBA	3610	13.0	9.5	0.94	0.05	25.98	
AR007	LMBA	9340	27.0	12.2	2.29	0.05	24.54	
AR008	LMBA	6650	25.0	11.5	1.71	0.05	25.65	
AR009	LMBA	7280	25.0	11.9	1.73	0.05	23.78	
AR010	LMBA	2690	14.0	9.5	0.68	0.05	25.21	
AR011	LMBA	7090	46.0	14.6	1.74	0.05	24.60	
AR012	LMBA	3900	12.0	9.2	0.96	0.05	24.71	
AR013	LMBA	6610	43.0	13.8	1.65	0.05	24.89	
AR014	LMBA	8250	32.0	13.4	1.99	0.05	24.14	
AR015	LMBA	6820	52.0	15.4	1.68	0.05	24.68	
AR016	LMBA	5150	79.0	16.9	1.34		26.06	0.1
AR017	LMBA	6990	54.0	15.6	1.74		24.91	0.1
AR018	LMBA	5730	130.0	20.0	1.46		25.50	0.1
AR019	LMBA	2120	110.0	16.4	0.61		28.63	0.1
AR020	LMBA	5970	140.0	24.2	1.79		29.92	0.1
AR021	LMBA	5690	425.0	29.1	1.54		27.07	0.1
AR022	LMBA	6230	245.0	24.0	1.65		26.55	0.1
AR023	LMBA	6050	320.0	25.5	1.61		26.68	0.1
AR024	LMBA	7760	280.0	25.4	2.18		28.15	0.1
AR025	LMBA	6600	245.0	23.0	1.80		27.26	0.1
AR026	LMBA	4700	330.0	27.3	1.45		30.74	0.1
Averages 5-15cm:				11.8	1.42			
Averages >15-35cm:				22.5	1.56			

Table 8: Mercury in Fish Almaden Reservoir October 2015

Calero Reservoir: Mercury in Fish 2012						
8/23/2012	**Species Code**	**Hg ng/g dw**	**Wt g**	**FL cm**	**Hg mg/kg ww**	**TMDL Hg mg/kg for whole trophic level 3 fish 5–15 cm in length**
CRLMB-02	LMB	770	9.5	9.0	**0.16**	**0.05**
CRLMB-03	LMB	281	9.7	8.9	**0.06**	**0.05**
CRLMB-04	LMB	473	10.6	9.0	**0.10**	**0.05**
CRLMB-05	LMB	417	8.1	8.5	**0.08**	**0.05**
CRLMB-06	LMB	429	9.9	8.9	**0.09**	**0.05**
CRLMB-07	LMB	715	9.8	8.8	**0.14**	**0.05**
CRLMB-09	LMB	436	9.8	8.8	**0.09**	**0.05**
CRLMB-10	LMB	688	10	9.1	**0.15**	**0.05**
CRLMB-11	LMB	177	7.1	8.1	0.04	0.05
CRLMB-12	LMB	461	4.3	7.0	**0.10**	**0.05**
CRLMB-13	LMB	446	6.2	7.6	**0.10**	**0.05**
CRLMB-14	LMB	280	8.4	8.9	**0.06**	**0.05**
CRLMB-15	LMB	548	5.9	7.4	**0.11**	**0.05**
CRLMB-19	LMB	324	6.2	7.4	**0.07**	**0.05**
CRLMB-20	LMB	304	4.6	7.0	**0.06**	**0.05**
CRLMB-21	LMB	248	3.8	6.2	**0.05**	**0.05**
CRLMB-22	LMB	319	4.3	6.5	**0.07**	**0.05**
CRLMB-24	LMB	215	4.5	6.9	0.05	0.05
CRLMB-25	LMB	1310	8.2	8.2	**0.29**	**0.05**
CRLMB-27	LMB	451	10.2	9.0	**0.10**	**0.05**
Averages:				8.1	**0.10**	

Table 9: Mercury in Fish Calero Reservoir August 2012

Calero Reservoir: Mercury in Fish 2012							
11/7/2012	Species Code	Hg ng/g dw	Wt g	FL cm	Hg mg/kg ww	TMDL Hg mg/kg for whole trophic level 3 fish 5–15 cm in length	%TS
CAL-06	BG	241	62.0	14.2	0.08	0.05	31.10
CAL-07	BG	298	53.0	13.3	0.10	0.05	34.19
CAL-08	BG	349	21.0	10.3	0.09	0.05	26.80
CAL-12	BG	305	24.0	11.2	0.08	0.05	26.78
CAL-17	BG	346	33.0	11.9	0.09	0.05	24.93
CAL-19	BG	255	26.0	11.8	0.06	0.05	25.28
CAL-28	BG	329	37.0	11.7	0.09	0.05	26.29
CAL-29	BG	257	53.0	13.5	0.07	0.05	25.70
CAL-30	BG	268	26.0	11.2	0.07	0.05	26.67
CAL-01	LMB	376	5.0	7.3	0.10	0.05	27.07
CAL-02	LMB	609	30.0	12.4	0.14	0.05	22.43
CAL-03	LMB	1660	46.0	14.0	0.43	0.05	25.82
CAL-04	LMB	1010	15.0	10.5	0.25	0.05	24.43
CAL-05	LMB	405	21.0	11.9	0.09	0.05	22.21
CAL-09	LMB	347	7.0	8.3	0.08	0.05	23.83
CAL-10	LMB	431	5.0	7.2	0.11	0.05	25.39
CAL-11	LMB	353	6.0	7.3	0.09	0.05	25.35
CAL-13	LMB	1000	38.0	13.5	0.26	0.05	26.29
CAL-14	LMB	1140	24.0	11.9	0.30	0.05	25.90
CAL-15	LMB	1420	28.0	12.2	0.35	0.05	24.38
CAL-16	LMB	1200	13.0	9.8	0.31	0.05	25.69
CAL-18	LMB	1040	43.0	14.0	0.25	0.05	23.57
CAL-20	LMB	1430	53.0	14.7	0.38	0.05	26.32
CAL-21	LMB	900	41.0	13.8	0.29	0.05	32.37
CAL-22	LMB	1490	37.0	13.2	0.38	0.05	25.22
CAL-23	LMB	1500	14.0	10.2	0.34	0.05	22.94
CAL-24	LMB	615	5.0	7.3	0.15	0.05	24.06
CAL-25	LMB	785	9.0	8.3	0.19	0.05	23.92
CAL-26	LMB	242	7.0	8.0	0.06	0.05	24.67
CAL-27	LMB	1170	29.0	12.4	0.27	0.05	22.89
Averages:				11.2	**0.18**		
Averages LMB only:				10.9	**0.23**		

Table 10: Mercury in Fish Calero Reservoir November 2012

Calero Reservoir: Mercury in Fish 2013							
7/31/2013	Species Code	Hg ng/g dw	Wt g	FL cm	Hg mg/kg ww	TMDL Hg mg/kg for whole trophic level 3 fish 5–15 cm in length	%TS
CALR 1	BG	376	62.7	14.4	0.10	0.05	25.43
CALR 2	BG	298	26.4	11.0	0.08	0.05	27.32
CALR 3	BG	437	37.5	12.0	0.11	0.05	24.69
CALR 4	BG	553	40.1	12.3	0.13	0.05	23.48
CALR 5	BG	346	17.4	9.3	0.09	0.05	25.12
CALR 6	BG	426	40.5	12.0	0.10	0.05	24.42
CALR 7	BG	350	28.6	11.5	0.09	0.05	24.75
CALR 8	BG	441	25.4	14.0	0.11	0.05	24.94
CALR 9	BG	313	24.1	10.2	0.09	0.05	27.14
CALR 10	BG	392	78.4	14.0	0.10	0.05	26.23
CALR 11	BG	282	19.9	9.8	0.07	0.05	26.11
CALR 12	BG	494	40.5	14.0	0.13	0.05	25.40
CALR 13	LMB	375	6.1	7.7	0.08	0.05	20.51
CALR 14	LMB	730	16.4	11.0	0.16	0.05	21.25
CALR 15	LMB	771	17.8	11.0	0.18	0.05	23.49
CALR 16	LMB	334	1.4	5.0	0.07	0.05	21.92
CALR 17	LMB	263	2.6	5.7	0.05	0.05	20.31
CALR 18	LMB	602	2.0	5.3	0.12	0.05	19.43
CALR 19	LMB	731	19.8	11.3	0.16	0.05	21.24
CALR 20	LMB	257	1.4	5.4	0.05	0.05	21.08
CALR 21	LMB	793	12.0	11.3	0.17	0.05	22.00
CALR 22	LMB	694	18.4	11.7	0.15	0.05	22.01
CALR 23	LMB	655	15.9	11.0	0.15	0.05	22.63
CALR 24	LMB	639	15.6	10.8	0.14	0.05	21.13
CALR 25	LMB	559	20.3	11.3	0.13	0.05	22.64
CALR 26	LMB	909	7.3	8.5	0.19	0.05	20.70
CALR 27	LMB	292	1.9	5.3	0.06	0.05	20.90
CALR 28	LMB	252	1.7	5.3	0.05	0.05	20.71
CALR 29	LMB	182	1.0	5.0	0.05	0.05	26.13
CALR 30	LMB	748	20.1	12.0	0.18	0.05	23.82

Table 11: Mercury in Fish Calero Reservoir July 2013

Calero Reservoir: Mercury in Fish 2013 continued…							
7/31/2013	**Species Code**	**Hg ng/g dw**	**Wt g**	**FL cm**	**Hg mg/kg ww**	**TMDL Hg mg/kg for whole trophic level 3 fish 5–15 cm in length**	**%TS**
CALR 31	LMB	514	35.6	13.1	**0.13**	**0.05**	24.48
CALR 32	LMB	395	1.2	5.0	**0.10**	**0.05**	24.86
CALR 33	BC	203	2.7	5.8	0.05	0.05	23.88
CALR 34	BC	222	1.8	5.9	0.05	0.05	22.38
CALR 35	BC	247	2.6	6.0	**0.06**	**0.05**	23.24
CALR 36	BC	206	2.5	5.8	0.05	0.05	22.64
CALR 37	BC	332	3.3	6.6	**0.06**	**0.05**	18.73
CALR 38	BC	148	2.0	5.3	0.04	0.05	24.51
CALR 39	BC	227	2.4	5.7	**0.05**	**0.05**	23.48
CALR 40	BC	220	2.0	6.7	**0.05**	**0.05**	23.04
CALR 41	BC	219	3.6	6.7	0.05	0.05	22.98
CALR 42	BC	270	26.7	13.5	**0.06**	**0.05**	23.31
CALR 43	BC	266	40.7	15.0	**0.07**	**0.05**	25.38
CALR 44	BC	298	47.2	14.9	**0.07**	**0.05**	24.06
CALR 45	BC	368	33.4	13.3	**0.08**	**0.05**	22.55
CALR 46	BC	233	1.7	5.4	**0.06**	**0.05**	23.47
CALR 47	BC	283	39.9	14.0	**0.08**	**0.05**	27.06
CALR 48	BC	349	38.5	14.9	**0.08**	**0.05**	21.66
CALR 49	BC	261	41.2	14.1	**0.07**	**0.05**	24.90
Averages:				9.7	**0.09**		
Averages LMB only:				8.6	**0.12**		

Table 11: Mercury in Fish Calero Reservoir July 2013 continued…

Calero Reservoir: Mercury in Fish 2013							
12/3/2013	Species Code	Hg ng/g dw	Wt g	FL cm	Hg mg/kg ww	TMDL Hg mg/kg for whole trophic level 3 fish 5–15 cm in length	%TS
BG1	BG	460	4.8	6.4	0.12	0.05	25.15
BG2	BG	524	3.8	5.9	0.13	0.05	25.59
BG3	BG	481	5.3	7.0	0.13	0.05	26.66
BG18	BG	670	3.0	5.7	0.17	0.05	24.90
BG19	BG	1350	4.7	6.5	0.31	0.05	23.19
BG21	BG	580	7.2	7.4	0.15	0.05	25.64
BG24	BG	1720	6.9	7.4	0.41	0.05	23.91
BG25	BG	585	4.5	6.8	0.15	0.05	25.69
BG26	BG	341	4.8	6.6	0.08	0.05	23.67
BG29	BG	783	7.2	7.3	0.20	0.05	25.24
BC9	BC	250	13.8	10.0	0.06	0.05	25.74
BC11	BC	392	11.4	9.5	0.10	0.05	25.96
BC12	BC	694	11.6	9.5	0.17	0.05	24.53
BC14	BC	409	6.0	7.9	0.10	0.05	24.08
BC15	BC	432	11.7	9.3	0.10	0.05	24.11
BC16	BC	515	9.6	9.0	0.12	0.05	23.52
BC17	BC	235	12.3	9.8	0.06	0.05	26.20
BC23	BC	524	5.3	7.5	0.13	0.05	25.44
BC27	BC	510	15.0	9.9	0.13	0.05	25.51
BC28	BC	591	9.8	8.6	0.15	0.05	25.61
LMB4	LMB	478	14.3	10.8	0.12	0.05	25.40
LMB5	LMB	459	22.3	11.7	0.12	0.05	27.10
LMB6	LMB	464	6.6	8.2	0.11	0.05	23.91
LMB7	LMB	519	20.9	11.7	0.14	0.05	26.84
LMB8	LMB	443	5.1	7.5	0.11	0.05	25.84
LMB10	LMB	479	38.8	14.6	0.13	0.05	26.16
LMB13	LMB	341	6.6	8.0	0.09	0.05	26.81
LMB20	LMB	415	9.2	8.9	0.10	0.05	23.48
LMB22	LMB	505	5.4	7.4	0.13	0.05	26.08
LMB30	LMB	1650	21.8	12.0	0.40	0.05	23.91
Averages:				8.6	**0.15**		
Averages LMB only:				10.1	**0.14**		

Table 12: Mercury in Fish Calero Reservoir December 2013

Calero Reservoir: Mercury in Fish 2014							
4/21/2014	Species Code	Hg ng/g dw	Wt g	FL cm	Hg mg/kg ww	TMDL Hg mg/kg for whole trophic level 3 fish 5–15 cm in length	%TS
CALR 18	BC	612	9.1	8.4	0.14	0.05	23.41
CALR 01	BC	508	9.0	8.5	0.11	0.05	22.50
CALR 08	BC	467	7.3	8.6	0.10	0.05	21.53
CALR 10	BC	398	9.1	8.6	0.09	0.05	23.23
CALR 15	BC	545	8.6	8.6	0.12	0.05	22.41
CALR 19	BC	461	8.9	8.7	0.11	0.05	23.30
CALR 07	BC	560	10.0	9.0	0.12	0.05	21.90
CALR 09	BC	405	12.6	9.0	0.09	0.05	22.60
CALR 17	BC	372	11.4	9.4	0.08	0.05	21.85
CALR 11	BC	387	13.4	9.5	0.09	0.05	23.51
CALR 14	BC	380	13.5	10.0	0.09	0.05	23.85
CALR 03	BC	489	143.0	10.1	0.11	0.05	22.57
CALR 27	BC	436	13.9	10.1	0.10	0.05	22.28
CALR 13	BC	408	14.4	10.4	0.09	0.05	21.96
CALR 22	BC	422	20.9	11.4	0.10	0.05	22.96
CALR 24	BC	383	21.4	11.5	0.09	0.05	24.27
CALR 16	BC	647	28.2	13.3	0.16	0.05	23.95
CALR 23	BC	411	31.6	13.4	0.09	0.05	21.85
CALR 12	BC	364	44.6	14.9	0.09	0.05	23.99
CALR 20	BC	377	46.9	15.0	0.10	0.05	25.82
CALR 04	BG	408	4.9	6.2	0.09	0.05	22.10
CALR 32	BG	381	5.8	6.6	0.09	0.05	23.28

Table 13: Mercury in Fish Calero Reservoir April 2014

Calero Reservoir: Mercury in Fish 2014 continued…							
4/21/2014	Species Code	Hg ng/g dw	Wt g	FL cm	Hg mg/kg ww	TMDL Hg mg/kg for whole trophic level 3 fish 5–15 cm in length	%TS
CALR 30	BG	452	5.1	6.7	0.11	0.05	23.27
CALR 31	BG	443	4.9	6.7	0.09	0.05	21.25
CALR 28	BG	383	6.2	6.9	0.09	0.05	24.11
CALR 29	BG	472	6.7	7.1	0.11	0.05	23.28
CALR 25	BG	365	6.9	7.3	0.09	0.05	23.52
CALR 26	BG	417	12.4	8.5	0.11	0.05	25.65
CALR 06	BG	349	12.6	8.7	0.08	0.05	23.03
CALR 02	BG	330	17.4	9.5	0.08	0.05	22.83
CALR 35	BG	331	36.3	11.8	0.09	0.05	26.09
CALR 21	BG	299	40.6	12.3	0.08	0.05	24.96
CALR 39	BG	377	50.3	13.3	0.10	0.05	25.83
CALR 05	BG	362	43.6	14.6	0.09	0.05	25.61
CALR 45	LMB	552	4.6	7.1	0.12	0.05	21.08
CALR 49	LMB	706	3.8	7.5	0.14	0.05	20.39
CALR 48	LMB	704	5.7	7.9	0.16	0.05	22.29
CALR 34	LMB	563	8.6	8.6	0.13	0.05	23.15
CALR 36	LMB	535	12.6	9.5	0.12	0.05	22.92
CALR 44	LMB	423	12.2	9.7	0.10	0.05	22.96
CALR 47	LMB	755	12.2	9.7	0.17	0.05	22.20
CALR 46	LMB	730	13.3	10.1	0.16	0.05	21.28
CALR 37	LMB	727	18.5	10.6	0.18	0.05	24.26
CALR 41	LMB	1250	18.8	11.0	0.29	0.05	22.94
CALR 33	LMB	812	22.3	12.1	0.19	0.05	23.28
CALR 40	LMB	664	26.3	12.1	0.16	0.05	24.13
CALR 42	LMB	806	27.6	12.4	0.19	0.05	23.01
CALR 43	LMB	1040	32.6	13.5	0.25	0.05	23.88
CALR 38	LMB	1100	40.4	14.8	0.26	0.05	23.77
Averages:				10.02	**0.12**		
Averages LMB only:				10.44	**0.17**		

Table 13: Mercury in Fish Calero Reservoir April 2014 continued…

Calero Reservoir: Mercury in Fish 2014							
8/7/2014	Species Code	Hg ng/g dw	Wt g	FL cm	Hg mg/kg ww	TMDL Hg mg/kg for whole trophic level 3 fish 5–15 cm in length	%TS
CALR 01	BC	432	15.1	10.5	0.09	0.05	20.83
CALR 04	BC	300	18.3	11.0	0.07	0.05	24.02
CALR 05	BC	361	17.8	11.7	0.08	0.05	22.70
CALR 06	BC	297	16.1	10.9	0.06	0.05	20.05
CALR 08	BC	407	16.5	10.9	0.09	0.05	23.02
CALR 11	BC	280	15.35	10.4	0.06	0.05	21.85
CALR 12	BC	311	17.0	11.3	0.07	0.05	21.27
CALR 14	BC	319	19.68	11.1	0.07	0.05	22.96
CALR 16	BC	266	19.13	14.3	0.06	0.05	22.96
CALR 26	BC	270	16.56	10.8	0.06	0.05	21.63
CALR 15	BG	335	31.5	11.3	0.08	0.05	22.52
CALR 17	BG	439	35.5	11.3	0.11	0.05	24.27
CALR 22	BG	251	28.15	10.8	0.06	0.05	23.40
CALR 23	BG	337	23.59	10.3	0.08	0.05	24.06
CALR 24	BG	239	31.76	11.4	0.06	0.05	24.83
CALR 25	BG	293	28.45	11.0	0.08	0.05	25.58
CALR 27	BG	332	57.54	13.7	0.08	0.05	23.11
CALR 28	BG	551	65.45	14.7	0.14	0.05	25.02
CALR 29	BG	386	29.27	10.9	0.08	0.05	21.31
CALR 30	BG	220	23.34	10.9	0.05	0.05	24.41
CALR 02	LMB	268	3.0	5.5	0.04	0.05	16.18
CALR 03	LMB	203	2.7	5.6	0.04	0.05	19.61
CALR 07	LMB	336	5.65	7.1	0.08	0.05	22.71
CALR 09	LMB	236	3.0	5.6	0.06	0.05	23.27
CALR 10	LMB	860	4.35	7.0	0.16	0.05	19.11
CALR 13	LMB	331	3.55	6.5	0.06	0.05	18.89
CALR 18	LMB	993	6.95	8.0	0.20	0.05	19.72
CALR 19	LMB	826	2.58	5.3	0.17	0.05	20.45
CALR 20	LMB	408	22.8	11.8	0.09	0.05	22.69
CALR 21	LMB	736	2.67	5.1	0.16	0.05	21.28
Averages:				9.9	**0.09**		
Averages LMB only:				6.8	**0.11**		

Table 14: Mercury in Fish Calero Reservoir August 2014

Calero Reservoir: Mercury in Fish 2014									
11/4/2014	Species Code	Hg ng/g dw	Wt g	FL cm	Hg mg/kg ww	TMDL Hg mg/kg for whole trophic level 3 fish 5–15 cm in length	%TS	TMDL Hg ng/g for whole trophic level 3 fish >15–35 cm in length	TMDL Hg mg/kg for whole trophic level 3 fish >15–35 cm in length
LMB 25	LMB	327	9.2	8.8	0.07	0.05	20.98		
LMB17	LMB	943	20.6	12.0	0.22	0.05	22.84		
LMB22	LMB	1050	24.0	12.2	0.26	0.05	24.26		
LMB4	LMB	946	28.0	12.9	0.23	0.05	24.23		
LMB2	LMB	1040	40.25	15.0	0.23	0.05	22.48		
LMB24	LMB	730	10.7	9.4	0.17	0.05	23.69		
LMB14	LMB	276	6.90	8.6	0.06	0.05	22.62		
LMB7	LMB	1180	42.5	15.0	0.28	0.05	23.75		
LMB15	LMB	233	7.8	8.2	0.06	0.05	24.87		
LMB8	LMB	536	23.50	12.6	0.13	0.05	23.99		
LMB36	LMB	1180	202.70	24.4	0.25		21.28	100	0.1
LMB36DUP	LMB	1210	202.7	24.4	0.27		21.96	100	0.1
LMB37	LMB	2040	79.3	17.5	0.38		18.36	100	0.1
LMB37DUP	LMB	2090	79.3	17.5	0.44		20.97	100	0.1
LMB35	LMB	1400	139.7	21.0	0.31		21.98	100	0.1
LMB35DUP	LMB	1330	139.7	21.0	0.29		22.14	100	0.1
BG31	BG	215	12.0	8.6	0.05	0.05	24.28		
BG32	BG	321	5.6	6.7	0.08	0.05	24.42		
BG26	BG	256	61.4	14.3	0.06	0.05	25.16		
BG11	BG	251	11.1	8.5	0.06	0.05	25.03		
BG29	BG	246	14.1	8.8	0.06	0.05	23.96		
BG28	BG	266	44.9	12.9	0.06	0.05	23.49		
BG34	BG	283	8.6	7.7	0.07	0.05	25.00		

Table 15: Mercury in Fish Calero Reservoir November 2014

Calero Reservoir: Mercury in Fish 2014 continued…									
11/4/2014	Species Code	Hg ng/g dw	Wt g	FL cm	Hg mg/kg ww	TMDL Hg mg/kg for whole trophic level 3 fish 5–15 cm in length	%TS	TMDL Hg ng/g for whole trophic level 3 fish >15–35 cm in length	TMDL Hg mg/kg for whole trophic level 3 fish >15–35 cm in length
BG30	BG	248	14.7	8.9	**0.07**	**0.05**	26.56		
BG33	BG	289	25.6	13.6	**0.07**	**0.05**	25.28		
BG27	BG	374	77.0	14.6	**0.08**	**0.05**	21.94		
BG27DUP	BG	395	77.0	14.6	**0.09**	**0.05**	23.14		
BG01	BG	438	94.6	16.2	0.10		22.60	100	0.1
BG01DUP	BG	397	94.6	16.2	0.08		20.69	100	0.1
BG38	BG	805	108.1	16.6	**0.18**		22.04	**100**	**0.1**
BG38DUP	BG	657	108.1	16.6	**0.16**		23.74	**100**	**0.1**
BC13	BC	274	25.6	12.5	**0.07**	**0.05**	24.18		
BC18	BC	355	23.8	12.0	**0.08**	**0.05**	23.18		
BC9	BC	421	39.1	14.5	**0.10**	**0.05**	23.12		
BC3	BC	504	27.1	12.7	**0.11**	**0.05**	21.72		
BC21	BC	489	32.0	13.6	**0.10**	**0.05**	21.23		
BC12	BC	524	30.3	13.5	**0.12**	**0.05**	23.24		
BC19	BC	519	25.6	12.0	**0.12**	**0.05**	22.20		
BC23	BC	487	25.1	12.3	**0.12**	**0.05**	23.65		
BC20	BC	385	21.2	11.7	**0.10**	**0.05**	26.20		
BC16	BC	494	38.1	13.9	**0.11**	**0.05**	23.04		
BC5	BC	749	62.4	16.7	**0.15**		20.50	**100**	**0.1**
BC5DUP	BC	798	62.4	16.7	**0.16**		20.51	**100**	**0.1**
BC6	BC	705	53.9	15.9	**0.14**		19.41	**100**	**0.1**
BC6DUP	BC	711	53.9	15.9	**0.14**		20.11	**100**	**0.1**
BC10	BC	447	45.5	15.1	0.09		19.65	100	0.1
BC10DUP	BC	446	45.5	15.1	0.09		21.09	100	0.1
Averages 5-15cm:				11.7	**0.11**				
Averages >15-35cm:				17.9	**0.20**				
Averages LMB 5-15cm Only:				11.5	**0.17**				

Table 15: Mercury in Fish Calero Reservoir November 2014 continued…

Calero Reservoir: Mercury in Fish 2015									
10/15/2015	Species Code	Hg ng/g dw	Wt g	FL cm	Hg mg/kg ww	TMDL Hg mg/kg for whole trophic level 3 fish 5–15 cm in length	%TS	TMDL Hg ng/g for whole trophic level 3 fish >15–35 cm in length	TMDL Hg mg/kg for whole trophic level 3 fish >15–35 cm in length
CR001	BLGI	466	4.0	5.5	0.12	0.05	26.40		
CR002	LMBA	646	5.0	7.1	0.15	0.05	23.68		
CR003	LMBA	926	15.0	10.0	0.21	0.05	22.78		
CR004	LMBA	715	10.0	9.2	0.18	0.05	24.86		
CR005	LMBA	1070	23.0	11.5	0.25	0.05	23.33		
CR006	BLGI	324	48.0	13.4	0.09	0.05	29.00		
CR007	BLCR	378	8.0	8.3	0.09	0.05	23.79		
CR008	LMBA	782	25.0	11.5	0.17	0.05	22.15		
CR009	BLGI	300	28.0	11.0	0.08	0.05	25.37		
CR010	BLCR	310	23.0	10.3	0.08	0.05	25.67		
CR011	LMBA	1040	39.0	14.0	0.25	0.05	24.40		
CR012	LMBA	1000	27.0	13.0	0.25	0.05	24.81		
CR013	BLGI	405	49.0	12.9	0.10	0.05	25.36		
CR014	BLCR	458	14.0	9.4	0.10	0.05	21.94		
CR015	LMBA	642	13.0	10.0	0.15	0.05	23.08		
CR016	LMBA	789	10.0	9.0	0.18	0.05	22.77		
CR017	LMBA	769	30.0	12.6	0.19	0.05	24.79		
CR018	LMBA	1310	15.0	10.0	0.29	0.05	21.87		
CR019	BLCR	303	12.0	8.7	0.07	0.05	22.47		
CR020	LMBA	645	9.0	8.2	0.16	0.05	25.19		
CR021	BLGI	396	70.0	14.2	0.11	0.05	28.39		

Table 16: Mercury in Fish Calero Reservoir October 2015

Calero Reservoir: Mercury in Fish 2015 continued…									
10/15/2015	Species Code	Hg ng/g dw	Wt g	FL cm	Hg mg/kg ww	TMDL Hg mg/kg for whole trophic level 3 fish 5–15 cm in length	%TS	TMDL Hg ng/g for whole trophic level 3 fish >15–35 cm in length	TMDL Hg mg/kg for whole trophic level 3 fish >15–35 cm in length
CR022	LMBA	843	35.0	13.3	**0.22**	**0.05**	25.90		
CR023	LMBA	555	12.0	9.0	**0.14**	**0.05**	25.00		
CR024	BLGI	462	18.0	9.3	**0.12**	**0.05**	25.98		
CR025	LMBA	953	42.0	14.0	**0.22**	**0.05**	23.04		
CR026	BLGI	308	39.0	12.3	**0.09**	**0.05**	27.51		
CR027	BLGI	476	3.0	5.2	**0.13**	**0.05**	27.32		
CR028	BLGI	369	20.0	9.9	**0.10**	**0.05**	25.96		
CR029	BLGI	292	60.0	13.5	**0.08**	**0.05**	28.05		
CR030	BLGI	317	41.0	12.4	**0.09**	**0.05**	29.11		
CR031	BLGI	335	110.0	16.5	0.10		29.11	100	0.1
CR032	BLGI	304	100.0	15.5	0.09		30.13	100	0.1
CR033	BLGI	481	68.0	17.0	**0.11**		23.38	**100**	**0.1**
CR034	LMBA	633	200.0	23.0	**0.17**		27.00	**100**	**0.1**
CR035	BLCR	321	79.0	18.0	0.09		27.92	100	0.1
CR036	BLGI	412	120.0	17.0	**0.12**		29.64	**100**	0.1
CR037	LMBA	720	150.0	21.7	**0.17**		23.13	**100**	**0.1**
CR038	BLCR	1050	200.0	23.3	**0.30**		28.84	**100**	**0.1**
CR039	BLCR	385	70.0	16.6	**0.11**		27.57	**100**	**0.1**
CR040	LMBA	1180	440.0	29.0	**0.32**		27.09	**100**	**0.1**
CR041	LMBA	587	260.0	26.0	**0.17**		29.09	**100**	**0.1**
CR042	BLGI	281	79.0	14.7	**0.08**	**0.05**	26.69		
Averages 5-15cm:				10.8	**0.15**				
Averages >15-35cm:				20.3	**0.16**				
Averages LMB only:				10.8	**0.20**				

Table 16: Mercury in Fish Calero Reservoir October 2015 continued…

Guadalupe Reservoir: Mercury in Fish 2012						
8/23/2012	Species Code	Hg ng/g dw	Wt g	FL cm	Hg mg/kg ww	TMDL Hg mg/kg for whole trophic level 3 fish 5–15 cm in length
GRLMB-01	LMB	4280	9.3	8.9	0.90	0.05
GRLMB-02	LMB	4140	8.0	8.5	0.86	0.05
GRLMB-03	LMB	2380	2.7	6.0	0.52	0.05
GRLMB-04	LMB	2900	8.7	8.8	0.66	0.05
GRLMB-05	LMB	4480	8.6	8.4	0.95	0.05
GRLMB-06	LMB	4190	9.5	8.5	0.85	0.05
GRLMB-13	LMB	3990	7.0	8.1	0.84	0.05
GRLMB-15	LMB	2910	3.0	6.5	0.67	0.05
GRLMB-23	LMB	3010	3.2	6.8	0.66	0.05
GRLMB-24	LMB	3980	4.2	7.3	0.80	0.05
GRBG-07	BG	2200	8.0	7.6	0.51	0.05
GRBG-09	BG	1890	4.7	6.4	0.45	0.05
GRBG-10	BG	1780	6.2	6.9	0.42	0.05
GRBG-11	BG	2820	5.1	6.4	0.63	0.05
GRBG-12	BG	2350	8.4	7.6	0.61	0.05
GRBG-17	BG	2470	5.5	7.3	0.60	0.05
GRBG-19	BG	2610	4.2	6.5	0.60	0.05
GRBG-20	BG	2040	3.8	6.2	0.49	0.05
GRBG-21	BG	2210	4.0	6.0	0.46	0.05
GRBG-25	BG	1830	6.0	6.9	0.44	0.05
Averages:				7.3	**0.64**	
Averages LMB only:				7.8	**0.77**	

Table 17: Mercury in Fish Guadalupe Reservoir August 2012

Guadalupe Reservoir: Mercury in Fish 2013							
7/17/2013	Species Code	Hg ng/g dw	Wt g	FL cm	Hg mg/kg ww	TMDL Hg mg/kg for whole trophic level 3 fish 5–15 cm in length	%TS
GR 1 LMB	LMB	2920	1.9	5.3	0.64	0.05	21.92
GR 2 LMB	LMB	3120	2.1	5.6	0.72	0.05	23.02
GR 3 LMB	LMB	3390	31.7	13.3	0.71	0.05	20.93
GR 4 LMB	LMB	6070	2.6	5.8	1.27	0.05	20.84
GR 5 LMB	LMB	6440	1.8	5.1	1.56	0.05	24.24
GR 6 LMB	LMB	12500	27.3	12.8	2.68	0.05	21.45
GR 7 LMB	LMB	8920	3.3	6.5	1.85	0.05	20.74
GR 8 LMB	LMB	3830	1.8	5.3	0.78	0.05	20.34
GR 9 LMB	LMB	6840	34.0	13.7	1.73	0.05	25.32
GR 10 LMB	LMB	3040	1.6	5.1	0.68	0.05	22.29
GR 11 LMB	LMB	7760	21.5	12.2	1.64	0.05	21.13
GR 12 LMB	LMB	7200	41.4	14.7	1.64	0.05	22.73
GR 13 LMB	LMB	8430	28.7	13.5	1.89	0.05	22.46
GR 14 LMB	LMB	8660	39.8	14.9	1.82	0.05	20.99
GR 15 LMB	LMB	7300	21.2	11.8	1.58	0.05	21.67
GR 35 LMB	LMB	6160	40.2	14.2	1.32	0.05	21.39
GR 46 LMB	LMB	7480	24.2	12.4	1.62	0.05	21.67
GR 16 BG	BG	7900	36.8	12.4	1.93	0.05	24.40
GR 17 BG	BG	7580	16.6	9.5	1.75	0.05	23.03
GR 18 BG	BG	4300	25.5	11.2	1.06	0.05	24.74
GR 19 BG	BG	5150	40.0	12.5	1.23	0.05	23.88
GR 20 BG	BG	4990	48.5	13.0	1.20	0.05	23.99
GR 21 BG	BG	4240	2.4	5.3	0.97	0.05	22.87

Table 18: Mercury in Fish Guadalupe Reservoir July 2013

Guadalupe Reservoir: Mercury in Fish 2013 continued…							
7/17/2013	Species Code	Hg ng/g dw	Wt g	FL cm	Hg mg/kg ww	TMDL Hg mg/kg for whole trophic level 3 fish 5–15 cm in length	%TS
GR 22 BG	BG	6040	18.3	10.2	1.48	0.05	24.56
GR 23 BG	BG	4390	8.3	7.8	1.12	0.05	25.43
GR 24 BG	BG	8420	14.2	9.7	1.96	0.05	23.22
GR 25 BG	BG	4920	58.9	14.5	1.36	0.05	27.60
GR 26 BG	BG	5880	11.7	8.9	1.63	0.05	27.76
GR 27 BG	BG	3940	4.1	6.2	1.02	0.05	25.96
GR 28 BG	BG	10000	13.2	9.8	2.24	0.05	22.42
GR 29 BG	BG	3850	47.8	13.5	1.03	0.05	26.64
GR 30 BG	BG	4570	36.3	12.1	1.16	0.05	25.38
GR 31 BG	BG	6000	32.4	11.8	1.53	0.05	25.56
GR 32 BG	BG	5820	13.6	9.2	1.46	0.05	25.12
GR 33 BG	BG	5690	17.6	10.0	1.45	0.05	25.56
GR 34 BG	BG	3630	15.0	8.9	0.89	0.05	24.54
GR 36 BG	BC	4160	27.6	12.5	1.00	0.05	23.94
GR 37 BC	BC	4140	26.9	12.5	1.02	0.05	24.51
GR 38 BC	BC	3780	24.3	12.0	0.88	0.05	23.26
GR 39 BC	BC	3820	21.6	10.7	0.95	0.05	24.95
GR 40 BC	BC	4060	22.0	11.6	0.98	0.05	24.14
GR 41 BC	BC	4420	20.5	11.5	1.07	0.05	24.20
GR 42 BC	BC	4590	16.4	10.5	0.97	0.05	21.15
GR 43 BC	BC	4150	17.6	10.7	0.94	0.05	22.67
GR 44 BC	BC	3910	20.7	10.5	0.99	0.05	25.25
GR 45 BC	BC	4020	24.2	12.7	0.92	0.05	22.93
Averages:				10.5	**1.31**		
Averages LMB only:				10.1	**1.42**		

Table 18: Mercury in Fish Guadalupe Reservoir July 2013 continued…

Guadalupe Reservoir: Mercury in Fish 2015									
10/6/2015	Species Code	Hg ng/g dw	Wt g	FL cm	Hg mg/kg ww	TMDL Hg mg/kg for whole trophic level 3 fish 5–15 cm in length	%TS	TMDL Hg ng/g for whole trophic level 3 fish >15–35 cm in length	TMDL Hg mg/kg for whole trophic level 3 fish >15–35 cm in length
GR001	LMBA	6060	20	10.9	1.46	0.05	24.16		
GR002	LMBA	8610	15	10.5	2.06	0.05	23.90		
GR003	BLGI	5360	55	13.4	1.42	0.05	26.42		
GR004	LMBA	4980	21	12.0	1.24	0.05	24.92		
GR005	BLGI	5890	61	14.0	1.57	0.05	26.59		
GR006	BLGI	5400	59	14.5	1.50	0.05	27.73		
GR007	BLGI	4100	10	8.1	1.00	0.05	24.42		
GR008	LMBA	6770	38	14.1	1.65	0.05	24.38		
GR009	BLGI	4410	4	5.8	1.30	0.05	29.55		
GR010	LMBA	9460	33	13.8	2.24	0.05	23.71		
GR011	BLGI	5040	30	11.6	1.28	0.05	25.41		
GR012	LMBA	7280	23	11.6	1.69	0.05	23.23		
GR013	BLGI	5550	4	5.8	1.33	0.05	23.98		
GR014	BLGI	5710	17	9.3	1.49	0.05	26.02		
GR015	LMBA	8790	42	14.4	2.12	0.05	24.08		
GR016	BLGI	5560	63	14.6	1.58	0.05	28.39		
GR017	LMBA	6380	45	14.3	1.42	0.05	22.31		
GR018	BLGI	5790	39	12.2	1.54	0.05	26.61		
GR019	BLGI	4790	63	14.1	1.23	0.05	25.71		

Table 19: Mercury in Fish Guadalupe Reservoir October 2015

Guadalupe Reservoir: Mercury in Fish 2015 continued…									
10/6/2015	Species Code	Hg ng/g dw	Wt g	FL cm	Hg mg/kg ww	TMDL Hg mg/kg for whole trophic level 3 fish 5–15 cm in length	%TS	TMDL Hg ng/g for whole trophic level 3 fish >15–35 cm in length	TMDL Hg mg/kg for whole trophic level 3 fish >15–35 cm in length
GR020	BLGI	4330	60	14.4	1.21	0.05	27.90		
GR021	LMBA	6600	12	9.5	1.54	0.05	23.38		
GR022	LMBA	7490	36	13.5	1.74	0.05	23.24		
GR023	BLGI	4710	6	6.8	1.11	0.05	23.52		
GR024	LMBA	9060	17	10.9	2.08	0.05	22.93		
GR025	LMBA	7960	32	13.5	1.95	0.05	24.55		
GR026	BLGI	6440	6	6.4	1.69	0.05	26.29		
GR027	BLGI	7330	5	6.2	1.85	0.05	25.17		
GR028	LMBA	412	35	13.4	0.09	0.05	22.88		
GR029	BLGI	5850	4	5.7	1.39	0.05	23.79		
GR030	LMBA	7460	28	12.4	1.80	0.05	24.06		
GR031	BLCR	4690	81	16.7	1.26		26.89	100	0.1
GR032	BLCR	4920	81	18.3	1.22		24.79	100	0.1
GR033	BLCR	3950	170	21.0	1.15		29.06	100	0.1
GR034	BLCR	5910	110	17.7	1.40		23.74	100	0.1
GR035	BLGI	5990	150	17.8	1.59		26.53	100	0.1
GR036	BLGI	4690	100	15.8	1.34		28.54	100	0.1
GR037	BLGI	0.51	125	17.1	0.00014		27.55	100	0.1
GR038	BLGI	6880	92	16.0	1.86		27.05	100	0.1
GR039	LMBA	7770	245	25.1	2.20		28.27	100	0.1
GR040	LMBA	8940	195	22.4	2.29		25.66	100	0.1
GR041	LMBA	8870	200	23.8	2.58		29.04	100	0.1
GR042	LMBA	7540	305	22.8	2.34		31.00	100	0.1
Averages 5-15cm:				11.3	**1.52**				
Averages >15-35cm:				19.5	**1.60**				
Averages LMB 5-15cm only:				12.5	**1.65**				

Table 19: Mercury in Fish Guadalupe Reservoir October 2015 continued…

ALMADEN EPILIMNION

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
5/10/2005	ALMADENEPI*	14	10	0.369							15		0.0036	4	21.5	*=New sampler Type Alpha (Silicone)
5/24/2005	ALMADENEPI	0.91	4.8	0.459	0.226			<0.25	<0.50	<0.50	15	0.010	0.0015	3.5	21.35	
6/7/2005	ALMADENEPI		7.8	0.484	0.254			<0.25	14.0	<5.0	14	<0.010	0.0008	3	21.6	
6/21/2005	ALMADENEPI			0.502				<0.25	0.52	<0.50	17	<0.010	0.0010	2	20.75	
7/7/2005	ALMADENEPI	5.90	3.2	0.591				<0.25	<0.50	<0.50	17	<0.010	0.0019	2.25	20.1	
7/19/2005	ALMADENEPI	25	5.1	0.856				<0.25	<0.50	<0.50	16	<0.010	0.150	2	20.25	
8/3/2005	ALMADENEPI	9	4.2	1.140				<0.50	<0.50	<0.50	15	<0.010	0.0068	3.5	19.3	
8/15/2005	ALMADENEPI	12	5.1	1.300				<0.50	<0.50	<0.50	15	<0.010	0.0076	3.5	19.75	
8/31/2005	ALMADENEPI	430*	23*	1.810				<0.50	<0.50	<0.50	15	<0.010	0.0078	5	18.5	
9/14/2005	ALMADENEPI	780*	120*	1.500				<0.25	<0.50	<0.50	15	<0.010	0.0095	5	18.5	
9/27/2005	ALMADENEPI	<2.00	8.9	1.470				<0.100	<0.50	<0.50	14	<0.010	0.0440	4.5	18.1	
10/18/2005	ALMADENEPI	5.07	0.67	0.737				0.129	<0.50	<0.50	16	<0.010	0.0210	3	15.5	
11/14/2005	ALMADENEPI	5.95	1.46	0.461				0.170	<0.50	<0.50	15	<0.010	0.0041	3	13.5	
12/20/2005	ALMADENEPI	79	14	0.331				0.266	2.3	<0.50	15	0.120	0.0100	3	16	
1/17/2006	ALMADENEPI	19	6.1	0.225				<0.100	0.68	<0.50	11	0.031	0.00060	3	16.8	
2/15/2006	ALMADENEPI	13	2.1	0.281				<0.100	<0.50	<0.50	130	<0.010	0.0058	2	17.25	
3/16/2006	ALMADENEPI	0.91	7.9	0.284				<0.100	0.70	<0.50	11	0.043	0.0017	2	19	
4/25/2006	ALMADENEPI	1.4	2.4	0.227				0.165	<0.50	<0.50	11	0.012	0.0190	2	20	
5/9/2006	ALMADENEPI	<0.50	2.0	0.257				<0.100	<0.50	<0.50	13	<0.010	0.0011	2	19.25	
5/23/2006	ALMADENEPI	3.9	1.6	0.344				<0.100	<0.50	<0.50	16	<0.050	0.0014	2	20	
6/6/2006	ALMADENEPI	6.6	1.6	0.293				<0.100	<0.50	<0.50	15	<0.050	0.0005	2	20.25	
6/19/2006	ALMADENEPI	5.6	1.7	0.495				0.114	<0.50	<0.50	17	<0.050	0.0014	3	21.25	
7/10/2006	ALMADENEPI	2.9	3.6	0.570				<0.100	<0.50	<0.50	15	<0.050	0.0011	3	20.25	dup diss 1.630
7/24/2006	ALMADENEPI	2.2		0.842				0.224	<0.50	<0.50	15	<0.050	0.0010	3	18.25	
8/16/2006	ALMADENEPI	4.0	2.2	0.822				0.106	<0.50	<0.50	14	<0.050	0.0050	3	18	
8/29/2006	ALMADENEPI	6.5	2.1	1.610				<0.100	<0.50	<0.50	14	0.055	0.016	3	17.5	
9/11/2006	ALMADENEPI			1.400				0.156	<0.50	<0.50	14	0.055	0.017	2.5	17.8	

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
10/2/2006	ALMADENEPI	5.7	3.9	1.030				<0.100	<0.50	<0.50	15	0.067	0.020	2	16.5	
10/16/2006	ALMADENEPI	<0.50	2.2	0.322				<0.100	<0.50	<0.50	17	0.076	0.019	2	17.25	
11/13/2006	ALMADENEPI	5.4	1.9	0.240				0.110	<0.50	<0.50	13	0.069	0.036	2	15.8	
12/11/2006	ALMADENEPI	7.5	1.380	0.442				0.153	0.59	<0.50	14	0.086	0.020	2	14	
1/22/2007	ALMADENEPI	7.5	0.75	0.143				0.105	0.76	<0.50	19	<0.050	0.022	2	11.8	
2/20/2007	ALMADENEPI	3.5		0.126				0.286	0.83	<0.50	21	<0.050	0.0028	2	14.1	
3/19/2007	ALMADENEPI	0.55		0.108	0.048			<0.100	<0.50	<0.50	17	<0.050	0.0028	2	18.25	
4/9/2007	ALMADENEPI	<0.50		0.170	0.077			0.109	<0.50	<0.50	17	<0.050	0.0017	2	18.5	
4/23/2007	ALMADENEPI	3.98		0.169	0.107			0.186	<0.50	<0.50	18	<0.050	0.0020	2	18	
5/9/2007	ALMADENEPI	2.61		0.129	0.086			<0.100	<0.50	<0.50	18	<0.050	0.0015	2	17.75	
5/22/2007	ALMADENEPI	3.33		0.170	0.138			0.116	<0.50	<0.50	19	<0.050	0.0014	2	17.7	
6/12/2007	ALMADENEPI	3.5		0.320	0.177			<0.100	<0.50	<0.50	19	<0.050	0.0023	2	17.1	
6/26/2007	ALMADENEPI	3.2		0.268	0.144			0.211	<0.50	<0.50	18	<0.050	0.0025	2	16.8	
7/10/2007	ALMADENEPI	2.6		0.330	0.163			<0.100	<0.50	<0.50	18	<0.050	0.0062	2	16.1	
7/23/2007	ALMADENEPI	3.7		0.424	0.257			<0.100	<0.50	<0.50	18	<0.050	0.011	2	14.5	
8/6/2007	ALMADENEPI	3.3		0.476	0.229			0.111	<0.50	<0.50	16	<0.050	0.013	2	14.8	
8/20/2007	ALMADENEPI	4.6		0.827	0.299			<0.100	<0.50	<0.50	16	<0.050	0.038	2	14.5	
9/13/2007	ALMADENEPI	62		2.220	0.619			<0.100	<0.50	<0.50	15	<0.050	0.021	2	13	
9/27/2007	ALMADENEPI	11		1.120	0.376			<0.100	<0.50	<0.50	14	<0.050	0.023	2	12.25	
10/18/2007	ALMADENEPI	9.0		0.850	0.238			<0.100	<0.50	<0.50	14	0.062	0.067	2	11.1	
11/19/2007	ALMADENEPI	5.0		0.771	0.136			0.341	0.55	<0.50	15	<0.050	0.0042	2	9.7	
1/16/2008	ALMADENEPI	80		0.249	0.116			0.211	3.6	<0.50	21	<0.050	0.0032	2	13.7	
2/8/2008	ALMADENEPI	12		0.227	0.162			0.111	1.2	<0.50	12	<0.050	0.0005	2	17.4	
3/10/2008	ALMADENEPI	9.4		0.266	0.081			<0.100	<0.50	<0.50	14	<0.050	0.0063	2	17.7	
4/10/2008	ALMADENEPI	4.4		0.317				<0.100	<0.50	<0.50	16	<0.050	0.0034	2	16.6	
4/24/2008	ALMADENEPI	2.7		0.425				<0.100	<0.50	<0.50	17	<0.050	0.0016	2	19.3	
5/8/2008	ALMADENEPI	2.6	2.4	0.426				0.102	<0.50	<0.50	16	<0.050	0.0011	2	18.6	
5/27/2008	ALMADENEPI	1.8	1.6	0.422				<0.100	<0.50	<0.50	16	<0.050	0.0017	2	18.25	
6/11/2008	ALMADENEPI	3.1	1.9	0.505				<0.100	<0.50	<0.50	16	<0.050	0.0015	2	18.1	
6/25/2008	ALMADENEPI	2.3	1.9	0.535				0.150	<0.50	<0.50	16	<0.050	0.0031	2	17.7	
7/7/2008	ALMADENEPI	2.6	1.3	0.740				<0.100	<0.50	<0.50	17	<0.050	0.0048	2	17.25	
7/23/2008	ALMADENEPI	4.6	1.3	1.37				0.108	<0.50	<0.50	16	<0.050	0.014	2	16.5	

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
8/6/2008	ALMADENEPI	2.4	1.5	1.27				<0.100	<0.50	<0.50	17	<0.050	NA	2	15.8	Lab error Chla
8/20/2008	ALMADENEPI	3.7	2.1	1.98				<2.00	<0.50	<0.50	15	<0.050	0.16	2	15	
9/8/2008	ALMADENEPI	3.8	1.9	1.57				<0.100	<0.50	<0.50	15	<0.050	0.014	2	14.25	
9/22/2008	ALMADENEPI	2.2	1.6	0.983				<0.100	<0.50	<0.50	14	<0.050	0.019	2	13.25	
10/20/2008	ALMADENEPI	2.8	1.7	1.09				0.297	<0.50	<0.50	14	<0.050	0.042	2	11.9	
11/17/2008	ALMADENEPI	2.0	1.8	0.785				<0.100	<0.50	<0.50	17	0.058	0.031	2	10.9	
12/15/2008	ALMADENEPI	5.2	1.4	0.443				0.276	0.5	<0.50	19	<0.050	0.005	2	9.25	
1/12/2009	ALMADENEPI	8.8		0.297				0.223	<0.50	<0.50	22	0.060	0.006	2	8.75	
1/12/2009	ALMADENEPI	8.1												2	8.75	Duplicate
2/9/2009	ALMADENEPI	19.8	1.15	0.188				<0.100	0.70	<0.50	23	<0.050	0.024	2	8	
3/23/2009	ALMADENEPI	10.8	4.9	0.213				<0.100	0.53	<0.50	11	<0.050	<0.002	2	17	
4/20/2009	ALMADENEPI	3.4	2.2	0.282				<0.100	<1.0	<1.0	15	<0.050		2	18.75	
5/4/2009	ALMADENEPI	3.3	1.9	0.420				0.295	<1.0	<1.0	15	<0.050	<0.002	2	17.8	
5/20/2009	ALMADENEPI	2.7	1.8	0.328				0.138	<1.0	<1.0	16	<0.050	0.002	2	18.25	
6/8/2009	ALMADENEPI	3.29	1.8	0.602				<0.100	<1.0	<1.0	16	<0.050	0.008	2	18.25	
6/22/2009	ALMADENEPI	4.42	1.4	0.590				<0.100	<1.0	<1.0	16	<0.050	0.002	2	16.8	
7/6/2009	ALMADENEPI	3.60	1.6	0.982				0.255	<1.0	<1.0	16	<0.050	0.004	2	17.8	
7/20/2009	ALMADENEPI	3.97	1.85	1.43				<0.100	<1.0	<1.0	15	<0.050	<0.002	2	17.25	
8/3/2009	ALMADENEPI	4.73	1.81	0.351				<0.100	<1.0	<1.0	16	<0.050	0.003	2	16.8	
8/17/2009	ALMADENEPI	3.60	1.45	1.44				0.177	<1.0	<1.0	16	<0.050	0.002	2	15.5	
8/31/2009	ALMADENEPI	4.04	1.20	1.49				<0.100	<1.0	<1.0	15	<0.050	0.012	2	15.6	
9/14/2009	ALMADENEPI	7.42	1.45	1.04				<0.100	<1.0	<1.0	15	0.21	0.008	2	15	
10/19/2009	ALMADENEPI	22.1	10.1	1.11				<0.100	<1.0	<1.0	14	0.080	0.018	2	15.2	
11/24/2009	ALMADENEPI	9.83		1.91				<0.100	<1.0	<1.0	16	<0.050	0.006	2	12.5	
12/16/2009	ALMADENEPI	16.1	3.51	0.386				0.319	<1.0	<1.0	18	<0.050	<0.002	2	13.6	
1/11/2010	ALMADENEPI	7.11	1.31	0.511				0.097	<1.0	<1.0	19	<0.050	0.002	2	12.5	
2/8/2010	ALMADENEPI	20	4.5	0.29				<0.100	<1.0	<1.0	12	0.055	<0.006	2	13.75	
3/15/2010	ALMADENEPI	8.67	2.86	0.246				0.135	<1.0	<1.0	13	0.066	0.002	2	15.6	
3/15/2010	ALMADENEPI*	6.8	2.5	0.18										2	15.6	Dup/Lab test
4/28/2010	ALMADENEPI	4.51	2.18	0.213				0.114	<1.0	<1.0	14	<0.050	<0.002	2	18.25	
5/10/2010	ALMADENEPI	2.84	1.55	0.271				0.177	<1.0	<1.0	14	<0.050	0.002	2	18.3	

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
5/25/2010	ALMADENEPI	2.97	1.27	0.225				<0.100	<1.0	<1.0	16	<0.050	<0.002	2	18.25	
6/9/2010	ALMADENEPI	3.2	1.13	0.141				<0.100	<1.0	<1.0	16	<0.050	<0.002	2	18.25	
6/21/2010	ALMADENEPI	3.15		0.588				0.182	<1.0	<1.0	16	<0.050	<0.002	2	18.5	
7/7/2010	ALMADENEPI	2.24	1.14	0.387				0.117	<1.0	<1.0	17	<0.050	<0.002	2	18.3	
7/26/2010	ALMADENEPI	2.70	1.01	0.423				0.088	<1.0	<1.0	16	<0.050	0.004	2	18.25	
8/10/2010	ALMADENEPI	2.37	1.09	0.626				0.104	<1.0	<1.0	16	<0.050	0.009	2	17.9	
8/23/2010	ALMADENEPI	3.33	1.18	0.997				0.104	<1.0	<1.0	15	0.061	0.008	2	17.7	
9/14/2010	ALMADENEPI	3.80	1.42	1.31				<0.100	<1.0	<1.0	15	<0.050	0.006	2	16.9	
10/5/2010	ALMADENEPI	3.22	1.54	0.742				<0.100	<1.0	<1.0	14	<0.050	0.005	2	16.25	
11/2/2010	ALMADENEPI	3.40	0.732	0.436				0.128	<1.0	<1.0	14	<0.050	0.009	2	15.25	
12/14/2010	ALMADENEPI	5.36	0.690	0.305				0.103	<1.0	<1.0	16	0.053	0.009	2	12.9	
1/24/2011	ALMADENEPI	6.14	2.77	0.153				0.122	<1.0	<1.0	14	<0.050	0.003	2	16.1	
3/28/2011	ALMADENEPI	24.7	7.30	0.134				<0.100	<1.0	<1.0	6.7	<0.050	<0.002	2	19.4	
4/18/2011	ALMADENEPI	4.02	1.72	0.254				0.106	<1.0	<1.0	12	<0.050	<0.002	2	18	
5/4/2011	ALMADENEPI	2.45	0.922	0.193				0.161	<1.0	<1.0	13	<0.050	<0.002	2	18.2	
6/8/2011	ALMADENEPI	4.36	1.05	0.291				0.105	<1.0	<1.0	15	<0.050	<0.002	2	18.25	
6/28/2011	ALMADENEPI	2.46	0.915	0.434				0.098	<1.0	<1.0	15	<0.050	<0.002	2	18	
7/13/2011	ALMADENEPI	2.44	1.00	0.498				0.090	<1.0	<1.0	15	<0.050	0.002	2	17.9	
8/3/2011	ALMADENEPI	1.98	0.976	0.400				0.572	<1.0	<1.0	14	<0.050	0.006	2	17.8	
8/16/2011	ALMADENEPI	2.89	0.691	0.539				<0.100	<1.0	<1.0	14	<0.050	0.006	2	17.6	
9/14/2011	ALMADENEPI	2.97	1.32	0.547				<0.100	<1.0	<1.0	14	<0.050	0.004	2	16.6	
10/12/2011	ALMADENEPI	2.14	1.48	0.229				0.100	<1.0	<1.0	14	<0.050	0.003	2	15.8	
11/15/2011	ALMADENEPI	4.83	1.01	0.228				<0.100	<1.0	<1.0	14	<0.050	0.017	2	13.2	
12/7/2011	ALMADENEPI	7.67	0.733	0.175				<0.100	<1.0	<1.0	15	<0.050	0.017	2	12	
1/10/2012	ALMADENEPI	9.42	1.09	0.152				<0.100	<1.0	<1.0	17	<0.050	0.017	2	11.1	
2/15/2012	ALMADENEPI	5.88	1.07	0.431				0.325	<1.0	<1.0	22	<0.050	0.010	2	11	
3/14/2012	ALMADENEPI	1.10	0.780	0.178				0.106	<1.0	<1.0	20	<0.050	0.002	2	11.1	
4/24/2012	ALMADENEPI	8.9	4.6	0.193				<0.100	<1.0	<1.0	15	<0.050	0.002	2	19.6	
5/8/2012	ALMADENEPI	3.7	2.1	0.367				1.02	<1.0	<1.0	15	<0.050	0.002	2	19.75	
5/22/2012	ALMADENEPI	2.9	NS	0.644				<0.100	<1.0	<1.0	15	<0.050	0.003	2	19.7	
6/5/2012	ALMADENEPI	NS	NS	0.763				0.171	<1.0	<1.0	15	<0.050	0.002	2	19.6	
6/25/2012	ALMADENEPI	2.8	1.5	0.710				<0.100	<1.0	<1.0	15	<0.050	0.006	2	19.2	

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7/17/2012	ALMADENEPI	3.5	1.0	0.988				<0.100	<1.0	<1.0	15	<0.050	0.012	2	18	
8/13/2012	ALMADENEPI	3.5	1.4	1.36				<0.20	<1.0	<1.0	14	<0.050	0.006	2	17.6	
9/24/2012	ALMADENEPI	2.9	1.3	0.524				<0.100	<1.0	<1.0	13	<0.050	0.003	2	15.6	
10/15/2012	ALMADENEPI	4.4	1.1	0.362				0.16	<1.0	<1.0	13	<0.050	0.009	2	15.6	
11/6/2012	ALMADENEPI	7.7	0.80	0.250				<0.100	<1.0	<1.0	14	0.051	0.012	2	13.2	
1/7/2013	ALMADENEPI	24	10	0.259				0.16	<1.0	<1.0	10	0.068	0.002	2	18.5	
1/28/2013	ALMADENEPI	8.6	4.7	0.298				<0.10	<1.0	<1.0	14	<0.050	0.002	2	15.6	
2/11/2013	ALMADENEPI	5.4	2.5	0.224				0.12	<1.0	<1.0	15	<0.050	0.009	2	16.6	
3/18/2013	ALMADENEPI	4.3	2.1	0.515				<0.10	<1.0	<1.0	16	<0.050	0.003	2	16.9	
4/24/2013	ALMADENEPI	1.4	1.1	0.332				<0.10	<1.0	<1.0	17	0.14	0.003	2	16.8	
5/14/2013	ALMADENEPI	0.85	1.3	0.348				<0.10	<1.0	<1.0	17	<0.050	0.003	2	16.5	
6/3/2013	ALMADENEPI	2.1	1.2	0.261				<0.10	<1.0	<1.0	18	<0.050	0.002	2	16	
6/26/2013	ALMADENEPI	3.4	1.1	0.548				0.11	<1.0	<1.0	16	<0.050	0.021	2	16	
7/15/2013	ALMADENEPI	3.6	1.3	0.713				<0.10	<1.0	<1.0	15	<0.050	0.010	2	14	
8/12/2013	ALMADENEPI	5.7	0.69	0.574				<0.10	<1.0	<1.0	14	<0.050	0.013	2	12	
8/27/2013	ALMADENEPI	5.8	1.2	0.440				<0.10	<1.0	<1.0	13	<0.050	0.022	2	10.8	
1/20/2015	ALMADENEPI	14		0.95				0.13	1.9	<1.0	26	0.073	0.014	2	15.7	
1/20/2015	ALMADENEPIDUP			0.96										2	15.7	
2/9/2015	ALMADENEPI	91		1.0		0.041	1.8	<0.10	1.0	<1.0	13	<0.10	0.011	2	20.7	
3/19/2015	ALMADENEPI	25		0.77		<0.020	<0.20	0.17	<1.0	<1.0	14	<0.050	0.004	2	17.1	
4/15/2015	ALMADENEPI	8.6		1.600		<0.020	<0.20	<0.10	<1.0	<1.0	16	<0.050	0.0140	2	18.700	
7/13/2015	ALMADENEPI	6.1		1.800		<0.020	<0.20	0.160	<1.0	<1.0	16	<0.050	0.0040	2	18.500	
7/28/2015	ALMADENEPI	4.1		1.700		<0.020	<0.20	0.110	<1.0	<1.0	16	<0.050	0.0060	2	16.700	
8/4/2015	ALMADENEPI	3.6		1.500		<0.020	<0.20	0.200	<1.0	<1.0	16	0.051	0.0060	2	17.000	
8/13/2015	ALMADENEPI	3.2		1.300		<0.020	<0.20	<0.10	<1.0	<1.0	17	<0.050	0.0020	2	17.250	
9/2/2015	ALMADENEPI	2.9		1.100		<0.020	<0.20	<0.10	<1.0	<1.0	16	0.057	0.0040	2	16.200	
09/29/2015	ALMADENEPI	4.1		0.53		0.024	<0.20	<0.10	<1.0	<1.0	17	0.053	0.0120	2	15.430	

ALMADEN HYPOLIMNION

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5/10/2005	ALMADENHYP	4.40	2.2	0.258					0.59		15			13	21.5	
5/24/2005	ALMADENHYP	0.62	2.9	0.241	0.127			<0.25	<0.50	<0.50	15	0.02		13	21.35	
6/7/2005	ALMADENHYP		3.1	0.203	0.131			<0.25	<5.0	<5.0	13	0.015		16.5	21.6	
6/21/2005	ALMADENHYP			0.262				<0.25	0.51	<0.50	16	0.025		19.75	20.75	
7/7/2005	ALMADENHYP	5.90	1.8	0.364				<0.25	<0.50	<0.50	16	0.019		19	20.1	
7/19/2005	ALMADENHYP	11	4.7	0.484				<0.25	<0.50	<0.50	15	0.058		17	20.25	
8/3/2005	ALMADENHYP	7	2.6	0.358				<0.50	<0.50	<0.50	15	0.062		18.5	19.3	
8/15/2005	ALMADENHYP	5	2.1	1.580				<0.50	<0.50	<0.50	12	0.12		18.5	19.75	
8/31/2005	ALMADENHYP	71*	24*	8.440				<0.50	<0.50	<0.50	12	<0.010		18	18.5	
9/14/2005	ALMADENHYP	52*	22*	2.290				<0.25	<0.50	<0.50	14	0.012		12	18.5	
9/27/2005	ALMADENHYP	2.76	17	1.440				<0.25	<0.50	<0.50	14	<0.010		17.25	18.1	
10/18/2005	ALMADENHYP	9.56	0.87	0.416				<0.100	0.52	<0.50	16	<0.010		14.5	15.5	
11/14/2005	ALMADENHYP	17.4	1.74	0.387				0.107	<0.50	<0.50	15	<0.010		12.5	13.5	
12/20/2005	ALMADENHYP	53.0	8.3	b				0.348	0.82	<0.50	18	0.085		13.5	16	
1/17/2006	ALMADENHYP	28	4.7	0.235				<0.100	0.63	<0.50	12	0.072		16	16.8	
2/15/2006	ALMADENHYP	13	2.0	0.203				0.269	<0.50	<0.50	14	0.032		16	17.25	
3/16/2006	ALMADENHYP	21	5.4	0.181				<0.100	0.70	<0.50	12	0.039		18	19	
4/25/2006	ALMADENHYP	1.3	1.6	0.020				0.160	0.52	<0.50	11	0.024		19	20	
5/9/2006	ALMADENHYP	4.3	1.5	0.237				<0.100	<0.50	<0.50	12	0.019		18	19.25	
5/23/2006	ALMADENHYP	14	1.0	0.128				<0.100	0.64	<0.50	12	<0.050		19	20	
6/6/2006	ALMADENHYP	6	0.86	0.164				0.101	<0.50	<0.50	15	<0.050		19.25	20.25	
6/19/2006	ALMADENHYP	7.4	1.8	0.404				0.165	<0.50	<0.50	14	0.09		20.25	21.25	
7/10/2006	ALMADENHYP	3.7	3.8	0.664				0.166	<0.50	<0.50	13	0.16		19.5	20.25	dup diss 1.360
7/24/2006	ALMADENHYP	4.3	1.410	0.881				<0.100	<0.50	<0.50	13	0.12		17.5	18.25	
8/16/2006	ALMADENHYP	7.3	5.2	3.640				0.311	<0.50	<0.50	12	<0.050		17	18	
8/29/2006	ALMADENHYP	14	7.0	10.100				0.249	<5.0	<5.0	15	0.095		17	17.5	
9/11/2006	ALMADENHYP			2.530				0.342	<0.50	<0.50	13	0.18		17	17.8	
10/2/2006	ALMADENHYP	17	3.7	0.719				<0.100	<0.50	<0.50	15	0.078		16	16.5	
10/16/2006	ALMADENHYP	1.4	2.6	1.040				0.228	<0.50	<0.50	15	0.17		16.75	17.25	
11/13/2006	ALMADENHYP	45	1.9	0.290				0.117	<0.50	<0.50	13	0.075		15	15.8	

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12/11/2006	ALMADENHYP	10	1.420	0.197				0.140	0.63	<0.50	15	0.052		13	14	
1/22/2007	ALMADENHYP	6.0	0.59	0.179				0.119	0.75	<0.50	20	<0.050		11	11.8	
2/20/2007	ALMADENHYP	4.7		0.141				0.243	<0.50	<0.50	0.89	0.074		7.5	14.1	
3/19/2007	ALMADENHYP	0.51		0.100	0.045			0.226	0.78	<0.50	15	<0.050		17.5	18.25	
4/9/2007	ALMADENHYP	0.66		0.139	0.053			0.291	0.64	<0.50	15	<0.050		17.75	18.5	
4/23/2007	ALMADENHYP	9.68		0.103	0.059			0.228	0.75	<0.50	16	<0.050		17.5	18	
5/9/2007	ALMADENHYP	11.4		0.106	0.055			0.174	0.59	<0.50	16	<0.050		17.25	17.75	
5/22/2007	ALMADENHYP	5.64		0.164	0.131			0.278	<0.50	<0.50	17	0.077		17.25	17.7	
6/12/2007	ALMADENHYP	6.9		0.590	0.337			0.175	<0.50	<0.50	16	0.13		16.5	17.1	
6/26/2007	ALMADENHYP	4.8		0.679	0.398			0.320	<0.50	<0.50	16	0.12		16	16.8	
7/10/2007	ALMADENHYP	6.0		0.995	0.589			0.176	<0.50	<0.50	16	0.17		15.5	16.1	
7/23/2007	ALMADENHYP	12.9		3.350	2.680			0.146	<0.50	<0.50	16	0.10		14	14.5	
8/6/2007	ALMADENHYP	11.5		6.400	2.850			0.252	<0.50	<0.50	13	<0.050		14	14.8	
8/20/2007	ALMADENHYP	6.9		1.480	0.603			0.196	<0.50	<0.50	15	<0.050		14	14.5	
9/13/2007	ALMADENHYP	9.5		1.320	0.610			<0.100	<0.50	<0.50	14	<0.050		12	13	
9/27/2007	ALMADENHYP	9.4		0.988	0.355			0.179	<0.50	<0.50	14	0.057		12	12.25	
10/18/2007	ALMADENHYP	20		0.278	0.086			<0.100	<0.50	<0.50	13	<0.050		10.25	11.1	
11/19/2007	ALMADENHYP	8.2		0.387	0.138			0.369	0.52	<0.50	15	0.070		9	9.7	
1/16/2008	ALMADENHYP	66		0.221	0.099			0.268	3.1	<0.50	22	<0.050		13	13.7	
2/8/2008	ALMADENHYP	7.4		0.148	0.109			0.141	0.78	<0.50	13	<0.050		17	17.4	
3/10/2008	ALMADENHYP	7.4		0.177	0.125			<0.100	<0.50	<0.50	15	<0.050		17	17.7	
4/10/2008	ALMADENHYP	3.3		0.164				0.187	<0.50	<0.50	16	<0.050		16	16.6	
4/24/2008	ALMADENHYP	4.7		0.325				0.241	<0.50	<0.50	15	0.064		18.5	19.3	
5/8/2008	ALMADENHYP	19	1.7	0.255				0.145	0.57	<0.50	15	0.055		18	18.6	
5/27/2008	ALMADENHYP	2.0	1.2	0.219					0.56	<0.50	16	<0.050		17.5	18.25	
6/11/2008	ALMADENHYP	3.3	1.6	0.529				0.310	<0.50	<0.50	15	0.073		17.25	18.1	
6/25/2008	ALMADENHYP	2.4	1.4	0.358				<0.100	0.74	<0.50	15	0.086		17	17.7	
7/7/2008	ALMADENHYP	3.5	1.1	0.991				0.118	<0.50	<0.50	16	0.12		16.5	17.25	
7/23/2008	ALMADENHYP	4.6	2.1	1.81				0.115	<0.50	<0.50	16	<0.050		16	16.5	
8/6/2008	ALMADENHYP	4.1	6.3	5.44				0.245	<0.50	<0.50	15	<0.050		15	15.8	
8/20/2008	ALMADENHYP	7.2	3.5	4.76				2.13	<0.50	<0.50	14	0.050		15	15	
9/8/2008	ALMADENHYP	3.7	1.8	1.82				0.133	<0.50	<0.50	14	0.050		13.5	14.25	

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
9/22/2008	ALMADENHYP	3.5	1.7	0.842				0.245	<0.50	<0.50	14	<0.050		12.5	13.25	
10/20/2008	ALMADENHYP	3.4	1.6	0.486				0.128	<0.50	<0.50	14	<0.050		11	11.9	
11/17/2008	ALMADENHYP	2.4	1.1	0.543				<0.100	<0.50	<0.50	17	<0.050		10	10.9	
12/15/2008	ALMADENHYP	4.9	1.5	0.328				0.302	0.52	<0.50	20	<0.050		9	9.25	
1/12/2009	ALMADENHYP	12.3		0.199				0.213	<0.50	<0.50	21	<0.050		8	8.75	
1/12/2009	ALMADENHYP	14.1												8	8.75	Duplicate
2/9/2009	ALMADENHYP	39.2	1.05	0.146				<0.100	0.69	<0.50	22	<0.050		7.5	8	
3/23/2009	ALMADENHYP	29.7	3.2	0.204				0.102	0.66	<0.50	12	<0.050		16	17	
4/20/2009	ALMADENHYP	25.0	1.6	0.246				0.127	<1.0	<1.0	15	<0.050		18	18.75	
5/4/2009	ALMADENHYP	6.4	1.6	0.249				0.237	<1.0	<1.0	15	<0.050		17	17.8	
5/20/2009	ALMADENHYP	6.5	1.1	0.240				0.089	<1.0	<1.0	16	<0.050		17.5	18.25	
6/8/2009	ALMADENHYP	4.06	1.0	0.324				0.122	<1.0	<1.0	15	0.057		17.5	18.25	
6/22/2009	ALMADENHYP	4.99	1.2	0.405				0.124	<1.0	<1.0	15	0.055		16	16.8	
7/6/2009	ALMADENHYP	5.93	2.1	3.01				0.219	<1.0	<1.0	15	0.061		17	17.8	
7/20/2009	ALMADENHYP	7.45	5.44	5.89				0.301	<1.0	<1.0	13	<0.050		16.5	17.25	
8/3/2009	ALMADENHYP	12.1	4.64	10.5				0.370	<1.0	<1.0	11	0.088		16	16.8	
8/17/2009	ALMADENHYP	9.88	4.59	6.42				0.162	<1.0	<1.0	14	0.068		15.5	16.2	
8/31/2009	ALMADENHYP	12.0	5.76	9.87				0.279	<1.0	<1.0	12	0.100		15	15.6	
9/14/2009	ALMADENHYP	18.8	1.71	1.30				0.084	<1.0	<1.0	14	0.093		14.5	15	
10/19/2009	ALMADENHYP	28.4	13.0	1.59				0.281	1.1	<1.0	15	0.080		15	15.2	
11/24/2009	ALMADENHYP	18.7		0.575				0.120	<1.0	<1.0	17	<0.050		12	12.5	
12/16/2009	ALMADENHYP	30.5	1.95	0.308				0.443	<1.0	<1.0	18	<0.050		13	13.6	
1/11/2010	ALMADENHYP	14.2	1.21	0.312				0.240	<1.0	<1.0	19	<0.050		12	12.5	
2/8/2010	ALMADENHYP	27	4.9	0.29				<0.100	<1.0	<1.0	13	<0.050		13	13.75	
3/15/2010	ALMADENHYP	38.1	1.95	0.227				0.132	<1.0	<1.0	14	<0.050		15	15.6	
3/15/2010	ALMADENHYP*	44	1.9	0.25										15	15.6	Dup/Lab test
4/28/2010	ALMADENHYP	11.7	1.53	0.139				0.157	<1.0	<1.0	14	<0.050		17.75	18.25	
5/10/2010	ALMADENHYP	8.97	0.944	0.172				0.131	<1.0	<1.0	14	<0.050		17.75	18.3	
5/25/2010	ALMADENHYP	5.14	0.842	0.224				0.082	<1.0	<1.0	15	<0.050		17.75	18.25	
6/9/2010	ALMADENHYP	12.6	0.845	0.141				0.132	<1.0	<1.0	16	<0.050		18	18.25	
6/21/2010	ALMADENHYP	15.9		0.151				0.175	<1.0	<1.0	16	<0.050		18	18.5	
7/7/2010	ALMADENHYP	8.94	1.15	0.395				0.214	<1.0	<1.0	15	0.092		18	18.3	

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
7/26/2010	ALMADENHYP	5.01	1.33	0.667				1.36	<1.0	<1.0	14	0.15		18	18.25	
8/10/2010	ALMADENHYP	6.31	2.56	2.77				0.209	<1.0	<1.0	14	0.050		17.5	17.9	
8/23/2010	ALMADENHYP	9.61	4.49	5.81				0.271	<1.0	<1.0	13	0.055		17.25	17.7	
9/14/2010	ALMADENHYP	5.90	1.92	2.34				<0.100	<1.0	<1.0	14	<0.050		16	16.9	
10/5/2010	ALMADENHYP	5.91	1.88	0.766				0.297	<1.0	<1.0	13	0.092		16	16.25	
11/2/2010	ALMADENHYP	14.9	0.875	0.309				0.487	<1.0	<1.0	14	<0.050		15	15.25	
12/14/2010	ALMADENHYP	17.5	0.611	0.175				<0.100	<1.0	<1.0	16	<0.050		12	12.9	
1/24/2011	ALMADENHYP	10.3	3.93	0.136				0.113	<1.0	<1.0	14	<0.050		15.5	16.1	
3/28/2011	ALMADENHYP	37.8	7.67	0.129				0.107	<1.0	<1.0	6.8	0.10		19	19.4	
4/18/2011	ALMADENHYP	4.67	1.10	0.206				<0.100	<1.0	<1.0	13	<0.050		17.5	18	
5/4/2011	ALMADENHYP	11.3	1.30	0.291				<0.100	<1.0	<1.0	14	<0.050		18	18.2	
6/8/2011	ALMADENHYP	2.26	1.13	0.340				0.151	<1.0	<1.0	15	<0.050		18	18.25	
6/28/2011	ALMADENHYP	2.87	1.18	0.349				0.223	<1.0	<1.0	15	<0.050		17.5	18	
7/13/2011	ALMADENHYP	3.52	0.971	0.429				0.090	<1.0	<1.0	14	0.058		17.5	17.9	
8/3/2011	ALMADENHYP	5.34	1.96	1.60				0.170	<1.0	<1.0	13	0.059		17.5	17.8	
8/16/2011	ALMADENHYP	7.91	1.90	3.72				0.403	<1.0	<1.0	11	<0.050		17	17.6	
9/14/2011	ALMADENHYP	7.43	3.61	2.49				0.108	<1.0	<1.0	13	<0.050		16.25	16.6	
10/12/2011	ALMADENHYP	6.18	1.74	0.272				0.324	<1.0	<1.0	14	<0.050		15.25	15.8	
11/15/2011	ALMADENHYP	27.9	0.990	0.230				<0.100	<1.0	<1.0	14	<0.050		12.5	13.2	
12/7/2011	ALMADENHYP	20.8	0.705	0.164				<0.100	<1.0	<1.0	15	<0.050		11.5	12	
1/10/2012	ALMADENHYP	19.3	1.13	0.148				<0.100	<1.0	<1.0	17	<0.050		10.5	11.1	
2/15/2012	ALMADENHYP	14.6	2.1	0.092				0.493	<1.0	<1.0	21	<0.050		10.5	11	
3/14/2012	ALMADENHYP	1.1	0.68	0.072				<0.100	<1.0	<1.0	20	<0.050		10.5	11.1	
4/24/2012	ALMADENHYP	18	6.0	0.145				0.106	<1.0	<1.0	13	<0.050		19	19.6	
5/8/2012	ALMADENHYP	10	3.2	0.218				0.197	<1.0	<1.0	13	<0.050		19.25	19.75	
5/22/2012	ALMADENHYP	5.0	NS	0.324				0.109	<1.0	<1.0	13	<0.050		19.5	19.7	
6/5/2012	ALMADENHYP	NS	NS	0.370				0.213	<1.0	<1.0	13	0.065		19	19.6	
6/25/2012	ALMADENHYP	4.1	1.3	0.272				0.091	<1.0	<1.0	14	0.051		18.75	19.2	
7/17/2012	ALMADENHYP	3.0	1.1	1.40				0.14	<1.0	<1.0	15	<0.050		17.5	18	
8/13/2012	ALMADENHYP	7.6	2.2	5.85				0.56	<1.0	<1.0	12	0.071		17	17.6	
9/24/2012	ALMADENHYP	4.9	<0.50	0.705				<0.100	<1.0	<1.0	13	<0.050		15	15.6	

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10/15/2012	ALMADENHYP	11	1.5	0.400				0.16	<1.0	<1.0	13	0.068		14	15.6	
11/6/2012	ALMADENHYP	11	0.73	0.136				<0.100	<1.0	<1.0	14	<0.050		12.75	13.2	
1/7/2013	ALMADENHYP	23	11	0.268				0.32	<1.0	<1.0	10	0.061		18	18.5	
1/28/2013	ALMADENHYP	29	4.6	0.258				0.41	<1.0	<1.0	14	<0.050		15	15.6	
2/11/2013	ALMADENHYP	29	2.3	0.253				0.22	<1.0	<1.0	15	<0.050		16	16.6	
3/18/2013	ALMADENHYP	10	1.5	0.137				0.21	<1.0	<1.0	16	<0.050		16.5	16.9	
4/24/2013	ALMADENHYP	3.8	0.81	0.209				<0.10	<1.0	<1.0	16	0.10		16	16.8	
5/14/2013	ALMADENHYP	2.5	0.99	0.237				<0.10	<1.0	<1.0	16	<0.050		16	16.5	
6/3/2013	ALMADENHYP	1.9	1.0	0.192				<0.10	<1.0	<1.0	17	<0.050		15.5	16	
6/26/2013	ALMADENHYP	5.5	1.9	1.94				0.16	<1.0	<1.0	15	<0.050		15.5	16	
7/15/2013	ALMADENHYP	0.88	4.9	4.45				0.25	<1.0	<1.0	13	<0.050		13.5	14	
8/12/2013	ALMADENHYP	16	0.84	0.598				<0.10	<1.0	<1.0	13	<0.050		11.5	12	
8/27/2013	ALMADENHYP	9.3	1.5	0.962				0.12	<1.0	<1.0	13	0.062		10.5	10.8	
1/20/2015	ALMADENHYP	15		0.91				0.18	1.7	<1.0	26	0.066		15.25	15.7	
1/20/2015	ALMADENHYP DUP	15												15.25	15.7	
2/9/2015	ALMADENHYP	12		0.44		<0.020	<0.20	<0.10	1.2	<1.0	26	<0.050		20	20.7	
2/9/2015	ALMADENHYP DUP					<0.020	<0.20							20	20.7	
3/19/2015	ALMADENHYP	17		0.71		0.062	0.41	<0.10	1.0	<1.0	16	0.058		16.5	17.1	
4/15/2015	ALMADENHYP	20		1.100		0.099	0.54	<0.10	<1.0	<1.0	16	0.058		18.5	18.7	
7/13/2015	ALMADENHYP	77		0.410		0.27	0.24	0.230	<1.0	<1.0	13	0.190		18	18.5	
7/28/2015	ALMADENHYP	13		5.400		0.31	<0.20	0.240	<1.0	<1.0	15	0.068		16	16.7	
8/4/2015	ALMADENHYP	12		2.000		0.27	<0.20	0.260	<1.0	<1.0	14	0.086		16.5	17	
8/13/2015	ALMADENHYP	10		8.400		0.16	<0.20	0.150	<1.0	<1.0	15	0.061		17	17.25	
9/2/2015	ALMADENHYP	4.5		1.100		0.11	<0.20	0.120	<1.0	<1.0	15	<0.050		16	16.2	
09/29/2015	ALMADENHYP	3.8		0.53		0.024	<0.20	<0.10	<1.0	<1.0	17	0.051		15	15.43	

ALMADEN EPI-MID, MID, MID-HYP

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
7/7/2005	ALMADENMID			1.090										14	20.1	
7/19/2005	ALMADENMID			0.458										17	20.25	
8/3/2005	ALMADENMID			0.454										16	19.3	
8/15/2005	ALMADENMID			1.020										12	19.75	
8/31/2005	ALMADENMID			3.280										12	18.5	
9/14/2005	ALMADENMID			1.820										12	18.5	
9/27/2005	ALMADENMID			0.894										12	18.1	
10/18/2005	ALMADENMID			0.549										10	15.5	
11/14/2005	ALMADENMID			0.319										8.25	13.5	
12/20/2005	ALMADENMID			0.179										10	16	
1/17/2006	ALMADENMID			0.235										10	16.8	
2/15/2006	ALMADENMID			0.260										10	17.25	
3/16/2006	ALMADENMID			0.173										10	19	
4/25/2006	ALMADENMID			0.166										11	20	
5/9/2006	ALMADENMID			0.580										12	19.25	
5/23/2006	ALMADENMID			0.311										12	20	
6/6/2006	ALMADENMID			0.300										11	20.25	
6/19/2006	ALMADENMID			0.394										15	21.25	
7/10/2006	ALMADENMID			0.391										15	20.25	
7/24/2006	ALMADENMID			0.421										14	18.25	
8/16/2006	ALMADENMID			2.790										13	18	
8/29/2006	ALMADENMID			8.250										13.5	17.5	
9/11/2006	ALMADENMID			1.380										11.5	17.8	
10/2/2006	ALMADENMID			0.617										9	16.5	
10/16/2006	ALMADENMID			0.339										10	17.25	
11/13/2006	ALMADENMID			0.415										9	15.8	
12/11/2006	ALMADENMID			0.285										7	14	
1/22/2007	ALMADENMID			0.372										6	11.8	
2/20/2007	ALMADENMID			0.075										7.5	14.1	
3/19/2007	ALMADENMID			0.071	0.048									10	18.25	

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4/9/2007	ALMADENMID			0.161	0.041									11	18.5	
4/23/2007	ALMADENMID			0.148	0.047									11	18	
5/9/2007	ALMADENMID			0.305	0.051									10	17.75	
5/22/2007	ALMADENMID			0.241	0.057									10	17.7	
6/12/2007	ALMADENMID			0.160	0.085									9.25	17.1	
6/26/2007	ALMADENMID			0.170	0.091									9	16.8	
7/10/2007	ALMADENMID			0.541	0.154									9	16.1	
7/23/2007	ALMADENMID			0.463	0.204									8	14.5	
8/6/2007	ALMADENMID			0.564	0.218									8	14.8	
8/20/2007	ALMADENMID			0.942	0.310									8	14.5	
9/13/2007	ALMADENMID			1.190	0.587									7	13	*lab report indicates total, not dissolved
9/27/2007	ALMADENMID			0.797	0.353									7	12.25	
10/18/2007	ALMADENMID			0.591	0.158									6	11.1	
11/19/2007	ALMADENMID			0.392	0.107									5.5	9.7	
1/16/2008	ALMADENMID			0.222	0.116									7.5	13.7	
2/8/2008	ALMADENMID			0.154	0.123									9.5	17.4	
3/10/2008	ALMADENMID			0.232	0.191									9.5	17.7	
4/10/2008	ALMADENMID			0.244										9	16.6	
4/24/2008	ALMADENMID			0.446										10.5	19.3	
5/8/2008	ALMADENMID			<0.051										10	18.6	
5/27/2008	ALMADENMID			0.584										10	18.25	
6/11/2008	ALMADENMID			0.569										10	18.1	
6/25/2008	ALMADENMID			0.481										9.5	17.7	
7/7/2008	ALMADENMID			0.540										9	17.25	
7/23/2008	ALMADENMID			0.785										9	16.5	
7/23/2008	ALMADENMID *			1.38										12.5	16.5	Do not use for Mid taken at 12.5m
8/6/2008	ALMADENMID			1.48										8.5	15.8	

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8/6/2008	ALMADENMID*			5.25										12	15.8	Do not use for Mid taken at 12m
8/20/2008	ALMADENMID			0.974										8	15	
8/20/2008	ALMADENMID*			4.05										11	15	Do not use for Mid taken at 11m
9/8/2008	ALMADENMID			1.40										7.5	14.25	
9/8/2008	ALMADENMID*			1.36										10.5	14.25	Do not use for Mid taken at 10.5m
9/22/2008	ALMADENMID			0.724										7	13.25	
9/22/2008	ALMADENMID*			0.723										10	13.25	Do not use for Mid taken at 10m
10/20/2008	ALMADENMID			0.782										6.5	11.9	
11/17/2008	ALMADENMID			0.531										6	10.9	
12/15/2008	ALMADENMID			0.341										5	9.25	
1/12/2009	ALMADENMID			0.293										5	8.75	
2/9/2009	ALMADENMID			0.177										5	8	
3/23/2009	ALMADENMID			0.181										9	17	
4/20/2009	ALMADENMID			0.494										10	18.75	
5/4/2009	ALMADENMID			0.311										9.5	17.8	
5/20/2009	ALMADENMID			0.623										10	18.25	
6/8/2009	ALMADENMID			0.456										10	18.25	
6/22/2009	ALMADENMID			0.489										9	16.8	
7/6/2009	ALMADENMID			1.500										9.5	17.8	
7/20/2009	ALMADENMID			4.14										9.5	17.25	
8/3/2009	ALMADENMID			2.85										9	16.8	
8/17/2009	ALMADENMID			1.44										9	16.2	
8/31/2009	ALMADENMID			1.04										8.5	15.6	
9/14/2009	ALMADENMID			1.54										8	15	
10/19/2009	ALMADENMID			0.460										8.5	15.2	
11/24/2009	ALMADENMID			0.672										7	12.5	

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
12/16/2009	ALMADENMID			0.323										7.5	13.6	
1/11/2010	ALMADENMID			0.432										7	12.5	
2/8/2010	ALMADENMID			0.32										7.5	13.75	
3/15/2010	ALMADENMID			0.128										8.5	15.6	
3/15/2010	ALMADENMID*			0.20										8.5	15.6	Dup/Lab test
4/28/2010	ALMADENMID			0.152										10	18.25	
4/28/2010	ALMADENMID*			0.223										6	18.25	EPIMID
4/28/2010	ALMADENMID*			0.148										14	18.25	MIDHYP
5/10/2010	ALMADENMID			0.268										10	18.3	
5/10/2010	ALMADENMID*			0.230										6	18.3	EPIMID
5/10/2010	ALMADENMID*			0.149										14	18.3	MIDHYP
5/25/2010	ALMADENMID			0.315										10	18.25	
5/25/2010	ALMADENMID*			0.259										6	18.25	EPIMID
5/25/2010	ALMADENMID*			0.229										14	18.25	MIDHYP
6/9/2010	ALMADENMID			0.142										10	18.25	
6/9/2010	ALMADENMID*			0.241										6	18.25	EPIMID
6/9/2010	ALMADENMID*			0.139										14	18.25	MIDHYP
6/21/2010	ALMADENMID			0.281										10	18.5	
6/21/2010	ALMADENMID*			0.706										6	18.5	EPIMID
6/21/2010	ALMADENMID*			0.279										14	18.5	MIDHYP
7/7/2010	ALMADENMID			0.515										10	18.3	
7/7/2010	ALMADENMID*			0.458										6	18.3	EPIMID
7/7/2010	ALMADENMID*			0.277										14	18.3	MIDHYP
7/26/2010	ALMADENMID			0.457										10	18.25	
7/26/2010	ALMADENMID*			0.633										6	18.25	EPIMID
7/26/2010	ALMADENMID*			0.373										14	18.25	MIDHYP
8/10/2010	ALMADENMID			0.644										10	17.9	
8/10/2010	ALMADENMID*			0.761										6	17.9	EPIMID
8/10/2010	ALMADENMID*			1.09										14	17.9	MIDHYP
8/23/2010	ALMADENMID			1.01										10	17.7	
8/23/2010	ALMADENMID*			1.26										6	17.7	EPIMID
8/23/2010	ALMADENMID*			4.76										14	17.7	MIDHYP

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
9/14/2010	ALMADENMID			1.04										9	16.9	
9/14/2010	ALMADENMID*			1.18										5.5	16.9	EPIMID
9/14/2010	ALMADENMID*			1.48										12.5	16.9	MIDHYP
10/5/2010	ALMADENMID			0.629										9	16.25	
11/2/2010	ALMADENMID			0.526										8.5	15.25	
12/14/2010	ALMADENMID			0.192										7	12.9	
1/24/2011	ALMADENMID			0.151										9	16.1	
3/28/2011	ALMADENMID			0.127										10.5	19.4	
4/18/2011	ALMADENMID			0.219										10	18	
5/4/2011	ALMADENMID			0.831										10	18.2	
6/8/2011	ALMADENMID			0.277										10	18.25	
6/28/2011	ALMADENMID			0.422										10	18	
6/28/2011	ALMADENMID*			0.956										6	18	EPIMID
6/28/2011	ALMADENMID*			0.346										14	18	MIDHYP
7/13/2011	ALMADENMID			0.554										10	17.9	
7/13/2011	ALMADENMID*			0.670										6	17.9	EPIMID
7/13/2011	ALMADENMID*			0.314										14	17.9	MIDHYP
8/3/2011	ALMADENMID			0.489										10	17.8	
8/3/2011	ALMADENMID*			0.338										6	17.8	EPIMID
8/3/2011	ALMADENMID*			1.15										14	17.8	MIDHYP
8/16/2011	ALMADENMID			2.05										10	17.6	
8/16/2011	ALMADENMID*			0.693										6	17.6	EPIMID
8/16/2011	ALMADENMID*			3.77										13.5	17.6	MIDHYP
9/14/2011	ALMADENMID			0.539										9	16.6	
9/14/2011	ALMADENMID*			0.591										5.5	16.6	EPIMID
9/14/2011	ALMADENMID*			1.10										12	16.6	MIDHYP
10/12/2011	ALMADENMID			0.175										9	15.8	
10/12/2011	ALMADENMID*			0.203										5.5	15.8	EPIMID
10/12/2011	ALMADENMID*			0.206										12	15.8	MIDHYP
11/15/2011	ALMADENMID			0.199										7.5	13.2	
12/7/2011	ALMADENMID			0.168										7	12	
1/10/2012	ALMADENMID			0.150										6	11.1	

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2/15/2012	ALMADENMID			0.104										6.25	11	
3/14/2012	ALMADENMID			0.147										6.25	11.1	
4/24/2012	ALMADENMID			0.117										10.5	19.6	
5/8/2012	ALMADENMID			0.154										11	19.75	
5/8/2012	ALMADENMID*			0.211										6.5	19.75	EPIMID
5/8/2012	ALMADENMID*			0.200										15.5	19.75	MIDHYP
5/22/2012	ALMADENMID			0.304										11	19.7	
5/22/2012	ALMADENMID*			0.936										6.5	19.7	EPIMID
5/22/2012	ALMADENMID*			0.297										15.5	19.7	MIDHYP
6/5/2012	ALMADENMID			0.541										10.5	19.6	
6/5/2012	ALMADENMID*			0.670										6.5	19.6	EPIMID
6/5/2012	ALMADENMID*			0.258										14.5	19.6	MIDHYP
6/25/2012	ALMADENMID			0.387										10.5	19.2	
6/25/2012	ALMADENMID*			0.582										6.5	19.2	EPIMID
6/25/2012	ALMADENMID*			0.306										14.5	19.2	MIDHYP
7/17/2012	ALMADENMID			0.581										6	18	
7/17/2012	ALMADENMID*			1.09										14	18	EPIMID
7/17/2012	ALMADENMID*			1.19										10	18	MIDHYP
8/13/2012	ALMADENMID			2.13										9	17.6	
8/13/2012	ALMADENMID*			1.23										5.5	17.6	EPIMID
8/13/2012	ALMADENMID*			4.71										13	17.6	MIDHYP
9/24/2012	ALMADENMID			0.431										8.5	15.6	
9/24/2012	ALMADENMID*			0.503										5	15.6	EPIMID
9/24/2012	ALMADENMID*			0.485										12	15.6	MIDHYP
10/15/2012	ALMADENMID			0.252										8	15.6	
11/6/2012	ALMADENMID			0.275										7.5	13.2	
1/7/2013	ALMADENMID			0.234										10	18.5	
1/28/2013	ALMADENMID			0.249										8.5	15.6	
2/11/2013	ALMADENMID			0.191										9	16.6	
3/18/2013	ALMADENMID			0.164										9	16.9	
4/24/2013	ALMADENMID			0.283										9	16.8	
5/14/2013	ALMADENMID			0.448										9.5	16.5	

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5/14/2013	ALMADENMID*			0.998										6	16.5	EPIMID
5/14/2013	ALMADENMID*			0.178										13	16.5	MIDHYP
6/3/2013	ALMADENMID			0.255										9	16	
6/3/2013	ALMADENMID*			0.444										5.5	16	EPIMID
6/3/2013	ALMADENMID*			0.159										12.5	16	MIDHYP
6/26/2013	ALMADENMID			0.649										9	16	
6/26/2013	ALMADENMID*			0.443										5.5	16	EPIMID
6/26/2013	ALMADENMID*			1.03										12.5	16	MIDHYP
7/15/2013	ALMADENMID			1.63										8	14	
7/15/2013	ALMADENMID*			1.29										5	14	EPIMID
7/15/2013	ALMADENMID*			3.43										11	14	MIDHYP
8/12/2013	ALMADENMID			0.682										7	12	
8/12/2013	ALMADENMID*			0.488										4.5	12	EPIMID
8/12/2013	ALMADENMID*			0.807										9.5	12	MIDHYP
8/27/2013	ALMADENMID			0.214										6	10.8	
1/20/2015	ALMADENMID			0.96										8.5	15.7	
2/9/2015	ALMADENMID			0.57		<0.020	0.51							11	20.7	
2/9/2015	ALMADENMID DUP			0.60										11	20.7	
3/19/2015	ALMADENMID			0.78										9.5	17.1	
4/15/2015	ALMADENEPIMID			0.820										6	18.8	
4/15/2015	ALMADENMID			0.650										10	18.8	
4/15/2015	ALMADENMID HYP			0.570										14	18.8	
7/13/2015	ALMADENEPIMID			2.300										6	18.5	
7/13/2015	ALMADENMID			2.000										10	18.5	
7/13/2015	ALMADENMID HYP			0.530										14	18.5	
7/28/2015	ALMADENEPIMID			2.100										5.5	16.7	
7/28/2015	ALMADENMID			3.900										9	16.7	
7/28/2015	ALMADENMID HYP			4.800										12.5	16.7	
8/4/2015	ALMADENEPIMID			2.200										6	17	
8/4/2015	ALMADENMID			5.500										9.75	17	
8/4/2015	ALMADENMID HYP			2.100										13.25	17	
8/13/2015	ALMADENEPIMID			1.200										5.25	17.25	

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8/13/2015	ALMADENMID			6.900										9.5	17.25	
8/13/2015	ALMADENMIDHYP			8.100										13.75	17.25	
9/2/2015	ALMADENEPIMID			1.100										5.5	16.2	
9/2/2015	ALMADENMID			1.100										9	16.2	
9/2/2015	ALMADENMIDHYP			1.100										12.5	16.2	
09/29/2015	ALMADENEPIMID			0.54										5.25	15.43	
09/29/2015	ALMADENMID			0.55										8.5	15.43	
09/29/2015	ALMADENMIDHYP			0.55										11.75	15.43	

ALMADEN OUTLET

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
4/10/2008	ALMADENOUTLET	13		0.251												
4/24/2008	ALMADENOUTLET	5.4		0.344												
5/8/2008	ALMADENOUTLET	14	2.4	0.320												
5/27/2008	ALMADENOUTLET	6.7	1.1	0.283												
6/11/2008	ALMADENOUTLET	7.2	1.6	0.522												
6/25/2008	ALMADENOUTLET	4.4	1.6	0.819												
7/7/2008	ALMADENOUTLET	4.5	1.7	1.67												
7/23/2008	ALMADENOUTLET	11	3.6	5.47												
8/6/2008	ALMADENOUTLET	8.0	7.4	5.77												Samples from upper outlet
8/20/2008	ALMADENOUTLET	11	2.8	7.89												Samples from upper outlet
9/8/2008	ALMADENOUTLET	5.9	2.5	3.62												Samples from upper outlet
9/22/2008	ALMADENOUTLET	4.3	2.2	1.14												
10/20/2008	ALMADENOUTLET	11	8.1	0.574												
11/17/2008	ALMADENOUTLET	2.8	0.94	0.301												
12/15/2008	ALMADENOUTLET	7.0	1.8	0.294												
1/12/2009	ALMADENOUTLET	10.6		0.166												
1/12/2009	ALMADENOUTLET	12.7														
2/9/2009	ALMADENOUTLET	22.6	0.985	0.162												
3/23/2009	ALMADENOUTLET	42.2	2.6	0.226												
4/20/2009	ALMADENOUTLET	50.7	1.5	0.297												
5/4/2009	ALMADENOUTLET	55.8	1.7	0.274												
5/20/2009	ALMADENOUTLET	20.1	1.2	0.226												
6/8/2009	ALMADENOUTLET	14.3	1.3	0.383												
6/22/2009	ALMADENOUTLET	5.98	1.4	0.757												
7/6/2009	ALMADENOUTLET	7.18	2.7	4.39												
7/20/2009	ALMADENOUTLET	8.62	4.86	5.05												

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
8/3/2009	ALMADENOUTLET	12.9	1.43	8.21												
8/17/2009	ALMADENOUTLET	12.3	6.43	9.63												
8/31/2009	ALMADENOUTLET	13.1	5.62	9.68												
9/14/2009	ALMADENOUTLET	10.4	2.91	5.32												
10/19/2009	ALMADENOUTLET	33.3	14.6	2.41												
11/24/2009	ALMADENOUTLET	16.8		0.659												
12/16/2009	ALMADENOUTLET	26.4	2.18	0.523												
1/11/2010	ALMADENOUTLET	12.6	1.43	0.427												
2/8/2010	ALMADENOUTLET	32	4.4	0.29												
3/15/2010	ALMADENOUTLET	54.8	1.96	0.262												
3/15/2010	ALMADENOUTLET*	48	1.9	0.32												Dup/Lab test
4/28/2010	ALMADENOUTLET	14.7	1.67	0.144												
5/10/2010	ALMADENOUTLET	14.4	1.05	0.177												
5/25/2010	ALMADENOUTLET	9.38	0.916	0.209												
6/9/2010	ALMADENOUTLET	7.29	0.911	0.194												
6/21/2010	ALMADENOUTLET	8.19		0.164												
7/7/2010	ALMADENOUTLET	5.53	1.19	0.419												
7/26/2010	ALMADENOUTLET	4.95	1.46	0.935												
8/10/2010	ALMADENOUTLET	7.88	2.70	4.26												
8/23/2010	ALMADENOUTLET	10.2	4.12	5.89												
9/14/2010	ALMADENOUTLET	6.22	1.64	3.03												
10/5/2010	ALMADENOUTLET	6.78	2.24	1.67												
11/2/2010	ALMADENOUTLET	5.71	0.828	0.247												
12/14/2010	ALMADENOUTLET	44.6	0.657	0.232												
1/24/2011	ALMADENOUTLET	13.0	3.70	0.141												
3/28/2011	ALMADENOUTLET	34.0	7.75	0.120												
4/18/2011	ALMADENOUTLET	16.5	1.21	0.262												
5/4/2011	ALMADENOUTLET	11.8	0.900	0.265												
6/8/2011	ALMADENOUTLET	6.75	1.16	0.381												
6/28/2011	ALMADENOUTLET	4.99	0.846	0.425												
7/13/2011	ALMADENOUTLET	23.0	1.32	1.38												

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8/3/2011	ALMADENOUTLET	6.18	2.00	3.58												
8/16/2011	ALMADENOUTLET	8.94	1.58	4.03												
9/14/2011	ALMADENOUTLET	8.60	3.63	3.18												
10/12/2011	ALMADENOUTLET	5.28	1.46	0.291												
11/15/2011	ALMADENOUTLET	8.51	0.935	0.188												
12/7/2011	ALMADENOUTLET	8.82	0.973	0.126												
1/10/2012	ALMADENOUTLET	8.79	0.975	0.140												
2/15/2012	ALMADENOUTLET	11.9	1.0	0.160												
3/14/2012	ALMADENOUTLET	0.98	0.56	0.070												
4/24/2012	ALMADENOUTLET	17	5.5	0.134												
5/8/2012	ALMADENOUTLET	14	2.9	0.211												
5/22/2012	ALMADENOUTLET	5.6	NS	0.317												
6/5/2012	ALMADENOUTLET	NS	NS	0.337												
6/25/2012	ALMADENOUTLET	3.4	1.3	0.341												
7/17/2012	ALMADENOUTLET	3.5	1.5	1.70												
8/13/2012	ALMADENOUTLET	8.8	1.9	4.90												
9/24/2012	ALMADENOUTLET	5.3	1.3	0.797												
10/15/2012	ALMADENOUTLET	6.4	1.3	0.302												
11/6/2012	ALMADENOUTLET	8.2	0.81	0.156												
1/7/2013	ALMADENOUTLET	25	3.0	0.237												
1/28/2013	ALMADENOUTLET	16	4.3	0.244												
2/11/2013	ALMADENOUTLET	11	2.7	0.181												
3/18/2013	ALMADENOUTLET	6.9	1.9	0.869												
4/24/2013	ALMADENOUTLET	2.5	1.0	0.334												
5/14/2013	ALMADENOUTLET	1.7	0.81	0.471												
6/3/2013	ALMADENOUTLET	2.3	1.4	0.559												
6/26/2013	ALMADENOUTLET	7.4	1.8	2.68												
7/15/2013	ALMADENOUTLET	8.7	4.9	4.34												
8/12/2013	ALMADENOUTLET	11	1.4	1.70												
8/27/2013	ALMADENOUTLET	7.4	2.0	2.17												
9/17/2013	ALMADENOUTLET	4.9	1.0	0.370												
11/20/2013	ALMADENOUTLET	16	1.4	0.212												

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12/16/2013	ALMADENOUTLET	25	0.73	0.123												
1/27/2014	ALMADENOUTLET	23	1.0	0.18												MeHg corrected from 0.21 per Recall
5/14/2014	ALMADENOUTLET	15	NS	6.2												MeHg corrected from 7.2 per Recall
6/10/2014	ALMADENOUTLET	11	NS	1.3												MeHg corrected from 1.5 per Recall
3/19/2015	ALMADENOUTLET	16		0.69												
4/15/2015	ALMADENOUTLET	8.8		0.720		0.200	<0.20									
7/28/2015	ALMADENOUTLET	23		5.300		1.100	<0.20									
8/4/2015	ALMADENOUTLET	14		1.200		0.350	<0.20									
8/13/2015	ALMADENOUTLET	12		10.000		0.250	0.250									
9/2/2015	ALMADENOUTLET	6		3.400		0.260	<0.20									
9/16/2015	ALMADENOUTLET	5.7		1.000		0.130	<0.20									
09/29/2015	ALMADENOUTLET	7		0.73		0.047	<0.20									

CALERO EPILIMNION

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
4/28/2005	CALEROEPI			0.295					<0.50			0.016		2.5	20.25	
5/9/2005	CALEROEPI	7.3	2.1	0.223				<0.25	<0.50	<0.50	18	0.024	0.0120	2.5	20.4	
5/23/2005	CALEROEPI	<0.50	2.8	0.176	0.054			0.30	<0.50	<0.50	17	0.015	0.0047	7	17.5	
6/9/2005	CALEROEPI		1.4	0.119	0.040			<0.25	<0.50	<0.50	12	0.095	0.011	3	20	
6/20/2005	CALEROEPI			0.151				<0.25	<0.50	<0.50	25	0.017	0.013	3	20.75	
7/5/2005	CALEROEPI	8.1	2.5	0.207				<0.25	<0.50	<0.50	23	0.026	0.028	2.5	21	
7/18/2005	CALEROEPI	36.0	5.2	0.300				<0.25	<0.50	<0.50	23	0.022	0.015	2.5	20.6	
8/1/2005	CALEROEPI	8.6	2.8	0.518				<0.25	<0.50	<0.50	22	<0.010	0.021	2.5	19	
8/16/2005	CALEROEPI	140*	280*	1.630				<0.50	<0.50	<0.50	23	0.013	0.025	3.25	18.5	
8/29/2005	CALEROEPI	1700*	460*	1.750				<0.50	<0.50	<0.50	21	<0.010	0.010	4	19.6	
9/12/2005	CALEROEPI	220*	45*	0.906				<0.25	<0.50	<0.50	21	<0.010	0.0080	5	19.8	
9/26/2005	CALEROEPI	98*	130*	0.780				<0.25	<0.50	<0.50	26	<0.010	0.0081	5	20.75	
10/20/2005	CALEROEPI	7.0	0.66**	0.371				<0.100	<0.50	<0.50	19	0.014	0.0097	4.5	20.1	**Sample not filtered w/in 24 hours
11/15/2005	CALEROEPI	3.83	2.24	0.116				<0.100	<0.50	<0.50	23	<0.010	0.0044	3.5	18.3	
12/19/2005	CALEROEPI	2.3	1.4	b				0.123	0.93	<0.50	25	0.099	0.0080	3.5	19.6	
1/18/2006	CALEROEPI	15	3.1	0.073				<0.100	1.9	<0.50	25	0.029	0.0066	3.5	19.6	
2/16/2006	CALEROEPI	12	1.3	0.103				<0.100	1.1	<0.50	34	0.041	0.012	2	22	
3/13/2006	CALEROEPI	4.6	2.8	0.108				1.70	1.2	<0.50	28	0.039	0.0089	2	19	
4/24/2006	CALEROEPI	<0.50	1.7	0.130				<0.100	<0.50	<0.50	17	0.032	0.0160	3	22	
5/8/2006	CALEROEPI	<0.50	1.4	0.181				0.125	<0.50	<0.50	21	<0.010	0.0043	2	21	
5/22/2006	CALEROEPI	2.9	1.2	0.186				<0.100	0.64	<0.50	17	<0.050	0.0081	3	22	
6/5/2006	CALEROEPI	2.8	1.3	0.148				<0.100	<0.50	<0.50	21	<0.050	0.0052	3	20.75	
6/20/2006	CALEROEPI	1.9	1.8	0.111				<0.100	<0.50	<0.50	18	<0.050	0.0078	3	19	
7/11/2006	CALEROEPI	3.6	1.1	0.125				0.277	<0.50	<0.50	18	<0.050	0.0048	3	20.25	dup diss 0.530
7/25/2006	CALEROEPI	1.4		0.186				<0.100	1.2	<0.50	18	<0.050	0.0024	3	20	
8/14/2006	CALEROEPI	4.2	2.1	0.184				0.278	<0.50	<0.50	20	<0.050	0.0048	3	20.9	
8/28/2006	CALEROEPI	1.2	1.0	0.204				<0.100	<0.50	<0.50	22	<0.050	0.0048	3	20	
9/15/2006	CALEROEPI			0.235				<0.100	<0.50	<0.50	25	<0.050	0.0092	3	19.5	

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
10/5/2006	CALEROEPI	4.2	0.93	0.154				0.140	<0.50	<0.50	25	0.053	0.0031	2	18.9	
10/18/2006	CALEROEPI	4.7	6.8	0.113				<0.100	<0.50	<0.50	27	0.081	0.0051	2	20	
11/15/2006	CALEROEPI	5.3	0.84	0.021				0.220	<0.50	<0.50	22	0.059	0.0057	2	17.8	
12/13/2006	CALEROEPI	2.2	1.280	0.046				0.158	0.70	<0.50	34	0.077	0.016	2	17	
1/23/2007	CALEROEPI	2.0	<0.50	0.026				<0.100	0.70	<0.50	25	<0.050	0.012	2	15.25	
4/9/2008	CALEROEPI	4.3		0.072				<0.100	0.74	<0.50	26	<0.050	0.0097	2	18.5	
4/21/2008	CALEROEPI	1.9		0.083				0.353	0.52	<0.50	27	<0.050	0.014	2	18.3	
5/6/2008	CALEROEPI	1.4		0.112				0.265	0.58	<0.50	29	<0.050	0.018	2	18.5	
5/29/2008	CALEROEPI	0.98		0.111				<0.100	<0.50	<0.50	32	<0.050	0.014	2	18.9	
6/12/2008	CALEROEPI	1.3		0.135				<0.100	<0.50	<0.50	30	<0.050	0.012	2	19.3	
6/26/2008	CALEROEPI	0.96		0.147				0.167	<0.50	<0.50	34	<0.050	0.021	2	19.8	
7/9/2008	CALEROEPI	1.9		0.335				0.167	<0.50	<0.50	36	<0.050	0.035	2	19.75	
7/24/2008	CALEROEPI	1.9		0.536				0.146	<0.50	<0.50	34	<0.050	0.021	2	19.25	
8/7/2008	CALEROEPI	0.70		0.489				0.133	<0.50	<0.50	37	<0.050	NA	2	18.75	Lab error Chla
8/21/2008	CALEROEPI	1.0		0.247				<0.100	<0.50	<0.50	31	<0.050	<0.10	2	18.25	
9/10/2008	CALEROEPI	0.96		0.543				<0.100	<0.50	<0.50	35	0.10	0.019	2	20	
9/25/2008	CALEROEPI	0.85		0.536				<0.100	<0.50	<0.50	34	<0.050	0.008	2	17.4	
10/15/2008	CALEROEPI	1.2		0.167				0.185	<0.50	<0.50	74	<0.050	0.004	2	16.4	
11/19/2008	CALEROEPI	0.67		0.057				0.103	<0.50	<0.50	38	<0.050	0.004	2	16.8	
12/17/2008	CALEROEPI	1.95		0.031				<0.100	0.80	<0.50	41	<0.050	0.002	2	16.3	
1/15/2009	CALEROEPI			<0.049				<0.100	<0.50	<0.50	39	<0.050	0.006	2	16	
2/9/2009	CALEROEPI	1.54		<0.050				0.133	<0.50	<0.50	38	<0.050	0.009	2	16.6	
3/25/2009	CALEROEPI	3.46		0.148				<0.100	<0.50	<0.50	26	<0.050	0.006	2	19.3	
4/22/2009	CALEROEPI	1.80		0.095				<0.100	<1.0	<1.0	24	<0.050	0.005	2	18.75	
5/6/2009	CALEROEPI	2.34		0.090				0.084	<1.0	<1.0	23	0.053	0.002	2	19.5	
5/18/2009	CALEROEPI	1.90		0.077				0.103	<1.0	<1.0	29	<0.050	0.009	2	19.75	
6/10/2009	CALEROEPI	2.01		0.130				0.135	<1.0	<1.0	34	0.052	0.005	2	20.5	
6/24/2009	CALEROEPI	2.02		0.151				0.096	<1.0	<1.0	35	<0.050	0.002	2	19.5	
7/8/2009	CALEROEPI	3.15		0.171				<0.100	<1.0	<1.0	35	<0.050	0.003	2	19.25	
7/22/2009	CALEROEPI	1.57		0.072				<0.100	<1.0	<1.0	38	<0.050	0.002	2	18.1	
8/10/2009	CALEROEPI	1.94		0.246				1.82	<1.0	<1.0	37	<0.050	0.002	2	18.5	
8/19/2009	CALEROEPI	1.63		0.271				<0.100	<1.0	<1.0	38	<0.050	0.002	2	16.8	

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9/16/2009	CALEROEPI	2.03		0.279				<0.100	<1.0	<1.0	38	<0.050	0.002	2	17.1	
10/21/2009	CALEROEPI	4.39		0.147				0.093	<1.0	<1.0	37	<0.050	0.002	2	18.5	
11/25/2009	CALEROEPI	3.38		0.063				0.094	<1.0	<1.0	37	<0.050	<0.002	2	16.25	
12/17/2009	CALEROEPI	2.49		0.039				0.126	<1.0	<1.0	39	<0.050	<0.002	2	16.25	
1/14/2010	CALEROEPI	2.39		0.042				0.119	<1.0	<1.0	34	<0.050	0.003	2	15.75	
2/17/2010	CALEROEPI	7.9		0.14				<0.100	<1.0	<1.0	21	<0.050	0.003	2	18.8	
3/17/2010	CALEROEPI	4.84		0.118				0.202	<1.0	<1.0	20	<0.050	0.004	2	19.5	
3/17/2010	CALEROEPI*	3.3		0.12										2	19.5	Dup/Lab test
4/26/2010	CALEROEPI	2.94		0.094				0.144	<1.0	<1.0	19	<0.050	<0.002	2	21	
5/13/2010	CALEROEPI	2.14		0.084				<0.100	<1.0	<1.0	20	<0.050	<0.002	2	18.8	
5/24/2010	CALEROEPI	2.49		0.073				<0.100	<1.0	<1.0	20	<0.050	0.006	2	21.5	
6/16/2010	CALEROEPI	1.89		0.167				0.288	<1.0	<1.0	21	<0.050	0.002	2	19.1	
6/30/2010	CALEROEPI	1.48		0.150				0.166	<1.0	<1.0	23	<0.050	0.003	2	20	
7/13/2010	CALEROEPI	1.45		0.117				0.446	<1.0	<1.0	24	<0.050	0.006	2	20	
7/27/2010	CALEROEPI	1.35		0.110				0.202	<1.0	<1.0	26	<0.050	0.004	2	19.8	
8/11/2010	CALEROEPI	1.56		0.156				0.144	<1.0	<1.0	23	<0.050	0.004	2	17	
8/24/2010	CALEROEPI	1.26		0.147				0.093	<1.0	<1.0	24	<0.050	0.002	2	18.5	
9/16/2010	CALEROEPI	1.06		0.119				<0.100	<1.0	<1.0	23	<0.050	0.002	2	18	
10/6/2010	CALEROEPI	2.32		0.167				0.112	<1.0	<1.0	21	<0.050	0.011	2	17.75	
11/4/2010	CALEROEPI	1.73		0.080				0.114	<1.0	<1.0	24	<0.050	0.006	2	16.4	
12/15/2010	CALEROEPI	1.53		0.035				0.105	<1.0	<1.0	27	0.067	0.019	2	15.75	
1/11/2011	CALEROEPI	4.74		0.047				0.768	1.60	<1.0	24	<0.050	<0.002	2	18.1	
3/4/2011	CALEROEPI	5.00		0.094				0.170	<1.0	<1.0	23	0.062	0.014	2	18	
4/14/2011	CALEROEPI	7.64		0.068				0.138	<1.0	<1.0	18	<0.050	0.005	2	18	
5/5/2011	CALEROEPI	4.06		0.069				<0.100	<1.0	<1.0	19	<0.050	0.004	2	18.3	
6/9/2011	CALEROEPI	2.76		0.046				0.430	<1.0	<1.0	20	0.37	0.005	2	14.3	
6/30/2011	CALEROEPI	2.15		0.111				0.084	<1.0	<1.0	23	<0.050	0.010	2	17.6	
7/14/2011	CALEROEPI	2.16		0.137				0.212	<1.0	<1.0	25	<0.050	0.002	2	17.6	
7/28/2011	CALEROEPI	1.45		0.193				0.263	<1.0	<1.0	27	<0.050	0.014	2	17.75	
8/18/2011	CALEROEPI	1.67		0.159				0.171	<1.0	<1.0	26	<0.050	0.013	2	17.6	
9/15/2011	CALEROEPI	1.45		0.208				0.623	<1.0	<1.0	28	<0.050	0.014	2	17	
10/6/2011	CALEROEPI	2.45		0.193				0.332	<1.0	<1.0	30	<0.050	0.010	2	17.2	

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
11/8/2011	CALEROEPI	2.59		0.087				0.151	<1.0	<1.0	35	0.059	0.004	2	14.5	
12/19/2011	CALEROEPI	1.87		0.027				0.125	<1.0	<1.0	34	<0.050	0.010	2	15.8	
1/11/2012	CALEROEPI	2.05		0.021				<0.100	<1.0	<1.0	35	<0.050	0.010	2	15.4	
2/22/2012	CALEROEPI	2.41		0.043				0.119	<1.0	<1.0	34	<0.050	0.015	2	14.9	
3/19/2012	CALEROEPI	3.5		0.040				0.222	<1.0	<1.0	35	<0.050	0.006	2	16.4	
4/16/2012	CALEROEPI	2.3		0.036					<1.0	<1.0	35	<0.050	0.002	2	15.6	
5/7/2012	CALEROEPI	1.8		0.045				0.838	<1.0	<1.0	34	<0.050	0.006	2	14.75	
5/21/2012	CALEROEPI	1.5		0.051				0.093	<1.0	<1.0	34	<0.050	0.007	2	16.7	
6/7/2012	CALEROEPI	NS		0.055				0.264	<1.0	<1.0	34	<0.050	0.011	2	16	
6/28/2012	CALEROEPI	1.1		0.061				0.074	<1.0	<1.0	36	<0.050	0.010	2	15.6	
7/16/2012	CALEROEPI	1.5		0.085				<0.068	<1.0	<1.0	38	<0.050	0.012	2	16.75	
8/14/2012	CALEROEPI	0.95		0.080				<0.20	<1.0	<1.0	39	<0.050	0.014	2	16	
9/27/2012	CALEROEPI	2.1		0.066				<0.100	<1.0	<1.0	37	<0.050	0.006	2	15.4	
10/18/2012	CALEROEPI	1.1		0.068				<0.10	<1.0	<1.0	37	<0.050	0.009	2	16.75	
11/6/2012	CALEROEPI	1.1		0.052				<0.10	<1.0	<1.0	37	<0.050	0.011	2	15.5	
12/4/2012	CALEROEPI	2.3		0.067				0.15	<1.0	<1.0	38	<0.050	0.009	2	15.7	
1/23/2013	CALEROEPI	5.5		0.075				<0.10	1.1	<1.0	29	<0.050	0.004	2	16.2	
2/14/2013	CALEROEPI	6.0		0.055				<0.10	<1.0	<1.0	29	<0.050	0.017	2	15.8	
3/20/2013	CALEROEPI	1.7		0.060				<0.10	<1.0	<1.0	31	<0.050	0.004	2	16.5	
4/22/2013	CALEROEPI	0.82		0.054				0.270	<1.0	<1.0	33	0.13	0.008	2	16.5	
5/8/2013	CALEROEPI	1.7		0.047				<0.10	<1.0	<1.0	35	0.22	0.007	2	17.5	
6/5/2013	CALEROEPI	1.4		0.078				<0.10	<1.0	<1.0	37	<0.050	0.030	2	17.5	
6/27/2013	CALEROEPI	2.5		0.146				0.24	<1.0	<1.0	37	<0.050	0.010	2	17.3	
7/16/2013	CALEROEPI	1.2		0.122				<0.10	<1.0	<1.0	36	<0.050	0.022	2	15.9	
8/13/2013	CALEROEPI	1.6		0.088				<0.10	<1.0	<1.0	37	<0.050	0.015	2	17	
8/28/2013	CALEROEPI	1.3		0.182				<0.10	<1.0	<1.0	37	<0.050	0.013	2	17	
9/17/2013	CALEROEPI	1.4		0.218				0.11	<1.0	<1.0	36	<0.050	0.016	2	17.5	
10/1/2013	CALEROEPI	1.1		0.091				0.23	<1.0	<1.0	37	<0.050	0.015	2	16.8	
10/22/2013	CALEROEPI	1.0		0.058				<0.10	<1.0	<1.0	38	<0.050	0.014	2	17	
11/19/2013	CALEROEPI	2.0		0.044				0.11	<1.0	<1.0	38	<0.050	0.006	2	16.5	
12/19/2013	CALEROEPI	0.96		0.027				0.18	<1.0	<1.0	38	<0.050	0.011	2	16.3	
1/22/2014	CALEROEPI	1.6		NA				<0.10	<1.0	<1.0	40	<0.050	0.006	2	16.9	

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2/24/2014	CALEROEPI	1.3		0.052				0.13	<1.0	<1.0	39	<0.050	0.006	2	17.2	MeHg corrected from 0.06 per Recall
3/25/2014	CALEROEPI	1.0		<0.050				NS	<1.0	<1.0	39	<0.050	0.008	2	14.75	
4/15/2014	CALEROEPI	0.76		0.063				<0.10	<1.0	<1.0	40	<0.050	0.007	2	15.5	MeHg corrected from 0.073 per Recall
5/14/2014	CALEROEPI	1.0		<0.050				<0.10	<1.0	<1.0	42	<0.050	0.004	2	17	
5/27/2014	CALEROEPI	NS		0.064				NS	NS	NS	NS	NS	NS	2	18.6	MeHg corrected from 0.075 per Recall
6/10/2014	CALEROEPI	1.1		0.062				<0.10	<1.0	<1.0	44	<0.050	0.010	2	17.6	MeHg corrected from 0.072 per Recall
6/24/2014	CALEROEPI	NS		0.081				NS	NS	NS	NS	NS	NS	2	19.2	MeHg corrected from 0.094 per Recall
7/8/2014	CALEROEPI	0.82		0.098				0.11	<1.0	<1.0	45	<0.050	0.015	2	16.5	MeHg corrected from 0.11 per Recall
7/22/2014	CALEROEPI	0.74		0.12				<0.10	<1.0	<1.0	45	<0.050	0.014	2	18.1	MeHg corrected from 0.14 per Recall
7/31/2014	CALEROEPI			0.12										2	18.1	MeHg corrected from 0.14 per Recall
8/14/2014	CALEROEPI	1.0		0.21				<0.10	<1.0	<1.0	45	<0.050	0.014	2	17.25	MeHg corrected from 0.24 per Recall
8/27/2014	CALEROEPI			0.11										2	18.6	MeHg corrected from 0.12 per Recall
9/9/2014	CALEROEPI	0.90		0.10				0.16	<1.0	<1.0	43	<0.050	0.014	2	17.25	MeHg corrected from 0.12 per Recall
9/24/2014	CALEROEPI			0.098										2	18.5	MeHg corrected from 0.11 per Recall
10/7/2014	CALEROEPI	0.63		0.088				<0.10	<1.0	<1.0	43	<0.050	0.014	2	18	MeHg corrected from 0.1 per Recall
10/7/2014	CALEROEPIDUP	1.1												2	18	
10/22/2014	CALEROEPI			0.096										2	16.6	MeHg corrected from 0.11

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
11/4/2014	CALEROEPI	1.7		0.080				0.11	<1.0	<10.0	44	<0.050	0.012	2	16.6	
12/9/2014	CALEROEPI	0.91		<0.050				<0.10	<1.0	<10.0	45	<0.050	0.029	2	18	
1/15/2015	CALEROEPI	2.1		0.095				<0.10	1.0	<1.0	39	<0.050	0.020	2	16	
2/10/2015	CALEROEPI	10		0.17		0.020	0.56	<0.10	<1.0	<1.0	38	0.061	0.036	2	16.8	
2/10/2015	CALEROEPIDUP					0.021	0.48							2	16.8	
3/12/2015	CALEROEPI	3.0		0.066		<0.020	<0.20	0.22	<1.0	<1.0	35	0.066	0.015	2	16.4	
3/25/2015	CALEROEPI	2.6		0.050		<0.020	<0.20	<0.10	<1.0	<1.0	38	<0.050	0.023	2	15	
5/21/2015	CALEROEPI	1.2		0.059		0.020	<0.20	0.120	<1.0	<1.0	38	0.089	0.047	2	14.3	
7/9/2015	CALEROEPI	2.3		0.330		<0.020	<0.20	0.13	<1.0	<1.0	40	0.080	0.134	2	16.2	
7/29/2015	CALEROEPI	2.2		0.460		<0.020	<0.20	0.14	<1.0	<1.0	39	0.060	0.078	2	15.25	
8/5/2015	CALEROEPI	2.0		0.360		<0.020	<0.20	<0.10	<1.0	<1.0	39	0.066	0.056	2	14.8	
8/17/2015	CALEROEPI	1.8		0.400		<0.020	<0.20	NS	<1.0	<1.0	41	0.064	0.038	2	15.5	No NH4 sample taken, did not have enough NH4 bottles to collect sample.
9/3/2015	CALEROEPI	2.6		0.630		0.038	<0.20	0.120	<1.0	<1.0	39	0.096	0.021	2	15.7	
9/17/2015	CALEROEPI	2.6		0.950		0.044	0.230	<0.10	<1.0	<1.0	40	0.110	0.064	2	16.4	
10/01/2015	CALEROEPI	1.9		0.99		0.052	<0.20	0.17	<1.0	<1.0	39	0.074	0.031	2	16.05	
10/22/2015	CALEROEPI	3.5		1.1		0.13	0.48	0.18	<1.0	<1.0	39	0.14	0.017	2	15.86	

CALERO HYPOLIMNION

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
4/28/2005	CALEROHYP			0.251					0.76			0.280		13	20.25	
5/9/2005	CALEROHYP	5.5	3.4	0.117				<0.25	0.67	<0.50	18	0.012		10	20.4	
5/23/2005	CALEROHYP	<0.50	<0.50	0.154	0.091			<0.25	0.55	<0.50	17	0.02		13.5	17.5	
6/9/2005	CALEROHYP		1.20	0.151	0.088			<0.25	0.54	<0.50	11	0.016		18	20	
6/20/2005	CALEROHYP			0.757				<0.25	0.74	<0.50	18	0.095		20	20.75	
7/5/2005	CALEROHYP	5.7	3.7	1.270				<0.25	0.90	<0.50	19	0.12		20	21	
7/18/2005	CALEROHYP	7.3	2.4	1.800				<0.25	0.54	<0.50	22	0.13		19	20.6	
8/1/2005	CALEROHYP	9.5	2.8	2.010				<0.25	<0.50	<0.50	19	0.14		18	19	
8/16/2005	CALEROHYP	91*	52*	3.740				<0.50	<0.50	<0.50	18	0.14		17.5	18.5	
8/29/2005	CALEROHYP	20*	230*	5.690				0.52	<0.50	<0.50	17	0.12		18.75	19.6	
9/12/2005	CALEROHYP	33*	25*	5.900				0.28	<0.50	<0.50	14	0.19		19	19.8	
9/26/2005	CALEROHYP	1.41*	65*	7.460				0.33	<0.50	<0.50	14	<0.010		20	20.75	
10/20/2005	CALEROHYP	3.10	8.90**	0.391				0.151	<0.50	<0.50	19	0.042		19.5	20.1	**Sample not filtered w/in 24 hours
11/15/2005	CALEROHYP	5.15	1.69	0.152				<0.100	0.54	<0.50	23	<0.010		17.25	18.3	
12/19/2005	CALEROHYP	2.30	1.0	0.047				0.2	0.92	<0.50	26	0.10		18.5	19.6	
1/18/2006	CALEROHYP	19	2.7	0.064				<0.100	2.0	<0.50	27	0.032		18	19.6	
2/16/2006	CALEROHYP	12	1.2	0.136				0.160	1.6	<0.50	35	0.032		21	22	
3/13/2006	CALEROHYP	1.6	2.6	0.114				0.135	1.2	<0.50	26	0.037		18	19	
4/24/2006	CALEROHYP	1.6	0.67	0.121				0.140	<0.50	<0.50	17	0.044		21	22	
5/8/2006	CALEROHYP	1.0	1.1	0.108				<0.100	<0.50	<0.50	16	0.023		20	21	
5/22/2006	CALEROHYP	4.7	1.6	0.140				<0.100	1.3	<0.50	17	<0.050		21	22	
6/5/2006	CALEROHYP	2.9	1.1	0.054				0.188	1.2	<0.50	<0.50	0.079		20	20.75	
6/20/2006	CALEROHYP	3.4	2.0	0.256				<0.100	0.97	<0.50	18	0.12		18.5	19	
7/11/2006	CALEROHYP	3.7	1.4	1.070				0.158	0.50	<0.50	15	0.22		19.25	20.25	dup diss 2.160
7/25/2006	CALEROHYP	3.2		1.640				0.133	<0.50	<0.50	15	0.13		19	20	
8/14/2006	CALEROHYP	8.8	6.4	3.740				0.325	<0.50	<0.50	13	0.12		20	20.9	
8/28/2006	CALEROHYP		2.4	1.170				0.178	<0.50	<0.50	15	0.090		19.5	20	
9/15/2006	CALEROHYP			3.310				0.459	<0.50	<0.50	20	0.098		19	19.5	

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
10/5/2006	CALEROHYP	7.2	0.66	0.166				<0.100	<0.50	<0.50	27	0.060		18	18.9	
10/18/2006	CALEROHYP	7.3	1.4	0.147				<0.100	<0.50	<0.50	28	0.096		19	20	
11/15/2006	CALEROHYP	4.3	0.80	0.037				0.206	<0.50	<0.50	22	0.062		17	17.8	
12/13/2006	CALEROHYP	4.4	4.820	0.038				0.135	0.70	<0.50	34	0.078		16	17	
1/23/2007	CALEROHYP	<0.50	<0.50	0.024				<0.100	0.66	<0.50	25	<0.050		14.5	15.25	
4/9/2008	CALEROHYP	5.2		0.067				0.148	1.8	<0.50	26	<0.050		17.75	18.5	
4/21/2008	CALEROHYP	3.7		0.072				<0.100	2.3	<0.50	25	<0.050		17.75	18.3	
5/6/2008	CALEROHYP	2.6		0.718				0.174	1.9	<0.50	26	<0.050		18	18.5	
5/29/2008	CALEROHYP	1.4		0.297				<0.100	1.8	<0.50	29	<0.050		18	18.9	
6/12/2008	CALEROHYP	1.9		0.683				<0.100	1.1	<0.50	25	0.055		18.5	19.3	
6/26/2008	CALEROHYP	1.5		1.08				0.216	0.83	<0.50	29	0.096		19	19.8	
7/9/2008	CALEROHYP	3.0		2.09				0.306	<0.50	<0.50	30	0.10		19	19.75	
7/24/2008	CALEROHYP	3.2		2.39				0.310	<0.50	<0.50	28	0.12		18.5	19.25	
8/7/2008	CALEROHYP	0.98		3.44				0.387	<0.50	<0.50	29	0.14		18	18.75	
8/21/2008	CALEROHYP	4.3		4.09				0.385	<0.50	<0.50	23	0.15		17.5	18.25	
9/10/2008	CALEROHYP	3.1		5.87				0.510	<0.50	<0.50	25	0.064		19	20	
9/25/2008	CALEROHYP	4.9		10.5				0.891	<0.50	<0.50	23	0.065		16.75	17.4	
10/15/2008	CALEROHYP	1.5		0.152				0.161	<0.50	<0.50	34	<0.050		15.5	16.4	
11/19/2008	CALEROHYP	1.6		0.104				0.486	0.58	<0.50	38	<0.050		16	16.8	
12/17/2008	CALEROHYP	2.29		0.036				<0.100	0.80	<0.50	40	<0.050		15.5	16.3	
1/15/2009	CALEROHYP			0.021				<0.100	0.54	<0.50	38	<0.050		15	16	
2/9/2009	CALEROHYP	2.23		<0.050				<0.100	0.51	<0.50	37	<0.050		16	16.6	
3/25/2009	CALEROHYP	4.58		0.064				<0.100	0.59	<0.50	26	<0.050		18.5	19.3	
4/22/2009	CALEROHYP	3.47		0.083				0.178	<1.0	<1.0	23	<0.050		18	18.75	
5/6/2009	CALEROHYP	3.65		0.177				1.02	<1.0	<1.0	25	<0.050		19	19.5	
5/18/2009	CALEROHYP	2.41		0.232				0.134	<1.0	<1.0	23	0.069		19	19.75	
6/10/2009	CALEROHYP	2.62		0.710				<0.100	<1.0	<1.0	24	0.11		20	20.5	
6/24/2009	CALEROHYP	3.13		1.61				0.153	<1.0	<1.0	25	0.090		19	19.5	
7/8/2009	CALEROHYP	4.37		1.88				0.241	<1.0	<1.0	26	0.14		18.25	19.25	
7/22/2009	CALEROHYP	3.99		3.12				0.354	<1.0	<1.0	26	0.13		17	18.1	
8/10/2009	CALEROHYP	6.44		5.68				0.450	<1.0	<1.0	33	0.13		18	18.5	
8/19/2009	CALEROHYP	7.15		6.60				0.526	<1.0	<1.0	26	0.12		16	16.8	

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9/16/2009	CALEROHYP	16.6		13.2				0.454	<1.0	<1.0	29	0.078		16.25	17.1	
10/21/2009	CALEROHYP	9.21		0.115				0.144	1.6	<1.0	35	0.11		18	18.5	
11/25/2009	CALEROHYP	3.62		0.067				0.359	<1.0	<1.0	37	<0.050		16	16.25	
12/17/2009	CALEROHYP	4.28		0.042				<0.100	<1.0	<1.0	39	0.051		16	16.25	
1/14/2010	CALEROHYP	4.04		0.033				0.084	<1.0	<1.0	35	<0.050		15	15.75	
2/17/2010	CALEROHYP	6.6		0.12				<0.100	<1.0	<1.0	21	<0.050		18	18.8	
3/17/2010	CALEROHYP	6.95		0.105				0.204	<1.0	<1.0	19	<0.050		19	19.5	
3/17/2010	CALEROHYP*	4.3		0.049										19	19.5	Dup/Lab test
4/26/2010	CALEROHYP	4.52		0.059				0.127	<1.0	<1.0	19	<0.050		20	21	
5/13/2010	CALEROHYP	3.89		0.116				0.119	<1.0	<1.0	19	0.082		18	18.8	
5/24/2010	CALEROHYP	3.24		0.099				<0.100	<1.0	<1.0	19	0.078		21	21.5	
6/16/2010	CALEROHYP	2.46		0.274				0.382	0.088	<1.0	18.1	0.11		18	19.1	
6/30/2010	CALEROHYP	4.19		0.821				0.322	<1.0	<1.0	18	0.11		19.5	20	
7/13/2010	CALEROHYP	6.95		1.92				0.257	<1.0	<1.0	18	0.20		19.5	20	
7/27/2010	CALEROHYP	6.39		3.22				0.723	<1.0	<1.0	16	0.14		19	19.8	
8/11/2010	CALEROHYP	6.65		3.33				0.410	<1.0	<1.0	16	0.22		16	17	
8/24/2010	CALEROHYP	7.70		3.79				0.426	<1.0	<1.0	14	0.092		18	18.5	
9/16/2010	CALEROHYP	8.42		4.87				0.207	<1.0	<1.0	14	0.21		17.5	18	
10/6/2010	CALEROHYP	12.2		8.69				0.282	<1.0	<1.0	14	0.15		17	17.75	
11/4/2010	CALEROHYP	6.37		0.107				0.275	<1.0	<1.0	23	0.066		16	16.4	
12/15/2010	CALEROHYP	2.20		0.023				0.131	<1.0	<1.0	26	<0.050		15	15.75	
1/11/2011	CALEROHYP	4.70		0.058				0.153	1.6	<1.0	22	<0.050		17.5	18.1	
3/4/2011	CALEROHYP	6.67		0.078				0.183	<1.0	<1.0	23	<0.050		17.5	18	
4/14/2011	CALEROHYP	13.3		0.088				0.131	<1.0	<1.0	18	<0.050		17.5	18	
5/5/2011	CALEROHYP	11.5		0.107				<0.100	1.30	<1.0	18	<0.050		18	18.3	
6/9/2011	CALEROHYP	4.15		0.047				0.171	<1.0	<1.0	19	<0.050		14	14.3	
6/30/2011	CALEROHYP	2.37		0.349				<0.100	<1.0	<1.0	19	0.14		17	17.6	
7/14/2011	CALEROHYP	2.78		1.09				0.178	<1.0	<1.0	18	0.098		17	17.6	
7/28/2011	CALEROHYP	6.30		2.22				0.307	<1.0	<1.0	18	0.11		17.5	17.75	
8/18/2011	CALEROHYP	8.04		4.22				0.417	<1.0	<1.0	24	0.092		17	17.6	
9/15/2011	CALEROHYP	5.94		4.44				0.299	<1.0	<1.0	23	0.089		16	17	
10/6/2011	CALEROHYP	2.41		0.217				0.927	<1.0	<1.0	30	<0.050		16.75	17.2	

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11/8/2011	CALEROHYP	2.86		0.065				0.229	<1.0	<1.0	32	0.060		14	14.5	
12/19/2011	CALEROHYP	2.27		0.023				0.089	<1.0	<1.0	33	<0.050		15	15.8	
1/11/2012	CALEROHYP	5.47		0.025				<0.100	<1.0	<1.0	34	<0.050		15	15.4	
2/22/2012	CALEROHYP	2.14		0.021				<0.100	<1.0	<1.0	34	<0.050		14.5	14.9	
3/19/2012	CALEROHYP	7.7		0.105				0.253	<1.0	<1.0	36	0.063		16	16.4	
4/16/2012	CALEROHYP	2.4		0.024				NS	<1.0	<1.0	37	<0.050		15	15.6	
5/7/2012	CALEROHYP	2.0		0.034				0.603	<1.0	<1.0	32	<0.050		14	14.75	
5/21/2012	CALEROHYP	2.0		0.019				0.113	<1.0	<1.0	34	<0.050		16.25	16.7	
6/7/2012	CALEROHYP	NS		0.038				0.175	<1.0	<1.0	35	<0.050		15.5	16	
6/28/2012	CALEROHYP	3.6		0.102				0.080	<1.0	<1.0	36	0.050		15	15.6	
7/16/2012	CALEROHYP	5.1		1.27				0.14	<1.0	<1.0	34	0.099		16.25	16.75	
8/14/2012	CALEROHYP	3.8		2.53				<0.20	<1.0	<1.0	33	0.072		15.5	16	
9/27/2012	CALEROHYP	4.7		0.121				<0.100	<1.0	<1.0	37	0.051		15	15.4	
10/18/2012	CALEROHYP	2.1		0.070				<0.10	<1.0	<1.0	37	0.063		16.25	16.75	
11/6/2012	CALEROHYP	3.3		0.049				<0.10	<1.0	<1.0	40	0.057		15	15.5	
12/4/2012	CALEROHYP	7.6		0.069				0.18	<1.0	<1.0	35	<0.050		15.5	15.7	
1/23/2013	CALEROHYP	7.4		0.093				0.17	<1.0	<1.0	30	<0.050		15.75	16.2	
2/14/2013	CALEROHYP	6.4		0.049				0.95	<1.0	<1.0	29	<0.050		15.5	15.8	
3/20/2013	CALEROHYP	1.4		0.020				0.27	<1.0	<1.0	30	<0.050		16	16.5	
4/22/2013	CALEROHYP	4.2		2.08				0.29	<1.0	<1.0	29	0.37		16	16.5	
5/8/2013	CALEROHYP	1.9		0.462				0.22	<1.0	<1.0	31	0.21		17	17.5	
6/5/2013	CALEROHYP	0.69		0.163				0.14	1.4	<1.0	31	0.088		17.5	17.5	
6/27/2013	CALEROHYP	3.0		1.38				0.2	<1.0	<1.0	30	0.050		17	17.3	
7/16/2013	CALEROHYP	3.0		1.87				0.18	<1.0	<1.0	32	0.073		15.5	15.9	
8/13/2013	CALEROHYP	6.8		2.95				<0.10	<1.0	<1.0	32	0.22		16.5	17	
8/28/2013	CALEROHYP	4.6		2.16				0.19	<1.0	<1.0	33	0.11		16.5	17	
9/17/2013	CALEROHYP	2.2		0.262				<0.10	<1.0	<1.0	36	<0.050		17	17.5	
10/1/2013	CALEROHYP	2.0		0.096				0.14	<1.0	<1.0	36	<0.050		16.5	16.8	
10/22/2013	CALEROHYP	2.5		0.070				0.19	<1.0	<1.0	38	<0.050		16.5	17	

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
11/19/2013	CALEROHYP	2.2		0.043				NC*	<1.0	<1.0	37	<0.050		16	16.5	*lab result of 98 mg/l inconsistent & thrown out
12/19/2013	CALEROHYP	3.8		0.025				0.25	<1.0	<1.0	39	<0.050		16	16.3	
1/22/2014	CALEROHYP	5.0		NA				<0.10	<1.0	<1.0	40	<0.050		16.5	16.9	
2/24/2014	CALEROHYP	4.1		0.045				0.19	<1.0	<1.0	39	<0.050		17	17.2	MeHg corrected from 0.053 per Recall
3/25/2014	CALEROHYP	3.1		<0.050				0.12	1.2	<1.0	38	<0.050		14.5	14.75	
4/15/2014	CALEROHYP	7.6		0.31				0.17	<1.0	<1.0	38	0.17		15	15.5	MeHg corrected from 0.36 per Recall
5/14/2014	CALEROHYP	1.3		0.19				0.13	<1.0	<1.0	38	0.063		16.5	17	MeHg corrected from 0.22 per Recall
5/27/2014	CALEROHYP	NS		0.46				NS	NS	NS	NS	NS		18	18.6	MeHg corrected from 0.54 per Recall
6/10/2014	CALEROHYP	1.4		0.096				0.19	<1.0	<1.0	39	0.076		17	17.6	MeHg corrected from 0.11 per Recall
6/24/2014	CALEROHYP	NS		0.045				NS	NS	NS	NS	NS		17	19.2	MeHg corrected from 0.052 per Recall
7/8/2014	CALEROHYP	1.0		0.33				0.19	<1.0	<1.0	40	<0.050		16	16.5	MeHg corrected from 0.39 per Recall
7/22/2014	CALEROHYP	2.4		0.39				0.20	<1.0	<1.0	37	0.11		17.5	18.1	MeHg corrected from 0.46 per Recall
7/31/2014	CALEROHYP			0.36										17	18.1	MeHg corrected from 0.42 per Recall
8/14/2014	CALEROHYP	2.0		0.20				<0.10	<1.0	<1.0	38	<0.050		16	17.25	MeHg corrected from 0.23 per Recall
9/9/2014	CALEROHYP	1.4		0.13				0.15	<1.0	<1.0	35	<0.050		16	17.25	MeHg corrected from 0.15 per Recall
8/27/2014	CALEROHYP			0.17										17	18.6	MeHg corrected from 0.2 per Recall

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
9/24/2014	CALEROHYP			0.086										16	18.5	MeHg corrected from 0.1 per Recall
10/7/2014	CALEROHYP	2.8		0.13				0.15	<1.0	<1.0	39	0.079		16	18	MeHg corrected from 0.15 per Recall
10/22/2014	CALEROHYP			0.089										16	16.6	MeHg corrected from 0.1 per Recall
10/22/2014	CALEROHYPDUP			0.082										16	16.6	MeHg corrected from 0.096 per Recall
11/4/2014	CALEROHYP	3.5		0.076				<0.10	<1.0	<10.0	44	<0.050		16	16.6	
12/9/2014	CALEROHYP	3.7		<0.050				0.24	<1.0	<10.0	45	0.052		17.5	18	
1/15/2015	CALEROHYP	6.8		0.077				0.16	1.6	<1.0	41	<0.050		15.5	16	
2/10/2015	CALEROHYP	2.2		<0.050		0.039	<0.20	0.14	<1.0	<1.0	42	<0.050		16.5	16.8	
2/10/2015	CALEROHYPDUP	2.1												16.5	16.8	
3/12/2015	CALEROHYP	4.1		0.065		0.055	0.26	0.22	<1.0	<1.0	35	0.066		16	16.4	
3/25/2015	CALEROHYP	9.7		0.054		0.25	2.0	0.16	<1.0	<1.0	38	0.062		14.5	15	
3/25/2015	CALEROHYPDUP	12												14.5	15	
5/21/2015	CALEROHYP	1.6		0.050		0.170	<0.20	0.19	<1.0	<1.0	35	0.120		14	14.3	
7/9/2015	CALEROHYP	2.50		1.1		0.17	<0.20	0.11	1.5	<1.0	33	0.210		16	16.2	
7/29/2015	CALEROHYP	3.50		1.6		0.2	<0.20	0.34	1.4	<1.0	32	0.200		15	15.25	
8/5/2015	CALEROHYP	3.5		2.500		0.190	<0.20	0.33	<1.0	<1.0	33	0.230		14	14.8	
8/17/2015	CALEROHYP	5.9		0.600		0.520	<0.20	0.520	<1.0	<1.0	28	0.320		15	15.5	
9/3/2015	CALEROHYP	6.9		<2.0		0.620	1.300	0.91	<1.0	<1.0	25	0.400		15.5	15.7	Samples were diluted due to nature of the sampling matrix.

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
9/17/2015	CALEROHYP	12.0		<2.0		0.740	<0.20	1.8	<1.0	<1.0	18	0.560		16	16.4	Samples were diluted due to the Odor. RL changed to 2.0
10/01/2015	CALEROHYP	11		<0.50		0.68	<0.20	1.6	<1.0	<1.0	16	0.48		16	16.05	
10/22/2015	CALEROHYP	3.2		1.1		0.13	<0.20	0.14	<1.0	<1.0	39	0.14		15.5	15.86	
10/22/2015	CALEROHYPDUP	3.2		1.1										15.5	15.86	

CALERO DEEP SPOT

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
8/14/2014	CALERODEEP			0.25										17	17.25	MeHg corrected from 0.29 per Recall
8/27/2014	CALERODEEP			0.17										17	18.6	MeHg corrected from 0.2 per Recall
9/9/2014	CALERODEEP			0.46										17	17.25	MeHg corrected from 0.54 per Recall
9/24/2014	CALERODEEP			0.42										18	18.5	MeHg corrected from 0.49 per Recall
10/7/2014	CALERODEEP			0.24										17	18	MeHg corrected from 0.27 per Recall
10/7/2014	CALERODEEPDUP			0.23										17	18	MeHg corrected from 0.27 per Recall

CALERO EPI-MID, MID, MID-HYP

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
6/9/2005	CALEROMID			0.116										12	20	
6/20/2005	CALEROMID			0.148										6	20.75	
7/5/2005	CALEROMID			0.162										14.5	21	
7/18/2005	CALEROMID			0.691										15	20.6	
8/1/2005	CALEROMID			2.000										15	19	
8/16/2005	CALEROMID			3.380										15.25	18.5	
8/29/2005	CALEROMID			4.300										14.5	19.6	
9/12/2005	CALEROMID			6.810										14.5	19.8	
9/26/2005	CALEROMID			8.910										14	20.75	
10/20/2005	CALEROMID			0.369										14	20.1	
11/15/2005	CALEROMID			0.154										12	18.3	
12/19/2005	CALEROMID			0.050										12.5	19.6	
1/18/2006	CALEROMID			0.052										12	19.6	
2/16/2006	CALEROMID			0.052										12	22	
3/13/2006	CALEROMID			0.142										8	19	
4/24/2006	CALEROMID			0.085										12	22	
5/8/2006	CALEROMID			0.091										14	21	
5/22/2006	CALEROMID			0.076										15	22	
6/5/2006	CALEROMID			0.074										13	20.75	
6/20/2006	CALEROMID			0.102										10	19	
7/11/2006	CALEROMID			0.449										14	20.25	
7/25/2006	CALEROMID			1.760										10.5	20	
8/14/2006	CALEROMID			2.230										14	20.9	
8/28/2006	CALEROMID			0.320										14.75	20	
9/15/2006	CALEROMID			0.281										12	19.5	
10/5/2006	CALEROMID			0.126										10	18.9	
10/18/2006	CALEROMID			0.142										10	20	
11/15/2006	CALEROMID			0.075										10	17.8	
12/13/2006	CALEROMID			0.057										9	17	

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
1/23/2007	CALEROMID			0.029										8.5	15.25	
4/9/2008	CALEROMID			0.085										10	18.5	
4/21/2008	CALEROMID			0.069										10	18.3	
5/6/2008	CALEROMID			0.093										10	18.5	
5/29/2008	CALEROMID			0.074										10	18.9	
6/12/2008	CALEROMID			0.097										10.25	19.3	
6/26/2008	CALEROMID			0.387										10.5	19.8	
7/9/2008	CALEROMID			0.746										10.5	19.75	
7/24/2008	CALEROMID			1.73										10.5	19.25	
8/7/2008	CALEROMID			2.08										10	18.75	
8/21/2008	CALEROMID			5.25										10	18.25	
9/10/2008	CALEROMID			0.361										10.5	20	
9/25/2008	CALEROMID			0.517										9.5	17.4	
10/15/2008	CALEROMID			0.155										8.5	16.4	
11/19/2008	CALEROMID			0.053										9	16.8	
12/17/2008	CALEROMID			0.035										9	16.3	
1/15/2009	CALEROMID			<0.049										8.5	16	
2/9/2009	CALEROMID			0.028										9	16.6	
3/25/2009	CALEROMID			0.080										10	19.3	
4/22/2009	CALEROMID			0.073										10	18.75	
5/6/2009	CALEROMID			0.077										11	19.5	
5/18/2009	CALEROMID			0.054										10.5	19.75	
6/10/2009	CALEROMID			0.110										11	20.5	
6/24/2009	CALEROMID			0.434										10.5	19.5	
7/8/2009	CALEROMID			1.69										10	19.25	
7/22/2009	CALEROMID			3.79										9.5	18.1	
8/10/2009	CALEROMID			5.43										10	18.5	
8/19/2009	CALEROMID			1.23										9	16.8	
9/16/2009	CALEROMID			0.359										9	17.1	
10/21/2009	CALEROMID			0.192										10	18.5	

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
11/25/2009	CALEROMID			0.068										9	16.25	
12/17/2009	CALEROMID			0.042										9	16.25	
1/14/2010	CALEROMID			0.044										8.5	15.75	
2/17/2010	CALEROMID			0.11										10	18.8	
3/17/2010	CALEROMID			0.093										11	19.5	
3/17/2010	CALEROMID*			0.068										11	19.5	Dup/Lab test
4/26/2010	CALEROMID			0.059										11	21	
4/26/2010	CALEROMID*			0.093										6.5	21	EPIMID
4/26/2010	CALEROMID*			0.063										15.5	21	MIDHYP
5/13/2010	CALEROMID			0.071										10	18.8	
5/13/2010	CALEROMID*			0.079										6	18.8	EPIMID
5/13/2010	CALEROMID*			0.061										14	18.8	MIDHYP
5/24/2010	CALEROMID			0.059										11.5	21.5	
5/24/2010	CALEROMID*			0.076										6	21.5	EPIMID
5/24/2010	CALEROMID*			0.061										16	21.5	MIDHYP
6/16/2010	CALEROMID			0.048										10	19.1	
6/16/2010	CALEROMID*			0.091										6	19.1	EPIMID
6/16/2010	CALEROMID*			0.078										14	19.1	MIDHYP
6/30/2010	CALEROMID			0.099										10	20	
6/30/2010	CALEROMID*			0.141										6	20	EPIMID
6/30/2010	CALEROMID*			0.271										15	20	MIDHYP
7/13/2010	CALEROMID			0.455										11	20	
7/13/2010	CALEROMID*			0.111										6.5	20	EPIMID
7/13/2010	CALEROMID*			1.68										15.5	20	MIDHYP
7/27/2010	CALEROMID			0.871										11	19.8	
7/27/2010	CALEROMID*			0.269										7	19.8	EPIMID
7/27/2010	CALEROMID*			2.27										15	19.8	MIDHYP
8/11/2010	CALEROMID			0.954										9	17	
8/11/2010	CALEROMID*			0.164										5.5	17	EPIMID
8/11/2010	CALEROMID*			2.29										12.5	17	MIDHYP
8/24/2010	CALEROMID			1.09										10	18.5	

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
8/24/2010	CALEROMID*			0.171										6	18.5	EPIMID
8/24/2010	CALEROMID*			3.12										14	18.5	MIDHYP
9/16/2010	CALEROMID			0.255										10	18	
9/16/2010	CALEROMID*			0.115										6	18	EPIMID
9/16/2010	CALEROMID*			5.29										14	18	MIDHYP
10/6/2010	CALEROMID			0.110										9.5	17.75	
11/4/2010	CALEROMID			0.061										9	16.4	
12/15/2010	CALEROMID			0.024										8.5	15.75	
1/11/2011	CALEROMID			0.071										10	18.1	
3/4/2011	CALEROMID			0.055										10	18	
4/14/2011	CALEROMID			0.122										10	18	
5/5/2011	CALEROMID			0.073										10	18.3	
6/9/2011	CALEROMID			0.034										8	14.3	
6/30/2011	CALEROMID			0.061										9.5	17.6	
6/30/2011	CALEROMID*			0.075										5.5	17.6	EPIMID
6/30/2011	CALEROMID*			0.126										13.5	17.6	MIDHYP
7/14/2011	CALEROMID			0.279										10	17.6	
7/14/2011	CALEROMID*			0.108										6	17.6	EPIMID
7/14/2011	CALEROMID*			0.662										14	17.6	MIDHYP
7/28/2011	CALEROMID			1.99										10	17.75	
7/28/2011	CALEROMID*			0.285										6	17.75	EPIMID
7/28/2011	CALEROMID*			1.92										14	17.75	MIDHYP
8/18/2011	CALEROMID			1.44										10	17.6	
8/18/2011	CALEROMID*			0.195										6	17.6	EPIMID
8/18/2011	CALEROMID*			2.37										13.5	17.6	MIDHYP
9/15/2011	CALEROMID			1.63										10	17	
9/15/2011	CALEROMID*			0.208										6	17	EPIMID
9/15/2011	CALEROMID*			3.35										13.5	17	MIDHYP
10/6/2011	CALEROMID			0.209										9.5	17.2	
10/6/2011	CALEROMID*			0.111										6	17.2	EPIMID
10/6/2011	CALEROMID*			0.218										13	17.2	MIDHYP
11/8/2011	CALEROMID			0.094										8	14.5	

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12/19/2011	CALEROMID			0.023										8.5	15.8	
1/11/2012	CALEROMID			0.020										8.5	15.4	
2/22/2012	CALEROMID			0.026										8	14.9	
3/19/2012	CALEROMID			0.030										9	16.4	
4/16/2012	CALEROMID			0.040										8.5	15.6	
5/7/2012	CALEROMID			0.022										8	14.75	
5/7/2012	CALEROMID*			0.031										5	14.75	EPIMID
5/7/2012	CALEROMID*			0.024										11	14.75	MIDHYP
5/21/2012	CALEROMID			0.024										9	16.7	
5/21/2012	CALEROMID*			0.037										5.5	16.7	EPIMID
5/21/2012	CALEROMID*			0.021										12.5	16.7	MIDHYP
6/7/2012	CALEROMID			0.030										8	16	
6/7/2012	CALEROMID*			0.033										5	16	EPIMID
6/7/2012	CALEROMID*			0.035										11.5	16	MIDHYP
6/28/2012	CALEROMID			0.058										8.5	15.6	
6/28/2012	CALEROMID*			0.055										5	15.6	EPIMID
6/28/2012	CALEROMID*			0.063										12	15.6	MIDHYP
7/16/2012	CALEROMID			0.111										9	16.75	
7/16/2012	CALEROMID*			0.084										5.5	16.75	EPIMID
7/16/2012	CALEROMID*			0.939										12.5	16.75	MIDHYP
8/14/2012	CALEROMID			0.231										9	16	
8/14/2012	CALEROMID*			0.094										5.5	16	EPIMID
8/14/2012	CALEROMID*			1.43										12.5	16	MIDHYP
9/27/2012	CALEROMID			0.081										8.5	15.4	
9/27/2012	CALEROMID*			0.069										5	15.4	EPIMID
9/27/2012	CALEROMID*			0.076										12	15.4	MIDHYP
10/18/2012	CALEROMID			0.067										9	16.75	
11/6/2012	CALEROMID			0.046										8.5	15.5	
12/4/2012	CALEROMID			0.028										9	15.7	
1/23/2013	CALEROMID			0.079										9	16.2	
2/14/2013	CALEROMID			0.047										8.5	15.8	
3/20/2013	CALEROMID			0.038										9	16.5	

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
4/22/2013	CALEROMID			0.081										9	16.5	
5/8/2013	CALEROMID			0.123										9.5	17.5	
5/8/2013	CALEROMID*			0.062										6	17.5	EPIMID
5/8/2013	CALEROMID*			0.321										13.5	17.5	MIDHYP
6/5/2013	CALEROMID			0.033										10	17.5	
6/5/2013	CALEROMID*			0.045										6	17.5	EPIMID
6/5/2013	CALEROMID*			0.083										14	17.5	MIDHYP
6/27/2013	CALEROMID			0.690										9.5	17.3	
6/27/2013	CALEROMID*			0.168										5.5	17.3	EPIMID
6/27/2013	CALEROMID*			0.917										13.5	17.3	MIDHYP
7/16/2013	CALEROMID			1.50										9	15.9	
7/16/2013	CALEROMID*			0.160										5.5	15.9	EPIMID
7/16/2013	CALEROMID*			1.78										12.5	15.9	MIDHYP
8/13/2013	CALEROMID			1.42										10	17	
8/13/2013	CALEROMID*			0.260										6	17	EPIMID
8/13/2013	CALEROMID*			1.36										13	17	MIDHYP
8/28/2013	CALEROMID			1.25										10	17	
8/28/2013	CALEROMID*			0.411										6	17	EPIMID
8/28/2013	CALEROMID*			1.58										13.5	17	MIDHYP
9/17/2013	CALEROMID			0.229										10	17.5	
9/17/2013	CALEROMID*			0.242										6	17.5	EPIMID
9/17/2013	CALEROMID*			0.170										13.5	17.5	MIDHYP
10/1/2013	CALEROMID			0.086										9	16.8	
10/22/2013	CALEROMID			0.067										9	17	
11/19/2013	CALEROMID			0.044										9	16.5	
12/19/2013	CALEROMID			0.027										9	16.3	
1/22/2014	CALEROMID			NA										9.5	16.9	
2/24/2014	CALEROMID			0.050										9.5	17.2	MeHg corrected from 0.058 per Recall
3/25/2014	CALEROMID			<0.050										8.5	14.75	
4/15/2014	CALEROMID			<0.050										8.5	15.5	

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
5/14/2014	CALEROMID			0.092										9.5	17	MeHg corrected from 0.11 per Recall
5/27/2014	CALEROMID			0.11										10	18.6	MeHg corrected from 0.13 per Recall
5/27/2014	CALEROMID*			0.055										6	18.6	EPIMID
5/27/2014	CALEROMID*			0.12										14	18.6	MIDHYP
6/10/2014	CALEROMID			0.076										9.5	17.6	MeHg corrected from 0.089 per Recall
6/10/2014	CALEROMID*			0.051										6	17.6	EPIMID
6/10/2014	CALEROMID*			0.092										13.5	17.6	MIDHYP
6/24/2014	CALEROMID			0.055										10	19.2	MeHg corrected from 0.064 per Recall
6/24/2014	CALEROMID*			0.05										6	19.2	EPIMID
6/24/2014	CALEROMID*			0.059										14	19.2	MIDHYP
7/8/2014	CALEROMID			0.059										9	16.5	MeHg corrected from 0.069 per Recall
7/8/2014	CALEROMID*			0.096										5.5	16.5	EPIMID
7/8/2014	CALEROMID*			0.048										12.5	16.5	MIDHYP
7/22/2014	CALEROMID			0.14										9.5	18.1	MeHg corrected from 0.16 per Recall
7/22/2014	CALEROMID*			0.17										6	18.1	EPIMID
7/22/2014	CALEROMID*			0.12										13.5	18.1	MIDHYP
7/31/2014	CALEROMID			0.11										9.5	18.1	MeHg corrected from 0.13 per Recall
7/31/2014	CALEROMID*			0.37										6	18.1	EPIMID
7/31/2014	CALEROMID*			0.10										13.5	18.1	MIDHYP

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
8/14/2014	CALEROMID			0.31										9	17.25	MeHg corrected from 0.36 per Recall
8/14/2014	CALEROMID*			0.19										5.5	17.25	EPIMID
8/14/2014	CALEROMID*			0.22										12.5	17.25	MIDHYP
8/27/2014	CALEROMID			0.12										9	18.6	MeHg corrected from 0.14 per Recall
8/27/2014	CALEROMID*			0.096										5.5	18.6	EPIMID
8/27/2014	CALEROMID*			0.14										13.5	18.6	MIDHYP
9/9/2014	CALEROMID			0.097										9	17.25	MeHg corrected from 0.11 per Recall
9/9/2014	CALEROMID*			0.10										5.5	17.25	EPIMID
9/9/2014	CALEROMID*			0.14										13.5	17.25	MIDHYP
9/24/2014	CALEROMID			0.063										9	18.5	MeHg corrected from 0.074 per Recall
9/24/2014	CALEROMID*			0.084										5.5	18.5	EPIMID
9/24/2014	CALEROMID*			<0.050										12.5	18.5	MIDHYP
10/7/2014	CALEROMID			0.088										9	18	MeHg corrected from 0.1 per Recall
10/7/2014	CALEROMID*			0.095										5.5	18	EPIMID
10/7/2014	CALEROMID*			0.094										12.5	18	MIDHYP
10/22/2014	CALEROMID			0.087										9	16.6	MeHg corrected from 0.1 per Recall
10/22/2014	CALEROMID*			0.073										5.5	16.6	EPIMID
10/22/2014	CALEROMID*			0.082										12.5	16.6	MIDHYP
11/4/2014	CALEROMID			0.073										9	16.6	
11/4/2014	CALEROMID*			0.071										5.5	16.6	EPIMID
11/4/2014	CALEROMID*			0.067										12.5	16.6	MIDHYP
12/9/2014	CALEROMID			<0.050										10	18	
1/15/2015	CALEROMID			0.083										9	16	

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
2/10/2015	CALEROMID			0.12		0.020	0.39							9	16.8	
2/10/2015	CALEROMIDDUP			0.12										9	16.8	
3/12/2015	CALEROMID			0.055										9	16.4	
3/25/2015	CALEROMID			<0.050										8.5	15	
5/21/2015	CALEROEPIMID			<0.050										5	14.3	
5/21/2015	CALEROMID			<0.050										8	14.3	
5/21/2015	CALEROMIDHYP			<0.050										11	14.3	
7/9/2015	CALEROEPIMID			0.970										5.5	16.2	
7/9/2015	CALEROMID			1.000										9	16.2	
7/9/2015	CALEROMIDHYP			0.760										12.5	16.2	
7/29/2015	CALEROEPIMID			0.500										5.25	15.25	
7/29/2015	CALEROMID			1.000										8.5	15.25	
7/29/2015	CALEROMIDHYP			1.100										11.75	15.25	
8/5/2015	CALEROEPIMID			0.280										5	14.8	
8/5/2015	CALEROMID			1.600										8	14.8	
8/5/2015	CALEROMIDHYP			1.900										11	14.8	
8/17/2015	CALEROEPIMID			NS										NS	15.5	Did not have enough bottles to take an EPIMID sample. No sample taken
8/17/2015	CALEROMID			<0.50										8.5	15.5	
8/17/2015	CALEROMIDHYP			0.720										11.75	15.5	
9/3/2015	CALEROEPIMID			0.800										5.25	15.7	
9/3/2015	CALEROMID			<2.0										8.75	15.7	Samples were diluted due to the nature of the sampling matrix. RL 2.0

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
9/3/2015	CALEROMIDHYP			<2.0										12	15.7	Samples were diluted due to the nature of the sampling matrix. RL 2.0
9/17/2015	CALEROEPIMID			0.950										5.5	16.4	
9/17/2015	CALEROMID			<2.0										9	16.4	Samples were diluted due to the Odor. The RL changed to 2.0
9/17/2015	CALEROMIDHYP			<2.0										12.5	16.4	Samples were diluted due to the Odor. The RL changed to 2.0
10/01/2015	CALEROEPIMID			0.93										5.5	16.05	
10/01/2015	CALEROMID			1										9	16.05	
10/01/2015	CALEROMIDHYP			<0.50										12.5	16.05	
10/22/2015	CALEROEPIMID			1.1										5.5	15.86	
10/22/2015	CALEROMID			1.1										8.75	15.86	
10/22/2015	CALEROMIDHYP			0.12										12.25	15.86	

CALERO OUTLET

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
4/9/2008	CALEROOUTLET	3.8		0.120												
4/21/2008	CALEROOUTLET	4.5		0.117												
5/6/2008	CALEROOUTLET	3.8		0.701												
5/29/2008	CALEROOUTLET	1.3		0.555												
6/12/2008	CALEROOUTLET	2.8		1.39												
6/26/2008	CALEROOUTLET	2.5		1.40												
7/9/2008	CALEROOUTLET	3.5		2.34												
7/24/2008	CALEROOUTLET	3.3		2.65												
8/7/2008	CALEROOUTLET	1.0		3.52												
8/21/2008	CALEROOUTLET	5.2		5.10												
9/10/2008	CALEROOUTLET	3.0		5.04												
9/25/2008	CALEROOUTLET	7.4		11.7												
10/15/2008	CALEROOUTLET	1.9		0.153												
11/19/2008	CALEROOUTLET	2.1		0.131												
12/17/2008	CALEROOUTLET	3.12		0.049												
1/15/2009	CALEROOUTLET			0.031												
2/9/2009	CALEROOUTLET	5.93		0.026												
3/25/2009	CALEROOUTLET	5.00		0.067												
4/22/2009	CALEROOUTLET	3.61		0.114												
5/6/2009	CALEROOUTLET	4.28		0.387												
5/18/2009	CALEROOUTLET	2.83		0.412												
6/10/2009	CALEROOUTLET	3.12		0.710												
6/24/2009	CALEROOUTLET	3.75		2.17												
7/8/2009	CALEROOUTLET	5.03		2.37												
7/22/2009	CALEROOUTLET	5.16		4.31												
8/10/2009	CALEROOUTLET	7.73		6.98												
8/19/2009	CALEROOUTLET	7.62		7.36												
9/16/2009	CALEROOUTLET	16.2		13.8												
10/21/2009	CALEROOUTLET	12.3		0.268												

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
11/25/2009	CALEROOUTLET	5.92		0.087												
12/17/2009	CALEROOUTLET	4.37		0.042												
1/14/2010	CALEROOUTLET	5.23		0.043												
2/17/2010	CALEROOUTLET	6.7		0.11												
3/17/2010	CALEROOUTLET	6.81		0.088												
3/19/2010	CALEROOUTLET*	5.1		0.080												Dup/Lab test
4/26/2010	CALEROOUTLET	4.95		0.079												
5/13/2010	CALEROOUTLET	5.85		0.136												
5/24/2010	CALEROOUTLET	4.42		0.189												
6/16/2010	CALEROOUTLET	2.97		0.668												
6/30/2010	CALEROOUTLET	5.05		1.55												
7/13/2010	CALEROOUTLET	7.27		2.75												
7/27/2010	CALEROOUTLET	7.07		3.57												
8/11/2010	CALEROOUTLET	7.87		4.62												
8/24/2010	CALEROOUTLET	9.35		5.16												
9/16/2010	CALEROOUTLET	13.8		5.42												
10/6/2010	CALEROOUTLET	11.6		9.38												
11/4/2010	CALEROOUTLET	12.7		0.157												
12/15/2010	CALEROOUTLET	7.40		0.045												
1/11/2011	CALEROOUTLET	4.39		0.046												
3/4/2011	CALEROOUTLET	12.4		0.064												
4/14/2011	CALEROOUTLET	27.8		0.217												
5/5/2011	CALEROOUTLET	15.4		0.138												
6/9/2011	CALEROOUTLET	11.9		0.213												
6/30/2011	CALEROOUTLET	2.99		0.998												
7/14/2011	CALEROOUTLET	3.52		1.28												
7/28/2011	CALEROOUTLET	6.46		1.76												
8/18/2011	CALEROOUTLET	11.5		4.90												
9/15/2011	CALEROOUTLET	6.66		4.97												
10/6/2011	CALEROOUTLET	9.32		0.261												
11/8/2011	CALEROOUTLET	5.14		0.111												
12/19/2011	CALEROOUTLET	4.56		0.041												

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
1/11/2012	CALEROOUTLET	2.74		0.024												
2/22/2012	CALEROOUTLET	2.57		0.025												
3/19/2012	CALEROOUTLET	15		0.139												
4/16/2012	CALEROOUTLET	3.2		0.063												
5/7/2012	CALEROOUTLET	2.7		0.049												
5/21/2012	CALEROOUTLET	2.2		0.055												
6/7/2012	CALEROOUTLET	NS		0.250												
6/28/2012	CALEROOUTLET	5.1		0.171												
7/16/2012	CALEROOUTLET	5.3		2.12												
8/14/2012	CALEROOUTLET	6.8		3.030												
9/27/2012	CALEROOUTLET	14		0.190												
10/18/2012	CALEROOUTLET	6.2		0.083												
11/6/2012	CALEROOUTLET	8.9		0.081												
12/4/2012	CALEROOUTLET	7.6		0.067												
1/23/2013	CALEROOUTLET	8.7		0.089												
2/14/2013	CALEROOUTLET	8.7		0.049												
3/20/2013	CALEROOUTLET	1.8		0.027												
4/22/2013	CALEROOUTLET	10		2.97												
5/8/2013	CALEROOUTLET	2.7		0.903												
6/5/2013	CALEROOUTLET	1.5		0.216												
6/27/2013	CALEROOUTLET	5.0		2.69												
7/16/2013	CALEROOUTLET	3.5		2.29												
8/13/2013	CALEROOUTLET	16		9.88												
8/28/2013	CALEROOUTLET	13		6.52												
9/17/2013	CALEROOUTLET	5.3		0.307												
10/1/2013	CALEROOUTLET	7.2		0.200												
10/22/2013	CALEROOUTLET	7.3		0.118												
11/19/2013	CALEROOUTLET	5.4		0.060												
12/19/2013	CALEROOUTLET	3.6		0.028												
1/22/2014	CALEROOUTLET	6.7		NA												

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
2/24/2014	CALEROOUTLET	9.5		0.11												MeHg corrected from 0.12 per Recall
3/25/2014	CALEROOUTLET	7.0		0.08												MeHg corrected from 0.093 per Recall
4/15/2014	CALEROOUTLET	8.7		0.69												MeHg corrected from 0.80 per Recall

GUADALUPE EPILIMNION

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
5/10/2005	GUADALUPEEPI	16	5.6	0.912							14			5.5	29.25	
5/24/2005	GUADALUPEEPI	13	5.0	1.020	0.518			<0.25	<0.50	<0.50	13	0.009		5	29.75	
6/7/2005	GUADALUPEEPI		4.0	1.224	0.504			<0.25	<5.0	<5.0	12	0.009	0.0060	3	28.5	
6/21/2005	GUADALUPEEPI			1.820				<0.25	<0.50	<0.50	14	0.013	0.0150	2	29.1	
7/7/2005	GUADALUPEEPI	17	2.8	1.320				<0.25	<0.50	<0.50	14	0.010	0.0065	1.75	30	
7/19/2005	GUADALUPEEPI	32	5.3	0.896				<0.25	0.50	<0.50	14	<0.010	0.0054	1.5	27.4	
8/3/2005	GUADALUPEEPI	26	4.3	0.907				<0.50	<0.50	<0.50	14	<0.010	0.0035	2	27.1	
8/15/2005	GUADALUPEEPI	34	4.6	1.160				<0.50	<0.50	<0.50	14	<0.010	0.0038	2.5	25	
8/31/2005	GUADALUPEEPI	72*	41*	1.210				<0.50	<0.50	<0.50	16	<0.010	0.0026	3.25	23.5	
9/14/2005	GUADALUPEEPI	220*	24*	1.180				<0.25	<0.50	<0.50	15	<0.010	0.0029	2.25	22.75	
9/27/2005	GUADALUPEEPI	5.37	1.97	0.798				0.108	<0.50	<0.50	18	<0.010	0.0020	5.5	21.3	
10/18/2005	GUADALUPEEPI	18.6	1.07	0.734				<0.100	<0.50	<0.50	20	<0.010	0.0078	2	18.5	
11/14/2005	GUADALUPEEPI	16.6	1.39	0.577				<0.100	<0.50	<0.50	20	<0.010	0.0022	3	17.8	
12/20/2005	GUADALUPEEPI	45	6.5	0.287				0.123	1.2	<0.50	18	0.11	0.0090	3	18.25	
1/17/2006	GUADALUPEEPI	33	6.2	0.194				<0.100	0.9	<0.50	12	0.080	0.00050	3	23.3	
2/15/2006	GUADALUPEEPI	35	3.8	0.219				<0.100	<0.50	<0.50	13	0.037	0.024	2	21.3	
3/16/2006	GUADALUPEEPI	10	4.1	0.211				<0.100	<0.50	<0.50	12	0.022	0.010	3	27.5	
4/25/2006	GUADALUPEEPI	2.4	4.3	0.237				<0.100	<0.50	<0.50	9.8	0.015	0.0024	2	29	
5/9/2006	GUADALUPEEPI	<0.50	3.5	1.110				0.190	<0.50	<0.50	11	<0.010	0.0012	3	29.25	
5/23/2006	GUADALUPEEPI	10	2.3	0.448				<0.100	<0.50	<0.50	12	<0.050	0.0029	3	28.8	
6/6/2006	GUADALUPEEPI	10	2.4	0.405				<0.100	<0.50	<0.50	12	<0.050	0.0024	3	28.5	
6/19/2006	GUADALUPEEPI	13	3.7	0.629				0.144	<0.50	<0.50	12	<0.050	0.0012	3	28	
7/10/2006	GUADALUPEEPI	6.3	4.5	0.451				<0.100	<0.50	<0.50	14	<0.050	0.0011	3	26.75	dup diss 2.030
7/24/2006	GUADALUPEEPI	11		0.429				0.163	0.59	<0.50	14	0.069	0.0013	3	25.75	
8/16/2006	GUADALUPEEPI	10	3.0	0.274				0.104	<0.50	<0.50	15	<0.050	0.0013	3	24.25	
8/29/2006	GUADALUPEEPI	9.2	2.4	0.429				<0.100	<5.0	<5.0	7.1	<0.050	0.0014	3	23.4	
9/11/2006	GUADALUPEEPI			0.245				0.218	<0.50	<0.50	18	<0.050	0.0013	3	22.4	
10/2/2006	GUADALUPEEPI	11	3.3	0.329				<0.100	<0.50	<0.50	24	<0.050	0.00070	3	21.6	
10/16/2006	GUADALUPEEPI	9.6	1.6	0.397				<0.100	<0.50	<0.50	30	<0.050	0.0039	2	21.2	
11/13/2006	GUADALUPEEPI	16	1.9	0.409				0.102	<0.50	<0.50	20	<0.050	0.0042	2	19.25	

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
12/11/2006	GUADALUPEEPI	8.9	1.330	0.225				<0.100	0.53	<0.50	14	<0.050	0.0040	2	17.3	
2/20/2007	GUADALUPEEPI	10		0.288				<0.100	0.65	<0.50	22	<0.050	0.0048	2	15.25	
3/19/2007	GUADALUPEEPI	<0.50		0.170	0.043			<0.100	<0.50	<0.50	18	<0.050	0.0019	2	17.75	
4/9/2007	GUADALUPEEPI	<0.50		0.141				0.120	<0.50	<0.50	19	<0.050	0.0026	2	17.6	
4/23/2007	GUADALUPEEPI	14.1		0.227	0.046			0.121	<0.50	<0.50	21	<0.050	0.0035	2	17.2	
5/9/2007	GUADALUPEEPI	8.81		0.100	0.040			0.166	<0.50	<0.50	21	<0.050	0.0018	2	17.2	
5/22/2007	GUADALUPEEPI	6.12		0.092	0.061			0.389	<0.50	<0.50	22	<0.050	0.0015	2	16.75	
6/12/2007	GUADALUPEEPI	12.9		0.553	0.084			0.194	<0.50	<0.50	23	<0.050	0.0014	2	16.1	
6/26/2007	GUADALUPEEPI	4.8		0.424	0.174			0.179	<0.50	<0.50	25	<0.050	0.0018	2	16	
7/10/2007	GUADALUPEEPI	12.6		0.706	0.253			<0.100	<0.50	<0.50	24	<0.050	0.0017	2	15.6	
7/23/2007	GUADALUPEEPI	9.0		0.669	0.240			<0.100	<0.50	<0.50	27	<0.050	0.0014	2	15.5	
8/6/2007	GUADALUPEEPI	16.9		4.19*	0.132			<0.100	<0.50	<0.50	25	<0.050	0.0028	2	14.9	*anomalous
8/20/2007	GUADALUPEEPI	10.3		0.321	0.073			<0.100	<0.50	<0.50	27	<0.050	0.0033	2	14.5	
9/13/2007	GUADALUPEEPI	11		0.303	0.096			<0.100	<0.50	<0.50	29	<0.050	0.051	2	13.75	
9/27/2007	GUADALUPEEPI	9.7		0.525	0.140			0.110	<0.50	<0.50	25	<0.050	0.0029	2	13.75	
10/18/2007	GUADALUPEEPI	34		0.470	0.129			<0.100	<0.50	<0.50	27	<0.050	0.0048	2	13.25	
11/19/2007	GUADALUPEEPI	5.9		0.816	0.079			<0.100	<0.50	<0.50	28	<0.050	0.017	2	12.7	
1/16/2008	GUADALUPEEPI	24		0.185	0.113			<0.100	1.9	<0.50	25	<0.050	0.0010	2	16.5	
2/8/2008	GUADALUPEEPI	7.5		0.212	0.134			<0.100	1.1	<0.50	17	<0.050	0.0018	2	22.5	
3/10/2008	GUADALUPEEPI	8.8		0.224	0.135			<0.100	<0.50	<0.50	15	<0.050	0.0058	2	25.4	
4/10/2008	GUADALUPEEPI	6.3		0.433				0.143	<0.50	<0.50	16	<0.050	0.0055	2	25.75	
4/24/2008	GUADALUPEEPI	5.2		1.03				0.151	<0.50	<0.50	16	<0.050	0.0053	2	25.5	
5/8/2008	GUADALUPEEPI	9.2		0.512				<0.100	0.55	<0.50	16	<0.050	0.0011	2	25.8	
5/29/2008	GUADALUPEEPI			0.755				<0.100	<0.50	<0.50	17	<0.050	0.0046	2	25.4	
6/11/2008	GUADALUPEEPI	3.5		0.750				0.130	<0.50	<0.50	16	<0.050	0.0017	2	24.5	
6/25/2008	GUADALUPEEPI	7.6		0.664				0.149	0.66	<0.50	17	<0.050	0.0017	2	25.6	
7/7/2008	GUADALUPEEPI	6.1		0.589				0.239	<0.50	<0.50	18	<0.050	0.0017	2	24.8	
7/23/2008	GUADALUPEEPI	5.0		0.799				<0.100	0.50	<0.50	18	<0.050	0.0018	2	24	
8/6/2008	GUADALUPEEPI	3.3		0.629				0.130	<0.50	<0.50	20	<0.050	NA	2	23.7	Lab error Chla
8/20/2008	GUADALUPEEPI	6.8		0.624									<0.05	2	23.25	
9/8/2008	GUADALUPEEPI	5.5		0.625				<0.100	<0.50	<0.50	22	<0.050	0.002	2	22.5	
9/22/2008	GUADALUPEEPI	3.3		0.621				0.139	<0.50	<0.50	20	<0.050	0.003	2	21.75	

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
10/16/2008	GUADALUPEEPI	4.5		0.594				1.73	<0.50	<0.50	29	<0.050	0.002	2	20.7	
11/17/2008	GUADALUPEEPI	2.7		0.298				<0.100	0.52	<0.50	24	<0.050	0.0019	2	19.75	
12/18/2008	GUADALUPEEPI	9.35		0.273				0.148	0.50	<0.50	27	<0.050	<0.006	2	17.25	
1/14/2009	GUADALUPEEPI	7.3		0.166				0.279	<0.50	<0.50	24	<0.050	0.003	2	16.1	
2/11/2009	GUADALUPEEPI	10.2		0.131				<0.100	<0.50	<0.50	25	<0.050	0.003	2	15.2	
3/23/2009	GUADALUPEEPI	17.1		0.183				<0.100	0.54	<0.50	9.3	<0.050	0.002	2	26	
4/20/2009	GUADALUPEEPI	11.2		0.378				<0.100	<1.0	<1.0	11.0	<0.050		2	26.25	
5/4/2009	GUADALUPEEPI	7.60		0.416				<0.100	<1.0	<1.0	11	<0.050	<0.002	2	26.4	
5/18/2009	GUADALUPEEPI	7.30		0.470				0.175	<1.0	<1.0	12	<0.050	0.002	2	26	
6/8/2009	GUADALUPEEPI	9.35		0.240				0.082	<1.0	<1.0	12	<0.050	<0.002	2	27.2	
6/22/2009	GUADALUPEEPI	8.10		0.195				0.141	<1.0	<1.0	13	0.61	<0.002	2	25.25	
7/6/2009	GUADALUPEEPI	10.7		0.261				0.098	<1.0	<1.0	14	<0.050	<0.002	2	24.6	
7/20/2009	GUADALUPEEPI	6.55		0.210				<0.100	<1.0	<1.0	15	<0.050	<0.002	2	24	
8/3/2009	GUADALUPEEPI	14.6		1.43				0.085	<1.0	<1.0	14	<0.050	0.002	2	23.25	
8/17/2009	GUADALUPEEPI	9.44		0.328				0.080	<1.0	<1.0	14	<0.050	<0.002	2	22.3	
8/31/2009	GUADALUPEEPI	11.7		0.255				0.115	<1.0	<1.0	16	<0.050	<0.002	2	22.3	
9/14/2009	GUADALUPEEPI	8.71		0.228				0.140	<1.0	<1.0	17	0.21	<0.002	2	20.75	
10/19/2009	GUADALUPEEPI	11.8		0.336				<0.100	<1.0	<1.0	17	<0.050	0.005	2	19.25	
11/24/2009	GUADALUPEEPI	22.4		0.440				<0.100	<1.0	<1.0	18	<0.050	0.002	2	16.75	
12/16/2009	GUADALUPEEPI	19.6		0.210				0.109	<1.0	<1.0	18	<0.050	<0.002	2	15.8	
1/11/2010	GUADALUPEEPI	7.8		0.132				<0.100	<1.0	<1.0	19	<0.050	0.002	2	14.9	
2/8/2010	GUADALUPEEPI	15		0.20				<0.100	<1.0	<1.0	11	<0.050	<0.006	2	24.8	
3/15/2010	GUADALUPEEPI	13.9		0.205				0.147	<1.0	<1.0	11	<0.050	0.003	2	26	
3/15/2010	GUADALUPEEPI*	18		0.25										2	26	Dup/Lab test
4/28/2010	GUADALUPEEPI	8.88		0.332				0.107	<1.0	<1.0	11	<0.050	<0.002	2	27.25	
5/10/2010	GUADALUPEEPI	11.7		0.508				0.212	<1.0	<1.0	12	<0.050	<0.002	2	27.5	
5/25/2010	GUADALUPEEPI	13.4		0.419				0.148	<1.0	<1.0	13	<0.050	0.004	2	27	
6/9/2010	GUADALUPEEPI	15.3		0.345				0.137	<1.0	<1.0	14	<0.050	<0.002	2	25.9	
6/21/2010	GUADALUPEEPI	16.5		0.365				0.133	<1.0	<1.0	13	<0.050	<0.002	2	25.3	
7/7/2010	GUADALUPEEPI	8.54		0.475				0.182	<1.0	<1.0	15	<0.050	0.002	2	24.9	

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
7/26/2010	GUADALUPEEPI	8.26		0.229				0.213	<1.0	<1.0	15	<0.050	0.002	2	24.25	
8/10/2010	GUADALUPEEPI	9.58		0.279				0.067	<1.0	<1.0	16	<0.050	<0.002	2	23.75	
8/23/2010	GUADALUPEEPI	20.5		0.378				0.068	<1.0	<1.0	16	<0.050	0.002	2	23.4	
9/14/2010	GUADALUPEEPI	8.77		0.258				<0.100	<1.0	<1.0	17	<0.050	0.002	2	22.7	
10/5/2010	GUADALUPEEPI	7.41		0.264				0.097	<1.0	<1.0	18	<0.050	0.002	2	21.4	
11/2/2010	GUADALUPEEPI	12.8		0.232				0.322	<1.0	<1.0	19	<0.050	0.007	2	18.75	
12/14/2010	GUADALUPEEPI	10.1		0.166				<0.100	<1.0	<1.0	21	<0.050	0.006	2	14.9	
1/24/2011	GUADALUPEEPI	15.1		0.113				0.130	<1.0	<1.0	15	<0.050	0.004	2	20.5	
3/28/2011	GUADALUPEEPI	20.0		0.119				0.105	<1.0	<1.0	11	<0.050	0.002	2	26	
4/18/2011	GUADALUPEEPI	12.5		0.195				<0.100	<1.0	<1.0	11	<0.050	<0.002	2	27	RL:<0.0070 MDL:<0.0020 FOR Chl a
5/4/2011	GUADALUPEEPI	9.76		0.271				0.164	<1.0	<1.0	12	<0.050	0.002	2	26.3	
6/8/2011	GUADALUPEEPI	11.4		0.269				0.279	<1.0	<1.0	13	<0.050	0.002	2	25.5	
6/28/2011	GUADALUPEEPI	11.3		0.297				0.141	<1.0	<1.0	14	<0.050	0.002	2	24.4	
7/13/2011	GUADALUPEEPI	11.8		0.348				0.187	<1.0	<1.0	14	<0.050	0.003	2	23.8	
7/26/2011	GUADALUPEEPI	12.8		0.294				<0.100	<1.0	<1.0	15	<0.050	0.002	2	22.9	
8/16/2011	GUADALUPEEPI	12.8		0.294				0.111	<1.0	<1.0	16	<0.050	0.002	2	21.4	
9/14/2011	GUADALUPEEPI	7.9		0.217				0.431	<1.0	<1.0	18	<0.050	0.002	2	19	
10/12/2011	GUADALUPEEPI	5.68		0.267				<0.100	<1.0	<1.0	20	<0.050	0.006	2	17	
11/15/2011	GUADALUPEEPI	12.2		0.278				<0.100	<1.0	<1.0	22	<0.050	0.004	2	14.4	
12/7/2011	GUADALUPEEPI	17.1		0.131				0.0680	<1.0	<1.0	22	<0.050	0.008	2	12.1	
1/10/2012	GUADALUPEEPI	16.9		0.243				<0.100	<1.0	<1.0	26	<0.050	0.028	2	9.6	
2/21/2012	GUADALUPEEPI	29.9		0.585				0.160	<1.0	<1.0	33	<0.050	0.017	2	8.75	
3/21/2012	GUADALUPEEPI	29		0.306				0.297	<1.0	<1.0	25	0.074	0.004	2	10.6	
4/24/2012	GUADALUPEEPI	10		0.097				<0.100	<1.0	<1.0	16	<0.050	0.004	2	17.4	
5/8/2012	GUADALUPEEPI	6.5		0.094				0.253	<1.0	<1.0	16	<0.050	<0.002	2	17.5	RL:<0.0070 MDL:<0.0020 FOR Chl a
5/22/2012	GUADALUPEEPI	9.2		0.190				<0.100	<1.0	<1.0	16	<0.050	0.003	2	17.25	
6/5/2012	GUADALUPEEPI	ns		0.337				0.0620	<1.0	<1.0	17	<0.050	0.004	2	17.2	

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
6/25/2012	GUADALUPEEPI	13		0.239				0.068	<1.0	<1.0	17	<0.050	0.002	2	17	
7/17/2012	GUADALUPEEPI	10		0.260				<0.20	<1.0	<1.0	20	<0.050	<0.002	2	16.4	RL:<0.0070 MDL:<0.0020 FOR Chl a
8/13/2012	GUADALUPEEPI	6.6		0.328				<0.20	<1.0	<1.0	22	<0.050	0.002	2	15.5	
9/24/2012	GUADALUPEEPI	9.6		0.142				<0.100	<1.0	<1.0	14	<0.050	<0.002	2	13.7	RL:<0.0070 MDL:<0.0020 FOR Chl a
10/15/2012	GUADALUPEEPI	9.8		0.133				<0.100	<1.0	<1.0	3.6	<0.050	0.004	2	13.2	
11/5/2012	GUADALUPEEPI	9.1		0.207				<0.100	<1.0	<1.0	22	<0.050	0.006	2	13.2	
12/10/2012	GUADALUPEEPI	28		0.142				0.11	<1.0	<1.0	15	0.058	<0.002	2	18.4	RL:<0.0070 MDL:<0.0020 FOR Chl a
1/28/2013	GUADALUPEEPI	21		0.258				<0.10	<1.0	<1.0	12	<0.050	0.004	2	22.7	
2/11/2013	GUADALUPEEPI	14		0.264				<0.10	<1.0	<1.0	12	<0.050	0.004	2	22.7	
3/18/2013	GUADALUPEEPI	9.7		0.286				0.13	<1.0	<1.0	13	<0.050	<0.002	2	22.7	RL:<0.0070 MDL:<0.0020 FOR Chl a
4/17/2013	GUADALUPEEPI	6.1		0.598				<0.10	<1.0	<1.0	15	0.13	0.002	2	21	
5/14/2013	GUADALUPEEPI	3.3		0.698				<0.10	<1.0	<1.0	17	<0.050	0.005	2	20	
6/3/2013	GUADALUPEEPI	5.6		0.621				<0.10	<1.0	<1.0	18	<0.050	0.003	2	19.8	
6/24/2013	GUADALUPEEPI	8.7		0.585				0.10	<1.0	<1.0	18	<0.050	0.002	2	18.75	
7/15/2013	GUADALUPEEPI	7.4		0.307				<0.10	<1.0	<1.0	20	<0.050	0.003	2	18.2	
8/12/2013	GUADALUPEEPI	8.3		0.387				<0.10	<1.0	<1.0	19	<0.050	0.003	2	16.9	
8/27/2013	GUADALUPEEPI	8.7		0.511				<0.10	<1.0	<1.0	20	<0.050	0.003	2	16.4	
9/17/2013	GUADALUPEEPI	7.6		0.400				0.12	<1.0	<1.0	22	<0.050	0.003	2	15	
10/1/2013	GUADALUPEEPI	9.8		0.234				<0.10	<1.0	<1.0	21	<0.050	0.005	2	14.25	
10/22/2013	GUADALUPEEPI	8.4		0.202				0.12	<1.0	<1.0	22	<0.050	0.010	2	13.25	
11/19/2013	GUADALUPEEPI	16		0.142				<0.10	<1.0	<1.0	22	<0.050	0.011	2	11.4	
12/19/2013	GUADALUPEEPI	21		0.125				0.14	<1.0	<1.0	25	<0.050	0.009	2	9.6	
1/12/2015	GUADALUPEEPI	14		0.93				0.18	1.6	<1.0	24	0.061	0.003	2	15.4	

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
2/11/2015	GUADALUPEEPI	29		0.71		0.031	1.7	0.19	1.1	<1.0	12	0.051	<0.002	2	21	RL:<0.0070 MDL:<0.0020 FOR Chl a
3/9/2015	GUADALUPEEPI	16		1.5		<0.020	0.23	<0.10	<1.0	<1.0	13	<0.050	0.002	2	22.5	
3/24/2015	GUADALUPEEPI	16		1.5		<0.020	0.20	0.11	<1.0	<1.0	14	0.057	0.006	2	22.4	
4/16/2015	GUADALUPEEPI	12.0		4.600		<0.020	<0.20	<0.10	<1.0	<1.0	15	<0.050	0.0020	2		
5/14/2015	GUADALUPEEPI	8.4		1.800		<0.020	0.200	0.140	<1.0	<1.0	16	0.064	0.0050	2	22.6	
6/17/2015	GUADALUPEEPI	4.5		1.200		<0.020	<0.20	<0.10	<1.0	<1.0	16	<0.050	<0.002	2	21.4	RL:<0.0070 MDL:<0.0020 FOR Chl a
7/30/2015	GUADALUPEEPI	4.8		1.100		<0.020	<0.20	0.140	<1.0	<1.0	18	<0.050	0.0040	2	21.5	
8/10/2015	GUADALUPEEPI	5.4		0.940		<0.020	<0.20	<0.10	<1.0	<1.0	18	<0.050	0.0050	2	20.5	
8/18/2015	GUADALUPEEPI	4.0		0.920		<0.020	0.200	0.110	<1.0	<1.0	18	<0.050	<0.002	2	20.5	RL:<0.0070 MDL:<0.0020 FOR Chl a
9/8/2015	GUADALUPEEPI	3.7		2.000		<0.020	0.200	0.110	<1.0	<1.0	19	<0.050	<0.002	2	19.25	RL:<0.0070 MDL:<0.0020 FOR Chl a
09/24/2015	GUADALUPEEPI	4.1		0.72		<0.020	<0.20	0.12	<1.0	<1.0	21	<0.050	<0.002	2	18.25	RL:<0.0070 MDL:<0.0020 FOR Chl a
10/13/2015	GUADALUPEEPI	4.1		0.95		<0.020	<0.20	0.15	<1.0	<1.0	20	<0.050	<0.002	2	17.19	RL:<0.0070 MDL:<0.0020 FOR Chl a

GUADALUPE HYPOLIMNION AND DEEP

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
5/10/2005	GUADALUPEHYP	13	5.6	0.432					0.83		12			18	29.25	
5/24/2005	GUADALUPEHYP	9.20	5.7	0.534	0.383			<0.25	0.67	<5.0	13	0.038		20	29.75	
6/7/2005	GUADALUPEHYP		4.4	0.720	0.404			<0.25	4.2	<5.0	12	0.022		27	28.5	
6/21/2005	GUADALUPEHYP			3.190				<0.25	1.4	<5.0	13	0.038		28	29.1	
7/7/2005	GUADALUPEHYP	24	6.8					<0.25	0.99	<0.50	12	0.041		29	30	
7/19/2005	GUADALUPEHYP	16	4.3	51.800				<0.25	0.85	<0.50	14	0.029		26.5	27.4	
8/3/2005	GUADALUPEHYP	31	9.7	12.900				<0.50	<0.50	<0.50	12	0.036		26	27.1	
8/15/2005	GUADALUPEHYP	33	12	8.550				ns	ns	ns	ns	ns		24	25	Van Dorn Broken
8/31/2005	GUADALUPEHYP	46*	24*	29.200				<0.50	<0.50	<0.50	13	<0.010		22.75	23.5	
9/14/2005	GUADALUPEHYP	14*	6.2*	13.400				<0.25	<0.50	<0.50	8.5	0.028		22	22.75	
9/27/2005	GUADALUPEHYP	9.40	12	11.300				0.444	<0.50	<0.50	9.4	<0.010		20.75	21.3	
10/18/2005	GUADALUPEHYP	56.3	2.43	3.360				<0.100	0.50	<0.50	19.0	0.014		18	18.5	
11/14/2005	GUADALUPEHYP	43.2	2.56	1.610				<0.100	<0.50	<0.50	20	<0.010		17	17.8	
12/20/2005	GUADALUPEHYP	17.0	4.6	0.279				0.269	<0.50	<0.50	22	0.088		17.25	18.25	
1/17/2006	GUADALUPEHYP	50	5.3	0.240				<0.100	0.82	<0.50	13	0.061		22.25	23.3	
2/15/2006	GUADALUPEHYP	37	3.2	0.126				0.147	1.2	<0.50	14	0.092		20.5	21.3	
3/16/2006	GUADALUPEHYP	30	5.1	0.187				<0.100	0.65	<0.50	12	0.10		26	27.5	
4/25/2006	GUADALUPEHYP	2.8	3.5	0.260				0.376	0.64	<0.50	10	0.079		28	29	
5/9/2006	GUADALUPEHYP	8.6	3.5	0.323				<0.100	1.0	<0.50	12	0.099		28	29.25	
5/23/2006	GUADALUPEHYP	7.0	5.1	3.440				0.269	1.4	<0.50	11	<0.050		28	28.8	
6/6/2006	GUADALUPEHYP	26	7.1	7.600				<0.100	1.0	<0.50	11	0.089		27.5	28.5	
6/19/2006	GUADALUPEHYP	34	8.9	8.980				0.315	0.89	<0.50	11	0.12		27	28	
7/10/2006	GUADALUPEHYP	37	20	21.800				0.600	0.51	<0.50	11	0.16		26	26.75	dup diss 28.700
7/24/2006	GUADALUPEHYP	38		26.600				0.459	<0.50	<0.50	9.7	<0.050		25	25.75	
8/16/2006	GUADALUPEHYP	54	22	23.900				0.562	<0.50	<0.50	8.7	0.055		23.25	24.25	
8/29/2006	GUADALUPEHYP	68	25	56.900				0.552	<0.50	<0.50	7.5	0.11		23	23.4	
9/11/2006	GUADALUPEHYP			15.100				0.610	<0.50	<0.50	7.0	0.14		22	22.4	
10/2/2006	GUADALUPEHYP	64	24	20.700				0.702	<0.50	<0.50	7.4	0.19		21	21.6	
10/16/2006	GUADALUPEHYP	88	26	23.000				0.768	<0.50	<0.50	17	0.12		20.5	21.2	
11/13/2006	GUADALUPEHYP	85	9.8	11.300				0.323	<0.50	<0.50	15	0.098		18.5	19.25	

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
12/11/2006	GUADALUPEHYP	26	1.440	0.191				0.116	0.60	<0.50	15	<0.050		16.5	17.3	
2/20/2007	GUADALUPEHYP	6.3		0.178				0.129	0.50	<0.50	26	0.075		14.25	15.25	
3/19/2007	GUADALUPEHYP	<0.50		0.101	0.034			0.206	<0.50	<0.50	21	<0.050		17	17.75	
4/9/2007	GUADALUPEHYP	<0.50		0.268	0.043			0.189	0.69	<0.50	22	<0.050		17	17.6	
4/23/2007	GUADALUPEHYP	42.0		0.516	0.186			0.542	0.82	<0.50	24	0.052		16.5	17.2	
5/9/2007	GUADALUPEHYP	25.2		1.510	0.683			0.159	0.65	<0.50	20	<0.050		16.5	17.2	
5/22/2007	GUADALUPEHYP	13.0		3.500	1.610			0.162	<0.50	<0.50	19	<0.050		16.25	16.75	
6/12/2007	GUADALUPEHYP	46.8		22.900	3.340			0.329	<0.50	<0.50	15	0.10		15.5	16.1	
6/26/2007	GUADALUPEHYP	49.6		20.800	10.300			0.548	<0.50	<0.50	13	0.15		15.5	16	
7/10/2007	GUADALUPEHYP	53.3		18.800	14.500			0.485	<0.50	<0.50	10	0.18		15	15.6	
7/23/2007	GUADALUPEHYP	59.4		21.200	18.200			0.602	<0.50	<0.50	9.3	0.20		15	15.5	
8/6/2007	GUADALUPEHYP	21.9		1.410	2.300			0.148	<0.50	<0.50	21	0.052		14	14.9	
8/20/2007	GUADALUPEHYP	39.5		8.920	7.260			0.538	<0.50	<0.50	10	<0.050		14	14.5	
9/13/2007	GUADALUPEHYP	53		11.800	7.520			0.487	<0.50	<0.50	12	0.12		13	13.75	
9/27/2007	GUADALUPEHYP	61		11.800	9.380			1.92	<0.50	<0.50	7.5	0.13		13	13.75	
10/18/2007	GUADALUPEHYP	34		0.850	0.206			<0.100	<0.50	<0.50	26	<0.050		12.5	13.25	
11/19/2007	GUADALUPEHYP	20		0.174	0.080			0.152	<0.50	<0.50	28	<0.050		12	12.7	
1/16/2008	GUADALUPEHYP	16		0.225	0.107			0.172	1.2	<0.50	29	<0.050		16	16.5	
2/8/2008	GUADALUPEHYP	7.8		0.239	0.160			<0.100	1.4	<0.50	18	<0.050		22	22.5	
3/10/2008	GUADALUPEHYP	11		0.270	0.174			0.144	1.1	<0.50	19	<0.050		25	25.4	
4/10/2008	GUADALUPEHYP	6.3		0.747				0.300	1.6	<0.50	18	<0.050		25	25.75	
4/24/2008	GUADALUPEHYP	8.2		3.70				0.108	1.9	<0.50	18	<0.050		25	25.5	
5/8/2008	GUADALUPEHYP	8.3		18.0				0.280	1.1	<0.50	16	0.054		25	25.8	
5/29/2008	GUADALUPEHYP	6.2		1.19				0.178	1.6	<0.50	18	<0.050		24.5	25.4	
6/11/2008	GUADALUPEHYP	12		21.9				0.412	<0.50	<0.50	14	0.079		25.3	24.5	
6/25/2008	GUADALUPEHYP	6.4		14.1				0.453	0.59	<0.50	14	0.055		24.5	25.6	
7/7/2008	GUADALUPEHYP	27		14.3				0.629	<0.50	<0.50	11	0.15		24	24.8	
7/23/2008	GUADALUPEHYP	5.1		3.22				0.101	1.3	<0.50	17	<0.050		23	24	
8/6/2008	GUADALUPEHYP	5.2		7.05				0.287	0.73	<0.50	16	<0.050		23	23.7	
8/20/2008	GUADALUPEHYP	8.8		3.33				<2.00	0.68	<0.50	16	<0.050		22.5	23.25	
9/8/2008	GUADALUPEHYP	12		6.53				0.195	<0.50	<0.50	15	0.059		22	22.5	
9/22/2008	GUADALUPEHYP	19		8.93				0.530	<0.50	<0.50	8.5	0.11		21	21.75	

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
10/16/2008	GUADALUPEHYP	33		13.0				0.624	<0.50	<0.50	8.0	0.17		19.5	20.7	
11/17/2008	GUADALUPEHYP	13		5.94				0.231	<0.50	<0.50	18	<0.050		19	19.75	
12/18/2008	GUADALUPEHYP	9.42		0.261				<0.100	0.51	<0.50	25	<0.050		16.5	17.25	
1/14/2009	GUADALUPEHYP	15.0		0.136				<0.100	<0.50	<0.50	24	<0.050		15	16.1	
2/11/2009	GUADALUPEHYP	30.1		0.152				0.201	<0.50	<0.50	25	<0.050		14.5	15.2	
3/23/2009	GUADALUPEHYP	13.0		0.243				0.135	0.91	<0.50	19	<0.050		25	26	
4/20/2009	GUADALUPEHYP	12.3		3.96				0.223	<1.0	<1.0	18	<0.050		25.5	26.25	
5/4/2009	GUADALUPEHYP	28.0		0.606				0.103	<1.0	<1.0	10	<0.050		26	26.4	
5/18/2009	GUADALUPEHYP	23.4		0.438				0.369	<1.0	<1.0	15	0.063		25	26	
6/8/2009	GUADALUPEHYP	19.7		1.30				0.098	<1.0	<1.0	10	0.059		25	27.2	
6/22/2009	GUADALUPEHYP	47.1		20.0				0.493	<1.0	<1.0	11	0.39		24.5	25.25	
7/6/2009	GUADALUPEHYP	61.1		29.0				0.770	<1.0	<1.0	8.6	0.097		24	24.6	
7/20/2009	GUADALUPEHYP	57.0		24.3				0.694	<1.0	<1.0	7.7	0.15		23.5	24	
8/3/2009	GUADALUPEHYP	59.1		28.7				0.723	<1.0	<1.0	6.8	0.15		22.5	23.25	
8/17/2009	GUADALUPEHYP	39.3		15.0				0.316	<1.0	<1.0	9.6	<0.050		22	22.3	
8/31/2009	GUADALUPEHYP	50.3		27.9				0.823	<1.0	<1.0	6.5	0.11		21	22.3	
9/14/2009	GUADALUPEHYP	48.9		25.7				0.698	<1.0	<1.0	5.8	0.099		20	20.75	
10/19/2009	GUADALUPEHYP	77.2		1.13				0.177	1.5	<1.0	14	0.059		19	19.25	
11/24/2009	GUADALUPEHYP	23.7		0.360				0.083	<1.0	<1.0	18	<0.050		16	16.75	
12/16/2009	GUADALUPEHYP	48.5		0.253				0.103	<1.0	<1.0	18	0.084		15	15.8	
1/11/2010	GUADALUPEHYP	10.9		0.126				0.094	<1.0	<1.0	19	<0.050		14	14.9	
2/8/2010	GUADALUPEHYP	13		0.19				<0.100	<1.0	<1.0	12	0.11		24	24.8	
3/15/2010	GUADALUPEHYP	32.9		0.262				<0.100	<1.0	<1.0	11	0.062		25.25	26	
3/15/2010	GUADALUPEHYP*	30		0.56										25.25	26	Dup/Lab test
4/28/2010	GUADALUPEHYP	13.7		0.198				<0.100	<1.0	<1.0	11	<0.050		26	27.25	
5/10/2010	GUADALUPEHYP	20.8		0.514				0.430	<1.0	<1.0	11	<0.050		27	27.5	
5/25/2010	GUADALUPEHYP	21.5		0.353				<0.100	<1.0	<1.0	12	<0.050		26.5	27	
6/9/2010	GUADALUPEHYP	25.5		3.47				0.135	<1.0	<1.0	12	<0.050		25.5	25.9	
6/21/2010	GUADALUPEHYP	42.6		7.29				0.203	<1.0	<1.0	11	0.11		25	25.3	
7/7/2010	GUADALUPEHYP	26.4		11.7				0.166	<1.0	<1.0	11	0.052		24.5	24.9	
7/26/2010	GUADALUPEHYP	37.9		17.6				0.712	<1.0	<1.0	9.5	0.10		24	24.25	

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8/10/2010	GUADALUPEHYP	52.4		18.3				0.755	<1.0	<1.0	8.6	0.079		23	23.75	
8/23/2010	GUADALUPEHYP	41.8		6.61				0.184	<1.0	<1.0	12	0.051		23	23.4	
9/14/2010	GUADALUPEHYP	43.7		10.8				0.454	<1.0	<1.0	8.6	0.067		22	22.7	
10/5/2010	GUADALUPEHYP	33.5		9.27				0.248	<1.0	<1.0	11	0.067		21	21.4	
11/2/2010	GUADALUPEHYP	55.5		21.9				0.900	<1.0	<1.0	14	0.14		18	18.75	
12/14/2010	GUADALUPEHYP	50.1		0.615				0.245	<1.0	<1.0	21	<0.050		14	14.9	
1/24/2011	GUADALUPEHYP	51.7		0.170				0.152	<1.0	<1.0	15	0.070		20	20.5	
3/28/2011	GUADALUPEHYP	92.7		0.198				0.089	<1.0	<1.0	9.1	0.087		25	26	
4/18/2011	GUADALUPEHYP	40.4		0.276				0.065	<1.0	<1.0	9	<0.050		26.5	27	
5/4/2011	GUADALUPEHYP	76.3		5.50				0.166	1.0	<1.0	9	<0.050		26	26.3	
6/8/2011	GUADALUPEHYP	50.7		0.883				0.397	1.0	<1.0	9.7	<0.050		25	25.5	
6/28/2011	GUADALUPEHYP	14.9		0.435				0.599	<1.0	<1.0	11	<0.050		24	24.4	
7/13/2011	GUADALUPEHYP	41.2		15.4				0.638	<1.0	<1.0	8.1	0.081		23.5	23.8	
7/26/2011	GUADALUPEHYP	56.2		13.9				0.669	<1.0	<1.0	7.4	0.14		22.5	22.9	
8/16/2011	GUADALUPEHYP	63.5		25.1				1.02	<1.0	<1.0	4.5	0.17		21	21.4	
9/14/2011	GUADALUPEHYP	54.3		23.6				1.63	<1.0	<1.0	<1.0	0.20		18.5	19	
10/12/2011	GUADALUPEHYP	46.3		18.1				1.96	<1.0	<1.0	1	0.22		16.5	17	
11/15/2011	GUADALUPEHYP	39.8		1.04				0.137	<1.0	<1.0	22	<0.050		14	14.4	
12/7/2011	GUADALUPEHYP	18.1		0.112				0.105	<1.0	<1.0	22	<0.050		11.5	12.1	
1/10/2012	GUADALUPEHYP	47.8		0.223				0.186	<1.0	<1.0	29	<0.050		9	9.6	
2/21/2012	GUADALUPEHYP	89.0		7.83				0.399	<1.0	<1.0	34	0.069		8.5	8.75	
3/21/2012	GUADALUPEHYP	25		0.395				0.386	<1.0	<1.0	33	0.058		10	10.6	
4/24/2012	GUADALUPEHYP	21		0.105				0.368	<1.0	<1.0	22	<0.050		17	17.4	
5/8/2012	GUADALUPEHYP	22		4.92				2.35	<1.0	<1.0	20	0.052		17	17.5	
5/22/2012	GUADALUPEHYP	22		3.56				0.171	<1.0	<1.0	18	0.050		17	17.25	
6/5/2012	GUADALUPEHYP	ns		14.8				0.0550	<1.0	<1.0	16	0.01		17	17.2	
6/25/2012	GUADALUPEHYP	54		12.6				0.54	<1.0	<1.0	13	0.19		16.5	17	
7/17/2012	GUADALUPEHYP	42		12.9				0.63	<1.0	<1.0	12	0.19		16	16.4	
8/13/2012	GUADALUPEHYP	120		11.5				0.86	<1.0	<1.0	9.7	0.20		15	15.5	
9/24/2012	GUADALUPEHYP	58		9.43				1.3	<1.0	<1.0	4.9	0.35		13.5	13.7	
10/15/2012	GUADALUPEHYP	68		9.62				0.26	<1.0	<1.0	3.4	0.47		13	13.2	

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11/5/2012	GUADALUPEHYP	30		3.22				0.30	<1.0	<1.0	19	0.052		12	13.2	
12/10/2012	GUADALUPEHYP	53		0.226				0.14	<1.0	<1.0	15	0.11		18	18.4	
1/28/2013	GUADALUPEHYP	33		0.280				<0.10	<1.0	<1.0	13	0.074		22	22.7	
2/11/2013	GUADALUPEHYP	22		0.203				0.63	<1.0	<1.0	12	0.050		21.5	22.7	
3/18/2013	GUADALUPEHYP	17		0.389				<0.10	<1.0	<1.0	13	<0.050		21.5	22.7	
4/17/2013	GUADALUPEHYP	11		0.737				<0.10	1.2	<1.0	13	0.20		20	21	
5/14/2013	GUADALUPEHYP	6.7		3.53				<0.10	<1.0	<1.0	13	<0.050		19.5	20	
6/3/2013	GUADALUPEHYP	10		7.68				0.13	<1.0	<1.0	13	<0.050		19.5	19.8	
6/24/2013	GUADALUPEHYP	31		13.3				0.34	<1.0	<1.0	11	0.075		18.5	18.75	
7/15/2013	GUADALUPEHYP	25		11.0				0.28	<1.0	<1.0	12	0.057		18	18.2	
8/12/2013	GUADALUPEHYP	73		9.35				0.28	<1.0	<1.0	11	<0.050		16.5	16.9	
8/27/2013	GUADALUPEHYP	78		13.1				0.43	<1.0	<1.0	11	0.080		16.25	16.4	
9/17/2013	GUADALUPEHYP	55		8.18				<0.10	<1.0	<1.0	11	0.081		14.5	15	
10/1/2013	GUADALUPEHYP	46		9.90				0.54	<1.0	<1.0	13	0.090		14	14.25	
10/22/2013	GUADALUPEHYP	45		0.948				0.25	<1.0	<1.0	21	<0.050		12.5	13.25	
11/19/2013	GUADALUPEHYP	44		0.281				0.15	<1.0	<1.0	31	<0.050		11	11.4	Discontinued
12/19/2013	GUADALUPEHYP	60		0.204				0.31	<1.0	<1.0	27	0.061		9	9.6	
1/12/2015	GUADALUPEHYP	27		1.3				0.18	1.6	<1.0	24	0.061		8.5	15.4	
2/11/2015	GUADALUPEHYP	20		1.2		0.11	1.6	0.26	1.4	<1.0	24	<0.050		20.5	21	
3/9/2015	GUADALUPEHYP	17		2.8		0.22	0.35	<0.10	2.2	<1.0	24	<0.050		22	22.5	
3/24/2015	GUADALUPEHYP	13		1.9		0.054	0.30	0.19	1.4	<1.0	19	0.055		22	22.4	
4/16/2015	GUADALUPEHYP	24.0		5.8		0.210	0.720	0.210	1.2	<1.0	18	0.068				
5/14/2015	GUADALUPEHYP	13.0		4.2		0.055	0.240	0.150	1.4	<1.0	19	0.072		21	22.6	
5/14/2015	GUADALUPEDEEP			4.4										22	22.6	
6/17/2015	GUADALUPEHYP	9.9		4.3		0.097	0.200	0.110	1.2	<1.0	17	<0.050		20	21.4	
6/17/2015	GUADALUPEDEEP			5.7										21	21.4	
7/30/2015	GUADALUPEHYP	10.00		3.4		0.041	<0.20	<0.10	1.1	<1.0	17	<0.050		20	21.5	
7/30/2015	GUADALUPEDEEP			3.7										21	21.5	
8/10/2015	GUADALUPEHYP	9.00		2		0.11	0.200	<0.10	<1.0	<1.0	17	<0.050		19	20.5	
8/10/2015	GUADALUPEDEEP			2										20	20.5	
8/18/2015	GUADALUPEHYP	10.00		9.5		0.57	0.29	0.13	<1.0	<1.0	16	0.069		19	20.5	
8/18/2015	GUADALUPEDEEP			13										20	20.5	

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9/8/2015	GUADALUPEHYP	10.00		2.2		0.16	0.28	0.12	<1.0	<1.0	17	0.062		18	19.25	
9/8/2015	GUADALUPEDEEP			2.1										19	19.25	
09/24/2015	GUADALUPEHYP	8.1		2.2		0.14	0.2	0.11	<1.0	<1.0	17	<0.050		18	18.25	
10/13/2015	GUADALUPEHYP	26		1.2		0.15	0.34	0.15	<1.0	<1.0	19	<0.050		16	17.19	
10/13/2015	GUADALUPEHYPDUP	28		1.3										16	17.19	
10/13/2015	GUADALUPEDEEP			4.3										17	17.19	
10/13/2015	GUADALUPEDEEPDUP			3.4										17	17.19	

GUADALUPE EPI-MID, MID, MID-HYP

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
6/7/2005	GUADALUPEMID			0.436										18.5	28.5	
6/21/2005	GUADALUPEMID			0.495										25	29.1	
7/7/2005	GUADALUPEMID			0.783										23.5	30	
7/19/2005	GUADALUPEMID			0.586										22.5	27.4	
8/3/2005	GUADALUPEMID			0.740										19	27.1	
8/15/2005	GUADALUPEMID			2.600										19	25	
8/31/2005	GUADALUPEMID			3.330										16	23.5	
9/27/2005	GUADALUPEMID			12.700										14	21.3	
10/18/2005	GUADALUPEMID			0.677										14	18.5	
11/14/2005	GUADALUPEMID			0.507										11	17.8	
12/20/2005	GUADALUPEMID			0.242										11	18.25	
1/17/2006	GUADALUPEMID			0.142										15	23.3	
2/15/2006	GUADALUPEMID			0.187										12	21.3	
3/16/2006	GUADALUPEMID			0.178										14	27.5	
4/25/2006	GUADALUPEMID			0.119										15	29	
5/9/2006	GUADALUPEMID			0.134										17	29.25	
5/23/2006	GUADALUPEMID			0.230										19	28.8	
6/6/2006	GUADALUPEMID			0.235										19	28.5	
6/19/2006	GUADALUPEMID			0.349										21	28	
7/10/2006	GUADALUPEMID			0.302										20	26.75	
7/24/2006	GUADALUPEMID			0.429										20	25.75	
8/16/2006	GUADALUPEMID			0.605										18	24.25	
8/29/2006	GUADALUPEMID			1.180										16	23.4	
9/11/2006	GUADALUPEMID			4.740										15	22.4	
10/2/2006	GUADALUPEMID			11.100										15	21.6	
10/16/2006	GUADALUPEMID			5.580										16.5	21.2	
11/13/2006	GUADALUPEMID			0.251										11	19.25	
12/11/2006	GUADALUPEMID			0.163										9	17.3	
2/20/2007	GUADALUPEMID			0.117										8	15.25	
3/19/2007	GUADALUPEMID			0.091	0.032									10	17.75	

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
4/9/2007	GUADALUPEMID			0.118	0.039									11	17.6	
4/23/2007	GUADALUPEMID			0.119	0.052									11	17.2	
5/9/2007	GUADALUPEMID			0.098	0.042									9.25	17.2	
5/22/2007	GUADALUPEMID			0.175	0.064									9	16.75	
6/12/2007	GUADALUPEMID			0.256	0.084									8.75	16.1	
6/26/2007	GUADALUPEMID			0.471	0.179									10	16	
7/10/2007	GUADALUPEMID			0.581	0.153									9	15.6	
7/23/2007	GUADALUPEMID	9.9		1.240	0.870									8.5	15.5	
8/6/2007	GUADALUPEMID			0.461	0.765									8	14.9	
8/20/2007	GUADALUPEMID		2.100	0.721										14	14.5	
9/13/2007	GUADALUPEMID			0.701	0.212									8	13.75	
9/27/2007	GUADALUPEMID			0.537	0.191									8	13.75	
10/18/2007	GUADALUPEMID			0.390	0.120									7.25	13.25	
11/19/2007	GUADALUPEMID			0.219	0.065									7	12.7	
1/16/2008	GUADALUPEMID			0.171	0.111									9	16.5	
2/8/2008	GUADALUPEMID			0.198	0.146									12	22.5	
3/10/2008	GUADALUPEMID			0.256	0.174									14	25.4	
4/10/2008	GUADALUPEMID			0.290										14	25.75	
4/24/2008	GUADALUPEMID			0.391										13.5	25.5	
5/8/2008	GUADALUPEMID			0.428										13.5	25.8	
5/29/2008	GUADALUPEMID			0.834										13	25.4	
6/11/2008	GUADALUPEMID			0.931										14	24.5	
6/11/2008	GUADALUPEMID*			0.908										19	24.5	Do not use for MID; taken at 19m
6/25/2008	GUADALUPEMID			1.58										14	25.6	
6/25/2008	GUADALUPEMID*			1.09										19	25.6	Do not use for MID; taken at 20m
7/7/2008	GUADALUPEMID			1.160										14	24.8	
7/7/2008	GUADALUPEMID*			1.720										20	24.8	Do not use for MID; taken at 20m

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
7/23/2008	GUADALUPEMID			2.42										16.5	24	
7/23/2008	GUADALUPEMID*			1.17										13	24	EPIMID
7/23/2008	GUADALUPEMID*			1.62										19.5	24	MIDHYP
8/6/2008	GUADALUPEMID			3.46										12.5	23.7	
8/6/2008	GUADALUPEMID*			1.42										7	23.7	EPIMID
8/6/2008	GUADALUPEMID*			1.07										18	23.7	MIDHYP
8/20/2008	GUADALUPEMID			5.21										12	23.25	
8/20/2008	GUADALUPEMID*			0.662										7	23.25	EPIMID
8/20/2008	GUADALUPEMID*			2.20										17	23.25	MIDHYP
9/8/2008	GUADALUPEMID			12.8										12	22.5	
9/8/2008	GUADALUPEMID*			0.671										7	22.5	EPIMID
9/8/2008	GUADALUPEMID*			5.84										17	22.5	MIDHYP
9/22/2008	GUADALUPEMID			7.14										11.5	21.75	
9/22/2008	GUADALUPEMID*			0.632										7	21.75	EPIMID
9/22/2008	GUADALUPEMID*			5.51										16.5	21.75	MIDHYP
10/16/2008	GUADALUPEMID			0.553										11	20.7	
11/17/2008	GUADALUPEMID			0.256										10.5	19.75	
12/18/2008	GUADALUPEMID			0.335										9	17.25	
1/14/2009	GUADALUPEMID			0.142										8.5	16.1	
2/11/2009	GUADALUPEMID			0.102										8.5	15.2	
3/23/2009	GUADALUPEMID			0.125										13	26	
4/20/2009	GUADALUPEMID			0.201										14	26.25	
5/4/2009	GUADALUPEMID			0.282										14	26.4	
5/4/2009	GUADALUPEMID*			0.235										8	26.4	EPIMID
5/4/2009	GUADALUPEMID*			0.236										20	26.4	MIDHYP
5/18/2009	GUADALUPEMID			0.254										13.5	26	
5/18/2009	GUADALUPEMID*			11.2										8	26	EPIMID
5/18/2009	GUADALUPEMID*			0.242										22	26	MIDHYP
6/8/2009	GUADALUPEMID			0.264										14	27.2	
6/8/2009	GUADALUPEMID*			0.331										7	27.2	EPIMID
6/8/2009	GUADALUPEMID*			0.284										22.5	27.2	MIDHYP
6/22/2009	GUADALUPEMID			0.255										13	25.25	

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
6/22/2009	GUADALUPEMID*			0.632										8	25.25	EPIMID
6/22/2009	GUADALUPEMID*			0.228										21	25.25	MIDHYP
7/6/2009	GUADALUPEMID			0.368										13	24.6	
7/6/2009	GUADALUPEMID*			3.32										7.5	24.6	EPIMID
7/6/2009	GUADALUPEMID*			0.293										21.5	24.6	MIDHYP
7/20/2009	GUADALUPEMID			0.337										12.5	24	
7/20/2009	GUADALUPEMID*			1.04										7	24	EPIMID
7/20/2009	GUADALUPEMID*			0.251										21	24	MIDHYP
8/3/2009	GUADALUPEMID			0.330										13	23.25	
8/3/2009	GUADALUPEMID*			1.550										8	23.25	EPIMID
8/3/2009	GUADALUPEMID*			0.290										20	23.25	MIDHYP
8/17/2009	GUADALUPEMID			0.591										10	22.3	
8/17/2009	GUADALUPEMID*			0.837										6	22.3	EPIMID
8/17/2009	GUADALUPEMID*			1.63										19	22.3	MIDHYP
8/31/2009	GUADALUPEMID			0.350										11.5	22.3	
8/31/2009	GUADALUPEMID*			4.61										6.5	22.3	EPIMID
8/31/2009	GUADALUPEMID*			3.84										18	22.3	MIDHYP
9/14/2009	GUADALUPEMID			0.229										11	20.75	
9/14/2009	GUADALUPEMID*			5.95										6.5	20.75	EPIMID
9/14/2009	GUADALUPEMID*			5.94										17.5	20.75	MIDHYP
10/19/2009	GUADALUPEMID			0.311										11	19.25	
10/19/2009	GUADALUPEMID*			0.519										7	19.25	EPIMID
10/19/2009	GUADALUPEMID*			0.320										17.5	19.25	MIDHYP
11/24/2009	GUADALUPEMID			0.428										9	16.75	
11/24/2009	GUADALUPEMID*			0.444										5.5	16.75	EPIMID
11/24/2009	GUADALUPEMID*			0.424										13	16.75	MIDHYP
12/16/2009	GUADALUPEMID			0.204										8.5	15.8	
1/11/2010	GUADALUPEMID			0.135										8	14.9	
2/8/2010	GUADALUPEMID			0.16										13	24.8	
3/15/2010	GUADALUPEMID			0.211										13.5	26	
3/15/2010	GUADALUPEMID*			0.26										13.5	26	Dup/Lab test
4/28/2010	GUADALUPEMID			0.136										14	27.25	

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
4/28/2010	GUADALUPEMID*			0.181										8	27.25	EPIMID
4/28/2010	GUADALUPEMID*			0.171										24	27.25	MIDHYP
5/10/2010	GUADALUPEMID			0.136										14	27.5	
5/10/2010	GUADALUPEMID*			0.188										8	27.5	EPIMID
5/10/2010	GUADALUPEMID*			0.257										25	27.5	MIDHYP
5/25/2010	GUADALUPEMID			0.168										14	27	
5/25/2010	GUADALUPEMID*			0.260										8	27	EPIMID
5/25/2010	GUADALUPEMID*			<0.020										24	27	MIDHYP
6/9/2010	GUADALUPEMID			0.176										14	25.9	
6/9/2010	GUADALUPEMID*			0.170										8	25.9	EPIMID
6/9/2010	GUADALUPEMID*			1.05										24	25.9	MIDHYP
6/21/2010	GUADALUPEMID			0.178										13.5	25.3	
6/21/2010	GUADALUPEMID*			0.275										8	25.3	EPIMID
6/21/2010	GUADALUPEMID*			2.32										23	25.3	MIDHYP
7/7/2010	GUADALUPEMID			0.210										13	24.9	
7/7/2010	GUADALUPEMID*			0.363										7	24.9	EPIMID
7/7/2010	GUADALUPEMID*			2.50										22	24.9	MIDHYP
7/26/2010	GUADALUPEMID			0.235										14	24.25	
7/26/2010	GUADALUPEMID*			0.169										8	24.25	EPIMID
7/26/2010	GUADALUPEMID*			3.57										21.5	24.25	MIDHYP
8/10/2010	GUADALUPEMID			0.277										13	23.75	
8/10/2010	GUADALUPEMID*			0.388										7	23.75	EPIMID
8/10/2010	GUADALUPEMID*			2.75										20	23.75	MIDHYP
8/23/2010	GUADALUPEMID			0.349										13	23.4	
8/23/2010	GUADALUPEMID*			0.311										7	23.4	EPIMID
8/23/2010	GUADALUPEMID*			0.367										20	23.4	MIDHYP
9/14/2010	GUADALUPEMID			1.14										12	22.7	
9/14/2010	GUADALUPEMID*			0.159										7	22.7	EPIMID
9/14/2010	GUADALUPEMID*			1.78										20	22.7	MIDHYP
10/5/2010	GUADALUPEMID			1.79										12	21.4	
11/2/2010	GUADALUPEMID			0.313										10	18.75	
12/14/2010	GUADALUPEMID			0.125										14	14.9	

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
1/24/2011	GUADALUPEMID			0.112										11	20.5	
3/28/2011	GUADALUPEMID			0.131										13.5	26	
4/18/2011	GUADALUPEMID			0.139										14	27	
5/4/2011	GUADALUPEMID			0.177										14	26.3	
6/8/2011	GUADALUPEMID			0.136										14	25.5	
6/28/2011	GUADALUPEMID			0.224										13	24.4	
6/28/2011	GUADALUPEMID*			0.240										7.5	24.4	EPIMID
6/28/2011	GUADALUPEMID*			0.253										21	24.4	MIDHYP
7/13/2011	GUADALUPEMID			0.270										14	23.8	
7/13/2011	GUADALUPEMID*			0.281										8	23.8	EPIMID
7/13/2011	GUADALUPEMID*			1.27										20.5	23.8	MIDHYP
7/26/2011	GUADALUPEMID			0.179										12.5	22.9	
7/26/2011	GUADALUPEMID*			0.251										7	22.9	EPIMID
7/26/2011	GUADALUPEMID*			0.507										19.5	22.9	MIDHYP
8/16/2011	GUADALUPEMID			0.193										12	21.4	
8/16/2011	GUADALUPEMID*			0.315										7	21.4	EPIMID
8/16/2011	GUADALUPEMID*			2.27										18	21.4	MIDHYP
9/14/2011	GUADALUPEMID			3.14										10.5	19	
9/14/2011	GUADALUPEMID*			0.266										6	19	EPIMID
9/14/2011	GUADALUPEMID*			5.57										15.5	19	MIDHYP
10/12/2011	GUADALUPEMID			0.270										10	17	
10/12/2011	GUADALUPEMID*			0.351										6	17	EPIMID
10/12/2011	GUADALUPEMID*			2.54										14	17	MIDHYP
11/15/2011	GUADALUPEMID			0.178										8	14.4	
11/15/2011	GUADALUPEMID*			0.202										5	14.4	EPIMID
11/15/2011	GUADALUPEMID*			0.196										11	14.4	MIDHYP
12/7/2011	GUADALUPEMID			0.084										7	12.1	
1/10/2012	GUADALUPEMID			0.138										5.5	9.6	
2/21/2012	GUADALUPEMID			0.773										5.25	8.75	
3/21/2012	GUADALUPEMID			0.155										6	10.6	
4/24/2012	GUADALUPEMID			0.100										9.5	17.4	
5/8/2012	GUADALUPEMID			0.078										10	17.5	

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
5/8/2012	GUADALUPEMID*			0.277										6	17.5	EPIMID
5/8/2012	GUADALUPEMID*			0.610										14.5	17.5	MIDHYP
5/22/2012	GUADALUPEMID			0.159										10	17.25	
5/22/2012	GUADALUPEMID*			0.277										6	17.25	EPIMID
5/22/2012	GUADALUPEMID*			0.169										14	17.25	MIDHYP
6/5/2012	GUADALUPEMID			0.217										10	17.2	
6/5/2012	GUADALUPEMID*			0.391										6	17.2	EPIMID
6/5/2012	GUADALUPEMID*			1.46										14	17.2	MIDHYP
6/25/2012	GUADALUPEMID			0.140										10.5	17	
6/25/2012	GUADALUPEMID*			0.199										6.5	17	EPIMID
6/25/2012	GUADALUPEMID*			1.41										13.5	17	MIDHYP
7/17/2012	GUADALUPEMID			0.402										10	16.4	
7/17/2012	GUADALUPEMID*			0.259										6	16.4	EPIMID
7/17/2012	GUADALUPEMID*			1.54										13	16.4	MIDHYP
8/13/2012	GUADALUPEMID			0.871										8.5	15.5	
8/13/2012	GUADALUPEMID*			0.262										5	15.5	EPIMID
8/13/2012	GUADALUPEMID*			5.27										12.5	15.5	MIDHYP
9/24/2012	GUADALUPEMID			0.168										8	13.7	
9/24/2012	GUADALUPEMID*			0.114										5	13.7	EPIMID
9/24/2012	GUADALUPEMID*			1.35										10.75	13.7	MIDHYP
10/15/2012	GUADALUPEMID			0.244										10	13.2	
11/5/2012	GUADALUPEMID			0.173										12	13.2	
12/10/2012	GUADALUPEMID			0.153										10	18.4	
1/28/2013	GUADALUPEMID			0.217										12	22.7	
2/11/2013	GUADALUPEMID			0.213										12	22.7	
3/18/2013	GUADALUPEMID			0.309										12	22.7	
4/17/2013	GUADALUPEMID			0.743										11	21	
5/14/2013	GUADALUPEMID			0.702										10.5	20	
5/14/2013	GUADALUPEMID*			0.571										6	20	EPIMID
5/14/2013	GUADALUPEMID*			0.840										16.5	20	MIDHYP
6/3/2013	GUADALUPEMID			0.695										10	19.8	
6/3/2013	GUADALUPEMID*			0.578										6	19.8	EPIMID

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
6/3/2013	GUADALUPEMID*			1.65										16	19.8	MIDHYP
6/24/2013	GUADALUPEMID			2.57										10	18.75	
6/24/2013	GUADALUPEMID*			0.310										6	18.75	EPIMID
6/24/2013	GUADALUPEMID*			3.45										15.5	18.75	MIDHYP
7/15/2013	GUADALUPEMID			7.09										10	18.2	
7/15/2013	GUADALUPEMID*			0.301										6	18.2	EPIMID
7/15/2013	GUADALUPEMID*			5.16										15	18.2	MIDHYP
8/12/2013	GUADALUPEMID			2.57										9.5	16.9	
8/12/2013	GUADALUPEMID*			0.308										5.5	16.9	EPIMID
8/12/2013	GUADALUPEMID*			8.22										14	16.9	MIDHYP
8/27/2013	GUADALUPEMID			2.01										9	16.4	
8/27/2013	GUADALUPEMID*			0.282										5.5	16.4	EPIMID
8/27/2013	GUADALUPEMID*			6.73										13	16.4	MIDHYP
9/17/2013	GUADALUPEMID			0.258										8	15	
9/17/2013	GUADALUPEMID*			0.277										5	15	EPIMID
9/17/2013	GUADALUPEMID*			0.438										11.5	15	MIDHYP
10/1/2013	GUADALUPEMID			0.201										8	14.25	
10/22/2013	GUADALUPEMID			0.117										7	13.25	
11/19/2013	GUADALUPEMID			0.154										6.5	11.4	
12/19/2013	GUADALUPEMID			0.098										5.5	9.6	
1/12/2015	GUADALUPEMID			0.91										8.5	15.4	
2/11/2015	GUADALUPEMID			0.91		0.023	0.61							11.5	21	
3/9/2015	GUADALUPEMID			1.6										12	22.5	
3/9/2015	GUADALUPEMID*	15		2.1										19.5	22.5	MIDHYP
3/24/2015	GUADALUPEMID			1.8										12	22.4	
3/24/2015	GUADALUPEEPIMID*			1.6										7	22.4	EPIMID
3/24/2015	GUADALUPEMIDHYP*			1.9										19	22.4	MIDHYP
4/16/2015	GUADALUPEMID			1.800												
4/16/2015	GUADALUPEEPIMID*			1.200												
4/16/2015	GUADALUPEMIDHYP*	16.0		3.100		0.034	0.370									
5/14/2015	GUADALUPEMID			3.700										11.5	22.6	
5/14/2015	GUADALUPEEPIMID*			2.200										6.75	22.6	

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
5/14/2015	GUADALUPEMIDHYP*			4.000										16.25	22.6	
6/17/2015	GUADALUPEEPIMID*			8.300										6.5	21.4	
6/17/2015	GUADALUPEMID			3.300										11	21.4	
6/17/2015	GUADALUPEMIDHYP*			3.400										15.5	21.4	
7/30/2015	GUADALUPEEPIMID*			3.100										6.5	21.5	
7/30/2015	GUADALUPEMID			4.600										11	21.5	
7/30/2015	GUADALUPEMIDHYP*			4.700										15.5	21.5	
8/10/2015	GUADALUPEEPIMID*			14.000										6.25	20.5	
8/10/2015	GUADALUPEMID			3.700										10.5	20.5	
8/10/2015	GUADALUPEMIDHYP*			2.500										14.75	20.5	
8/18/2015	GUADALUPEEPIMID*			24.000										6.25	20.5	
8/18/2015	GUADALUPEMID			2.800										8.5	20.5	
8/18/2015	GUADALUPEMIDHYP*			2.000										14.75	20.5	
9/8/2015	GUADALUPEEPIMID*			2.100										6	19.25	
9/8/2015	GUADALUPEMID			5.100										10	19.25	
9/8/2015	GUADALUPEMIDHYP*			2.700										14	19.25	
09/24/2015	GUADALUPEEPIMID			1.000										6	18.25	
09/24/2015	GUADALUPEMID			2.7										10	18.25	
09/24/2015	GUADALUPEMIDHYP			2.4										14	18.25	
10/13/2015	GUADALUPEEPIMID			1.1										5.5	17.19	
10/13/2015	GUADALUPEMID			0.79										9	17.19	
10/13/2015	GUADALUPEMIDHYP			0.66										12.5	17.19	

GUADALUPE OUTLET

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
4/18/2011	GUADFIELDBLANK	0.209														Estimated at below RL (see lab report)
4/10/2008	GUADOUTLET	9.6		0.828												
4/24/2008	GUADOUTLET	8.5		0.975												
5/8/2008	GUADOUTLET	6.8		0.950												
5/29/2008	GUADOUTLET	7.8		4.41												
6/11/2008	GUADOUTLET	6.9		5.07												
6/25/2008	GUADOUTLET	12		6.30												
7/7/2008	GUADOUTLET	16		8.79												
7/23/2008	GUADOUTLET	11		4.87												
8/6/2008	GUADOUTLET	4.2		3.68												
8/20/2008	GUADOUTLET	7.6		4.13												
9/8/2008	GUADOUTLET	8.9		5.93												
9/22/2008	GUADOUTLET	8.7		6.96												
10/16/2008	GUADOUTLET	47		10.5												
11/17/2008	GUADOUTLET	14		1.23												
12/18/2008	GUADOUTLET	16.3		0.349												
1/14/2009	GUADOUTLET	10.6		0.123												
2/11/2009	GUADOUTLET	24.7		0.135												
3/23/2009	GUADOUTLET	15.2		0.160												
4/20/2009	GUADOUTLET	17.2		0.285												
5/4/2009	GUADOUTLET	21.4		0.610												
5/18/2009	GUADOUTLET	26.7		0.581												
6/8/2009	GUADOUTLET	18.1		0.785												
6/22/2009	GUADOUTLET	23.8		1.32												
7/6/2009	GUADOUTLET	19.4		1.97												
7/20/2009	GUADOUTLET	18.7		0.629												
8/3/2009	GUADOUTLET	18.2		0.600												
8/17/2009	GUADOUTLET	25.1		3.16												

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
8/31/2009	GUADOUTLET	26.7		8.58												
9/14/2009	GUADOUTLET	30.5		6.05												
10/19/2009	GUADOUTLET	70.9		0.658												
11/24/2009	GUADOUTLET	24.9		0.423												
12/16/2009	GUADOUTLET	48.4		0.257												
1/11/2010	GUADOUTLET	14.1		0.135												
2/8/2010	GUADOUTLET	44		0.21												
3/15/2010	GUADOUTLET	28.1		0.191												
3/15/2010	GUADOUTLET*	18		0.25												Dup/Lab test
4/26/2010	GUADOUTLET	16.5		0.271												
5/10/2010	GUADOUTLET	19.4		0.274												
5/25/2010	GUADOUTLET	16.9		0.310												
6/9/2010	GUADOUTLET	13.7		0.276												
6/21/2010	GUADOUTLET	9.64		0.578												
7/7/2010	GUADOUTLET	14.5		1.20												
7/26/2010	GUADOUTLET	19.8		0.888												
8/10/2010	GUADOUTLET	28.2		3.24												
8/23/2010	GUADOUTLET	51.8		4.46												
9/14/2010	GUADOUTLET	27.3		3.09												
10/5/2010	GUADOUTLET	31.3		5.36												
11/2/2010	GUADOUTLET	49.3		0.958												
12/14/2010	GUADOUTLET	32.0		0.214												
1/24/2011	GUADOUTLET	25.1		0.122												
3/28/2011	GUADOUTLET	72.0		0.157												
4/18/2011	GUADOUTLET	34.6		0.226												
5/4/2011	GUADOUTLET	30.3		0.703												
6/8/2011	GUADOUTLET	31.6		0.426												
6/28/2011	GUADOUTLET	13.5		0.418												
7/13/2011	GUADOUTLET	20.3		0.864												
7/26/2011	GUADOUTLET	37.2		0.818												
8/16/2011	GUADOUTLET	51.7		2.89												
9/14/2011	GUADOUTLET	38.5		6.25												

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
10/12/2011	GUADOUTLET	38.3		0.778												
11/15/2011	GUADOUTLET	12.4		0.202												
12/7/2011	GUADOUTLET	13.7		0.102												
1/10/2012	GUADOUTLET	31.7		0.130												
2/21/2012	GUADOUTLET	52.8		0.769												
3/21/2012	GUADOUTLET	36		0.276												
4/24/2012	GUADOUTLET	20		0.172												
5/8/2012	GUADOUTLET	16		0.705												
5/22/2012	GUADOUTLET	23		1.04												
6/5/2012	GUADOUTLET	NS		1.83												
6/25/2012	GUADOUTLET	34		3.40												
7/17/2012	GUADOUTLET	22		2.62												
8/13/2012	GUADOUTLET	60		5.67												
9/24/2012	GUADOUTLET	40		3.58												
10/15/2012	GUADOUTLET	29		0.450												
11/5/2012	GUADOUTLET	21		0.352												
12/10/2012	GUADOUTLET	28		0.155												
1/28/2013	GUADOUTLET	28		0.226												
2/11/2013	GUADOUTLET	21		0.197												
3/18/2013	GUADOUTLET	20		0.304												
4/17/2013	GUADOUTLET	7.1		0.410												
5/14/2013	GUADOUTLET	4.0		0.786												
6/3/2013	GUADOUTLET	8.6		3.81												
6/24/2013	GUADOUTLET	21		8.86												
7/15/2013	GUADOUTLET	15		4.59												
8/12/2013	GUADOUTLET	41		5.13												
8/27/2013	GUADOUTLET	48		4.15												
9/17/2013	GUADOUTLET	82		3.86												
10/1/2013	GUADOUTLET	52		1.71												
10/22/2013	GUADOUTLET	32		0.407												
11/19/2013	GUADOUTLET	NS		NS												
Date	**SampleID**	**Hg**	**Hg**	**MeHg**	**MeHg**	**Mn**	**Fe**	**NH4**	**NO3**	**NO2**	**Sulfate**	**TP**	**Chl a**	**Sample Depth**	**Total Depth**	**Notes**

		Total ng/L	Diss ng/L	Total ng/L	Diss ng/L	Total mg/L	Total mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	(meters)	(meters)	
12/19/2013	GUADOUTLET	23		0.106												
1/27/2014	GUADOUTLET	23		0.29												MeHg corrected from 0.34 per Recall
2/24/2014	GUADOUTLET	21		0.29												MeHg corrected from 0.34 per Recall
3/25/2014	GUADOUTLET	22		0.37												MeHg corrected from 0.43 per Recall
4/15/2014	GUADOUTLET	23		1.2												MeHg corrected from 1.4 per Recall
5/20/2014	GUADOUTLET	84		8.2												MeHg corrected from 9.5 per Recall
6/11/2014	GUADOUTLET	49		2.5												MeHg corrected from 3.0 per Recall
1/12/2015	GUADOUTLET	25		1.1												
2/11/2015	GUADOUTLET	18		1.4		0.11	1.3									
3/9/2015	GUADOUTLET	17		2.0												
3/24/2015	GUADOUTLET	15		2.3		0.069	0.26									
4/16/2015	GUADOUTLET	18.0		3.700		0.068	0.580									
5/14/2015	GUADOUTLET	14.0		3.900		0.051	0.260									
6/17/2015	GUADOUTLET	9.3		3.900		0.089	<0.20									
7/30/2015	GUADOUTLET	11.0		4.700		0.180	<0.20									
8/10/2015	GUADOUTLET	15.0		2.800		0.140	0.270									
8/18/2015	GUADOUTLET	9.4		2.700		0.080	0.200									
9/8/2015	GUADOUTLET	15.0		3.600		0.230	0.460									
09/24/2015	GUADOUTLET	19		2.3		0.18	0.39									
10/13/2015	GUADOUTLET	13		1.1		0.14	0.53									

LAKE ALMADEN 1 EPILIMNION

Date	SampleID	Hg Totaln g/L	Hg Dissn g/L	MeHg Totalng /L	MeHg Dissng /L	Mn Total mg/L	Fe Total mg/L	NH4m g/L	NO3m g/L	NO2m g/L	Sulfate mg/L	TPm g/L	Chl amg/ L	Sample Depth (meters)	Total Depth (meters)	Notes
5/10/2005	LAKEALM1EPI	24	1.0	0.374					3.0		41		0.0036	2.5	12.5	
5/24/2005	LAKEALM1EPI	<0.50	7.1	0.307	0.084			<0.25	2.0	<0.50	40	0.020	0.0290	4.5	12.1	
6/7/2005	LAKEALM1EPI		11	0.517	0.099			<0.25	4.6	<5.0	26	0.024	0.0160	1.5	13.1	
6/21/2005	LAKEALM1EPI			b				<0.25	1.1	<0.50	37	0.026	0.0110	1.5	12.9	
7/7/2005	LAKEALM1EPI	28	8.6	2.730				<0.25	<0.50	<0.50	30	0.070	0.1800	0.75	12.4	
7/19/2005	LAKEALM1EPI	26	5.8	5.590				<0.25	<0.50	<0.50	33	0.046	0.0036	0.5	13.4	
8/3/2005	LAKEALM1EPI	29	6.2	5.200				<0.50	<0.50	<0.50	33	0.032	0.0650	0.5	12.9	
8/15/2005	LAKEALM1EPI	640*	370*	1.590				<0.50	0.50	<0.50	31	<0.010	0.0270	3	13	
8/31/2005	LAKEALM1EPI	110*	71*	1.590				<0.50	<0.50	<0.50	29	<0.010	0.0480	2.5	13.1	
9/14/2005	LAKEALM1EPI	48*	12*	b				<0.25	<0.50	<0.50	35	<0.010	0.0063	2.5	12.25	
9/27/2005	LAKEALM1EPI	8.05	14.6	1.460				0.104	0.59	<0.50	40	0.016	0.0170	2.5	11.75	
10/18/2005	LAKEALM1EPI	11.2	2.92	0.937				<0.100	0.89	<0.50	35	0.140	0.020	3	13	
11/14/2005	LAKEALM1EPI	17.0	18.6	2.100				0.201	1.6	<0.50	31	0.074	0.026	3.5	12.75	
12/20/2005	LAKEALM1EPI	70	5.6	0.372				0.285	4.8	<0.50	39	0.230	0.0023	3	11.5	
1/17/2006	LAKEALM1EPI	77	9.5	0.394				<0.100	3.7	<0.50	32	0.093	0.0011	2	11.25	
2/15/2006	LAKEALM1EPI	20	6.0	0.187				<0.100	3.3	<0.50	41	<0.010	0.013	2	11.6	
3/16/2006	LAKEALM1EPI	49	11	0.302				0.152	4.4	<0.50	42	0.094	0.0024	2	11.75	
4/25/2006	LAKEALM1EPI	<0.50	6.6	0.432				0.149	3.3	<0.50	38	0.046	0.0330	2	11	
5/9/2006	LAKEALM1EPI	0.86	9.0	0.890				<0.100	2.6	<0.50	32	0.014	0.0066	1.5	11.75	
5/23/2006	LAKEALM1EPI	37	8.1	1.290				0.124	2.8	<0.50	35	0.057	0.0120	1.5	11.75	
6/6/2006	LAKEALM1EPI	36	5.8	0.985				<0.100	0.62	<0.50	32	0.093	0.0500	1.5	11.5	
6/19/2006	LAKEALM1EPI	30	6.9	0.740				<0.100	1.2	<0.50	35	0.068	0.0170	1.5	11.6	
7/10/2006	LAKEALM1EPI	16	5.2	1.920				0.131	1.2	<0.50	48	0.059	0.0140	1.5	11.75	dup diss 4.650
7/24/2006	LAKEALM1EPI	8.9	4.910	2.730				0.246	0.69	<0.50	31	<0.050	0.0130	1.5	10.25	
8/16/2006	LAKEALM1EPI	9.8	3.8	1.800				<0.100	<0.50	<0.50	28	<0.050	0.0120	2	12.6	
8/29/2006	LAKEALM1EPI	13.0	4.2	1.000				<0.100	<5.0	<5.0	26	0.077	0.0190	2	12.8	
9/11/2006	LAKEALM1EPI			2.340				0.153	<0.50	<0.50	27	0.087	0.0190	2	12.8	
9/21/2006	LAKEALM1EPI			2.200										2	12.5	
10/2/2006	LAKEALM1EPI	16	6.8	2.070				0.234	0.80	<0.50	36	0.12	0.011	2	12.6	
10/16/2006	LAKEALM1EPI	36	3.0	1.780				0.153	1.5	<0.50	37	0.15	0.045	2	11.9	

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
11/13/2006	LAKEALM1EPI	96	2.8	0.299				0.194	1.7	<0.50	30	0.060	0.018	2	12.5	
11/29/2006	LAKEALM1EPI			0.557										2	12.75	
12/11/2006	LAKEALM1EPI	25	4.490	0.317				0.240	2.4	<0.50	24	0.098	0.0091	2	12.75	
1/22/2007	LAKEALM1EPI	1.8	1.7	0.201				0.216	2.8	<0.50	38	<0.050	0.0062	2	12.3	
2/20/2007	LAKEALM1EPI	11		0.219				<0.100	<0.50	<0.50	40	<0.050	0.061	2	11.6	
3/19/2007	LAKEALM1EPI	0.92		0.318	0.042			<0.100	2.3	<0.50	45	0.054	0.022	2	11.5	
4/9/2007	LAKEALM1EPI	0.73		0.288	0.054			0.145	1.7	<0.50	42	<0.050	0.035	2	11.6	
4/23/2007	LAKEALM1EPI	14.3		0.238	0.107			0.284	2.3	<0.50	44	<0.050	0.0054	2	11.5	
5/8/2007	LAKEALM1EPI	8.57		0.238	0.100			<0.100	1.4	<0.50	46	<0.050	0.0054	2	11.5	
5/22/2007	LAKEALM1EPI	<0.50		0.358	0.178			15.6	1.2	<0.50	46	0.069	0.014	2	11.6	
6/12/2007	LAKEALM1EPI	28.30		0.685	0.104			<0.100	<0.50	<0.50	37	<0.050	0.034	2	12.6	
6/26/2007	LAKEALM1EPI	8.1		1.180	0.109			<0.100	<0.50	<0.50	32	<0.050	0.026	2	12.8	
7/10/2007	LAKEALM1EPI	8.6		1.200	0.170			<0.100	<0.50	<0.50	32	0.062	0.071	2	12.8	
7/23/2007	LAKEALM1EPI	12.3		2.010	0.540			<0.100	<0.50	<0.50	35	0.070	0.043	2	12.5	
8/6/2007	LAKEALM1EPI	8.3		1.040	0.508			0.144	0.53	<0.50	32	0.050	0.035	2	12.3	
8/20/2007	LAKEALM1EPI	11.4		2.380				0.144	<0.50	<0.50	34	0.050	0.018	2	12.6	
8/20/2007	LAKEALM1EPI*			2.700										2	12.6	*Duplicate
9/4/2007	LAKEALM1EPI			0.969										2	12.6	
9/11/2007	LAKEALM1EPI	13		1.310	0.289			<0.100	<0.50	<0.50	36	0.051	0.032	2	12.4	
9/19/2007	LAKEALM1EPI			1.300										2	12.75	
9/25/2007	LAKEALM1EPI	27		0.982	0.229			0.291	0.76	<0.50	33	0.065	0.018	2	12.7	
10/3/2007	LAKEALM1EPI			0.775										2	12.7	
10/17/2007	LAKEALM1EPI	51		0.272	0.120			0.180	0.80	<0.50	39	<0.050	0.0090	2	12.7	
11/16/2007	LAKEALM1EPI	12		0.291	0.058			<0.100	1.3	<0.50	37	<0.050	0.025	2	12.7	
12/26/2007	LAKEALM1EPI	8.0		0.190	0.050			0.205	1.7	<0.50	42	<0.050	0.026	2	12.4	
1/15/2008	LAKEALM1EPI	18		0.324	0.155			0.152	8.4	<0.50	46	0.10	0.0047	2		
2/11/2008	LAKEALM1EPI	9.1		0.255	0.105			<0.100	5.6	<0.50	39	0.060	0.0039	2		
3/11/2008	LAKEALM1EPI	16		0.194	0.076			<0.100	4.0	<0.50	36	<0.050	0.0055	2		
4/8/2008	LAKEALM1EPI	5.3		0.347				0.169	3.5	<0.50	38	<0.050	0.014	2		
4/22/2008	LAKEALM1EPI	6.5		0.314				<0.100	2.8	<0.50	45	<0.050	0.015	2		
5/7/2008	LAKEALM1EPI	6.0		0.631				0.166	2.6	<0.50	38	<0.050	0.0083	2		
5/27/2008	LAKEALM1EPI	5.0		0.846				0.414	1.3	<0.50	36	<0.050	0.035	2		

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
6/10/2008	LAKEALM1EPI	7.0		0.762				<0.100	<0.50	<0.50	34	<0.050	0.021	2		
6/24/2008	LAKEALM1EPI	6.4		1.30				0.214	0.52	<0.50	37	<0.050	0.044	2		
7/8/2008	LAKEALM1EPI	5.0		0.931				0.145	<0.50	<0.50	37	0.15	0.064	2		
7/22/2008	LAKEALM1EPI	3.2		1.66				0.267	<0.50	<0.50	38	0.18	0.031	2		
8/5/2008	LAKEALM1EPI	7.0		1.27				0.271	<0.50	<0.50	37	<0.050	NA	2		Lab error Chla
8/19/2008	LAKEALM1EPI	5.3		2.20				0.194	<0.50	<0.50	34	<0.050	<0.10	2		
8/28/2008	LAKEALM1EPI			3.56										2		
9/9/2008	LAKEALM1EPI	3.2		4.24				<0.100	<0.50	<0.50	34	0.15	0.011	2		
9/23/2008	LAKEALM1EPI	3.8		3.22				<0.100	<0.50	<0.50	34	<0.050	0.014	2		
10/14/2008	LAKEALM1EPI	7.1		1.51				1.07	0.66	<0.50	36	0.075	0.012	2		
11/18/2008	LAKEALM1EPI	4.7		0.341				<0.100	2.1	<0.50	39	0.075	0.013	2		
12/16/2008	LAKEALM1EPI	6.8		0.359				0.230	2.2	<0.50	43	<0.050	0.005	2		
1/13/2009	LAKEALM1EPI	18.1		0.179				0.296	2.8	<0.50	47	<0.050	0.006	2		
2/10/2009	LAKEALM1EPI	17.4		0.106				0.267	2.7	<0.50	37	<0.050	<0.006	2		
3/24/2009	LAKEALM1EPI	17.8		0.164				<0.100	3.5	<0.50	44	<0.050	0.014	2		
4/21/2009	LAKEALM1EPI	9.5		0.327				0.138	<1.0	<1.0	39	<0.050	0.002	2		
5/5/2009	LAKEALM1EPI	14.8		0.556				0.191	1.2	<1.0	35	<0.050	0.031	2		
5/19/2009	LAKEALM1EPI	11.6		0.950				0.157	<1.0	<1.0	39	<0.050	0.008	2		
6/9/2009	LAKEALM1EPI	13.9		0.870				0.177	<1.0	<1.0	34	0.071	0.009	2		
6/23/2009	LAKEALM1EPI	13.0		1.64				<0.100	<1.0	<1.0	36	<0.050	0.012	2		
7/7/2009	LAKEALM1EPI	9.06		1.64				0.167	<1.0	<1.0	36	0.062	0.010	2		
7/21/2009	LAKEALM1EPI	7.87		1.52				0.788	<1.0	<1.0	36	<0.050	0.006	2		
8/4/2009	LAKEALM1EPI	7.55		1.65				<0.100	<1.0	<1.0	35	0.084	0.017	2		
8/18/2009	LAKEALM1EPI	9.57		3.12				0.120	<1.0	<1.0	34	0.062	0.009	2		
9/15/2009	LAKEALM1EPI	9.26		2.40				<0.100	<1.0	<1.0	33	0.091	0.021	2		
10/20/2009	LAKEALM1EPI	37.7		0.728				0.339	3.9	<1.0	37	0.170	<0.002	2		
11/19/2009	LAKEALM1EPI	44.9		0.492				0.199	2.5	<1.0	38	0.067	0.010	2		
12/15/2009	LAKEALM1EPI	22.7		0.289				0.134	2.9	<1.0	41	0.094	0.006	2		
1/12/2010	LAKEALM1EPI	24.3		0.153				0.138	3.0	<1.0	45	<0.050	0.002	2		
2/10/2010	LAKEALM1EPI	81		0.53				<0.100	4.4	<1.0	38	0.10	<0.006	2		
3/18/2010	LAKEALM1EPI	19.0		0.268				<0.100	3.5	<1.0	38	<0.050	0.005	2		

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
3/18/2010	LAKEALM1EPI*	8.4		0.26										2		
4/29/2010	LAKEALM1EPI	18.5		0.239				0.220	3.6	<1.0	42	0.070	<0.002	2		
5/12/2010	LAKEALM1EPI	16.9		0.289				<0.100	2.3	<1.0	36	<0.050	0.005	2		
5/26/2010	LAKEALM1EPI	22.0		0.373				<0.100	1.1	<1.0	33	<0.050	0.022	2		
6/10/2010	LAKEALM1EPI	15.4		0.819				<0.100	<1.0	<1.0	37	<0.050	0.007	2		
6/30/2010	LAKEALM1EPI	12.3		1.42				0.267	<1.0	<1.0	40	<0.050	0.034	2		
7/13/2010	LAKEALM1EPI	16.0		1.57				0.149	<1.0	<1.0	41	0.060	0.025	2		
7/27/2010	LAKEALM1EPI	8.61		0.887				0.308	<1.0	<1.0	42	<0.050	0.016	2		
8/11/2010	LAKEALM1EPI	8.42		1.35				0.276	<1.0	<1.0	40	<0.050	0.016	2		
8/24/2010	LAKEALM1EPI	9.44		1.87				0.071	<1.0	<1.0	39	<0.050	0.018	2		
9/16/2010	LAKEALM1EPI	22.2		1.10				0.221	<1.0	<1.0	39	<0.050	0.009	2		
10/6/2010	LAKEALM1EPI	22.3		1.28				0.213	1.1	<1.0	35	0.075	0.010	2		
11/4/2010	LAKEALM1EPI	16.5		0.397				0.157	1.6	<1.0	30	0.052	0.033	2		
12/15/2010	LAKEALM1EPI	19.5		0.480				0.190	2.4	<1.0	37	0.074	0.060	2		
1/12/2011	LAKEALM1EPI	50.0		0.189				0.337	4.2	<1.0	42	0.073	0.002	2		
3/17/2011	LAKEALM1EPI	28.1		0.316				0.079	2.2	<1.0	34	<0.050	0.016	2		
4/19/2011	LAKEALM1EPI	22.4		0.446				0.079	2.8	<1.0	35	<0.050	0.008	2		
5/3/2011	LAKEALM1EPI	21.3		0.944				0.151	1.9	<1.0	29	<0.050	0.018	2		
6/7/2011	LAKEALM1EPI	22.1		1.09				0.168	1.9	<1.0	29	0.060	0.002	2		
6/29/2011	LAKEALM1EPI	18.8		1.09				0.236	<1.0	<1.0	30	0.052	0.026	2		
7/12/2011	LAKEALM1EPI	14.8		1.69				0.135	<1.0	<1.0	28	0.074	0.010	2		
7/27/2011	LAKEALM1EPI	12.4		1.60				0.218	<1.0	<1.0	27	<0.050	<0.006	2		
8/17/2011	LAKEALM1EPI	17.0		1.29				0.143	<1.0	<1.0	28	<0.050	0.022	2		
9/13/2011	LAKEALM1EPI	11.3		1.40				0.106	<1.0	<1.0	29	<0.050	0.026	2		
10/13/2011	LAKEALM1EPI	10.5		1.47				0.238	<1.0	<1.0	32	0.064	0.050	2		
11/16/2011	LAKEALM1EPI	54.5		0.562				<0.100	1.1	<1.0	33	<0.050	0.022	2		
12/28/2011	LAKEALM1EPI	13.9		0.286				0.112	2.3	<1.0	43	<0.050	0.010	2		
1/25/2012	LAKEALM1EPI	25.5		0.240				<0.100	3.0	<1.0	38	0.064	0.010	2		
2/22/2012	LAKEALM1EPI	16.2		0.190				<0.100	2.6	<1.0	41	<0.050	0.010	2		
3/20/2012	LAKEALM1EPI	15		0.360				0.255	2.4	<1.0	40	<0.050	0.006	2		
4/18/2012	LAKEALM1EPI	21.0		0.456				0.426	1.2	<1.0	38	0.061	0.050	2		

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5/9/2012	LAKEALM1EPI	14		0.435				2.65	<1.0	<1.0	35	<0.050	0.022	2		
5/23/2012	LAKEALM1EPI	11		0.763				<0.100	<1.0	<1.0	34	<0.050	0.013	2		
6/6/2012	LAKEALM1EPI	NS		1.08				0.115	<1.0	<1.0	35	<0.050	0.021	2		
7/18/2012	LAKEALM1EPI	7.9		1.37				0.12	<1.0	<1.0	34	<0.050	0.018	2		
8/15/2012	LAKEALM1EPI	11		1.87				<0.20	<1.0	<1.0	34	0.064	0.030	2		
9/26/2012	LAKEALM1EPI	11		2.70				<0.100	<1.0	<1.0	35	0.088	0.057	2		
10/16/2012	LAKEALM1EPI	9.9		1.02				0.30	<1.0	<1.0	35	0.059	0.026	2		
11/7/2012	LAKEALM1EPI	17		0.434				<0.100	<1.0	<1.0	38	<0.050	0.087	2		
1/9/2013	LAKEALM1EPI	72		0.361				0.12	4.0	<1.0	37	0.12	0.002	2		
1/31/2013	LAKEALM1EPI	16		0.263				<0.10	3.5	<1.0	44	<0.050	0.018	2		
2/21/2013	LAKEALM1EPI	22		0.163				<0.10	3.2	<1.0	46	<0.050	0.016	2		
3/21/2013	LAKEALM1EPI	21		0.259				0.10	2.4	<1.0	46	<0.050	0.022	2		
4/30/2013	LAKEALM1EPI	3.7		0.388				0.13	<1.0	<1.0	45	0.13	0.044	2		
6/25/2013	LAKEALM1EPI	7.2		0.683				0.13	1.0	<1.0	39	0.052	0.022	2		
7/31/2013	LAKEALM1EPI	4.7		2.99				0.15	<1.0	<1.0	33	0.058	0.024	2		
8/20/2013	LAKEALM1EPI	9.2		1.24				<0.10	<1.0	<1.0	36	0.050	0.049	2		
10/23/2013	LAKEALM1EPI	16		0.579				0.11	<1.0	<1.0	35	<0.050	0.054	2		
11/26/2013	LAKEALM1EPI	49		0.233				0.62	1.2	<1.0	39	<0.050	0.006	2		
12/18/2013	LAKEALM1EPI	21		0.224				0.45	1.4	<1.0	43	<0.050	0.046	2		
1/28/2014	LAKEALM1EPI	33		NA				0.14	1.7	<1.0	48	<0.050	0.047	2		
3/4/2014	LAKEALM1EPI	63		0.44				0.13	3.5	<1.0	42	0.15	0.011	2		MeHg corrected from 0.51 per Recall
4/17/2014	LAKEALM1EPI	20		0.95				0.12	<1.0	<1.0	48	0.072	0.038	2		MeHg corrected from 1.1 per Recall
5/20/2014	LAKEALM1EPI	17		1.7				0.11	<1.0	<1.0	57	0.069	0.117	2		MeHg corrected from 2.0 per Recall
7/6/2015	LAKEALM1EPI	10.0		1.300				<0.10	<1.0	<1.0	64	0.056	0.0330	2	10.5	
7/23/2015	LAKEALM1EPI	9.6		1.500		0.037	<0.20	0.130	<1.0	<1.0	63	0.077	0.0640	2	10.5	
8/11/2015	LAKEALM1EPI	11.0		2.400		0.052	<0.20	<0.10	<1.0	<1.0	61	0.074	0.0260	2	10.5	
8/31/2015	LAKEALM1EPI	9.2		2.900		0.088	<0.20	0.160	<1.0	<1.0	59	0.054	0.0090	2	10.5	

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9/10/2015	LAKEALM1EPI	8.0		1.100		0.062	<0.20	0.190	<1.0	<1.0	63	0.066	0.0140	2	10.75	
09/22/2015	LAKEALM1EPI	4.6		0.72		<0.020	<0.20	0.12	<1.0	<1.0	62	0.06	0.0180	2	10.75	
10/08/2015	LAKEALM1EPI	15		1.4		0.035	<0.20	0.14	<1.0	<1.0	61	0.093	0.0130	2	10.75	

LAKE ALMADEN 1 HYPOLIMNION

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5/10/2005	LAKEALM1HYP	28	4.5	5.480				0.63	0.83		31	0.190		8	12.5	
5/24/2005	LAKEALM1HYP	1.3	31	24.100	14.600			1.50	<0.50	<0.50	20	0.680		11	12.1	
6/7/2005	LAKEALM1HYP		68	13.800	7.740			0.91	<5.0	<5.0	24	0.200		10	13.1	
6/21/2005	LAKEALM1HYP			36.700				2.5	<0.50	<0.50	19	0.970		12	12.9	
7/7/2005	LAKEALM1HYP	87	31					2.8	<0.50	<0.50	12	1.0		11.75	12.4	
7/19/2005	LAKEALM1HYP	98	30	64.400				3.0	<0.50	<0.50	9.4	1.0		12	13.4	
8/3/2005	LAKEALM1HYP	3.0	41	49.200				3.9	<0.50	<0.50	9.0	0.88		12	12.9	
8/15/2005	LAKEALM1HYP	11*	69*	42.100				11.0	<0.50	<0.50	1.3	1.40		12	13	
8/31/2005	LAKEALM1HYP	15*	55*	70.500				4.00	<0.50	<0.50	1.6	0.610		12	13.1	
9/14/2005	LAKEALM1HYP	39*	5.1*	9.230				4.2	<0.50	<0.50	0.87	<0.010		11.5	12.25	
9/27/2005	LAKEALM1HYP	<0.50	4.84	43.300				3.1	<0.50	<0.50	1.4	<0.010		11	11.75	
10/18/2005	LAKEALM1HYP	48.2	33.1	43.100				6.63	<0.50	<0.50	5.8	0.270		12.5	13	
11/14/2005	LAKEALM1HYP	72.0	31.8	51.700				7.12	<0.50	<0.50	5.4	0.760		12	12.75	
12/20/2005	LAKEALM1HYP	82	2.2	0.468				0.516	3.0	<0.50	39	0.119		10.5	11.5	
1/17/2006	LAKEALM1HYP	330	8.4	1.320				0.110	3.7	<0.50	32	0.098		11	11.25	
2/15/2006	LAKEALM1HYP	43	5.0	0.237				0.353	2.8	<0.50	37	0.066		10.5	11.6	
3/16/2006	LAKEALM1HYP	57	8.0	0.581				0.442	4.0	<0.50	41	0.110		11	11.75	
4/25/2006	LAKEALM1HYP	10	9.2	0.535				0.456	1.9	<0.50	22	0.068		10	11	
5/9/2006	LAKEALM1HYP	3.9	12	6.800				1.300	0.92	<0.50	22	0.25		11	11.75	
5/23/2006	LAKEALM1HYP	84	38	29.800				2.09	<0.50	<0.50	16	0.47		11	11.75	
6/6/2006	LAKEALM1HYP	96	27	30.600				1.99	<0.50	<0.50	16	0.59		11	11.5	
6/19/2006	LAKEALM1HYP	60	35	41.000				2.94	<0.50	<0.50	17	0.43		10.5	11.6	
7/10/2006	LAKEALM1HYP	52	40	44.400				4.78	<0.50	<0.50	1.3	0.88		11	11.75	dup diss 52.300
7/24/2006	LAKEALM1HYP	9.1	4.75	2.840				0.279	0.76	<0.50	30	<0.050		9.75	10.25	
8/16/2006	LAKEALM1HYP	80	44	53.000				5.58	<0.50	<0.50	5.6	0.67		12	12.6	
8/29/2006	LAKEALM1HYP	74	41	62.600					<0.50	<0.50	5.1	0.87		12	12.8	
9/11/2006	LAKEALM1HYP			32.900				5.69	<0.50	<0.50	13.0	0.85		12	12.8	
9/21/2006	LAKEALM1HYP			19.500										12	12.5	
10/2/2006	LAKEALM1HYP	180	11	28.400				1.52	0.7	<0.50	31	0.70		12	12.6	
10/16/2006	LAKEALM1HYP	240	2.4	1.150				0.22	1.6	<0.50	36	0.17		11.25	11.9	

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11/13/2006	LAKEALM1HYP	190	3.1	0.744				0.220	1.7	<0.50	30	0.076		12	12.5	
11/29/2006	LAKEALM1HYP			0.496										12	12.75	
12/11/2006	LAKEALM1HYP	120	2.790	0.551				0.513	1.8	<0.50	25	0.058		12	12.75	
1/22/2007	LAKEALM1HYP	0.63	4.7	0.281				0.269	2.5	<0.50	37	0.093		12	12.3	
2/20/2007	LAKEALM1HYP	9.6		0.117				0.499	2.0	<0.50	37	78		11	11.6	
3/19/2007	LAKEALM1HYP	<0.50		0.317	0.092			0.396	1.6	<0.50	36	<0.050		11	11.5	
4/9/2007	LAKEALM1HYP	<0.50		0.566	0.255			0.451	1.7	<0.50	39	16		11	11.6	
4/23/2007	LAKEALM1HYP	32.5		7.000	3.430			0.889	1.0	<0.50	42	23		11	11.5	
5/8/2007	LAKEALM1HYP	17.8		0.622	0.368			0.619	1.8	<0.50	46	<0.050		11	11.5	
5/22/2007	LAKEALM1HYP	<0.50		0.474	0.305			0.534	1.1	<0.50	50	0.11		11	11.6	
6/12/2007	LAKEALM1HYP	87.7		51.500	24.000			3.37	<0.50	<0.50	22	1.1		12	12.6	
6/26/2007	LAKEALM1HYP	84.7		65.200	22.900			4.24	<0.50	<0.50	24	1.2		12	12.8	
7/10/2007	LAKEALM1HYP	72.2		59.600	39.900			4.50	<0.50	<0.50	11	1.6		12	12.8	
7/23/2007	LAKEALM1HYP	67.6		50.900	30.800			5.98	<0.50	<0.50	6.0	1.0		12	12.5	
8/6/2007	LAKEALM1HYP	36.2		7.310	4.420			0.431	<0.50	<0.50	28	0.26		12	12.3	
8/20/2007	LAKEALM1HYP	41.2		19.700	12.500			0.378	<0.50	<0.50	28	<0.25		12	12.6	
9/4/2007	LAKEALM1HYP			3.820				0.527	<0.50	<0.50	35	<0.25		10	12.6	
9/11/2007	LAKEALM1HYP	21		5.290	4.350									12	12.4	
9/19/2007	LAKEALM1HYP			5.860										12	12.75	
9/25/2007	LAKEALM1HYP	96		1.860	0.309			0.315	0.86	<0.50	34	0.11		12	12.7	
10/3/2007	LAKEALM1HYP			1.070										12	12.7	
10/17/2007	LAKEALM1HYP	<0.50		0.402	0.082			0.202	0.79	<0.50	40	0.075		12	12.7	
11/16/2007	LAKEALM1HYP	100		0.585	0.079			0.444	1.4	<0.50	38	0.053		12	12.7	
12/26/2007	LAKEALM1HYP	39		0.224	0.025			0.296	1.5	<0.50	42	<0.050		12	12.4	
1/15/2008	LAKEALM1HYP	180		0.641	0.092			0.216	8.3	<0.50	42	0.13				
2/11/2008	LAKEALM1HYP	9.3		0.405	0.077			<0.100	6.7	<0.50	44	0.090				
3/11/2008	LAKEALM1HYP	20		0.253	0.129			0.367	3.6	<0.50	32	0.097				
4/8/2008	LAKEALM1HYP	10		0.540				0.437	3.0	<0.50	34	0.13				
4/22/2008	LAKEALM1HYP	13		4.550				0.712	1.7	<0.50	33	0.35				
5/7/2008	LAKEALM1HYP	6.9		2.23				0.629	2.1	<0.50	36	0.23				
5/27/2008	LAKEALM1HYP	4.0		1.60				0.494	1.8	<0.50	35	0.16				
6/10/2008	LAKEALM1HYP	6.1		3.21				0.517	<0.50	<0.50	35	0.22				

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
6/24/2008	LAKEALM1HYP	8.7		2.49				0.653	<0.50	<0.50	33	0.14				
7/8/2008	LAKEALM1HYP	25		6.86				0.555	<0.50	<0.50	33	<0.050				
7/22/2008	LAKEALM1HYP	15		15.4				1.72	<0.50	<0.50	26	0.33				
8/5/2008	LAKEALM1HYP	13		15.7				1.26	<0.50	<0.50	28	0.19				
8/19/2008	LAKEALM1HYP	13		15.9				0.480	<0.50	<0.50	30	0.10				
8/28/2008	LAKEALM1HYP			20.4												
9/9/2008	LAKEALM1HYP	6.4		26.2				0.445	<0.50	<0.50	26	<0.050				
9/23/2008	LAKEALM1HYP	12		30.3				0.887	<0.50	<0.50	25	0.14				
10/14/2008	LAKEALM1HYP	11		1.68				0.148	0.86	<0.50	37	0.078				
11/18/2008	LAKEALM1HYP	6.6		0.687				0.131	1.7	<0.50	38	0.061				
12/16/2008	LAKEALM1HYP	84		0.450				0.251	2.2	<0.50	43	<0.050				
1/13/2009	LAKEALM1HYP	114		0.360				0.573	2.4	<0.50	48	0.16				
2/10/2009	LAKEALM1HYP	23.6		0.195				0.641	1.8	<0.50	43	0.062				
3/24/2009	LAKEALM1HYP	30.3		0.312				0.529	3.5	<0.50	36	0.072				
4/21/2009	LAKEALM1HYP	26.1		1.29				0.675	2.0	<1.0	37	0.15				
5/5/2009	LAKEALM1HYP	33.5		1.98				0.721	1.4	<1.0	35	0.18				
5/19/2009	LAKEALM1HYP	31.4		1.20				0.555	1.5	<1.0	38	0.073				
6/9/2009	LAKEALM1HYP	32.4		10.3				1.24	<1.0	<1.0	33	0.260				
6/23/2009	LAKEALM1HYP	28.7		5.09				0.655	<1.0	<1.0	36	0.12				
7/7/2009	LAKEALM1HYP	15.5		5.69				0.575	<1.0	<1.0	33	0.093				
7/21/2009	LAKEALM1HYP	14.4		8.20				0.456	<1.0	<1.0	33	0.067				
8/4/2009	LAKEALM1HYP	21.5		10.2				0.538	<1.0	<1.0	31	0.11				
8/18/2009	LAKEALM1HYP	19.1		13.8				0.617	<1.0	<1.0	28	0.16				
9/15/2009	LAKEALM1HYP	27.5		18.2				1.01	<1.0	<1.0	26	0.22				
10/20/2009	LAKEALM1HYP	69.7		2.24				0.304	3.6	<1.0	31	0.25				
11/19/2009	LAKEALM1HYP	150		0.819				0.209	2.5	<1.0	40	0.10				
12/15/2009	LAKEALM1HYP	32.6		0.175				0.241	2.3	<1.0	39	<0.050				
1/12/2010	LAKEALM1HYP	64.5		0.171				0.198	3.2	<1.0	46	<0.050				
2/10/2010	LAKEALM1HYP	110		0.42				0.279	3.7	<1.0	33	0.10				
3/18/2010	LAKEALM1HYP	39.0		0.376				0.372	2.7	<1.0	34	0.083				
3/18/2010	LAKEALM1HYP*	40		0.36												
4/29/2010	LAKEALM1HYP	17.0		0.253				0.474	2.6	<1.0	37	0.12				

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
5/12/2010	LAKEALM1HYP	30.8		1.07				0.723	1.9	<1.0	37	0.17				
5/26/2010	LAKEALM1HYP	33.1		0.195				0.455	1.6	<1.0	39	0.13				
6/10/2010	LAKEALM1HYP	27.7		11.2				1.06	<1.0	<1.0	35	0.22				
6/30/2010	LAKEALM1HYP	6.17		0.857				0.540	<1.0	<1.0	38	<0.050				
7/13/2010	LAKEALM1HYP	25.5		9.49				0.872	<1.0	<1.0	34	0.25				
7/27/2010	LAKEALM1HYP	27.3		17.3				1.39	<1.0	<1.0	31	0.26				
8/11/2010	LAKEALM1HYP	56.1		23.9				1.41	<1.0	<1.0	32	0.22				
8/24/2010	LAKEALM1HYP	30.6		9.79				0.909	<1.0	<1.0	34	0.14				
9/16/2010	LAKEALM1HYP	79.3		3.86				0.380	<1.0	<1.0	39	0.074				
10/6/2010	LAKEALM1HYP	62.2		0.701				0.239	1.2	<1.0	33	0.078				
11/4/2010	LAKEALM1HYP	66.1		0.602				0.636	1.7	<1.0	31	0.088				
12/15/2010	LAKEALM1HYP	64.9		0.260				0.874	1.2	<1.0	31	0.098				
1/12/2011	LAKEALM1HYP	62.2		0.221				0.326	3.7	<1.0	42	0.082				
3/17/2011	LAKEALM1HYP	87.4		0.727				0.407	1.5	<1.0	17	<0.050				
4/19/2011	LAKEALM1HYP	58.3		0.555				0.236	2.4	<1.0	22	<0.050				
5/3/2011	LAKEALM1HYP	24.7		0.348				0.275	1.9	<1.0	22	<0.050				
6/7/2011	LAKEALM1HYP	67.7		1.33				0.509	1.4	<1.0	29	0.094				
6/29/2011	LAKEALM1HYP	13.9		0.700				0.524	1.6	<1.0	31	0.092				
7/12/2011	LAKEALM1HYP	20.8		4.66				0.473	<1.0	<1.0	28	0.16				
7/27/2011	LAKEALM1HYP	33.1		9.47				3.04	<1.0	<1.0	27	0.20				
8/17/2011	LAKEALM1HYP	47.0		15.4				0.750	<1.0	<1.0	24	0.23				
9/13/2011	LAKEALM1HYP	40.1		12.8				0.576	<1.0	<1.0	22	0.16				
10/13/2011	LAKEALM1HYP	11.1		1.88				0.437	<1.0	<1.0	33	0.084				
11/16/2011	LAKEALM1HYP	205		1.05				<0.100	1.1	<1.0	34	0.059				
12/28/2011	LAKEALM1HYP	55.5		0.177				0.243	2.1	<1.0	41	<0.050				
1/25/2012	LAKEALM1HYP	37.4		0.292				<0.100	2.2	<1.0	41	<0.050				
2/22/2012	LAKEALM1HYP	57.2		0.673				0.845	1.1	<1.0	39	0.11				
3/20/2012	LAKEALM1HYP	41		0.891				0.700	1.2	<1.0	39	0.099				
4/18/2012	LAKEALM1HYP	29		0.557				0.662	1.7	<1.0	39	0.068				
5/9/2012	LAKEALM1HYP	25		3.66				0.879	<1.0	<1.0	33	0.17				
5/23/2012	LAKEALM1HYP	24		6.83				0.668	<1.0	<1.0	34	0.15				

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
6/6/2012	LAKEALM1HYP	NS		3.75				0.062	<1.0	<1.0	32	0.065				
7/18/2012	LAKEALM1HYP	17		14.7				0.70	<1.0	<1.0	30	0.21				
8/15/2012	LAKEALM1HYP	31		12.4				0.62	<1.0	<1.0	33	0.14				
9/26/2012	LAKEALM1HYP	26		6.86				0.26	<1.0	<1.0	35	0.21				
10/16/2012	LAKEALM1HYP	24		1.44				0.21	<1.0	<1.0	35	0.099				
11/7/2012	LAKEALM1HYP	87		0.614				0.19	<1.0	<1.0	38	0.063				
1/9/2013	LAKEALM1HYP	31		0.410				0.23	3.6	<1.0	36	0.12				
1/31/2013	LAKEALM1HYP	29		0.158				0.26	3.7	<1.0	43	<0.050				
2/21/2013	LAKEALM1HYP	28		0.143				0.79	2.5	<1.0	40	<0.050				
3/21/2013	LAKEALM1HYP	40		0.740				0.71	1.7	<1.0	41	<0.050				
4/30/2013	LAKEALM1HYP	25		1.91				0.66	1.2	<1.0	43	0.26				
6/25/2013	LAKEALM1HYP	18		5.78				0.64	<1.0	<1.0	37	0.19				
7/31/2013	LAKEALM1HYP	15		10.2				0.54	<1.0	<1.0	31	0.14				
8/20/2013	LAKEALM1HYP	28		12.8				0.74	<1.0	<1.0	29	0.12				
10/23/2013	LAKEALM1HYP	91		0.620				0.26	<1.0	<1.0	39	<0.050				
11/26/2013	LAKEALM1HYP	150		0.304				0.28	1.2	<1.0	39	0.078				
12/18/2013	LAKEALM1HYP	62		0.174				0.27	1.3	<1.0	43	<0.050				
1/28/2014	LAKEALM1HYP	120		NA				0.65	1.1	<1.0	48	<0.050				
3/4/2014	LAKEALM1HYP	150		0.55				0.91	<1.0	<1.0	45	0.18				MeHg corrected from 0.65 per Recall
4/17/2014	LAKEALM1HYP	140		2.3				0.94	<1.0	<1.0	40	0.21				MeHg corrected from 2.7 per Recall
5/20/2014	LAKEALM1HYP	85		2.1				1.0	<1.0	<1.0	48	0.20				MeHg corrected from 2.5 per Recall
7/6/2015	LAKEALM1HYP	26.0		0.093				0.950	<1.0	<1.0	59	0.18		10	10.5	
7/23/2015	LAKEALM1HYP	41.0		0.23		1.000	0.450	0.940	<1.0	<1.0	57	0.17		10	10.5	
8/11/2015	LAKEALM1HYP	30.0		2.30		0.600	0.300	0.800	<1.0	<1.0	55	0.12		10	10.5	

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8/31/2015	LAKEALM1HYP	29.0		<2.0		0.530	<0.20	0.900	<1.0	<1.0	52	0.14		10.25	10.5	Sample was diluted due to the nature of the sample matrix leading to a increased RL of 2.0 ng/g.
9/10/2015	LAKEALM1HYP	18.0		1.70		0.170	0.390	0.380	<1.0	<1.0	63	<0.050		10.5	10.75	
09/22/2015	LAKEALM1HYP	14		0.7		0.16	0.3	0.45	<1.0	<1.0	62	0.066		10.5	10.75	
10/08/2015	LAKEALM1HYP	28		1.1		0.13	<0.20	0.26	<1.0	<1.0	61	0.083		10.5	10.75	
10/08/2015	LAKEALM1DUP	34		1.1										10.5	10.75	

LAKE ALMADEN 1 MID

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
6/7/2005	LAKEALM1MID			0.775										5.5	13.1	
6/21/2005	LAKEALM1MID			0.634										5.75	12.9	
7/19/2005	LAKEALM1MID			1.760										6.5	13.4	
8/3/2005	LAKEALM1MID			6.130										6.5	12.9	
8/15/2005	LAKEALM1MID			27.800										7	13	
8/31/2005	LAKEALM1MID			59.000										9.5	13.1	
9/27/2005	LAKEALM1MID	b	b	140.000										7.75	11.75	
10/18/2005	LAKEALM1MID			11.400										8	13	
11/14/2005	LAKEALM1MID			6.150										8.5	12.75	
12/20/2005	LAKEALM1MID			0.355										5.5	11.5	
1/17/2006	LAKEALM1MID			0.462										6	11.25	
2/15/2006	LAKEALM1MID			0.208										7.5	11.6	
3/16/2006	LAKEALM1MID			0.321										7	11.75	
4/25/2006	LAKEALM1MID			0.392										6	11	
5/9/2006	LAKEALM1MID			0.238										6.5	11.75	
5/23/2006	LAKEALM1MID			0.910										6.5	11.75	
6/6/2006	LAKEALM1MID			0.733										7	11.5	
6/19/2006	LAKEALM1MID			0.924										6.25	11.6	
7/10/2006	LAKEALM1MID			0.676										5	11.75	
7/24/2006	LAKEALM1MID			0.741										5	10.25	
8/16/2006	LAKEALM1MID			2.090										7	12.6	
8/29/2006	LAKEALM1MID *			2.910										4	12.8	* do not use as MID value for chart
8/29/2006	LAKEALM1MID *			5.040										6	12.8	* do not use as MID value for chart
8/29/2006	LAKEALM1MID			3.970										8	12.8	
8/29/2006	LAKEALM1MID *			5.010										10	12.8	* do not use as MID value for chart
9/11/2006	LAKEALM1MID			2.250										7	12.8	
9/21/2006	LAKEALM1MID			0.683										7	12.5	

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
10/2/2006	LAKEALM1MID			4.470										7	12.6	
10/16/2006	LAKEALM1MID			1.240										6.5	11.9	
11/13/2006	LAKEALM1MID			0.581										7	12.5	
11/29/2006	LAKEALM1MID			0.521										4	12.75	
11/29/2006	LAKEALM1MID			0.476										6	12.75	
11/29/2006	LAKEALM1MID			0.443										8	12.75	
11/29/2006	LAKEALM1MID			0.436										10	12.75	
12/11/2006	LAKEALM1MID			0.293										7	12.75	
1/22/2007	LAKEALM1MID			0.304										7	12.3	
2/20/2007	LAKEALM1MID			0.102										6.5	11.6	
3/19/2007	LAKEALM1MID			0.131	0.029									7	11.5	
4/9/2007	LAKEALM1MID			0.095	0.028									6.5	11.6	
4/23/2007	LAKEALM1MID			0.411	0.142									6.5	11.5	
5/8/2007	LAKEALM1MID			0.260	0.069									6.5	11.5	
5/22/2007	LAKEALM1MID			0.216	0.068									6.5	11.6	
6/12/2007	LAKEALM1MID			0.376	0.198									7	12.6	
6/26/2007	LAKEALM1MID			0.325	0.147									7	12.8	
7/10/2007	LAKEALM1MID			0.718	0.472									7	12.8	
7/23/2007	LAKEALM1MID			2.260	1.600									7	12.5	
8/6/2007	LAKEALM1MID			4.580	1.870									7	12.3	
8/20/2007	LAKEALM1MID			0.525	0.318									7	12.6	
8/20/2007	LAKEALM1MID*			0.427										4.5	12.6	*4.5 meter depth
8/20/2007	LAKEALM1MID*			1.910										9.5	12.6	*9.5 meter depth
9/4/2007	LAKEALM1MID			2.410										6	12.6	
9/11/2007	LAKEALM1MID			1.850	0.891									7	12.4	
9/19/2007	LAKEALM1MID			1.300										7	12.75	
9/25/2007	LAKEALM1MID			0.758	0.312									7	12.7	
10/3/2007	LAKEALM1MID			0.427										7	12.7	
10/17/2007	LAKEALM1MID			0.371	0.110									7	12.7	
11/16/2007	LAKEALM1MID			0.223	0.068									7	12.7	
12/26/2007	LAKEALM1MID			0.195	0.039									7	12.4	

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
1/15/2008	LAKEALM1MID			0.278												
2/11/2008	LAKEALM1MID			0.233	0.137											
3/11/2008	LAKEALM1MID			0.160	0.106											
4/8/2008	LAKEALM1MID			0.151												
4/22/2008	LAKEALM1MID			0.247												
5/7/2008	LAKEALM1MID			0.255												
5/27/2008	LAKEALM1MID			0.588												
6/10/2008	LAKEALM1MID			0.593												
6/24/2008	LAKEALM1MID			1.77												
7/8/2008	LAKEALM1MID			4.21												
7/22/2008	LAKEALM1MID			6.22												
7/22/2008	LAKEALM1MID*			4.26												Do not use for mid taken at 4.5m
7/22/2008	LAKEALM1MID*			12.0												Do not use for mid taken at 9.5m
8/5/2008	LAKEALM1MID			9.53												
8/5/2008	LAKEALM1MID*			1.14												Do not use for mid taken at 4.5m
8/5/2008	LAKEALM1MID*			12.7												Do not use for mid taken at 9.5m
8/19/2008	LAKEALM1MID			5.19												
8/19/2008	LAKEALM1MID*			2.58												Do not use for mid taken at 4.5m
8/19/2008	LAKEALM1MID*			15.9												Do not use for mid taken at 9.5m
8/28/2008	LAKEALM1MID			13.3												
8/28/2008	LAKEALM1MID*			2.18												Do not use for mid taken at 4.5m
8/28/2008	LAKEALM1MID*			15.9												Do not use for mid taken at 9.5m
9/9/2008	LAKEALM1MID			13.8												

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
9/9/2008	LAKEALM1MID*			3.33												Do not use for mid taken at 4.5m
9/9/2008	LAKEALM1MID*			22.1												Do not use for mid taken at 9.5m
9/23/2008	LAKEALM1MID			11.9												
9/23/2008	LAKEALM1MID*			5.24												Do not use for mid taken at 4.5m
9/23/2008	LAKEALM1MID*			15.0												Do not use for mid taken at 9.5m
10/14/2008	LAKEALM1MID			1.21												
11/18/2008	LAKEALM1MID			0.372												
12/16/2008	LAKEALM1MID			0.519												
1/13/2009	LAKEALM1MID			0.149												
2/10/2009	LAKEALM1MID			0.080												
3/24/2009	LAKEALM1MID			0.175												
4/21/2009	LAKEALM1MID			0.163												
5/5/2009	LAKEALM1MID			0.255												
5/19/2009	LAKEALM1MID*			0.575												Do not use for mid taken at 4m
5/19/2009	LAKEALM1MID*			0.391												Do not use for mid taken at 8m
5/19/2009	LAKEALM1MID			0.506												
6/9/2009	LAKEALM1MID*			0.420												Do not use for mid taken at 4m
6/9/2009	LAKEALM1MID*			0.820												Do not use for mid taken at 8m
6/9/2009	LAKEALM1MID			1.86												
6/23/2009	LAKEALM1MID*			0.880												Do not use for mid taken at 4m
6/23/2009	LAKEALM1MID*			2.19												Do not use for mid taken at 8m
6/23/2009	LAKEALM1MID			1.61												

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
7/7/2009	LAKEALM1MID*			0.857												Do not use for mid taken at 4m
7/7/2009	LAKEALM1MID*			4.71												Do not use for mid taken at 8m
7/7/2009	LAKEALM1MID			3.90												
7/21/2009	LAKEALM1MID*			0.609												Do not use for mid taken at 4m
7/21/2009	LAKEALM1MID*			5.46												Do not use for mid taken at 8m
7/21/2009	LAKEALM1MID			3.82												
8/4/2009	LAKEALM1MID*			2.41												Do not use for mid taken at 4m
8/4/2009	LAKEALM1MID*			7.05												Do not use for mid taken at 8m
8/4/2009	LAKEALM1MID			4.83												
8/18/2009	LAKEALM1MID*			3.79												Do not use for mid taken at 4m
8/18/2009	LAKEALM1MID*			10.5												Do not use for mid taken at 8m
8/18/2009	LAKEALM1MID			7.04												
9/15/2009	LAKEALM1MID*			2.48												Do not use for mid taken at 4m
9/15/2009	LAKEALM1MID*			10.6												Do not use for mid taken at 8m
9/15/2009	LAKEALM1MID			6.16												
10/20/2009	LAKEALM1MID*			0.904												Do not use for mid taken at 4m
10/20/2009	LAKEALM1MID*			1.47												Do not use for mid taken at 8m
10/20/2009	LAKEALM1MID			1.16												
11/19/2009	LAKEALM1MID*			0.520												Do not use for mid taken at 4m

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
11/19/2009	LAKEALM1MID*			0.684												Do not use for mid taken at 8m
11/19/2009	LAKEALM1MID			0.566												
12/15/2009	LAKEALM1MID			0.195												
1/12/2010	LAKEALM1MID			0.127												
2/10/2010	LAKEALM1MID			0.52												
3/18/2010	LAKEALM1MID			0.212												
3/18/2010	LAKEALM1MID*			0.44												Dup/Lab test
4/29/2010	LAKEALM1MID			0.330												
4/29/2010	LAKEALM1MID*			0.210												Do not use for mid taken at 4m
4/29/2010	LAKEALM1MID*			0.189												Do not use for mid taken at 8m
5/12/2010	LAKEALM1MID			0.252												
5/12/2010	LAKEALM1MID*			0.307												EPIMID
5/12/2010	LAKEALM1MID*			0.295												MIDHYP
5/26/2010	LAKEALM1MID			0.327												
5/26/2010	LAKEALM1MID*			0.587												EPIMID
5/26/2010	LAKEALM1MID*			1.81												MIDHYP
6/10/2010	LAKEALM1MID			0.216												
6/10/2010	LAKEALM1MID*			0.596												EPIMID
6/10/2010	LAKEALM1MID*			1.38												MIDHYP
6/30/2010	LAKEALM1MID			0.535												
6/30/2010	LAKEALM1MID*			0.441												EPIMID
6/30/2010	LAKEALM1MID*			2.80												MIDHYP
7/13/2010	LAKEALM1MID			1.58												
7/13/2010	LAKEALM1MID*			0.548												EPIMID
7/13/2010	LAKEALM1MID*			9.82												MIDHYP
7/27/2010	LAKEALM1MID			0.758												
7/27/2010	LAKEALM1MID*			0.669												EPIMID
7/27/2010	LAKEALM1MID*			12.1												MIDHYP
8/11/2010	LAKEALM1MID			0.714												

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
8/11/2010	LAKEALM1MID*			1.01												EPIMID
8/11/2010	LAKEALM1MID*			13.0												MIDHYP
8/24/2010	LAKEALM1MID			0.796												
8/24/2010	LAKEALM1MID*			0.639												EPIMID
8/24/2010	LAKEALM1MID*			1.55												MIDHYP
9/16/2010	LAKEALM1MID			1.14												
9/16/2010	LAKEALM1MID*			0.952												EPIMID
9/16/2010	LAKEALM1MID*			1.17												MIDHYP
10/6/2010	LAKEALM1MID			0.739												
11/4/2010	LAKEALM1MID			0.210												
12/15/2010	LAKEALM1MID			0.137												
1/12/2011	LAKEALM1MID			0.174												
3/17/2011	LAKEALM1MID			0.190												
4/19/2011	LAKEALM1MID			0.477												
5/3/2011	LAKEALM1MID			0.452												
6/7/2011	LAKEALM1MID			0.293												
6/29/2011	LAKEALM1MID			0.503												
6/29/2011	LAKEALM1MID*			0.581												EPIMID
6/29/2011	LAKEALM1MID*			0.533												MIDHYP
7/12/2011	LAKEALM1MID			1.03												
7/12/2011	LAKEALM1MID*			0.823												EPIMID
7/12/2011	LAKEALM1MID*			2.48												MIDHYP
7/27/2011	LAKEALM1MID			0.761												
7/27/2011	LAKEALM1MID*			0.413												
7/27/2011	LAKEALM1MID*			2.89												
8/17/2011	LAKEALM1MID			0.522												
8/17/2011	LAKEALM1MID*			0.421												
8/17/2011	LAKEALM1MID*			4.27												
9/13/2011	LAKEALM1MID			4.43												
9/13/2011	LAKEALM1MID*			2.25												
9/13/2011	LAKEALM1MID*			6.95												
10/13/2011	LAKEALM1MID			0.671												

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
10/13/2011	LAKEALM1MID*			0.430												
10/13/2011	LAKEALM1MID*			0.841												
11/16/2011	LAKEALM1MID			0.987												
12/28/2011	LAKEALM1MID			0.162												
1/25/2012	LAKEALM1MID			0.182												
2/22/2012	LAKEALM1MID			0.170												
3/20/2012	LAKEALM1MID			0.217												
4/18/2012	LAKEALM1MID			0.300												
5/9/2012	LAKEALM1MID			0.349												
5/9/2012	LAKEALM1MID*			0.435												
5/9/2012	LAKEALM1MID*			0.295												
5/23/2012	LAKEALM1MID			0.490												
5/23/2012	LAKEALM1MID*			0.492												
5/23/2012	LAKEALM1MID*			0.790												
6/6/2012	LAKEALM1MID			0.291												
6/6/2012	LAKEALM1MID*			0.559												
6/6/2012	LAKEALM1MID*			0.640												
7/18/2012	LAKEALM1MID			2.04												
7/18/2012	LAKEALM1MID*			0.354												
7/18/2012	LAKEALM1MID*			8.03												
8/15/2012	LAKEALM1MID			1.12												
8/15/2012	LAKEALM1MID*			0.968												
8/15/2012	LAKEALM1MID*			5.92												
9/26/2012	LAKEALM1MID			0.966												
9/26/2012	LAKEALM1MID*			0.945												
9/26/2012	LAKEALM1MID*			1.05												
10/16/2012	LAKEALM1MID			0.599												
11/7/2012	LAKEALM1MID			0.260												
1/9/2013	LAKEALM1MID			0.319												
1/31/2013	LAKEALM1MID			0.122												
2/21/2013	LAKEALM1MID			0.120												

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
3/21/2013	LAKEALM1MID			0.093												
4/30/2013	LAKEALM1MID			0.234												
6/25/2013	LAKEALM1MID			0.400												
7/31/2013	LAKEALM1MID			4.75												
8/20/2013	LAKEALM1MID			1.99												
10/23/2013	LAKEALM1MID			0.408												
11/26/2013	LAKEALM1MID			0.285												
12/18/2013	LAKEALM1MID			0.184												
1/28/2014	LAKEALM1MID			NA												
3/4/2014	LAKEALM1MID			<0.050												
4/17/2014	LAKEALM1MID			0.15												MeHg corrected from 0.18 per Recall
5/20/2014	LAKEALM1MID			2.2												MeHg corrected from 2.6 per Recall
7/6/2015	LAKEALM1MID			0.200										6	10.5	
7/23/2015	LAKEALM1MID			0.310										6	10.5	
8/11/2015	LAKEALM1MID			1.600										6	10.5	
8/31/2015	LAKEALM1MID			0.880										6	10.5	
9/10/2015	LAKEALM1MID			1.100										6.25	10.75	
09/22/2015	LAKEALM1MID			0.5										6.25	10.75	
10/08/2015	LAKEALM1MID			0.27										6.25	10.75	

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Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
5/10/2005	LAKEALM2EPI	29	3.6	0.353					3.1		41		0.0037	2	8.2	
5/24/2005	LAKEALM2EPI	0.81	7.3					<0.25	2.5	<0.50	40	0.031	0.0320	3.5	9.7	
6/7/2005	LAKEALM2EPI		7.6	0.693	0.114			<0.25	4.4	<5.0	27	0.013	0.0160	1.5	10.75	
6/21/2005	LAKEALM2EPI			0.670				<0.25	1.1	<0.50	35	0.027	0.0200	0.75	10.75	
7/7/2005	LAKEALM2EPI	22	6.2	3.840				<0.25	<0.50	<0.50	30	0.041	0.12	1.25	10.8	
7/19/2005	LAKEALM2EPI	36	7.4	3.170				<0.25	<0.50	<0.50	32	0.042	0.12	0.5	10.8	
8/3/2005	LAKEALM2EPI	26	9.9	8.190				<0.50	<0.50	<0.50	33	<0.010	0.087	0.5	10.75	
8/15/2005	LAKEALM2EPI	74*	12*	1.950				<0.50	0.52	<0.50	31	<0.010	0.023	2	11	
8/31/2005	LAKEALM2EPI	52*	11*	2.210				<0.50	<0.50	<0.50	26	<0.010	0.065	2	10.6	
9/14/2005	LAKEALM2EPI	22*	3.5*	0.958				<0.25	0.72	<0.50	40	<0.010	0.0090	2.5	10	
9/27/2005	LAKEALM2EPI	b	b	5.220				0.212	<0.50	<0.50	39	<0.010	0.0270	2.5	9.6	
10/18/2005	LAKEALM2EPI	18.3	3.11	1.460				<0.100	1.0	<0.50	34	0.016	0.035	3	9.75	
11/14/2005	LAKEALM2EPI	19.1	4.88	2.410				0.175	1.7	<0.50	31	0.016	0.034	3.5	10.75	
12/20/2005	LAKEALM2EPI	87	6.3	b				0.309	4.9	<0.50	39	0.210	0.0025	3	9.1	
1/17/2006	LAKEALM2EPI	79	9.3	0.386				0.102	3.7	<0.50	31	0.082	0.0010	2	9.75	
2/15/2006	LAKEALM2EPI	24	5.7	0.208				<0.100	3.3	<0.50	45	0.021	0.014	2	9.5	
3/16/2006	LAKEALM2EPI	48	9.9	0.370				0.131	4.3	<0.50	42	0.120	0.0028	2	9	
4/25/2006	LAKEALM2EPI	14	6.6	0.417				0.140	3.3	<0.50	38	0.025	0.0310	2	9.5	
5/9/2006	LAKEALM2EPI	1.0	7.7	0.374				<0.100	2.5	<0.50	33	<0.010	0.0054	1	9.75	
5/23/2006	LAKEALM2EPI	58	9.7	0.652				0.143	3.1	<0.50	35	<0.050	0.0076	1.5	9.75	
6/6/2006	LAKEALM2EPI	53	6.6	0.981				<0.100	1.2	<0.50	34	0.091	0.0230	1.5	9.3	
6/19/2006	LAKEALM2EPI	40	6.1	1.160				<0.100	1.3	<0.50	44	<0.050	0.0130	2	9.5	
7/10/2006	LAKEALM2EPI	31	5.0	2.660				0.126	1.5	<0.50	16	0.076	0.0140	1.5	9.75	dup diss 4.780
7/24/2006	LAKEALM2EPI	12	4.730	2.310				0.178	0.63	<0.50	32	0.063	0.0190	1.5	10.5	
8/16/2006	LAKEALM2EPI	19	6.6	3.510				0.156	<0.50	<0.50	28	0.061	0.0540	2	10.8	
8/29/2006	LAKEALM2EPI	16	6.5	1.780				<0.100	<5.0	<5.0	27	0.088	0.023	2	10.8	
9/11/2006	LAKEALM2EPI			2.790				0.163	0.59	<0.50	30	0.082	0.020	2	10.8	
9/21/2006	LAKEALM2EPI			3.450										2	10.7	
10/2/2006	LAKEALM2EPI	23	6.4	3.230				0.125	1.0	<0.50	37	0.11	0.017	2	10.6	
10/16/2006	LAKEALM2EPI	56	3.0	1.300				0.151	<0.50	<0.50	37	0.13	0.021	2	10.5	

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11/13/2006	LAKEALM2EPI	68	2.7	0.635				0.200	1.7	<0.50	31	0.060	0.020	2	11	
11/29/2006	LAKEALM2EPI			0.473										2	10.8	
12/11/2006	LAKEALM2EPI	22	4.180	0.333				0.258	2.4	<0.50	26	0.10	0.0088	2	10.8	
1/22/2007	LAKEALM2EPI	0.83	2.0	0.266				0.108	3.0	<0.50	39	0.063	0.027	2	10.8	
2/20/2007	LAKEALM2EPI	17		0.260				0.124	<0.50	<0.50	0.69	0.080	0.048	2	9.6	
3/19/2007	LAKEALM2EPI	0.84		0.274	0.072			0.145	2.4	<0.50	41	0.050	0.017	2	9.5	
4/9/2007	LAKEALM2EPI	0.78		0.395	0.070			0.139	1.9	<0.50	43	0.060	0.031	2	9.6	
4/23/2007	LAKEALM2EPI	26.9		0.299	0.106			0.375	2.3	<0.50	46	0.057	0.0072	2	9.7	
5/8/2007	LAKEALM2EPI	17.7		0.199	0.020			0.106	1.5	<0.50	45	<0.050	0.012	2	9.6	
5/22/2007	LAKEALM2EPI	<0.50		0.515	0.222			0.131	1.2	<0.50	46	0.063	0.017	2	9.6	
6/12/2007	LAKEALM2EPI	19.7		0.660	0.167			<0.100	<0.50	<0.50	37	0.060	0.043	2	10.8	
6/26/2007	LAKEALM2EPI	10.2		1.510	0.163			0.116	<0.50	<0.50	33	<0.050	0.030	2	10.9	
7/10/2007	LAKEALM2EPI	13.8		0.921	0.143			<0.100	<0.50	<0.50	32	0.058	0.058	2	10.8	
7/23/2007	LAKEALM2EPI	8.5		1.850	0.475			<0.100	<0.50	<0.50	35	0.052	0.029	2	10.8	
8/6/2007	LAKEALM2EPI	14.3		1.500	0.184			<0.100	<0.50	<0.50	32	0.092	0.096	2	10.8	
8/20/2007	LAKEALM2EPI	8.9		1.230	0.433			0.106	<0.50	<0.50	33	<0.050	0.033	2	10.8	
9/4/2007	LAKEALM2EPI			1.110										2	10.75	
9/11/2007	LAKEALM2EPI	22		2.850	0.890			<0.100	<0.50	<0.50	30	0.065	0.051	2	10.8	
9/19/2007	LAKEALM2EPI			1.040										2	10.8	
9/25/2007	LAKEALM2EPI	65		0.921	0.225			0.177	0.83	<0.50	34	0.079	0.023	2	10.8	
10/3/2007	LAKEALM2EPI			0.523										2	10.8	
10/17/2007	LAKEALM2EPI	50		0.362	0.099			0.156	0.92	<0.50	39	<0.050	0.011	2	10.8	
11/16/2007	LAKEALM2EPI	21		0.385	0.085			<0.100	1.4	<0.50	38	<0.050	0.051	2	10.8	
12/26/2007	LAKEALM2EPI	30		0.274	0.045			0.171	1.8	<0.50	41	0.074	0.025	2	10.8	
1/15/2008	LAKEALM2EPI	10		0.416	0.153			<0.100	7.8	<0.50	48	0.095	0.0039	2		
2/11/2008	LAKEALM2EPI	12		0.237	0.126			<0.100	5.5	<0.50	40	<0.050	0.0043	2		
3/11/2008	LAKEALM2EPI	16		0.155	0.082			<0.100	3.7	<0.50	35	<0.050	0.0045	2		
4/8/2008	LAKEALM2EPI	9.0		0.324				<0.100	3.5	<0.50	38	<0.050	0.012	2		
4/22/2008	LAKEALM2EPI	7.3		0.479				<0.100	2.8	<0.50	37	<0.050	0.016	2		
5/7/2008	LAKEALM2EPI	5.4		0.521				0.340	2.6	<0.50	39	<0.050	0.009	2		
5/27/2008	LAKEALM2EPI	6.8		0.224				0.110	1.1	<0.50	36	<0.050	0.033	2		
6/10/2008	LAKEALM2EPI	7.0		0.802				0.129	<0.50	<0.50	32	<0.050	0.016	2		

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6/24/2008	LAKEALM2EPI	6.1		1.27				0.167	<0.50	<0.50	37	<0.050	0.058	2		
7/8/2008	LAKEALM2EPI	9.8		1.21				0.320	<0.50	<0.50	37	<0.050	0.064	2		
7/22/2008	LAKEALM2EPI	5.7		1.77				0.254	<0.50	<0.50	37	<0.050	0.027	2		
8/5/2008	LAKEALM2EPI	8.0		1.51				0.175	<0.50	<0.50	38	<0.050	NA	2		Lab error Chla
8/19/2008	LAKEALM2EPI	7.8		4.22				0.112	<0.50	<0.50	36	<0.050	0.33	2		
8/28/2008	LAKEALM2EPI			5.04										2		
9/9/2008	LAKEALM2EPI	4.5		1.79				<0.100	0.54	<0.50	35	0.15	0.008	2		
9/23/2008	LAKEALM2EPI	4.5		2.66				<0.100	<0.50	<0.50	36	0.054	0.056	2		
10/14/2008	LAKEALM2EPI	7.2		2.06				0.159	0.64	<0.50	36	0.060	0.006	2		
11/18/2008	LAKEALM2EPI	4.2		0.346				0.336	2.1	<0.50	39	0.053	0.030	2		
12/16/2008	LAKEALM2EPI	15		0.311				0.234	2.2	<0.50	44	<0.050	0.007	2		
1/13/2009	LAKEALM2EPI	23		0.178				0.308	2.8	<0.50	48	<0.050	0.002	2		
2/10/2009	LAKEALM2EPI	34.9		0.131				0.269	2.7	<0.50	43	<0.050	<0.006	2		
3/24/2009	LAKEALM2EPI	29.6		0.196				<0.100	3.4	<0.50	43	<0.050	NS	2		
4/21/2009	LAKEALM2EPI	11.3		0.309				<0.100	3.0	<1.0	39	<0.050	0.002	2		
5/5/2009	LAKEALM2EPI	26.2		0.765				<0.100	1.6	<1.0	37	<0.050	0.016	2		
5/19/2009	LAKEALM2EPI	11.6		0.674				0.203	<1.0	<1.0	39	<0.050	0.006	2		
6/9/2009	LAKEALM2EPI	16.1		1.06				<0.100	<1.0	<1.0	36	0.086	0.007	2		
6/23/2009	LAKEALM2EPI	13.3		1.38				<0.100	<1.0	<1.0	36	<0.050	<0.002	2		
7/7/2009	LAKEALM2EPI	10.4		1.45				0.145	<1.0	<1.0	37	0.056	0.043	2		
7/21/2009	LAKEALM2EPI	9.6		1.60				0.085	<1.0	<1.0	36	0.068	0.239	2		
8/4/2009	LAKEALM2EPI	13.9		2.88				0.188	<1.0	<1.0	39	0.078	0.034	2		
8/18/2009	LAKEALM2EPI	10.2		2.47				0.082	<1.0	<1.0	35	0.061	0.026	2		
9/15/2009	LAKEALM2EPI	15.0		6.06				0.800	<1.0	<1.0	31	0.24	0.018	2		
10/20/2009	LAKEALM2EPI	45.1		0.796				0.243	3.9	<1.0	37	0.18	0.002	2		
11/19/2009	LAKEALM2EPI	44.1		0.374				0.230	2.5	<1.0	39	0.080	0.007	2		
12/15/2009	LAKEALM2EPI	22.4		0.333				0.101	2.9	<1.0	42	0.094	0.003	2		
1/12/2010	LAKEALM2EPI	34.7		0.187				0.124	3.1	<1.0	47	<0.050	0.002	2		
2/10/2010	LAKEALM2EPI	100		0.57				0.156	4.4	<1.0	39	0.11	<0.006	2		
3/18/2010	LAKEALM2EPI	22.1		0.233				<0.100	3.5	<1.0	38	<0.050	0.004	2		
3/18/2010	LAKEALM2EPI*	20		0.26										2		Dup/Lab test
4/29/2010	LAKEALM2EPI	21.8		0.268				0.229	3.4	<1.0	41	0.069	0.002	2		

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
5/12/2010	LAKEALM2EPI	30.3		0.368				0.212	2.3	<1.0	37	0.054	0.004	2		
5/26/2010	LAKEALM2EPI	43.1		0.422				0.082	1.1	<1.0	36	<0.050	0.015	2		
6/10/2010	LAKEALM2EPI	73.1		0.875				0.140	<1.0	<1.0	38	<0.050	0.010	2		
6/30/2010	LAKEALM2EPI	15.5		1.12				0.581	<1.0	<1.0	43	0.053	0.019	2		
7/13/2010	LAKEALM2EPI	18.6		0.715				0.371	<1.0	<1.0	43	0.052	0.020	2		
7/27/2010	LAKEALM2EPI	20.8		0.578				0.231	1.1	<1.0	44	<0.050	0.018	2		
8/11/2010	LAKEALM2EPI	13.8		1.40				0.133	<1.0	<1.0	42	0.060	0.028	2		
8/24/2010	LAKEALM2EPI	14.3		2.26				0.265	<1.0	<1.0	54	0.086	0.030	2		
9/16/2010	LAKEALM2EPI	31.9		1.35				0.174	<1.0	<1.0	40	<0.050	0.002	2		
10/6/2010	LAKEALM2EPI	30.9		1.29				0.340	1.1	<1.0	37	<0.050	0.011	2		
11/4/2010	LAKEALM2EPI	19.6		0.569				0.321	1.6	<1.0	30	0.067	0.034	2		
12/15/2010	LAKEALM2EPI	33.8		0.408				0.235	2.4	<1.0	37	0.1	0.034	2		
1/12/2011	LAKEALM2EPI	48.2		0.201				0.337	4.0	<1.0	43	<0.050	<0.006	2		
3/17/2011	LAKEALM2EPI	32.0		0.346				0.120	2.1	<1.0	31	<0.050	0.019	2		
4/19/2011	LAKEALM2EPI	33.4		0.700				<0.100	3.3	<1.0	35	<0.050	0.011	2		
5/3/2011	LAKEALM2EPI	23.8		0.776				0.175	1.2	<1.0	28	<0.050	0.010	2		
6/7/2011	LAKEALM2EPI	37.7		0.773				0.306	1.9	<1.0	29	0.053	0.002	2		
6/29/2011	LAKEALM2EPI	24.7		0.969				0.110	<1.0	<1.0	29	0.054	0.017	2		
7/12/2011	LAKEALM2EPI	16.9		0.991				0.132	<1.0	<1.0	28	0.074	0.009	2		
7/27/2011	LAKEALM2EPI	14.3		1.32				0.130	<1.0	<1.0	27	0.054	0.007	2		
8/17/2011	LAKEALM2EPI	16.3		1.57				0.110	<1.0	<1.0	27	0.063	0.019	2		
9/13/2011	LAKEALM2EPI	23.9		5.06				0.204	<1.0	<1.0	29	0.17	0.020	2		
10/13/2011	LAKEALM2EPI	16.4		2.51				<0.100	<1.0	<1.0	34	0.080	0.041	2		
11/16/2011	LAKEALM2EPI	45.1		0.439				<0.100	1.2	<1.0	33	<0.050	0.015	2		
12/28/2011	LAKEALM2EPI	23.1		0.248				0.205	2.3	<1.0	42	<0.050	0.011	2		
1/25/2012	LAKEALM2EPI	34.5		0.205				0.064	2.9	<1.0	37	0.064	0.010	2		
2/22/2012	LAKEALM2EPI	28.8		0.199				0.253	2.6	<1.0	42	<0.050	0.014	2		
3/20/2012	LAKEALM2EPI	28		0.214				0.128	2.5	<1.0	42	0.051	0.004	2		
4/18/2012	LAKEALM2EPI	25		0.379				0.316	1.3	<1.0	38	0.065	0.028	2		
5/9/2012	LAKEALM2EPI	12		0.315				0.212	<1.0	<1.0	39	<0.050	0.017	2		
5/23/2012	LAKEALM2EPI	9.7		0.870				<0.100	<1.0	<1.0	34	<0.050	0.015	2		
6/6/2012	LAKEALM2EPI	NS		0.891				0.453	<1.0	<1.0	35	<0.050	0.020	2		

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
7/18/2012	LAKEALM2EPI	7.3		0.758				0.11	<1.0	<1.0	36	<0.050	0.002	2		
8/15/2012	LAKEALM2EPI	17		2.91				<0.20	<1.0	<1.0	36	0.071	0.043	2		
9/26/2012	LAKEALM2EPI	10		1.74				<0.100	<1.0	<1.0	35	0.061	0.050	2		
10/16/2012	LAKEALM2EPI	9.9		1.28				0.29	<1.0	<1.0	36	0.059	0.022	2		
11/7/2012	LAKEALM2EPI	18		0.399				<0.100	<1.0	<1.0	38	<0.050	0.055	2		
1/9/2013	LAKEALM2EPI	71		0.384				0.21	3.9	<1.0	38	0.094	0.004	2		
1/31/2013	LAKEALM2EPI	21		0.210				0.14	3.3	<1.0	44	<0.050	0.011	2		
2/21/2013	LAKEALM2EPI	41		0.191				<0.10	3.2	<1.0	45	<0.050	0.012	2		
3/21/2013	LAKEALM2EPI	33		0.316				0.14	2.3	<1.0	47	0.051	0.014	2		
4/30/2013	LAKEALM2EPI	3.5		0.365				0.48	<1.0	<1.0	43	0.11	0.046	2		
6/25/2013	LAKEALM2EPI	10		0.602				0.15	<1.0	<1.0	38	<0.050	0.018	2		
7/31/2013	LAKEALM2EPI	12		2.27				0.12	<1.0	<1.0	35	0.077	0.043	2		
8/20/2013	LAKEALM2EPI	14		0.975				0.18	<1.0	<1.0	36	<0.050	0.030	2		
10/23/2013	LAKEALM2EPI	20		0.507				0.15	<1.0	<1.0	37	0.060	0.049	2		
11/26/2013	LAKEALM2EPI	35		0.218				0.32	1.2	<1.0	40	0.074	0.017	2		
12/18/2013	LAKEALM2EPI	28		0.300				0.22	1.6	<1.0	44	<0.050	0.051	2		
1/28/2014	LAKEALM2EPI	50		NA				0.19	1.6	<1.0	48	<0.050	0.042	2		
3/4/2014	LAKEALM2EPI	63		0.42				0.24	3.4	<1.0	42	0.16	0.014	2		MeHg corrected from 0.49 per Recall
4/17/2014	LAKEALM2EPI	11		0.57				0.11	<1.0	<1.0	49	0.052	0.034	2		MeHg corrected from 0.66 per Recall
5/20/2014	LAKEALM2EPI	140		1.5				0.22	<1.0	<1.0	56	0.071	0.045	2		MeHg corrected from 1.8 per Recall
7/6/2015	LAKEALM2EPI	13.0		1.300				<0.10	<1.0	<1.0	63	0.051	0.025	2	10.5	
7/23/2015	LAKEALM2EPI	14.0		1.800		0.050	<0.20	<0.10	<1.0	<1.0	63	0.072	0.046	2	10.5	
8/11/2015	LAKEALM2EPI	12.0		2.200		0.058	<0.20	0.110	<1.0	<1.0	61	0.061	0.014	2	9.2	
8/31/2015	LAKEALM2EPI	9.4		3.500		0.057	<0.20	0.190	<1.0	<1.0	59	0.075	0.010	2	9.25	
9/10/2015	LAKEALM2EPI	13.0		1.000		0.076	<0.20	0.400	<1.0	<1.0	59	0.063	0.008	2	9.15	
09/22/2015	LAKEALM2EPI	6.3		3.3		0.044	<0.20	<0.10	<1.0	<1.0	61	0.12	0.050	2	9.2	
10/08/2015	LAKEALM2EPI	12		1.7		0.042	<0.20	0.19	<1.0	<1.0	60	0.11	0.050	2	9.03	

LAKE ALMADEN 2 HYPOLIMNION

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5/10/2005	LAKEALM2HYP	70	4.6	2.480				0.26	3.0		40	0.058		7	8.2	
5/24/2005	LAKEALM2HYP	0.71	5.3	2.250	1.190			0.63	0.92	<0.50	35	0.180		9	9.7	
6/7/2005	LAKEALM2HYP		6.4	5.440	3.510			0.74	4.1	<5.0	30	0.180		9.5	10.75	
6/21/2005	LAKEALM2HYP			b				1.20	<0.50	<0.50	34	0.460		9.75	10.75	
7/7/2005	LAKEALM2HYP	100	26	32.100				1.6	<0.50	<0.50	26	0.590		10	10.8	
7/19/2005	LAKEALM2HYP	100	30	46.500				2.3	<0.50	<0.50	24	0.690		9.75	10.8	
8/3/2005	LAKEALM2HYP	70	41	50.200				3.0	<0.50	<0.50	15	0.74		9.75	10.75	
8/15/2005	LAKEALM2HYP	0.77*	79*	44.500				4.9	<0.50	<0.50	8.7	1.20		10	11	
8/31/2005	LAKEALM2HYP	28*	33*	59.000				4.1	<0.50	<0.50	9.4	0.49		10	10.6	
9/14/2005	LAKEALM2HYP	15*	12*	8.800				3.7	<0.50	<0.50	7.7	<0.010		9.5	10	
9/27/2005	LAKEALM2HYP	b	b	42.900				5.53	<0.50	<0.50	7.8	0.45		9	9.6	
10/18/2005	LAKEALM2HYP	53.4	13.4	20.600				1.54	<0.50	<0.50	26	0.24		9.25	9.75	
11/14/2005	LAKEALM2HYP	157	4.64	3.460				0.284	1.8	<0.50	35	0.021		10	10.75	
12/20/2005	LAKEALM2HYP	130	5.2	0.601				0.488	3.0	<0.50	37	0.172		8	9.1	
1/17/2006	LAKEALM2HYP	120	9.6	0.599				<0.100	3.7	<0.50	31	0.080		9	9.75	
2/15/2006	LAKEALM2HYP	64	3.9	0.268				0.329	2.6	<0.50	40	0.065		9	9.5	
3/16/2006	LAKEALM2HYP	25	8.6	0.381				0.202	4.2	<0.50	41	0.140		8	9	
4/25/2006	LAKEALM2HYP	11	10	1.520				0.650	2.2	<0.50	26	0.098		9	9.5	
5/9/2006	LAKEALM2HYP	3.7	16	12.400				1.00	0.99	<0.50	26	0.180		9	9.75	
5/23/2006	LAKEALM2HYP	97	42	29.800				1.88	<0.50	<0.50	24	0.41		9	9.75	
6/6/2006	LAKEALM2HYP	94	38	43.600				3.05	<0.50	<0.50	17	0.72		9	9.3	
6/19/2006	LAKEALM2HYP	84	35	63.900				4.45	<0.50	<0.50	14	0.86		9	9.5	
7/10/2006	LAKEALM2HYP	33	38	43.900				4.98	<0.50	<0.50	4	0.89		9	9.75	dup diss 40.500
7/24/2006	LAKEALM2HYP	29	31.200	54.200				4.63	<0.50	<0.50	4.9	0.89		9.75	10.5	
8/16/2006	LAKEALM2HYP	46	35	54.900				6.82	<0.50	<0.50	0.74	0.80		10	10.8	
8/29/2006	LAKEALM2HYP	72	42	27.500				8.50	<0.50	<0.50	1.8	1.3		10	10.8	
9/11/2006	LAKEALM2HYP			70.600				7.49	<0.50	<0.50	0.56	1.0		10	10.8	
9/21/2006	LAKEALM2HYP			68.900										10	10.7	
10/2/2006	LAKEALM2HYP	77	49	63.800				10.1	<0.50	<0.50	0.58	1.7		10	10.6	

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10/16/2006	LAKEALM2HYP	130	78	55.000				11.6	<0.50	<0.50	5.5	1.7		10	10.5	
11/13/2006	LAKEALM2HYP	380	13	1.770				0.359	1.7	<0.50	31	0.12		10	11	
11/29/2006	LAKEALM2HYP			0.713										10	10.8	
12/11/2006	LAKEALM2HYP	140	2.930	0.459				0.683	1.6	<0.50	26	0.10		10	10.8	
1/22/2007	LAKEALM2HYP	1.0	1.8	0.224				0.249	2.5	<0.50	36	<0.050		10	10.8	
2/20/2007	LAKEALM2HYP	20		0.285				0.525	1.9	<0.50	36	85		9	9.6	
3/19/2007	LAKEALM2HYP	0.62		0.139	0.051			0.188	2.4	<0.50	42	<0.050		9	9.5	
4/9/2007	LAKEALM2HYP	<0.50		0.116	0.088			0.316	2.3	<0.50	42	0.066		9	9.6	
4/23/2007	LAKEALM2HYP	107		1.163	0.134			0.336	2.3	<0.50	45	0.076		9	9.7	
5/8/2007	LAKEALM2HYP	24.6		0.134	0.072			1.26	1.8	<0.50	44	0.065		9	9.6	
5/22/2007	LAKEALM2HYP	10.6		0.468	0.231			0.474	1.2	<0.50	53	0.075		9	9.6	
6/12/2007	LAKEALM2HYP	142		1.070	0.230			0.228	<0.50	<0.50	35	0.085		10	10.8	
6/26/2007	LAKEALM2HYP	101		3.010	0.375			0.667	<0.50	<0.50	33	0.18		10	10.9	
7/10/2007	LAKEALM2HYP	31.6		2.020	1.440			0.477	<0.50	<0.50	30	0.19		10	10.8	
7/23/2007	LAKEALM2HYP	27.7		5.110	3.300			0.399	<0.50	<0.50	31	0.23		10	10.8	
8/6/2007	LAKEALM2HYP	30.4		16.600	7.780			0.243	<0.50	<0.50	30	0.14		10	10.8	
8/20/2007	LAKEALM2HYP	10.7		2.450	0.489			0.379	0.61	<0.50	33	<0.050		10	10.8	
9/4/2007	LAKEALM2HYP			3.180										10	10.75	
9/11/2007	LAKEALM2HYP	190		3.060	0.588			0.220	<0.50	<0.50	34	0.085		10	10.8	
9/19/2007	LAKEALM2HYP			1.520										10	10.8	
9/25/2007	LAKEALM2HYP	150		1.930	0.160			0.258	1.0	<0.50	33	0.11		10	10.8	
10/3/2007	LAKEALM2HYP			0.809										10	10.8	
10/17/2007	LAKEALM2HYP	88		0.445	0.091			0.132	1.1	<0.50	40	0.079		10	10.8	
11/16/2007	LAKEALM2HYP	52		0.309	0.091			0.409	1.5	<0.50	38	0.061		10	10.8	
12/26/2007	LAKEALM2HYP	27		0.352	0.029			0.341	1.6	<0.50	42	<0.050		10	10.8	
1/15/2008	LAKEALM2HYP	8.6		0.592	0.137			0.326	7.8	<0.50	48	0.10				
2/11/2008	LAKEALM2HYP	6.3		0.278	0.119			0.209	5.8	<0.50	40	0.063				
3/11/2008	LAKEALM2HYP	14		0.277	0.123			0.192	4.3	<0.50	35	0.010				
4/8/2008	LAKEALM2HYP	8.2		0.256				0.237	3.6	<0.50	38	<0.050				
4/22/2008	LAKEALM2HYP	4.9		0.790				0.260	2.8	<0.50	37	0.12				
5/7/2008	LAKEALM2HYP	6.5		1.21				1.00	2.3	<0.50	38	0.14				
5/27/2008	LAKEALM2HYP	11		0.795				0.426	1.6	<0.50	36	0.057				

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
6/10/2008	LAKEALM2HYP	6.2		0.50				0.440	1.0	<0.50	33	<0.050				
6/24/2008	LAKEALM2HYP	4.8		0.984				0.503	<0.50	<0.50	36	0.12				
7/8/2008	LAKEALM2HYP	27		2.37				0.380	<0.50	<0.50	36	0.11				
7/22/2008	LAKEALM2HYP	16		7.51				0.819	<0.50	<0.50	35	<0.050				
8/5/2008	LAKEALM2HYP	13		13.6				0.572	<0.50	<0.50	34	0.14				
8/19/2008	LAKEALM2HYP	14		14.3				0.290	<0.50	<0.50	34	0.11				
8/28/2008	LAKEALM2HYP			16.0												
9/9/2008	LAKEALM2HYP	16		17.6				0.359	<0.50	<0.50	34	<0.050				
9/23/2008	LAKEALM2HYP	12		1.97				<0.100	<0.50	<0.50	36	<0.050				
10/14/2008	LAKEALM2HYP	31		2.23				0.166	0.78	<0.50	37	0.090				
11/18/2008	LAKEALM2HYP	14		0.874				<0.100	2.2	<0.50	40	0.15				
12/16/2008	LAKEALM2HYP	31		0.486				0.233	2.2	<0.50	44	<0.050				
1/13/2009	LAKEALM2HYP	37.4		0.170				0.337	2.8	<0.50	48	<0.050				
2/10/2009	LAKEALM2HYP	67.8		0.248				0.115	2.7	<0.50	43	<0.050				
3/24/2009	LAKEALM2HYP	24.8		0.254				0.367	3.5	<0.50	39	0.073				
4/21/2009	LAKEALM2HYP	21.6		1.94				0.971	1.3	<1.0	36	0.13				
5/5/2009	LAKEALM2HYP	67.4		8.07				1.54	<1.0	<1.0	30	0.47				
5/19/2009	LAKEALM2HYP	46.7		10.4				1.24	<1.0	<1.0	32	0.38				
6/9/2009	LAKEALM2HYP	57.1		31.1				3.83	<1.0	<1.0	14	0.69				
6/23/2009	LAKEALM2HYP	64.9		38.9				2.27	<1.0	<1.0	21	0.53				
7/7/2009	LAKEALM2HYP	52.3		42.3				3.09	<1.0	<1.0	15	0.70				
7/21/2009	LAKEALM2HYP	44.1		36.5				3.28	<1.0	<1.0	12	1.0				
8/4/2009	LAKEALM2HYP	46.7		43.4				3.89	<1.0	<1.0	9.3	0.80				
8/18/2009	LAKEALM2HYP	38.7		37.0				8.43	<1.0	<1.0	<1.0	1.5				
9/15/2009	LAKEALM2HYP	52.8		48.4				11.3	<1.0	<1.0	<1.0	1.60				
10/20/2009	LAKEALM2HYP	68.8		0.962				0.268	3.5	<1.0	35	0.27				
11/19/2009	LAKEALM2HYP	94.2		0.691				0.189	2.7	<1.0	41	0.074				
12/15/2009	LAKEALM2HYP	41.9		0.220				0.252	2.6	<1.0	46	<0.050				
1/12/2010	LAKEALM2HYP	36.0		0.150				0.187	3.1	<1.0	47	0.053				
2/10/2010	LAKEALM2HYP	170		0.71				<0.100	4.6	<1.0	40	0.12				
3/18/2010	LAKEALM2HYP	27.2		0.243				0.200	3.4	<1.0	37	<0.050				
3/18/2010	LAKEALM2HYP *	28		0.17												Dup/Lab test

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
4/29/2010	LAKEALM2HYP	25.9		0.175				0.287	3.2	<1.0	40	0.17				
5/12/2010	LAKEALM2HYP	61.5		0.377				0.206	2.4	<1.0	38	0.074				
5/26/2010	LAKEALM2HYP	140		0.576				0.154	1.4	<1.0	36	0.086				
6/10/2010	LAKEALM2HYP	41.5		2.97				0.614	<1.0	<1.0	35	0.11				
6/30/2010	LAKEALM2HYP	14.4		1.52				0.337	<1.0	<1.0	42	0.071				
7/13/2010	LAKEALM2HYP	36.8		9.35				0.782	<1.0	<1.0	38	0.24				
7/27/2010	LAKEALM2HYP	32.8		8.38				0.992	<1.0	<1.0	38	0.24				
8/11/2010	LAKEALM2HYP	22.9		5.48				0.548	<1.0	<1.0	40	0.093				
8/24/2010	LAKEALM2HYP	22.5		5.33				0.554	<1.0	<1.0	37	0.070				
9/16/2010	LAKEALM2HYP	97.4		1.64				0.308	<1.0	<1.0	40	0.068				
10/6/2010	LAKEALM2HYP	108		1.74				0.227	1.0	<1.0	37	0.093				
11/4/2010	LAKEALM2HYP	66.9		0.687				0.650	1.7	<1.0	32	0.091				
12/15/2010	LAKEALM2HYP	35.8		0.195				0.632	1.5	<1.0	32	0.071				
1/12/2011	LAKEALM2HYP	78.1		0.203				0.326	3.8	<1.0	44	0.082				
3/17/2011	LAKEALM2HYP	32.7		0.193				<0.100	2.6	<1.0	25	<0.050				
4/19/2011	LAKEALM2HYP	34.3		0.350				0.080	2.9	<1.0	30	0.053				
5/3/2011	LAKEALM2HYP	44.0		0.620				0.142	1.9	<1.0	28	<0.050				
6/7/2011	LAKEALM2HYP	73.6		0.796				0.369	1.7	<1.0	30	0.079				
6/29/2011	LAKEALM2HYP	97.1		0.622				0.412	1.1	<1.0	29	0.092				
7/12/2011	LAKEALM2HYP	77.8		31.5				0.897	<1.0	<1.0	21	0.66				
7/27/2011	LAKEALM2HYP	39.1		6.84				0.791	<1.0	<1.0	25	0.24				
8/17/2011	LAKEALM2HYP	26.6		4.06				0.352	<1.0	<1.0	26	0.15				
9/13/2011	LAKEALM2HYP	81.3		13.9				1.11	<1.0	<1.0	23	0.27				
10/13/2011	LAKEALM2HYP	53.4		1.88				0.379	<1.0	<1.0	32	0.10				
11/16/2011	LAKEALM2HYP	54.0		2.30				0.211	1.3	<1.0	34	0.16				
12/28/2011	LAKEALM2HYP	92.6		0.259				0.241	2.1	<1.0	41	<0.050				
1/25/2012	LAKEALM2HYP	42.9		0.183				<0.100	2.2	<1.0	41	<0.050				
2/22/2012	LAKEALM2HYP	129		0.826				0.649	1.9	<1.0	39	0.091				
3/20/2012	LAKEALM2HYP	52		0.382				0.268	2.3	<1.0	40	0.084				
4/18/2012	LAKEALM2HYP	34		0.364				0.566	1.9	<1.0	37	0.057				
5/9/2012	LAKEALM2HYP	49		12.4				1.36	<1.0	<1.0	32	0.25				
5/23/2012	LAKEALM2HYP	13		2.52				0.278	<1.0	<1.0	30	0.12				

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
6/6/2012	LAKEALM2HYP	NS		4.42				0.515	<1.0	<1.0	29	0.30				
7/18/2012	LAKEALM2HYP	26		17.1				1.7	<1.0	<1.0	25	0.70				
8/15/2012	LAKEALM2HYP	39		7.89				0.82	<1.0	<1.0	32	0.25				
9/26/2012	LAKEALM2HYP	15		1.22				0.11	<1.0	<1.0	35	0.088				
10/16/2012	LAKEALM2HYP	18		1.17				0.23	<1.0	<1.0	37	0.098				
11/7/2012	LAKEALM2HYP	110		0.654				0.29	<1.0	<1.0	37	0.055				
1/9/2013	LAKEALM2HYP	120		0.480				0.16	3.7	<1.0	38	0.13				
1/31/2013	LAKEALM2HYP	30		0.183				0.18	3.6	<1.0	42	<0.050				
2/21/2013	LAKEALM2HYP	220		0.479				0.13	3.2	<1.0	46	0.062				
3/21/2013	LAKEALM2HYP	54		0.261				0.19	2.3	<1.0	44	<0.050				
4/30/2013	LAKEALM2HYP	88		0.889				0.42	1.2	<1.0	41	0.24				
6/25/2013	LAKEALM2HYP	42		4.06				0.43	<1.0	<1.0	36	0.16				
7/31/2013	LAKEALM2HYP	13		9.73				0.44	<1.0	<1.0	30	0.15				
8/20/2013	LAKEALM2HYP	25		4.72				0.61	<1.0	<1.0	33	0.13				
10/23/2013	LAKEALM2HYP	85		0.414				0.32	<1.0	<1.0	40	0.080				
11/26/2013	LAKEALM2HYP	200		0.483				0.36	1.2	<1.0	40	0.11				
12/18/2013	LAKEALM2HYP	67		0.247				0.40	1.4	<1.0	44	0.062				
1/28/2014	LAKEALM2HYP	140		NA				0.43	1.4	<1.0	48	<0.050				
3/4/2014	LAKEALM2HYP	300		0.7				0.26	3.2	<1.0	42	0.19				MeHg corrected from 0.82 per Recall
4/17/2014	LAKEALM2HYP	14		0.4				0.34	1.6	<1.0	47	0.076				MeHg corrected from 0.47 per Recall
5/20/2014	LAKEALM2HYP	77		2.4				0.34	<1.0	<1.0	54	0.077				MeHg corrected from 2.8 per Recall
7/6/2015	LAKEALM2HYP	49.0		0.31		0.210	0.390	0.39	<1.0	<1.0	63	0.06		8	8.75	
7/23/2015	LAKEALM2HYP	91.0		0.33		0.220	0.620	0.41	<1.0	<1.0	60	0.089		9	9.5	
8/11/2015	LAKEALM2HYP	22.0		1.10		0.370	<0.20	0.36	<1.0	<1.0	59	0.063		9	9.2	
8/31/2015	LAKEALM2HYP	19.0		2.10		0.240	0.910	0.52	<1.0	<1.0	54	0.081		9	9.25	
9/10/2015	LAKEALM2HYP	17.0		2.30		0.180	<0.20	0.35	<1.0	<1.0	63	0.0990		9	9.15	
09/22/2015	LAKEALM2HYP	6.7		1		0.16	<0.20	0.33	<1.0	<1.0	60	0.058		9	9.2	
10/08/2015	LAKEALM2HYP	14		2.7		0.22	<0.20	0.21	<1.0	<1.0	59	0.097		9	9.03	

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10/08/2015	LAKEALM2DUP	18		2.8										9	9.03	

LAKE ALMADEN 2 MID

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
6/7/2005	LAKEALM2MID			0.553										6	10.75	
6/21/2005	LAKEALM2MID			0.686										6	10.75	
7/7/2005	LAKEALM2MID			2.670										4.5	10.8	
7/19/2005	LAKEALM2MID			13.200										6.5	10.8	
8/3/2005	LAKEALM2MID			43.000										5.5	10.75	
8/15/2005	LAKEALM2MID			40.800										7	11	
8/31/2005	LAKEALM2MID			77.700										7.25	10.6	
9/14/2005	LAKEALM2MID			8.310										6	10	
9/27/2005	LAKEALM2MID			45.000										6	9.6	
10/18/2005	LAKEALM2MID			6.720										6	9.75	
11/14/2005	LAKEALM2MID			1.660										8	10.75	
12/20/2005	LAKEALM2MID			0.551										4.5	9.1	
1/17/2006	LAKEALM2MID			0.445										5	9.75	
2/15/2006	LAKEALM2MID			0.192										7	9.5	
3/16/2006	LAKEALM2MID			0.383										5	9	
4/25/2006	LAKEALM2MID			0.366										6	9.5	
5/9/2006	LAKEALM2MID			0.372										5	9.75	
5/23/2006	LAKEALM2MID			1.120										5.5	9.75	
6/6/2006	LAKEALM2MID			0.530										5.5	9.3	
6/19/2006	LAKEALM2MID			2.150										4.5	9.5	
7/10/2006	LAKEALM2MID			24.800										5.5	9.75	
7/24/2006	LAKEALM2MID			28.400										6	10.5	
8/16/2006	LAKEALM2MID			20.300										6	10.8	
8/29/2006	LAKEALM2MID *			2.300										4	10.8	* do not use as MID value for chart
8/29/2006	LAKEALM2MID			18.000										6	10.8	
8/29/2006	LAKEALM2MID *			80.100										8	10.8	* do not use as MID value for chart
9/11/2006	LAKEALM2MID			112.000										6.5	10.8	
9/21/2006	LAKEALM2MID			10.000										6	10.7	

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10/2/2006	LAKEALM2MID			36.800										6	10.6	
10/16/2006	LAKEALM2MID			6.890										6.5	10.5	
11/13/2006	LAKEALM2MID			0.375										6	11	
11/29/2006	LAKEALM2MID *			0.511										4	10.8	* do not use as MID value for chart
11/29/2006	LAKEALM2MID			0.544										6	10.8	
11/29/2006	LAKEALM2MID *			0.522										8	10.8	* do not use as MID value for chart
12/11/2006	LAKEALM2MID			0.277										6	10.8	
1/22/2007	LAKEALM2MID			0.326										6	10.8	
2/20/2007	LAKEALM2MID			0.187										5.5	9.6	
3/19/2007	LAKEALM2MID			0.154	0.039									5	9.5	
4/9/2007	LAKEALM2MID			0.220	0.041									5.5	9.6	
4/23/2007	LAKEALM2MID			0.433	0.103									5.5	9.7	
5/8/2007	LAKEALM2MID			0.233	0.056									5.5	9.6	
5/22/2007	LAKEALM2MID			0.386	0.113									5.5	9.6	
6/12/2007	LAKEALM2MID			0.558	0.214									6	10.8	
6/26/2007	LAKEALM2MID			0.442	0.177									6	10.9	
7/10/2007	LAKEALM2MID			0.381	0.213									6	10.8	
7/23/2007	LAKEALM2MID	41.9		3.090	1.770									6	10.8	
8/6/2007	LAKEALM2MID			4.680	1.120									6	10.8	
8/20/2007	LAKEALM2MID			0.954	0.263									6	10.8	
8/20/2007	LAKEALM2MID *			0.893										4	10.8	4 meters
8/20/2007	LAKEALM2MID *			1.180										8	10.8	8 meters
9/4/2007	LAKEALM2MID			0.723										6	10.75	
9/11/2007	LAKEALM2MID			1.370	0.329									6	10.8	
9/19/2007	LAKEALM2MID			0.665										6	10.8	
9/25/2007	LAKEALM2MID			0.614	0.167									6	10.8	
10/3/2007	LAKEALM2MID			0.371										6	10.8	
10/17/2007	LAKEALM2MID			0.632	0.078									6	10.8	
11/16/2007	LAKEALM2MID			0.224	0.083									6	10.8	
12/26/2007	LAKEALM2MID			0.206	0.033									6	10.8	

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1/15/2008	LAKEALM2MID			0.482	0.152											
2/11/2008	LAKEALM2MID			0.242	0.134											
3/11/2008	LAKEALM2MID			0.154	0.103											
4/8/2008	LAKEALM2MID			0.328												
4/22/2008	LAKEALM2MID			0.460												
5/7/2008	LAKEALM2MID			0.457												
5/27/2008	LAKEALM2MID			0.472												
6/10/2008	LAKEALM2MID			0.359												
6/24/2008	LAKEALM2MID			0.526												
7/8/2008	LAKEALM2MID			0.991												
7/22/2008	LAKEALM2MID			8.13												
7/22/2008	LAKEALM2MID*			5.04												Do not use for mid taken at 4m
7/22/2008	LAKEALM2MID*			5.85												Do not use for mid taken at 8m
8/5/2008	LAKEALM2MID			6.42												
8/5/2008	LAKEALM2MID*			3.77												Do not use for mid taken at 4m
8/5/2008	LAKEALM2MID*			12.2												Do not use for mid taken at 8m
8/19/2008	LAKEALM2MID			9.81												
8/19/2008	LAKEALM2MID*			7.27												Do not use for mid taken at 4m
8/19/2008	LAKEALM2MID*			11.2												Do not use for mid taken at 8m
8/28/2008	LAKEALM2MID			18.4												
8/28/2008	LAKEALM2MID*			3.25												Do not use for mid taken at 4m
8/28/2008	LAKEALM2MID*			16.8												Do not use for mid taken at 8m
9/9/2008	LAKEALM2MID			4.99												

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
9/9/2008	LAKEALM2MID*			3.34												Do not use for mid taken at 4m
9/9/2008	LAKEALM2MID*			12.6												Do not use for mid taken at 8m
9/23/2008	LAKEALM2MID			1.62												
9/23/2008	LAKEALM2MID*			2.14												Do not use for mid taken at 4m
9/23/2008	LAKEALM2MID*			1.79												Do not use for mid taken at 8m
10/14/2008	LAKEALM2MID			1.61												
11/18/2008	LAKEALM2MID			0.290												
12/16/2008	LAKEALM2MID			0.506												
1/13/2009	LAKEALM2MID			0.160												
2/10/2009	LAKEALM2MID			0.173												
3/24/2009	LAKEALM2MID			0.209												
4/21/2009	LAKEALM2MID			0.186												
5/5/2009	LAKEALM2MID			0.408												
5/19/2008	LAKEALM2MID*			0.664												Do not use for mid taken at 4m
5/19/2008	LAKEALM2MID*			0.275												Do not use for mid taken at 8m
5/19/2008	LAKEALM2MID			0.595												
6/9/2009	LAKEALM2MID*			1.28												Do not use for mid taken at 4m
6/9/2009	LAKEALM2MID*			13.4												Do not use for mid taken at 8m
6/9/2009	LAKEALM2MID			0.731												
6/23/2009	LAKEALM2MID*			1.37												Do not use for mid taken at 4m
6/23/2009	LAKEALM2MID*			2.52												Do not use for mid taken at 8m
6/23/2009	LAKEALM2MID			1.37												

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
7/7/2009	LAKEALM2MID*			0.785												Do not use for mid taken at 4m
7/7/2009	LAKEALM2MID*			6.51												Do not use for mid taken at 8m
7/7/2009	LAKEALM2MID			2.75												
7/21/2009	LAKEALM2MID*			1.49												Do not use for mid taken at 4m
7/21/2009	LAKEALM2MID*			3.52												Do not use for mid taken at 8m
7/21/2009	LAKEALM2MID			2.62												
8/4/2009	LAKEALM2MID*			3.48												Do not use for mid taken at 4m
8/4/2009	LAKEALM2MID*			5.46												Do not use for mid taken at 8m
8/4/2009	LAKEALM2MID			3.80												
8/18/2009	LAKEALM2MID*			4.42												Do not use for mid taken at 4m
8/18/2009	LAKEALM2MID*			34.3												Do not use for mid taken at 8m
8/18/2009	LAKEALM2MID			4.35												
9/15/2009	LAKEALM2MID*			1.53												Do not use for mid taken at 4m
9/15/2009	LAKEALM2MID*			28.1												Do not use for mid taken at 8m
9/15/2009	LAKEALM2MID			1.12												
10/20/2009	LAKEALM2MID*			0.743												Do not use for mid taken at 4m
10/20/2009	LAKEALM2MID*			1.29												Do not use for mid taken at 8m
10/20/2009	LAKEALM2MID			1.00												
11/19/2009	LAKEALM2MID*			0.618												Do not use for mid taken at 4m

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
11/19/2009	LAKEALM2MID*			0.447												Do not use for mid taken at 8m
11/19/2009	LAKEALM2MID			0.639												
12/15/2009	LAKEALM2MID			0.215												
1/12/2010	LAKEALM2MID			0.170												
2/10/2010	LAKEALM2MID			0.58												
3/18/2010	LAKEALM2MID			0.248												
3/18/2010	LAKEALM2MID*			0.20												Dup/Lab test
4/29/2010	LAKEALM2MID			0.376												
4/29/2010	LAKEALM2MID*			0.386												Do not use for mid taken at 4m
4/29/2010	LAKEALM2MID*			0.235												Do not use for mid taken at 8m
5/12/2010	LAKEALM2MID			0.594												
5/12/2010	LAKEALM2MID*			0.429												EPIMID
5/12/2010	LAKEALM2MID*			0.448												MIDHYP
5/26/2010	LAKEALM2MID			0.636												
5/26/2010	LAKEALM2MID*			0.677												EPIMID
5/26/2010	LAKEALM2MID*			0.547												MIDHYP
6/10/2010	LAKEALM2MID			0.490												
6/10/2010	LAKEALM2MID*			0.601												EPIMID
6/10/2010	LAKEALM2MID*			0.542												MIDHYP
6/30/2010	LAKEALM2MID			0.700												
6/30/2010	LAKEALM2MID*			0.464												EPIMID
6/30/2010	LAKEALM2MID*			0.458												MIDHYP
7/13/2010	LAKEALM2MID			0.727												
7/13/2010	LAKEALM2MID*			0.490												EPIMID
7/13/2010	LAKEALM2MID*			1.45												MIDHYP
7/27/2010	LAKEALM2MID			0.783												
7/27/2010	LAKEALM2MID*			0.487												EPIMID
7/27/2010	LAKEALM2MID*			1.45												MIDHYP
8/11/2010	LAKEALM2MID			0.982												

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
8/11/2010	LAKEALM2MID*			0.933												EPIMID
8/11/2010	LAKEALM2MID*			1.36												MIDHYP
8/24/2010	LAKEALM2MID			2.15												
8/24/2010	LAKEALM2MID*			1.48												EPIMID
8/24/2010	LAKEALM2MID*			2.88												MIDHYP
9/16/2010	LAKEALM2MID			0.794												
9/16/2010	LAKEALM2MID*			0.966												EPIMID
9/16/2010	LAKEALM2MID*			1.12												MIDHYP
10/6/2010	LAKEALM2MID			2.86												
11/4/2010	LAKEALM2MID			0.326												
12/15/2010	LAKEALM2MID			0.133												
1/12/2011	LAKEALM2MID			0.193												
3/17/2011	LAKEALM2MID			0.200												
4/19/2011	LAKEALM2MID			0.468												
5/3/2011	LAKEALM2MID			0.440												
6/7/2011	LAKEALM2MID			0.553												
6/29/2011	LAKEALM2MID			0.700												
6/29/2011	LAKEALM2MID*			1.05												EPIMID
6/29/2011	LAKEALM2MID*			0.842												MIDHYP
7/12/2011	LAKEALM2MID			1.25												
7/12/2011	LAKEALM2MID*			0.698												EPIMID
7/12/2011	LAKEALM2MID*			1.05												MIDHYP
7/27/2011	LAKEALM2MID			0.955												
7/27/2011	LAKEALM2MID*			0.369												EPIMID
7/27/2011	LAKEALM2MID*			0.648												MIDHYP
8/17/2011	LAKEALM2MID			1.09												
8/17/2011	LAKEALM2MID*			1.12												
8/17/2011	LAKEALM2MID*			0.879												
9/13/2011	LAKEALM2MID			7.25												
9/13/2011	LAKEALM2MID*			6.59												
9/13/2011	LAKEALM2MID*			7.16												
10/13/2011	LAKEALM2MID			0.583												

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
10/13/2011	LAKEALM2MID*			0.746												
10/13/2011	LAKEALM2MID*			2.21												
11/16/2011	LAKEALM2MID			0.609												
12/28/2011	LAKEALM2MID			0.324												
1/25/2012	LAKEALM2MID			0.209												
2/22/2012	LAKEALM2MID			0.221												
3/20/2012	LAKEALM2MID			0.243												
4/18/2012	LAKEALM2MID			0.157												
5/9/2012	LAKEALM2MID			0.279												
5/9/2012	LAKEALM2MID*			0.170												
5/9/2012	LAKEALM2MID*			0.407												
5/23/2012	LAKEALM2MID			0.425												
5/23/2012	LAKEALM2MID*			0.741												
5/23/2012	LAKEALM2MID*			0.334												
6/6/2012	LAKEALM2MID			0.397												
6/6/2012	LAKEALM2MID*			0.747												
6/6/2012	LAKEALM2MID*			0.577												
7/18/2012	LAKEALM2MID			2.02												
7/18/2012	LAKEALM2MID*			0.582												
7/18/2012	LAKEALM2MID*			8.45												
8/15/2012	LAKEALM2MID			1.08												
8/15/2012	LAKEALM2MID*			1.12												
8/15/2012	LAKEALM2MID*			1.83												
9/26/2012	LAKEALM2MID			2.37												
9/26/2012	LAKEALM2MID*			0.74												
9/26/2012	LAKEALM2MID*			2.49												
10/16/2012	LAKEALM2MID			0.572												
11/7/2012	LAKEALM2MID			0.336												
1/9/2013	LAKEALM2MID			0.374												
1/31/2013	LAKEALM2MID			0.173												
2/21/2013	LAKEALM2MID			0.193												
3/21/2013	LAKEALM2MID			0.177												

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
4/30/2013	LAKEALM2MID			0.262												
6/25/2013	LAKEALM2MID			0.528												
7/31/2013	LAKEALM2MID			7.88												
8/20/2013	LAKEALM2MID			2.60												
10/23/2013	LAKEALM2MID			0.271												
11/26/2013	LAKEALM2MID			0.259												
12/18/2013	LAKEALM2MID			0.159												
3/4/2014	LAKEALM2MID			0.44												MeHg corrected from 0.52 per Recall
4/17/2014	LAKEALM2MID			0.16												MeHg corrected from 0.18 per Recall
5/20/2014	LAKEALM2MID			0.92												MeHg corrected from 1.1 per Recall
7/6/2015	LAKEALM2MID			0.380										5	8.75	
7/23/2015	LAKEALM2MID			0.340										5.5	9.5	
8/11/2015	LAKEALM2MID			1.300										5.5	9.2	
8/31/2015	LAKEALM2MID			4.600										5.5	9.25	
9/10/2015	LAKEALM2MID			0.880										5.5	9.15	
09/22/2015	LAKEALM2MID			0.56										5.5	9.2	
10/08/2015	LAKEALM2MID			0.69										5.5	9.03	

LAKE ALMADEN 3 HYPOLIMNION

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
9/4/2007	LAKEALM3EPI			1.320										2	8.4	
9/19/2007	LAKEALM3EPI			1.150										2	8.6	
9/4/2007	LAKEALM3HYP			5.380										8	8.4	
9/19/2007	LAKEALM3HYP			0.992										8	8.6	
10/3/2007	LAKEALM3HYP			0.407										8	8.3	
6/10/2010	LAKEALM3HYP			16.6												
6/30/2010	LAKEALM3HYP			21.3												
7/13/2010	LAKEALM3HYP			41.8												
7/27/2010	LAKEALM3HYP			43.0												
8/11/2010	LAKEALM3HYP			52.1												
8/24/2010	LAKEALM3HYP			44.4												
9/16/2010	LAKEALM3HYP			19.5												
10/6/2010	LAKEALM3HYP			1.39												
11/4/2010	LAKEALM3HYP			0.930												
12/15/2010	LAKEALM3HYP			0.616												
1/12/2011	LAKEALM3HYP			0.286												
3/17/2011	LAKEALM3HYP			0.727												
4/19/2011	LAKEALM3HYP			2.26												
5/3/2011	LAKEALM3HYP			9.68												
6/7/2011	LAKEALM3HYP			1.01												
6/29/2011	LAKEALM3HYP			5.71												
7/12/2011	LAKEALM3HYP			27.5												
7/27/2011	LAKEALM3HYP			37.6												
8/17/2011	LAKEALM3HYP			48.8												
9/13/2011	LAKEALM3HYP			5.20												
9/20/2011	LAKEALM3HYP			1.61												
9/29/2011	LAKEALM3HYP			6.76												
10/13/2011	LAKEALM3HYP			2.28												
11/16/2011	LAKEALM3HYP			1.21												
12/28/2011	LAKEALM3HYP			0.548												

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
1/25/2012	LAKEALM3HYP			0.720												
2/22/2012	LAKEALM3HYP			0.404												
3/20/2012	LAKEALM3HYP			0.313												
4/18/2012	LAKEALM3HYP			0.351												
5/9/2012	LAKEALM3HYP			1.54												
5/23/2012	LAKEALM3HYP			1.25												
6/6/2012	LAKEALM3HYP			1.06												
7/18/2012	LAKEALM3HYP			1.29												
8/15/2012	LAKEALM3HYP			3.40												
9/26/2012	LAKEALM3HYP			5.06												
10/16/2012	LAKEALM3HYP			1.05												
11/7/2012	LAKEALM3HYP			0.756												
1/9/2013	LAKEALM3HYP			1.04												
1/31/2013	LAKEALM3HYP			0.357												
2/21/2013	LAKEALM3HYP			0.817												
3/21/2013	LAKEALM3HYP			0.600												
4/30/2013	LAKEALM3HYP			0.310												
6/25/2013	LAKEALM3HYP			3.43												
7/31/2013	LAKEALM3HYP			7.83												
8/20/2013	LAKEALM3HYP			5.35												
10/23/2013	LAKEALM3HYP			0.663												
11/26/2013	LAKEALM3HYP			0.293												
12/18/2013	LAKEALM3HYP			0.265												
3/4/2014	LAKEALM3HYP			0.9												MeHg corrected from 1.0 per Recall
4/17/2014	LAKEALM3HYP			1.1												MeHg corrected from 1.2 per Recall
5/20/2014	LAKEALM3HYP			1.7												MeHg corrected from 2.0 per Recall
7/6/2015	LAKEALM3HYP			0.320												
7/23/2015	LAKEALM3HYP			0.280												
8/11/2015	LAKEALM3HYP			0.800												

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
8/31/2015	LAKEALM3HYP			1.900												
9/10/2015	LAKEALM3HYP			0.900												
09/22/2015	LAKEALM3HYP			0.48												
10/08/2015	LAKEALM3HYP			2.1										2	2.15	
10/08/2015	LAKEALM3DUP	29		2.2										2	2.15	

LAKE ALMADEN 4 HYPOLIMNION

Date	SampleID	Hg Totaln g/L	Hg Dissn g/L	MeHg Totalng /L	MeHg Dissng /L	Mn Total mg/L	Fe Total mg/L	NH4m g/L	NO3m g/L	NO2m g/L	Sulfate mg/L	TPm g/L	Chl amg/ L	Sample Depth (meters)	Total Depth (meters)	Notes
9/4/2007	LAKEALM4EPI			1.510										2	7.9	
9/19/2007	LAKEALM4EPI			1.150										2	8.25	
9/4/2007	LAKEALM4HYP			2.140										7.5	7.9	
9/19/2007	LAKEALM4HYP			0.964										8	8.25	
10/3/2007	LAKEALM4HYP			0.390										7.5	8.1	
9/20/2011	LAKEALM4HYP			4.45												
9/29/2011	LAKEALM4HYP			2.9												
10/13/2011	LAKEALM4HYP			0.961												
11/16/2011	LAKEALM4HYP			1.56												
12/28/2011	LAKEALM4HYP			0.323												
1/25/2012	LAKEALM4HYP			0.392												
2/22/2012	LAKEALM4HYP			0.336												
3/20/2012	LAKEALM4HYP			0.351												
4/18/2012	LAKEALM4HYP			0.371												
5/9/2012	LAKEALM4HYP			0.583												
5/23/2012	LAKEALM4HYP			1.64												
6/6/2012	LAKEALM4HYP			1.05												
7/18/2012	LAKEALM4HYP			0.913												
8/15/2012	LAKEALM4HYP			2.89												
9/26/2012	LAKEALM4HYP			2.14												
10/16/2012	LAKEALM4HYP			0.661												
11/7/2012	LAKEALM4HYP			0.448												
1/9/2013	LAKEALM4HYP			0.882												
1/31/2013	LAKEALM4HYP			0.297												
2/21/2013	LAKEALM4HYP			0.411												
3/21/2013	LAKEALM4HYP			0.288												
4/30/2013	LAKEALM4HYP			0.456												
6/25/2013	LAKEALM4HYP			2.80												
7/31/2013	LAKEALM4HYP			7.93												
8/20/2013	LAKEALM4HYP			5.67												

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
10/23/2013	LAKEALM4HYP			0.583												
11/26/2013	LAKEALM4HYP			0.279												
12/18/2013	LAKEALM4HYP			0.200												
3/4/2014	LAKEALM4HYP			1.2												MeHg corrected from 1.4 per Recall
4/17/2014	LAKEALM4HYP			0.77												MeHg corrected from 0.90 per Recall
5/20/2014	LAKEALM4HYP			1.8												MeHg corrected from 2.1 per Recall
7/6/2015	LAKEALM4HYP			1.100												
7/23/2015	LAKEALM4HYP			0.450												
8/11/2015	LAKEALM4HYP			1.100												
8/31/2015	LAKEALM4HYP			1.800												
9/10/2015	LAKEALM4HYP			0.810												
09/22/2015	LAKEALM4HYP			0.600												
10/08/2015	LAKEALM4HYP			0.73										5.5	5.8	
10/08/2015	LAKEALM4DUP	41		0.94										5.5	5.8	

LAKE ALMADEN 5 HYPOLIMNION

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
7/22/2008	LAKEALM5HYP			30.3												
8/5/2008	LAKEALM5HYP			15.7												
8/19/2008	LAKEALM5HYP			6.78												
8/28/2008	LAKEALM5HYP			16.5												
9/9/2008	LAKEALM5HYP			37.7												
9/23/2008	LAKEALM5HYP			6.02												
10/14/2008	LAKEALM5HYP			1.66												
11/18/2008	LAKEALM5HYP			0.684												
12/16/2008	LAKEALM5HYP			0.573												
1/13/2009	LAKEALM5HYP			0.206												
2/10/2009	LAKEALM5HYP			0.161												
3/24/2009	LAKEALM5HYP			0.176												
4/21/2009	LAKEALM5HYP			0.193												
5/5/2009	LAKEALM5HYP			0.420												
5/19/2009	LAKEALM5HYP			0.795												
6/9/2009	LAKEALM5HYP			2.56												
6/23/2009	LAKEALM5HYP			3.53												
7/7/2009	LAKEALM5HYP			7.56												
7/21/2009	LAKEALM5HYP			4.06												
8/4/2009	LAKEALM5HYP			6.44												
8/18/2009	LAKEALM5HYP			3.97												
9/15/2009	LAKEALM5HYP			4.99												
10/20/2009	LAKEALM5HYP			1.93												
11/19/2009	LAKEALM5HYP			0.720												
12/15/2009	LAKEALM5HYP			0.178												
1/12/2010	LAKEALM5HYP			0.250												
2/10/2010	LAKEALM5HYP			0.64												
3/18/2010	LAKEALM5HYP			0.332												
3/18/2010	LAKEALM5HYP *			0.51												Dup/Lab test

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
4/29/2010	LAKEALM5HYP			0.246												
5/12/2010	LAKEALM5HYP			0.317												
5/26/2010	LAKEALM5HYP			0.427												
6/10/2010	LAKEALM5HYP			2.41												
6/30/2010	LAKEALM5HYP			0.665												
7/13/2010	LAKEALM5HYP			2.50												
7/27/2010	LAKEALM5HYP			1.51												
8/11/2010	LAKEALM5HYP			2.21												
8/24/2010	LAKEALM5HYP			4.19												
9/16/2010	LAKEALM5HYP			1.22												
10/6/2010	LAKEALM5HYP			1.21												
11/4/2010	LAKEALM5HYP			0.332												
12/15/2010	LAKEALM5HYP			0.232												
1/12/2011	LAKEALM5HYP			0.227												
3/17/2011	LAKEALM5HYP			0.255												
4/19/2011	LAKEALM5HYP			0.585												
5/3/2011	LAKEALM5HYP			0.569												
6/7/2011	LAKEALM5HYP			0.358												
6/29/2011	LAKEALM5HYP			0.926												
7/12/2011	LAKEALM5HYP			2.01												
7/27/2011	LAKEALM5HYP			2.69												
8/17/2011	LAKEALM5HYP			2.60												
9/13/2011	LAKEALM5HYP			8.36												
9/20/2011	LAKEALM5HYP			1.36												
9/29/2011	LAKEALM5HYP			3.51												
10/13/2011	LAKEALM5HYP			1.85												
11/16/2011	LAKEALM5HYP			1.98												
12/28/2011	LAKEALM5HYP			0.238												
1/25/2012	LAKEALM5HYP			0.210												
2/22/2012	LAKEALM5HYP			0.407												
3/20/2012	LAKEALM5HYP			0.499												
4/18/2012	LAKEALM5HYP			0.230												

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
5/9/2012	LAKEALM5HYP			2.21												
5/23/2012	LAKEALM5HYP			1.10												
6/6/2012	LAKEALM5HYP			1.51												
7/18/2012	LAKEALM5HYP			6.19												
8/15/2012	LAKEALM5HYP			3.22												
9/26/2012	LAKEALM5HYP			1.03												
10/16/2012	LAKEALM5HYP			1.06												
11/7/2012	LAKEALM5HYP			1.17												
1/9/2013	LAKEALM5HYP			0.385												
1/31/2013	LAKEALM5HYP			0.170												
2/21/2013	LAKEALM5HYP			0.175												
3/21/2013	LAKEALM5HYP			0.394												
4/30/2013	LAKEALM5HYP			0.422												
6/25/2013	LAKEALM5HYP			3.58												
7/31/2013	LAKEALM5HYP			5.80												
8/20/2013	LAKEALM5HYP			1.98												
10/23/2013	LAKEALM5HYP			0.796												
11/26/2013	LAKEALM5HYP			0.227												
12/18/2013	LAKEALM5HYP			0.221												
3/4/2014	LAKEALM5HYP			0.56												MeHg corrected from 0.65 per Recall
4/17/2014	LAKEALM5HYP			0.25												MeHg corrected from 0.29 per Recall
5/20/2014	LAKEALM5HYP			2.0												MeHg corrected from 2.4 per Recall
7/6/2015	LAKEALM5HYP			0.410												
7/23/2015	LAKEALM5HYP			0.290												
8/11/2015	LAKEALM5HYP			1.300												
8/31/2015	LAKEALM5HYP			1.100												
9/10/2015	LAKEALM5HYP			1.700												
09/22/2015	LAKEALM5HYP			0.54												

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
10/08/2015	LAKEALM5HYP			0.96										6.5	6.83	
10/08/2015	LAKEALM5DUP	29		1.2										6.5	6.83	

LAKE ALMADEN INLET

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
4/8/2008	LAKEALMIN	7.8		0.352												
4/22/2008	LAKEALMIN	11		0.390												
5/7/2008	LAKEALMIN	10		0.426												
5/27/2008	LAKEALMIN	7.2		0.719												
6/10/2008	LAKEALMIN	7.2		0.635												
6/24/2008	LAKEALMIN	6.8		1.06												
7/8/2008	LAKEALMIN	20		1.68												
7/22/2008	LAKEALMIN	5.7		1.16												
8/5/2008	LAKEALMIN	8.9		16.4												
8/19/2008	LAKEALMIN	20		8.66												
9/9/2008	LAKEALMIN	4.9		5.84												
9/23/2008	LAKEALMIN	5.0		4.57												
10/14/2008	LAKEALMIN	8.3		1.23												
11/18/2008	LAKEALMIN	6.8		0.339												
12/16/2008	LAKEALMIN	9.5		0.318												
1/13/2009	LAKEALMIN	6.6		0.105												
2/10/2009	LAKEALMIN	15.8		0.169												
3/24/2009	LAKEALMIN	14.2		0.173												
4/21/2009	LAKEALMIN	10.1		0.376												
5/5/2009	LAKEALMIN	21.6		0.630												
5/19/2009	LAKEALMIN	14.0		0.739												

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
6/9/2009	LAKEALMIN	39		2.44												
6/23/2009	LAKEALMIN	13.6		1.16												
7/7/2009	LAKEALMIN	9.39		1.03												
7/21/2009	LAKEALMIN	12.8		3.59												
8/4/2009	LAKEALMIN	16.9		7.87												
8/18/2009	LAKEALMIN	10.0		3.29												
9/15/2009	LAKEALMIN	9.68		1.64												
10/20/2009	LAKEALMIN	39.0		0.769												
11/19/2009	LAKEALMIN	34.0		0.413												
12/15/2009	LAKEALMIN	29.6		0.479												
1/12/2010	LAKEALMIN	20.5		0.294												
2/10/2010	LAKEALMIN	23		0.33												
3/18/2010	LAKEALMIN	18.6		0.224												
3/18/2010	LAKEALMIN*	13		0.24												Dup/Lab test
4/29/2010	LAKEALMIN	17.4		0.145												
5/12/2010	LAKEALMIN	23.8		0.180												
5/26/2010	LAKEALMIN	21.8		0.216												
6/10/2010	LAKEALMIN	17.9		0.202												
6/30/2010	LAKEALMIN	25.8		0.410												
7/13/2010	LAKEALMIN	51.8		0.722												
7/27/2010	LAKEALMIN	39.8		0.593												
8/11/2010	LAKEALMIN	28.9		0.600												
8/24/2010	LAKEALMIN	118		0.602												
9/16/2010	LAKEALMIN	44.3		0.504												
10/6/2010	LAKEALMIN	41.5		0.693												
11/4/2010	LAKEALMIN	37.6		0.336												
12/15/2010	LAKEALMIN	23.8		0.351												
1/12/2011	LAKEALMIN	21.8		0.151												
3/17/2011	LAKEALMIN	27.4		0.180												
4/19/2011	LAKEALMIN	34.8		0.240												
5/3/2011	LAKEALMIN	19.5		0.696												
6/7/2011	LAKEALMIN	63.3		0.442												

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
6/29/2011	LAKEALMIN	34.8		0.527												
7/12/2011	LAKEALMIN	16.8		2.11												
7/27/2011	LAKEALMIN	19.1		1.43												
8/17/2011	LAKEALMIN	22.3		7.03												
9/13/2011	LAKEALMIN	33.3		5.25												
10/13/2011	LAKEALMIN	19.1		1.42												
11/16/2011	LAKEALMIN	27.9		0.300												
12/28/2011	LAKEALMIN	12.0		0.195												
1/25/2012	LAKEALMIN	35.8		0.227												
2/22/2012	LAKEALMIN	10.7		0.135												
3/20/2012	LAKEALMIN	19		0.206												
4/18/2012	LAKEALMIN	28		0.265												
5/9/2012	LAKEALMIN	16		0.326												
5/23/2012	LAKEALMIN	8.9		0.690												
6/6/2012	LAKEALMIN	NS		0.588												
7/18/2012	LAKEALMIN	11		1.49												
8/15/2012	LAKEALMIN	4.3		3.59												
9/26/2012	LAKEALMIN	31		2.47												
10/16/2012	LAKEALMIN	17		1.09												
11/7/2012	LAKEALMIN	15		0.585												
1/9/2013	LAKEALMIN	42		0.249												
1/31/2013	LAKEALMIN	27		0.192												
2/21/2013	LAKEALMIN	21		0.156												
3/21/2013	LAKEALMIN	21		0.410												
4/30/2013	LAKEALMIN	30		0.280												
6/25/2013	LAKEALMIN	18		0.741												
7/31/2013	LAKEALMIN	5.7		2.34												
8/20/2013	LAKEALMIN	18		1.98												
10/23/2013	LAKEALMIN	12		0.162												
11/26/2013	LAKEALMIN	18		0.189												
12/18/2013	LAKEALMIN	9.3		0.148												
1/28/2014	LAKEALMIN	13		NA												

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
3/4/2014	LAKEALMIN	20		0.28												MeHg corrected from 0.32 per Recall
4/17/2014	LAKEALMIN	11		0.24												MeHg corrected from 0.27 per Recall
5/20/2014	LAKEALMIN	13		0.45												MeHg corrected from 0.53 per Recall
7/6/2015	LAKEALMIN	15		5.500		<0.020	<0.20									
7/23/2015	LAKEALMIN	12		2.100		<0.020	<0.20									
8/11/2015	LAKEALMIN	10		2.200		0.036	<0.20									
8/31/2015	LAKEALMIN	8.9		1.800		0.043	<0.20									
9/10/2015	LAKEALMIN	11		2.200		0.054	<0.20									
09/22/2015	LAKEALMIN	11		3.9		<0.020	<0.20									
10/08/2015	LAKEALMIN	19		2.8		0.02	<0.20									

LAKE ALMADEN OUTLET

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
4/8/2008	LAKEALMOUT	12		0.329												
4/22/2008	LAKEALMOUT	8.4		0.359												
5/7/2008	LAKEALMOUT	6.9		0.229												
5/27/2008	LAKEALMOUT	6.9		0.640												
6/10/2008	LAKEALMOUT	6.2		0.747												
6/24/2008	LAKEALMOUT	6.6		1.19												
7/8/2008	LAKEALMOUT	21		1.27												
7/22/2008	LAKEALMOUT	5.2		1.82												
8/5/2008	LAKEALMOUT	6.0		1.16												
8/19/2008	LAKEALMOUT	12		3.50												
9/9/2008	LAKEALMOUT	2.8		3.06												
9/23/2008	LAKEALMOUT	3.9		2.22												
10/14/2008	LAKEALMOUT	7.1		2.77												
11/18/2008	LAKEALMOUT	5.6		0.395												
12/16/2008	LAKEALMOUT	10		0.268												
1/13/2009	LAKEALMOUT	45.3		0.181												
2/10/2009	LAKEALMOUT	9.16		0.076												
3/24/2009	LAKEALMOUT	24.2		0.175												
4/21/2009	LAKEALMOUT	9.5		0.211												
5/5/2009	LAKEALMOUT	37.7		0.503												
5/19/2009	LAKEALMOUT	29.1		0.515												
6/9/2009	LAKEALMOUT	14.3		0.682												
6/23/2009	LAKEALMOUT	35.8		1.60												
7/7/2009	LAKEALMOUT	7.54		1.23												
7/21/2009	LAKEALMOUT	14.5		0.997												
8/4/2009	LAKEALMOUT	13.0		1.51												
8/18/2009	LAKEALMOUT	16.3		4.25												

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
9/15/2009	LAKEALMOUT	10.1		1.96												
10/20/2009	LAKEALMOUT	51.3		0.802												
11/19/2009	LAKEALMOUT	37.5		0.482												
12/15/2009	LAKEALMOUT	24.0		0.253												
1/12/2010	LAKEALMOUT	33.0		0.194												
2/10/2010	LAKEALMOUT	110		0.56												
3/18/2010	LAKEALMOUT	18.8		0.282												
3/18/2010	LAKEALMOUT*	18		0.20												Dup/Lab test
4/29/2010	LAKEALMOUT	31.6		0.237												
5/12/2010	LAKEALMOUT	27.2		0.265												
5/26/2010	LAKEALMOUT	26.3		0.428												
6/10/2010	LAKEALMOUT	21.2		0.674												
6/30/2010	LAKEALMOUT	14.3		0.822												
7/13/2010	LAKEALMOUT	28.1		0.835												
7/27/2010	LAKEALMOUT	16.0		0.748												
8/11/2010	LAKEALMOUT	16.8		1.02												
8/24/2010	LAKEALMOUT	8.65		1.77												
9/16/2010	LAKEALMOUT	32.1		1.89												
10/6/2010	LAKEALMOUT	20.8		0.539												
11/4/2010	LAKEALMOUT	13.7		0.331												
12/15/2010	LAKEALMOUT	32.6		0.366												
1/12/2011	LAKEALMOUT	51.8		0.197												
3/17/2011	LAKEALMOUT	41.3		0.382												
4/19/2011	LAKEALMOUT	28.5		0.591												
5/3/2011	LAKEALMOUT	31.2		0.618												
6/7/2011	LAKEALMOUT	22.6		0.472												
6/29/2011	LAKEALMOUT	26.9		1.01												
7/12/2011	LAKEALMOUT	112		0.695												
7/27/2011	LAKEALMOUT	22.4		0.525												
8/17/2011	LAKEALMOUT	18.2		0.875												
9/13/2011	LAKEALMOUT	17.4		1.89												

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
10/13/2011	LAKEALMOUT	20.5		1.13												
11/16/2011	LAKEALMOUT	47.2		0.596												
12/28/2011	LAKEALMOUT	19.9		0.241												
1/25/2012	LAKEALMOUT	27.5		0.222												
2/22/2012	LAKEALMOUT	25.6		0.176												
3/20/2012	LAKEALMOUT	18		0.167												
4/18/2012	LAKEALMOUT	23		0.277												
5/9/2012	LAKEALMOUT	8.4		0.316												
5/23/2012	LAKEALMOUT	10		0.720												
6/6/2012	LAKEALMOUT	NS		0.832												
7/18/2012	LAKEALMOUT	5.1		0.431												
8/15/2012	LAKEALMOUT	14		2.00												
9/26/2012	LAKEALMOUT	11		1.23												
10/16/2012	LAKEALMOUT	9.6		0.641												
11/7/2012	LAKEALMOUT	18		0.481												
1/9/2013	LAKEALMOUT	69		0.392												
1/31/2013	LAKEALMOUT	21		0.247												
2/21/2013	LAKEALMOUT	36		0.166												
3/21/2013	LAKEALMOUT	24		0.345												
4/30/2013	LAKEALMOUT	4.3		0.277												
6/25/2013	LAKEALMOUT	14		1.01												
7/31/2013	LAKEALMOUT	8.1		2.80												
8/20/2013	LAKEALMOUT	12		1.75												
10/23/2013	LAKEALMOUT	25		0.681												
11/26/2013	LAKEALMOUT	38		0.337												
12/18/2013	LAKEALMOUT	22		0.318												
1/28/2014	LAKEALMOUT	10		NA												
3/4/2014	LAKEALMOUT	57		0.4												MeHg corrected from 0.47 per Recall
4/17/2014	LAKEALMOUT	13		2.2												MeHg corrected from 2.5 per Recall

Date	SampleID	Hg Total ng/L	Hg Diss ng/L	MeHg Total ng/L	MeHg Diss ng/L	Mn Total mg/L	Fe Total mg/L	NH4 mg/L	NO3 mg/L	NO2 mg/L	Sulfate mg/L	TP mg/L	Chl a mg/L	Sample Depth (meters)	Total Depth (meters)	Notes
5/20/2014	LAKEALMOUT	22		1.6												MeHg corrected from 1.9 per Recall
7/6/2015	LAKEALMOUT	42.0		1.700		<0.020	<0.20									
7/23/2015	LAKEALMOUT	22.0		1.300		<0.020	<0.20									
8/11/2015	LAKEALMOUT	15.0		2.300		0.050	<0.20									
8/31/2015	LAKEALMOUT	12.0		2.900		0.052	<0.20									
9/10/2015	LAKEALMOUT	13.0		1.200		0.057	<0.20									
09/22/2015	LAKEALMOUT	7		0.8		0.021	<0.20									
10/08/2015	LAKEALMOUT	22		0.79		0.026	<0.20									

Table 20: Water Quality Chemical Data

APPENDIX C

Hypolimnetic Oxygenation Systems Installation

SYSTEMS DESCRIPTION

Mobley Engineering, for the installation of bubble diffuser hypolimnetic oxygenation systems in Almaden Reservoir. Almaden Reservoir was constructed in south San Jose in 1930s, and currently are restricted to approximately 93% capacity due to seismic concerns. At design capacity, Calero Reservoir has a total reservoir volume of 1,586 acre-feet (1,472 acre-feet, restricted)

Water levels are often carefully controlled, and the reservoir is typically feet deep at its deepest location. The deepest location near the face of the dam typically ranges from feet deep. Each site consists of a power source, an oxygen supply facility, supply piping and diffuser lines that deliver oxygen to the reservoir. All components are of corrosion resistant materials.

The supply lines are comprised of two separate piping systems. One line supplies oxygen gas to the reservoir, the other is used to control buoyancy. During installation, the diffusers were assembled on water surface in the geometry and location desired. Anchors, composed of cement filled flower pots, were placed 15 feet apart, to hold the line in position, as shown in Figure 2. The buoyancy pipes were subsequently filled with water to sink the assembly to the bottom at the specified location(s). Under operating conditions, the buoyancy pipe is anchored at the bottom of the reservoir, with approximately three feet of head space between the pipe and bottom. To remove for maintenance, the buoyancy pipe is filled with compressed air.

ALMADEN RESERVOIR SYSTEM INSTALLATION

The installation of the system at Almaden Reservoir was completed in May 2015; however operation began in June 2015. The oxygen supply system also consists of a catalyst based on-site generation system (Oxygen Generating Systems Intl, NY USA) housed in a portable trailer. The facility sits on the side of the dam, just off xx road.

HYPOLIMNETIC OXYGENATION SYSTEMS

Almaden, Calero, Guadalupe and Stevens Creek Reservoirs

LINE DIFFUSER OPERATING AND MAINTENANCE MANUAL
With
SYSTEM OPERATING RECOMMENDATIONS

Prepared for
Santa Clara Valley Water District

By:

Mobley Engineering

Norris, TN

April 2014

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SANTA CLARA VALLEY WATER DISTRICT

HYPOLIMNETIC OXYGENATION SYSTEMS

LINE DIFFUSER OPERATING AND MAINTENANCE INSTRUCTIONS

1.0 INTRODUCTION

1.1 Background

The oxygenation equipment at Almaden, Calero, Guadalupe and Stevens Creek Reservoirs is designed to protect the water quality of the reservoir by maintaining oxygen content in the reservoir at a level sufficient to inhibit the formation of various undesirable compounds in the water column methylated mercury in particular. Stratified reservoirs such as these, form an Epilimnion - a warm, highly oxygenated layer near the water surface due to solar heating, and a hypolimnion - a cold layer near the bottom of the reservoir effectively sealed off from oxygen sources by the Epilimnion. Oxygen demands are continually exerted by the sediments, incoming organic loading and other biological processes that cause the hypolimnion oxygen content to diminish over time.

1.2 System and Diffuser Design Criteria and Description

A reservoir aeration/oxygenation study prepared by Brown and Caldwell (Agreement A2896A, Technical Memorandum 2.1.1, December, 2005) recommended the oxygen design capacity to improve hypolimnetic water quality. The diffuser design capacity and construction details were then specified in the construction contract documents for each project. The as built capacities and dimension as installed by Mobley Engineering are shown in Table 1.1.

Almaden	Line 1	Line 2	Total	
Oxygen flow per diffuser	6.8	5.7	12.5	scfm
Diffuser Line Length (each)	661.5	555	1,217	feet
Diffuser Elevation	543	550		feet
Underwater Supply Line	80	360	440	feet
Underground Supply Line	200	200	400	feet
Sleeve Pipe		200	200	feet

Calero	Line 1	Line 2	Total	
Oxygen flow per diffuser	12.5		12.5	scfm
Diffuser Line Length (each)	1,000		1,000	feet
Diffuser Elevation	410			

Underwater Supply Line	500		500	feet
Underground Supply Line	100		100	feet
Guadalupe	Line 1	Line 2	Total	
Oxygen flow per diffuser	3.6	8.9	12.5	scfm
Diffuser Line Length (each)	400	1,000	1,400	feet
Diffuser Elevation	522	522 to 532		feet
Underwater Supply Line	600	500	1,100	feet
Underground Supply Line	200	200	400	feet
Sleeve Pipe		200	200	feet
Stevens Creek	Line 1	Line 2	Total	
Oxygen flow per diffuser	12.5		12.5	scfm
Diffuser Line Length (each)	1,000		1,000	feet
Diffuser Elevation	466 to 468			
Underwater Supply Line	475		475	feet
Underground Supply Line			0	feet
Sleeve Pipe	120		120	feet

Table 1.1: SCVWD Oxygen Diffuser Specifications

2. 0 Description of Facilities

2.1 Gaseous Oxygen Supply—

Each project utilizes oxygen generated on site by pressure swing adsorption (PSA) system that separates oxygen and nitrogen from a compressed air stream. The PSA systems at Almaden, Guadalupe and Stevens Creek are mounted in trailers so that they can be removed in the off season. The PSA system at Calero is permanently onsite. These systems and their operation are covered in O&M manuals provided by the manufacturer.

2.2 Oxygen Supply Piping Connections—

The PSA system at each project is connected to the oxygen delivery piping and diffusers at a shoreline connection. The shoreline connections vary in design for each project. Calero has a permanent piping connection shown in Figures 2.2.1 and 2.2.2. The projects with trailer mounted PSA systems have fixed hose connections at a location near to each trailer parking space. The shoreline connections for

Almaden are shown in Figures 2.2.3 and 2.2.4. The connections at Almaden include 2” and 1” blind flange connections for buoyancy pipes, shut off valves, vent valves and hose connections for oxygen supply connections.

The shoreline connections at Calero are 2” flanges at the edge of the concrete pad are shown in Figures 2.2.1 and 2.2.2.

The 2” buoyancy connection is in use in the photo. It is normally closed with a blind flange.

Figure 2.2.1: Shoreline Connections at Calero

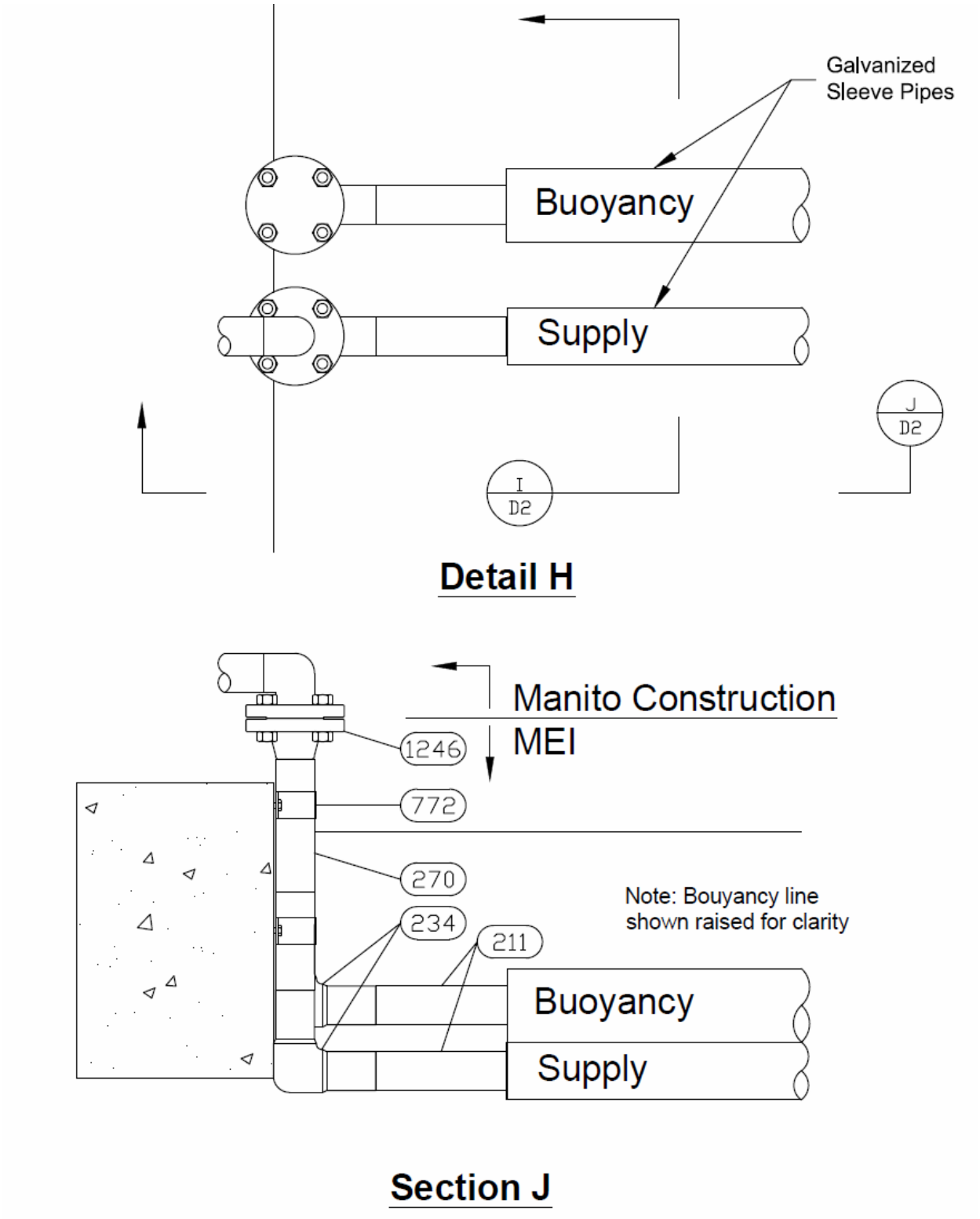


Figure 2.2.2: Shoreline Connections at Calero

Figure 2.2.3: Shoreline Connections for Almaden

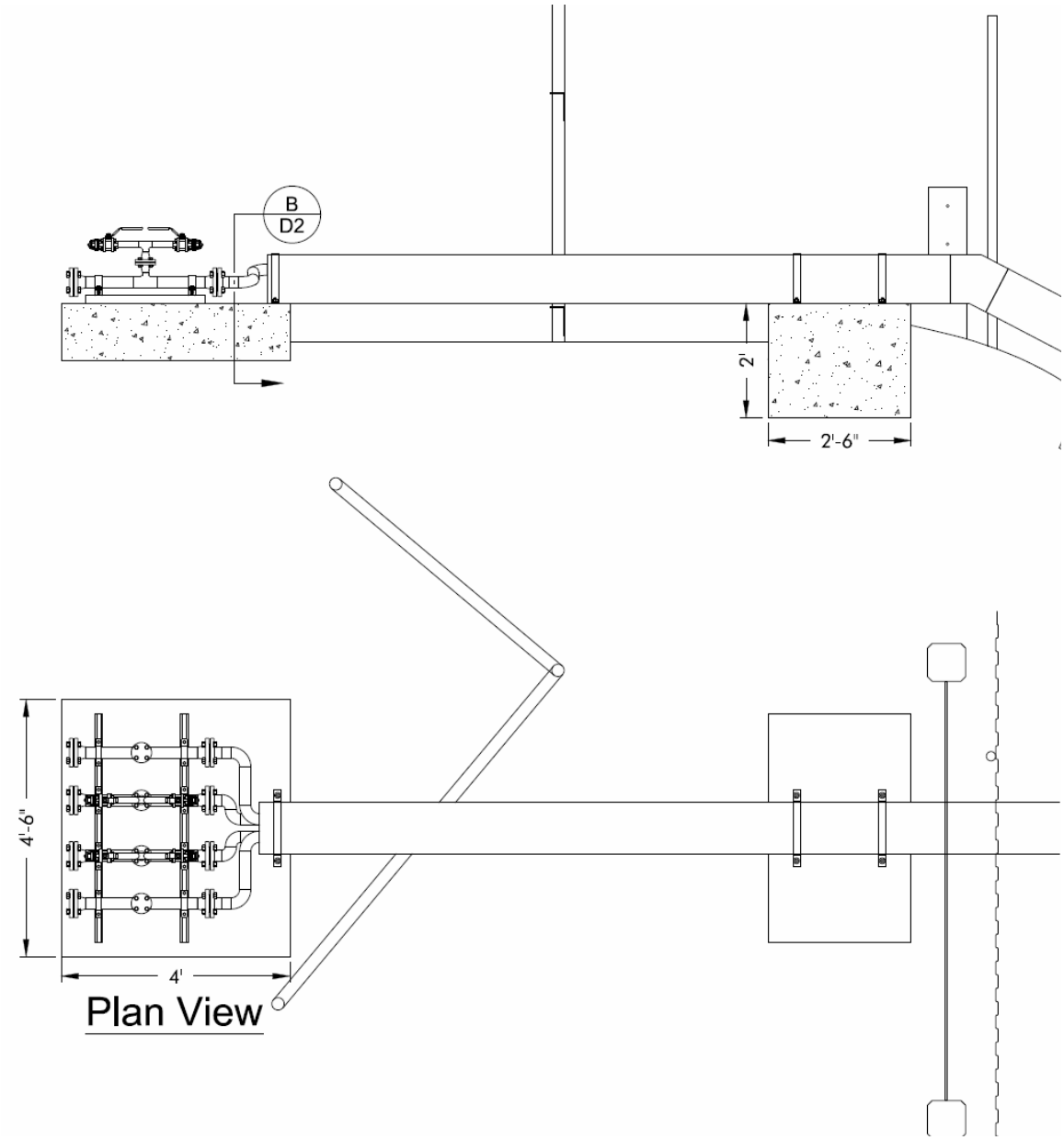


Figure 2.2.4: Shoreline Connections for Almaden

The shoreline connections at Guadalupe are 1” flanges with shut off valves and connections to Chicago air fittings for the buoyancy lines and Dixon hose connections for the oxygen supply connections as shown in Figure 2.2.5 and 2.2.6. Figure 2.2.5 shows the oxygen supply hoses from the PSA system connected.

Figure 2.2.5: Shoreline Connections for Guadalupe

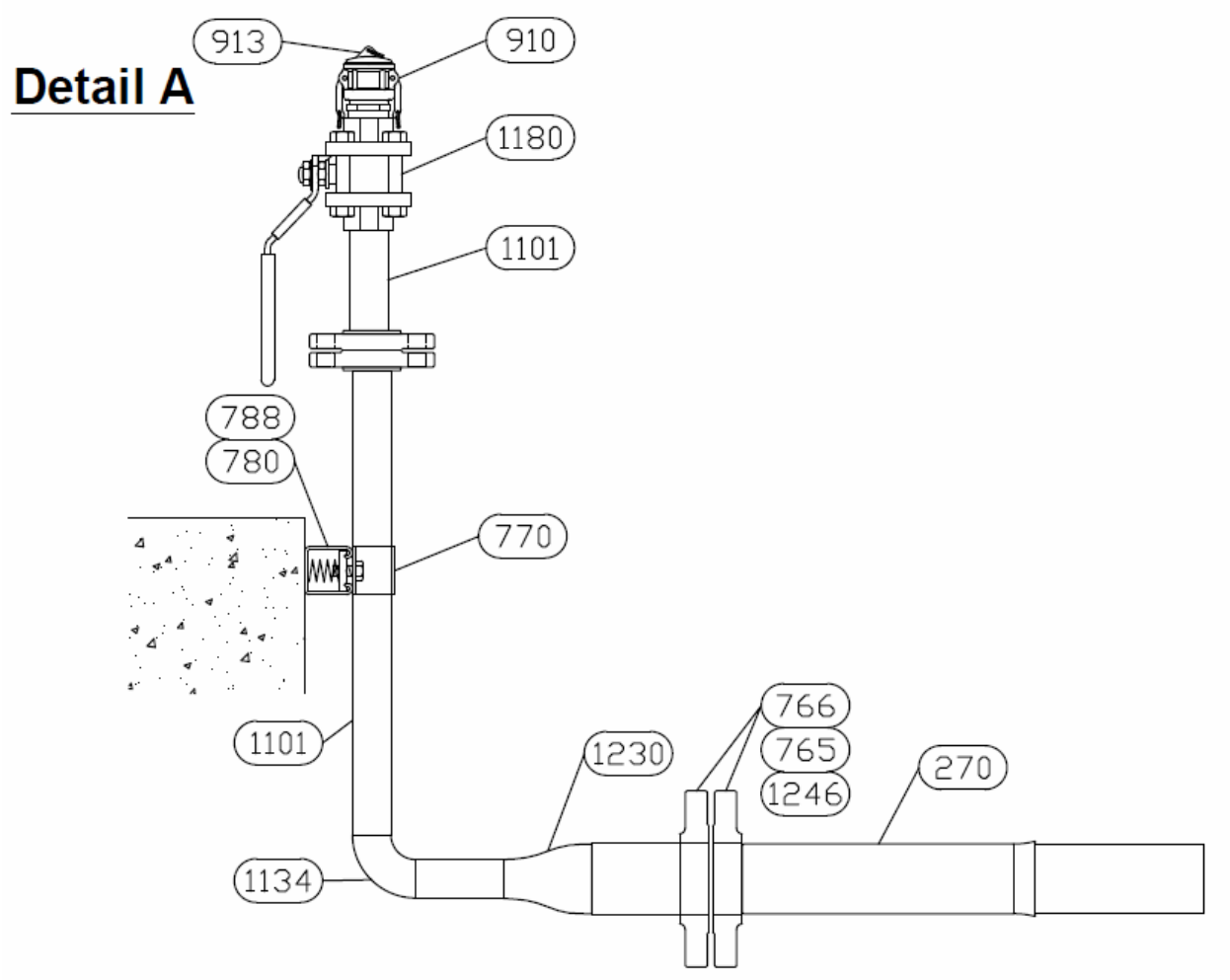
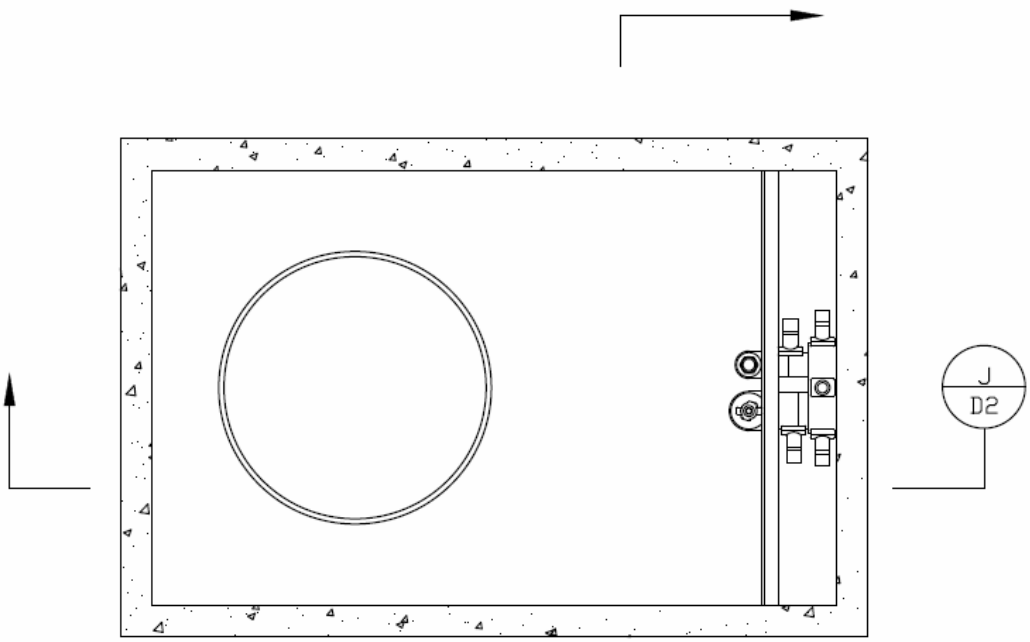


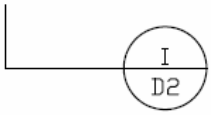
Figure 2.2.6: Shoreline Connections for Guadalupe

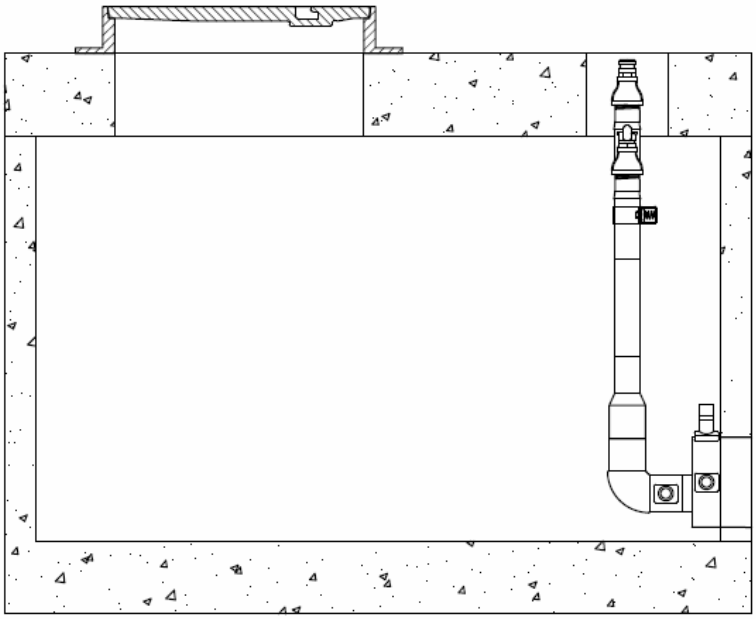
The shoreline connections for Stevens Creek are installed in a concrete box under the parking lot. The box is equipped with a manhole and a hand hole. The buoyancy and oxygen supply connections are located in the hand hole with a Chicago air fitting on the buoyancy connections and a Dixon connection on the oxygen supply. The shoreline connections at Sevens Creek are shown in Figures 2.2.7 and 2.2.8.

Figure 2.2.7: Shoreline Connections for Stevens Creek



Detail H





Section J

Figure 2.2.8: Shoreline Connections for Stevens Creek

All of the oxygen connections except Calero use the same Dixon hose fitting and cap arrangement so that they fit the hoses on the PSA trailers. The oxygen connections should be capped when not in use to maintain cleanliness for oxygen service.

2.3 Gaseous Oxygen Delivery Piping—

High Density Polyethylene (HDPE) piping is utilized to deliver the gaseous oxygen from the shoreline connections to the diffuser in the reservoir. The HDPE piping is routed in a protective HDPE sleeve, trench or galvanized pipe as appropriate for each project layout. There are independent HDPE pipes in the sleeve pipe providing oxygen supply (2") and buoyancy connection (2" or 3") for each diffuser line – four total for Almaden and Guadalupe, two total for Calero and Stevens Creek.

2.4 Oxygen Diffuser System—

The oxygen diffuser system for each of the SCVWD reservoirs is designed to operate as needed to provide the oxygen input necessary to meet or exceed the oxygen demands of the reservoir and thus maintain the reservoir at desired DO levels. The required oxygen flowrate can be set manually at the flow control manifold on the PSA oxygen supply and can be changed as needed to meet varying reservoir conditions.

The line diffuser system installed by Mobley Engineering for SCVWD was originally developed for the Tennessee Valley Authority for hydropower applications to improve the oxygen content of the reservoir releases. The line diffuser design has been applied at 22 hydropower projects and 21 water supply reservoirs since 1994. The general arrangement of the diffuser assembly is shown in Figure 2.4.1. The line diffuser is deployed and retrieved without the use of divers. Operation of similar systems at TVA and other utilities has resulted in efficient oxygen distribution with minimal maintenance expenditures.

2.4.1 Diffuser Details:

The MEI Line Diffuser design has two lines of porous hose along the full length of each diffuser. The hose is divided into independent 15 foot long sections. The oxygen flow to each porous hose is controlled by a flow control orifice in the branch saddle connection to the supply pipe to equalize the flow along the length of the diffuser and to minimize losses in the event of a hose break. The flow control orifices are protected by stainless steel filter washers to prevent clogging with debris. The oxygen supply piping is 2" HDPE (High-density polyethylene). The buoyancy piping in the water is 3" MDPE (Medium-density polyethylene) yellow pipe. The yellow MDPE piping is used to provide high visibility during periods when the diffuser system is on the surface so that boaters are more likely to see the pipe. The elevation of each diffuser segment is maintained using custom anchor cable lengths to hold the diffuser the desired distance off the bottom of the reservoir. All anchor and flow connections are welded to the oxygen supply pipe. All HDPE piping fusion welds are made according to the Plastics Pipe Institute: *Recommended Minimum Training Guidelines for PE Pipe Butt Fusion Joining Operators for Municipal and Industrial Projects* TN-42/September 2009, and manufacturer's procedures. High-density polyethylene pipe (oxygen supply piping) meets all the specifications of PE 3408, PE 4710 and ASTM Specification D 3350 with a cell classification of 345464C. Medium-density polyethylene pipe (buoyancy piping) meets all the specifications of PE 2406 and ASTM Specification D 3350 with a cell classification of 234363E.

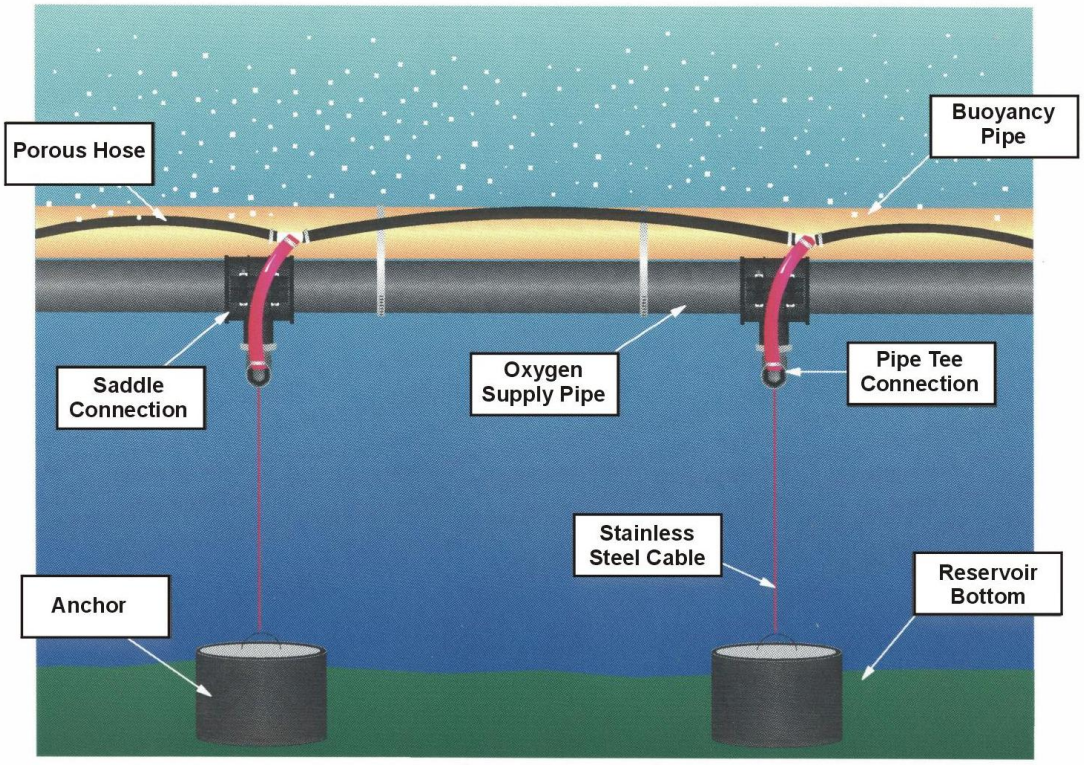


Figure 2.4.1 Line Diffuser Detail

There are specific diffuser layouts for each reservoir, designed to place oxygen in one or two elevations as specified. The Diffuser layouts are presented in Figures 2.4.2 through 2.4.5. A detail of the diffuser is shown in Figure 2.4.6.

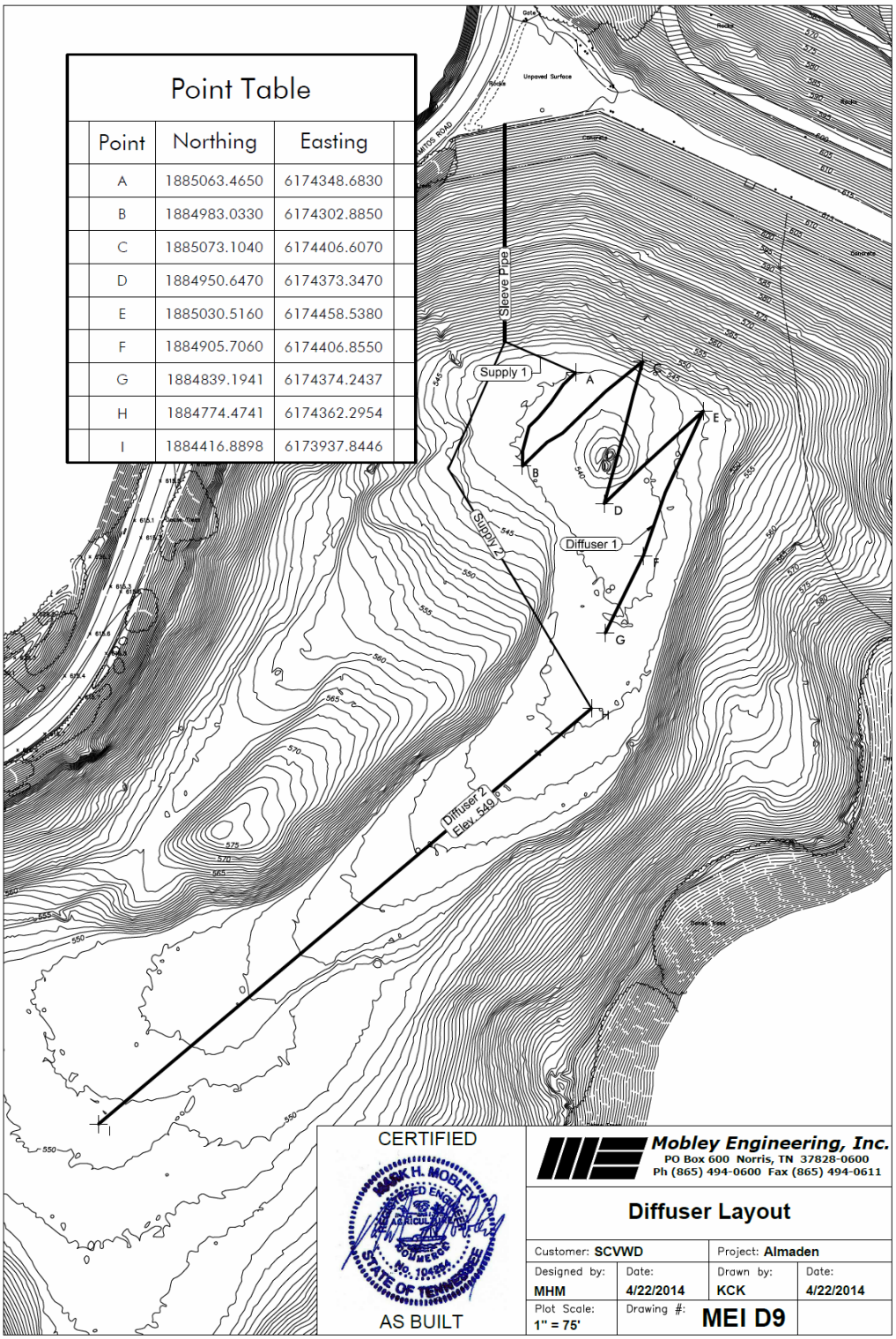


Figure 2.4.2 Diffuser Layout at Almaden

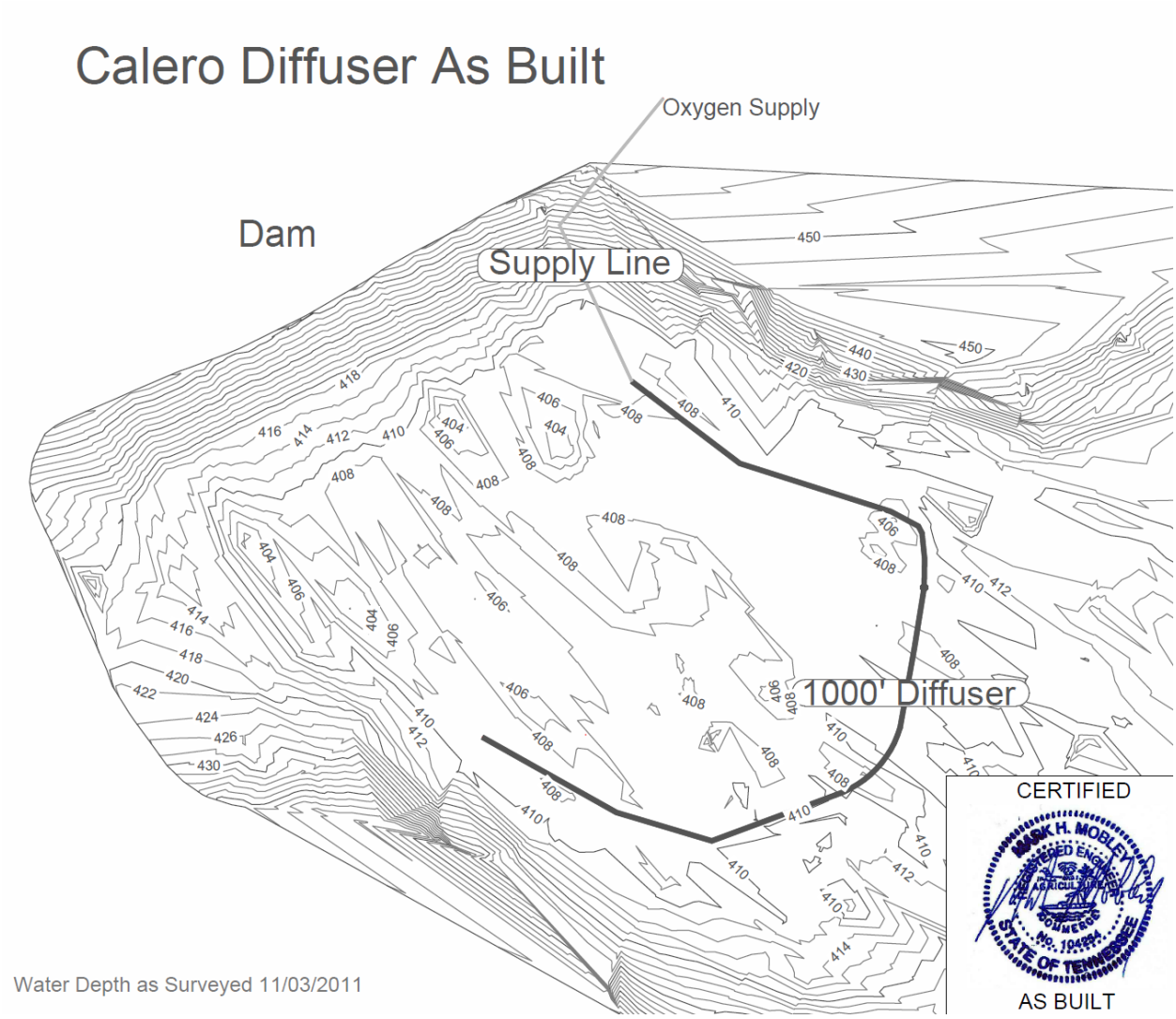


Figure 2.4.3 Diffuser Layout at Calero

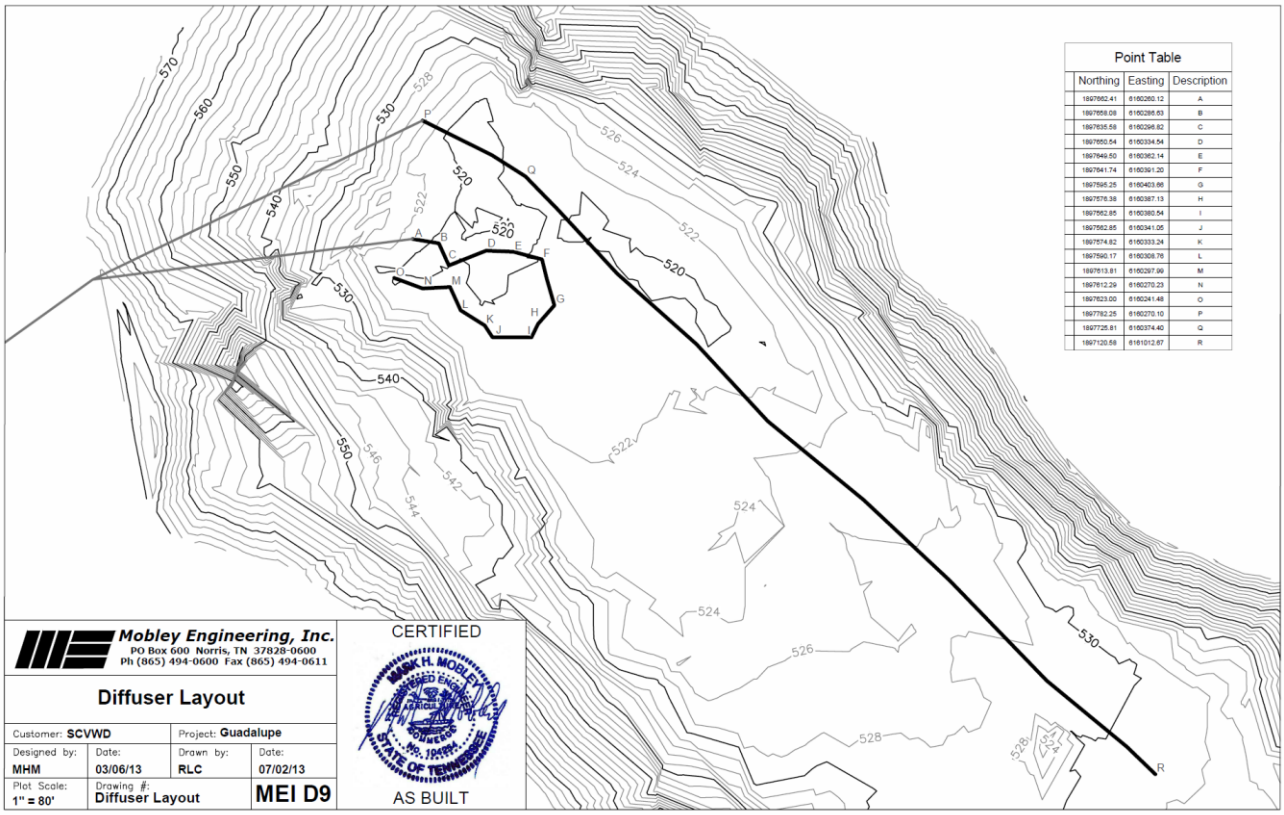


Figure 2.4.4 Diffuser Layout at Guadalupe

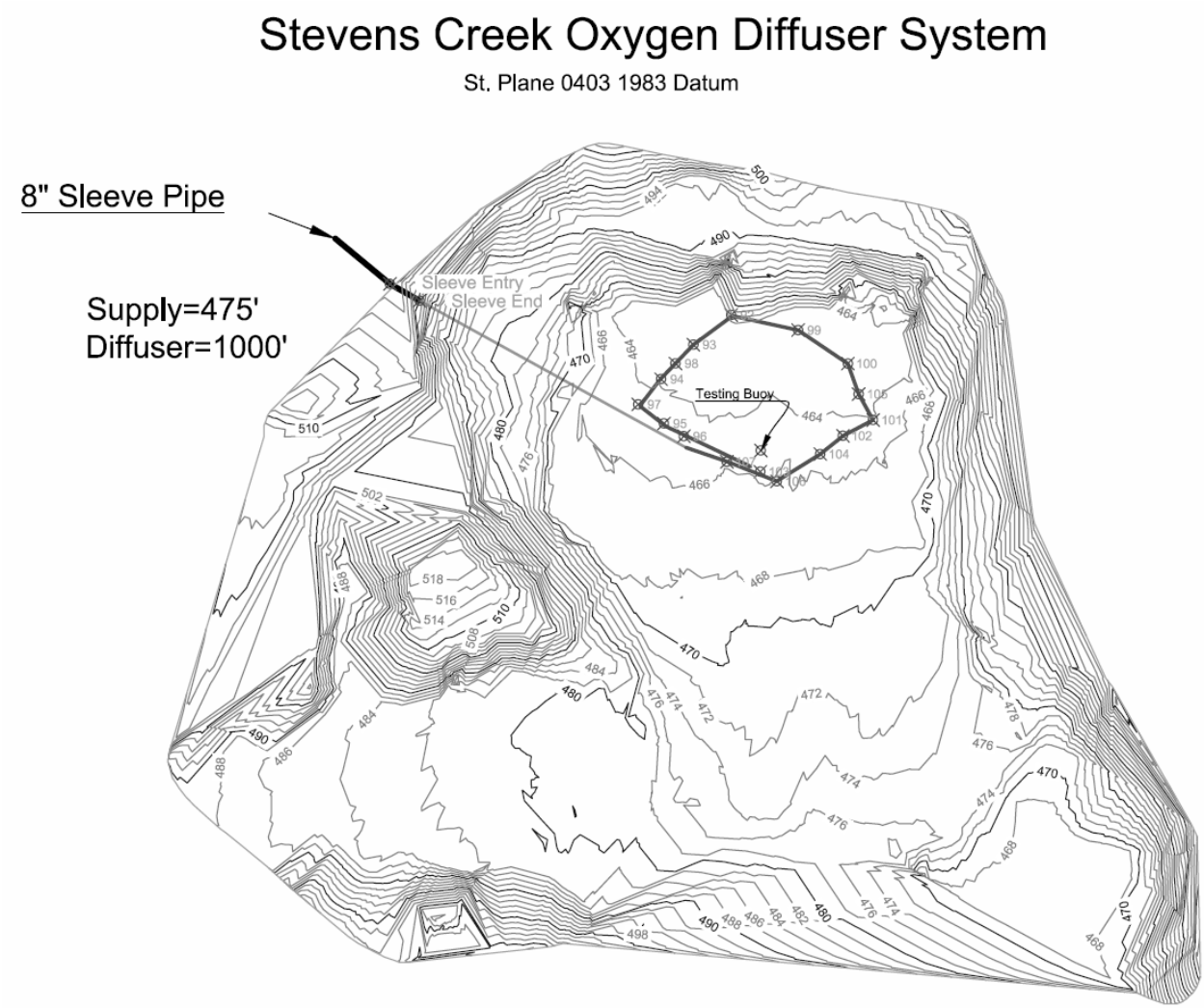


Figure 2.4.5 Diffuser Layout at Stevens Creek

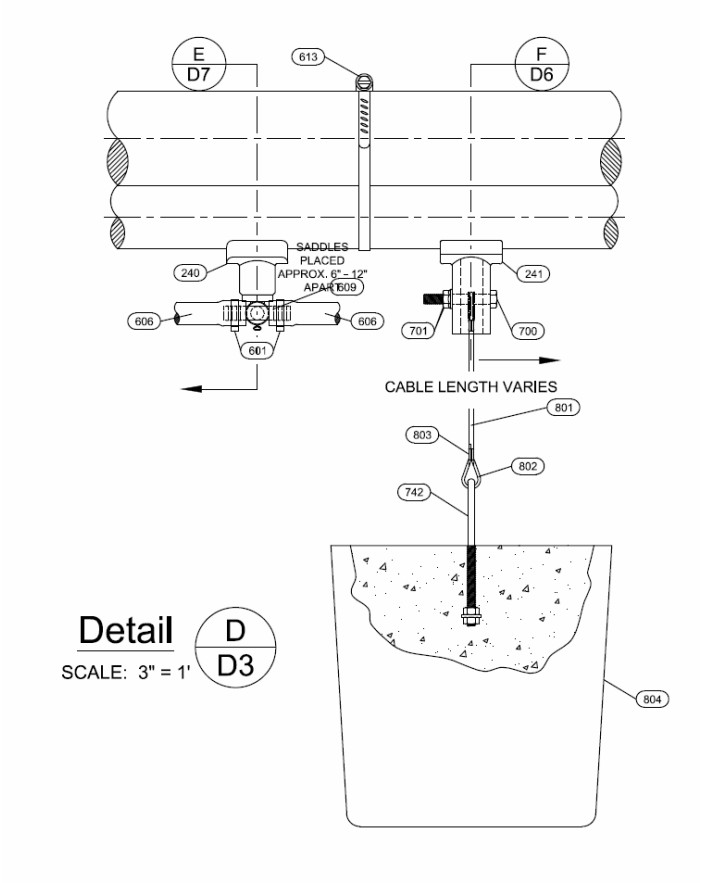


Figure 2.4.6 Diffuser Details as Configured for SCVWD Reservoirs

2.4.2 Oxygen Delivery Pressure Requirements:

The diffuser piping and orifice design for each reservoir was modeled using the CFSIM compressible flow model. The model inputs include; flow media, supply pressure, pipe diameter, pipe length, fittings, orifices and hydrostatic pressure. Model results include pipe pressures and flows at each orifice. Orifice size was chosen to provide minimum flow variation across the length of the diffuser lines along with capability for achieving full flow capacity with pressure requirements less than 40 psi. A sample summary table of results from Almaden is presented as **Table 2.1** for operation of Diffusers #1 and 2 at design flows and 50% flow. These results verify that 100% of the oxygen supply can be directed to either diffuser or distributed as desired with operating pressures not exceeding 35 psi.

Almaden							
Line	Diffuser Elevation (ft)	Oxygen Flow (scfm)	HWEL (ft)	Orifice Size	Orifice Flow (scfm) Maximum	Minimum	Operating Pressure (psi)
1	542	12.5	597.4	#60	0.285	0.284	26.8
1	542	12.5	570	#60	0.285	0.284	16.6
1	542	12.5	610	#60	0.285	0.284	31.9
1	542	6	597.4	#60	0.136	0.136	24.5
1	542	6	570	#60	0.136	0.136	13
1	542	6	610	#60	0.136	0.136	29.9
2	549	12.5	597.4	#60	0.338	0.338	25.6
2	549	12.5	570	#60	0.338	0.338	16.8
2	549	12.5	610	#60	0.338	0.338	30.3
2	549	6	597.4	#60	0.162	0.162	21.9
2	549	6	570	#60	0.162	0.162	10.6
2	549	6	610	#60	0.162	0.162	27.1

Table 2.1: Summary of Flow Modeling Results for Almaden

2.4.3 Piping Specification and Pressure Ratings:

HDPE piping is de-rated for use with oxygen using environment factors provided by HDPE manufactures. For example, SDR 11 is rated at 160 psi for water but is de-rated to 88 psi with environmental (oxygen) and temperature factors (90°F) following the procedure presented in *Performance Pipe Technical Note PP 831-TN PE3408 Pipe in Compressed Air or Compressed Gas Service* Chevron Phillips Chemical Company 2002. A schedule of pipe size and ratings for the diffuser design is presented in **Table 2.2.**

As shown in **Table 2.2**, rated pressures for each section of pipe are greater than the normal operating conditions. Thin wall piping is specified for buoyancy lines to maximize the lifting force available to support the concrete anchors. Buoyancy lines will only be subjected to pressures around hydrostatic pressure during re-floating operations (short term and less than 50 psi).

SDR		Fe	Temp	Ft		Po2				
			F							
5	HDPE	0.32	73	1.00		256.0				
5		0.32	80	0.94		241.4				
5		0.32	90	0.86		220.5				
5		0.32	100	0.78		199.7				
5		0.32	120	0.62		158.0				
7.3	HDPE	0.32	73	1.00		162.5				
7.3		0.32	80	0.94		153.3				
7.3		0.32	90	0.86		140.0				
7.3		0.32	100	0.78		126.8				
7.3		0.32	120	0.62		100.3				
9	HDPE	0.32	73	1.00		128.0				
9		0.32	80	0.94		120.7				
9		0.32	90	0.86		110.3				
9		0.32	100	0.78		99.8				
9		0.32	120	0.62		79.0				
11	HDPE	0.32	73	1.00		102.4				
11		0.32	80	0.94		96.6				
11		0.32	90	0.86		88.2				
11		0.32	100	0.78		79.9				
11		0.32	120	0.62		63.2				
17	MDPE	0.32	73	1.00		50.0				
17		0.32	80	0.94		47.1				
17		0.32	90	0.86		43.1				
17		0.32	100	0.78		39.0				
17		0.32	100	0.78		39.0				
21	MDPE	0.32	73	1.00		40.0				
21		0.32	80	0.94		37.7				
21		0.32	90	0.86		34.5				
21		0.32	100	0.78		31.2				
21		0.32	120	0.62		24.7				
Oxygen Supply Pipe			Operating Temperature (°F)	Pressure Rating for Oxygen (psi)		**Buoyancy Pipe**			Operating Temperature (°F)	Pressure Rating for Oxygen (psi)
Sleeve	2"	SDR 11	90	88.2		Sleeve	2"	SDR 11	90	88.2
Supply	2"	SDR 11	80	96.6		Supply	3"	SDR 17	80	47.1
Diffuser	2"	SDR 11	80	96.6		Diffuser	3"	SDR 17	80	47.1

Table 2.2: Schedule of Pipe Ratings

2.4.4 Anchoring:

Diffuser anchoring consists of 65 pound concrete weights attached at 15 foot intervals along the diffuser and underwater supply piping. Anchor cables are 7x7 3/32” nylon coated stainless steel. A properly swaged end connection with thimble and stripped coating is generally accepted to provide maximum holding capacity equal to the cable breaking strength. Cable lengths are generally 1 foot long to keep the diffuser as deep as possible, but are designed to match the reservoir bathymetry in some cases to maintain a specific elevation (Almaden Diffuser #2).

2.4.5 Buoyancy Calculations:

Each section of pipe is anchored to the bottom with concrete anchors. The anchors are sized and spaced to counter the operating buoyancy of the polyethylene supply piping. The buoyancy pipe size and anchor spacing is designed to optimize residual anchor weight on the bottom yet allow for floatation of the piping with the buoyancy pipe and weight of the FCL pipe. The buoyancy and weights for specified pipe sizes and concrete anchors are listed in Table 4. Buoyancy calculations for each section of pipe are shown in Table 5. Buoyancy forces are shown as positive and anchoring force is shown as negative.

Pipe Sched.	Size (in)	O.D. (in)	I.D. (in)	Wt./ft in air (lb/ft)	Specific Gravity	Wt./ft in H2O (lb/ft)	Volume/ft (cuft)	Buoyancy (lb/ft)	Net Buoyancy (lb/ft)
SDR26	10	10.75	9.874	-5.87	0.95	0.309	0.532	33.075	33.384
SDR21	3	3.5	3.153	-0.75	0.95	0.039	0.054	3.373	3.412
SDR17	3	3.5	3.063	-0.93	0.95	0.049	0.051	3.183	3.232
SDR13.5	3	3.5	2.951	-1.15	0.95	0.061	0.047	2.954	3.015
SDR11	3	3.5	2.826	-1.39	0.95	0.073	0.044	2.709	2.782
SDR9	3	3.5	2.675	-1.66	0.95	0.087	0.039	2.428	2.515
SDR7.3	3	3.5	2.485	-1.98	0.95	0.104	0.034	2.095	2.199
SDR5	3	3.5	2.1	-2.5	0.95	0.132	0.024	1.496	1.628
SDR11	2	2.375	1.926	-0.63	0.95	0.033	0.020	1.258	1.292
SDR9	2	2.375	1.815	-0.76	0.95	0.040	0.018	1.118	1.158
SDR 7.3	2	2.375	1.724	-0.87	0.95	0.046	0.016	1.008	1.054

Table 4: Pipe Buoyancy Characteristics

Sleeve			size	Operating Buoyancy (lb/ft)	Number	Total Buoyancy (lb/ft)		Total Buoyancy (lb/ft)		
	sleeve pipe	SDR26	10	0.31	1	0.31		0.31		0.31
	buoy	SDR11	2	0.03	2	0.07	1.29	2.58	1.29	2.58
	O2	SDR11	2	1.29	2	2.58	0.03	0.07	1.29	2.58
						2.96		2.96		5.48
	Anchor Weight in air (lbs)	Volume (cuin)	Volume (cuft)	Weight in Water (ea.)	Spacing	Net Weight (lb/ft)		Diffuser wt/ft operating	Floating w/ diffuser empty	Floating w/ diffuser full
Block	110.00	1320	0.76	(62.34)	10.00	(6.23)		(3.28)	(0.76)	(3.28)
Supply			size	Operating Buoyancy (lb/ft)	Number	Floating Buoyancy (lb/ft)		Weight in Water Full (lb/ft)		
	buoy	SDR17	3	0.05	1	3.23				
	O2	SDR11	2	1.29	1	1.29		0.09		
				1.34		4.52				
	Anchor Weight in air (lbs)	Volume (cuin)	Volume (cuft)	Weight in Water (ea.)	Spacing	Net Weight (lb/ft)		Diffuser wt/ft operating	Floating w/ diffuser empty	Floating w/ diffuser full
3 gallon	57.75	693	0.40	(32.73)	15.00	(2.18)		(0.84)	2.34	1.14
Diffuser			size	Operating Buoyancy (lb/ft)	Number	Floating Buoyancy (lb/ft)		Weight in Water Full (lb/ft)		
	buoy	SDR17	3	0.05	1	3.23				
	O2	SDR11	2	1.29	1	1.29		0.03		
				1.34		4.52				
	Anchor Weight in air (lbs)	Volume (cuin)	Volume (cuft)	Weight in Water (ea.)	Spacing	Net Weight (lb/ft)		Diffuser wt/ft operating	Floating w/ diffuser empty	Floating w/ diffuser full
3 gallon	57.75	693	0.40	(32.73)	15.00	(2.18)		(0.84)	2.34	1.08

Table 5: Buoyancy Calculations for Diffuser Piping Sections

3.0 OXYGENATION SYSTEM EQUIPMENT MAINTENANCE

3.1 Inspections

Prior to seasonal start-up, a general walk down of the PSA oxygen supply system should be made to verify operational readiness. Since the diffuser system is under water, the inspection will be limited to the oxygen supply facility and any exposed supply piping. After the initial start-up, the bubble pattern of the underwater portion of the system can be inspected from shore or from a boat.

3.1.1 Distribution Piping Inspection--The distribution piping includes the tubing, valves, and controls between the main pressure regulator and the polyethylene supply piping to the diffusers. At startup, an inspection for leaks from piping, flanges, valves, and pressure regulators should be conducted. Power supply to the flowmeters should be verified.

3.1.2 Line Diffuser Supply Pipe and Porous Hose Inspection--Inspection for underwater leaks should be conducted while all line diffusers are in operation at maximum design flow. Leaks can be found by watching for disruptions in the bubble pattern on the surface. The inspection should be made from a boat when the water surface is calm. Mobley Engineering will perform this inspection at the start-up testing of the system, and can be contracted to inspect the system thereafter. The bubble pattern on the surface is slight and hard to see under some conditions; however, a damaged hose or leaking connection will create a bubble plume that is readily visible.

3.2 Oxygenation System Maintenance

3.2.1 Diffuser Supply Pipe and Porous Hose--Maintenance is to be performed on an as needed basis. Generally, several small leaks in the diffuser (usually broken hoses) can be neglected as long as good flow is sustained over the rest of the diffuser length since each hose connection is independently orifice controlled. When sufficient major leaks are identified to cause concern during the start up, or other visual inspections, the diffuser must be raised to the water surface for repair. Once the diffuser line is raised for repair, all leaks and broken porous hose should be replaced or repaired.

3.2.1.1 Raising and Lowering Procedure— Each line diffuser can be raised to the surface by filling the buoyancy pipe with compressed air or oxygen. The buoyancy connections for each diffuser are located at the shoreline piping connection shown in Figures 2.2.1 through 2.2.8. Buoyancy lines are constructed of SDR17 MDPE pipe and should not be pressurized over 47 psi (Table 2.2). As the line is filled with air the entire line diffuser assembly will float to the surface except the first 200 feet of supply piping section at the shoreline in the sleeve pipe. The buoyancy pipe will raise the entire diffuser assembly (anchors and all) even if the oxygen diffuser pipe is filled with water. Once the entire length of diffuser is on the surface, the buoyancy pipe must be capped and the diffuser immediately moored to anchors to prevent damage from contact with the shoreline or entanglements. The diffuser can then be

fixed, modified or realigned. To lower the diffuser, a portable water pump is connected to the 2" buoyancy fill line connection at the shoreline. The 3" buoyancy pipe is left open at the far end of the diffuser so that air can escape from the pipe as the water is pumped in. Water in the buoyancy line will sink the diffuser in a smooth line from the fixed end. The raising and lowering of a 500 to 1,500-foot long diffuser line can be a difficult task requiring numerous boats and an experienced crew, especially if high winds are encountered. Mobley Engineering can be contacted for assistance at (865) 494-0600.

3.3 Check List for Recommended Diffuser System Inspections and Maintenance

Inspection Task	Recommended	Completed
Bubble Plume Visual Inspection	Start-up 2014	
	Start-up 2015	
	Start-up 2016	
	Start-up 2017	
	Start-up 2018	
	Start-up 2019	
	Start-up 2020	
Bubble Plume Visual Inspection	Start-up 2021	
	Start-up 2022	
	Start-up 2023	
	Start-up 2024	
Raise and Replace Porous Hose	2024	

Dates and tasks should be modified to reflect results of inspections and evaluations as needed.

4.0 Oxygenation System Operation

The oxygen diffuser system is designed to be able to supply sufficient oxygen to counteract the oxygen depletion rate of the reservoir with recovery capacity to increase the hypolimnetic oxygen content if operation is interrupted. If the oxygen demands are low or the hypolimnetic volume is small (such as at the beginning of the season) operation of the hypolimnetic oxygenation system could significantly increase the oxygen content of the reservoir in a matter of days. Reservoir conditions should be monitored carefully during operation of the system.

4.1 Diffuser Flow Rates and Bubble Pattern:

The oxygen flow to the diffusers will take time to reach a steady state value especially when the system is first activated. This is because the diffuser will fill with water when it is not in operation and it takes time to move water out of the very small supply orifices between the oxygen supply pipe and the porous hose sections (30 minutes or more may be required to clear each diffuser). At initial startup with the lines full of water, the pressure may build up to full supply line pressure once the flow control valves are opened with little or no measurable flow. This condition may persist until most of the water has been blown out of the diffuser. In this condition, the flowrate must be monitored and the flow control valve opening reduced as the oxygen flow rate increases. Once in operation – the diffuser will react more quickly to changes in flowrate setting. In either case, with any change in flowrate setting, the operator should check the flowmeter reading at 30 minute to 1-hour intervals until the desired flow rate is steady. Supply pressure to the diffuser system should be set to less than the working pressure of the HDPE piping (80 psi Table 2.2).

4.1.1 Bubble pattern

The bubbles from the diffuser will be visible on the water surface during calm periods. There should be a nearly continuous line of small bubbles along the length of the diffuser with very little upwelling of water. There may be some variations in the intensity of the bubble flow along the length of the diffuser but no strong flow spots with bubbles much larger than the norm. The bubble pattern may be less continuous at oxygen flow rates less than the maximum design flow rate. An example bubble pattern from Calero is shown in Figure 4.1.

Figure 4.1 Example Bubble Pattern from Calero

4.1.2 Effect of Oxygen Input

The oxygen input capacity of the system is likely to be sufficient to increase the hypolimnetic oxygen content of the reservoir in a matter of days. The Calaveras Reservoir line diffuser installation was placed in operation for the San Francisco Public Utility Commission on September 6, 2005. DO content in the hypolimnion was measurably increased in just one day's operation and continued to increase to over 5 mg/L in about a month. Results from initial operation of the system are shown in Figure 4.2.

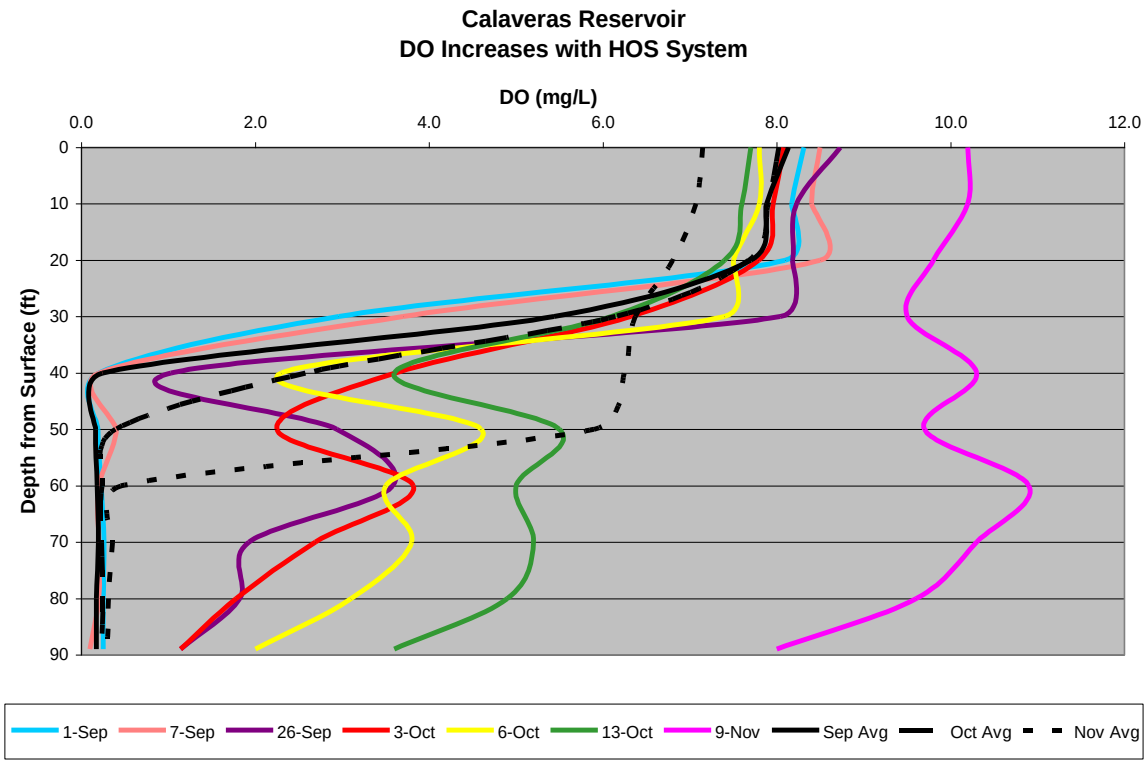


Figure 4.2: Results of Initial Oxygenation System Operation at Calaveras in 2005

4.3 Recommended Monitoring Requirements

Reservoir monitoring should initially include DO profiles at several locations chosen to represent areas of the reservoir. These profiles could be used to adjust the daily oxygen flow rate to each diffuser to achieve the desired results in the reservoir. Certain areas of the reservoir may be slow to respond to changes and the oxygen input will take some time to distribute laterally so adjustments should be made accordingly. Initial operations should include frequent profiling to provide feedback for oxygenation system operations.

4.4 Suppliers to the SCVWD Oxygenation Systems

Overall system construction:

Manito Construction, Inc.
1043 Serpentine Lane, Suite I
Pleasanton, CA 94566
(925) 600-0220

Diffuser installation, operation and maintenance:

Mobley Engineering, Inc.
PO Box 600
Norris, TN 37828
(865) 494-0600

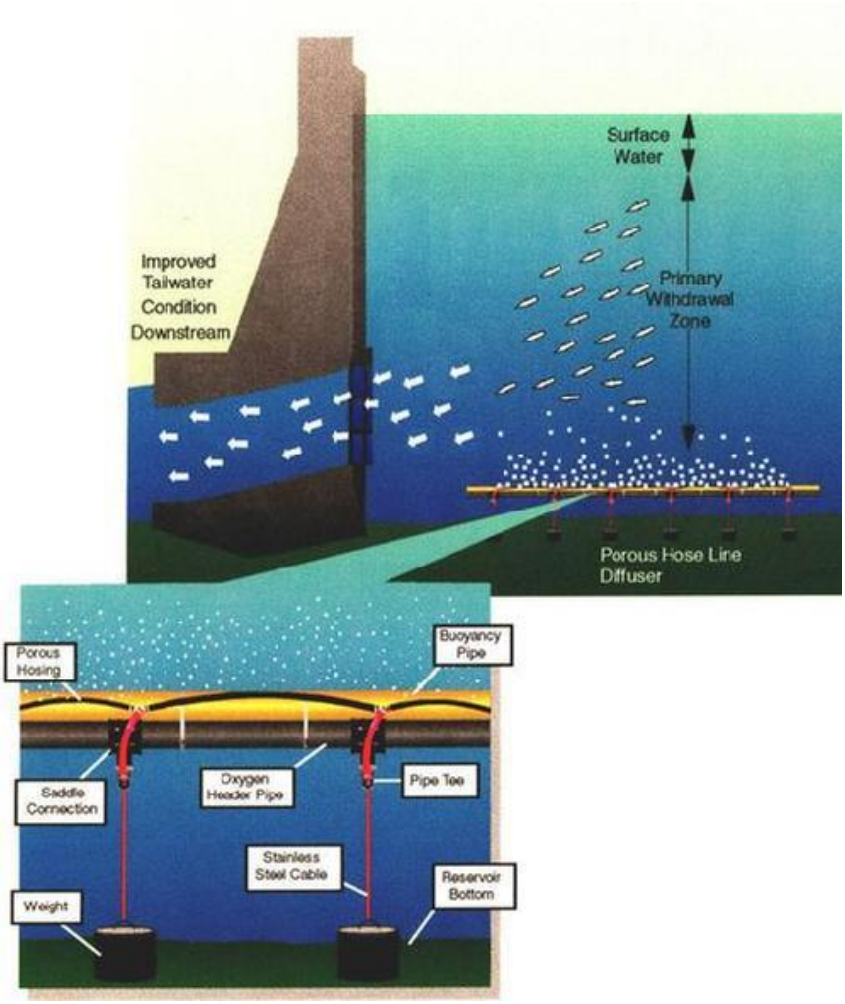


Figure 1: Typical Bubble Line Diffuser System, From www.mobleyengineering.com

APPENDIX D

Fish Sampling

Fish Sampling

Memo Report by Jason Nishijima, Associate Water Resources Specialist,

Septebmer 29, 2015

Introduction

As part of the Surface Water Improvement Project, fish sampling of the reservoirs was undertaken to document the fish assemblages in reservoirs which will be oxygenated as part of the remediation effort to manage legacy mercury pollution. Data is to be collected seasonally over multiple years to document fish assemblages present and relative changes in fish populations over time as treatment regimes are implemented. At the same time, specimens are taken to assess the body burden of mercury levels of target fish species. 2014 represents the third year of fish assemblage data and specimens collected on Calero Reservoir. Conditions at Guadalupe, Almaden, and Stevens Creek Reservoirs were not conducive to sampling in 2014 since the boat could not be safely launched due to low water levels . The effort reported herein is a continuation of this sampling effort including fish assemblage and relative occurrence data collected in Calero Reservoir in the summer and fall of 2014. Comparisons prior year's data are included. Data on body burden analyses will be reported elsewhere.

Methods

In Calero Reservoir in 2014 fish were captured using a Smith-Root Model H electrofishing boat. Settings were 120V DC, in the 360-500 range. Four fetches (stations) were sampled at Calero Reservoir for each effort. Sampling was initiated at night shortly after dusk. Stations were located along the shoreline following the lake margin with sampling proceeding in a clockwise direction. Station distances were defined by the amount of shoreline sampled in 15 minute spans with positioning recorded on a Lowrance GPS. At the end of each sampling station, the boat was stopped and anchored away from the shoreline. Fish were then identified to species, measured and counted. Forklength was taken for the first 25 of each species measured at a station. Generally the larger specimens were counted first; as a result the length frequency graphs may generally be skewed toward the larger specimens.

Results

During 2014 Calero Reservoir was sampled by electrofishing boat.

Sampling was done in Calero Reservoir on April 21, August 7, and November 4 of 2014. The species captured in 2014 were the same as those encountered in 2012 and 2013 (Table 1). Of the 13 fish species captured only two are native to Santa Clara County, tuleperch and Sacramento sucker. There is variation in encounter rate for the various fish species captured between seasons and across years.

Table 1. Electrofishing Results from Calero Reservoir, 2012-2014.

Sampling Date	Largemouth Bass	Bluegill	Black Crappie	Pumpkinseed	Common Carp	Tuleperch	Inland Silverside	Prickly Sculpin	Bigscale Logperch	Threadfin Shad	Sacramento Sucker	Golden Shiner	Brown Bullhead
6/28/2012	102	138	10	5	3	25	32	11	14	4	0	2	0
11/7/2012	322	15	40	3	2	4	321	3	13	44	3	10	1
7/31/2013	318	24	80	4	8	179	196	5	65	128	0	5	1
12/3/2013	401	111	216	1	6	6	684	13	21	27	3	13	1
4/21/2014	74	80	303	0	1	47	174	11	21	60	2	0	0
8/7/2014	259	69	47	7	0	51	79	1	60	33	1	0	0
11/4/2014	580	61	109	6	1	0	28	6	21	9	0	0	0

Discussion

When examining the data across years obvious trends do not emerge. The abundance of the most common species, largemouth bass, bluegill, black crappie, inland silverside, and threadfin shad captured in 2014 were within the range expected, based on data collected in previous years (Table 1). There are wide fluctuations in the capture rate of shoaling species, threadfin shad, inland silverside, and black crappie. Variation in capture rate would be expected in these species that occur in groups; the boat electrofishing method may encounter, or alternatively miss, dense aggregates of a fish species. As the efforts to oxygenate the reservoirs continue over time, future sampling efforts may detect changes in fish assemblages that may be attributable to changes in habitat (increased oxygen in the lower levels).

Reproduction continues to occur for the common fish species within the Calero Reservoir, as evidenced by the occurrence of young of the year sized largemouth bass, bluegill, and black crappie (Figures 1-3). Multiple age classes (based on size) were collected for each. Likewise, similar length distributions have been sampled across years (Figures 4-6).

It was not anticipated that the addition of oxygen to the reservoirs would significantly change the near-shore fish assemblages that are sampled by the boat electrofishing technique. Changes to the species that occur in the deeper levels may have more profound changes resulting from additional oxygenated habitat, but would require a change in methodology to detect. The oxygenation is more likely to change the amount of biologically available mercury to the food web, than to significantly alter the food web itself. Changes in methyl mercury in fish tissue over time are monitored and reported in a related effort.

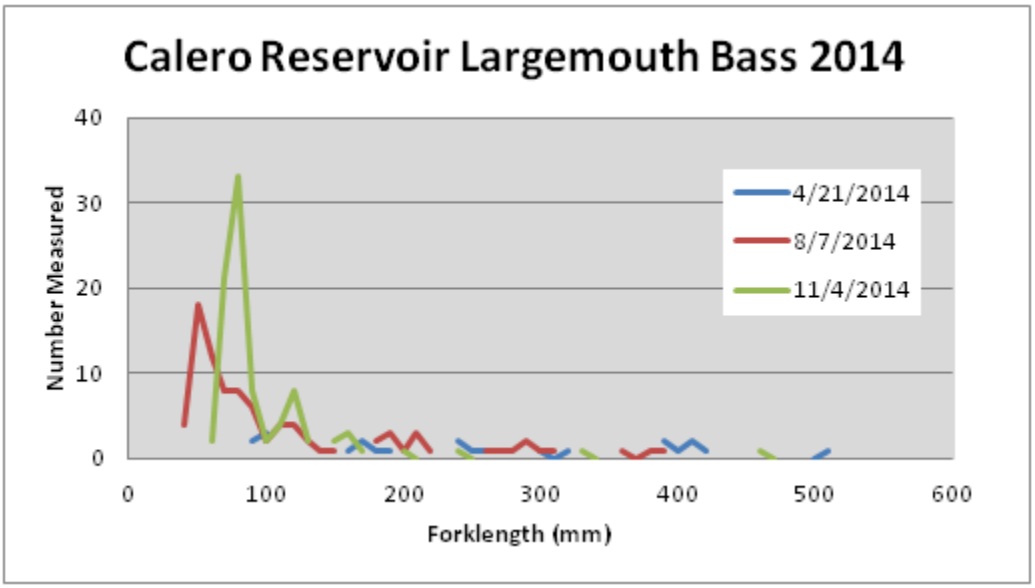


Figure 1. Largemouth bass size distribution, 2014.

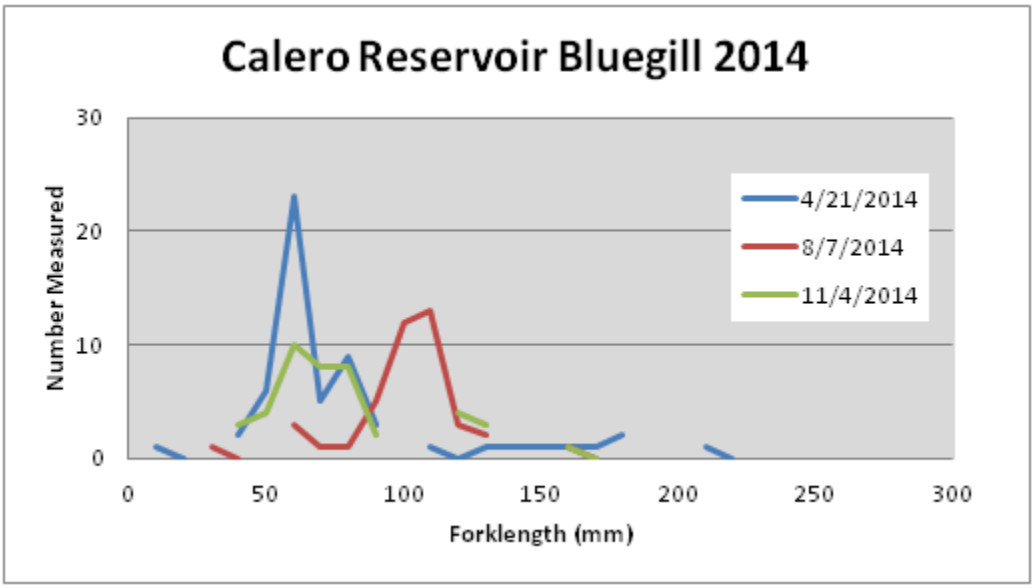


Figure 2. Bluegill size distribution, 2014.

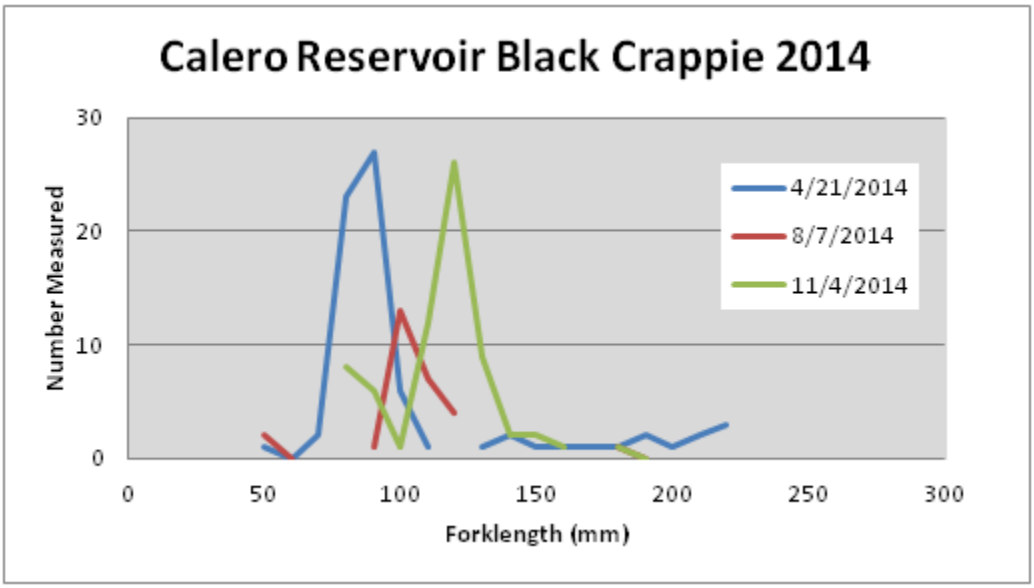


Figure 3. Black crappie size distribution, 2014.

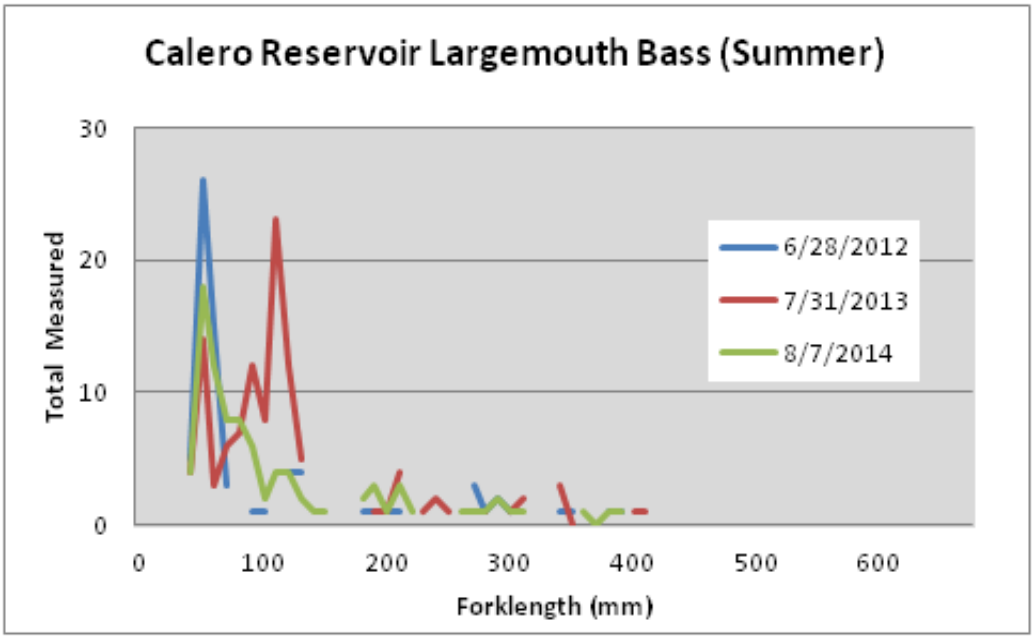


Figure 4. Summer Largemouth Bass size distribution, 2012-2014.

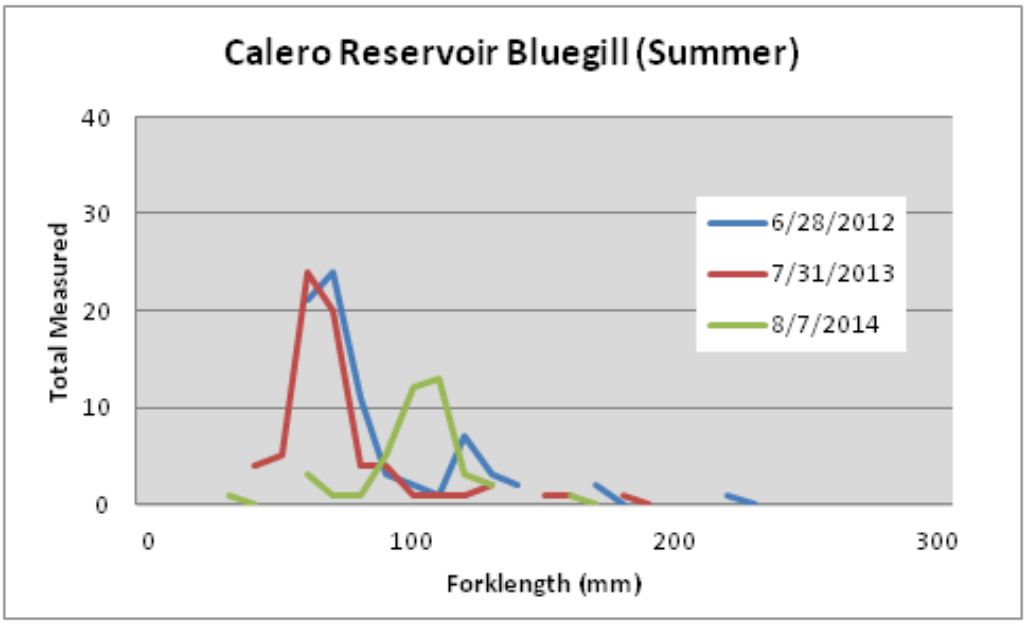


Figure 5. Summer Bluegill size distribution, 2012-2014.

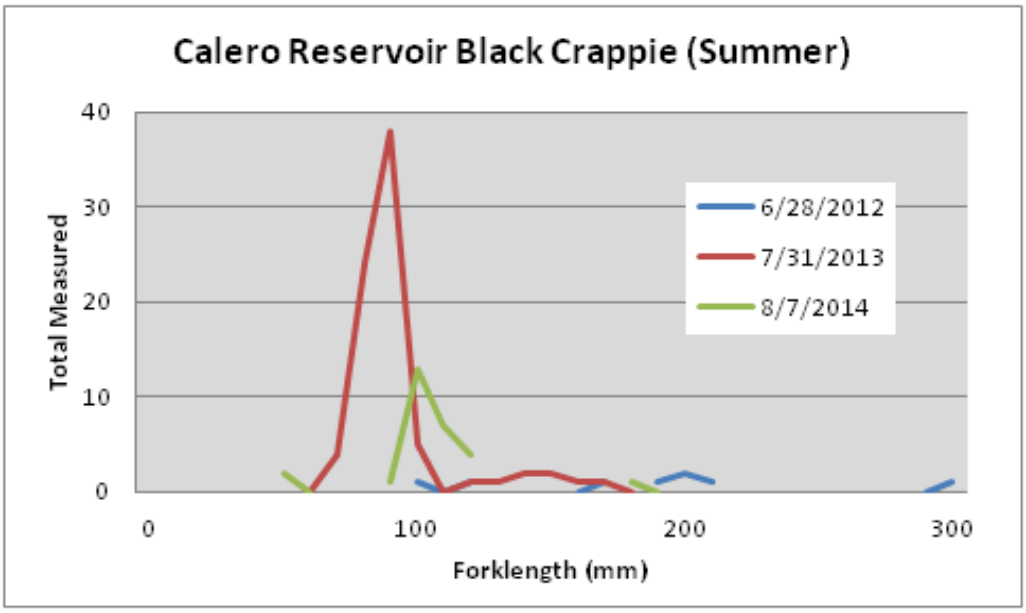


Figure 6. Summer Black Crappie size distribution, 2012-2014.

Guadalupe River Watershed Reservoir Total Maximum Daily Load for Mercury Fisheries Monitoring

Santa Clara Valley Water District

Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118
December 18, 2015

Introduction

The Guadalupe River Watershed supports many beneficial uses, such as drinking water supply, sport fishing, and habitat for wildlife and endangered species. Mercury concentrations in fish tissue that exceed the U.S. EPA human health mercury fish criterion (0.3 mg/kg) have been measured at numerous creeks and reservoirs in the Guadalupe River Watershed. According to the State Water Resources Control Board, elevated mercury concentrations in fish tissue may also pose a threat to wildlife, such as birds, amphibians, and mammals.

The Guadalupe River Watershed Mercury Total Maximum Daily Load (TMDL) is a regulatory driver to require agencies to control the prevalence of mercury in the system. In addition to being the primary regulatory means of achieving water quality goals in the watershed, the Guadalupe River Watershed Mercury TMDL will simultaneously reduce the amount of mercury in the Bay in accordance with the San Francisco Bay Mercury TMDL's proposed requirements.

The Basin Plan Amendment of the Guadalupe River Watershed Total Maximum Daily Load for mercury calls for special studies to provide information and improve the understanding of mercury cycling in the watershed. The special studies may answer two questions:

1. How do the reservoirs and lakes in the Guadalupe River Watershed differ from one another?
2. Is it possible to increase the assimilative capacity for methylmercury in reservoirs and lakes?

The Santa Clara Valley Water District (SCVWD) installed oxygenation systems into reservoirs listed as impaired for mercury (Calero, Guadalupe, and Almaden) which may limit anoxic conditions where the methylation of mercury occurs. It is reasonable to assume that limiting the production of the bio-available form of mercury will reduce mercury accumulation in fish tissues. There is an additional potential to affect the fish assemblages by oxygenating additional levels in the water column. Since, it would be difficult to predict the effects of these actions on fish populations', in 2012 the SCVWD began sampling fish assemblages in reservoirs impacted by presence of mercury. The goal was to begin to document the fish assemblages in reservoirs before and after oxygenation. Data has been collected to document fish presence and relative changes in fish populations over time. The 2015 sampling event represents the fourth year of reservoir fisheries monitoring. Datasets are not continuous for each reservoir over the four year span as sampling constraints and conditions were encountered which did not facilitate sampling. In 2015 Guadalupe, Almaden, and Calero Reservoirs were sampled during the fall sampling period. Sampling did not occur in the Spring months due to staffing change and permitting challenges. Boat based electrofishing is the preferred method of sampling, but due to low reservoir levels at Almaden Reservoir, boat electrofishing was not feasible. Hook and line surveys (angling surveys) were conducted primarily to obtain samples for the body burden analysis, but was not an adequate assessment of assemblage. Boat electrofishing was conducted at Guadalupe and Calero Reservoirs. The effort reported herein is a continuation of this sampling effort including fish assemblage and relative occurrence data collected in Guadalupe, Almaden, and Calero Reservoir in fall of 2015. Comparisons of prior year's data are included. Data on mercury body burden analyses will be reported in the Santa Clara Valley Water Districts, December 2015, Progress Report Methyl Mercury Production and Control in Lakes and Reservoirs Contaminated by Historic Mining Activities in the Guadalupe River Watershed.

Methods

In 2015, fish were captured using a Smith-Root Model H electrofishing boat in Calero and Guadalupe Reservoirs. Settings were 120V DC, in the 360-500 range. Five fetches (stations) were sampled at Guadalupe Reservoir and three were sampled at Calero Reservoir. Equipment issues limited the sampling in Calero Reservoir to three stations, but an adequate sample size was obtained. Sampling was initiated at night, shortly after dusk. Stations were located along the shoreline following the lake margin with sampling occurring in water 15 ft. to 2 ft. in depth. Two forward netters and two flank netters were positioned on the boat with a captain driving the boat and controlling shocking duration. Station distances were defined by the amount of shoreline sampled in 15 minute spans with positioning recorded on a GPS. At the end of each sampling station, the boat was stopped and anchored away from the shoreline. Fish were then identified to species, measured and counted. Forklength was taken for the first 25 of each species measured at a station. Fish selected for the body burden analysis were sacrificed and preserved for shipment to the lab.

In Almaden Reservoir hook and line samples were conducted from a 14 ft. aluminum Jon Boat. Two methods of fishing were deployed in an attempt to catch different species and different size classes. The first method used was open water trolling along two transects by two anglers. Each transect was trolled for half hour increments. The other method used stationary angling along the shore margins at four stations. The boat was anchored and two anglers fished from the boat using various techniques for half hour increments. Lures and hooks were scaled to catch fish of various sizes and each lure size and technique was used for an equal amount of time. All fish collected during both methods were held in a livewell and forklength was taken for the first 25 of each species measured at a station. If fish showed signs of stress induced from the capture method they were rehabilitated and released without measurement to reduce mortality. Fish selected for the body burden analysis were sacrificed and preserved for shipment to the lab. The primary goal of this sampling effort was to collect fish for the body burden analysis, so more emphasis was placed on collecting those fish than providing an estimate of fish assemblage.

Sampling bias is associated with all sampling methods especially in an uncontrolled field environment. Boat electrofishing and hook and line survey possess various bias associated with the limitation of the sampling equipment. Boat electrofishing only samples the water column between the surface and approximately 15 ft. deep, depending on the conductivity and settings. This limits the area that can be sampled, thus only targeting fish near-shore or within the top of the water column. Electrofishing also has bias in terms of specific species catch-ability, fish size, and netting efficiency. Certain species (especially bottom dwelling fish (*Ictalurus*, *Cottus*, and *Catostomus* species)) are not as easily captured due to morphological and physiological characteristics. Often larger fish are more readily collected with electrofishing since they are more susceptible to electric shock and they are highly visible when stunned (Mantyniemi et al. 2005; Marshal 2009). Netting efficiency also results in bias as human error is a variable that is difficult to control. Hook and line sampling is biased by location of sampling, limitations of the equipment and ability of the sampler. The sample size of fish measured (25 of each species at each station) is sized to reduce bias in length frequency, but no randomization of which fish measured occurred. Length frequency may not be a true representation of fish size within the station and size data could be skewed to larger and fish that were the easiest to handle.

Results

Guadalupe Reservoir

Sampling occurred on Guadalupe Reservoir on October 6, 2015. Reservoir water elevation at the time of the survey was 578.73 ft., which is approximately 36% capacity. The 2015 dataset represent low water conditions, and elevation changes occurred throughout the water year. A total of 4,803 linear ft. of reservoir margin was sampled, through the 5 sampling stations (figure 1). Three species were collected: largemouth bass (*Micropterus salmoides*), bluegill (*Lepomis macrochiru*), and black crappie (*Pomoxis nigromaculatus*). All of these species are non-native. Total capture data is reported in table 1, and in order to standardize the results, data were converted to a catch per unit effort (CPUE) (fish per minute) (Figure 2).

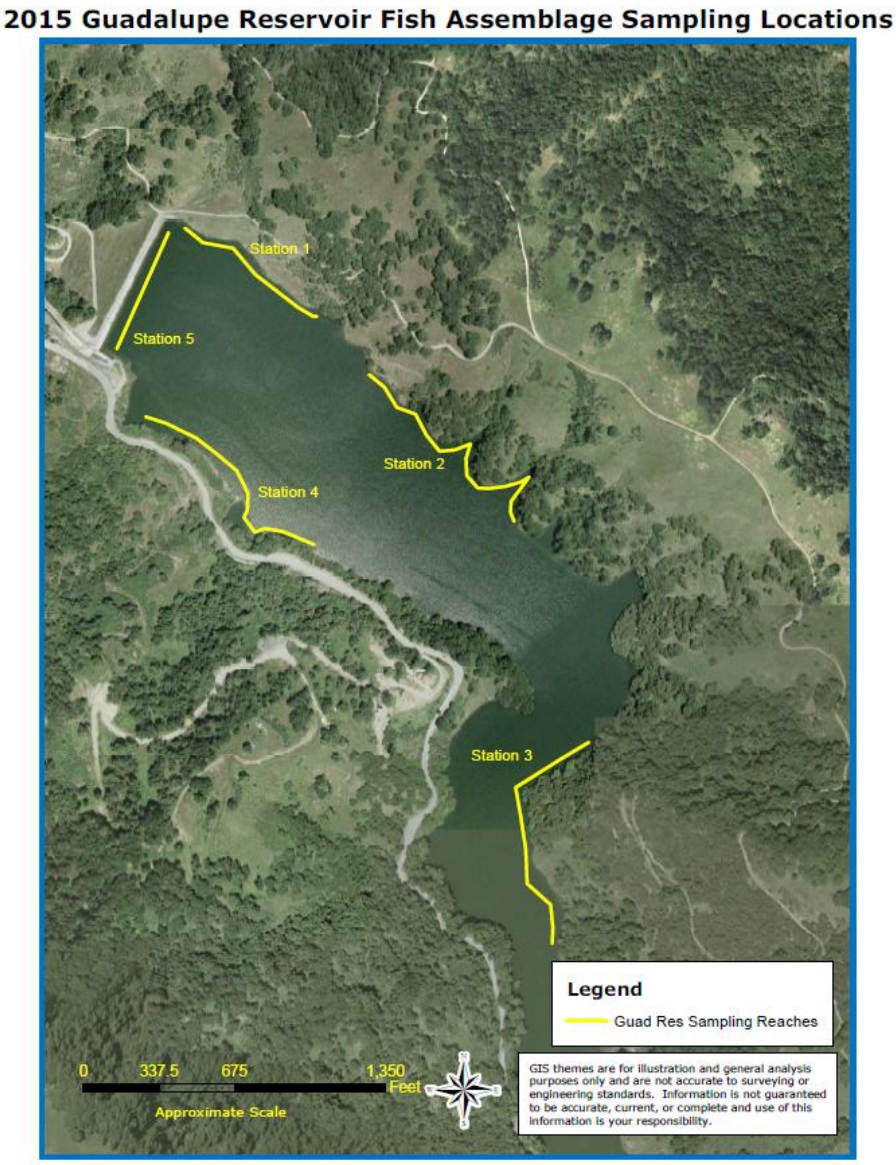


Figure 1: Guadalupe Reservoir sampling locations.

Table 1. Electrofishing Captures in Guadalupe Reservoir 10/6/2015

Total Number of Fish Captured				
Station	**Duration (min)**	**Largemouth Bass**	**Bluegill**	**Black Crappie**
1	15	12	21	0
2	15	23	77	3
3	15	68	209	1
4	15	29	47	5
5	15	13	32	11
Total Fish		145	386	20
# Fish/min		1.93	5.15	0.27

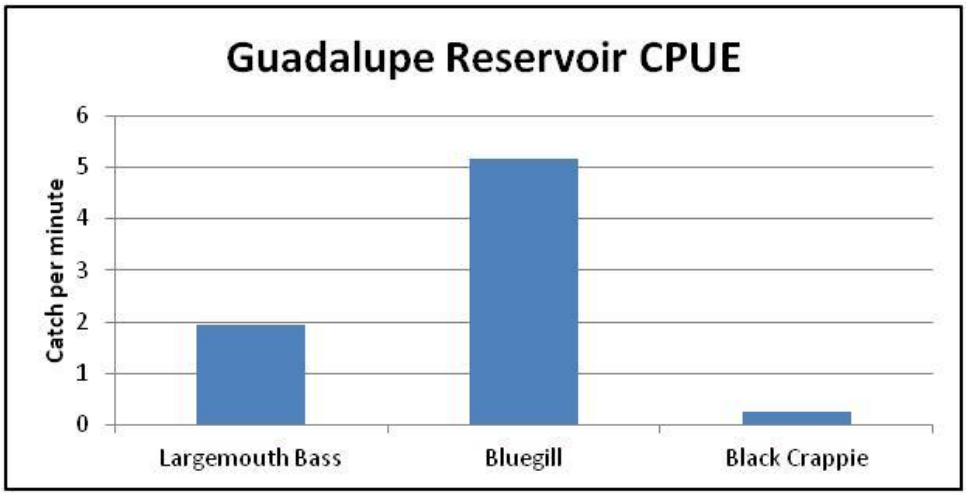


Figure 2: Guadalupe Reservoir catch per unit effort (fish per minute) standardized results.

Bluegill were the dominate species encountered during the sampling effort followed by largemouth bass. Black crappies were the least abundant species captured. The size distribution of collected fish can be seen in Figure 3. The size distribution shows different age classes of largemouth bass and bluegill, but limited size distribution was present with black crappie. All black crappie were greater than 150 mm, therefore would not fall into the young of the year designation.

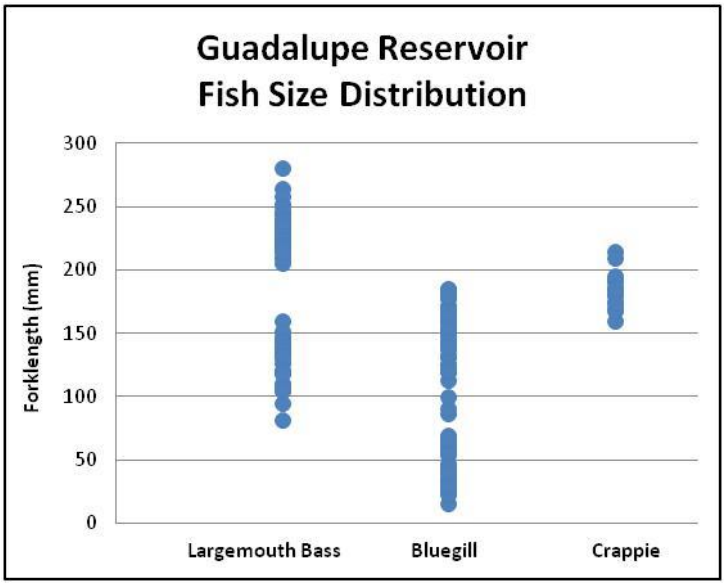


Figure 3: Guadalupe Reservoir fish size distribution.

The size distribution indicates that successful spawning of largemouth bass and bluegill occurred. The size distribution seen with black crappie indicates that either successful spawning did not occur, juvenile fish were using portions of the reservoir not sampled, or high level of predation of juvenile black crappie is occurring. According to Moyle (2002), black crappie 40 mm to 80 mm are first year, 120 mm to 210 mm are second year and fish 150 mm to 280 mm are at the end of their third year. All black crappie collected were greater than 150 mm. This size distribution could indicate that spawning of black crappie has not been successful for the last two and potentially for the last three years. Predation of young of the year black crappie could be occurring at a higher rate due to the lack of other forage available. The largemouth bass population appears to be stunted, slow growing, or adult older/larger fish were not encountered. Largemouth bass growth rates are highly variable due to temperature, competition, genetic background, forage availability, and liminological conditions (Moyle 2002). The data collected indicates two distinct size classes of fish. Largemouth bass fell between 82 mm to 160 mm and then separated to a larger size class between 205 mm and 280 mm. According to Moyle (2002) largemouth bass in their first year can occur at 50 mm to 200 mm and 70 mm to 320 mm in their second, 150 mm to 370 mm in their third and 200 mm to 410 mm in their fourth year. Moyle (2002) also states that in most California reservoir largemouth bass 350-450 mm are 4 years or older. In Guadalupe Reservoir no fish were collected over 280 mm. Based on the size data, fish are present within the young of the year class and could extend into the fourth year but have a slower growth rate. It could also indicate that the reservoir has a low survivorship of bass after year two. With the lack of forage fish present in the reservoir, older fish would be on the smaller size of the range. The break between sizes classes could indicate that growth spurt occurs when fish are large enough (>150 mm) to shift to a different food source, but are still limited by food availability. This lack of size variation present in largemouth bass makes it difficult to determine age based on size and therefore difficult to determine how the

oxygenation system is impacting the accumulation of mercury in an age class. Bluegill size data displayed three distinct size classes, with the middle size class showing limited distinction. The distinct size distribution ranged from 16 mm to 62 mm, 67 mm to 100 mm, and from 113 to 185. Moyle (2002) indicates that bluegill at the end of their first year will be between 40 mm and 60 mm and tend to grow 20 mm to 50 mm each additional year. This size breakdown is consistent with size distinctions observed in Guadalupe Reservoir, indicating that bluegill are present that are potentially within their fourth or fifth year as well as young of the year. Based on the data, 32%, of the captured bluegill fall within a range that indicates they are over 4 years of age, and may have been present prior to the oxygenation system. Scale analysis has been attempted to further understand age distribution within the reservoir, but due to the mild Santa Clara County climate, results are often inconclusive. The lack of distinct growing seasons limits the development of clearly defined annuli in the scale.

No clear trends are present between catch per unit effort data from the three sampling years. Sampling did not occur in 2014 and sampling in previous years (2012 and 2013) occurred during the summer months (Table 2). The data presented below is standardized but does not represent the same season of sampling, so direct comparisons cannot be made. An evaluation of overall trends in terms of abundance and presence are drawn from the results. In Guadalupe Reservoir, during all sampling events, bluegill made up a majority of the catch followed by largemouth bass and black crappie. In 2015 no common carp (*Cyprinus carpio*) or Sacramento sucker (*Catostomus occidentalis*) were observed. This is the first year no common carp were observed and the second for Sacramento sucker. Bias associated with the sampling method or the seasonal change of the sampling effort could contribute to the lack of detection of these species.

Table 2. Guadalupe Reservoir catch per unit effort (catch per minute) 2012-2015 (2014 no sampling occurred).

Sampling Date	Largemouth Bass	Bluegill	Black Crappie	Common Carp	Sacramento Sucker
7/12/2012	5.33	10.55	1.16	0.19	0.05
7/17/2013	0.69	9.19	0.91	0.11	0.00
No Sampling Occurred in 2014					
10/6/2015	1.93	5.15	0.27	0.00	0.00

Average forklength of largemouth bass, bluegill, and crappie have increased since sampling commenced in 2012 (Figure 4). No data is available for 2014, as no sampling occurred, but for each other year, each species has seen an increase in average size. This increase in size of fish could be contributed to warmer temperatures associated with drought conditions or operations of the reservoir during these conditions or both.

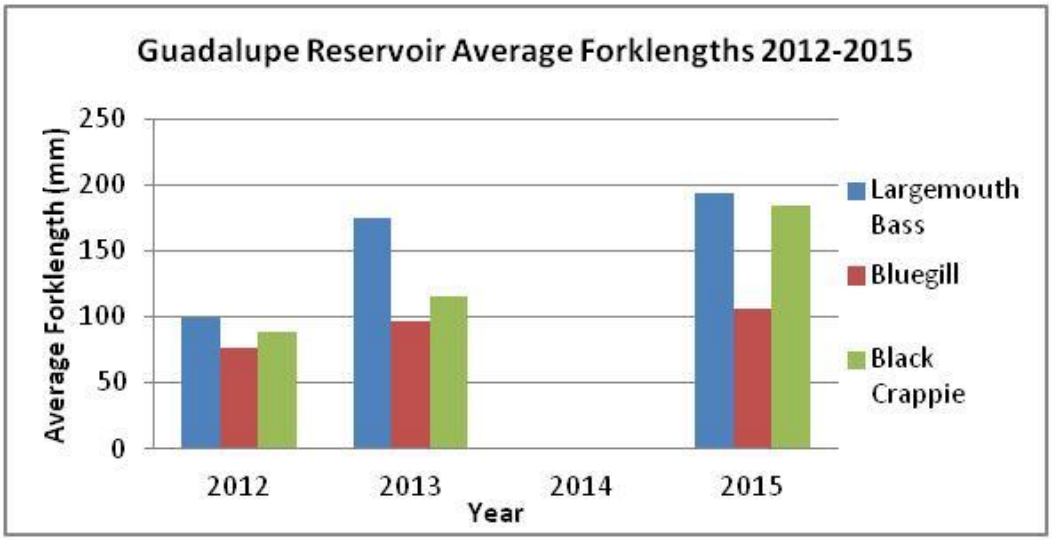


Figure 4: Guadalupe Reservoir average forklength of largemouth bass, bluegill, and black crappie 2012-2015.

Calero Reservoir

Sampling occurred at Calero Reservoir on October 15, 2015. Reservoir elevation at the time of the survey was 463.7 ft., which is approximately 45% capacity. The reservoir elevation remained relatively consistent throughout the water year with no large fluctuations. A total of 5,210 linear ft. of reservoir margin was sampled through the 3 sampling stations (figure 5). Ten species were collected: largemouth bass, bluegill, black crappie, threadfin shad (*Dorosoma petenense)*, inland silverside (*Menidia beryllina*), bigscale logperch (*Percina macrolepida*), golden shiner (*Notemigonus crysoleucas*), pumpkinseed (*Lepomis gibbosus*), tule perch (*Hysterocarpus traskii*) and Sacramento sucker. Common carp were observed, but not collected to avoid crowding in the livewell. All carp observed were estimated at over 300 mm and potentially exceeded 600 mm. Tule perch and Sacramento sucker were the only native species collected. Total capture data is reported in table 3, and in order to standardize the results, data were converted to a catch per unit effort (CPUE) (fish per minute) (Figure 6). Largemouth bass were the dominate species encountered during the sampling effort followed by forage fish species (threadfin shad and inland silverside). Low occurrence of Sacramento sucker can be contributed to sampling method bias (discussed previously), and is likely not an indicator of population level. Native tule perch were encountered at a higher rate than other species in similar niche.

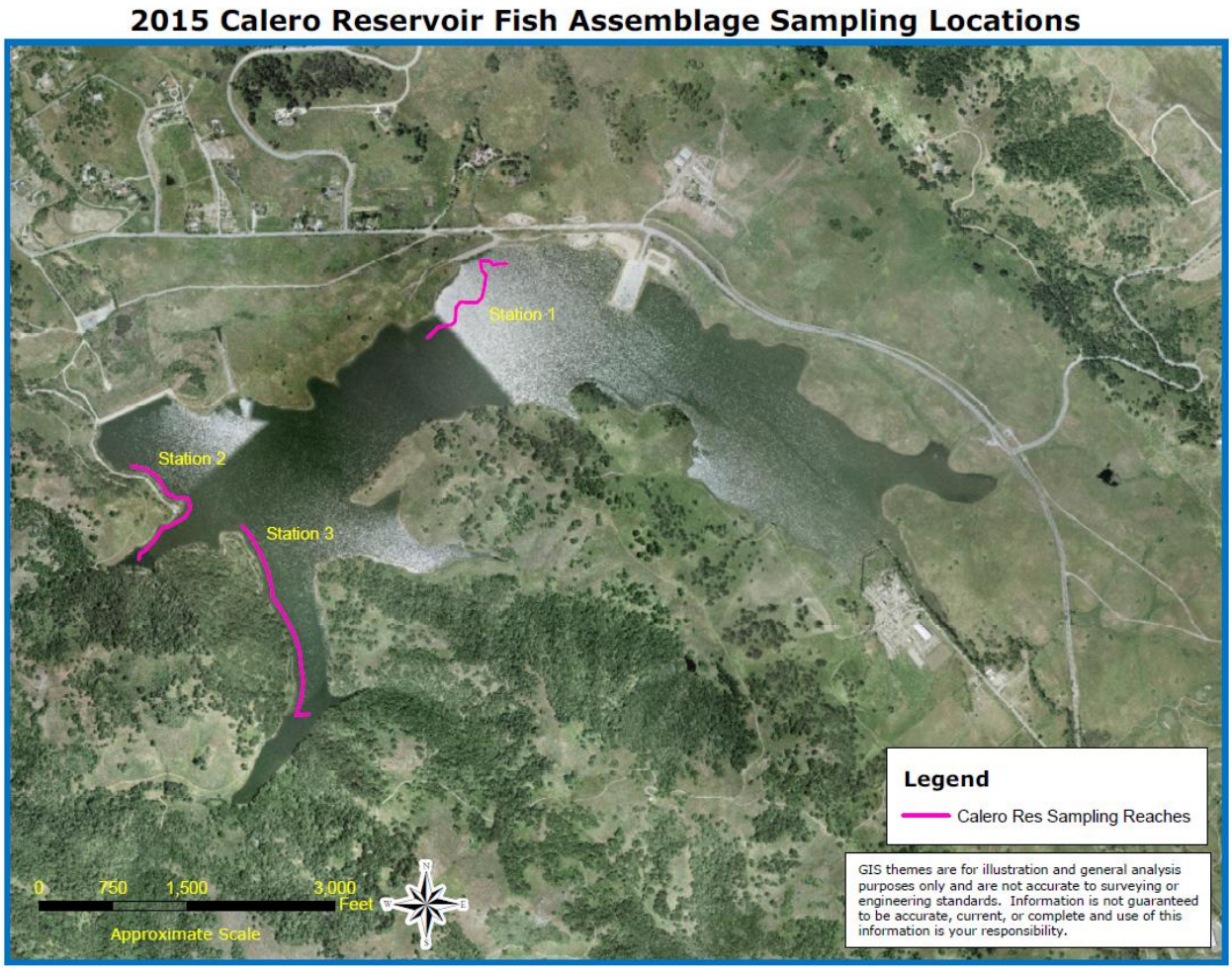


Figure 5: Calero Reservoir sampling locations.

Table 3. Electrofishing captures in Calero Reservoir, October 15, 2015.

Total Number of Fish Captured											
Station	**Duration (min)**	**Bass**	**Bluegill**	**Black Crappie**	**Shad**	**Silverside**	**Logperch**	**Golden Shiner**	**Pumpkinseed**	**Tule Perch**	**Sucker**
1	15	65	11	9	81	32	6	3	4	32	0
2	15	84	12	4	45	61	1	6	8	13	0
3	15	59	2	1	53	25	2	3	0	17	1
Total Fish		208	25	14	179	118	9	12	12	62	1
# Fish/min		4.62	0.56	0.31	3.98	2.62	0.20	0.27	0.27	1.38	0.02

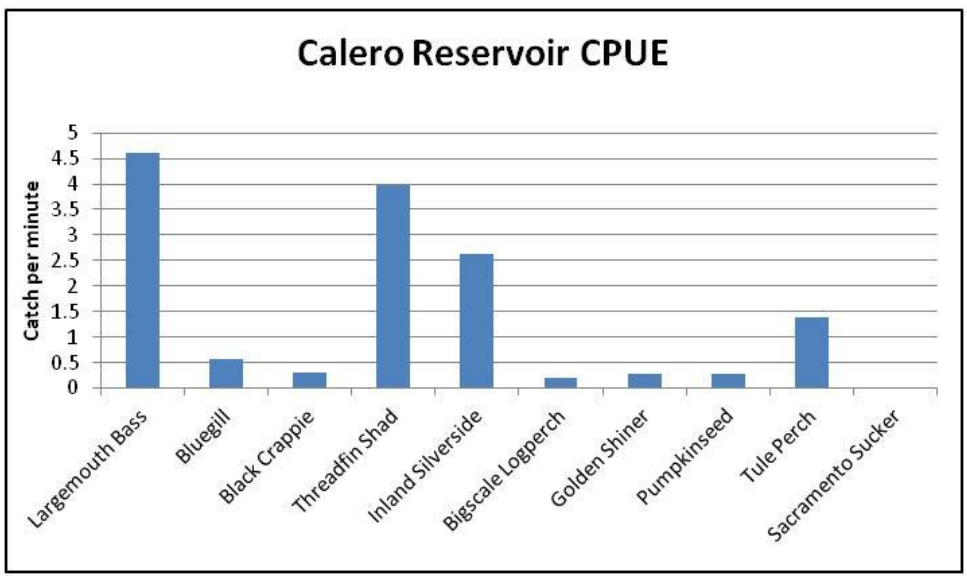


Figure 6: Guadalupe Reservoir catch per unit effort (fish per minute) standardized results.

The size distribution of collected fish can be seen in figure 7. The size distribution shows different age classes of fish, in fish that mature over multiple years. The size distribution of largemouth bass, bluegill, crappie, and tule perch indicate that successful spawning has occurred over multiple years. The size data suggests that tule perch are successfully reproducing in the system. The growth rate of this species is variable by water body (Moyle 2002), but an estimate of reproductive success occurring for three

years is plausible. The data also suggests that conditions favor growth in predatory species, adequate forage is available, and longevity within individuals is common. The growth rate and longevity of recreationally caught species can be a concern in terms of mercury contamination. Largemouth bass, bluegill, and crappie showed a size distribution (based on Moyle 2002) that indicates fish potentially in their fourth year or older are present, and these fish follow a growth pattern commonly seen in California. Largemouth bass greater than 300 mm are likely 3 to 4 years old. Fish under 300 mm were likely stock produced since the implementation of the oxygenation system. Bluegill and black crappie greater than 150 mm have the potential of being in or past their third year of growth, and could have been in the system prior to implementation of the oxygenation system.

Based on average forklength data available for largemouth bass, bluegill, and black crappie the overall size of these fish have increased since the sampling commenced in 2012 (Figure 8). Lengths of these fish in 2012 and 2013 are relatively similar (with the exception of black crappie in 2012), and in 2014 and 2015, an increase in size compared to the two previous years can be seen. This increase in size of fish could be contributed to a shift in population dynamics, warmer temperatures associated with drought conditions or operations of the reservoir during these conditions or any combination of these factors.

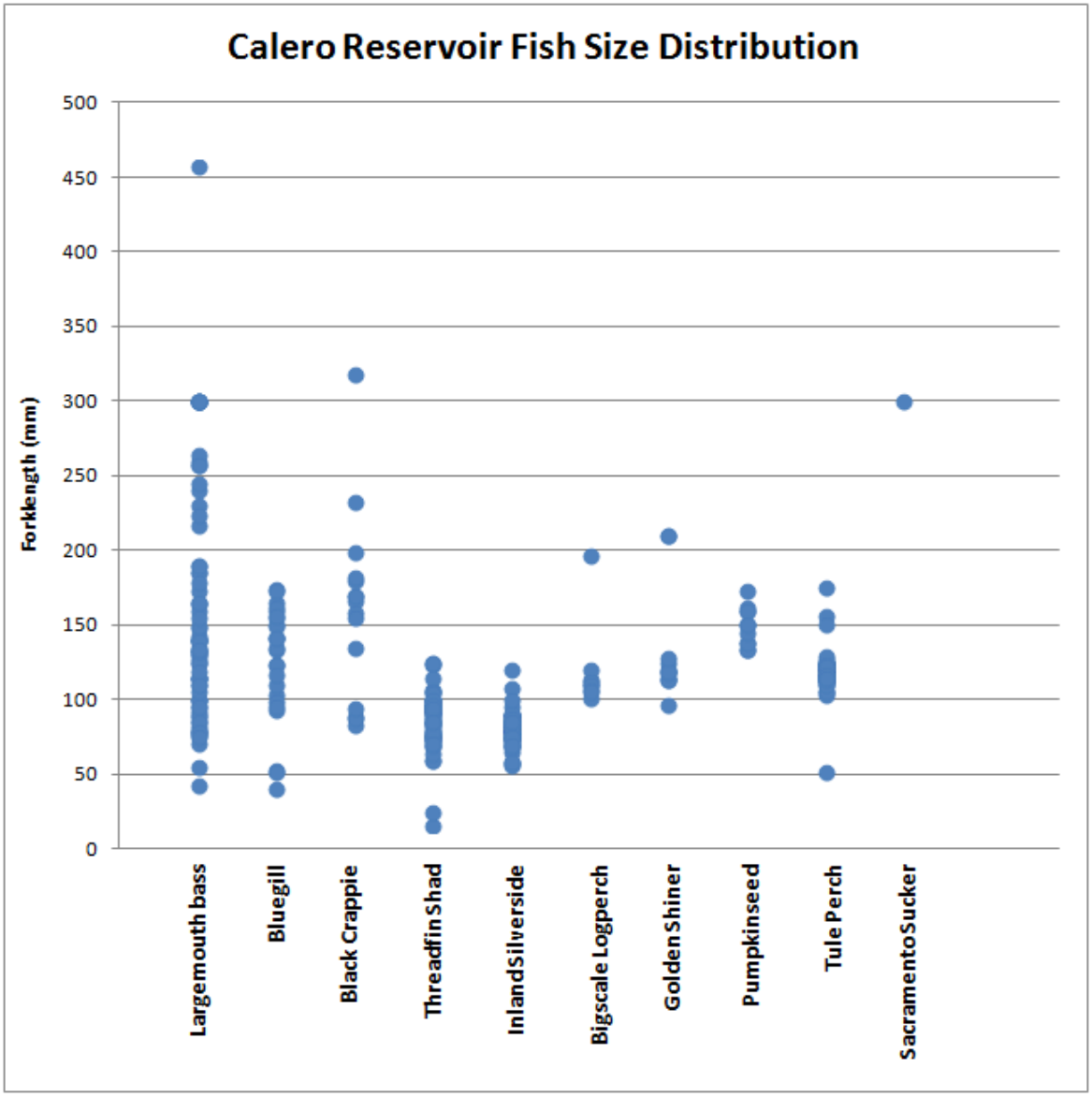


Figure 7: Calero Reservoir fish size distribution.

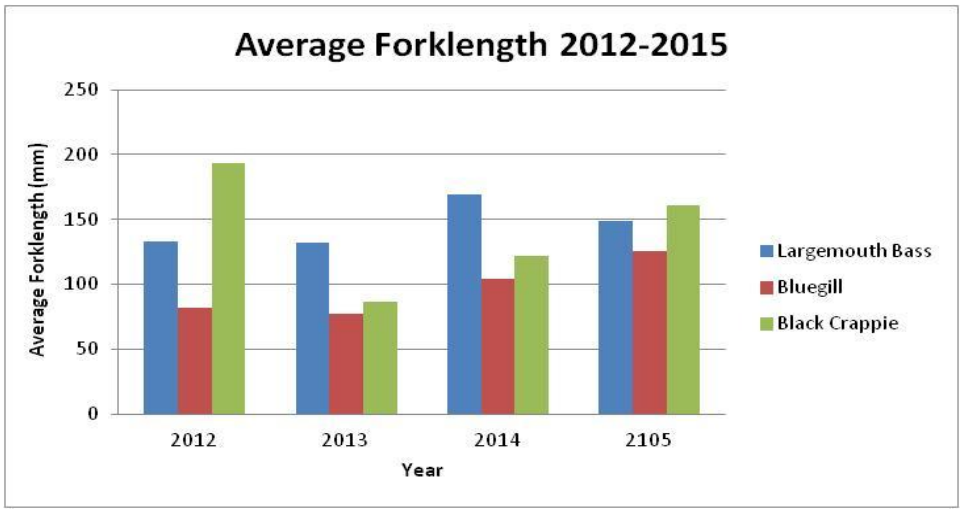


Figure 8: Largemouth bass, bluegill, and black crappie average fork length 2012-2015.

The catch per unit effort data from 2015 compared to previous years sampling efforts shows no clear trends (Table 2). Calero Reservoir has the most comprehensive data set during the 4 year sampling period. The data presented below is standardized (catch per minute) and displays all seasons of data collection. An evaluation of overall trends in terms of abundance and presence can be drawn between results in different seasons. As in most sampling events largemouth bass were the most abundant species collected. This was the second year that no brown bullhead (*Ameiurus nebulosus*) were observed and the first year no prickly sculpin (*Cottus asper*) were observed. In years prior, abundances of both these species were low, which could be contributed to bias associated with the sampling method or a low population density or both. The 2015 sampling event indicated one of the lowest CPUE of bluegill and black crappie, and largemouth bass collection resulted in an average CPUE. Tule perch had the second highest CPUE on record indicating they are still present, after the November 2014 sampling resulted in no Tule Perch collected.

Table 4. Calero Reservoir catch per unit effort (catch per minute) 2012-2015 ("P" indicates presence but not quantified).

Sampling Date	Largemouth Bass	Bluegill	Black Crappie	Pumpkinseed	Common Carp	Tule Perch	Inland Silverside	Prickly Sculpin	Bigscale Logperch	Threadfin Shad	Sacramento Sucker	Golden Shiner	Brown Bullhead
6/28/2012	1.70	2.30	0.17	0.08	0.05	0.42	0.53	0.18	0.23	0.42	0.00	0.03	0.00
11/7/2012	5.37	0.25	0.67	0.05	0.03	0.07	5.35	0.05	0.22	0.73	0.05	0.17	0.02
7/31/2013	5.30	0.40	1.33	0.07	0.13	2.98	3.27	0.08	1.08	2.13	0.00	0.08	0.02
12/3/2013	6.67	1.85	3.60	0.02	0.10	0.10	11.45	0.07	0.35	0.45	0.05	0.22	0.02
4/21/2014	1.23	1.33	5.05	0.00	0.02	0.78	2.90	0.18	0.35	1.00	0.03	0.00	0.00
8/7/2014	4.32	1.15	0.78	0.12	0.00	0.85	1.32	0.02	1.00	0.55	0.02	0.00	0.00
11/4/2014	9.67	1.02	1.82	0.10	0.02	0.00	0.47	0.10	0.35	0.15	0.00	0.00	0.00
10/15/2015	4.62	0.56	0.31	0.27	P	1.38	2.62	0.00	0.20	3.98	0.02	0.27	0.00

When CPUE data of predator (largemouth bass) and prey species (inland silverside and threadfin shad) is evaluated the populations oscillation associated with this relationship can be seen (figure 9). In years with a higher CPUE of prey species an increase of predator species is observed. This oscillation is muted as largemouth bass are the apex predator in this reservoir and can shift their feeding habitats to other sources including species not classified as prey or forage fish. A longer duration of study will better display these results but, a basic trend is seen. This indicates lower trophic level fish are potentially contributing to the population fluctuations and lowering mercury accumulation of these species could greatly reduce mercury contamination in predatory fish.

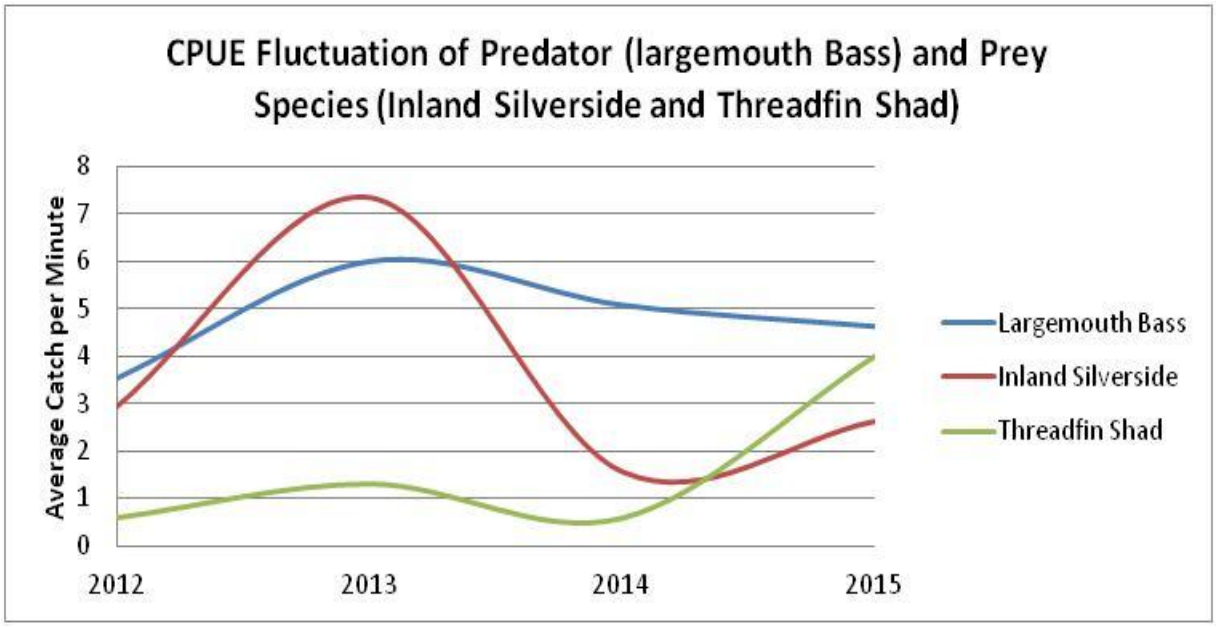


Figure 9: Average catch per unit effort fluctuation of predator and prey species within Calero Reservoir 2012-2015.

Almaden Reservoir

Sampling occurred on Almaden Reservoir on October 15, 2015. Reservoir surface elevation at the time of sampling was 589.65 ft., which is approximately 45% capacity. The 2015 dataset represent low water conditions, and elevation changes occurred throughout the water year. At this low water elevation it was not possible to launch the electrofishing boat. Sampling was conducted using hook and line sampling (angling) methods. A total of 4 sampling stations using stationary angling and 2 trolling transects were sampled (figure 10). All sampling methods yielded fish. The primary focus of this sampling was to collect fish for the body burden analysis. Angling methods were not designed to capture fish within all feeding guilds in the reservoir. The sampling method targeted predatory fish. Two species were collected: largemouth bass and bluegill. Both of these species are non-native. Total catch can be seen in Table 5. Standardizing the results graphically is not necessary as this sampling method cannot be compared to previous the year's effort that used boat electrofishing.

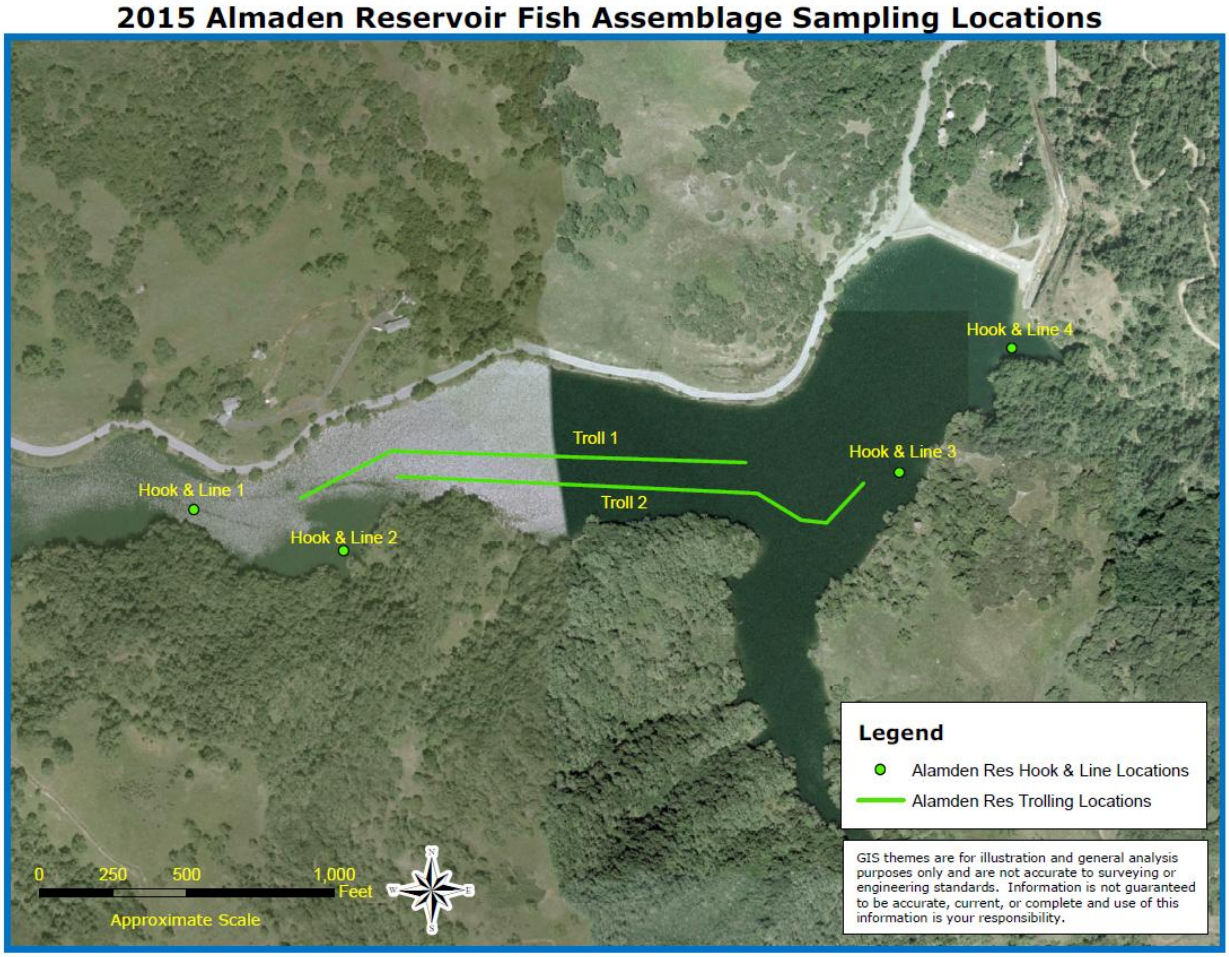


Figure 10: Almaden Reservoir sampling locations.

Table 5. Angling survey captures in Almaden Reservoir, October 15, 2015.

Station	Duration (min)	Largemouth Bass	Bluegill
Hook/Line 1	30	3	0
Hook/Line 2	30	14	1
Hook/Line 3	30	8	0
Hook/line 4	30	2	0
Troll 1	30	4	0
Troll 2	30	7	0
Total		38	1
# Fish/per min		0.21	0.005

The lack of capture of species seen in previous years (black crappie primarily) does not indicate any change in the population or species richness within the reservoir. The hook and line survey conducted was biased, and as mentioned previously, was specifically designed to capture fish for the body burden analysis. The size distribution of collected fish can be seen in figure 11. The size distribution shows different age classes of largemouth bass, but the small sample size (n=25) limits specific distinction of size and age. The size distribution of largemouth bass indicates that successful spawning occurred in the reservoir, and size distribution follows similar trends of what was observed in Guadalupe Reservoir. Fish were captured that were young of the year and could extend into their fourth year with slow growth rates. As in Guadalupe Reservoir, it could also indicate that the reservoir has a low survivorship of bass after year two, or that larger adult fish were not encountered during the survey. The lack of size distribution of bluegill can be contributed to the sample size (n=1). When smaller fish such as bluegill were targeted, small, largemouth bass were captured. Only a large bluegill was captured. This can indicate a higher abundance of largemouth bass, a more aggressive tendency of that species, or bluegill and crappie were not present in the area of the water column sampled and any combination of these factors. The bluegill that was captured was likely in its fourth or fifth year based on size.

Figure 11: Almaden Reservoir fish size distribution.

Though no comparison of previous year's data can be conducted due to the variation in sampling methods, the 2012 total catch data is included in Table 6 for reference. The 2012 data indicates a much higher capture of largemouth bass than any other species and this is again reflected in 2015 regardless of sampling methods.

Table 6. Almaden Reservoir total catch data 2012-2015 (no sampling occurred in 2013 or 2014).

Sampling Date	Largemouth Bass	Bluegill	Black Crappie	Threadfin Shad
7/19/2012	117	12	70	1
No Sampling Occurred in 2013				
No Sampling Occurred in 2014				
10/15/2015	38	1	0	0

Discussion

It was not anticipated that the addition of oxygen to the reservoirs would significantly change the near-shore fish assemblages that are sampled by the boat electrofishing technique. Changes to the species that occur in the deeper levels may result from additional oxygenated habitat, but would require a change in sample collection methodology to detect. The oxygenation is more likely to change the

amount of biologically available mercury to the food web, than to significantly alter the food web itself. Changes in methyl mercury in fish tissue over time are monitored and reported in a related effort.

The 2015 sampling results indicate that species assemblage is staying consistent over the course of the 4 year sampling period. In most cases the same species are reoccurring at each reservoir, but the abundance is fluctuating. These fluctuations can be contributed to normal population dynamics as well as bias associated with the sampling method. Calero Reservoir appears to be supporting reproduction of all species and longevity of predatory fish is common. The presence of tule perch in the system and the various size classes indicates the potential stronghold of a native fish species within a system that is normally dominated by non-native species. Guadalupe Reservoir is supporting reproduction for largemouth bass and bluegill, but it is uncertain if black crappie spawning has been successful for the last three years. There is a potential that largemouth bass in Guadalupe Reservoir are stunted or experiencing slower in growth, but the average size of fish is increasing each year. This could be contributed to lack of forage fish observed. Trends and comparisons between sampling years on fish captured on Almaden Reservoir cannot be made since different sampling methods were used. The data that was collected indicates that spawning of largemouth bass is occurring and this species is abundant in Almaden reservoir.

The data collected through this monitoring will provide insight on population dynamics of near shore fish within the reservoirs and can contribute to a better understanding of the relic mercury contamination and how the remediation efforts can be altered to gain the greatest benefit. As the data set expands, more insight will develop and educated management decisions can be made.

Recommendations for Guadalupe and Almaden Reservoir

Based on the size analysis conducted on the 2015 data, it is recommended that adjustments be made to the mercury body burden analysis sample collection protocol. Currently, largemouth bass, bluegill, and black crappie are collected within the size range of 50 mm to 150 mm and 150 mm to 300 mm for all species. This size range was to account for young of the year fish and fish that are a year or older. Collection of fish in the 150 mm to 300 mm size range at Guadalupe and Almaden Reservoirs could potentially be resulting in a high sample size of fish that have been in the system longer than the oxygenation system. To better understand the impacts of the oxygenation system fish could be collected in the size ranges 50 mm to 100 mm for young of the year and 100 mm to 150 mm for fish greater than 1 year, and then have a third age class of sentinel fish which are greater than 200 mm for largemouth bass and greater than 150 mm for black crappie and bluegill. This would place more constraints on the sampling effort but could provide a better understanding of changes in mercury contamination in age classes. The size distribution could be better understood by completing at least two sampling events in Guadalupe and Almaden Reservoir in the same year as proposed in the

monitoring plan. This could be achieved by sampling earlier in the summer, before reservoir drawdowns occur. Growth of young of the year could be tracked, and shifts in size distribution could be seen in the growing season. Another potential option for understanding age compared to size would be tagging young of the year fish and assessing growth upon recapture. This type of data collection would be accurate, but would require multiple years to get results.

Recommendations for Calero Reservoir

The current measurement protocol is sufficient in Calero Reservoir for largemouth bass, as growth appears to occur at a normal rate and more size distribution is present. However, a third size range could be added for largemouth bass to capture sentinel fish that includes fish 300 mm and larger. Black crappie and bluegill size ranges could be reduced to the 50 mm to 100 mm for young of the year, 100 mm to 150 mm for year one or older, and a third category of greater than 150 mm could be added for sentinel fish. This reduction in the size categories could make collecting samples more difficult, but could provide more accurate results in terms of the influence of the oxygenation system.

Work Cited

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