Attachment 1
Water Quality Technical Memorandum Attachment

2010 and 2011 Water Quality Monitoring Results

Upper San Joaquin River Basin Storage Investigation, California

Prepared for:

U.S. Department of the Interior, Bureau of Reclamation
2800 Cottage Way
Sacramento, CA 95825
Contact: Erika Kegel, P.E.

Prepared by:

MWH
3321 Power Inn Road, Suite 300
Sacramento, CA 95826
Contact: Jill Chomycia, P.H.

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Acronyms and Abbreviations

µg/L	micrograms per liter
ºC	degrees Celsius
CaCO3	calcium carbonate
CALFED	CALFED Bay-Delta Program
CDEC	California Data Exchange Center
CNRFC	California Nevada River Forecast Center
Cfs	cubic feet per second
CIMIS	California Irrigation Management Information Center
DWR	California Department of Water Resources
EIS/EIR	Environmental Impact Statement/Environmental Impact Report
EPA	Environmental Protection Agency
FERC	Federal Energy Regulatory Commission
ID	Identification
Investigation	Upper San Joaquin River Basin Storage Investigation
mg/L	milligrams per liter
mS/cm	milliSiemens per centimeter
mg/m3	milligrams per cubic meter
mV	millivolts
NADP/NTN	National Atmospheric Deposition Network/National Trends Network
NTU	Nephelometric Turbidity Units
OEHHA	Office of Environmental Health Hazard Assessment
P&G	Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies
PFR	Plan Formulation Report
Reclamation	U.S. Department of the Interior, Bureau of Reclamation
RM	river mile
ROD	Record of Decision
TDS	Total Dissolved Solids
TMDL	Total Daily Maximum Load
USGS	United States Geological Survey
WRC	United States Water Resources Council

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Section 1
Introduction

The Upper San Joaquin River Basin Storage Investigation (Investigation) is a joint feasibility study by the U.S. Department of the Interior, Bureau of Reclamation (Reclamation), and the California Department of Water Resources (DWR). The purpose of the Investigation is to determine the type and extent of Federal, State, and regional interests in a potential project(s) in the upper San Joaquin River watershed to expand water storage capacity; improve water supply reliability and flexibility of the water management system for agricultural, urban, and environmental uses; and enhance San Joaquin River water temperature and flow conditions to support anadromous fish restoration efforts.

The Investigation is one of five surface water storage studies recommended in the CALFED Bay-Delta Program (CALFED) Programmatic Environmental Impact Statement/Environmental Impact Report (EIS/EIR) Record of Decision (ROD) of August 2000 (CALFED, 2000a). Previous studies in support of the CALFED Programmatic EIS/EIR considered more than 50 surface water storage sites throughout California and recommended more detailed study of the five identified in the ROD (CALFED, 2000b).

Progress and results of the Investigation are being documented in a series of interim reports that will culminate in a Feasibility Report and an EIS/EIR, consistent with the Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies (P&G) (WRC, 1983), Reclamation directives and standards, DWR guidance, and applicable environmental laws. In 2008, Reclamation and DWR completed a Plan Formulation Report (PFR) for the Investigation that describes the alternative formulation, evaluation, and comparison activities that led to selection of the dam site at San Joaquin River Mile (RM) 274, Temperance Flat RM 274 Reservoir, for detailed feasibility-level evaluation (Reclamation, 2008).

Construction of a new dam at Temperance Flat RM 274 would modify water quality in the San Joaquin River between Kerckhoff Dam and Millerton Lake. This report presents the

results of water quality monitoring conducted during 2010 and 2011to assess existing water quality conditions that may be affected by Temperance Flat RM 274 Reservoir alternative plans.

Section 2 Water Quality Sampling Methodology and Conditions

The primary study area of the Investigation encompasses the San Joaquin River watershed from Kerckhoff Dam to Friant Dam, including Millerton Lake, and the areas that would be directly affected by construction-related activities, including the footprint of reservoir alternatives and related facilities upstream from Friant Dam. Water quality was sampled at four locations within the Primary Study Area, as shown in Figure 2-1 and as follows:

- **San Joaquin River near Auberry** – Located on the San Joaquin River approximately 1 mile downstream from Kerckhoff Dam and 5 miles north of Auberry, California, at U.S. Geological Survey (USGS) Station 11246700, and California Data Exchange Center (CDEC) Station SJA. The San Joaquin River at this location is incised in a narrow canyon of metamorphosed granite. The San Joaquin River below Kerckhoff Dam was sampled to capture water quality conditions in the upstream portion of the San Joaquin River that would be inundated with construction of a new dam at Temperance Flat RM 274. This sample location is abbreviated in figures and tables throughout this technical memorandum, and in Attachment 1, as *SJR near Auberry*. In Attachment 2, this sample location is mislabeled as *SJR below Kerchoff Powerhouse #2*.

- **San Joaquin River below Kerckhoff Powerhouse No. 2** – Located approximately 1,000 feet downstream from the Kerckhoff Powerhouse No. 2 discharge to the San Joaquin River. The shoreline of the San Joaquin River at this location is gently sloping, with shallow soils and exposed granite bedrock. The San Joaquin River below Kerckhoff Powerhouse No. 2 was sampled to capture the water quality conditions in the San Joaquin River downstream from the Kerckhoff and Kerckhoff No. 2 powerhouses, before the river enters Millerton Lake. This sampling location is abbreviated in figures and tables throughout this technical memorandum, and in

Attachment 1, as *SJR below Kerckhoff Powerhouse No. 2*. In Attachment 2, this sample location is mislabeled as *SJR near Auberry*.

- **Boat-In Campground** – Located approximately within the main channel near the Temperance Flat Boat-In Campground in the Millerton Lake State Recreation Area. The San Joaquin River at the Boat-In Campground was sampled in 2011 only (2010 conditions prevented access to this location) for a subset of water quality conditions. This sampling location is abbreviated in figures and tables throughout this technical memorandum as *Boat-in Campground*.

- **Millerton Lake below Temperance Flat** – Located in the uppermost portion of Millerton Lake, also referred to as the Big-Bend area, approximately 1 mile downstream from Temperance Flat. Millerton Lake at this location has a steep and rocky shoreline, with many granite outcrops. Millerton Lake below Temperance Flat was sampled to capture the contribution of the San Joaquin River to water quality conditions within Millerton Lake. This sampling location is abbreviated in figures and tables throughout this technical memorandum as *Millerton Lake below Temperance Flat*.

- **Millerton Lake at Fine Gold Bay** – Located at the mouth of an arm of Millerton Lake formed by a former canyon originally incised by Fine Gold Creek, approximately 5 miles upstream from Friant Dam. Millerton Lake at Fine Gold Bay was sampled to capture the contribution of Fine Gold Creek, the largest drainage feature entering Millerton Lake aside from the San Joaquin River, to water quality conditions within Millerton Lake. This sampling location is abbreviated in figures and tables throughout this technical memorandum as *Millerton Lake at Fine Gold Bay*.

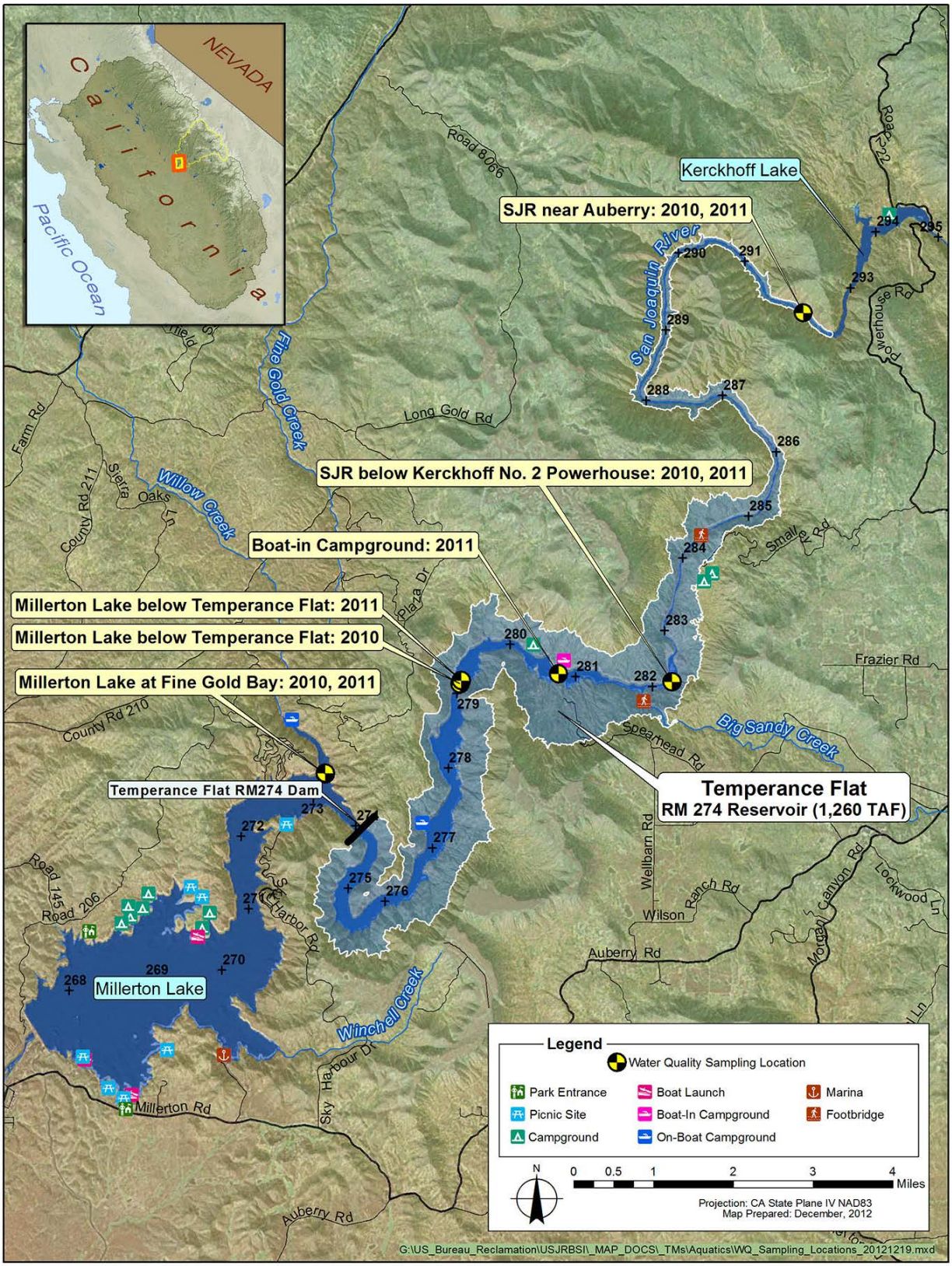


Figure 2-1. Water Quality Sampling Locations on November 3, 2010, and July 26, 2011

Water Quality Sampling Methodology

Each location was sampled at two time periods (with the exception of the Boat-In Campground, as previously noted). The first sampling event took place November 3, 2010, approximately 1 week after the first rain event of the 2011 Water Year (the 2011 Water Year began October 1, 2010, and ended September 30, 2011), and was timed to capture the first flush event. The first flush is a qualitatively defined event that may occur during the initial period of runoff occurring after a dry period, during which the concentration of various water quality constituents is substantially higher than subsequent continued wet periods. The second sampling event took place July 26, 2011, and was timed to capture water quality conditions during low-flow, prolonged dry periods. Data regarding flow, precipitation, and daily air temperatures preceding each sampling event are discussed in the following subsection.

Water quality data were collected at each location during sampling using a Horiba U-22 water quality monitoring system. Data collected *in situ* include pH, dissolved oxygen, conductivity, total dissolved solids (TDS), water temperature, turbidity, depth, and oxidation reduction potential. All parameters were measured at a depth of 3 feet. Samples were collected at a depth of 3 feet for further laboratory analysis (with the exception of the Boat-In Campground, where only *in situ* data were collected). Parameters analyzed in collected samples include pH, TDS, hardness, alkalinity, and specific conductance (conductivity at 25 degrees Celsius (ºC)), and the concentrations of constituents, including fluoride, chlorophyll-a, mercury, and metals. Results are reported in Section 3 of this technical memorandum.

Conditions Preceding Water Quality Sampling Events

Flow data were acquired for the 2 weeks preceding each sampling event from the CDEC station located at the San Joaquin River near Auberry sampling location (CDEC Station SJA). Station information is provided in Table 2-1. Flow data provided from CDEC are preliminary and subject to revision.

Table 2-1. California Data Exchange Center Station Information

Identification and Operation	
Station Identification	SJA
Station Name	San Joaquin River near Auberry
Operator	Pacific Gas & Electric
Data Collection	Satellite
Location	
River Basin	San Joaquin River
Hydrologic Area	San Joaquin River
Latitude	37.1320°N
Longitude	119.5310°W
Elevation	870 feet
County	Fresno
Nearby City	Auberry

Flow data from October 20, 2010, through November 3, 2010, are continuous over 15-minute increments, as shown in Figure 2-2. The average flow during this period was about 1,137 cubic feet per second (cfs). As shown in Figure 2-3, flow data from July 12, 2011, through July 26, 2011, are also continuous, but include periods of relatively high flows (up to 4,613 cfs) during an otherwise low-flow period on the San Joaquin River, when flows averaged less than 60 cfs. Relatively high flows during this period reflect releases from Kerckhoff Dam, when less or no water is diverted from the river to the Kerckhoff and Kerckhoff No. 2 powerhouses.

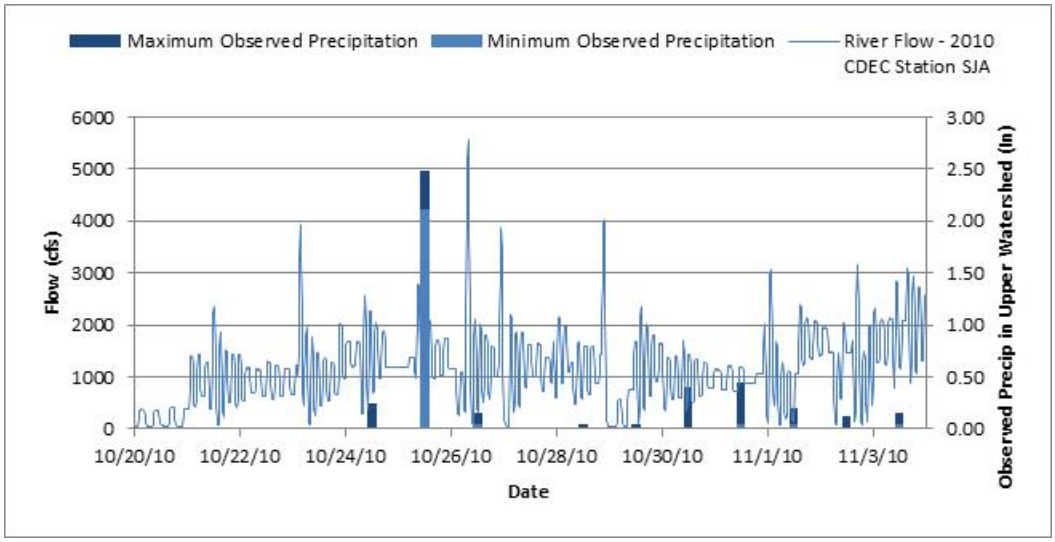


Figure 2-2.San Joaquin River near Auberry, California, Flow and Precipitation in the Upper San Joaquin River Watershed – 2010

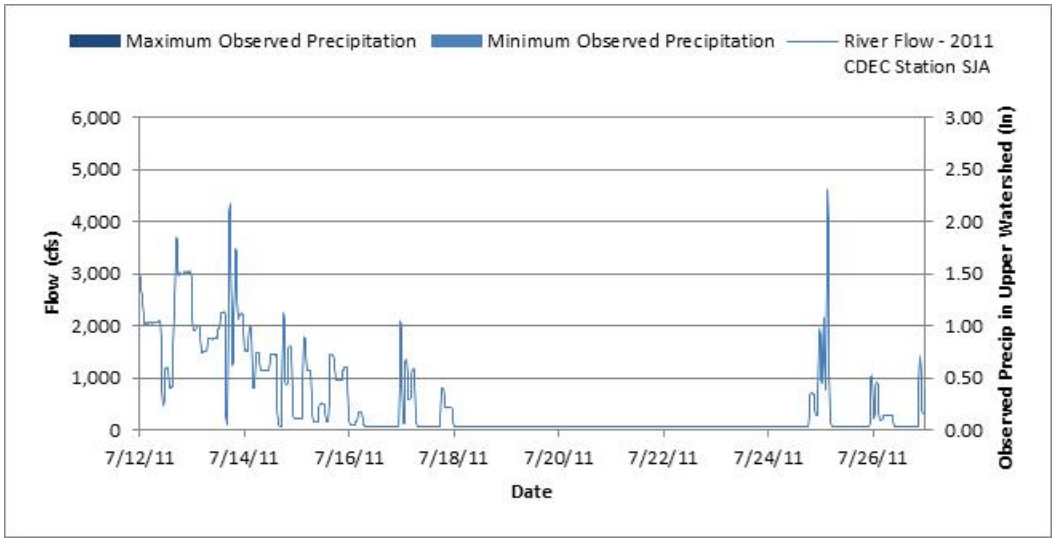


Figure 2-3. San Joaquin River near Auberry, California, Flow and Precipitation in the Upper San Joaquin River Watershed – 2011

Precipitation data were acquired for the 2 weeks preceding each sampling event from the California Irrigation Management Information System (CIMIS), managed by DWR, in Fresno. Additional precipitation data were acquired from the California Nevada River Forecast Center (CNRFC), managed by the National Weather Service, for locations in Fresno and at Friant Dam. Additional precipitation data were acquired from CNRFC for three meteorological stations in the upper San Joaquin River watershed. Meteorological station information is

provided in Table 2-2. Precipitation data provided by CIMIS and CNFRC are preliminary and subject to revision.

Table 2-2. California Irrigation Management Information System and California Nevada River Forecast Center Station Information

Station Name/Identifier	Approximate Location	County	Elevation (ft msl)	Latitude (°N)	Longitude (°W)
California Irrigation Management Information System					
Fresno State/ Station No. 80	Fresno State University	Fresno	339	36.82	119.74
California Nevada River Forecast Center					
Fresno/FAT	In the city of Fresno	Fresno	372	36.78	119.72
Friant Dam/ FRIC1	At Friant Dam	Fresno	660	36.99	119.69
Peckinpah/ PCKC1	East side of the North Fork San Joaquin River	Madera	5,150	37.25	119.46
Graveyard Meadow/ GVYC1	North side of the San Joaquin River near Squaw Dome	Madera	6,900	37.47	119.27
Green Mountain/ GRMC1	North side of the San Joaquin River near Green Mountain	Madera	7,900	37.55	119.24

Key:
°N = degrees North
°W = degrees West
ft msl = feet above mean sea level

Precipitation from October 20, 2010, through November 3, 2010, in Fresno was between 0.30 inch (CNRFC) and 0.38 inch (CIMIS), and about 0.44 inch at Friant Dam. In the upper San Joaquin River watershed, total precipitation during the same period ranged from 3.08 inches at Graveyard Meadow to 3.72 inches at Peckinpah. Maximum and minimum daily precipitation amounts across the three upper San Joaquin River watershed stations (Green Mountain, Graveyard Meadow, and Peckinpah) are shown in Figure 2-2. No precipitation was recorded at any of the stations shown in Table 2-2 from July 12, 2011, through July 26, 2011, as reflected in Figure 2-3. CDEC stations in the San Joaquin River Basin indicated an accumulation of snowfall within the basin on or during the 2 weeks preceding both sampling events.

Air temperature data were acquired for the two weeks preceding each sampling event from CIMIS (identifying station information is provided in Table 2-2). The range of daily air temperatures from October 20, 2010, through November 3, 2010, in Fresno are shown in Figure 2-4. The range of daily air temperatures from July 12, 2011, through July 26, 2011, in Fresno are shown in Figure 2-5.

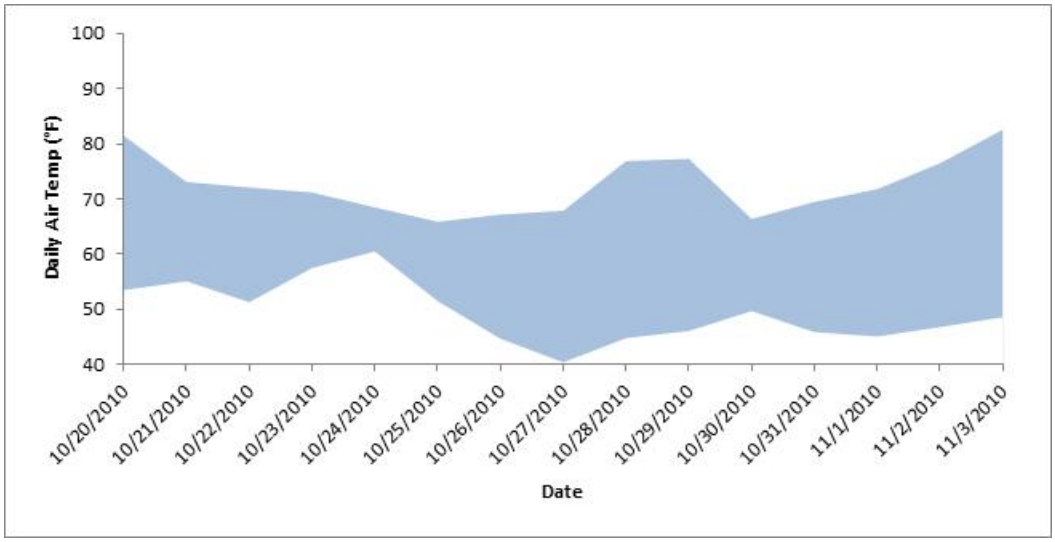


Figure 2-4. Air Temperatures in Fresno, California, Preceding the 2010 Water Quality Sampling Event

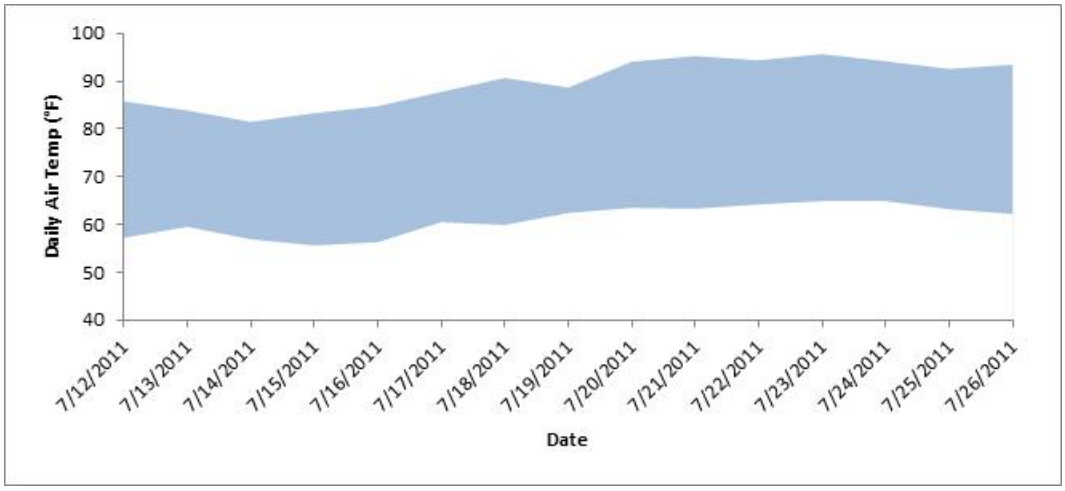


Figure 2-5. Air Temperatures in Fresno, California, Preceding the 2011 Water Quality Sampling Event

Section 3
Water Quality Monitoring Results

This section discusses water quality monitoring results as they pertain to characterizing the conditions present during a first flush event (November 3, 2010) and a low-flow period (July 26, 2011). Additional results not discussed in this section, including complete results for all measured parameters, are provided in Attachments 1 and 2. Parameters measured *in situ* include water temperature, pH, dissolved oxygen, conductivity, TDS, turbidity, and oxidation reduction potential. All parameters were measured at a depth of 3 feet. Samples were also collected at a depth of 3 feet for further laboratory analysis. Parameters analyzed in collected samples include hardness, alkalinity, and the concentrations of constituents, including chlorophyll-a, metals/metalloids, and nutrients. Results of both field and laboratory measurements are shown in Table 3-1 for those analytes with at least one reading above the minimum reporting level. Some analytes, such as nitrogen and potassium, were below minimum reporting levels in all samples. These analytes are reported in Table 3-2.

Table 3-1. Water Quality Conditions in Upper San Joaquin River Basin on November 3, 2010, and July 26, 2011

	San Joaquin River				Millerton Lake					
	Near Auberry		Below Kerckhoff Powerhouse No. 2		Boat-in Campground[1]		Below Temperance Flat		At Fine Gold Bay	
Analyte	2010	2011	2010	2011	2010	2011	2010	2011	2010	2011
Water temperature (°C)	13.6	14.4	14.2	15	--	27.5	17.6	27.8	19.3	27.3
pH	5.2	5.1	5.5	4.9	--	5.6	5.9	6.0	6.2	5.8
Dissolved Oxygen (mg/L)	11.4	10.2	12.0	12.6	--	9.6	10.8	8.6	10.4	9.3
Conductivity (mS/cm)	0.04	0.02	0.04	0.02	--	0.03	0.04	0.03	0.04	0.03
Turbidity (NTU)	3.6	51.1	44.3	94.3	--	--[2]	15.0	--[2]	22.4	--[2]
Total Dissolved Solids (mg/L)	24.0	20.0	31.0	18.0	--	--[2]	32.0	27.0	25.0	34.0
Alkalinity (mg/L)	12.0	13.0	12.0	6.9	--	--	13.0	11.0	7.1	10.0
Aluminum (µg/L)	44	47	36	47	--	--	26	75	<20[3]	32
Arsenic (µg/L)	3.2	<1[3]	3.2	<1[3]	--	--	2.2	<1[3]	1.7	<1[3]
Barium (µg/L)	6.3	3.4	6.4	3.7	--	--	7.0	8.2	7.1	7.0
Calcium (mg/L)	2.9	1.5	2.9	1.6	--	--	2.8	2.4	2.6	2.3
Chloride (mg/L)	1.9	<1[3]	2.0	<1[3]	--	--	1.6	<1[3]	1.4	<1[3]
Iron (mg/L)	0.14	0.05	0.14	0.06	--	--	0.06	0.10	<0.02[3]	0.03
Magnesium (mg/L)	0.6	0.3	0.6	0.3	--	--	0.6	0.6	0.5	0.5
Manganese (µg/L)	28	6	24	6	--	--	11	6	7	3
Mercury (µg/L)	0.0090	0.0008	0.0090	0.0008	--	--	0.0005	0.0006	<0.0005[3]	0.0005
Sodium (mg/L)	3	1	3	1	--	--	3	2	3	2
Sulfate (mg/L)	0.8	<.5[3]	0.8	<.5[3]	--	--	0.7	<.5[3]	0.7	<.5[3]
Chlorophyll-a (mg/m^3)	1.1	<1.1[3]	1.1	<1.1[3]	--	--	1.1	2.1	1.1	<1.1[2]

Notes:

[1] Boat-In Campground was not accessible by boat for sampling in 2010. Only *in situ* measurements were obtained at this site in 2011.

[2] Reading not obtained or considered unreliable.

[3] Concentrations of analytes below the minimum reporting level shown as less than the minimum reporting level specific to the method of analysis used for that analyte.

Key:

°C = degrees Celsius

µg/L = micrograms per liter

mg/L = milligrams per liter

mg/m^3 = milligrams per cubic meter

mS/cm = milliSiemens per centimeter

NTU = Nephelometric Turbidity Units

Table 3-2. Analytes Analyzed but not Detected on November 3, 2010, and July 26, 2011

Analyte	Minimum Reporting Level
Antimony	1 µg/L
Beryllium	1 µg/L
Cadmium	0.5 µg/L
Chromium	1 µg/L
Copper	2 µg/L
Fluoride	1 mg/L
Lead	0.05 mg/L
Nickel	5 µg/L
Nitrate, Total	0.1 mg/L
Potassium	1 mg/L
Selenium	5 µg/L
Silver	0.5 µg/L
Surfactants	0.05 mg/L
Thallium	1 µg/L
Zinc	20 µg/L

Key:
mg/L = milligrams per liter
µg/L = micrograms per liter

Water Temperature

Most of Millerton Lake weakly to moderately thermally stratifies during spring and summer months, with temperatures ranging from 6ºC to 25ºC, depending on water depth and season (FERC, 2009). Measurements taken at multiple depths in Millerton Lake at Fine Gold Bay on November 3, 2010, as shown in Figure 3-1, ranged from 16.2ºC to 19.3ºC, and decreased with depth. Complete mixing of the water column likely occurs during winter months (Reclamation, 2008). Regardless of season, temperatures remain fairly constant in the San Joaquin River between Kerckhoff Powerhouse No. 2 and Millerton Lake, and increase within Millerton Lake, as shown in Figure 3-2. Water temperatures in the San Joaquin River on both sampling dates differed by less than 1ºC, while water temperatures in Millerton Lake were significantly warmer on July 26, 2011, than on November 3, 2010, reflecting consistently warmer air temperatures during the preceding weeks (see Figures 2-4 and 2-5). Temperatures in the San Joaquin River upstream from Millerton Lake were lower than in Millerton Reservoir on both sampling dates.

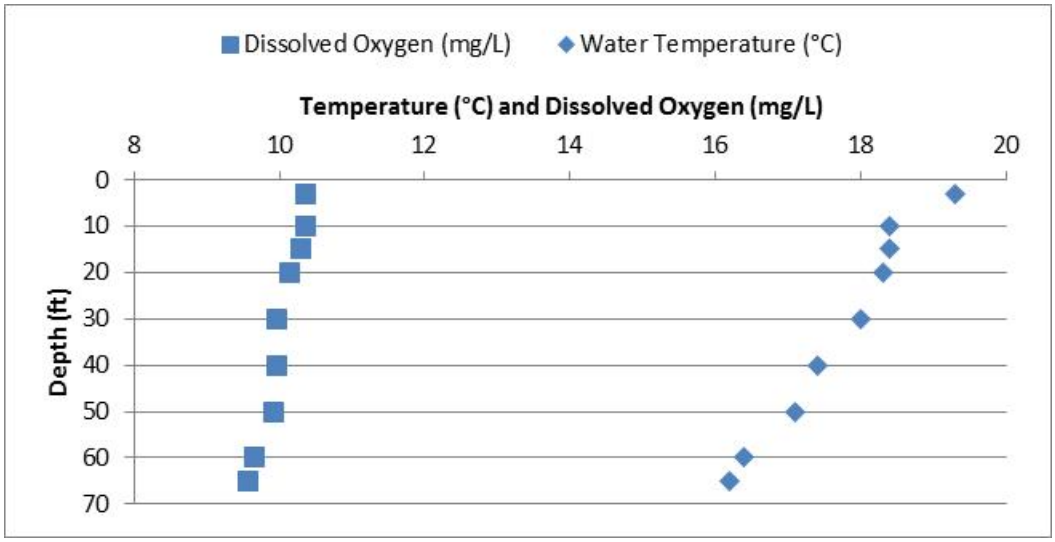
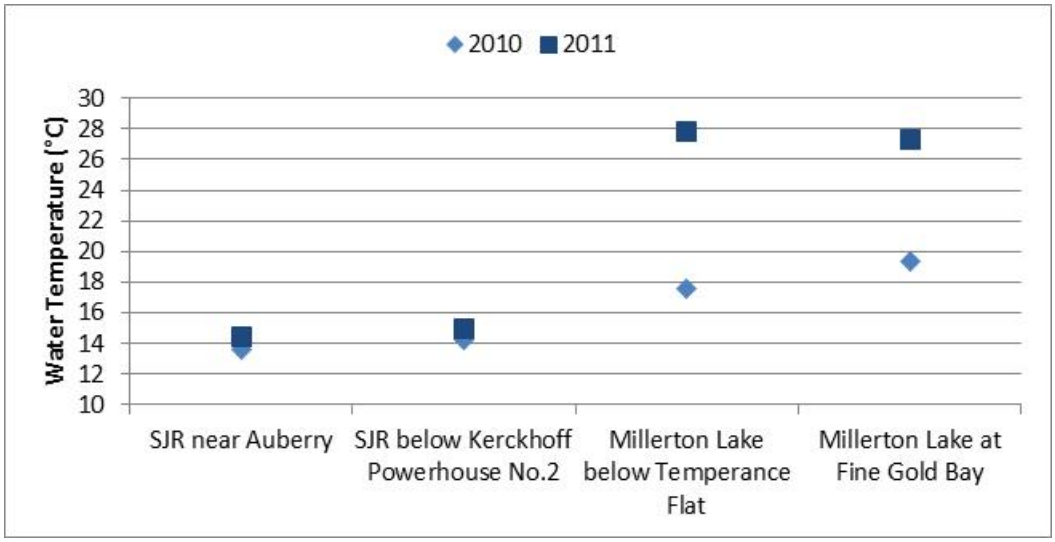


Figure 3-1. Water Temperatures and Dissolved Oxygen by Depth in Millerton Lake at Fine Gold Bay on November 3, 2010



Key: SJR = San Joaquin River

Figure 3-2. Water Surface Temperatures on November 3, 2010, and July 26, 2011

Historical water temperature data from the CDEC station located about 1 mile above the Kerckhoff Powerhouse No. 1, Station ID SJK, were acquired for the period from May 6, 2008, through December 19, 2012. This station is closest to the San Joaquin River near Auberry sampling site. While temperatures recorded at Station SJK on the sampling dates were missing or are considered unreliable, seasonal variation in water temperatures are apparent within the record.

Average monthly water temperatures recorded at Station SJK peak in June, July, August, and September, reaching 22°C to 23°C. Monthly average temperatures in July range from 22°C to 26°C, significantly higher than temperatures measured within the river on July 26, 2011, but lower than temperatures measured within Millerton Lake on the same date. In November, the average monthly water temperature recorded at Station SJK is 14°C, consistent with temperatures measured within the river on November 3, 2010, but also with those measured on July 26, 2011. Minimum average monthly water temperatures at Station SJK occur in January, reaching 6.4°C.

pH, Hardness, and Alkalinity

As measured *in situ* on November 3, 2010, and July 26, 2011, pH in the San Joaquin River and Millerton Lake ranged from 5.17 to 6.18, relatively low (acidic) compared to most surface waters. The pH values measured in the San Joaquin River and Millerton Lake are within the range of measured pH values of precipitation in the region, as summarized in Table 3-3, and related to the low alkalinity conditions observed in the watershed, as described below. Surface water typically has a pH of between 6.5 and 8.5 (Michaud, 1991). The U.S. Environmental Protection Agency (EPA) issues National Recommended Water Quality Criteria for the protection of aquatic life, and these recommendations include a pH range of 6.5 to 9 for chronic exposure (exposure of an indefinite duration) (EPA, 2012). While pH between 5 and 9 is not directly lethal to fish, changes in pH below 6.5 may cause adverse physiological effects (EPA, 1976).

Alkalinity, a measure of the acid-neutralizing capacity of a body of water, ranged from 7 milligrams per liter (mg/L) to 13 mg/L in calcium carbonate ($CaCO_3$) units, indicating moderate sensitivity to acidification (Boyd, 2000). Measured alkalinity was lower than the EPA-recommended minimum limit for the protection of aquatic wildlife (20 mg/L) (EPA, 2012). The EPA recommends that waters with alkalinity naturally below the 20 mg/L criteria not be further reduced (EPA, 1986).

Hardness is a measure of the concentration of divalent cations in water, mainly calcium and magnesium. Hardness is also relatively low in the watershed, ranging from 8.6 to 9.5 mg/L $CaCO_3$ on November 3, 2010, and from 4.9 to 8.3 mg/L $CaCO_3$ on July 26, 2011. Alkalinity and hardness are largely controlled by the geology and soils of the region, and these low values are

consistent with the insolubility of the granitic soils within the upper San Joaquin River watershed. Low pH rainfall, which ranges from 5 to 6 in California (NADP/NTN, 2010), may be a strong influence on pH within the upper San Joaquin River watershed.

Table 3-3. Annual and Seasonal Precipitation pH Data Summary for Sites near the Upper San Joaquin River Watershed

Precipitation-Weighted Mean Concentrations	Kings River Experimental Watershed (CA 28)	Yosemite National Park-Hodgdon Meadow (CA 99)
Year – 2010	**pH (lab)**	**pH (lab)**
Annual (12/29/2009 to 12/28/2010)	5.62[1]	5.53
Winter (12/01/2009 to 03/02/2010)	5.45[1]	5.51[1]
Spring (03/02/2010 to 06/01/2010)	5.86[1]	5.72
Summer (06/01/2010 to 08/31/2010)	–[1]	–[1]
Fall (08/31/2010 to 11/30/2010)	5.7[1]	5.61
Minimum	4.68	4.67
Maximum	6.44	5.71
Arithmetic mean	5.55	5.4
Year – 2011	**pH (lab)**	**pH (lab)**
Annual (12/28/2010 to 01/03/2012)	5.58[1]	5.6[1]
Winter (11/30/2010 to 03/01/2011)	5.43[1]	5.43
Spring (03/01/2011 to 05/31/2011)	5.72	5.64[1]
Summer (05/31/2011 to 08/30/2011)	5.65	5.99
Fall (08/30/2011 to 11/29/2011)	5.53[1]	5.61
Minimum	4.69	4.55
Maximum	6.19	6.27
Arithmetic mean	5.44	5.29

Sources: NADP/NTN 2011a, 2011b, 2012a, and 2012b

Notes:

[1] Data do not meet National Atmospheric Deposition Program/National Trends Network Completeness Criteria for this period.

Dissolved Oxygen and Oxidation Reduction Potential

Dissolved oxygen in the San Joaquin River upstream from Millerton Lake was higher than in Millerton Reservoir on both sampling dates. Measurements taken November 3, 2011, in Millerton Lake at Fine Gold Bay include temperature and dissolved oxygen measurements taken at depths of 3, 10, 15, 20, 30, 40, 50, 60, and 65 feet below the water surface, as shown in Figure 3-1. These measurements indicate decreasing dissolved oxygen with depth. These results are consistent with unpublished data collected by Reclamation during December 2004 through November 2005, which found that dissolved oxygen concentrations in Millerton Lake are generally high during most of the year, with lowest concentrations typically exhibited during November at depths greater than 175 feet.

Oxidation reduction potential, measured *in situ*, ranged from 181 millivolts (mV) to 195 mV in November 2010 and from 111 mV to 135 mV in July 2011. This is indicative of oxygenated water, and consistent with the dissolved oxygen levels described above.

Conductivity, Total Dissolved Solids, and Turbidity

Conductivity, along with TDS, provides a measure of the salinity, or the amount of dissolved particles and ions, in water. Conductivity was similar at each site between sampling dates, ranging between 0.02 milliSiemens per centimeter (mS/cm) and 0.04 mS/cm within the river, and between 0.03 and 0.04 mS/cm in Millerton Lake. TDS ranged from 24 mg/L to 32 mg/L in November 2010, and from 18 to 34 mg/L in July 2011. TDS concentrations in this range are considered typical of “pristine” freshwater lakes and rivers, and are well below the California drinking water limit of 1,000 mg/L (SWRCB, 2010). Similarly, California drinking water limits recommend an electrical conductivity of less than 0.9 mS/cm, well above values measured in 2010 and 2011.

Turbidity, measured in situ, ranges broadly in natural waters, from less than 1 Nephelometric Turbidity Unit (NTU) to as much as 1,000 NTU (SWRCB, 2004). In 2010, measured turbidity ranged from 3.6 to 44.3 NTU within river, and from 15 to 22.4 NTU within Millerton Lake. In 2011, turbidity

ranged from 51.1 to 94.3 NTU in the river (due to equipment malfunction, turbidity measurements were not obtained in Millerton Lake on July 26, 2011). Water bodies with turbidity less than 50 NTU (as measured during November 2010), are typical of water bodies with moderate to enriched levels of nutrients. Higher values are more typical of runoff periods in creeks and rivers (SWRCB, 2004).

The relatively low conductivity, TDS, and turbidity measured in 2010 and 2011 may be due in part to the influence of Kerckhoff Dam and other upstream dams. The construction and operation of dams and reservoirs, including Kerckhoff Dam and several projects located further upstream, have altered sediment transport and storage processes in the upper San Joaquin River Basin. The reservoirs capture and permanently store nearly all of the bedload sediment that is transported to them, reducing the amount of sand and gravel that would have naturally been available for recruitment to downstream reaches. Dam operations also limit the release of flows to downstream reaches, reducing the frequency of sediment-transporting flows in most years (SCE, 2007).

Chlorophyll-a

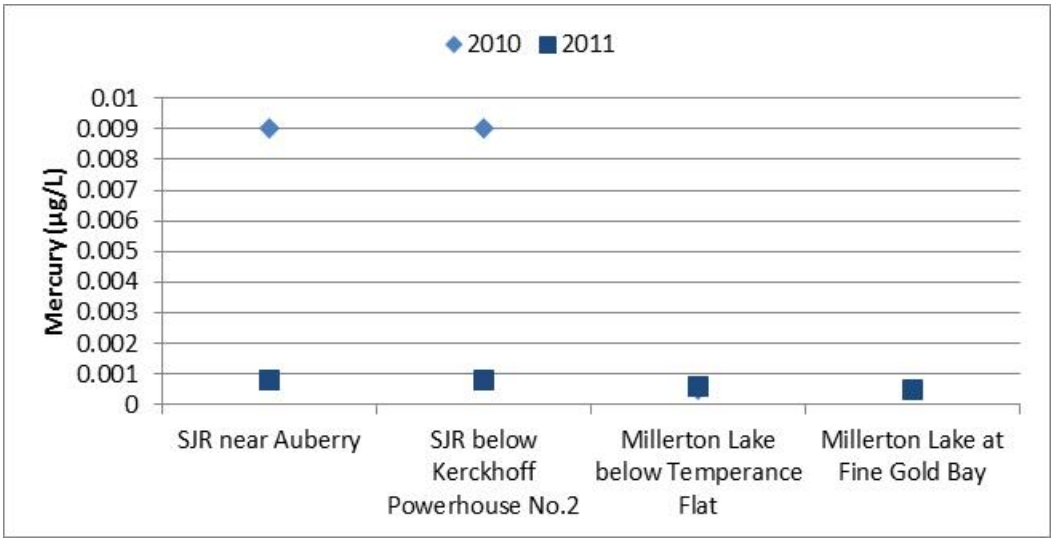
Concentrations of chlorophyll-a, which provides an estimate of the algal biomass present in a body of water, were at or below the minimum reporting limit (1.1 milligram per cubic meter (mg/m3)) in most cases. Only one sample, Millerton Lake below Temperance Flat when sampled in 2011, was above the minimum reporting limit, at 2.1 mg/m3. This sample also reflected the highest water temperature of all samples.

Metals/Metalloids and Nutrients

The concentration of most constituents sampled was lower in Millerton Lake than in the San Joaquin River, reflecting a high rate of mixing within the river as compared with the reservoir (excluding constituents not detected and listed in Table 3-2). Exceptions include barium on both November 3, 2010, and July 26, 2011, and aluminum, calcium, iron, magnesium, and sodium, which had higher concentrations in one or both Millerton Lake sample locations on July 26, 2011.

Millerton Lake is listed for mercury in the 2010 Clean Water Act Section 303(d) List of impaired waters requiring Total

Maximum Daily Loads (TMDL) (SWRCB, 2011). This listing is based on a 2007 sampling of mercury accumulation in 33 tissue samples from largemouth bass. This study found that 18 out of 33 samples exceeded the Office of Environmental Health Hazard Assessment (OEHHA) Screening Value of 0.3 milligrams per kilogram to protect human health when consuming (Davis et al., 2009). Water quality conditions detected on November 3, 2010, and July 26, 2011, indicate mercury concentrations within the water column of less than 0.0005 to 0.0006 µg/L. Mercury concentrations were higher on November 3, 2010 (0.009 micorgrams per liter (µg/L) within the river, decreasing in Millerton Lake), and likely reflect elevated concentrations of mercury in runoff occurring in the upper San Joaquin River watershed. Mercury concentrations decreased in Millerton Lake, as shown in Figure 3-3 and as observed for most constituents.



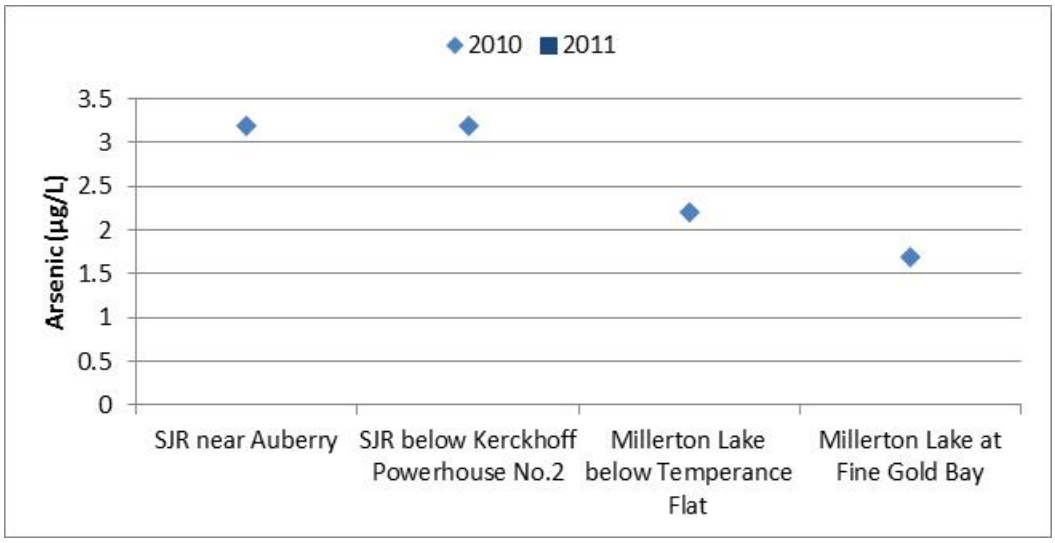
Key: SJR = San Joaquin River

Figure 3-3. Mercury Concentrations on November 3, 2010, and July 26, 2011

One possible source of mercury contamination within the watershed is resource extraction (SWRCB, 2011). Mercury itself is not mined within the watershed, but was historically used in the extraction of gold throughout California. Today, mercury is recovered as a byproduct from small-scale gold dredging operations. Mercury and gold are also recovered as byproducts from some gravel mining operations, especially in areas affected by historical gold mining (Alpers et al., 2005). Within the Millerton Lake watershed, there are 57 historical gold mines and one active mine; and historical two sand and

gravel mines (USGS, 2005). A second likely source of mercury within the watershed is atmospheric deposition. Atmospheric deposition of mercury in the high Sierra Nevadas has been shown to be high relative to other locations in the United States (Heyvaert et al., 2000). While mercury concentrations in surface water may remain low, mercury accumulates in biological tissues and tissue concentrations tend to increase higher in the food chain through biomagnification (Alpers et al., 2005). This is consistent with the observations noted above of low mercury concentrations within the water column and significantly higher concentrations in fish tissue.

Similarly, arsenic concentrations were higher on November 3, 2010, than on July 26, 2011. These concentrations likely reflect runoff occurring in the upper San Joaquin River watershed before this sampling event (arsenic occurs naturally in many geologic deposits found in the upper San Joaquin River watershed). Arsenic concentrations decreased in Millerton Lake as compared to the San Joaquin River, as shown in Figure 3-4.



Key: SJR = San Joaquin River

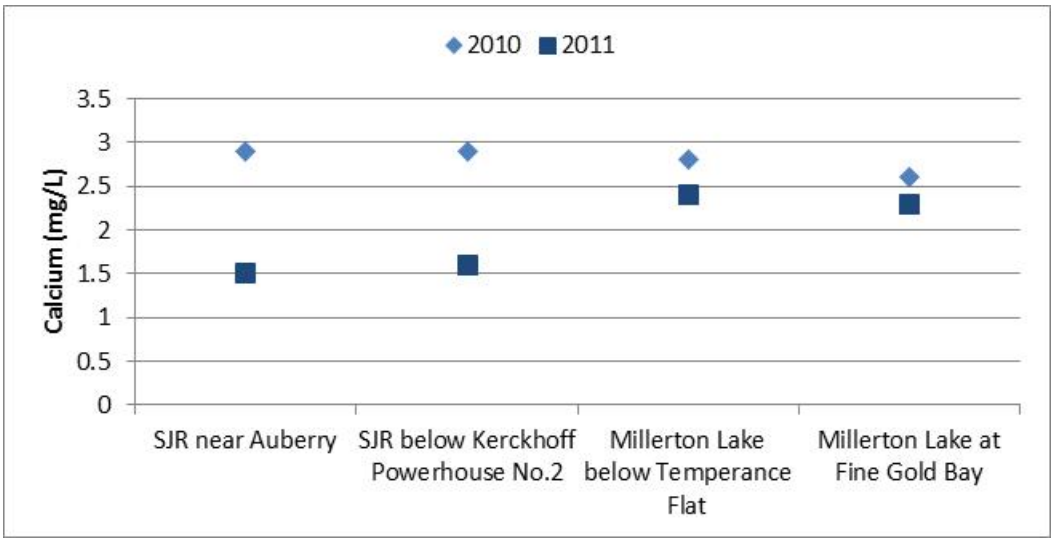
Figure 3-4. Arsenic Concentration on November 3, 2010, and July 26, 2011

In addition to mercury and arsenic, concentrations of other metals and metalloids measured on November 3, 2010, and July 26, 2011, are generally low, as shown in Tables 3-1 and 3-2.

Concentrations of primary plant nutrients analyzed, including nitrogen and potassium, were below the minimum reporting

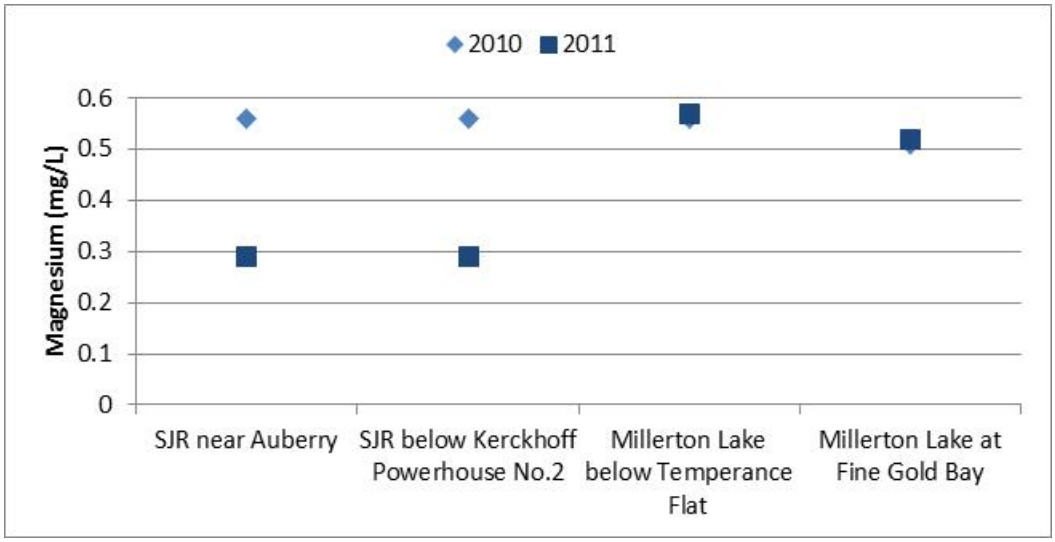
limits (0.1 mg/L and 1 mg/L, respectively). Sulfur, a secondary nutrient, was detected at low levels in 2010, but was below the minimum reporting limit (0.5 mg/L) on July 26, 2011. The other secondary nutrients, calcium and magnesium, were detected in all samples at low levels, as shown in Figures 3-5 and 3-6, respectively. Low concentrations of calcium and magnesium are consistent with the relatively low hardness levels in these samples (as previously described).

Chloride was detected in low levels in 2010, but not detected in 2011. Similarly, sodium decreased in concentration in July 2011 as compared to November 2010. This pattern likely reflects runoff occurring in the upper San Joaquin River watershed before this sampling event (the California Department of Transportation applies deicing agents, including sodium and chloride, to roads in the upper San Joaquin River watershed). Concentrations of the micronutrient chloride decreased in Millerton Lake as compared to the San Joaquin River. Sodium was lower in Millerton Lake on November 3, 2010, but higher on July 26, 2011.



Key: SJR = San Joaquin River

Figure 3-5. Calcium Concentration on November 3, 2010, and July 26, 2011



Key: SJR = San Joaquin River

Figure 3-6. Magnesium Concentration on November 3, 2010, and July 26, 2011

Section 4 Conclusions

Water upstream from Friant Dam is generally soft with low mineral and nutrient concentrations, likely due to the insolubility of granitic soils in the watershed and the river's granite substrate (FERC, 2009). Water quality within the San Joaquin River upstream from Millerton Lake and within Millerton Lake is generally of high quality, with low temperatures, low turbidity, high dissolved oxygen, and low concentrations of chlorophyll-a, arsenic, and other constituents. In the reaches above Millerton Lake, water quality is generally suitable for most designated beneficial uses. As previously mentioned, Millerton Lake itself is listed for mercury in the 2010 Clean Water Act Section 303(d) list of impaired waters requiring TMDLs (SWRCB, 2011).

Comparison of water quality conditions between November 3, 2010, and July 26, 2011, indicates that during a first flush event, concentrations of mercury, arsenic, and most constituents may increase, but remain low. Comparison of water quality conditions between the upper San Joaquin River sampling sites and Millerton Lake sampling sites indicates that concentrations of most constituents decrease as water enters Millerton Lake. This is likely due to a high rate of mixing within the river as compared with Millerton Lake, where slower water movement allows these constituents to settle out of the water column more easily. This interpretation is supported by the relatively low turbidity observed within Millerton Lake as compared to within the San Joaquin River.

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Section 5
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_____. 2011b. 2011 Annual & Seasonal Data Summary for Site CA99: Part 1: Summary of Sample Validity and Completeness Criteria. September 13.

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Water Quality Technical Memorandum Attachment: Water Quality Analysis, November 3, 2010

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750 Royal Oak Dr., Suite 100
Monrovia, California, 91016-3629
Tel: 626 386 1100
Fax: 626 386 1101
1 800 566 LABS (1 800 566 5227)

Laboratory Report

for

MWH Americas, Inc.
3321 Power Inn Road, Suite 300
Sacramento, CA 95826
Attention: Jamil Ibrahim
Fax: 916 924-9102

RSR: Rita Reeves

Project Manager

ACCREDITED IN ACCORDANCE WITH nelac 01114CA

Report#: 348083
Project: USJRBSI
Group: Fall WQ Monitoring
PO#: 1007014.021802

Laboratory certifies that the test results meet all **NELAC** requirements unless noted in the Comments section or the Case Narrative. Following the cover page are Hits Reports, Comments, QC Summary, QC Report and Regulatory Forms. This report shall not be reproduced except in full, without the written approval of the laboratory.

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Sacramento, CA 95826
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Phone: 916-924-8844

Customer Code: MWH-SAC
Folder #: 348083
Project: USJRBSI
Sample Group: Fall WQ Monitoring
Project Manager: Rita Reeves
Phone: 916-418-8358
PO #: 1007014.021802

The following samples were received from you on **November 04, 2010**. They have been scheduled for the tests listed below each sample. If this information is incorrect, please contact your service representative. Thank you for using MWH Laboratories.

Sample #	Sample ID	Sample Date
201011040069	SJR near Auberry	Nov 03, 2010 12:24

@ANIONS28	@ANIONS48	@ICP
@ICPMS	Agressiveness Index-Calculated	Alkalinity in CaCO3 units
Anion Sum - Calculated	Bicarb.Alkalinity as HCO3,calc	Carbon Dioxide,Free(25C)-Calc.
Carbonate as CO3, Calculated	Cation Sum - Calculated	Cation/Anion Difference
Fluoride	Hydroxide as OH, Calculated	Langelier Index - 25 degree
Langlier Index at 60 degrees C	PH (H3=past HT not compliant)	pH of CaCO3 saturation(25C)
pH of CaCO3 saturation(60C)	Specific Conductance	Surfactants
Total Dissolved Solid (TDS)	Total Hardness as CaCO3 by ICP	Chlorophyll A (Subbed)
Mercury by EPA Method 1631		

Sample #	Sample ID	Sample Date
201011040070	SJR below Kerckhoff Powerhouse #2	Nov 03, 2010 10:05

@ANIONS28	@ANIONS48	@ICP
@ICPMS	Agressiveness Index-Calculated	Alkalinity in CaCO3 units
Anion Sum - Calculated	Bicarb.Alkalinity as HCO3,calc	Carbon Dioxide,Free(25C)-Calc.
Carbonate as CO3, Calculated	Cation Sum - Calculated	Cation/Anion Difference
Fluoride	Hydroxide as OH, Calculated	Langelier Index - 25 degree
Langlier Index at 60 degrees C	PH (H3=past HT not compliant)	pH of CaCO3 saturation(25C)
pH of CaCO3 saturation(60C)	Specific Conductance	Surfactants
Total Dissolved Solid (TDS)	Total Hardness as CaCO3 by ICP	Chlorophyll A (Subbed)
Mercury by EPA Method 1631		

Sample #	Sample ID	Sample Date
201011040072	Millerton Lake @ Temperance Flat	Nov 03, 2010 15:15

@ANIONS28	@ANIONS48	@ICP
@ICPMS	Agressiveness Index-Calculated	Alkalinity in CaCO3 units
Anion Sum - Calculated	Bicarb.Alkalinity as HCO3,calc	Carbon Dioxide,Free(25C)-Calc.
Carbonate as CO3, Calculated	Cation Sum - Calculated	Cation/Anion Difference
Fluoride	Hydroxide as OH, Calculated	Langelier Index - 25 degree
Langlier Index at 60 degrees C	PH (H3=past HT not compliant)	pH of CaCO3 saturation(25C)
pH of CaCO3 saturation(60C)	Specific Conductance	Surfactants
Total Dissolved Solid (TDS)	Total Hardness as CaCO3 by ICP	Chlorophyll A (Subbed)
Mercury by EPA Method 1631		

Sample #	Sample ID	Sample Date
201011040073	Millerton Lake @ Fine Gold Bay	Nov 03, 2010 16:20

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Sacramento, CA 95826
Attn: Jamil Ibrahim
Phone: 916-924-8844

Customer Code: MWH-SAC
Folder #: 348083
Project: USJRBSI
Sample Group: Fall WQ Monitoring
Project Manager: Rita Reeves
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PO #: 1007014.021802

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Sample #	Sample ID	Sample Date

@ANIONS28	@ANIONS48	@ICP
@ICPMS	Agressiveness Index-Calculated	Alkalinity in CaCO3 units
Anion Sum - Calculated	Bicarb.Alkalinity as HCO3,calc	Carbon Dioxide,Free(25C)-Calc.
Carbonate as CO3, Calculated	Cation Sum - Calculated	Cation/Anion Difference
Fluoride	Hydroxide as OH, Calculated	Langelier Index - 25 degree
Langlier Index at 60 degrees C	PH (H3=past HT not compliant)	pH of CaCO3 saturation(25C)
pH of CaCO3 saturation(60C)	Specific Conductance	Surfactants
Total Dissolved Solid (TDS)	Total Hardness as CaCO3 by ICP	Chlorophyll A (Subbed)
Mercury by EPA Method 1631		

Test Description

@ANIONS28 -- Chloride, Sulfate by EPA 300.0
@ANIONS48 -- Nitrate, Nitrite by EPA 300.0
@ICP -- ICP Metals
@ICPMS -- ICPMS Metals

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SAMPLES CHECKED AGAINST COC BY: JS

SAMPLES LOGGED IN BY: MLD

SAMPLE TEMP WHEN REC'D AT LAB: 2° (Compliance: 4 +/- 2°C)

SAMPLES REC'D DAY OF COLLECTION? ☐ (check for yes)

CONDITION OF BLUE ICE: FROZEN ✓ PARTIALLY FROZEN ___ THAWED ___

TO BE COMPLETED BY SAMPLER:

COMPANY, UTILITY or PROJECT:	SYSTEM #:	COMPLIANCE SAMPLES - Requires state forms ☐ (check for yes)	NON-COMPLIANCE SAMPLES ☐ (check for yes) REGULATION INVOLVED: (eg. SDWA, Phase V, NPDES, FDA,...)
MWH Americas - SAC1		Type of samples (circle one): ROUTINE SPECIAL CONFIRMATION	
MWH LABS CLIENT CODE: MWH-SAC	P.O.# / PROJECT JOB #: USJRBSI - Fall WQ Monitoring	*SEE ATTACHED BOTTLE ORDER FOR ANALYSES* ☐ (check for yes), OR list ANALYSES REQUIRED (enter number of bottles sent for each test for each sample)	
SAMPLER PRINTED NAME AND SIGNA: RReeves	TAT requested: rush by adv notice only STD X 1 wk ___ 3 day ___ 2 day ___ 1 day ___		

SAMPLE DATE	SAMPLE TIME	STATION # or LOCATION	MATRIX	GRAB	COMP	GMMST22	Hg by 1631 (sub)	Chlorophyll A (su			TDS	Field Data	pH	Conductivity	DO	Turbidity	Temperature	Depth	ORP		SAMPLER COMMENTS
11/3	12:24	SJR near Auberry	RSW	X		X	X	X			0.03		5.53	0.42	12.03	44.3	14.2	3	183		37.30645N 119.56042W
11/3	10:05	SJR below Kerchoff Powerhouse #2	RSW	X		X	X	X			0.03		5.17	0.41	11.43	8.6	13.6	3	181		37.18220N 119.53216W
11/3	15:15	Millerton Lake @ Temperance Flat	RSW	X		X	X	X			0.02		5.90	0.36	10.83	15.0	17.6	3	195		37.04425N 119.60951W
11/3	16:20	Millerton Lake @ Fine Gold Bay	RSW	X		X	X	X			0.02		6.18	0.35	10.36	22.4	19.3	3	187		37.04771N 119.63997W
								DID NOT REC.													

	PRINT NAME	COMPANY/TITLE	DATE	TIME
RELINQUISHED BY:	RITA REEVES	MWH	11/3	17:00
RECEIVED BY:	Joe Sanchez	MWH	11/4/16	0740
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ActWgt: 40.0 LB
CAD: 1125860/INET3090

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Report all quality control data according to Method. Include dates analyzed date extracted (if extracted) and Method reference on the report.
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EMAIL TO: mwhlabs-subcontractreports@mwhglobal.com
MWH Laboratories 750 Royal Oaks Dr. Ste. 100, Monrovia, CA 91016
Phone (626) 386-1165 Fax (626) 386-1122
Invoices to: MWH LABORATORIES
Accounts Payable PO BOX 6610, Broomfield, CO 80021

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Samples from the State of: **CALIFORNIA**

MWH Project #	Report Due:	Sub PO#
348083	11/19/2010	99-06779

JLS		Use MWH Lab Sample # for ID	*Client Sample ID for reference only*	Analysis Requested	Sample Date & Time	Matrix	PWS Systemcode	PWSID
EPA 1631	Mercury by EPA Method 1631	201011040069	SJR near Auberry	Mercury by EPA 1631 (Sub)	11/03/10 1224	Water		
EPA 1631	Mercury by EPA Method 1631	201011040070	SJR below Kerckhoff Powerhouse #2	Mercury by EPA 1631 (Sub)	11/03/10 1005	Water		
EPA 1631	Mercury by EPA Method 1631	201011040072	Millerton Lake @ Temperance Flat	Mercury by EPA 1631 (Sub)	11/03/10 1515	Water		
EPA 1631	Mercury by EPA Method 1631	201011040073	Millerton Lake @ Fine Gold Bay	Mercury by EPA 1631 (Sub)	11/03/10 1620	Water		

Relinquished by: _____ Sample Control Date _____ Time _____ MUST HAVE NOTIFICATION IF TEMP IS GREATER THAN 6 OR LESS THAN CELSIUS

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Monrovia, CA 91016-3629
Ph (626) 386-1100 Fax (626) 386-1095

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EMAIL TO: mwhlabs-subcontractreports@mwhglobal.com
MWH Laboratories 750 Royal Oaks Dr. Ste. 100, Monrovia, CA 91016
Phone (626) 386-1165 Fax (626) 386-1122
Invoices to: MWH LABORATORIES
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Provide in each Report the Specified State Certification # & Exp Date for requested tests + matrix.

Samples from the State of :**CALIFORNIA**

MWH Project #	Report Due:	Sub PO#
348083	11/19/2010	99-06780

JLS	Use MWH Lab Sample # for ID	*Client Sample ID for reference only*	Analysis Requested	Sample Date & Time	Matrix	PWS Systemcode	PWSID
SM 10200-H Chlorophyll A (Subbed)	201011040069	SJR near Auberry	Chlorophyll A (Subbed)	11/03/10 1224	Water		
SM 10200-H Chlorophyll A (Subbed)	201011040070	SJR below Kerckhoff Powerhouse #2	Chlorophyll A (Subbed)	11/03/10 1005	Water		
SM 10200-H Chlorophyll A (Subbed)	201011040072	Millerton Lake @ Temperance Flat	Chlorophyll A (Subbed)	11/03/10 1515	Water		
SM 10200-H Chlorophyll A (Subbed)	201011040073	Millerton Lake @ Fine Gold Bay	Chlorophyll A (Subbed)	11/03/10 1620	Water		

Relinquished by: _____ Sample Control Date _____ Time _____ MUST HAVE NOTIFICATION IF TEMP IS GREATER THAN 6 OR LESS THAN CELSIUS

Received by: _____ Date _____ Time _____ An Acknowledgement of Receipt is requested to attn: **Christine Lewis**

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Monrovia, California, 91016-3629
Tel: 626 386 1100
Fax: 626 386 1101
1 800 566 LABS (1 800 566 5227)

MWH Americas, Inc.
Jamil Ibrahim
3321 Power Inn Road, Suite 300
Sacramento, CA 95826

Group Comments

Analytical results for Chlorophyll A are submitted by Advanced Environmental Laboratories, Inc., Gainesville, FL

Analytical results for Mercury by 1631E are submitted by Caltest, Napa, CA

Flags Legend:

J - Analyte is positively identified, but an estimated value. The analyte was either detected between MDL and MRL or did not meet any one of the required QC criteria.

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750 Royal Oak Dr., Suite 100
Monrovia, California, 91016-3629
Tel: 626 386 1100
Fax: 626 386 1101
1 800 566 LABS (1 800 566 5227)

Laboratory
Hits Report: 348083

MWH Americas, Inc.
Jamil Ibrahim
3321 Power Inn Road, Suite 300
Sacramento, CA 95826

Samples Received on:
11/04/2010

Analyzed	Analyte	Sample ID	Result	Federal MCL	Units	MRL
	201011040069	**SJR near Auberry**				
11/12/2010 09:58	Agressiveness Index-Calculated		9.4		None	0.1
11/11/2010 17:36	Alkalinity in CaCO3 units		12		mg/L	2
11/10/2010 20:07	Aluminum Total ICAP/MS		36	200	ug/L	20
11/12/2010 09:58	Anion Sum - Calculated		0.30		meq/L	0.001
11/10/2010 20:07	Arsenic Total ICAP/MS		3.2	10	ug/L	1
11/10/2010 20:07	Barium Total ICAP/MS		6.4	2000	ug/L	2
11/12/2010 09:58	Bicarb.Alkalinity as HCO3calc		14		mg/L	2
11/09/2010 12:24	Calcium Total ICAP		2.9		mg/L	1
11/09/2010 09:24	Cation Sum - Calculated		0.33		meq/L	0.001
11/04/2010 14:42	Chloride		2.0	250	mg/L	1
11/17/2010 11:00	Chlorophyll A		1.1		mg/m3	1.1
11/09/2010 12:24	Iron Total ICAP		0.14	0.3	mg/L	0.02
11/09/2010 09:23	Langelier Index - 25 degree		-2.6		None	
11/10/2010 01:24	Langelier Index at 60 degrees C		-2.1		None	
11/09/2010 12:24	Magnesium Total ICAP		0.56		mg/L	0.1
11/10/2010 20:07	Manganese Total ICAP/MS		24	50	ug/L	2
11/10/2010 09:24	Mercury by EPA Method 1631		0.0090		ug/L	0.0005
11/04/2010 16:44	PH (H3=past HT not compliant)		7.3		Units	0.1
11/09/2010 09:23	pH of CaCO3 saturation(25C)		9.8		Units	0.1
11/12/2010 09:58	pH of CaCO3 saturation(60C)		9.4		Units	0.1
11/09/2010 12:24	Sodium Total ICAP		3.3		mg/L	1
11/04/2010 18:18	Specific Conductance, 25 C		34		umho/cm	2
11/04/2010 14:42	Sulfate		0.81	250	mg/L	0.5
11/09/2010 18:56	Total Dissolved Solids (TDS)		31	500	mg/L	10
11/09/2010 09:23	Total Hardness as CaCO3 by ICP (calc)		9.5		mg/L	3
	201011040070	**SJR below Kerckhoff Powerhouse #2**				
11/12/2010 09:58	Agressiveness Index-Calculated		9.3		None	0.1
11/11/2010 18:02	Alkalinity in CaCO3 units		12		mg/L	2
11/10/2010 20:10	Aluminum Total ICAP/MS		44	200	ug/L	20
11/12/2010 09:58	Anion Sum - Calculated		0.31		meq/L	0.001
11/10/2010 20:10	Arsenic Total ICAP/MS		3.2	10	ug/L	1
11/10/2010 20:10	Barium Total ICAP/MS		6.3	2000	ug/L	2
11/12/2010 09:58	Bicarb.Alkalinity as HCO3calc		14		mg/L	2
11/09/2010 12:29	Calcium Total ICAP		2.9		mg/L	1
11/09/2010 09:24	Cation Sum - Calculated		0.33		meq/L	0.001

SUMMARY OF POSITIVE DATA ONLY

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Analyzed	Analyte	Sample ID	Result	Federal MCL	Units	MRL
11/04/2010	14:29	Chloride	1.9	250	mg/L	1
11/17/2010	11:00	Chlorophyll A	1.1		mg/m3	1.1
11/09/2010	12:29	Iron Total ICAP	0.14	0.3	mg/L	0.02
11/09/2010	09:23	Langelier Index - 25 degree	-2.6		None	
11/10/2010	01:25	Langelier Index at 60 degrees C	-2.2		None	
11/09/2010	12:29	Magnesium Total ICAP	0.56		mg/L	0.1
11/10/2010	20:10	Manganese Total ICAP/MS	28	50	ug/L	2
11/10/2010	09:24	Mercury by EPA Method 1631	0.0090		ug/L	0.0005
11/04/2010	16:48	PH (H3=past HT not compliant)	7.2		Units	0.1
11/09/2010	09:23	pH of CaCO3 saturation(25C)	9.8		Units	0.1
11/12/2010	09:58	pH of CaCO3 saturation(60C)	9.4		Units	0.1
11/09/2010	12:29	Sodium Total ICAP	3.3		mg/L	1
11/05/2010	14:20	Specific Conductance, 25 C	34		umho/cm	2
11/04/2010	14:29	Sulfate	0.81	250	mg/L	0.5
11/09/2010	18:57	Total Dissolved Solids (TDS)	24	500	mg/L	10
11/09/2010	09:23	Total Hardness as CaCO3 by ICP (calc)	9.5		mg/L	3
	201011040072	**Millerton Lake @ Temperance Flat**				
11/12/2010	10:03	Agressiveness Index-Calculated	9.4		None	0.1
11/11/2010	21:22	Alkalinity in CaCO3 units	13		mg/L	2
11/10/2010	20:14	Aluminum Total ICAP/MS	26	200	ug/L	20
11/12/2010	10:03	Anion Sum - Calculated	0.32		meq/L	0.001
11/10/2010	20:14	Arsenic Total ICAP/MS	2.2	10	ug/L	1
11/10/2010	20:14	Barium Total ICAP/MS	7.0	2000	ug/L	2
11/12/2010	10:03	Bicarb.Alkalinity as HCO3calc	16		mg/L	2
11/09/2010	12:46	Calcium Total ICAP	2.8		mg/L	1
11/09/2010	09:24	Cation Sum - Calculated	0.32		meq/L	0.001
11/04/2010	15:09	Chloride	1.6	250	mg/L	1
11/17/2010	11:00	Chlorophyll A	1.1		mg/m3	1.1
11/09/2010	12:46	Iron Total ICAP	0.060	0.3	mg/L	0.02
11/09/2010	09:23	Langelier Index - 25 degree	-2.5		None	
11/10/2010	01:25	Langelier Index at 60 degrees C	-2.1		None	
11/09/2010	12:46	Magnesium Total ICAP	0.56		mg/L	0.1
11/10/2010	20:14	Manganese Total ICAP/MS	11	50	ug/L	2
11/24/2010	09:24	Mercury by EPA Method 1631	0.00050		ug/L	0.0005
11/04/2010	16:52	PH (H3=past HT not compliant)	7.3		Units	0.1
11/09/2010	09:23	pH of CaCO3 saturation(25C)	9.8		Units	0.1

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11/04/2010

Analyzed	Analyte	Sample ID	Result	Federal MCL	Units	MRL
11/12/2010	10:02	pH of CaCO3 saturation(60C)	9.4		Units	0.1
11/09/2010	12:46	Sodium Total ICAP	3.0		mg/L	1
11/05/2010	14:21	Specific Conductance, 25 C	31		umho/cm	2
11/04/2010	15:09	Sulfate	0.69	250	mg/L	0.5
11/09/2010	18:58	Total Dissolved Solids (TDS)	32	500	mg/L	10
11/09/2010	09:23	Total Hardness as CaCO3 by ICP (calc)	9.4		mg/L	3
		201011040073 Millerton Lake @ Fine Gold Bay				
11/12/2010	10:03	Agressiveness Index-Calculated	9.1		None	0.1
11/11/2010	21:46	Alkalinity in CaCO3 units	7.1		mg/L	2
11/12/2010	10:03	Anion Sum - Calculated	0.20		meq/L	0.001
11/10/2010	20:17	Arsenic Total ICAP/MS	1.7	10	ug/L	1
11/10/2010	20:17	Barium Total ICAP/MS	7.1	2000	ug/L	2
11/12/2010	10:03	Bicarb.Alkalinity as HCO3calc	8.7		mg/L	2
11/09/2010	12:51	Calcium Total ICAP	2.6		mg/L	1
11/09/2010	09:24	Cation Sum - Calculated	0.29		meq/L	0.001
11/04/2010	14:55	Chloride	1.4	250	mg/L	1
11/17/2010	11:00	Chlorophyll A	1.1		mg/m3	1.1
11/09/2010	09:23	Langelier Index - 25 degree	-2.9		None	
11/10/2010	01:25	Langelier Index at 60 degrees C	-2.4		None	
11/09/2010	12:51	Magnesium Total ICAP	0.51		mg/L	0.1
11/10/2010	20:17	Manganese Total ICAP/MS	6.9	50	ug/L	2
11/04/2010	16:55	PH (H3=past HT not compliant)	7.2		Units	0.1
11/09/2010	09:23	pH of CaCO3 saturation(25C)	10		Units	0.1
11/12/2010	10:03	pH of CaCO3 saturation(60C)	9.7		Units	0.1
11/09/2010	12:51	Sodium Total ICAP	2.7		mg/L	1
11/05/2010	14:22	Specific Conductance, 25 C	30		umho/cm	2
11/04/2010	14:55	Sulfate	0.67	250	mg/L	0.5
11/09/2010	18:59	Total Dissolved Solids (TDS)	25	500	mg/L	10
11/09/2010	09:23	Total Hardness as CaCO3 by ICP (calc)	8.6		mg/L	3

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Laboratory Data
Report: 348083

MWH Americas, Inc.
Jamil Ibrahim
3321 Power Inn Road, Suite 300
Sacramento, CA 95826

Samples Received on:
11/04/2010

Prepared	Analyzed	QC Ref #	Method	Analyte	Result	Units	MRL	Dilution
SJR near Auberry (201011040069)						**Sampled on 11/03/2010 1224**		
			EPA 1631 - Mercury by EPA 1631 (Sub)					
11/10/2010	09:24		(EPA 1631)	Mercury by EPA Method 1631	0.0090	ug/L	0.0005	1
			SM 10200-H - Chlorophyll A (Subbed)					
11/17/2010	11:00		(SM 10200-H)	Chlorophyll A	1.1	mg/m3	1.1	1
			SM 2330B - pH of CaCO3 saturation(60C)					
11/12/2010	09:58		(SM 2330B)	pH of CaCO3 saturation(60C)	9.4	Units	0.1	1
			SM 2330B - Langelier Index - 25 degree					
11/09/2010	09:23		(SM 2330B)	Langelier Index - 25 degree	-2.6	None		1
			SM 1030E - Anion Sum - Calculated					
11/12/2010	09:58		(SM 1030E)	Anion Sum - Calculated	0.30	meq/L	0.001	1
			SM 1030E - Cation Sum - Calculated					
11/09/2010	09:24		(SM 1030E)	Cation Sum - Calculated	0.33	meq/L	0.001	1
			SM 2330B - pH of CaCO3 saturation(25C)					
11/09/2010	09:23		(SM 2330B)	pH of CaCO3 saturation(25C)	9.8	Units	0.1	1
			SM 2330 - Agressiveness Index-Calculated					
11/12/2010	09:58		(SM 2330)	Agressiveness Index-Calculated	9.4	None	0.1	1
			SM 2330B - Langlier Index at 60 degrees C					
11/10/2010	01:24		(SM 2330B)	Langelier Index at 60 degrees C	-2.1	None		1
			SM 1030E - Cation/Anion Difference					
11/10/2010	01:24		(SM 1030E)	Cation/Anion Difference	4.7	%		1
			EPA 200.8 - ICPMS Metals					
11/10/2010	20:07	576739	(EPA 200.8)	Aluminum Total ICAP/MS	36	ug/L	20	1
11/10/2010	20:07	576739	(EPA 200.8)	Antimony Total ICAP/MS	ND	ug/L	1	1
11/10/2010	20:07	576739	(EPA 200.8)	Arsenic Total ICAP/MS	3.2	ug/L	1	1
11/10/2010	20:07	576739	(EPA 200.8)	Barium Total ICAP/MS	6.4	ug/L	2	1
11/10/2010	20:07	576739	(EPA 200.8)	Beryllium Total ICAP/MS	ND	ug/L	1	1
11/10/2010	20:07	576739	(EPA 200.8)	Cadmium Total ICAP/MS	ND	ug/L	0.5	1
11/10/2010	20:07	576739	(EPA 200.8)	Chromium Total ICAP/MS	ND	ug/L	1	1
11/10/2010	20:07	576739	(EPA 200.8)	Copper Total ICAP/MS	ND	ug/L	2	1
11/10/2010	20:07	576739	(EPA 200.8)	Lead Total ICAP/MS	ND	ug/L	0.5	1
11/10/2010	20:07	576739	(EPA 200.8)	Manganese Total ICAP/MS	24	ug/L	2	1
11/10/2010	20:07	576739	(EPA 200.8)	Nickel Total ICAP/MS	ND	ug/L	5	1
11/10/2010	20:07	576739	(EPA 200.8)	Selenium Total ICAP/MS	ND	ug/L	5	1

Rounding on totals after summation.
(c) - indicates calculated results

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Prepared	Analyzed		QC Ref #	Method	Analyte	Result	Units	MRL	Dilution
	11/10/2010	20:07	576739	(EPA 200.8)	Silver Total ICAP/MS	ND	ug/L	0.5	1
	11/10/2010	20:07	576739	(EPA 200.8)	Thallium Total ICAP/MS	ND	ug/L	1	1
	11/10/2010	20:07	576739	(EPA 200.8)	Zinc Total ICAP/MS	ND	ug/L	20	1
				EPA 200.7 - ICP Metals					
	11/09/2010	12:24	575828	(EPA 200.7)	Calcium Total ICAP	2.9	mg/L	1	1
	11/09/2010	12:24	575828	(EPA 200.7)	Iron Total ICAP	0.14	mg/L	0.02	1
	11/09/2010	12:24	575828	(EPA 200.7)	Magnesium Total ICAP	0.56	mg/L	0.1	1
	11/09/2010	12:24	575828	(EPA 200.7)	Potassium Total ICAP	ND	mg/L	1	1
	11/09/2010	12:24	575828	(EPA 200.7)	Sodium Total ICAP	3.3	mg/L	1	1
				EPA 300.0 - Nitrate, Nitrite by EPA 300.0					
	11/04/2010	14:42	575481	(EPA 300.0)	Nitrate as Nitrogen by IC	ND	mg/L	0.1	1
	11/04/2010	14:42	575481	(EPA 300.0)	Nitrate as NO3 (calc)	ND	mg/L	0.44	1
	11/04/2010	14:42	575481	(EPA 300.0)	Nitrite Nitrogen by IC	ND	mg/L	0.05	1
	11/04/2010	14:42	575481	(EPA 300.0)	Total Nitrate, Nitrite-N, CALC	ND	mg/L	0.1	1
				EPA 300.0 - Chloride, Sulfate by EPA 300.0					
	11/04/2010	14:42	575513	(EPA 300.0)	Chloride	2.0	mg/L	1	1
	11/04/2010	14:42	575513	(EPA 300.0)	Sulfate	0.81	mg/L	0.5	1
				SM2330B - Hydroxide as OH, Calculated					
	11/05/2010	10:34		(SM2330B)	Hydroxide as OH Calculated	ND	mg/L	2	1
				SM4500-CO2-D - Carbon Dioxide,Free(25C)-Calc.					
	11/12/2010	09:58		(SM4500-CO2-D)	Carbon Dioxide,Free(25C)-Calc.	ND	mg/L	2	1
				SM 4500F-C - Fluoride					
	11/08/2010	14:51	575749	(SM 4500F-C)	Fluoride	ND	mg/L	0.05	1
				SM2330B - Carbonate as CO3, Calculated					
	11/12/2010	09:58		(SM2330B)	Carbonate as CO3, Calculated	ND	mg/L	2	1
				SM 2340B - Total Hardness as CaCO3 by ICP					
	11/09/2010	09:23		(SM 2340B)	Total Hardness as CaCO3 by ICP (calc)	9.5	mg/L	3	1
				SM 2320B - Alkalinity in CaCO3 units					
	11/11/2010	17:36	576364	(SM 2320B)	Alkalinity in CaCO3 units	12	mg/L	2	1
				E160.1/SM2540C - Total Dissolved Solids (TDS)					
11/9/2010	11/09/2010	18:56	575936	(E160.1/SM2540C)	Total Dissolved Solids (TDS)	31	mg/L	10	1
				SM4500-HB - PH (H3=past HT not compliant)					
	11/04/2010	16:44	575468	(SM4500-HB)	PH (H3=past HT not compliant)	7.3	Units	0.1	1
				SM 5540C/EPA 425.1 - Surfactants					

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	11/04/2010 16:09	575479	(SM 5540C/EPA 425.1)	Surfactants	ND	mg/L	0.05	1
	SM2330B - Bicarb.Alkalinity as HCO3,calc							
	11/12/2010 09:58		(SM2330B)	Bicarb.Alkalinity as HCO3calc	14	mg/L	2	1
	SM2510B - Specific Conductance							
	11/04/2010 18:18	575441	(SM2510B)	Specific Conductance, 25 C	34	umho/cm	2	1
SJR below Kerckhoff Powerhouse #2 (201011040070)						**Sampled on 11/03/2010 1005**		
	EPA 1631 - Mercury by EPA 1631 (Sub)							
	11/10/2010 09:24		(EPA 1631)	Mercury by EPA Method 1631	0.0090	ug/L	0.0005	1
	SM 10200-H - Chlorophyll A (Subbed)							
	11/17/2010 11:00		(SM 10200-H)	Chlorophyll A	1.1	mg/m3	1.1	1
	SM 2330B - pH of CaCO3 saturation(60C)							
	11/12/2010 09:58		(SM 2330B)	pH of CaCO3 saturation(60C)	9.4	Units	0.1	1
	SM 2330B - Langelier Index - 25 degree							
	11/09/2010 09:23		(SM 2330B)	Langelier Index - 25 degree	-2.6	None		1
	SM 1030E - Anion Sum - Calculated							
	11/12/2010 09:58		(SM 1030E)	Anion Sum - Calculated	0.31	meq/L	0.001	1
	SM 1030E - Cation Sum - Calculated							
	11/09/2010 09:24		(SM 1030E)	Cation Sum - Calculated	0.33	meq/L	0.001	1
	SM 2330B - pH of CaCO3 saturation(25C)							
	11/09/2010 09:23		(SM 2330B)	pH of CaCO3 saturation(25C)	9.8	Units	0.1	1
	SM 2330 - Agressiveness Index-Calculated							
	11/12/2010 09:58		(SM 2330)	Agressiveness Index-Calculated	9.3	None	0.1	1
	SM 2330B - Langlier Index at 60 degrees C							
	11/10/2010 01:25		(SM 2330B)	Langelier Index at 60 degrees C	-2.2	None		1
	SM 1030E - Cation/Anion Difference							
	11/10/2010 01:25		(SM 1030E)	Cation/Anion Difference	4.4	%		1
	EPA 200.8 - ICPMS Metals							
	11/10/2010 20:10	576739	(EPA 200.8)	Aluminum Total ICAP/MS	44	ug/L	20	1
	11/10/2010 20:10	576739	(EPA 200.8)	Antimony Total ICAP/MS	ND	ug/L	1	1
	11/10/2010 20:10	576739	(EPA 200.8)	Arsenic Total ICAP/MS	3.2	ug/L	1	1
	11/10/2010 20:10	576739	(EPA 200.8)	Barium Total ICAP/MS	6.3	ug/L	2	1
	11/10/2010 20:10	576739	(EPA 200.8)	Beryllium Total ICAP/MS	ND	ug/L	1	1
	11/10/2010 20:10	576739	(EPA 200.8)	Cadmium Total ICAP/MS	ND	ug/L	0.5	1
	11/10/2010 20:10	576739	(EPA 200.8)	Chromium Total ICAP/MS	ND	ug/L	1	1

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	11/10/2010 20:10	576739	(EPA 200.8)	Copper Total ICAP/MS	ND	ug/L	2	1
	11/10/2010 20:10	576739	(EPA 200.8)	Lead Total ICAP/MS	ND	ug/L	0.5	1
	11/10/2010 20:10	576739	(EPA 200.8)	Manganese Total ICAP/MS	28	ug/L	2	1
	11/10/2010 20:10	576739	(EPA 200.8)	Nickel Total ICAP/MS	ND	ug/L	5	1
	11/10/2010 20:10	576739	(EPA 200.8)	Selenium Total ICAP/MS	ND	ug/L	5	1
	11/10/2010 20:10	576739	(EPA 200.8)	Silver Total ICAP/MS	ND	ug/L	0.5	1
	11/10/2010 20:10	576739	(EPA 200.8)	Thallium Total ICAP/MS	ND	ug/L	1	1
	11/10/2010 20:10	576739	(EPA 200.8)	Zinc Total ICAP/MS	ND	ug/L	20	1
	EPA 200.7 - ICP Metals							
	11/09/2010 12:29	575828	(EPA 200.7)	Calcium Total ICAP	2.9	mg/L	1	1
	11/09/2010 12:29	575828	(EPA 200.7)	Iron Total ICAP	0.14	mg/L	0.02	1
	11/09/2010 12:29	575828	(EPA 200.7)	Magnesium Total ICAP	0.56	mg/L	0.1	1
	11/09/2010 12:29	575828	(EPA 200.7)	Potassium Total ICAP	ND	mg/L	1	1
	11/09/2010 12:29	575828	(EPA 200.7)	Sodium Total ICAP	3.3	mg/L	1	1
	EPA 300.0 - Nitrate, Nitrite by EPA 300.0							
	11/04/2010 14:29	575481	(EPA 300.0)	Nitrate as Nitrogen by IC	ND	mg/L	0.1	1
	11/04/2010 14:29	575481	(EPA 300.0)	Nitrate as NO3 (calc)	ND	mg/L	0.44	1
	11/04/2010 14:29	575481	(EPA 300.0)	Nitrite Nitrogen by IC	ND	mg/L	0.05	1
	11/04/2010 14:29	575481	(EPA 300.0)	Total Nitrate, Nitrite-N, CALC	ND	mg/L	0.1	1
	EPA 300.0 - Chloride, Sulfate by EPA 300.0							
	11/04/2010 14:29	575513	(EPA 300.0)	Chloride	1.9	mg/L	1	1
	11/04/2010 14:29	575513	(EPA 300.0)	Sulfate	0.81	mg/L	0.5	1
	SM2330B - Hydroxide as OH, Calculated							
	11/05/2010 10:34		(SM2330B)	Hydroxide as OH Calculated	ND	mg/L	2	1
	SM4500-CO2-D - Carbon Dioxide,Free(25C)-Calc.							
	11/12/2010 09:58		(SM4500-CO2-D)	Carbon Dioxide,Free(25C)-Calc.	ND	mg/L	2	1
	SM 4500F-C - Fluoride							
	11/08/2010 14:52	575749	(SM 4500F-C)	Fluoride	ND	mg/L	0.05	1
	SM2330B - Carbonate as CO3, Calculated							
	11/12/2010 09:58		(SM2330B)	Carbonate as CO3, Calculated	ND	mg/L	2	1
	SM 2340B - Total Hardness as CaCO3 by ICP							
	11/09/2010 09:23		(SM 2340B)	Total Hardness as CaCO3 by ICP (calc)	9.5	mg/L	3	1
	SM 2320B - Alkalinity in CaCO3 units							
	11/11/2010 18:02	576364	(SM 2320B)	Alkalinity in CaCO3 units	12	mg/L	2	1
	E160.1/SM2540C - Total Dissolved Solids (TDS)							

Rounding on totals after summation.
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750 Royal Oak Dr., Suite 100
Monrovia, California, 91016-3629
Tel: 626 386 1100
Fax: 626 386 1101
1 800 566 LABS (1 800 566 5227)

Laboratory Data
Report: 348083

MWH Americas, Inc.
Jamil Ibrahim
3321 Power Inn Road, Suite 300
Sacramento, CA 95826

Samples Received on:
11/04/2010

Prepared	Analyzed	QC Ref #	Method	Analyte	Result	Units	MRL	Dilution
11/9/2010	11/09/2010 18:57	575936	(E160.1/SM2540C)	Total Dissolved Solids (TDS)	24	mg/L	10	1
	SM4500-HB - PH (H3=past HT not compliant)							
	11/04/2010 16:48	575468	(SM4500-HB)	PH (H3=past HT not compliant)	7.2	Units	0.1	1
	SM 5540C/EPA 425.1 - Surfactants							
	11/04/2010 16:10	575479	(SM 5540C/EPA 425.1)	Surfactants	ND	mg/L	0.05	1
	SM2330B - Bicarb.Alkalinity as HCO3,calc							
	11/12/2010 09:58		(SM2330B)	Bicarb.Alkalinity as HCO3calc	14	mg/L	2	1
	SM2510B - Specific Conductance							
	11/05/2010 14:20	575549	(SM2510B)	Specific Conductance, 25 C	34	umho/cm	2	1
Millerton Lake @ Temperance Flat (201011040072)						**Sampled on 11/03/2010 1515**		
	EPA 1631 - Mercury by EPA 1631 (Sub)							
	11/24/2010 09:24		(EPA 1631)	Mercury by EPA Method 1631	0.00050 (J)	ug/L	0.0005	1
	SM 10200-H - Chlorophyll A (Subbed)							
	11/17/2010 11:00		(SM 10200-H)	Chlorophyll A	1.1	mg/m3	1.1	1
	SM 2330B - pH of CaCO3 saturation(60C)							
	11/12/2010 10:02		(SM 2330B)	pH of CaCO3 saturation(60C)	9.4	Units	0.1	1
	SM 2330B - Langelier Index - 25 degree							
	11/09/2010 09:23		(SM 2330B)	Langelier Index - 25 degree	-2.5	None		1
	SM 1030E - Anion Sum - Calculated							
	11/12/2010 10:03		(SM 1030E)	Anion Sum - Calculated	0.32	meq/L	0.001	1
	SM 1030E - Cation Sum - Calculated							
	11/09/2010 09:24		(SM 1030E)	Cation Sum - Calculated	0.32	meq/L	0.001	1
	SM 2330B - pH of CaCO3 saturation(25C)							
	11/09/2010 09:23		(SM 2330B)	pH of CaCO3 saturation(25C)	9.8	Units	0.1	1
	SM 2330 - Agressiveness Index-Calculated							
	11/12/2010 10:03		(SM 2330)	Agressiveness Index-Calculated	9.4	None	0.1	1
	SM 2330B - Langlier Index at 60 degrees C							
	11/10/2010 01:25		(SM 2330B)	Langelier Index at 60 degrees C	-2.1	None		1
	SM 1030E - Cation/Anion Difference							
	11/10/2010 01:25		(SM 1030E)	Cation/Anion Difference	0.049	%		1
	EPA 200.8 - ICPMS Metals							
	11/10/2010 20:14	576739	(EPA 200.8)	Aluminum Total ICAP/MS	26	ug/L	20	1
	11/10/2010 20:14	576739	(EPA 200.8)	Antimony Total ICAP/MS	ND	ug/L	1	1
	11/10/2010 20:14	576739	(EPA 200.8)	Arsenic Total ICAP/MS	2.2	ug/L	1	1

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Tel: 626 386 1100
Fax: 626 386 1101
1 800 566 LABS (1 800 566 5227)

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Report: 348083

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Jamil Ibrahim
3321 Power Inn Road, Suite 300
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Samples Received on:
11/04/2010

Prepared	Analyzed	QC Ref #	Method	Analyte	Result	Units	MRL	Dilution
	11/10/2010 20:14	576739	(EPA 200.8)	Barium Total ICAP/MS	7.0	ug/L	2	1
	11/10/2010 20:14	576739	(EPA 200.8)	Beryllium Total ICAP/MS	ND	ug/L	1	1
	11/10/2010 20:14	576739	(EPA 200.8)	Cadmium Total ICAP/MS	ND	ug/L	0.5	1
	11/10/2010 20:14	576739	(EPA 200.8)	Chromium Total ICAP/MS	ND	ug/L	1	1
	11/10/2010 20:14	576739	(EPA 200.8)	Copper Total ICAP/MS	ND	ug/L	2	1
	11/10/2010 20:14	576739	(EPA 200.8)	Lead Total ICAP/MS	ND	ug/L	0.5	1
	11/10/2010 20:14	576739	(EPA 200.8)	Manganese Total ICAP/MS	11	ug/L	2	1
	11/10/2010 20:14	576739	(EPA 200.8)	Nickel Total ICAP/MS	ND	ug/L	5	1
	11/10/2010 20:14	576739	(EPA 200.8)	Selenium Total ICAP/MS	ND	ug/L	5	1
	11/10/2010 20:14	576739	(EPA 200.8)	Silver Total ICAP/MS	ND	ug/L	0.5	1
	11/10/2010 20:14	576739	(EPA 200.8)	Thallium Total ICAP/MS	ND	ug/L	1	1
	11/10/2010 20:14	576739	(EPA 200.8)	Zinc Total ICAP/MS	ND	ug/L	20	1
	EPA 200.7 - ICP Metals							
	11/09/2010 12:46	575828	(EPA 200.7)	Calcium Total ICAP	2.8	mg/L	1	1
	11/09/2010 12:46	575828	(EPA 200.7)	Iron Total ICAP	0.060	mg/L	0.02	1
	11/09/2010 12:46	575828	(EPA 200.7)	Magnesium Total ICAP	0.56	mg/L	0.1	1
	11/09/2010 12:46	575828	(EPA 200.7)	Potassium Total ICAP	ND	mg/L	1	1
	11/09/2010 12:46	575828	(EPA 200.7)	Sodium Total ICAP	3.0	mg/L	1	1
	EPA 300.0 - Nitrate, Nitrite by EPA 300.0							
	11/04/2010 15:09	575481	(EPA 300.0)	Nitrate as Nitrogen by IC	ND	mg/L	0.1	1
	11/04/2010 15:09	575481	(EPA 300.0)	Nitrate as NO3 (calc)	ND	mg/L	0.44	1
	11/04/2010 15:09	575481	(EPA 300.0)	Nitrite Nitrogen by IC	ND	mg/L	0.05	1
	11/04/2010 15:09	575481	(EPA 300.0)	Total Nitrate, Nitrite-N, CALC	ND	mg/L	0.1	1
	EPA 300.0 - Chloride, Sulfate by EPA 300.0							
	11/04/2010 15:09	575513	(EPA 300.0)	Chloride	1.6	mg/L	1	1
	11/04/2010 15:09	575513	(EPA 300.0)	Sulfate	0.69	mg/L	0.5	1
	SM2330B - Hydroxide as OH, Calculated							
	11/05/2010 10:34		(SM2330B)	Hydroxide as OH Calculated	ND	mg/L	2	1
	SM4500-CO2-D - Carbon Dioxide,Free(25C)-Calc.							
	11/12/2010 10:03		(SM4500-CO2-D)	Carbon Dioxide,Free(25C)-Calc.	ND	mg/L	2	1
	SM 4500F-C - Fluoride							
	11/08/2010 14:53	575749	(SM 4500F-C)	Fluoride	ND	mg/L	0.05	1
	SM2330B - Carbonate as CO3, Calculated							
	11/12/2010 10:03		(SM2330B)	Carbonate as CO3, Calculated	ND	mg/L	2	1
	SM 2340B - Total Hardness as CaCO3 by ICP							

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750 Royal Oak Dr., Suite 100
Monrovia, California, 91016-3629
Tel: 626 386 1100
Fax: 626 386 1101
1 800 566 LABS (1 800 566 5227)

Laboratory Data
Report: 348083

MWH Americas, Inc.
Jamil Ibrahim
3321 Power Inn Road, Suite 300
Sacramento, CA 95826

Samples Received on:
11/04/2010

Prepared	Analyzed	QC Ref #	Method	Analyte	Result	Units	MRL	Dilution
	11/09/2010 09:23		(SM 2340B)	Total Hardness as CaCO3 by ICP (calc)	9.4	mg/L	3	1
		SM 2320B - Alkalinity in CaCO3 units						
	11/11/2010 21:22	576366	(SM 2320B)	Alkalinity in CaCO3 units	13	mg/L	2	1
		E160.1/SM2540C - Total Dissolved Solids (TDS)						
11/9/2010	11/09/2010 18:58	575936	(E160.1/SM2540C)	Total Dissolved Solids (TDS)	32	mg/L	10	1
		SM4500-HB - PH (H3=past HT not compliant)						
	11/04/2010 16:52	575468	(SM4500-HB)	PH (H3=past HT not compliant)	7.3	Units	0.1	1
		SM 5540C/EPA 425.1 - Surfactants						
	11/04/2010 16:11	575479	(SM 5540C/EPA 425.1)	Surfactants	ND	mg/L	0.05	1
		SM2330B - Bicarb.Alkalinity as HCO3,calc						
	11/12/2010 10:03		(SM2330B)	Bicarb.Alkalinity as HCO3calc	16	mg/L	2	1
		SM2510B - Specific Conductance						
	11/05/2010 14:21	575549	(SM2510B)	Specific Conductance, 25 C	31	umho/cm	2	1
Millerton Lake @ Fine Gold Bay (201011040073)						**Sampled on 11/03/2010 1620**		
		EPA 1631 - Mercury by EPA 1631 (Sub)						
	11/24/2010 09:24		(EPA 1631)	Mercury by EPA Method 1631	ND (J)	ug/L	0.001	1
		SM 10200-H - Chlorophyll A (Subbed)						
	11/17/2010 11:00		(SM 10200-H)	Chlorophyll A	1.1	mg/m3	1.1	1
		SM 2330B - pH of CaCO3 saturation(60C)						
	11/12/2010 10:03		(SM 2330B)	pH of CaCO3 saturation(60C)	9.7	Units	0.1	1
		SM 2330B - Langelier Index - 25 degree						
	11/09/2010 09:23		(SM 2330B)	Langelier Index - 25 degree	-2.9	None		1
		SM 1030E - Anion Sum - Calculated						
	11/12/2010 10:03		(SM 1030E)	Anion Sum - Calculated	0.20	meq/L	0.001	1
		SM 1030E - Cation Sum - Calculated						
	11/09/2010 09:24		(SM 1030E)	Cation Sum - Calculated	0.29	meq/L	0.001	1
		SM 2330B - pH of CaCO3 saturation(25C)						
	11/09/2010 09:23		(SM 2330B)	pH of CaCO3 saturation(25C)	10	Units	0.1	1
		SM 2330 - Agressiveness Index-Calculated						
	11/12/2010 10:03		(SM 2330)	Agressiveness Index-Calculated	9.1	None	0.1	1
		SM 2330B - Langlier Index at 60 degrees C						
	11/10/2010 01:25		(SM 2330B)	Langelier Index at 60 degrees C	-2.4	None		1
		SM 1030E - Cation/Anion Difference						
	11/10/2010 01:25		(SM 1030E)	Cation/Anion Difference	19	%		1

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Tel: 626 386 1100
Fax: 626 386 1101
1 800 566 LABS (1 800 566 5227)

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Jamil Ibrahim
3321 Power Inn Road, Suite 300
Sacramento, CA 95826

Samples Received on:
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Prepared	Analyzed	QC Ref #	Method	Analyte	Result	Units	MRL	Dilution
	EPA 200.8 - ICPMS Metals							
11/10/2010	20:17	576739	(EPA 200.8)	Aluminum Total ICAP/MS	ND	ug/L	20	1
11/10/2010	20:17	576739	(EPA 200.8)	Antimony Total ICAP/MS	ND	ug/L	1	1
11/10/2010	20:17	576739	(EPA 200.8)	Arsenic Total ICAP/MS	1.7	ug/L	1	1
11/10/2010	20:17	576739	(EPA 200.8)	Barium Total ICAP/MS	7.1	ug/L	2	1
11/10/2010	20:17	576739	(EPA 200.8)	Beryllium Total ICAP/MS	ND	ug/L	1	1
11/10/2010	20:17	576739	(EPA 200.8)	Cadmium Total ICAP/MS	ND	ug/L	0.5	1
11/10/2010	20:17	576739	(EPA 200.8)	Chromium Total ICAP/MS	ND	ug/L	1	1
11/10/2010	20:17	576739	(EPA 200.8)	Copper Total ICAP/MS	ND	ug/L	2	1
11/10/2010	20:17	576739	(EPA 200.8)	Lead Total ICAP/MS	ND	ug/L	0.5	1
11/10/2010	20:17	576739	(EPA 200.8)	Manganese Total ICAP/MS	6.9	ug/L	2	1
11/10/2010	20:17	576739	(EPA 200.8)	Nickel Total ICAP/MS	ND	ug/L	5	1
11/10/2010	20:17	576739	(EPA 200.8)	Selenium Total ICAP/MS	ND	ug/L	5	1
11/10/2010	20:17	576739	(EPA 200.8)	Silver Total ICAP/MS	ND	ug/L	0.5	1
11/10/2010	20:17	576739	(EPA 200.8)	Thallium Total ICAP/MS	ND	ug/L	1	1
11/10/2010	20:17	576739	(EPA 200.8)	Zinc Total ICAP/MS	ND	ug/L	20	1
	EPA 200.7 - ICP Metals							
11/09/2010	12:51	575828	(EPA 200.7)	Calcium Total ICAP	2.6	mg/L	1	1
11/09/2010	12:51	575828	(EPA 200.7)	Iron Total ICAP	ND	mg/L	0.02	1
11/09/2010	12:51	575828	(EPA 200.7)	Magnesium Total ICAP	0.51	mg/L	0.1	1
11/09/2010	12:51	575828	(EPA 200.7)	Potassium Total ICAP	ND	mg/L	1	1
11/09/2010	12:51	575828	(EPA 200.7)	Sodium Total ICAP	2.7	mg/L	1	1
	EPA 300.0 - Nitrate, Nitrite by EPA 300.0							
11/04/2010	14:55	575481	(EPA 300.0)	Nitrate as Nitrogen by IC	ND	mg/L	0.1	1
11/04/2010	14:55	575481	(EPA 300.0)	Nitrate as NO3 (calc)	ND	mg/L	0.44	1
11/04/2010	14:55	575481	(EPA 300.0)	Nitrite Nitrogen by IC	ND	mg/L	0.05	1
11/04/2010	14:55	575481	(EPA 300.0)	Total Nitrate, Nitrite-N, CALC	ND	mg/L	0.1	1
	EPA 300.0 - Chloride, Sulfate by EPA 300.0							
11/04/2010	14:55	575513	(EPA 300.0)	Chloride	1.4	mg/L	1	1
11/04/2010	14:55	575513	(EPA 300.0)	Sulfate	0.67	mg/L	0.5	1
	SM2330B - Hydroxide as OH, Calculated							
11/05/2010	10:33		(SM2330B)	Hydroxide as OH Calculated	ND	mg/L	2	1
	SM4500-CO2-D - Carbon Dioxide,Free(25C)-Calc.							
11/12/2010	10:03		(SM4500-CO2-D)	Carbon Dioxide,Free(25C)-Calc.	ND	mg/L	2	1
	SM 4500F-C - Fluoride							

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11/04/2010

Prepared	Analyzed	QC Ref #	Method	Analyte	Result	Units	MRL	Dilution
	11/08/2010 14:54	575749	(SM 4500F-C)	Fluoride	ND	mg/L	0.05	1
	SM2330B - Carbonate as CO3, Calculated							
	11/12/2010 10:03		(SM2330B)	Carbonate as CO3, Calculated	ND	mg/L	2	1
	SM 2340B - Total Hardness as CaCO3 by ICP							
	11/09/2010 09:23		(SM 2340B)	Total Hardness as CaCO3 by ICP (calc)	8.6	mg/L	3	1
	SM 2320B - Alkalinity in CaCO3 units							
	11/11/2010 21:46	576366	(SM 2320B)	Alkalinity in CaCO3 units	7.1	mg/L	2	1
	E160.1/SM2540C - Total Dissolved Solids (TDS)							
11/9/2010	11/09/2010 18:59	575936	(E160.1/SM2540C)	Total Dissolved Solids (TDS)	25	mg/L	10	1
	SM4500-HB - PH (H3=past HT not compliant)							
	11/04/2010 16:55	575468	(SM4500-HB)	PH (H3=past HT not compliant)	7.2	Units	0.1	1
	SM 5540C/EPA 425.1 - Surfactants							
	11/04/2010 16:12	575479	(SM 5540C/EPA 425.1)	Surfactants	ND	mg/L	0.05	1
	SM2330B - Bicarb.Alkalinity as HCO3,calc							
	11/12/2010 10:03		(SM2330B)	Bicarb.Alkalinity as HCO3calc	8.7	mg/L	2	1
	SM2510B - Specific Conductance							
	11/05/2010 14:22	575549	(SM2510B)	Specific Conductance, 25 C	30	umho/cm	2	1

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QC Ref # 575441 - Specific Conductance — **Analysis Date: 11/04/2010**

201011040069	SJR near Auberry	Analyzed by: SAR

QC Ref # 575468 - PH (H3=past HT not compliant) — **Analysis Date: 11/04/2010**

201011040069	SJR near Auberry	Analyzed by: SAR
201011040070	SJR below Kerckhoff Powerhouse #2	Analyzed by: SAR
201011040072	Millerton Lake @ Temperance Flat	Analyzed by: SAR
201011040073	Millerton Lake @ Fine Gold Bay	Analyzed by: SAR

QC Ref # 575479 - Surfactants — **Analysis Date: 11/04/2010**

201011040069	SJR near Auberry	Analyzed by: CYP
201011040070	SJR below Kerckhoff Powerhouse #2	Analyzed by: CYP
201011040072	Millerton Lake @ Temperance Flat	Analyzed by: CYP
201011040073	Millerton Lake @ Fine Gold Bay	Analyzed by: CYP

QC Ref # 575481 - Nitrate, Nitrite by EPA 300.0 — **Analysis Date: 11/04/2010**

201011040069	SJR near Auberry	Analyzed by: SXK
201011040070	SJR below Kerckhoff Powerhouse #2	Analyzed by: SXK
201011040072	Millerton Lake @ Temperance Flat	Analyzed by: SXK
201011040073	Millerton Lake @ Fine Gold Bay	Analyzed by: SXK

QC Ref # 575513 - Chloride, Sulfate by EPA 300.0 — **Analysis Date: 11/04/2010**

201011040069	SJR near Auberry	Analyzed by: SXK
201011040070	SJR below Kerckhoff Powerhouse #2	Analyzed by: SXK
201011040072	Millerton Lake @ Temperance Flat	Analyzed by: SXK
201011040073	Millerton Lake @ Fine Gold Bay	Analyzed by: SXK

QC Ref # 575549 - Specific Conductance — **Analysis Date: 11/05/2010**

201011040070	SJR below Kerckhoff Powerhouse #2	Analyzed by: SAR
201011040072	Millerton Lake @ Temperance Flat	Analyzed by: SAR
201011040073	Millerton Lake @ Fine Gold Bay	Analyzed by: SAR

QC Ref # 575749 - Fluoride — **Analysis Date: 11/08/2010**

201011040069	SJR near Auberry	Analyzed by: YXP
201011040070	SJR below Kerckhoff Powerhouse #2	Analyzed by: YXP
201011040072	Millerton Lake @ Temperance Flat	Analyzed by: YXP
201011040073	Millerton Lake @ Fine Gold Bay	Analyzed by: YXP

QC Ref # 575828 - ICP Metals — **Analysis Date: 11/09/2010**

201011040069	SJR near Auberry	Analyzed by: NINA
201011040070	SJR below Kerckhoff Powerhouse #2	Analyzed by: NINA
201011040072	Millerton Lake @ Temperance Flat	Analyzed by: NINA
201011040073	Millerton Lake @ Fine Gold Bay	Analyzed by: NINA

QC Ref # 575936 - Total Dissolved Solids (TDS) — **Analysis Date: 11/09/2010**

201011040069	SJR near Auberry	Analyzed by: JRF
201011040070	SJR below Kerckhoff Powerhouse #2	Analyzed by: JRF
201011040072	Millerton Lake @ Temperance Flat	Analyzed by: JRF
201011040073	Millerton Lake @ Fine Gold Bay	Analyzed by: JRF

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(continued)

QC Ref # 576364 - Alkalinity in CaCO3 units		**Analysis Date: 11/11/2010**
201011040069	SJR near Auberry	Analyzed by: AAO
201011040070	SJR below Kerckhoff Powerhouse #2	Analyzed by: AAO
QC Ref # 576366 - Alkalinity in CaCO3 units		**Analysis Date: 11/11/2010**
201011040072	Millerton Lake @ Temperance Flat	Analyzed by: AAO
201011040073	Millerton Lake @ Fine Gold Bay	Analyzed by: AAO
QC Ref # 576739 - ICPMS Metals		**Analysis Date: 11/10/2010**
201011040069	SJR near Auberry	Analyzed by: DTN
201011040070	SJR below Kerckhoff Powerhouse #2	Analyzed by: DTN
201011040072	Millerton Lake @ Temperance Flat	Analyzed by: DTN
201011040073	Millerton Lake @ Fine Gold Bay	Analyzed by: DTN

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QC Type	Analyte	Native	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPDLimit (%)	RPD%
QC Ref# 575441 - Specific Conductance by SM2510B							**Analysis Date: 11/04/2010**		
DUP1_201011020629	Specific Conductance	1900		1920	umho/cm		(0-20)	20	0.10
DUP2_201011040069	Specific Conductance	34		34.2	umho/cm		(0-20)	20	0.88
LCS1	Specific Conductance		1000	1020	umho/cm	102	(90-110)		
LCS2	Specific Conductance		1000	1030	umho/cm	103	(90-110)	20	0.98
MBLK	Specific Conductance			<2	umho/cm				
MRL_CHK	Specific Conductance		2.0	1.62	umho/cm	81	(50-150)		
QC Ref# 575468 - PH (H3=past HT not compliant) by SM4500-HB							**Analysis Date: 11/04/2010**		
DUP1_201011040073	PH (H3=past HT not compliant)	7.2		7.23	Units		(0-20)	20	0.14
LCS1	PH (H3=past HT not compliant)		6.0	6.07	Units	101	(98-102)		
LCS2	PH (H3=past HT not compliant)		6.0	6.09	Units	102	(98-102)	20	0.33
QC Ref# 575479 - Surfactants by SM 5540C/EPA 425.1							**Analysis Date: 11/04/2010**		
LCS1	Surfactants		0.2	0.181	mg/L	91	(90-110)		
LCS2	Surfactants		0.2	0.196	mg/L	98	(90-110)	20	8.0
MBLK	Surfactants			<0.05	mg/L				
MRL_CHK	Surfactants		0.05	0.0619	mg/L	124	(50-150)		
MS_201011040026	Surfactants	ND	0.2	0.209	mg/L	102	(80-120)		
MSD_201011040026	Surfactants	ND	0.2	0.215	mg/L	104	(80-120)	20	1.9
QC Ref# 575481 - Nitrate, Nitrite by EPA 300.0 by EPA 300.0							**Analysis Date: 11/04/2010**		
LCS1	Nitrate as Nitrogen by IC		2.5	2.5	mg/L	100	(90-110)		
LCS2	Nitrate as Nitrogen by IC		2.5	2.5	mg/L	100	(90-110)	20	0.0
MBLK	Nitrate as Nitrogen by IC			<0.10	mg/L				
MRL_CHK	Nitrate as Nitrogen by IC		0.05	0.0508	mg/L	102	(50-150)		
MRLLW	Nitrate as Nitrogen by IC		0.013	0.0145	mg/L	116	(50-150)		
MS_201011040247	Nitrate as Nitrogen by IC	3.5	1.3	6.25	mg/L	110	(80-120)		
MS_201011040423	Nitrate as Nitrogen by IC	6.1	1.3	8.76	mg/L	107	(80-120)		
MSD_201011040247	Nitrate as Nitrogen by IC	3.5	1.3	6.18	mg/L	107	(80-120)	20	2.8
MSD_201011040423	Nitrate as Nitrogen by IC	6.1	1.3	8.67	mg/L	103	(80-120)	20	3.8
LCS1	Nitrite Nitrogen by IC		1.0	0.948	mg/L	95	(90-110)		
LCS2	Nitrite Nitrogen by IC		1.0	0.945	mg/L	95	(90-110)	20	0.32
MBLK	Nitrite Nitrogen by IC			<0.10	mg/L				
MRL_CHK	Nitrite Nitrogen by IC		0.05	0.0455	mg/L	91	(50-150)		
MRLLW	Nitrite Nitrogen by IC		0.013	0.0118	mg/L	94	(50-150)		
MS_201011040247	Nitrite Nitrogen by IC	ND	0.5	0.935	mg/L	94	(80-120)		
MS_201011040423	Nitrite Nitrogen by IC	ND	0.5	0.990	mg/L	99	(80-120)		
MSD_201011040247	Nitrite Nitrogen by IC	ND	0.5	0.922	mg/L	92	(80-120)	20	1.4

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QC Type	Analyte	Native	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPDLimit (%)	RPD%
MSD_201011040423	Nitrite Nitrogen by IC	ND	0.5	0.977	mg/L	98	(80-120)	20	1.3
QC Ref# 575513 - Chloride, Sulfate by EPA 300.0 by EPA 300.0							**Analysis Date: 11/04/2010**		
LCS1	Chloride		25	25.7	mg/L	103	(90-110)		
LCS2	Chloride		25	25.6	mg/L	103	(90-110)	20	0.39
MBLK	Chloride			<0.5	mg/L				
MRL_CHK	Chloride		0.5	0.444	mg/L	89	(50-150)		
MS_201011040247	Chloride	92.8279	13	119	mg/L	103	(80-120)		
MS_201011050158	Chloride	44	13	72.2	mg/L	112	(80-120)		
MSD_201011040247	Chloride	92.8279	13	118	mg/L	100	(80-120)	20	3.1
MSD_201011050158	Chloride	44	13	71.3	mg/L	109	(80-120)	20	2.7
LCS1	Sulfate		50	50.9	mg/L	102	(90-110)		
LCS2	Sulfate		50	50.8	mg/L	102	(90-110)	20	0.20
MBLK	Sulfate			<0.25	mg/L				
MRL_CHK	Sulfate		1.0	0.973	mg/L	97	(50-150)		
MRLLW	Sulfate		0.25	0.272	mg/L	109	(50-150)		
MS_201011040247	Sulfate	29	25	84.7	mg/L	112	(80-120)		
MS_201011050158	Sulfate	55	25	111	mg/L	113	(80-120)		
MSD_201011040247	Sulfate	29	25	83.1	mg/L	108	(80-120)	20	3.6
MSD_201011050158	Sulfate	55	25	110	mg/L	111	(80-120)	20	1.8
QC Ref# 575549 - Specific Conductance by SM2510B							**Analysis Date: 11/05/2010**		
DUP1_201011040471	Specific Conductance	530		517	umho/cm		(0-20)	20	1.5
DUP2_201011060055	Specific Conductance	110		106	umho/cm		(0-20)	20	1.1
LCS1	Specific Conductance		1000	978	umho/cm	98	(90-110)		
LCS2	Specific Conductance		1000	991	umho/cm	99	(90-110)	20	1.3
MBLK	Specific Conductance			<2	umho/cm				
MRL_CHK	Specific Conductance		2.0	1.56	umho/cm	78	(50-150)		
QC Ref# 575749 - Fluoride by SM 4500F-C							**Analysis Date: 11/08/2010**		
LCS1	Fluoride		1.0	1.04	mg/L	104	(81-116)		
LCS2	Fluoride		1.0	1.05	mg/L	105	(81-116)	20	0.96
MBLK	Fluoride			<0.05	mg/L				
MRL_CHK	Fluoride		0.05	0.0510	mg/L	102	(50-150)		
MS_201011030178	Fluoride	0.83	1.0	1.77	mg/L	94	(73-124)		
MS_201011030225	Fluoride	ND	1.0	1.07	mg/L	105	(73-124)		
MSD_201011030178	Fluoride	0.83	1.0	1.74	mg/L	91	(73-124)	20	2.9
QC Ref# 575828 - ICP Metals by EPA 200.7							**Analysis Date: 11/08/2010**		

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Fax: 626 386 1101
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QC Type	Analyte	Native	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPDLimit (%)	RPD%
LCS1	Calcium Total ICAP		50	48.4	mg/L	97	(85-115)		
LCS2	Calcium Total ICAP		50	45.9	mg/L	92	(85-115)	20	5.3
MBLK	Calcium Total ICAP			<1	mg/L				
MRL_CHK	Calcium Total ICAP		1.0	1.04	mg/L	104	(50-150)		
MS_201011040253	Calcium Total ICAP	56	50	105	mg/L	98	(70-130)		
MS2_201011030178	Calcium Total ICAP	30	50	82.3	mg/L	105	(70-130)		
MSD_201011040253	Calcium Total ICAP	56	50	99.4	mg/L	87	(70-130)	20	12
MSD2_201011030178	Calcium Total ICAP	30	50	79.2	mg/L	99	(70-130)	20	5.6
LCS1	Iron Total ICAP		5.0	5.07	mg/L	101	(85-115)		
LCS2	Iron Total ICAP		5.0	4.73	mg/L	95	(85-115)	20	6.9
MBLK	Iron Total ICAP			<0.02	mg/L				
MRL_CHK	Iron Total ICAP		0.02	0.0180	mg/L	90	(50-150)		
MS_201011040253	Iron Total ICAP	ND	5.0	5.48	mg/L	110	(70-130)		
MS2_201011030178	Iron Total ICAP	ND	5.0	5.49	mg/L	110	(70-130)		
MSD_201011040253	Iron Total ICAP	ND	5.0	5.12	mg/L	102	(70-130)	20	7.5
MSD2_201011030178	Iron Total ICAP	ND	5.0	5.3	mg/L	106	(70-130)	20	3.7
LCS1	Magnesium Total ICAP		20	19.3	mg/L	96	(85-115)		
LCS2	Magnesium Total ICAP		20	18.3	mg/L	92	(85-115)	20	5.3
MBLK	Magnesium Total ICAP			<0.1	mg/L				
MRL_CHK	Magnesium Total ICAP		0.1	0.104	mg/L	104	(50-150)		
MS_201011040253	Magnesium Total ICAP	23	20	42.5	mg/L	98	(70-130)		
MS2_201011030178	Magnesium Total ICAP	12	20	33.1	mg/L	106	(70-130)		
MSD_201011040253	Magnesium Total ICAP	23	20	40.3	mg/L	87	(70-130)	20	12
MSD2_201011030178	Magnesium Total ICAP	12	20	31.7	mg/L	99	(70-130)	20	6.4
LCS1	Potassium Total ICAP		20	18.7	mg/L	94	(85-115)		
LCS2	Potassium Total ICAP		20	17.5	mg/L	88	(85-115)	20	6.6
MBLK	Potassium Total ICAP			<1	mg/L				
MRL_CHK	Potassium Total ICAP		1.0	0.959	mg/L	96	(50-150)		
MS_201011040253	Potassium Total ICAP	4.2	20	24.5	mg/L	102	(70-130)		
MS2_201011030178	Potassium Total ICAP	2.6	20	23.2	mg/L	103	(70-130)		
MSD_201011040253	Potassium Total ICAP	4.2	20	23.1	mg/L	95	(70-130)	20	7.2
MSD2_201011030178	Potassium Total ICAP	2.6	20	22.2	mg/L	98	(70-130)	20	4.9
LCS1	Sodium Total ICAP		50	46.1	mg/L	92	(85-115)		
LCS2	Sodium Total ICAP		50	43.8	mg/L	88	(85-115)	20	5.1
MBLK	Sodium Total ICAP			<1	mg/L				
MRL_CHK	Sodium Total ICAP		1.0	0.980	mg/L	98	(50-150)		
MS_201011040253	Sodium Total ICAP	88	50	135	mg/L	94	(70-130)		
MS2_201011030178	Sodium Total ICAP	58	50	110	mg/L	104	(70-130)		

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QC Type	Analyte	Native	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPDLimit (%)	RPD%
MSD_201011040253	Sodium Total ICAP	88	50	128	mg/L	81	(70-130)	20	15
MSD2_201011030178	Sodium Total ICAP	58	50	106	mg/L	97	(70-130)	20	7.2
QC Ref# 575936 - Total Dissolved Solids (TDS) by E160.1/SM2540C							**Analysis Date: 11/09/2010**		
DUP_201011030353	Total Dissolved Solid (TDS)	610		592	mg/L		(0-10)	10	2.3
DUP_201011040223	Total Dissolved Solid (TDS)	360		342	mg/L		(0-10)	10	4.6
LCS1	Total Dissolved Solid (TDS)		175	160	mg/L	91	(80-114)		
LCS2	Total Dissolved Solid (TDS)		700	678	mg/L	97	(80-114)		
MBLK	Total Dissolved Solid (TDS)			<10	mg/L				
MRL_CHK	Total Dissolved Solid (TDS)		10	9.00	mg/L	90	(50-150)		
QC Ref# 576364 - Alkalinity in CaCO3 units by SM 2320B							**Analysis Date: 11/11/2010**		
LCS1	Alkalinity in CaCO3 units		100	101	mg/L	101	(90-110)		
LCS2	Alkalinity in CaCO3 units		100	101	mg/L	101	(90-110)	20	0.0
MBLK	Alkalinity in CaCO3 units			<2	mg/L				
MRL_CHK	Alkalinity in CaCO3 units		2.0	1.59	mg/L	80	(50-150)		
MS_201011040069	Alkalinity in CaCO3 units	12	100	117	mg/L	106	(80-120)		
MS2_201011040070	Alkalinity in CaCO3 units	12	100	117	mg/L	105	(80-120)		
MSD_201011040069	Alkalinity in CaCO3 units	12	100	121	mg/L	109	(80-120)	20	2.8
MSD2_201011040070	Alkalinity in CaCO3 units	12	100	116	mg/L	105	(80-120)	20	0.0
QC Ref# 576366 - Alkalinity in CaCO3 units by SM 2320B							**Analysis Date: 11/11/2010**		
LCS1	Alkalinity in CaCO3 units		100	102	mg/L	102	(90-110)		
LCS2	Alkalinity in CaCO3 units		100	103	mg/L	103	(90-110)	20	0.98
MBLK	Alkalinity in CaCO3 units			<2	mg/L				
MRL_CHK	Alkalinity in CaCO3 units		2.0	2.97	mg/L	149	(50-150)		
MS_201011040072	Alkalinity in CaCO3 units	13	100	119	mg/L	106	(80-120)		
MS2_201011040073	Alkalinity in CaCO3 units	7.1	100	122	mg/L	115	(80-120)		
MSD_201011040072	Alkalinity in CaCO3 units	13	100	119	mg/L	106	(80-120)	20	0.0
MSD2_201011040073	Alkalinity in CaCO3 units	7.1	100	122	mg/L	115	(80-120)	20	0.0
QC Ref# 576739 - ICPMS Metals by EPA 200.8							**Analysis Date: 11/10/2010**		
LCS1	Aluminum Total ICAP/MS		200	199	ug/L	99	(85-115)		
LCS2	Aluminum Total ICAP/MS		200	198	ug/L	99	(85-115)	20	0.50
MBLK	Aluminum Total ICAP/MS			<20	ug/L				
MRL_CHK	Aluminum Total ICAP/MS		20	22.9	ug/L	115	(50-150)		
MS_201011030159	Aluminum Total ICAP/MS	ND	200	210	ug/L	104	(70-130)		
MS2_201011040025	Aluminum Total ICAP/MS	ND	200	191	ug/L	96	(70-130)		
MSD_201011030159	Aluminum Total ICAP/MS	ND	200	201	ug/L	99	(70-130)	20	4.6

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QC Type	Analyte	Native	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPDLimit (%)	RPD%
MSD2_201011040025	Aluminum Total ICAP/MS	ND	200	195	ug/L	98	(70-130)	20	2.1
LCS1	Antimony Total ICAP/MS		50	50.1	ug/L	100	(85-115)		
LCS2	Antimony Total ICAP/MS		50	49.7	ug/L	99	(85-115)	20	0.80
MBLK	Antimony Total ICAP/MS			<1	ug/L				
MRL_CHK	Antimony Total ICAP/MS		1.0	1.02	ug/L	102	(50-150)		
MS_201011030159	Antimony Total ICAP/MS	ND	50	52.8	ug/L	105	(70-130)		
MS2_201011040025	Antimony Total ICAP/MS	ND	50	49.7	ug/L	99	(70-130)		
MSD_201011030159	Antimony Total ICAP/MS	ND	50	51.6	ug/L	103	(70-130)	20	1.9
MSD2_201011040025	Antimony Total ICAP/MS	ND	50	50.4	ug/L	101	(70-130)	20	1.6
LCS1	Arsenic Total ICAP/MS		20	20.8	ug/L	104	(85-115)		
LCS2	Arsenic Total ICAP/MS		20	20.7	ug/L	103	(85-115)	20	0.48
MBLK	Arsenic Total ICAP/MS			<1	ug/L				
MRL_CHK	Arsenic Total ICAP/MS		1.0	1.1	ug/L	110	(50-150)		
MS_201011030159	Arsenic Total ICAP/MS	ND	20	23.1	ug/L	115	(70-130)		
MS2_201011040025	Arsenic Total ICAP/MS	ND	20	21.6	ug/L	108	(70-130)		
MSD_201011030159	Arsenic Total ICAP/MS	ND	20	21.9	ug/L	109	(70-130)	20	5.4
MSD2_201011040025	Arsenic Total ICAP/MS	ND	20	21.7	ug/L	109	(70-130)	20	0.92
LCS1	Barium Total ICAP/MS		100	99.4	ug/L	99	(85-115)		
LCS2	Barium Total ICAP/MS		100	99.0	ug/L	99	(85-115)	20	0.40
MBLK	Barium Total ICAP/MS			<2	ug/L				
MRL_CHK	Barium Total ICAP/MS		2.0	2.08	ug/L	104	(50-150)		
MS_201011030159	Barium Total ICAP/MS	ND	100	106	ug/L	104	(70-130)		
MS2_201011040025	Barium Total ICAP/MS	ND	100	97.8	ug/L	98	(70-130)		
MSD_201011030159	Barium Total ICAP/MS	ND	100	102	ug/L	101	(70-130)	20	2.9
MSD2_201011040025	Barium Total ICAP/MS	ND	100	97.9	ug/L	98	(70-130)	20	0.0
LCS1	Beryllium Total ICAP/MS		5.0	4.93	ug/L	99	(85-115)		
LCS2	Beryllium Total ICAP/MS		5.0	4.97	ug/L	99	(85-115)	20	0.81
MBLK	Beryllium Total ICAP/MS			<1	ug/L				
MRL_CHK	Beryllium Total ICAP/MS		1.0	1.08	ug/L	108	(50-150)		
MS_201011030159	Beryllium Total ICAP/MS	ND	5.0	5.52	ug/L	110	(70-130)		
MS2_201011040025	Beryllium Total ICAP/MS	ND	5.0	5.12	ug/L	102	(70-130)		
MSD_201011030159	Beryllium Total ICAP/MS	ND	5.0	5.31	ug/L	106	(70-130)	20	3.7
MSD2_201011040025	Beryllium Total ICAP/MS	ND	5.0	5.07	ug/L	101	(70-130)	20	0.99
LCS1	Cadmium Total ICAP/MS		20	20.1	ug/L	101	(85-115)		
LCS2	Cadmium Total ICAP/MS		20	20.1	ug/L	100	(85-115)	20	0.0
MBLK	Cadmium Total ICAP/MS			<0.5	ug/L				
MRL_CHK	Cadmium Total ICAP/MS		0.5	0.535	ug/L	107	(50-150)		
MS_201011030159	Cadmium Total ICAP/MS	ND	20	22.0	ug/L	110	(70-130)		

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QC Report: 348083

MWH Americas, Inc.
(continued)

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPDLimit (%)	RPD%
MS2_201011040025	Cadmium Total ICAP/MS	ND	20	20.7	ug/L	104	(70-130)		
MSD_201011030159	Cadmium Total ICAP/MS	ND	20	21.3	ug/L	107	(70-130)	20	2.8
MSD2_201011040025	Cadmium Total ICAP/MS	ND	20	20.5	ug/L	103	(70-130)	20	0.97
LCS1	Chromium Total ICAP/MS		100	97.0	ug/L	97	(85-115)		
LCS2	Chromium Total ICAP/MS		100	95.8	ug/L	96	(85-115)	20	1.2
MBLK	Chromium Total ICAP/MS			<1	ug/L				
MRL_CHK	Chromium Total ICAP/MS		1.0	1.02	ug/L	102	(50-150)		
MS_201011030159	Chromium Total ICAP/MS	ND	100	100	ug/L	100	(70-130)		
MS2_201011040025	Chromium Total ICAP/MS	ND	100	93.2	ug/L	93	(70-130)		
MSD_201011030159	Chromium Total ICAP/MS	ND	100	95.8	ug/L	96	(70-130)	20	4.3
MSD2_201011040025	Chromium Total ICAP/MS	ND	100	94.8	ug/L	95	(70-130)	20	1.7
LCS1	Copper Total ICAP/MS		100	103	ug/L	103	(85-115)		
LCS2	Copper Total ICAP/MS		100	103	ug/L	103	(85-115)	20	0.0
MBLK	Copper Total ICAP/MS			<2	ug/L				
MRL_CHK	Copper Total ICAP/MS		2.0	2.13	ug/L	107	(50-150)		
MS_201011030159	Copper Total ICAP/MS	48	100	157	ug/L	109	(70-130)		
MS2_201011040025	Copper Total ICAP/MS	ND	100	99.9	ug/L	100	(70-130)		
MSD_201011030159	Copper Total ICAP/MS	48	100	153	ug/L	105	(70-130)	20	3.7
MSD2_201011040025	Copper Total ICAP/MS	ND	100	102	ug/L	102	(70-130)	20	2.1
LCS1	Lead Total ICAP/MS		20	19.9	ug/L	100	(85-115)		
LCS2	Lead Total ICAP/MS		20	20.0	ug/L	100	(85-115)	20	0.0
MBLK	Lead Total ICAP/MS			<0.5	ug/L				
MRL_CHK	Lead Total ICAP/MS		0.5	0.519	ug/L	104	(50-150)		
MS_201011030159	Lead Total ICAP/MS	2.1	20	23.3	ug/L	106	(70-130)		
MS2_201011040025	Lead Total ICAP/MS	ND	20	19.4	ug/L	97	(70-130)		
MSD_201011030159	Lead Total ICAP/MS	2.1	20	22.3	ug/L	101	(70-130)	20	4.8
MSD2_201011040025	Lead Total ICAP/MS	ND	20	19.7	ug/L	98	(70-130)	20	1.3
LCS1	Manganese Total ICAP/MS		50	50.5	ug/L	101	(85-115)		
LCS2	Manganese Total ICAP/MS		50	50.1	ug/L	100	(85-115)	20	0.79
MBLK	Manganese Total ICAP/MS			<2	ug/L				
MRL_CHK	Manganese Total ICAP/MS		2.0	2.06	ug/L	103	(50-150)		
MS_201011030159	Manganese Total ICAP/MS	ND	50	52.1	ug/L	104	(70-130)		
MS2_201011040025	Manganese Total ICAP/MS	ND	50	48.3	ug/L	97	(70-130)		
MSD_201011030159	Manganese Total ICAP/MS	ND	50	49.8	ug/L	99	(70-130)	20	4.7
MSD2_201011040025	Manganese Total ICAP/MS	ND	50	49.1	ug/L	98	(70-130)	20	1.7
LCS1	Nickel Total ICAP/MS		50	50.1	ug/L	100	(85-115)		
LCS2	Nickel Total ICAP/MS		50	49.5	ug/L	99	(85-115)	20	1.2
MBLK	Nickel Total ICAP/MS			<5	ug/L				

Spike recovery is already corrected for native results.
Spikes which exceed Limits and Method Blanks with positive results are highlighted by Underlining.
Criteria for MS and Dup are advisory only, batch control is based on LCS. Criteria for duplicates are advisory only, unless otherwise specified in the method.
(S) Indicates surrogate compound.
(I) Indicates internal standard compound.
RPD not calculated for LCS2 when different a concentration than LCS1 is used
RPD not calculated for Duplicates when the result is not five times the MRL (Minimum Reporting Level)

MWH
LABORATORIES
A Division of MWH Americas, Inc.

750 Royal Oak Dr., Suite 100
Monrovia, California, 91016-3629
Tel: 626 386 1100
Fax: 626 386 1101
1 800 566 LABS (1 800 566 5227)

Laboratory
QC Report: 348083

MWH Americas, Inc.
(continued)

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPDLimit (%)	RPD%
MRL_CHK	Nickel Total ICAP/MS		5.0	5.26	ug/L	105	(50-150)		
MS_201011030159	Nickel Total ICAP/MS	ND	50	52.1	ug/L	104	(70-130)		
MS2_201011040025	Nickel Total ICAP/MS	ND	50	48.0	ug/L	96	(70-130)		
MSD_201011030159	Nickel Total ICAP/MS	ND	50	49.7	ug/L	99	(70-130)	20	4.8
MSD2_201011040025	Nickel Total ICAP/MS	ND	50	49.2	ug/L	98	(70-130)	20	2.4
LCS1	Selenium Total ICAP/MS		20	20.6	ug/L	103	(85-115)		
LCS2	Selenium Total ICAP/MS		20	20.4	ug/L	102	(85-115)	20	0.98
MBLK	Selenium Total ICAP/MS			<5	ug/L				
MRL_CHK	Selenium Total ICAP/MS		5.0	5.38	ug/L	108	(50-150)		
MS_201011030159	Selenium Total ICAP/MS	ND	20	25.3	ug/L	127	(70-130)		
MS2_201011040025	Selenium Total ICAP/MS	ND	20	23.2	ug/L	116	(70-130)		
MSD_201011030159	Selenium Total ICAP/MS	ND	20	23.8	ug/L	119	(70-130)	20	6.5
MSD2_201011040025	Selenium Total ICAP/MS	ND	20	23.1	ug/L	116	(70-130)	20	0.0
LCS1	Silver Total ICAP/MS		50	50.8	ug/L	102	(85-115)		
LCS2	Silver Total ICAP/MS		50	50.4	ug/L	101	(85-115)	20	0.79
MBLK	Silver Total ICAP/MS			<0.5	ug/L				
MRL_CHK	Silver Total ICAP/MS		0.5	0.585	ug/L	117	(50-150)		
MS_201011030159	Silver Total ICAP/MS	ND	50	51.7	ug/L	103	(70-130)		
MS2_201011040025	Silver Total ICAP/MS	ND	50	49.5	ug/L	99	(70-130)		
MSD_201011030159	Silver Total ICAP/MS	ND	50	51.0	ug/L	102	(70-130)	20	0.98
MSD2_201011040025	Silver Total ICAP/MS	ND	50	49.3	ug/L	99	(70-130)	20	0.51
LCS1	Thallium Total ICAP/MS		20	20.3	ug/L	101	(85-115)		
LCS2	Thallium Total ICAP/MS		20	20.2	ug/L	101	(85-115)	20	0.49
MBLK	Thallium Total ICAP/MS			<1	ug/L				
MRL_CHK	Thallium Total ICAP/MS		1.0	1.05	ug/L	105	(50-150)		
MS_201011030159	Thallium Total ICAP/MS	ND	20	21.4	ug/L	107	(70-130)		
MS2_201011040025	Thallium Total ICAP/MS	ND	20	19.9	ug/L	100	(70-130)		
MSD_201011030159	Thallium Total ICAP/MS	ND	20	20.5	ug/L	103	(70-130)	20	3.8
MSD2_201011040025	Thallium Total ICAP/MS	ND	20	19.9	ug/L	99	(70-130)	20	0.30
LCS1	Zinc Total ICAP/MS		100	103	ug/L	103	(85-115)		
LCS2	Zinc Total ICAP/MS		100	103	ug/L	103	(85-115)	20	0.0
MBLK	Zinc Total ICAP/MS			<20	ug/L				
MRL_CHK	Zinc Total ICAP/MS		20	21.0	ug/L	105	(50-150)		
MS_201011030159	Zinc Total ICAP/MS	ND	100	130	ug/L	124	(70-130)		
MS2_201011040025	Zinc Total ICAP/MS	ND	100	114	ug/L	114	(70-130)		
MSD_201011030159	Zinc Total ICAP/MS	ND	100	123	ug/L	117	(70-130)	20	5.8
MSD2_201011040025	Zinc Total ICAP/MS	ND	100	117	ug/L	117	(70-130)	20	2.6

Spike recovery is already corrected for native results.
Spikes which exceed Limits and Method Blanks with positive results are highlighted by Underlining.
Criteria for MS and Dup are advisory only, batch control is based on LCS. Criteria for duplicates are advisory only, unless otherwise specified in the method.
(S) Indicates surrogate compound.
(I) Indicates internal standard compound.
RPD not calculated for LCS2 when different a concentration than LCS1 is used
RPD not calculated for Duplicates when the result is not five times the MRL (Minimum Reporting Level)

Friday, November 12, 2010

Jackie Contreras
MWH Laboratories
750 Royal Oaks Dr.
Suite 100
Monrovia, CA 91016

RE: Lab Order: K110263
Project ID: 348083 (1000014)

Collected By: R.REEVES
PO/Contract #: 99-06779

Dear Jackie Contreras:

Enclosed are the analytical results for sample(s) received by the laboratory on Thursday, November 04, 2010. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Enclosures

Project Manager: Sonya Babcock

1885 North Kelly Road • Napa, California 94558
(707) 258-4000 • Fax: (707) 226-1001 • e-mail: info@caltestlabs.com

SAMPLE SUMMARY

Lab Order: K110263

Project ID: 348083 (1000014)

Lab ID	Sample ID	Matrix	Date Collected	Date Received
K110263001	**201011040069**	Water	11/3/2010 12:24	11/4/2010 09:52
K110263002	**201011040070**	Water	11/3/2010 10:05	11/4/2010 09:52
K110263003	**201011040072**	Water	11/3/2010 15:15	11/4/2010 09:52
K110263004	**201011040073**	Water	11/3/2010 16:20	11/4/2010 09:52

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NARRATIVE

Lab Order: K110263
Project ID: 348083 (1000014)

General Qualifiers and Notes

Caltest authorizes this report to be reproduced only in its entirety. Results are specific to the sample(s) as submitted and only to the parameter(s) reported.

Caltest certifies that all test results for wastewater and hazardous waste analyses meet all applicable NELAC requirements; all microbiology and drinking water testing meet applicable ELAP requirements, unless stated otherwise.

All analyses performed by EPA Methods or Standard Methods (SM) 20th Edition except where noted (SMOL=online edition).

Caltest collects samples in compliance with 40 CFR, EPA Methods, Cal. Title 22, and Standard Methods.

Dilution Factors (DF) reported greater than '1' have been used to adjust the result, Reporting Limit (RL), and Method Detection Limit (MDL).

All Solid, sludge, and/or biosolids data is reported in Wet Weight, unless otherwise specified.

Filtrations performed at Caltest for dissolved metals (excluding mercury) and/or pH analysis were not performed within the 15 minute holding time as specified by 40CFR 136.3 table II.

Results Qualifiers: Report fields may contain codes and non-numeric data correlating to one or more of the following definitions:

ND - Non Detect - indicates analytical result has not been detected.

RL - Reporting Limit is the quantitation limit at which the laboratory is able to detect an analyte. An analyte not detected at or above the RL is reported as ND unless otherwise noted or qualified. For analyses pertaining to the State Implementation Plan of the California Toxics Rule, the Caltest Reporting Limit (RL) is equivalent to the Minimum Level (ML). A standard is always run at or below the ML. Where Reporting Limits are elevated due to dilution, the ML calibration criteria has been met.

J - reflects estimated analytical result value detected below the Reporting Limit (RL) and above the Method Detection Limit (MDL). The 'J' flag is equivalent to the DNQ Estimated Concentration flag.

E - indicates an estimated analytical result value.

B - indicates the analyte has been detected in the blank associated with the sample.

NC - means not able to be calculated for RPD or Spike Recoveries.

SS - compound is a Surrogate Spike used per laboratory quality assurance manual.

NOTE: This document represents a complete Analytical Report for the samples referenced herein and should be retained as a permanent record thereof.

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ANALYTICAL RESULTS

Lab Order: K110263
Project ID 348083 (1000014)

Lab ID: K110263001 Date Collected: 11/3/2010 12:24 Matrix: Water
Sample ID: 201011040069 Date Received: 11/4/2010 09:52

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Mercury Analysis, Trace Level		**Prep Method:**	EPA 1631E			**Prep by:** UK				
		Analytical Method:	EPA 1631E					**Analyzed by:** SMD		
Mercury	0.0009	ug/L	0.0005	0.00020	1	11/09/10 00:00	MPR 9331	11/10/10 09:24	MHG 3316	

Lab ID: K110263002 Date Collected: 11/3/2010 10:05 Matrix: Water
Sample ID: 201011040070 Date Received: 11/4/2010 09:52

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Mercury Analysis, Trace Level		**Prep Method:**	EPA 1631E			**Prep by:** UK				
		Analytical Method:	EPA 1631E					**Analyzed by:** SMD		
Mercury	0.0009	ug/L	0.0005	0.00020	1	11/09/10 00:00	MPR 9331	11/10/10 09:24	MHG 3316	

Lab ID: K110263003 Date Collected: 11/3/2010 15:15 Matrix: Water
Sample ID: 201011040072 Date Received: 11/4/2010 09:52

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Mercury Analysis, Trace Level		**Prep Method:**	EPA 1631E			**Prep by:** UK				
		Analytical Method:	EPA 1631E					**Analyzed by:** SMD		
Mercury	J0.0005	ug/L	0.0005	0.00020	1	11/09/10 00:00	MPR 9331	11/10/10 09:24	MHG 3316	

Lab ID: K110263004 Date Collected: 11/3/2010 16:20 Matrix: Water
Sample ID: 201011040073 Date Received: 11/4/2010 09:52

Parameters	Result	Units	R. L.	MDL	DF	Prepared	Batch	Analyzed	Batch	Qual
Mercury Analysis, Trace Level		**Prep Method:**	EPA 1631E			**Prep by:** UK				
		Analytical Method:	EPA 1631E					**Analyzed by:** SMD		
Mercury	J0.0003	ug/L	0.0005	0.00020	1	11/09/10 00:00	MPR 9331	11/10/10 09:24	MHG 3316	

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QUALITY CONTROL DATA

Lab Order: K110263

Project ID: 348083 (1000014)

Analysis Description:	Mercury Analysis, Trace Level	**QC Batch:**	MPR/9331
Analysis Method:	EPA 1631E	**QC Batch Method:**	EPA 1631E

METHOD BLANK: 360905

Parameter	Blank Result	Reporting Limit	MDL	Units	Qualifiers
Mercury	ND	0.0005	0.0002	ug/L	

LABORATORY CONTROL SAMPLE: 360906

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	0.02	0.019	96	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 360909 360910

Parameter	Units	K110263001 Result	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
Mercury	ug/L	0.0009	0.02	0.02	.021	98	100	80-120	2.1	24	

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QUALITY CONTROL DATA QUALIFIERS

Lab Order: K110263

Project ID: 348083 (1000014)

QUALITY CONTROL PARAMETER QUALIFIERS

Results Qualifiers: Report fields may contain codes and non-numeric data correlating to one or more of the following definitions:

NS - means not spiked and will not have recoveries reported for Analyte Spike Amounts

NC - means not able to be calculated for RPD or Spike Recoveries.

QC Codes Keys: These descriptors are used to help identify the specific QC samples and clarify the report.

MB - Method Blank

Method Blanks are reported to the same Method Detection Limits (MDLs) or Reporting Limits (RLs) as the analytical samples in the corresponding QC batch.

LCS/LCSD - Laboratory Control Spike / Laboratory Control Spike Duplicate

DUP - Duplicate of Original Sample Matrix

MS/MSD - Matrix Spike / Matrix Spike Duplicate

RPD - Relative Percent Difference

%Recovery - Spike Recovery stated as a percentage

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(707) 258-4000 • Fax: (707) 226-1001 • e-mail: info@caltestlabs.com

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Lab Order: K110263

Project ID: 348083 (1000014)

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
K110263001	201011040069	EPA 1631E	MPR/9331	EPA 1631E	MHG/3316
K110263002	201011040070	EPA 1631E	MPR/9331	EPA 1631E	MHG/3316
K110263003	201011040072	EPA 1631E	MPR/9331	EPA 1631E	MHG/3316
K110263004	201011040073	EPA 1631E	MPR/9331	EPA 1631E	MHG/3316

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