# California Regional Water Quality Control Board
## Lahontan Region

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**Linda S. Adams**
*Secretary for*
*Environmental Protection*

**Arnold Schwarzenegger**
*Governor*


January 31, 2007

Mr. Kevin Mayer
USEPA, Region IX
75 Hawthorne Street, SFD-7-2
San Francisco, CA 94105-3901

Dear Mr. Mayer:

**TRANSMITTAL OF YEAR-END REPORT FOR THE 2006 FIELD SEASON AT LEVIATHAN MINE**

Enclosed is a copy of the Year-End Report for the 2006 Field Season at Leviathan Mine. The Year-End Report is intended to comply with Paragraph No. 50 of USEPA's July 14, 2005 Administrative Abatement Action (AAA), as amended, which states:

*"Within thirty (30) days after the LRWQCB concludes that the seasonal work on the NTCRA has been fully performed, the LRWQCB shall so notify EPA and shall schedule and conduct a pre-certification inspection to be attended by the LRWQCB and EPA. The pre-certification inspection shall be followed by a written report submitted within ninety (90) days of the inspection by the LRWQCB's Project Coordinator certifying that all work to date on the NTCRA has been completed in full satisfaction of the requirements of this Administrative Action."*

The enclosed document constitutes the "*written report*" as referenced in Paragraph No. 50 of the AAA, containing year-end summaries of all LRWQCB activities, including pond water treatment, site monitoring, and site maintenance. This letter constitutes certification that all work to date on the NTCRA has been completed in full satisfaction of the AAA and as specified in the 2006 Year-End Report.

If you have any questions regarding this matter, please contact me at (530) 542-5574.

Sincerely,

Richard W. Booth, PG, CHg
Senior Engineering Geologist

cc: Gavin McCabe/ California Attorney General's Office
Roy Thun/ Atlantic Richfield Company
Greg Reller/ Tetra Tech EMI
Carl Meier/ Washoe Tribe of California and Nevada
Steven Fechner/ United States Forest Service
Ed James/ Carson Water Subconservancy District
Melanie Markin/United States Fish and Wildlife Service
Monika Johnson/EMC$^2$
Steve Hampton/ California Department of Fish and Game

Enclosure: Year-End Report for the 2006 Field Season at Leviathan Mine

**Leviathan Mine**

**USEPA – transmittal of 2006 Year-end Report**

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USEPA (addressee)

# YEAR-END REPORT

# FOR THE 2006 FIELD SEASON

# AT LEVIATHAN MINE

**Alpine County, California**

**January 2007**

*Prepared by:*
**California Regional Water Quality Control Board, Lahontan Region**

*To comply with:*
**Paragraph No. 35 of USEPA's July 19, 2000 Administrative Abatement Action, as amended.**

# LEVIATHAN MINE
# YEAR-END REPORT FOR 2006 FIELD SEASON

## Table of Contents

**Section**

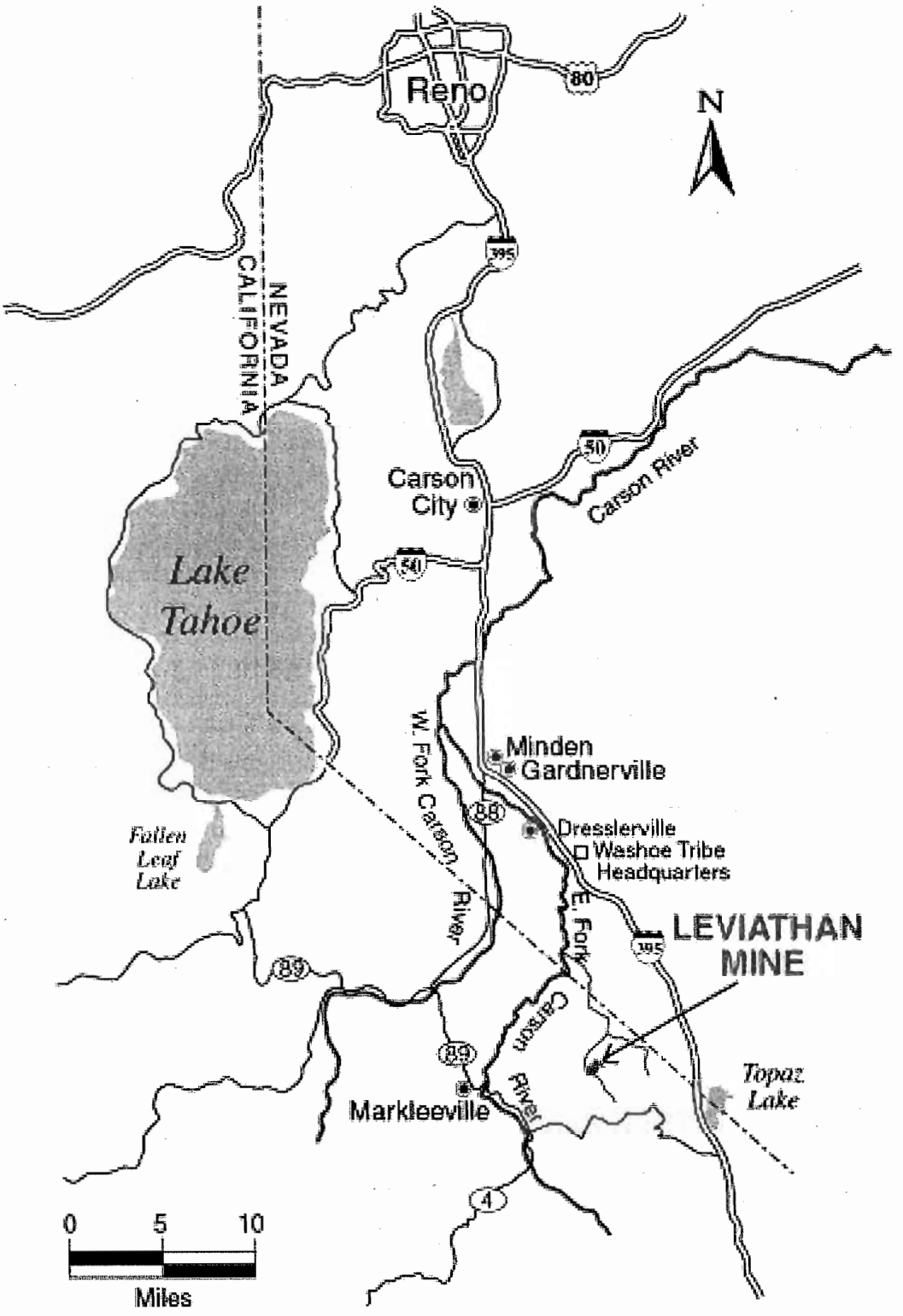
# 1. BACKGROUND

Leviathan Mine is an inactive sulfur mine that the State of California acquired in the early 1980s in order to clean up water quality problems caused by historic mining. Jurisdiction over Leviathan Mine rests with the State Water Resources Control Board, which, in turn, has delegated jurisdiction over clean up work to the California Regional Water Quality Control Board, Lahontan Region (Lahontan Water Board).

The former sulfur mine is located on the eastern slope of the Sierra Nevada Mountains in Alpine County, California, in the upper portions of the Bryant Creek watershed, as shown in Figure 1. The current boundary of the Leviathan Mine site encompasses thirty-two patented mineral claims and a patented mill site, which together total 656.09 acres. The state-owned portion of the Leviathan Mine site encompasses approximately 475.70 acres. Mining disturbance is evident on approximately 231 acres. The majority of mining disturbance is on state-owned property, with approximately 21 acres of disturbance found on property owned by the United States Department of Agriculture, Forest Service, Humboldt-Toiyabe National Forest (USFS). Leviathan Mine is approximately six miles east of Markleeville, California and five miles west of Topaz Lake, Nevada. The USFS owns the majority of surrounding land, with the exception of ten private parcels along the southern boundary of the mine site.

As shown in Figure 2, Leviathan and Aspen Creeks flow across the mine site and eventually join just below the mine. Approximately 1.5 miles downstream of the confluence of Leviathan and Aspen Creeks, Leviathan Creek joins Mountaineer Creek. The combined flow of Leviathan and Mountaineer Creeks forms Bryant Creek. Approximately 3.5 miles downstream of the confluence of Leviathan and Mountaineer Creeks, Bryant Creek flows across the Nevada state line. Approximately 1.8 miles downstream of the Nevada state line there exists an irrigation structure that enables the diversion of water from Bryant Creek to an irrigation ditch. The irrigation ditch is used seasonally to divert flow from Bryant Creek to the River Ranch property, owned by Park Cattle Company. From the irrigation diversion, the natural course of Bryant Creek continues to the northwest, and approximately 1.5 miles downstream from the irrigation diversion, Bryant Creek joins the East Fork of the Carson River.

Historic mining activities at Leviathan Mine included underground and open pit extraction of sulfur. These activities resulted in the exposure of certain minerals (e.g., pyrite) contained in the native soil and rock to air and water. This exposure triggers a series of chemical reactions that cause the ground water to become acidic. As the acidic ground water moves through the soil and around rocks, it dissolves metals in the ground. Eventually, the acidic ground water encounters the ground surface in the form of a seep or spring. Acidic- and metal-rich water seeping out of the ground is referred to as acid mine drainage (AMD). If left unabated, the AMD enters nearby creeks (Leviathan and Aspen) causing significant adverse impacts. In addition, historic mining activities resulted in significant soil disturbance, erosion, and sediment deposition to nearby receiving waters.




# FIGURE 1
# SITE LOCATION

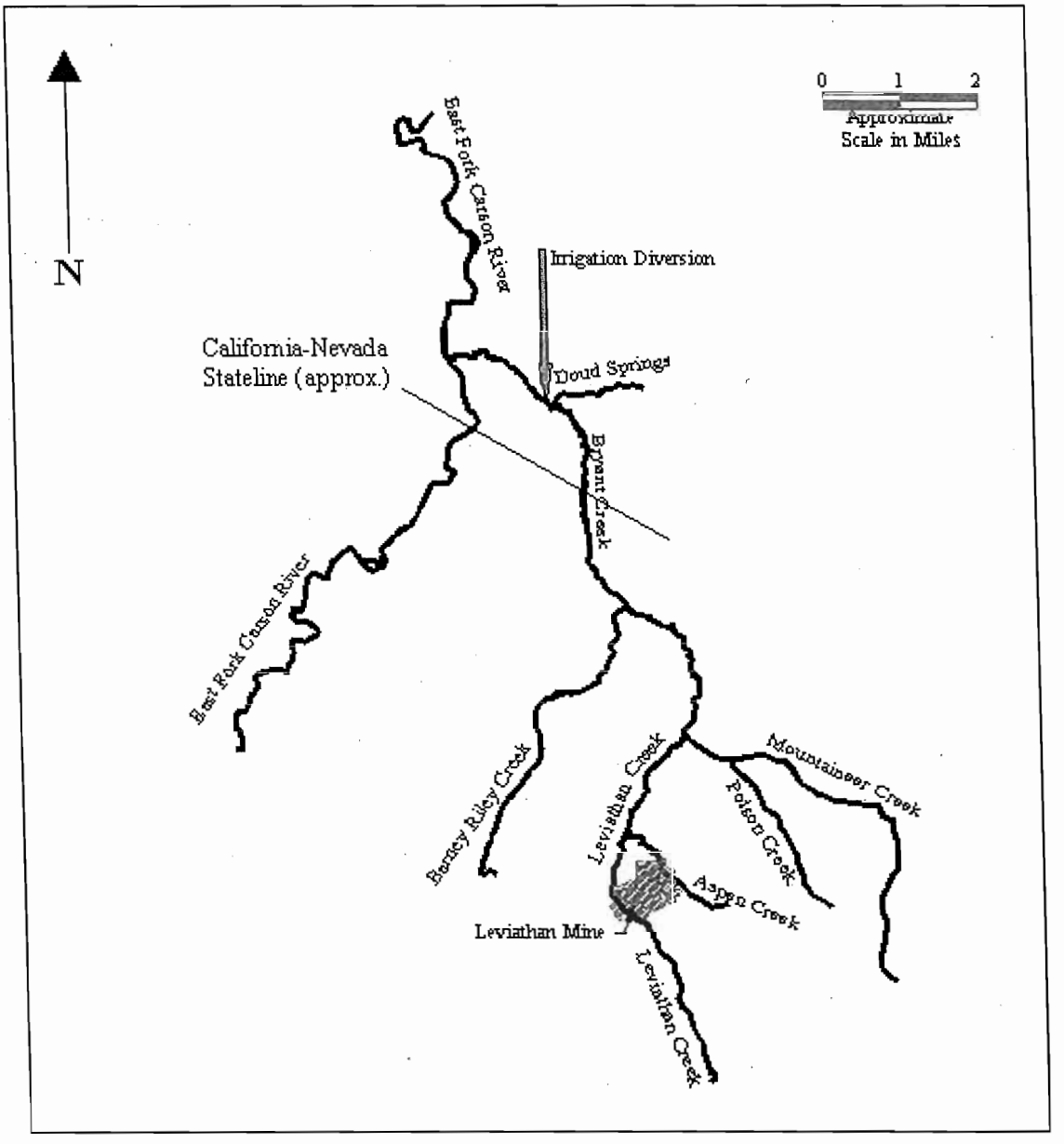



**Figure 2. Leviathan Creek and Receiving Waters**

Acting on the State's behalf, the Lahontan Water Board has implemented several projects to abate and quantify the discharge of pollutants from Leviathan Mine. In 1985, the Lahontan Water Board completed construction of a pollution abatement system at Leviathan Mine to address specific problem areas. The 1985 project reduced the pollutant load to receiving waters. However, the project was not intended to address all sources of pollution.

In May 2000, the United States Environmental Protection Agency (USEPA) placed Leviathan Mine on the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) National Priorities List, thus making Leviathan Mine a federal Superfund site. Because the State of California is the present property owner, USEPA has identified the State as a Potentially Responsible Party. USEPA may direct Potentially Responsible Parties to take certain actions to characterize and abate pollution at Superfund sites.

On July 19, 2000, pursuant to its authority under CERCLA, USEPA issued an Administrative Abatement Action (AAA) to the Lahontan Water Board and, thereby, directed the Lahontan Water Board to implement certain pollution abatement and site characterization activities at Leviathan Mine. With only slight modification, USEPA reissued the AAA in 2001, 2002, 2003, 2004, 2005, and again in 2006. It is expected that USEPA will continue to direct Lahontan Water Board work at Leviathan Mine through annual reissues of the AAA, until a remedy addressing all releases of hazardous substances at Leviathan Mine is implemented (potentially by other parties).

The Lahontan Water Board shall cooperate with USEPA in providing information regarding the work to the public. As requested by USEPA, the Lahontan Water Board shall participate in the preparation of such information for distribution to the public and in public meetings which may be held or sponsored by USEPA to explain activities or relating to the Site. This year-end report was created to comply with Paragraph 35 of USEPA's July 19, 2000 Administrative Abatement Action, as amended, which requires the Lahontan Water Board to explain activities relating to the Site.

## 2. 2006 LAHONTAN WATER BOARD ACTIVITIES

Lahontan Water Board activities for the 2006 field season included: 1) treatment of AMD held in evaporation ponds (pond water treatment); 2) continued implementation of surface water monitoring; and 3) site maintenance. Lahontan Water Board staff conducted each of the above-listed activities in accordance with *Work Plan for 2006 Site Work by the California Regional Water Quality Control Board at Leviathan Mine* (Work Plan) transmitted to USEPA in June 2006.

## 3. POND WATER TREATMENT

### 3.1 Background

As mentioned in Section 1, the Lahontan Water Board completed a pollution abatement system at Leviathan Mine in 1985 that addressed specific problem areas. The 1985 abatement system included construction of five lined evaporation

ponds (see Figure 3) to capture and evaporate AMD from remnant underground mine workings. The primary sources of AMD to the pond system are the "Adit" and the Pit Under-Drain (PUD).

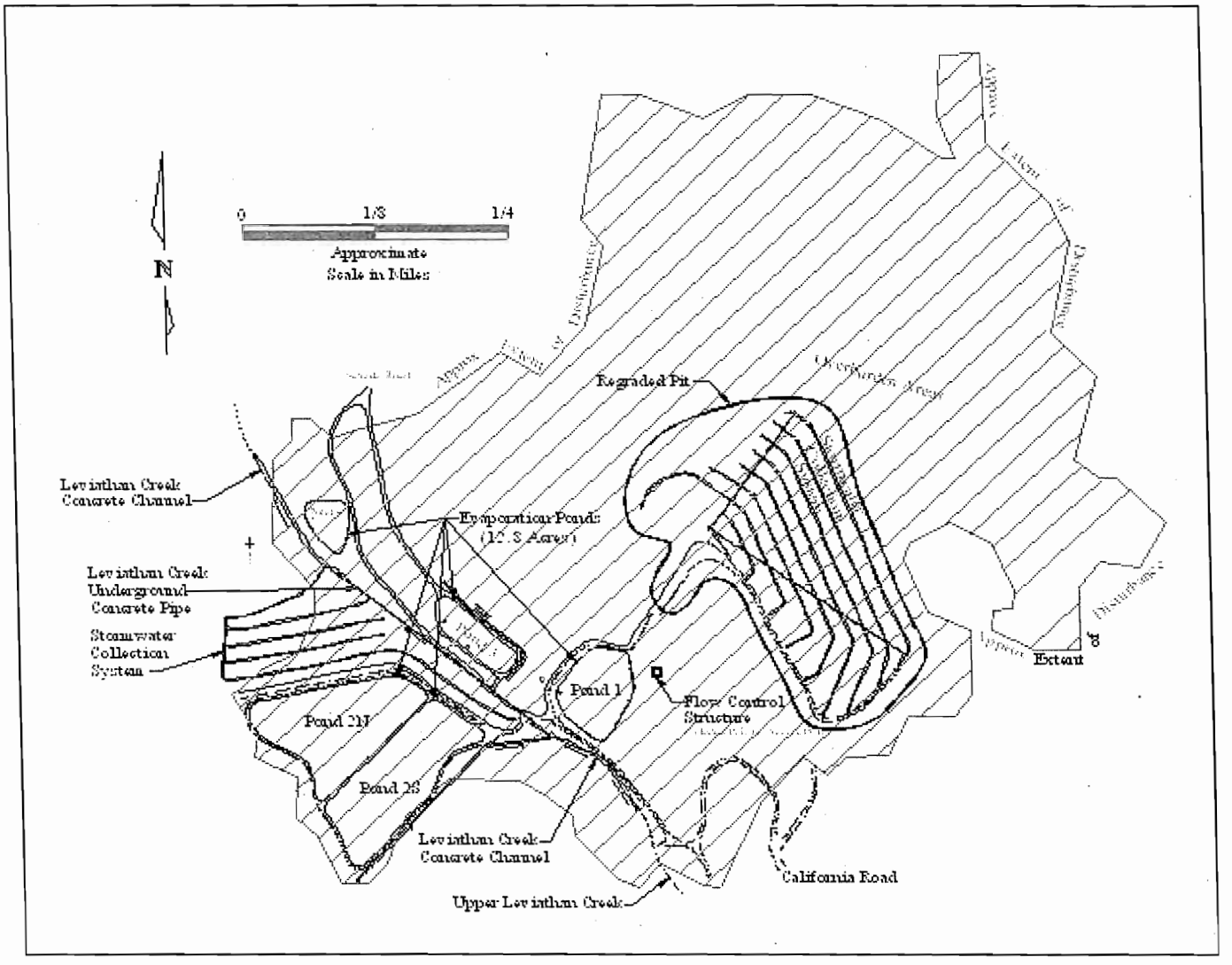



**Figure 3. 1985 Site Improvements**

The Adit is a remnant tunnel from underground mining activities that occurred in the 1930s. The exact condition of the interior of the Adit is unknown, but it is likely that portions of the tunnel have collapsed. The tunnel extends from a point approximately 80 feet east of Pond 1 in an easterly direction, beneath the floor of the open pit, to a point approximately 1,000 feet on the east side of the open pit. The Adit intercepts and conveys groundwater in a westerly direction, towards the evaporation pond system. Acidic groundwater from the Adit has a pH of less than 3.0 and typically has had a flow rate between 9 and 42 gallons per minute (gpm), based on United States Geological Survey (USGS) data from 1999 to 2006.

As part of the State's 1985 pollution abatement project, the State installed an underground drain to collect acidic groundwater emanating from the Adit. The underground drain consists of 12-inch perforated pipe positioned in a bed of drain rock having approximate dimensions 8-feet wide, 15-feet long, and 3-feet deep. The bed of drain rock is located at the collapsed westerly end of the Adit, approximately 80 feet east of Pond 1, and approximately 10 feet above the overflow elevation of Pond 1. The underground drain is completely buried in native material. The perforated pipe is connected to a non-perforated 12-inch pipe that carries the acidic drainage to a concrete box in which the drainage can be routed to the evaporation pond system or to Leviathan Creek.

The Lahontan Water Board installed the PUD during construction of the 1985 pollution abatement project to dewater saturated soils in the bottom of the open pit. Dewatering of the pit bottom was necessary for completion of excavation work in the pit. The PUD consists of approximately 1,900 linear feet of collector piping in the floor of the open pit. The collector piping consists of a 12-inch perforated pipe laid in a 3-foot by 3-foot trench filled with drain rock. The depth of the collector pipes is no greater than 30 feet below the elevation of the pit bottom. The collector pipes are completely buried in pit backfill material. The collector pipes eventually connect to a non-perforated 18-inch pipe that carries subsurface drainage from the PUD to a concrete box in which the drainage can be routed to the evaporation pond system or to Leviathan Creek (the same box that the Adit water is carried to). Acidic drainage from the PUD has a pH of less than 3.0 and typically has had a flow rate between 0.1 and 38 gpm, based on data between 1999 and 2006.

Leviathan Mine is located in mountainous terrain with minimal flat surface area. Given the limited usable area at the mine site, the evaporation ponds could not be sized to provide 100 percent containment of influent flows (consisting of AMD from the Adit and PUD, and direct rain/snow onto the ponds). The evaporation ponds cover a cumulative surface area of approximately 12.8 acres with a cumulative holding capacity of approximately 16 million gallons (based on an October 1998 survey conducted by ARCO Environmental Remediation, LLC).

To prevent pond overflows, the Lahontan Water Board treats pond water during the summer months to increase pond storage capacity for the subsequent winter and spring months. The Lahontan Water Board assembled a treatment system

during the 1999 field season on the north east corner of Pond 1 and tested the process at full-scale during the 1999 and 2000 field seasons. The typical field season at Leviathan Mine runs from mid-June through mid-October. The Lahontan Water Board has continued to operate the lime treatment system adjacent to Pond 1 during the summer months from 2001 through 2006.

Following unusually wet winters in 2005 and 2006, and the resulting large quantities of AMD contained in the pond system, the Lahontan Water Board implemented additional pond water treatment capabilities in an effort to prevent untreated discharges to Leviathan Creek. A smaller and more portable treatment system was assembled and tested adjacent to Pond 3 in the spring of 2005 and proved effective at treating AMD. The treatment system was mobilized and operated at the site without requiring the heavy equipment used for operational support of the treatment system adjacent to Pond 1. The portable treatment system, with minor improvements, was employed again at full scale in the spring of 2006.

## 3.2 2006 Pond Water Treatment

The Lahontan Water Board's 2006 treatment of AMD contained in the pond system is described as lime neutralization. The neutralization of AMD by the addition of alkalinity has long been accepted as an effective means to raise pH and remove metals in AMD. A source of alkalinity, such as lime (calcium hydroxide or $Ca[OH]_2$), is mixed into the AMD from the pond system. The addition of alkalinity causes an increase in pH and the precipitation of dissolved constituents, including metals contained in the AMD. The precipitated metals are then separated from the solution, and the final products are 1) a nearly metal-free effluent with near neutral pH, and 2) waste sludge. Two lime treatment systems were used to treat AMD contained in the pond system in 2006: Pond 3 Lime Treatment System (also known as Spring Treatment) and Pond 1 Lime Treatment Plant (also known as Summer Treatment).

*Pond 3 Lime Treatment System*

Above average precipitation during the 2005 and 2006 winter resulted in an increase in the volume of direct precipitation into the evaporation pond system and elevated flow rates in the primary sources of AMD to the pond system (Adit and PUD). Due to these conditions, the pond system was filling at a faster rate than had been observed in previous years. Staff monitors PUD and Adit flow rates and Pond 1 stage (i.e., water level) remotely in real time and compares these data to historical flow rates and stage readings to attempt to anticipate pond system overflow into Leviathan Creek. In an effort to minimize the potential of AMD and direct precipitation contained in the pond system from overflowing into Leviathan Creek, the Lahontan Water Board and their contractor implemented an in-situ system in April 2006 to treat AMD and direct precipitation contained in Pond 3.

The treatment system introduced lime into Pond 3 using a Rotating Cylinder Treatment System-High Speed (RCTS-HS) system. The removal of snow from

the site access road and mobilization of the treatment system to the site began on April 10, 2006, and treatment of water contained in Pond 3 began on April 14, 2006. Pond 3 had been filled to capacity, predominantly with direct precipitation, and had commenced overflowing to Leviathan Creek sometime between April 12 and April 13, 2006. Treatment of AMD utilizing the RCTS-HS system continued until July 11, 2006. A total of approximately 7.5 million gallons of treated water was discharged to Leviathan Creek during multiple controlled discharges from Pond 3 using discharge requirements established for pond water treatment (Table 1). By July 11, 2006, it was evident that the threat of pond overflow from Ponds 1, 2 north, and 2 south (known as the upper ponds) had diminished due to increased evaporation rates and the startup of the lime treatment plant on the northeast corner of Pond 1. The last discharge out of Pond 3 was on July 11, 2006.

Sludge generated during the treatment process was contained in the bottom of Pond 3. Most of the sludge was dry enough (due to evaporation) to be removed by early October 2006. In early November 2006, approximately 159 tons of sludge were removed from Pond 3 and disposed of in a Class I hazardous waste landfill in Beatty, Nevada. Residual sludge remaining in Pond 3, which was too wet for transport to the landfill, was gathered into stockpiles within the confines of Pond 3 in an effort to maximize the capacity of Pond 3.

The RCTS-HS system was effective in treating impacted water in Pond 3. Sand covering the Pond 3 liner contains acidity from Pond 3 AMD residue concentrated by evaporation over the years and because the sand was originally acidic waste rock. The acidic sand consumed alkalinity over time and caused a drop in pH when the system was shut down for any reason. The drop in pH complicated neutralization and proper timing of the discharge was required to minimize the mobilization of acidity and metals.

A detailed report describing the 2006 Pond 3 treatment activities titled *Data Summary Report for Pond 3 Emergency Treatment at the Leviathan Mine 2006* is included as Appendix C.

*Pond 1 Lime Treatment Plant*

The lime treatment plant located on the northeast corner of Pond 1 was modified slightly during the 2005 treatment season to increase the treatment rate of AMD contained in the pond system following an unusually wet winter. The modifications implemented during the 2005 treatment effort indicated that treatment rates of up to approximately 200 gallons per minute could be sustained reliably over extended periods. Modifications performed in 2005 also included eliminating required collection, sample preparation, and field analysis of mid-process samples, which had the additional benefit of significantly improving worker safety. However, laboratory testing demonstrated that the sludge produced would exceed the Total Threshold Limit Concentration (TTLC) for arsenic, which is 500 milligrams per kilogram (mg/kg). When the total concentration of any constituent equals or exceeds its TTLC, by California standards, the waste is considered to be hazardous.

In the late winter of 2006 it became apparent that the upper ponds would likely be filled to capacity with AMD and direct precipitation. The upper ponds reached their capacity and began overflowing to Pond 3 sometime on April 12, 2006. Pond 3 in-situ treatment efforts commenced on April 13, 2006 (see above). In mid June 2006, the upper ponds stopped overflowing into Pond 3. From mid June through July 7th, AMD from the upper ponds was brought down to Pond 3 by use of a siphon. The contractor continued treating the AMD in Pond 3 until July 11th. By June 7, 2006, the upper ponds contained approximately 14.5 million gallons of AMD requiring treatment. Typically in June, a natural equilibrium is established between the flow into the ponds from the PUD and Adit and the water losses due to evaporation. This equilibrium did not occur before the upper ponds overflowed into Pond 3 in April 2006.

Reliable access to the site by heavy equipment was reestablished in mid-June 2006 following substantial repairs to site access roads (see Section 5.2). Approximately 716 tons of sludge generated during the 2005 treatment season were removed from the Pit Clarifier in late June 2006 and disposed of in a Class I hazardous waste landfill in Beatty, Nevada by mid-July. While sludge was being removed from the Pit Clarifier for disposal, contractors assembled the treatment plant and incorporated modifications made during the 2005 treatment season that allowed treatment rates of up to 200 gpm. The Pond 1 Lime Treatment Plant contractor began treating AMD contained in the pond system on June 27, 2006. The contractors began discharging treated water to Leviathan Creek on June 30, 2006.

Two points of lime addition remained as they had been in past treatment seasons in an effort to preserve known treatment plant responses (e.g., chemical and mechanical) from operator input, minimize treatment plant and water quality disruptions, and to improve lime mixing and utilization. The treatment plant was shut down on August 12, 2006 after all the AMD in Ponds 2 north and 2 south were drained into Pond 1 and all the AMD in Pond 1 was treated. By August 28, 2006 approximately 13.2 million gallons of treated pond water had been discharged out of the Pit Clarifier to Leviathan Creek. The approximately 1.3 million-gallon difference between 14.5 million gallons in the ponds prior to starting treatment and 13.2 million gallons treated is attributed to evaporation and from the Pond 3 treatment contractor bring AMD down from the upper ponds into Pond 3 for treatment.

Discharge of treated pond water from the Pond 1 Lime Treatment Plant to Leviathan Creek is governed by discharge standards in USEPA's 2005 Non-Time Critical Removal Action Memo, as shown in Table 1.

Table 1. 2006 Discharge Criteria for Pond Water Treatment

| Water Quality Parameter | MAXIMUM | FOUR DAY AVERAGE |
|---|---|---|
| pH | -- | Between 6.0 – 9.0 $SU_{f2}$ |
| Arsenic | 0.34 $mg/L_{f1}$ | 0.15 $mg/L_{f4}$ |
| Aluminum | 4.0 $mg/L_{f1}$ | 2.0 $mg/L_{f4}$ |
| Cadmium | 0.009 $mg/L_{f1}$ | 0.004 $mg/L_{f4}$ |
| Chromium | 0.97 $mg/L_{f1}$ | 0.31 $mg/L_{f4}$ |
| Copper | 0.026 $mg/L_{f1}$ | 0.016 $mg/L_{f4}$ |
| Iron | 2.0 $mg/L_{f1}$ | 1.0 $mg/L_{f4}$ |
| Lead | 0.136 $mg/L_{f1}$ | 0.005 $mg/L_{f4}$ |
| Nickel | 0.84 $mg/L_{f1}$ | 0.094 $mg/L_{f4}$ |
| Selenium (Total Recoverable) | Not Promulgated $_{f3}$ | 0.005 $mg/L_{f4}$ |
| Zinc | 0.21 $mg/L_{f1}$ | 0.21 $mg/L_{f4}$ |

mg/L..... Milligrams per liter

f1..... Dissolved concentration in a daily grab sample that has been field-filtered (0.45 micron) and acid fixed.
f2..... pH measurement based on 24-hour average discharge.
f3..... Total recoverable concentration in a daily grab sample that is acid fixed, but not filtered.
f4..... The sum of the detected concentration in four daily grab samples, from four consecutive discharge days, divided by four. If the concentration detected by the laboratory is less than the detection limit, one-half of the detection limit shall be used in calculating the Average concentration.

## 3.3 Pond 1 Lime Treatment Plant Process

The Pond 1 Lime Treatment process treats the AMD stored in all three upper ponds. The process is referred to as Pond 1 treatment because the treatment plant draws the AMD from Pond 1; AMD from Pond 2 north and Pond 2 south flow to Pond 1 during the treatment season.

The Pond 1 Lime Treatment Plant operates optimally in the warm summer months. Cold temperatures encountered in the late summer and early fall appear to cause slow reaction times, and consequently, decreases in treatment rates.

A 5-horsepower (hp) electric pump conveyed AMD from Pond 1 to a 10,000-gallon fiberglass Phase 1 reaction tank (R-1). A pH probe installed in R-1 measured pH in R-1 and controlled the amount of lime slurry added to R-1. A 3-hp mixer on R-1 mixed AMD and lime slurry. The lime slurry raised the pH of the AMD from 2.5 to an approximate range of 3.1 to 3.4.

The partially treated AMD then flowed by gravity from R-1 through a two-chambered combination flash/flocculation mix tank and into a Lamella clarifier (CL-1) where precipitates settled.

Two 1.5-inch air diaphragm pumps removed precipitates from the bottom of CL-1. One of the 1.5-inch diaphragm pumps was used to pump a portion of the precipitates back into the top of R-1. The second 1.5-inch air diaphragm pump was used to pump remaining precipitates from the bottom of CL-1 back into the top of CL-1 in an effort to keep precipitates from settling out and potentially clogging the bottom of CL-1 with soilds.

Supernatant and precipitates from CL-1 flowed by gravity to the Phase 2 reaction tank (a second 10,000-gallon fiberglass tank) referred to as R-2. A pH probe in R-2 measured pH and controlled the amount of lime slurry added to R-2. A 7.5-hp mixer on R-2 mixed the partially treated AMD, precipitates, and lime slurry. In R-2, the lime slurry raised the pH of the partially treated AMD to approximately 8.5, which caused all but trace amounts of remaining metals to precipitate out of solution.

Treated AMD and precipitates then flowed through the Phase 2 flash/flocculation mix tank and into the Phase 2 Lamella clarifier (CL-2). Two 10-hp mud pumps transferred the water/solid mixture from the bottom of CL-2 to the Pit Clarifier. Polymer solution (Superfloc A-1849 RS Anionicpolyacrylamide water-in-oil emulsion, or equivalent) was injected into the sludge slurry line just upstream of the two 10-hp mud pumps.

The Pit Clarifier is an earthen reservoir located in the bottom of the Leviathan Mine open pit. The Pit Clarifier has plan dimensions of approximately 150-feet by 150-feet, and includes a perforated pipe and gravel/sand under-drain. When the treatment plant was treating AMD, the sludge slurry from CL-2 was pumped to the Pit Clarifier where solids settled out in near-quiescent conditions. Water can be discharged from the Pit Clarifier via a surface decant structure or via an under-drain. Clean water was decanted from the Pit Clarifier via an adjustable outlet and conveyed by gravity to a weir box used for final effluent monitoring and discharge. If discharge from the Pit Clarifier was found to be out of compliance (by field analysis or direct knowledge of system upset), discharge was stopped. A valve prior to the weir box was also available to divert discharge back to Pond 1 for re-treatment, if required.

The Pit Clarifier under-drain was used continuously during the 2006 treatment season to more accurately regulate the flow being discharged to the weir box. Using the under-drain continuously during 2006 treatment operations had the added benefit of utilizing the gravel/sand lining the bottom of the Pit Clarifier for additional filtration and clarification for the treated water. Once treatment ended, and discharge through the adjustable outlet (decant outlet) ended, treated water was then discharged only via the Pit Clarifier under-drain and the weir box. Daily sampling of the discharge from the under-drain occurred until the flow rate out of the under-drain dropped below approximately 4 gpm.

## 3.4 Sampling and Analysis for Pond 3 Lime Treatment

Sampling methodology and analytical procedures for aqueous samples collected during Pond 3 lime treatment followed protocols detailed in the *Sampling and Analysis Plan for Leviathan Mine Surface Water Monitoring (January 2004)*. Samples were collected of effluent, influent, and sludge generated by treatment. Sampling procedures are described briefly below. Additional information can be found in the *Data Summary Report for Pond 3 Emergency Treatment at Leviathan Mine 2006* (Appendix C).

*Sampling*

As a means to demonstrate that the Pond 3 treatment system was providing acceptable effluent for discharge to Leviathan Creek, Lahontan Water Board staff collected a grab sample of the treated effluent each day that effluent was discharged to the creek. Influent samples from the upper ponds were collected sporadically throughout treatment. Samples were submitted to the Lahontan Water Board's contract laboratory to be analyzed for dissolved aluminum, arsenic, copper, chromium, cadmium, nickel, iron, lead, and zinc and total recoverable selenium. Dissolved metals and total recoverable selenium samples were field filtered and preserved with nitric acid.

The Lahontan Water Board's contractor conducted field monitoring of the water in Pond 3 multiple times per day to determine treatment progress. The contractor monitored Pond 3 water from two to 14 times per day, more frequently during times of discharge. Field monitoring included the measurement of flow, pH, oxidation-reduction potential, conductivity, dissolved oxygen, and temperature.

Lahontan Water Board staff collected sludge generated by the Pond 3 treatment system. Sludge was sampled to determine if the sludge is considered a hazardous waste and as a qualitative evaluation of the AMD that generates the sludge.

Three sludge samples were collected from the effluent stream of the RCTS-HS prior to deposition in Pond 3. These three composite sludge samples represent three different time periods of operation. Samples were obtained by collecting a portion of slurry discharged out of the RCTS-HS prior to entering Pond 3 in a five-gallon plastic container. Solids were allowed to settle out of solution and the relatively clear treated water was decanted off the top of the sludge. The remaining sludge was air dried for approximately eight weeks.

Lahontan Water Board staff collected one additional sludge sample directly from Pond 3 following system shutdown and partial drying of the sludge in early August 2006. The sample was collected approximately seven weeks after the treatment system was shut down.

Sludge samples were prepared in the field laboratory and sent to the Water Board's contract laboratory for Total Threshold Limit Concentration (TTLC) and Soluble Threshold Limit Concentration (STLC) analyses for Title 22 Metals (i.e., the 17 metals whose analyses are specified in Title 22 of the California Code of Regulations. These metals are antimony, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, and zinc), and aluminum and iron.

*Results*

Pond 3 treatment system analytical results are presented and discussed in the *Data Summary Report for Pond 3 Emergency Treatment at Leviathan Mine, 2006* (Appendix C). Analytical results were generated by the Lahontan Water Board's contract laboratory by applying standard analytical methods.

The sludge sample collected directly from Pond 3 contained approximately 14 percent solids. The low solids content is most likely due to the short time period between treatment operations and sample collection.

With the exception of the TTLC and STLC analysis for arsenic, the sludge did not exceed any other STLC or TTLC limits.

## 3.5 Sampling and Analysis for Pond 1 Lime Treatment

Sampling and analysis associated with treatment of Pond 1 water was performed in accordance with the Lahontan Water Board's *Sampling and Analysis Plan for Leviathan Mine Site Pond Water Treatment (June 2006)*. Lahontan Water Board staff collected daily grab samples of treated effluent while water was being discharged to Leviathan Creek. Staff also collected and analyzed samples of influent AMD (pond water) and sludge generated by treatment.

*Sampling*

As a means to demonstrate that the treatment systems were providing acceptable effluent for discharge to Leviathan Creek, Lahontan Water Board staff collected a daily grab sample of the treated effluent. A portion of the grab sample was field filtered and preserved with nitric acid, and submitted to the Lahontan Water Board's contract laboratory to be analyzed for dissolved aluminum, arsenic, copper, chromium, cadmium, nickel, iron, lead, and zinc. An unfiltered portion of the daily grab sample was preserved with nitric acid and submitted for analysis for total recoverable selenium. Staff also requested total metals analyses of the effluent.

Once per week, Lahontan Water Board staff submitted samples of treated effluent and untreated influent for the following analysis: sulfate ($SO_4$), total dissolved solids, dissolved aluminum, arsenic, copper, chromium, cadmium, nickel, iron, lead, zinc, calcium, cobalt, manganese, magnesium, and total recoverable selenium.

To provide "real-time" information regarding metals concentrations and other parameters in the treated effluent from the Pond 1 treatment plant, Lahontan Water Board staff planned to collect and field-analyze at least two grab samples of effluent per day for pH, dissolved aluminum, and dissolved iron. The spectrophotometer that analyzes aluminum and iron (a DR model 2010 manufactured by the Hach Company) malfunctioned in late June and was returned to the company for repair. The Hach company was unable to loan the Water

Board a spectrophotometer so no field analysis of aluminum and iron occurred from late June until the beginning of August. Water Board staff continued to measure and record pH data throughout the duration of treatment. In addition, treatment system operators measured effluent pH at least once every two hours throughout treatment. pH measurements taken by Lahontan Water Board staff confirm that the discharge of treated effluent to Leviathan Creek was within USEPA's discharge criteria for pH, and are included in the *Data Summary Report for 2006 Pond 1 Lime Treatment* (Appendix A).

Sludge was sampled to determine if the sludge is considered a hazardous waste and as a qualitative evaluation of the AMD that generates the sludge. Sludge generated by the Pond 1 treatment system, contained in the Pit Clarifier, was sampled directly from the Pit Clarifier following partial dewatering of sludge in October 2006. Sludge samples were analyzed by the Lahontan Water Board's contract laboratory, according to appropriate analytical procedures, to provide comparisons with the TTLC and STLC for Title 22 metals, aluminum, and iron.

Staff sampled sludge directly from the Pit Clarifier approximately eight weeks after the treatment system was shutdown. At the time of sampling, there was no discharge of treated water from the Pit Clarifier under-drain. Three sludge samples were colleted from three different locations in the Pit Clarifier. Sludge samples were collected in a vertical profile that represented the complete interval of sludge from the upper surface of sludge down to the base of the sludge.

*Results*

The results of laboratory analysis of aqueous and sludge samples for the Pond 1 treatment system are included in the *Data Summary Report for 2006 Pond 1 Lime Treatment* (Appendix A). Analytical results were generated by the Lahontan Water Board's contract laboratory by applying standard analytical methods.

The four-day arithmetic average concentration for aluminum discharged to Leviathan Creek was exceeded during initial plant startup from July 3 through July 5, 2006 and again from July 8 through July 11, 2006. The cause for elevated aluminum concentration is believed to be the result of the lime-dosing set point in Reactor 2 being set slightly higher than was required. Following laboratory confirmation of initial aluminum discharge exceedences, the lime-dosing set point was adjusted to minimize aluminum discharge concentrations while still not exceeding nickel discharge concentrations. Once optimum treatment system set points were established during the initial two-week startup period, no exceedences of the daily maximum or four-day arithmetic average concentrations occurred.

The three sludge samples collected from the Pit Clarifier averaged approximately 21.4 percent solids. The low solids content is most likely due to the short time period between treatment operations and sample collection.

The three grab samples from the Pit Clarifier contained constituents in excess of the TTLC and STLC analytical thresholds. The TTLC concentration for arsenic was exceeded in all three samples collected from the pit clarifier. The hazardous

waste threshold for TTLC arsenic is 500 mg/kg. The STLC concentration for nickel was exceeded in one of the three samples collected. The arithmetic average STLC nickel concentration for the three samples is 16.7 mg/L. The STLC for nickel is 20 mg/L.

With the exception of the TTLC analysis for arsenic and the STLC analysis for nickel, the sludge did not exceed any other STLC or TTLC limits.

## 3.6 Summary

Implementation of pond water treatment in 2006 was consistent with the Lahontan Water Board's 2006 Work Plan. In-situ treatment of water contained in Pond 3 was implemented from mid-April through early July 2006. Approximately 7.5 million gallons of water treated in the Pond 3 treatment plant was discharged to Leviathan Creek. The Pond 1 treatment plant operated from late June 2006 through mid-August 2006. Approximately 13.2 million gallons of water treated in the Pond 1 treatment plant were discharged to Leviathan Creek from the Pit Clarifier.

*Pond 3 Lime Treatment Plant*

The 2006 in-situ treatment of Pond 3 consumed approximately 42.5 tons of dry lime to treat approximately 7.5 million gallons of varying concentrations of AMD mixed with direct precipitation. Sludge generated during the treatment process was contained in Pond 3. A portion of the sludge contained in Pond 3 was removed and disposed of at a Class 1 hazardous waste facility in Beatty, Nevada in November 2006. The in-situ treatment process combined with natural evaporation resulted in Pond 3 having a storage capacity of approximately one million gallons by the end of the treatment season. Atlantic Richfield Company (ARC) continued to use Pond 4 as part of their efforts to treat other sources of AMD in 2006.

*Pond 1 Lime Treatment Plant*

Seven hundred and sixteen tons of sludge generated during the 2005 treatment season by the Pond 1 treatment plant and deposited in the Pit Clarifier, was disposed of at a Class 1 hazardous waste facility in Beatty, Nevada. During the 2006 season, the Pond 1 treatment plant generated an estimated 1100 cubic yards (wet volume) of sludge. Sludge generated by the Pond 1 treatment plant in 2006 was contained in the Pit Clarifier and will be disposed of at a Class I hazardous waste facility in the spring of 2007 following final sludge dewatering and corresponding increase in solids content.

The 2006 upper ponds treatment effort consumed approximately 180 dry standard tons of lime; 4,236 pounds of polymer; 6,294 gallons of diesel fuel; and 756 gallons of gasoline. The Lahontan Water Board's treatment effort combined with natural evaporation resulted in the upper pond system having a storage capacity of approximately 14 million gallons at the end of the treatment season.

There remain some unavoidable issues mostly related to the remoteness of the mine site. The remote location results in logistical obstacles for the delivery of consumables for plant operation (lime, fuel, etc.). Rough road conditions can also hamper site access. The USFS and Alpine County, working with Lahontan Water Board staff, conducted road improvement projects along the California access road (see Site Maintenance section for more information).

## 4. SITE MONITORING

The Lahontan Water Board continued their efforts to monitor surface water flow and quality, and to collect meteorological information in the vicinity of Leviathan Mine. Additionally, depth to groundwater was measured sporadically (see Table 4) in Monitoring Well-3.

### 4.1 Flow Monitoring

Flow monitoring for the 2005-2006 water year (October 1, 2005 through September 30, 2006) at Leviathan Mine continued under contract between the Lahontan Water Board and the USGS. Flow monitoring occurred as detailed in Table 2. Daily average flow data for stations with continuous recorders are included in the *Data Summary Report for 2006 Surface Water Monitoring*, Appendix B. All final flow data collected by the USGS are forwarded to ARC for incorporation into the Leviathan Mine database.

Flow from the CUD was directed into the ARC treatment system beginning in mid July 2006. There was no flow from the CUD to the creek from then until early October 2006, except for a nine-day unauthorized discharge. Flows shown during this three-month period reflect discharges of treated effluent from ARC's treatment system that was directed through the CUD weir box. Many of the sites around the mine showed increased flows due to above average precipitation. The PUD flows showed significant increases compared to previous records.

**Table 2. Flow Monitoring Locations**

| STATION LOCATION/DESCRIPTION | EQUIPMENT | USGS STARTUP DATE |
|---|---|---|
| Leviathan Creek above the mine **(Station 1)** | Continuous flow recorder and appurtenances, solar power supply. | October 98 |
| Pit Under-Drain at the flow control structure **(PUD)** | Continuous flow recorder and appurtenances, solar power supply, telemetry. | October 99 |
| Adit at the flow control Structure **(Adit)** | Continuous flow recorder and appurtenances, solar power supply, telemetry. | October 99 |
| Pond 1 Stage | Continuous stage recorder and appurtenances, solar power supply, telemetry. | October 99 |
| Pond 4 Stage | Continuous stage recorder and appurtenances, solar power supply, telemetry. | October 99 |
| Channel Under-Drain **(CUD)** | Continuous flow recorder and appurtenances, solar power supply, telemetry. | October 99 |
| Aspen Creek above the mine **(Station 22)** | Continuous flow recorder and appurtenances, solar power supply. | October 03 |
| 4L Creek above its confluence with Leviathan Creek **(4L Creek)** | Continuous flow recorder and appurtenances, solar power supply. | October 03 |
| Leviathan Creek above its confluence with Aspen Creek **(Station 15)** | Continuous flow recorder and appurtenances, solar power supply, telemetry. | October 98 |
| Aspen Creek above its confluence with Leviathan Creek **(Station 16)** | None. Monthly flow measurements to establish relationship w/STA 15. | October 98 |
| Overburden (Aspen) Seep, above the Bioreactors **(OS)** | Continuous flow recorder and appurtenances, solar power supply. | October 98 |
| Bryant Creek just below the confluence of Mountaineer and Leviathan Creeks **(Station 25)** | Continuous flow recorder and appurtenances, solar power supply. | October 98 |
| Leviathan Creek just above the confluence of Mountaineer and Leviathan Creeks **(Station 23)** | Continuous flow recorder and appurtenances, solar power supply | November 99 |
| Mountaineer Creek just above the confluence of Leviathan and Mountaineer Creeks **(Station 24)** | None. Monthly flow measurements to establish relationship w/STA 23. | December 99 |
| Bryant Creek just above confluence with Doud Springs **(Station 26)** | Continuous flow recorder and appurtenances, solar power supply | August 01 |

## 4.2 Surface Water Monitoring

The Lahontan Water Board continued monthly water quality monitoring through the 2005-2006 water year (October 1, 2005 through September 30, 2006). The Lahontan Water Board's monthly surface water quality monitoring stations and measured parameters are summarized in Table 3. Surface water sampling and analysis was done in compliance with the *Sampling and Analysis Plan for Leviathan Mine Site Surface Water Monitoring (January 2004)* (SAP). The SAP is not included in this report, but copies may be obtained from the Lahontan Water Board. Surface water data collected by Lahontan Water Board staff is formatted and then forwarded to ARC for input into the Leviathan Mine database. Surface water data collected for this water year is summarized in the *Data Summary Report for 2006 Surface Water Monitoring*, included as Appendix B.

**Table 3. Surface Water Quality Monitoring Stations**

| Lahontan Water Board Station | Site Description | Sampling Frequency | Parameters Measured |
|---|---|---|---|
| **Station 1** | Leviathan Creek above Leviathan Mine. | Monthly | Total and Dissolved Metals for aluminum, arsenic, calcium, cadmium, cobalt, chromium, copper, iron, magnesium, manganese, nickel, zinc; Total Dissolved Solids (TDS); Sulfate. **Field**: pH, temperature, electrical conductivity, and specific conductance. |
| **Adit** | Drainage from Tunnel #5 (the Adit), prior to entering evaporation ponds. | Monthly | Same as above. |
| **Pit Under - Drain (PUD)** | Drainage from shallow ground water collection pipes in pit, prior to entering evaporation ponds. | Monthly | Same as above. |
| **Channel Under-Drain (CUD)** | Discharge from Channel Under-Drain below Leviathan Creek concrete channel. | Monthly | Same as above. |
| **Delta Seep (DS)** | Seepage from the toe of the Delta Slope, located north of Pond 4. | Semi-annual | Same as above. |
| **Station 15** | Leviathan Creek, above the confluence of Leviathan and Aspen creeks. | Monthly | Same as above. |
| **Station 16** | Aspen Creek, above the confluence of Leviathan and Aspen creeks. | Monthly | Same as above. |
| **4L Creek** | 4L Creek, just above the confluence of Leviathan Creek. | Semi-annual | Same as above. |
| **Station 22** | Aspen Creek above Leviathan Mine. | Monthly | Same as above. |
| **Overburden Seep (OS)** | Overburden seepage (a.k.a. Aspen Seep), above the bioreactors. | Monthly | Same as above. |
| **Station 23** | Leviathan Creek above the confluence of Leviathan and Mountaineer creeks. | Monthly | Same as above. |
| **Station 24** | Mountaineer above the confluence of Leviathan and Mountaineer creeks. | Monthly | Same as above. |
| **Station 25** | Bryant Creek below the confluence of Leviathan and Mountaineer creeks. | Monthly | Same as above. |
| **Station 26** | Bryant Creek above the confluence of Doud Springs and Bryant Creek. | Semi-annual | Same as above. |

## 4.3 Meteorological Monitoring

The weather station located on the Lahontan Water Board's construction trailer near Pond 1, a Davis Integrated Sensor Suite, has been operational since installation in November 2002. The system measures the following conditions hourly: wind speed, wind direction, rainfall, outside temperature, outside humidity, ultraviolet radiation, and solar radiation. Lahontan Water Board staff downloaded data from this weather station quarterly and transmitted the data to ARC for incorporation into the master database for Leviathan Mine.

## 4.4 Monitoring Well-3

In addition to the routine monitoring activities, Lahontan Water Board staff also monitored the depth to groundwater in Monitoring Well-3 (MW-3) sporadically between January 2006 and March 2006. MW-3 is located in the northwest part of the pit floor, adjacent to the Pit Clarifier. Table 4 shows depth to water and corresponding groundwater elevations at MW-3 taken from August 2001 to March 2006.

There is a correlation between groundwater elevations measured in MW-3 and PUD flow rates, and to a lesser degree between MW-3 groundwater elevations and Adit flow rates. In general, as groundwater elevations increase, PUD and Adit flow rates increase.

**Table 4. Monitoring Well-3 Water Elevations**

| Date | Depth to Water (ft) | Groundwater Elevation[fl] (ft asl) |
|---|---|---|
| 8/23/2001 | 22.78 | 7053.61 |
| 6/26/2002 | 21.75 | 7054.64 |
| 9/25/2002 | 22.50 | 7053.89 |
| 11/7/2003 | 22.43 | 7053.96 |
| 4/20/2005 | 20.65 | 7055.74 |
| 4/28/2005 | 20.61 | 7055.78 |
| 5/10/2005 | 20.48 | 7055.91 |
| 5/17/2005 | 20.39 | 7056.00 |
| 5/24/2005 | 20.41 | 7055.98 |
| 6/1/2005 | 20.62 | 7055.77 |
| 6/13/2005 | 20.70 | 7055.69 |
| 7/1/2005 | 20.89 | 7055.50 |
| 7/11/2005 | 20.97 | 7055.42 |
| 8/11/2005 | 21.16 | 7055.23 |
| 1/05/2006 | 21.35 | 7055.04 |
| 1/24/2006 | 20.99 | 7055.40 |
| 2/22/2006 | 20.94 | 7055.45 |
| 3/16/2006 | 20.74 | 7055.65 |
| 3/22/2006 | 20.77 | 7055.62 |

fl ...Bench Mark is the top of casing at 7076.39 feet above sea level (asl)

# 5. SITE MAINTENANCE

The Lahontan Water Board conducted site maintenance work during the 2006 field season in accordance with the Work Plan. These activities are necessary to prevent failures and to ensure proper performance of the 1985 pollution abatement system. Routine maintenance activities include repairing perimeter fencing, removing sediment from storm water ditches, covering exposed pond liners and minor road repair. Non-

routine maintenance for 2006 included road improvements along the California access road.

5.1 Repairing Perimeter Fencing

A barbed wire fence surrounds the majority of the site. The barbed wire fence does not continue along the high wall on the southeastern portion of the site where cattle cannot access. Instead, there is a fence limiting human access. During the 2006 field season, Lahontan Water Board staff inspected the entire fence line and noted the perimeter fencing required repairs in numerous locations. Lahontan Water Board staff repaired the perimeter fence throughout the 2006 field season.

5.2 Storm Water Conveyance and Road Maintenance

In the fall of 2006, the Lahontan Water Board hired a contractor to clean out portions of drainage ditches filled with sediment and improve drainage along the road around Pond 2 north. Minor grading was done on the north side of Pond 2 north in an effort to direct storm water and snow melt away from the terraced slope and into the concrete storm water conveyance system. In addition, sediment contained in the concrete lined ditch south and west of Pond 1 and to the west of Pond 4 was removed.

The USFS and Alpine County made significant improvements along the California access road between Highway 89 and Leviathan Mine under emergency contracts with the Lahontan Water Board. The improvement work was initiated in mid-May with the majority of improvement work being completed by mid-June 2006. The USFS returned in early July to complete road base placement and final grading.

Alpine County extended two 36-inch culverts (conveying Leviathan Creek) an additional 20 feet to improve the culvert crossing by heavy equipment. Additional road base material was placed and compacted in the roadway on both sides of the culvert crossing. Roadwork completed by the USFS included adding approximately 1600 tons of road base at several locations along the California access route, replacing a damaged culvert, and improving drainage along the road.

5.3 Covering Exposed Liner

Lahontan Water Board staff visually inspected cover material around each pond as a means to detect areas where earthen cover had eroded. Significant amounts of liner were exposed, and Lahontan Water Board staff directed the contractor removing sediment from concrete storm water conveyances to place material removed from conveyances over exposed liner.

# 6. REVEGETATION

## 6.1 Watering

Revegetation work conducted during August 2006 at Leviathan Mine consisted of hand watering the small trees and shrubs that were hand planted during the Delta Slope Stabilization Project in 2005.

## 6.2 Invasive Plant Control

The El Dorado County, Department of Agriculture (EDCDA) visited Leviathan Mine and applied herbicide (telar) on invasive plants in late July 2006. This year (2006), as in 2005 through 2002, the EDCDA sprayed to eradicate tall whitetop (Lepidium latifolium).

[Levi/Reports and Workplans/2006 year end report]

# Data Summary Report

## For

# Leviathan Mine
# 2006 Pond Water Treatment

*(Appendix A to the Year-End Report for the 2006 Field Season)*

**Prepared by:**

**California Regional Water Quality Control Board, Lahontan Region**

**January 2007**

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### Attachments

## I. Acronyms and Abbreviations

| | |
|---|---|
| AMD | Acid Mine Drainage |
| ARC | Atlantic Richfield Company |
| DQO | Data Quality Objective |
| DSR | Data Summary Report |
| GPM | Gallons per Minute |
| PQL | Practical Quantitation Limit |
| PWT | Pond Water Treatment |
| RPD | Relative Percent Difference |
| SAP | Sampling and Analysis Plan for Pond Water Treatment |
| Site-Wide SAP | Leviathan Mine Site Site-Wide Sampling and Analysis Plan |
| USEPA | United States Environmental Protection Agency |
| Water Board | California Regional Water Quality Control Board, Lahontan Region |
| Year-End Report | Year-End Report for the 2006 Field Season at Leviathan Mine |

## I. Acronyms and Abbreviations

| | |
|---|---|
| AMD | Acid Mine Drainage |
| ARC | Atlantic Richfield Company |
| DQO | Data Quality Objective |
| DSR | Data Summary Report |
| GPM | Gallons per Minute |
| PQL | Practical Quantitation Limit |
| PWT | Pond Water Treatment |
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| Site-Wide SAP | Leviathan Mine Site Site-Wide Sampling and Analysis Plan |
| USEPA | United States Environmental Protection Agency |
| Water Board | California Regional Water Quality Control Board, Lahontan Region |
| Year-End Report | Year-End Report for the 2006 Field Season at Leviathan Mine |

## II. Introduction

This Data Summary Report (DSR) presents the results of sampling and analysis conducted by the California Regional Water Quality Control Board, Lahontan Region (Water Board) during the summer 2006 Pond Water Treatment (PWT) at Leviathan Mine, as described in the Work Plan for 2006 Site Work by the California Regional Water Quality Control Board, Lahontan Region (*Water Board, June 2006a*). The data presented in this report was gathered following the objectives, procedures, and quality assurance and quality control standards documented in the Sampling and Analysis Plan for Leviathan Mine Site Pond Water Treatment (SAP) (*Water Board, June 2006b*). Overall site objectives and requirements are outlined in the Leviathan Mine Site Site-Wide Sampling and Analysis Plan (Site-Wide SAP) (*MWH, 2002*). The following information is included in the DSR:

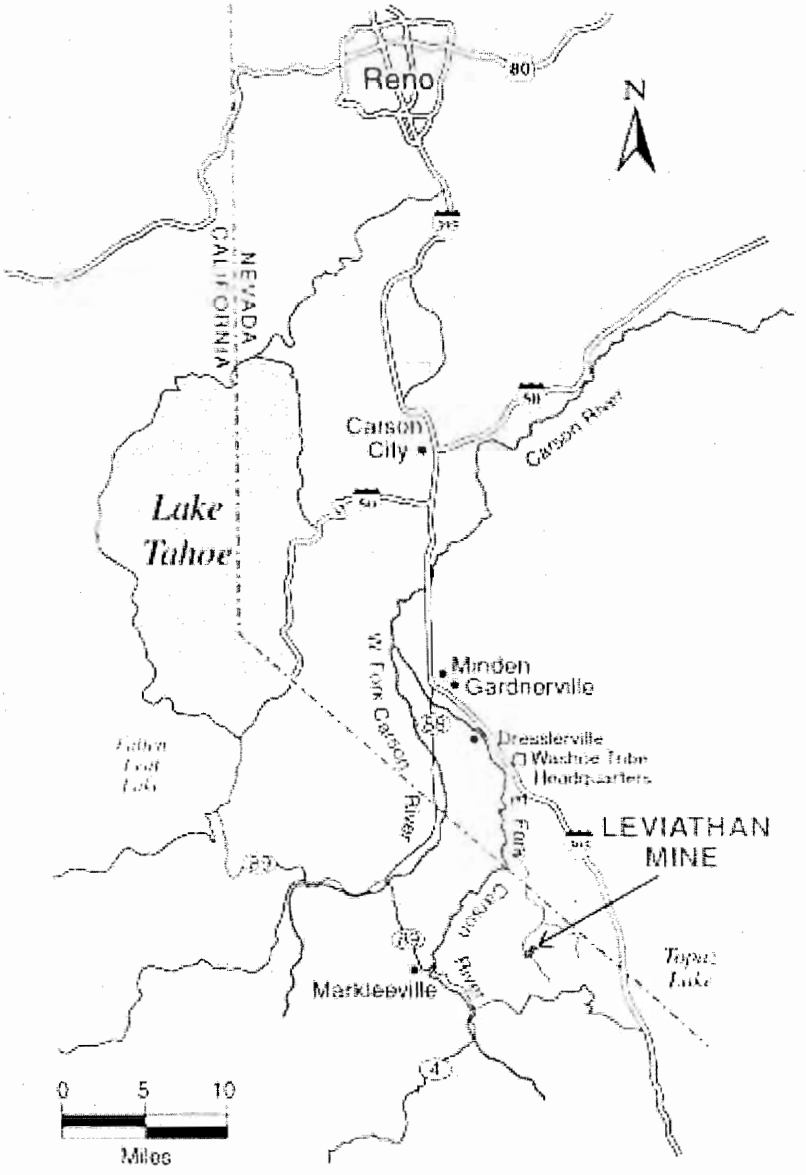
- Results of laboratory analyses.
- Results of field measurements.
- Location of sampling stations.

The SAP, field notebook, and monitoring program records for this project are located at the Water Board offices in South Lake Tahoe, California.

### a. Investigation Site Description

Leviathan Mine is located in Alpine County, California, approximately six miles east of Markleeville, California and five miles west of Topaz Lake, Nevada, as shown in Figure 1. The site is an inactive sulfur mine that the State of California acquired in the early 1980s in order to clean up water quality problems caused by historic mining. In May 2000, the United States Environmental Protection Agency (USEPA) placed Leviathan Mine on the Comprehensive Environmental Response, Compensation, and Liability Act National Priorities List, thus making Leviathan a federal Superfund site. USEPA identified the State of California and Atlantic Richfield Company (ARC) as Potentially Responsible Parties at the site. Additional information on the history and watershed of Leviathan Mine is contained in the Year-End Report for the 2006 Field Season at Leviathan Mine (Year-End Report).

Acting on the State's behalf, the Water Board has implemented several projects to abate and quantify the discharge of pollutants from Leviathan Mine. In 1985, the Water Board completed construction of a pollution abatement system at Leviathan Mine to address specific problem areas. One component of the 1985 pollution abatement project included construction of five lined evaporation ponds (see Figure 2) to capture and evaporate acid mine drainage (AMD) from remnant underground mine workings. Flows of AMD from the Adit and Pit Under-Drain, along with direct precipitation fill the ponds throughout the year.




# FIGURE 1
# SITE LOCATION

Following completion of the 1985 project and up until the Fall of 1999, discharge of AMD from the pond system to Leviathan Creek routinely occurred during the winter and spring months when pond inflow exceeded the storage and evaporative capacities of the pond system. To prevent overflow of AMD from the ponds, the Water Board assessed and field-tested a treatment process that enabled the treatment and discharge of pond water during the summer months to increase pond storage capacity for the subsequent winter and spring months.

The process employed by the Water Board for the treatment of AMD contained in the pond system was described as biphasic neutralization. The biphasic process consisted of neutralizing AMD by the addition of lime (calcium hydroxide [$Ca(OH)_2$]) at two points in the treatment process. Sludge was produced in both phases of the biphasic process. The Lahontan Water Board assembled a treatment system during the 1999 field season on the north east corner of Pond 1 and tested the process at full-scale during the 1999 and 2000 field seasons. The Lahontan Water Board has continued to operate the lime treatment system as a biphasic treatment process during the summer months from 2001 through 2005.

The Pond 1 lime treatment plant operation was modified slightly during the 2005 treatment season to increase the treatment rate of AMD contained in the pond system following an unusually wet winter. The modifications implemented during the 2005 season allowed for an increase in the treatment rate that could be sustained reliably over extended periods. Two points of lime addition remained as they had been in past treatment seasons in an effort to preserve known treatment plant responses, however only one sludge was produced. Modifications performed in 2005 also included eliminating required collection, sample preparation, and field analysis of mid-process samples. With the modified operation, strict control of the first phase operating parameters was no longer needed.

During the 2006 season, the Pond 1 lime treatment plant was operated maintaining two points of lime addition with no sludge segregation. When the treatment plant was treating AMD, the sludge slurry was pumped to the Pit Clarifier where the solids settled out in near-quiescent conditions. Clean water was decanted from the Pit Clarifier via an adjustable outlet and conveyed by gravity to a weir box used for final effluent monitoring and discharge. In addition to the decant outlet, the Pit Clarifier under-drain was used continuously during the 2006 treatment season to more accurately regulate the flow being discharged to the weir box. Using the under-drain continuously during 2006 treatment operations had the added benefit of utilizing the gravel/sand lining the bottom of the Pit Clarifier for additional filtration and clarification for the treated water. Once treatment ended, and discharge through the adjustable outlet (decant outlet) ended, treated water was then discharged only via the Pit Clarifier under-drain and the weir box. The Year-End Report contains additional detailed information on the treatment process, treatment system design, and operations implemented during the 2006 season.

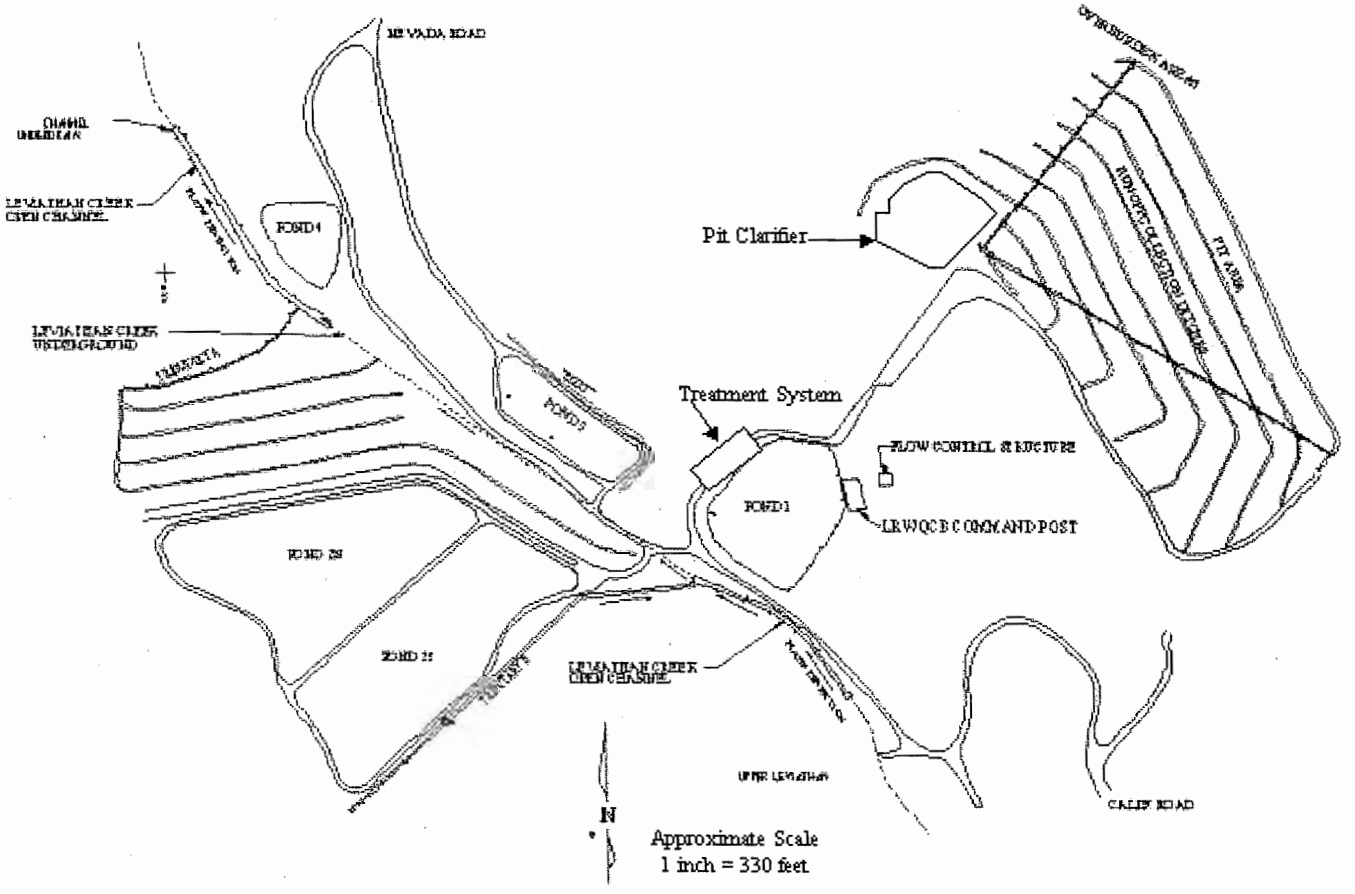



Figure 2 Leviathan Mine Site Map

### b. Investigation Objectives

The overall objective of the PWT project was to treat the AMD contained in the ponds and produce an effluent that met the Discharge Criteria designated by USEPA for the project. The Discharge Criteria for the project are listed below in Table 1. If discharge from the Pit Clarifier was found to be out of compliance (by field analysis or direct knowledge of system upset), discharge was stopped. The effluent would be retained in the Pit Clarifier until it met field parameters or returned to Pond 1 for re-treatment.

**Table 1. 2006 Discharge Criteria for Pond Water Treatment**

| WATER QUALITY PARAMETER | MAXIMUM | FOUR-DAY AVERAGE |
|---|---|---|
| pH | -- | Between 6.0 – 9.0 $SU_{f2}$ |
| Arsenic | 0.34 $mg/l_{f1}$ | 0.15 $mg/l_{f4}$ |
| Aluminum | 4.0 $mg/l_{f1}$ | 2.0 $mg/l_{f4}$ |
| Cadmium | 0.009 $mg/l_{f1}$ | 0.004$mg/l_{f4}$ |
| Chromium | 0.97 $mg/l_{f1}$ | 0.31 $mg/l_{f4}$ |
| Copper | 0.026 $mg/l_{f1}$ | 0.016 $mg/l_{f4}$ |
| Iron | 2.0 $mg/l_{f1}$ | 1.0 $mg/l_{f4}$ |
| Lead | 0.136 $mg/l_{f1}$ | 0.005 $mg/l_{f4}$ |
| Nickel | 0.84 $mg/l_{f1}$ | 0.094 $mg/l_{f4}$ |
| Selenium (Total Recoverable) | Not $Promulgated_{f3}$ | 0.005 $mg/l_{f4}$ |
| Zinc | 0.21 $mg/l_{f1}$ | 0.21 $mg/l_{f4}$ |

Mg/L..... Milligrams per Liter
f1..... Dissolved concentration in a daily grab sample that has been field-filtered (0.45 micron) and acid preserved.
f2..... pH measurement based on 24-hour average discharge.
f3..... Total recoverable concentration in a daily grab sample that is acid preserved, but not filtered.
f4..... The sum of the detected concentration in four daily grab samples, from four consecutive discharge days, divided by four.

### c. Data Quality Objectives

The overall objective of the monitoring program for PWT was to collect data in order to evaluate the effectiveness of the treatment process in terms of effluent and sludge quality. The Data Quality Objectives (DQOs) for this project were developed using the *USEPA Guidance for Data Quality Objectivs, EPA QA/G-4* (EPA 2000), and are described in Appendix A of the SAP. The specific DQOs for this project, as outlined in the SAP are as follows:

- Identify the chemical characteristics of the untreated pond water.
- Identify the chemical characteristics of the treated pond water.
- Identify the chemical characteristics of solids generated in the treatment process.
- Monitor the effectiveness in meeting USEPA discharge criteria.
- Provide real-time data on the quality of the effluent and efficiency of the treatment system at critical points.

## III. Sampling and Analysis Summary

Table 2, Monitoring Locations and Sampling Schedule, summarizes the sampling program for PWT as proposed in the SAP, however no Phase I solids were produced in 2006. PWT monitoring included the collection of samples for field analysis and for confirmation analysis by the Water Board's contract laboratory, Weck Labs of Industry, California. There were deviations from the SAP for sludge sampling and field parameter analyses. These deviations are documented in Section IV of this report.

**Table 2. Monitoring Locations and Sampling Schedule**

| MONITORING OBJECTIVE | SAMPLING LOCATION | SAMPLE TYPE | FREQUENCY |
|---|---|---|---|
| Influent | Intake line to treatment system | Field Parameters | As Needed |
| | | Lab Analysis | Once per week |
| Effluent | Discharge line from Pit Clarifier | Field Parameters | Daily |
| | | Lab Analysis | Daily (when discharging) |
| Phase I Solids | Bin located below Phase I filter press | Lab Analysis | Weekly (composite of daily grabs) |
| Phase II Solids | Pit Clarifier | Lab Analysis | 3 Samples (after completion of treatment) |

### a. Confirmation Monitoring

The Water Board's contractor operated the Pond 1 lime treatment plant from late-June through August 12, 2006. Preliminary effluent samples were collected from the Pit Clarifier beginning June 28, 2006, with the first effluent discharged to Leviathan Creek on June 30, 2006. After all the pond water was treated and the system was shut down,

the Water Board continued to collect effluent samples discharging from the Pit Clarifier until August 25, 2006, when the flow rate out of the under-drain dropped below approximately four gallons-per-minute (gpm). Six samples of the influent were collected during the treatment period. Three samples of sludge were collected in October 2006 following partial de-watering of the Pit Clarifier.

Water Board staff collected a daily grab sample of the treated effluent each day that the system discharged to the creek. A portion of the grab sample was field filtered, preserved with nitric acid, and submitted to the Water Board's contract laboratory to be analyzed for dissolved aluminum (Al), arsenic (As), copper (Cu), chromium (Cr), cadmium (Cd), nickel (Ni), iron (Fe), lead (Pb), and zinc (Zn). An unfiltered portion of the daily grab sample was preserved with nitric acid and submitted for Total Recoverable Selenium (Se). Once per week, Water Board staff submitted samples of treated effluent and samples of untreated influent for the following analysis: sulfate ($SO_4$), total dissolved solids, dissolved Al, As, Cu, Cr, Cd, Ni, Fe, Pb, Zn, calcium (Ca), cobalt (Co), manganese (Mn), magnesium (Mg), and Total Recoverable Se. Specific details of sample collection and handling are described in the SAP.

Laboratory monitoring results and qualifiers, for the influent, effluent, and sludge are presented in Attachment A. Also included in Attachment A is a table showing the calculated 4-day average for the effluent concentrations.

The 4-day arithmetic average concentration for aluminum discharged to Leviathan Creek was exceeded during initial plant startup from July 3 through July 5, 2006 and again from July 8 through July 11, 2006. The cause for elevated aluminum concentration is believed to be the result of the lime-dosing set point in Reactor 2 being set slightly higher than was required. Following laboratory confirmation of initial aluminum discharge exceedences, the lime-dosing set point was adjusted to minimize aluminum discharge concentrations while still not exceeding nickel discharge concentrations. Once optimum treatment system set points were established during the initial two-week startup period, no exceedences of the daily maximum or 4-day arithmetic average concentrations occurred.

Data were assessed to confirm that holding times were met and that field quality control samples were collected. Any exceedences of method hold times would be denoted with an "H" qualifier on the data tables but no hold time were exceeded.

Water Board staff collected one field duplicate per week of treatment. The Relative Percent Difference (RPD) was calculated for the duplicate and corresponding sample. If both the sample and duplicate values were greater than or equal to five times the Practical Quantitation Limit (PQL), then the RPD must be less than or equal to 25% to be in control limits. If either the sample or duplicate value was less than five times the PQL, then the absolute difference between the sample and duplicate values had to be less than the PQL to be in control limits. Results that were out of control limits were flagged with "*" qualifier on the Table 1 of Attachment A. Only one set of sample and duplicate

results, collected on 7/20/06, were flagged for exceeding the control limits for RPD (Table A-1). Equipment Rinsate Blanks (ERBs) and Field Method Blanks (FMBs) were also collected once per week and submitted for the same analyses as effluent samples. Water Board staff collected ERBs by pouring distilled water over laboratory equipment used in sample collection and processing after the equipment had been cleaned. FMBs were collecting and processing distilled water in the same method as effluent samples. No data were qualified based on ERB or FMB results.

The system was operated such that one sludge was produced from treatment of the AMD. Water Board staff collected three sludge samples from three different locations in the Pit Clarifier. Sludge samples collected represented the complete interval of sludge from the upper surface of sludge down to the base of the sludge. The sludge samples were analyzed by the Water Board's contract laboratory, according to appropriate analytical procedures, to provide comparisons with the Total Threshold Limit Concentration (TTLC) and the Soluble Threshold Limit Concentration (STLC) for various constituents.

The three sludge samples collected from the Pit Clarifier averaged approximately 21.4 percent solids. The low solids content is most likely due to insufficient drying time because of the short time period between treatment operations and sample collection. The three samples contained constituents in excess of the TTLC and STLC analytical thresholds. The TTLC concentration for arsenic was exceeded in all three samples collected from the Pit Clarifier. The hazardous waste threshold for TTLC arsenic is 500 mg/kg. The STLC concentration for nickel was exceeded in one of the three samples collected. The arithmetic average STLC nickel concentration for the three samples is 16.7 mg/L. The hazardous waste threshold for STLC nickel is 20 mg/L.

With the exception of the TTLC analysis for arsenic and the STLC analysis for nickel, the sludge did not exceed any other STLC or TTLC limits.

### b. Real-time Monitoring

To provide "real-time" information regarding metals concentrations and other parameters in the treated effluent, each day that the system was discharging to Leviathan Creek, Water Board staff collected and measured samples of the effluent for pH. These data were used to provide feedback to immediate system operations and as an indicator of effluent quality. As discussed in Section IV below, dissolved Al and Fe were not analyzed during the month of July due to equipment failure. In addition to pH measurements by Water Board staff, treatment system operators measured effluent pH at least once every two hours throughout treatment. pH measurements confirm that the discharge of treated effluent to Leviathan Creek was within USEPA's discharge criteria for pH.

Copies of the Water Boards field log sheets are presented in Attachment B. Specific details of sample collection, handling, and field analytical procedures are described in the SAP.

Treated water flows from the Pit Clarifier through a weir box where the flow data are recorded. The flow measuring system is similar to those used by the United States Geological Survey for measuring AMD flows from the Pit Under-drain and Adit. The weir box has a 90-degree V-notch weir and stage data is recorded at 15-minute intervals by a combination data logger/pressure transducer system. By August 28, 2006 approximately 13.2 million gallons of treated pond water had been discharged out of the Pit Clarifier to Leviathan Creek. A summary of daily discharge data in included as Attachment C. The raw data has not been included due to the large volume of data recorded by the data logger but it is available upon request to the Water Board.

## IV. Deviations from the SAP

There were several deviations from the sampling and analysis proposed in the SAP. Real-time monitoring was altered due to equipment malfunctions and the sludge sampling was modified to adjust to treatment system operations.

Real-time monitoring detailed in the SAP included field monitoring of pH, dissolved aluminum, and dissolved iron. A Hach DR2010 Spectrophotometer is used to perform field analysis of aluminum and iron. On June 29, 2006, during the first week of treatment, the instrument failed to turn on and could not be repaired in the field. The instrument was sent to Hach Company for repair with an estimated turnaround time of 10 days. Hach Company was unable to supply a loan instrument during the repair time. The turnaround time took longer than originally estimated by Hach and they finally returned the repaired instrument on August 1, 2006. Water Board staff only monitored pH as a field indicator of effluent water quality between June 29 and August 1, 2006. Monitoring of dissolved aluminum and dissolved iron resumed from August 1, 2006 until the treatment system was shut down on August 12, 2006.

The treatment system was operated in the modified, single sludge process, so there was no generation of Phase I sludge. The sludge was not segregated during the treatment process and all the sludge was directed to the Pit Clarifier for de-watering. The sludge generated by treatment was sampled and analyzed according to procedures detailed in the SAP for Phase II Sludge.

Weck Labs completed Laboratory Data Validation Checklists for Metals Analysis by ICP and ICPMS, as described in Appendix E-1 of the Site-Wide SAP, for eight of 20 reports collected for treatment. Due to the large number of analytical reports and corresponding Laboratory Data Validation Checklists produced for treatment, they have not been included in this report but are available at the Water Board office. Level A/B Screening Checklists and Data Validation Checklists for Field Quality Control were not completed for PWT data reporting. However the PWT data were assessed to confirm that holding times were met and that field quality control samples were collected.

## V. References

CA Regional Water Quality Control Board, Lahontan Region. June 2006a. Work Plan for 2006 Site Work by the California Regional Water Quality Control Board.

CA Regional Water Quality Control Board, Lahontan Region. June 2006b. Sampling and Analysis Plan for Leviathan Mine Site Pond Water Treatment.

Montgomery Watson Harza. April 2002. Leviathan Mine Site, Site-Wide Sampling and Analysis Plan.

United States Environmental Protection Agency. 2000. USEPA Guidance for Data Quality Objectivs, EPA QA/G-4.

# Attachment A

# Laboratory Data Summary Results

# Table A-1
# 2006 Effluent Daily Concentrations

| | Sample Date | pH | Al | Q | As | Q | Ca | Q | Cd | Q | Co | Q | Cr | Q | Cu | Q | Fe | Q | Pb | Q | Mg | Q | Mn | Q | Ni | Q | Zn | Q | Se | Q | TDS | Q | Sulfate | Q |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Daily Max Discharge Criteria:** | | **6 - 9 SU** | **4.0** | | **0.34** | | **n/a** | | **0.009** | | **n/a** | | **0.97** | | **0.026** | | **2.0** | | **0.136** | | **n/a** | | **n/a** | | **0.84** | | **0.210** | | **n/a** | | **n/a** | | **n/a** | |
| Pit Clarifier | 6/27/2006 | | 1.700 | | 0.0027 | J | | | 0.00021 | J | | | 0.00061 | J | 0.00110 | J | 0.000001 | U | 0.000042 | U | | | | | 0.0580 | | 0.00073 | U | 0.00180 | J | | | | |
| Pit Clarifier | 6/28/2006 | 8.00 | 1.500 | | 0.0029 | J | | | 0.00026 | J | | | 0.00140 | J | 0.00130 | J | 0.00048 | U | 0.000042 | U | | | | | 0.0600 | | 0.00073 | U | 0.00210 | | | | | |
| Pit Clarifier | 6/29/2006 | 7.40 | 0.290 | | 0.0027 | J | | | 0.00150 | J | 0.046 | | 0.00014 | J | 0.00200 | J | 0.1800 | | 0.000042 | U | | | | | 0.1300 | | 0.00660 | J | 0.00190 | J | | | | |
| Effluent to Creek | 6/30/2006 | 8.20 | 2.900 | | 0.0030 | J | | | 0.00034 | J | | | 0.00083 | J | 0.00530 | | 0.0048 | U | 0.000710 | J | | | | | 0.0760 | | 0.00330 | J | 0.00190 | J | | | | |
| Effluent to Creek | 7/1/2006 | 8.50 | 2.900 | | 0.0030 | J | | | 0.00015 | J | | | 0.00032 | J | 0.00097 | J | 0.0076 | J | 0.000042 | U | | | | | 0.0470 | | 0.00140 | J | 0.00210 | | | | | |
| Effluent to Creek | 7/2/2006 | 8.70 | 3.400 | | 0.0035 | J | | | 0.00011 | J | | | 0.00046 | J | 0.00090 | J | 0.0048 | U | 0.000042 | U | | | | | 0.0500 | | 0.00073 | U | 0.00200 | | | | | |
| Effluent to Creek | 7/3/2006 | 8.50 | 2.500 | | 0.0037 | J | 1000 | | 0.00012 | J | 0.0041 | J | 0.00053 | J | 0.00085 | J | 0.0083 | J | 0.000042 | U | 21 | | 0.18 | | 0.0560 | | 0.00082 | J | 0.00200 | | 2800 | | 2600 | |
| Effluent to Creek | 7/4/2006 | 8.10 | 1.500 | | 0.0036 | J | | | 0.00011 | J | | | 0.00063 | J | 0.00085 | J | 0.0290 | | 0.000042 | U | | | | | 0.0650 | | 0.00075 | J | 0.00190 | J | | | | |
| Effluent to Creek | 7/5/2006 | 8.00 | 1.900 | | 0.0039 | J | | | 0.00012 | J | | | 0.00072 | J | 0.00087 | J | 0.0130 | | 0.000042 | U | | | | | 0.0640 | | 0.00073 | U | 0.00210 | | | | | |
| Effluent to Creek | 7/6/2006 | 8.20 | 1.400 | | 0.0032 | J | | | 0.00012 | J | | | 0.00055 | J | 0.00064 | J | 0.0048 | U | 0.000042 | U | | | | | 0.0450 | | 0.00180 | J | 0.00170 | J | | | | |
| Effluent to Creek (Duplicate) | 7/6/2006 | 8.20 | 1.400 | | 0.0034 | J | | | 0.00009 | J | | | 0.00047 | J | 0.00064 | J | 0.0048 | U | 0.000042 | U | | | | | 0.0450 | | 0.00190 | J | 0.00180 | J | | | | |
| Effluent to Creek | 7/7/2006 | 8.40 | 2.500 | | 0.0041 | J | | | 0.00009 | J | | | 0.00057 | J | 0.00100 | J | 0.0048 | U | 0.000042 | U | | | | | 0.0480 | | 0.00130 | J | 0.00170 | J | | | | |
| Effluent to Creek | 7/8/2006 | 8.30 | 3.200 | | 0.0039 | J | | | 0.00009 | J | | | 0.00064 | J | 0.00092 | J | 0.0048 | U | 0.000042 | U | | | | | 0.0430 | | 0.00091 | J | 0.00190 | J | | | | |
| Effluent to Creek | 7/9/2006 | 8.10 | 1.900 | | 0.0034 | J | | | 0.00010 | J | | | 0.00066 | J | 0.00170 | J | 0.0048 | U | 0.000042 | U | | | | | 0.0390 | | 0.00150 | J | 0.00190 | J | | | | |
| Effluent to Creek | 7/10/2006 | 8.30 | 2.000 | | 0.0041 | J | 940 | | 0.00010 | J | 0.0045 | J | 0.00053 | J | 0.00081 | J | 0.0048 | U | 0.000042 | U | 21 | | 0.14 | | 0.0480 | | 0.00450 | J | 0.00180 | J | 3300 | | 2500 | |
| Effluent to Creek | 7/11/2006 | 8.12 | 1.300 | | 0.0038 | J | | | 0.00012 | J | | | 0.00055 | J | 0.00094 | J | 0.0048 | U | 0.000042 | U | | | | | 0.0520 | | 0.00110 | J | 0.00140 | J | | | | |
| Effluent to Creek | 7/12/2006 | 8.00 | 1.100 | | 0.0035 | J | | | 0.00012 | J | | | 0.00057 | J | 0.00077 | J | 0.0048 | U | 0.000042 | U | | | | | 0.0510 | | 0.00081 | J | 0.00190 | J | | | | |
| Effluent to Creek | 7/13/2006 | 8.10 | 1.100 | | 0.0039 | J | | | 0.00012 | J | | | 0.00066 | J | 0.00084 | J | 0.0048 | U | 0.000042 | U | | | | | 0.0450 | | 0.00073 | U | 0.00120 | J | | | | |
| Effluent to Creek (Duplicate) | 7/13/2006 | 8.10 | 1.100 | | 0.0043 | J | | | 0.00011 | J | | | 0.00070 | J | 0.00077 | J | 0.0048 | U | 0.000042 | U | | | | | 0.0410 | | 0.00073 | U | 0.00130 | J | | | | |
| Effluent to Creek | 7/14/2006 | 8.00 | 1.200 | | 0.0040 | J | | | 0.00010 | J | | | 0.00120 | J | 0.00076 | J | 0.0048 | U | 0.000042 | U | | | | | 0.0430 | | 0.00073 | U | 0.00140 | J | | | | |
| Effluent to Creek | 7/15/2006 | 8.22 | 2.200 | | 0.0039 | J | | | 0.00015 | J | | | 0.00160 | J | 0.00080 | J | 0.0048 | U | 0.000042 | U | | | | | 0.0500 | | 0.00073 | U | 0.00140 | J | | | | |
| Effluent to Creek | 7/16/2006 | 8.16 | 2.400 | | 0.0035 | J | | | 0.00011 | J | | | 0.00180 | J | 0.00076 | J | 0.0048 | U | 0.000042 | U | | | | | 0.0470 | | 0.00073 | U | 0.00190 | J | | | | |
| Effluent to Creek | 7/17/2006 | 8.05 | 0.230 | | 0.0025 | J | 660 | | 0.00010 | J | 0.0014 | J | 0.00150 | J | 0.00065 | J | 0.0048 | U | 0.000042 | U | 27 | | 0.18 | | 0.0320 | | 0.00220 | J | 0.00170 | J | 2500 | | 1800 | |
| Effluent to Creek | 7/18/2006 | 7.80 | 0.890 | | 0.0028 | J | | | 0.00007 | J | | | 0.00130 | J | 0.00080 | J | 0.0048 | U | 0.000042 | U | | | | | 0.0330 | | 0.00200 | J | 0.00220 | | | | | |
| Effluent to Creek | 7/19/2006 | 7.60 | 0.470 | | 0.0029 | J | | | 0.00011 | J | | | 0.00096 | J | 0.00082 | J | 0.0048 | U | 0.000042 | U | | | | | 0.0430 | | 0.00190 | J | 0.00190 | J | | | | |
| Effluent to Creek | 7/20/2006 | 7.94 | 1.500 | | 0.0032 | J | | | 0.00015 | J | | | 0.00080 | J | 0.00095 | J | 0.0048 | U | 0.000042 | U | | | | | 0.0490 | | 0.00180 | J,* | 0.00270 | | | | | |
| Effluent to Creek (Duplicate) | 7/20/2006 | 7.94 | 1.400 | | 0.0034 | J | | | 0.00014 | J | | | 0.00084 | J | 0.00092 | J | 0.0048 | U | 0.000042 | U | | | | | 0.0480 | | 0.03800 | * | 0.00260 | | | | | |
| Effluent to Creek | 7/21/2006 | 7.90 | 0.045 | | 0.0028 | J | | | 0.00094 | J | | | 0.00071 | J | 0.00480 | J | 0.0058 | J | 0.000042 | U | | | | | 0.0660 | | 0.00940 | J | 0.00180 | J | | | | |
| Effluent to Creek | 7/22/2006 | 7.60 | 0.530 | | 0.0031 | J | | | 0.00039 | J | | | 0.00140 | J | 0.00076 | J | 0.0048 | U | 0.000042 | U | | | | | 0.0290 | | 0.00410 | J | 0.00200 | | | | | |

# Table A-1
# 2006 Effluent Daily Concentrations

| | Sample Date | pH | Al | Q | As | Q | Ca | Q | Cd | Q | Co | Q | Cr | Q | Cu | Q | Fe | Q | Pb | Q | Mg | Q | Mn | Q | Ni | Q | Zn | Q | Se | Q | TDS | Q | Sulfate | Q |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Daily Max Discharge Criteria:** | | **6 - 9 SU** | **4.0** | | **0.34** | | **n/a** | | **0.009** | | **n/a** | | **0.97** | | **0.026** | | **2.0** | | **0.136** | | **n/a** | | **n/a** | | **0.84** | | **0.210** | | **n/a** | | **n/a** | | **n/a** | |
| Effluent to Creek | 7/23/2006 | 7.40 | 0.028 | | 0.0025 | J | | | 0.00021 | J | | | 0.00160 | J | 0.00120 | J | 0.0048 | U | 0.000042 | U | | | | | 0.0054 | | 0.00430 | J | 0.00160 | J | | | | |
| Effluent to Creek | 7/24/2006 | 7.59 | 0.350 | | 0.0033 | J | 690 | | 0.00047 | J | 0.0100 | | 0.00200 | J | 0.00140 | J | 0.0048 | U | 0.000042 | U | 25 | | 0.33 | | 0.0270 | | 0.00500 | J | 0.00190 | J | 2800 | | 1900 | |
| Effluent to Creek | 7/25/2006 | 7.80 | 0.750 | | 0.0038 | J | | | 0.00028 | J | | | 0.00370 | J | 0.00120 | J | 0.0048 | U | 0.000042 | U | | | | | 0.0250 | | 0.00240 | J | 0.00230 | | | | | |
| Effluent to Creek | 7/26/2006 | 7.80 | 0.760 | | 0.0035 | J | | | 0.00021 | J | | | 0.00280 | J | 0.00100 | J | 0.0048 | U | 0.000042 | U | | | | | 0.0170 | | 0.00170 | J | 0.00280 | | | | | |
| Effluent to Creek | 7/27/2006 | 7.70 | 0.760 | | 0.0039 | J | | | 0.00019 | J | | | 0.00210 | J | 0.00100 | J | 0.0048 | U | 0.000042 | U | | | | | 0.0140 | | 0.00270 | J | 0.00310 | | | | | |
| Effluent to Creek (Duplicate) | 7/27/2006 | 7.70 | 0.710 | | 0.0035 | J | | | 0.00019 | J | | | 0.00200 | J | 0.00093 | J | 0.0048 | U | 0.000042 | U | | | | | 0.0150 | | 0.00350 | J | 0.00280 | | | | | |
| Effluent to Creek | 7/28/2006 | 7.60 | 0.530 | | 0.0026 | J | | | 0.00024 | J | | | 0.00250 | J | 0.00120 | J | 0.0048 | U | 0.000042 | U | | | | | 0.0096 | | 0.00240 | J | 0.00240 | | | | | |
| Effluent to Creek | 7/29/2006 | 7.80 | 0.610 | | 0.0028 | J | | | 0.00024 | J | | | 0.00240 | J | 0.00130 | J | 0.0240 | | 0.000042 | U | | | | | 0.0091 | | 0.00990 | J | 0.00220 | | | | | |
| Effluent to Creek | 7/30/2006 | 7.80 | 0.040 | | 0.0018 | J | | | 0.00024 | J | | | 0.00200 | J | 0.00140 | J | 0.0080 | J | 0.000042 | U | | | | | 0.0075 | | 0.00370 | J | 0.00180 | J | | | | |
| Effluent to Creek | 7/31/2006 | 7.96 | 0.630 | | 0.0032 | J | 710 | | 0.00029 | J | 0.0050 | | 0.00240 | J | 0.00130 | J | 0.0048 | U | 0.000042 | U | 30 | | 0.29 | | 0.0180 | | 0.00400 | J | 0.00250 | | 2900 | | 2000 | |
| Effluent to Creek | 8/1/2006 | 8.01 | 0.450 | | 0.0031 | J | | | 0.00019 | J | | | 0.00160 | J | 0.00086 | J | 0.0048 | U | 0.000042 | U | | | | | 0.0090 | | 0.00073 | U | 0.00240 | | | | | |
| Effluent to Creek | 8/2/2006 | 7.71 | 0.760 | | 0.0040 | J | | | 0.00021 | J | | | 0.00120 | J | 0.00090 | J | 0.0048 | U | 0.000042 | U | | | | | 0.0170 | | 0.00073 | U | 0.00290 | | | | | |
| Effluent to Creek | 8/3/2006 | 7.80 | 0.450 | | 0.0040 | J | | | 0.00027 | J | | | 0.00099 | J | 0.00076 | J | 0.0048 | U | 0.000042 | U | | | | | 0.0160 | | 0.00073 | U | 0.00240 | | | | | |
| Effluent to Creek (Duplicate) | 8/3/2006 | 7.80 | 0.410 | | 0.0024 | J | | | 0.00030 | J | | | 0.00120 | J | 0.00120 | J | 0.0048 | U | 0.000086 | J | | | | | 0.0170 | | 0.00490 | J | 0.00240 | | | | | |
| Effluent to Creek | 8/4/2006 | 7.77 | 0.600 | | 0.0027 | J | | | 0.00024 | J | | | 0.00130 | J | 0.00120 | J | 0.0048 | U | 0.000064 | J | | | | | 0.0150 | | 0.00320 | J | 0.00260 | | | | | |
| Effluent to Creek | 8/5/2006 | 7.67 | 0.480 | | 0.0031 | J | | | 0.00027 | J | | | 0.00086 | J | 0.00110 | J | 0.0048 | U | 0.000098 | J | | | | | 0.0190 | | 0.00190 | J | 0.00340 | | | | | |
| Effluent to Creek | 8/6/2006 | 7.90 | 0.410 | | 0.0028 | J | | | 0.00028 | J | | | 0.00078 | J | 0.00110 | J | 0.0048 | U | 0.000086 | J | | | | | 0.0260 | | 0.00190 | J | 0.00360 | | | | | |
| Effluent to Creek | 8/7/2006 | 8.06 | 1.400 | | 0.0037 | J | 890 | | 0.00023 | J | 0.0064 | | 0.00094 | J | 0.00110 | J | 0.0048 | U | 0.000100 | J | 31 | | 0.35 | | 0.0180 | | 0.00100 | J | 0.00270 | | 3300 | | 2400 | |
| Effluent to Creek | 8/8/2006 | 7.78 | 0.770 | | 0.0050 | | | | 0.00034 | J | | | 0.00058 | J | 0.00092 | J | 0.0048 | U | 0.000042 | U | | | | | 0.0310 | | 0.02500 | | 0.00200 | | | | | |
| Effluent to Creek | 8/9/2006 | 7.81 | 0.860 | | 0.0053 | | | | 0.00028 | J | | | 0.00066 | J | 0.00078 | J | 0.0048 | U | 0.000048 | J | | | | | 0.0200 | | 0.00140 | J | 0.00340 | | | | | |
| Effluent to Creek | 8/10/2006 | 7.27 | 0.022 | | 0.0026 | J | | | 0.00026 | J | | | 0.00059 | J | 0.00130 | J | 0.0048 | U | 0.000042 | U | | | | | 0.0080 | | 0.00380 | J | 0.00220 | | | | | |
| Effluent to Creek (Duplicate) | 8/10/2006 | 7.27 | 0.024 | | 0.0032 | J | | | 0.00028 | J | | | 0.00063 | J | 0.00130 | J | 0.0048 | U | 0.000042 | U | | | | | 0.0088 | | 0.00550 | J | 0.00220 | | | | | |
| Effluent to Creek | 8/11/2006 | 8.03 | 0.960 | | 0.0047 | J | | | 0.00025 | J | | | 0.00045 | J | 0.00078 | J | 0.0048 | U | 0.000042 | U | | | | | 0.0220 | | 0.00120 | J | 0.00310 | | | | | |
| Effluent to Creek | 8/12/2006 | 7.84 | 0.780 | | 0.0049 | J | | | 0.00023 | J | | | 0.00048 | J | 0.00067 | J | 0.0048 | U | 0.000042 | | | | | | 0.0190 | | 0.00160 | J | 0.00280 | | | | | |
| Effluent to Creek | 8/13/2006 | 7.33 | 0.036 | | 0.0035 | J | | | 0.00030 | J | | | 0.00048 | J | 0.00120 | J | 0.0048 | U | 0.000130 | J | | | | | 0.0097 | | 0.00290 | J | 0.00220 | | | | | |
| Effluent to Creek | 8/14/2006 | 7.37 | 0.035 | | 0.0036 | J | 540 | | 0.00030 | J | 0.0034 | J | 0.00045 | J | 0.00110 | J | 0.0048 | U | 0.000042 | U | 41 | | 1.40 | | 0.0097 | | 0.00380 | J | 0.00140 | J | 2300 | | 1600 | |
| Effluent to Creek | 8/15/2006 | 7.28 | 0.030 | | 0.0064 | | | | 0.00031 | J | | | 0.00033 | J | 0.00220 | J | 0.0048 | U | 0.000042 | U | | | | | 0.0490 | | 0.00600 | J | 0.00160 | J | | | | |
| Effluent to Creek | 8/16/2006 | 7.32 | 0.028 | | 0.0067 | | | | 0.00032 | J | | | 0.00033 | J | 0.00200 | J | 0.0048 | U | 0.000042 | U | | | | | 0.0470 | | 0.00180 | J | 0.00190 | J | | | | |
| Effluent to Creek | 8/17/2006 | 7.24 | 0.030 | | 0.0064 | | | | 0.00029 | J | | | 0.00034 | J | 0.00180 | J | 0.0048 | U | 0.000042 | U | | | | | 0.0460 | | 0.00190 | J | 0.00170 | J | | | | |

# Table A-1
# 2006 Effluent Daily Concentrations

| | Sample Date | pH | Al | Q | As | Q | Ca | Q | Cd | Q | Co | Q | Cr | Q | Cu | Q | Fe | Q | Pb | Q | Mg | Q | Mn | Q | Ni | Q | Zn | Q | Se | Q | TDS | Q | Sulfate | Q |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Daily Max Discharge Criteria:** | | **6 - 9 SU** | **4.0** | | **0.34** | | **n/a** | | **0.009** | | **n/a** | | **0.97** | | **0.026** | | **2.0** | | **0.136** | | **n/a** | | **n/a** | | **0.84** | | **0.210** | | **n/a** | | **n/a** | | **n/a** | |
| Effluent to Creek (Duplicate) | 8/17/2006 | 7.24 | 0.031 | | 0.0068 | | | | 0.00030 | J | | | 0.00033 | J | 0.00190 | J | 0.0048 | U | 0.000042 | U | | | | | 0.0480 | | 0.00310 | J | 0.00180 | J | | | | |
| Effluent to Creek | 8/18/2006 | 7.21 | 0.028 | | 0.0073 | | | | 0.00029 | J | | | 0.00029 | J | 0.00190 | J | 0.0048 | U | 0.000042 | U | | | | | 0.0500 | | 0.00150 | J | 0.00170 | J | | | | |
| Effluent to Creek | 8/19/2006 | 7.44 | 0.024 | | 0.0074 | | | | 0.00032 | J | | | 0.00028 | J | 0.00200 | J | 0.0048 | U | 0.000078 | J | | | | | 0.0510 | | 0.00180 | J | 0.00170 | J | | | | |
| Effluent to Creek | 8/20/2006 | 7.30 | 0.022 | | 0.0073 | | | | 0.00032 | J | | | 0.00026 | J | 0.00170 | J | 0.0048 | U | 0.000045 | J | | | | | 0.0520 | | 0.00190 | J | 0.00160 | J | | | | |
| Effluent to Creek | 8/21/2006 | 7.37 | 0.021 | | 0.0070 | | 500 | | 0.00026 | J | 0.0051 | | 0.00026 | J | 0.00160 | J | 0.0048 | U | 0.000042 | U | 45 | | 1.50 | | 0.0530 | | 0.00130 | J | 0.00170 | J | 2300 | | 1500 | |
| Effluent to Creek | 8/22/2006 | 7.59 | 0.018 | | 0.0049 | J | | | 0.00030 | J | | | 0.00030 | J | 0.00130 | J | 0.0048 | U | 0.000042 | U | | | | | 0.0190 | | 0.00270 | J | 0.00130 | J | | | | |
| Effluent to Creek | 8/23/2006 | 7.20 | 0.017 | | 0.0043 | J | | | 0.00027 | J | | | 0.00023 | J | 0.00140 | J | 0.0048 | U | 0.000042 | U | | | | | 0.0180 | | 0.00230 | J | 0.00100 | J | | | | |
| Effluent to Creek | 8/24/2006 | 7.36 | 0.015 | | 0.0045 | J | | | 0.00023 | J | | | 0.00024 | J | 0.00130 | J | 0.0048 | U | 0.000042 | U | | | | | 0.0190 | | 0.00250 | J | 0.00098 | J | | | | |
| Effluent to Creek (Duplicate) | 8/24/2006 | 7.36 | 0.014 | | 0.0045 | J | | | 0.00023 | J | | | 0.00033 | J | 0.00160 | J | 0.0048 | U | 0.000042 | U | | | | | 0.0210 | | 0.00350 | J | 0.00099 | J | | | | |
| Effluent to Creek | 8/25/2006 | 7.25 | 0.018 | | 0.0044 | J | | | 0.00021 | J | | | 0.00027 | J | 0.00160 | J | 0.0048 | U | 0.000042 | U | | | | | 0.0220 | | 0.00240 | J | 0.00140 | J | | | | |

All values reported in milligrams/liter, except pH.
All parameters reported as dissolved, except Selenium reported as total recoverable.
n/a - not applicable, no discharge criteria exists for this parameter.

Qualifiers:
U - Analyte not detected at the given Method Detection Limit.
J - Analyte detected between the Method Detection Limit and the Reporting Limit
* - Relative Percent Difference outside of control limits

# Table A-2
# 2006 Effluent 4-Day Average Concentrations

| | Sample Date | Al 4-day Average | As 4-day Average | Cd 4-day Average | Cr 4-day Average | Cu 4-day Average | Fe 4-day Average | Pb 4-day Average | Ni 4-day Average | Zn 4-day Average | Se 4-day Average |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4- Day Average Discharge Criteria:** | | **2.0** | **0.15** | **0.004** | **0.31** | **0.016** | **1.00** | **0.005** | **0.094** | **0.21** | **0.005** |
| Effluent to Creek | 7/3/2006 | 2.9250 | 0.0033 | 0.0002 | 0.0005 | 0.0020 | 0.003975 | 0.00019 | 0.0573 | 0.0023 | 0.0020 |
| Effluent to Creek | 7/4/2006 | 2.5750 | 0.0035 | 0.0001 | 0.0005 | 0.0009 | 0.011225 | 0.00002 | 0.0545 | 0.0008 | 0.0020 |
| Effluent to Creek | 7/5/2006 | 2.3250 | 0.0037 | 0.0001 | 0.0006 | 0.0009 | 0.012575 | 0.00002 | 0.0588 | 0.0006 | 0.0020 |
| Effluent to Creek | 7/6/2006 | 1.8250 | 0.0036 | 0.0001 | 0.0006 | 0.0008 | 0.012575 | 0.00002 | 0.0575 | 0.0009 | 0.0019 |
| Effluent to Creek | 7/7/2006 | 1.8250 | 0.0037 | 0.0001 | 0.0006 | 0.0008 | 0.010500 | 0.00002 | 0.0555 | 0.0011 | 0.0019 |
| Effluent to Creek | 7/8/2006 | 2.2500 | 0.0038 | 0.0001 | 0.0006 | 0.0009 | 0.003250 | 0.00002 | 0.0500 | 0.0011 | 0.0019 |
| Effluent to Creek | 7/9/2006 | 2.2500 | 0.0037 | 0.0001 | 0.0006 | 0.0011 | 0.000001 | 0.00002 | 0.0438 | 0.0014 | 0.0018 |
| Effluent to Creek | 7/10/2006 | 2.4000 | 0.0039 | 0.0001 | 0.0006 | 0.0011 | 0.000001 | 0.00002 | 0.0445 | 0.0021 | 0.0018 |
| Effluent to Creek | 7/11/2006 | 2.1000 | 0.0038 | 0.0001 | 0.0006 | 0.0011 | 0.000001 | 0.00002 | 0.0455 | 0.0020 | 0.0018 |
| Effluent to Creek | 7/12/2006 | 1.5750 | 0.0037 | 0.0001 | 0.0006 | 0.0008 | 0.000001 | 0.00002 | 0.0475 | 0.0020 | 0.0018 |
| Effluent to Creek | 7/13/2006 | 1.3750 | 0.0038 | 0.0001 | 0.0006 | 0.0008 | 0.000001 | 0.00002 | 0.0490 | 0.0017 | 0.0016 |
| Effluent to Creek | 7/14/2006 | 1.1750 | 0.0038 | 0.0001 | 0.0007 | 0.0008 | 0.000001 | 0.00002 | 0.0478 | 0.0007 | 0.0015 |
| Effluent to Creek | 7/15/2006 | 1.4000 | 0.0038 | 0.0001 | 0.0010 | 0.0008 | 0.000001 | 0.00002 | 0.0473 | 0.0005 | 0.0015 |
| Effluent to Creek | 7/16/2006 | 1.7250 | 0.0038 | 0.0001 | 0.0013 | 0.0008 | 0.000001 | 0.00002 | 0.0463 | 0.0004 | 0.0015 |
| Effluent to Creek | 7/17/2006 | 1.5075 | 0.0035 | 0.0001 | 0.0015 | 0.0007 | 0.000001 | 0.00002 | 0.0430 | 0.0008 | 0.0016 |
| Effluent to Creek | 7/18/2006 | 1.4300 | 0.0032 | 0.0001 | 0.0016 | 0.0008 | 0.000001 | 0.00002 | 0.0405 | 0.0009 | 0.0018 |
| Effluent to Creek | 7/19/2006 | 0.9975 | 0.0029 | 0.0001 | 0.0014 | 0.0008 | 0.000001 | 0.00002 | 0.0388 | 0.0016 | 0.0019 |
| Effluent to Creek | 7/20/2006 | 0.7725 | 0.0029 | 0.0001 | 0.0011 | 0.0008 | 0.000001 | 0.00002 | 0.0393 | 0.0020 | 0.0021 |
| Effluent to Creek | 7/21/2006 | 0.7263 | 0.0029 | 0.0003 | 0.0009 | 0.0018 | 0.001450 | 0.00002 | 0.0478 | 0.0038 | 0.0022 |
| Effluent to Creek | 7/22/2006 | 0.6363 | 0.0030 | 0.0004 | 0.0010 | 0.0018 | 0.001450 | 0.00002 | 0.0468 | 0.0043 | 0.0021 |

# Table A-2
# 2006 Effluent 4-Day Average Concentrations

| | Sample Date | Al 4-day Average | As 4-day Average | Cd 4-day Average | Cr 4-day Average | Cu 4-day Average | Fe 4-day Average | Pb 4-day Average | Ni 4-day Average | Zn 4-day Average | Se 4-day Average |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4- Day Average Discharge Criteria:** | | **2.0** | **0.15** | **0.004** | **0.31** | **0.016** | **1.00** | **0.005** | **0.094** | **0.21** | **0.005** |
| Effluent to Creek | 7/23/2006 | 0.5258 | 0.0029 | 0.0004 | 0.0011 | 0.0019 | 0.001450 | 0.00002 | 0.0374 | 0.0049 | 0.0020 |
| Effluent to Creek | 7/24/2006 | 0.2383 | 0.0029 | 0.0005 | 0.0014 | 0.0020 | 0.001450 | 0.00002 | 0.0319 | 0.0057 | 0.0018 |
| Effluent to Creek | 7/25/2006 | 0.4145 | 0.0032 | 0.0003 | 0.0022 | 0.0011 | 0.000001 | 0.00002 | 0.0216 | 0.0040 | 0.0020 |
| Effluent to Creek | 7/26/2006 | 0.4720 | 0.0033 | 0.0003 | 0.0025 | 0.0012 | 0.000001 | 0.00002 | 0.0186 | 0.0034 | 0.0022 |
| Effluent to Creek | 7/27/2006 | 0.6550 | 0.0036 | 0.0003 | 0.0027 | 0.0012 | 0.000001 | 0.00002 | 0.0208 | 0.0030 | 0.0025 |
| Effluent to Creek | 7/28/2006 | 0.7000 | 0.0035 | 0.0002 | 0.0028 | 0.0011 | 0.000001 | 0.00002 | 0.0164 | 0.0023 | 0.0027 |
| Effluent to Creek | 7/29/2006 | 0.6650 | 0.0032 | 0.0002 | 0.0025 | 0.0011 | 0.006000 | 0.00002 | 0.0124 | 0.0042 | 0.0026 |
| Effluent to Creek | 7/30/2006 | 0.4850 | 0.0028 | 0.0002 | 0.0023 | 0.0012 | 0.008000 | 0.00002 | 0.0101 | 0.0047 | 0.0024 |
| Effluent to Creek | 7/31/2006 | 0.4525 | 0.0026 | 0.0003 | 0.0023 | 0.0013 | 0.008000 | 0.00002 | 0.0111 | 0.0050 | 0.0022 |
| Effluent to Creek | 8/1/2006 | 0.4325 | 0.0027 | 0.0002 | 0.0021 | 0.0012 | 0.008000 | 0.00002 | 0.0109 | 0.0045 | 0.0022 |
| Effluent to Creek | 8/2/2006 | 0.4700 | 0.0030 | 0.0002 | 0.0018 | 0.0011 | 0.002000 | 0.00002 | 0.0129 | 0.0021 | 0.0024 |
| Effluent to Creek | 8/3/2006 | 0.5725 | 0.0036 | 0.0002 | 0.0015 | 0.0010 | 0.000001 | 0.00002 | 0.0150 | 0.0013 | 0.0026 |
| Effluent to Creek | 8/4/2006 | 0.5650 | 0.0035 | 0.0002 | 0.0013 | 0.0009 | 0.000001 | 0.00003 | 0.0143 | 0.0011 | 0.0026 |
| Effluent to Creek | 8/5/2006 | 0.5725 | 0.0035 | 0.0002 | 0.0011 | 0.0010 | 0.000001 | 0.00005 | 0.0168 | 0.0007 | 0.0028 |
| Effluent to Creek | 8/6/2006 | 0.4850 | 0.0032 | 0.0003 | 0.0010 | 0.0010 | 0.000001 | 0.00007 | 0.0190 | 0.0019 | 0.0030 |
| Effluent to Creek | 8/7/2006 | 0.7225 | 0.0031 | 0.0003 | 0.0010 | 0.0011 | 0.000001 | 0.00009 | 0.0195 | 0.0020 | 0.0031 |
| Effluent to Creek | 8/8/2006 | 0.7650 | 0.0037 | 0.0003 | 0.0008 | 0.0011 | 0.000001 | 0.00008 | 0.0235 | 0.0075 | 0.0029 |
| Effluent to Creek | 8/9/2006 | 0.8600 | 0.0042 | 0.0003 | 0.0007 | 0.0010 | 0.000001 | 0.00006 | 0.0238 | 0.0073 | 0.0029 |
| Effluent to Creek | 8/10/2006 | 0.7630 | 0.0042 | 0.0003 | 0.0007 | 0.0010 | 0.000001 | 0.00005 | 0.0193 | 0.0078 | 0.0026 |
| Effluent to Creek | 8/11/2006 | 0.6530 | 0.0044 | 0.0003 | 0.0006 | 0.0009 | 0.000001 | 0.00003 | 0.0203 | 0.0079 | 0.0027 |

# Table A-2
# 2006 Effluent 4-Day Average Concentrations

| | Sample Date | Al 4-day Average | As 4-day Average | Cd 4-day Average | Cr 4-day Average | Cu 4-day Average | Fe 4-day Average | Pb 4-day Average | Ni 4-day Average | Zn 4-day Average | Se 4-day Average |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4- Day Average Discharge Criteria:** | | **2.0** | **0.15** | **0.004** | **0.31** | **0.016** | **1.00** | **0.005** | **0.094** | **0.21** | **0.005** |
| Effluent to Creek | 8/12/2006 | 0.6555 | 0.0044 | 0.0003 | 0.0005 | 0.0009 | 0.000001 | 0.00003 | 0.0173 | 0.0020 | 0.0029 |
| Effluent to Creek | 8/13/2006 | 0.4495 | 0.0039 | 0.0003 | 0.0005 | 0.0010 | 0.000001 | 0.00006 | 0.0147 | 0.0024 | 0.0026 |
| Effluent to Creek | 8/14/2006 | 0.4528 | 0.0042 | 0.0003 | 0.0005 | 0.0009 | 0.000001 | 0.00005 | 0.0151 | 0.0024 | 0.0024 |
| Effluent to Creek | 8/15/2006 | 0.2203 | 0.0046 | 0.0003 | 0.0004 | 0.0013 | 0.000001 | 0.00005 | 0.0219 | 0.0036 | 0.0020 |
| Effluent to Creek | 8/16/2006 | 0.0323 | 0.0051 | 0.0003 | 0.0004 | 0.0016 | 0.000001 | 0.00005 | 0.0289 | 0.0036 | 0.0018 |
| Effluent to Creek | 8/17/2006 | 0.0308 | 0.0058 | 0.0003 | 0.0004 | 0.0018 | 0.000001 | 0.00002 | 0.0379 | 0.0034 | 0.0017 |
| Effluent to Creek | 8/18/2006 | 0.0290 | 0.0067 | 0.0003 | 0.0003 | 0.0020 | 0.000001 | 0.00002 | 0.0480 | 0.0028 | 0.0017 |
| Effluent to Creek | 8/19/2006 | 0.0275 | 0.0070 | 0.0003 | 0.0003 | 0.0019 | 0.000001 | 0.00004 | 0.0485 | 0.0018 | 0.0018 |
| Effluent to Creek | 8/20/2006 | 0.0260 | 0.0071 | 0.0003 | 0.0003 | 0.0019 | 0.000001 | 0.00004 | 0.0498 | 0.0018 | 0.0017 |
| Effluent to Creek | 8/21/2006 | 0.0238 | 0.0073 | 0.0003 | 0.0003 | 0.0018 | 0.000001 | 0.00004 | 0.0515 | 0.0016 | 0.0017 |
| Effluent to Creek | 8/22/2006 | 0.0213 | 0.0067 | 0.0003 | 0.0003 | 0.0017 | 0.000001 | 0.00004 | 0.0438 | 0.0019 | 0.0016 |
| Effluent to Creek | 8/23/2006 | 0.0195 | 0.0059 | 0.0003 | 0.0003 | 0.0015 | 0.000001 | 0.00003 | 0.0355 | 0.0021 | 0.0014 |
| Effluent to Creek | 8/24/2006 | 0.0178 | 0.0052 | 0.0003 | 0.0003 | 0.0014 | 0.000001 | 0.00002 | 0.0273 | 0.0022 | 0.0012 |
| Effluent to Creek | 8/25/2006 | 0.0170 | 0.0045 | 0.0003 | 0.0003 | 0.0014 | 0.000001 | 0.00002 | 0.0195 | 0.0025 | 0.0012 |

All values reported in milligrams/liter.
All parameters reported as dissolved, except Selenium reported as total recoverable.
Shaded areas indicate exceedences of the 4-Day Average criteria.

# Table A-3
# 2006 Untreated Influent

| | Sample Date | pH | Al | Q | As | Q | Ca | Q | Cd | Q | Co | Q | Cr | Q | Cu | Q | Fe | Q | Pb | Q | Mg | Q | Mn | Q | Ni | Q | Zn | Q | Se | Q | TDS | Q | Sulfate | Q |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Daily Max Discharge Criteria:** | | **6 - 9 SU** | **4.0** | | **0.34** | | **n/a** | | **0.009** | | **n/a** | | **0.97** | | **0.026** | | **2.0** | | **0.136** | | **n/a** | | **n/a** | | **0.84** | | **0.210** | | **n/a** | | **n/a** | | **n/a** | |
| Influent | 7/3/2006 | 2.70 | 460 | | 12 | | 230 | | 0.085 | | 2.4 | | 1.8 | | 3.8 | | 1000 | | 0.0057 | | 59 | | 13 | | 6.70 | | 1.3 | | 0.0027 | | 9800 | | 6400 | |
| Influent | 7/10/2006 | 2.50 | 440 | | 11 | | 210 | | 0.074 | | 1.5 | | 1.5 | | 3.2 | | 920 | | 0.0039 | | 56 | | 12 | | 6.40 | | 1.2 | | 0.0033 | | 8500 | | 5800 | |
| Influent | 7/17/2006 | 2.50 | 430 | | 7 | | 210 | | 0.065 | | 2.3 | | 1.4 | | 2.4 | | 790 | | 0.0032 | | 56 | | 11 | | 5.70 | | 1.0 | | 0.0030 | | 7400 | | 5300 | |
| Influent | 7/24/2006 | 2.60 | 400 | | 6 | | 200 | | 0.064 | | 2.2 | | 1.2 | | 2.3 | | 720 | | 0.0032 | | 52 | | 10 | | 6.00 | | 1.1 | | 0.0028 | | 6400 | | 4900 | |
| Influent | 7/31/2006 | 2.54 | 460 | | 6.3 | | 210 | | 0.082 | | 1.7 | | 1.4 | | 2.6 | | 890 | | 0.0024 | | 64 | | 10 | | 6.30 | | 1.2 | | 0.0040 | | 8000 | | 6700 | |
| Influent | 8/7/2006 | 2.48 | 410 | | 4.6 | | 220 | | 0.065 | | 1.8 | | 1.1 | | 2.4 | | 590 | | 0.0021 | | 53 | | 6.1 | | 0.00014 | U | 0.76 | | 0.0035 | | 7300 | | 5700 | |

All values reported in milligrams/liter, except pH.
All parameters reported as dissolved, except Selenium reported as total recoverable.
n/a - not applicable, no discharge criteria exists for this parameter.

Qualifiers:
U - Analyte not detected at the given Method Detection Limit.
J - Analyte detected between the Method Detection Limit and the Practical Quantitation Limit.
* - Relative Percent Difference outside of control limits

# Table A-4
# 2006 Sludge Analysis

| Regulatory Criteria | Al | | Sb | | As | | Ba | | Be | | Cd | | Cr | | Co | | Cu | | Fe | | Pb | | Hg | | Mo | | Ni | | Se | | Ag | | Tl | | V | | Zn | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| STLC (mg/L) | NP | | 15 | | 5 | | 100 | | 0.75 | | 1 | | 560 | | 80 | | 25 | | NP | | 5 | | 0.2 | | 350 | | 20 | | 1 | | 5 | | 7 | | 24 | | 250 | |
| TTLC (mg/kg) | NP | | 500 | | 500 | | 10000 | | 75 | | 100 | | 2500 | | 8000 | | 2500 | | NP | | 1000 | | 20 | | 3500 | | 2000 | | 100 | | 500 | | 700 | | 2400 | | 5000 | |
| **Pit Clarifier Sample Date and Testing Procedure** | **Al** | **Q** | **Sb** | **Q** | **As** | **Q** | **Ba** | **Q** | **Be** | **Q** | **Cd** | **Q** | **Cr** | **Q** | **Co** | **Q** | **Cu** | **Q** | **Fe** | **Q** | **Pb** | **Q** | **Hg** | **Q** | **Mo** | **Q** | **Ni** | **Q** | **Se** | **Q** | **Ag** | **Q** | **Tl** | **Q** | **V** | **Q** | **Zn** | **Q** |
| 10/17/2006 (A) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| STLC (mg/L) | 690 | | 0.41 | U | 0.61 | | 0.059 | U | 0.043 | J | 0.18 | | 2.7 | | 7.6 | | 6.6 | | 1200 | | 0.032 | U | 0.0007 | U | 0.022 | U | 20 | | 0.13 | U | 0.013 | U | 0.19 | U | 0.37 | | 3.6 | |
| TTLC (mg/kg dry) | 48000 | | 12 | | 690 | | 5.6 | J | 1.6 | J | 17 | | 150 | | 280 | | 300 | | 66000 | | 0.5 | U | 0.03 | J | 3.7 | U | 710 | | 1.3 | U | 0.23 | U | 1.7 | U | 32 | | 140 | |
| 23.8* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10/17/2006 (B) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| STLC (mg/L) | 510 | | 0.41 | U | 0.76 | | 0.059 | U | 0.032 | J | 0.15 | | 2.2 | | 5.7 | | 6.8 | | 1400 | | 0.032 | U | 0.0007 | U | 0.022 | U | 14 | | 0.13 | U | 0.013 | U | 0.21 | J | 0.64 | | 2.9 | |
| TTLC (mg/kg dry) | 47000 | | 12 | | 990 | | 5.5 | J | 1.5 | J | 18 | | 150 | | 280 | | 340 | | 77000 | | 0.59 | U | 0.02 | J | 4.4 | U | 690 | | 1.5 | U | 0.27 | U | 3.5 | | 62 | | 140 | |
| 20.0* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10/17/2006 (C) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| STLC (mg/L) | 530 | | 0.41 | U | 0.44 | | 0.059 | U | 0.035 | J | 0.19 | | 2.1 | | 6.5 | | 6.1 | | 920 | | 0.032 | U | 0.0007 | U | 0.022 | U | 16 | | 0.13 | U | 0.013 | U | 0.19 | U | 0.46 | | 3.1 | |
| TTLC (mg/kg dry) | 46000 | | 12 | | 970 | | 5.4 | J | 1.5 | J | 18 | | 150 | | 270 | | 340 | | 95000 | | 0.58 | U | 0.027 | J | 4.3 | U | 670 | | 1.5 | U | 0.26 | U | 3.4 | J | 61 | | 130 | |
| 20.5* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

* percent solids
NP: None promulgated.
Shaded cells indicate concentrations that exceed hazardous waste criteria.

Qualifiers:
U - Analyte not detected at the given Method Detection Limit.
J - Analyte detected between the Method Detection Limit and the Practical Quantitation Limit.

# Attachment B

# Field Data Sheets

# 2006 Daily Chemistry for: Effluent

**in mg/l except pH**

**Metals reported as: preliminary result (PR) x dilution factor (DF) = final result (FR); if no dilution factor used record only final result.**

| Date | Time | pH | Al | | Fe | | Sample ID # / Comments | |
|---|---|---|---|---|---|---|---|---|
| 6-28-06 | 1245 | 8.0 | PR x DF = 0 | FR 0.66 | PR x DF = 0 | FR 0.00 | 056BP211 Collected from pit clarifier | Filling pit clarifi |
| 6-29-06 | 1230 | 7.4 | | | | | 056BP212 collected from P.C. near picolo | |
| 6-30-06 | 1310 | 8.2 | | | | | 056BP213 collected from weir V-notch | Discharge to L. Creek |
| 7-1-06 | 1700 | 8.5 | | | | | 06/07PWT001 collected from weir | |
| 7-2-06 | 1515 | 8.7 | | | | | 067PWT002 collected from weir | |
| 7-3-06 | 1030 | 8.5 | | | | | 067PWT003-Eff collected from weir V-notch | |
| 7-4-06 | 1335 | 8.1 | | | | | 067PWT005-Eff collected from weir V-notch | |
| 7-5-06 | 11:45 | 8.0 | | | | | 067PWT006-Eff collected from weir | |
| 7-6-06 | 10:15 | 8.2 | | | | | 067PWT007, 008 (Dup) | |
| 7-7-06 | 10:45 | 8.4 | | | | | 067PWT009 | |
| 7-8-06 | 14:05 | 8.3 | | | | | 067PWT012 | |
| 7-9-06 | 9:00 | 8.1 | | | | | 067PWT013 | |
| 7-10-06 | 10:40 | 8.3 | | | | | 067PWT014 | |
| 7-11-06 | 10:10 | 8.12 | | | | | 067PWT016 | |
| 7-12-06 | 10:20 | 8.0 | | | | | 067PWT018 2pt pH calibration (7+6) | |
| 7-13-06 | 1045 | 8.1 | | | | | 067PWT019+20 (dup) | |
| 7-14-06 | 1430 | 8.0 | | | | | 067PWT021 | |
| 7-15-06 | 1125 | 8.22 | | | | | 067PWT023 | |
| 7-16-06 | 1140 | 8.16 | | | | | 067PWT024 | |

## 2006 Daily Chemistry for: Effluent

**in mg/l except pH**

**Metals reported as: preliminary result (PR) x dilution factor (DF) = final result (FR); if no dilution factor used record only final result.**

| Date | Time | pH | Al | | Fe | | Sample ID # / Comments |
|---|---|---|---|---|---|---|---|
| | | | PR x DF = | FR | PR x DF = | FR | |
| 7.17.06 | 1120 | 8.05 | | | | | 067PWT025 discharge mostly from underdrain closed down picolo b/c high pH |
| 7.18.06 | 1600 | 7.8 | | | | | 067PWT027 " " |
| 7.19.06 | 945 | 7.6 | | | | | 067PWT029 " " |
| 7.20.06 | 1020 | 7.94 | | | | | 067PWT030,031 discharge from underdrain + picolo |
| 7.21.06 | 1000 | 7.9 | | | | | 067PWT032, pH from URS meter |
| 7.22.06 | 1745 | 7.6 | | | | | 067PWT034, URS meter - 7.9 at weir |
| 7.23.06 | 1615 | 7.4 | | | | | 067PWT035 URS meter 7.6 at weir |
| 7.24.06 | 1000 | 7.59 | | | | | 067PWT036 Eff collected from weir box |
| 7.25.06 | 1030 | 7.8 | | | | | 067PWT038 |
| 7.26.06 | 1115 | 7.8 | | | | | 067PWT040 |
| 7.27.06 | 1400 | 7.7 | | | | | 067PWT041 |
| 7.28.06 | 1715 | 7.6 | | | | | 067PWT043 |
| 7.29.06 | 945 | 7.8 | | | | | 067PWT045 |
| 7.30.06 | 1045 | 7.8 | | | | | 067PWT046 |
| 7.31.06 | 1050 | 7.96 | | | | | 067PWT047 |
| 8.1.06 | 1005 | 8.01 | | | | | |
| 8.1.06 | 1145 | 7.70 | | 0.07 | | 0.000 | 067PWT049 flow almost entirely from P.C. underdrains |
| 8.2.06 | 1000 | 7.71 | | 0.09 | | 0.000 | 067PWT051 |

## 2006 Daily Chemistry for: Effluent

**in mg/l except pH**

**Metals reported as: preliminary result (PR) x dilution factor (DF) = final result (FR); if no dilution factor used record only final result.**

| Date | Time | pH | Al | | Fe | | As | | Sample ID # / Comments |
|---|---|---|---|---|---|---|---|---|---|
| | ~~0935~~ | | PR x DF = | FR | PR x DF = | FR | PR x DF = | FR | |
| 8.3.06 | ~~1035~~ | 7.8 | | 0.09 | | 0.000 | | | 067PWT052 |
| 8.4.06 | 1140 | 7.77 | | 0.13 | | 0.000 | | | 067PWT054 |
| 8.5.06 | 0945 | 7.67 | | 0.10 | | 0.001 | | | 067PWT056 |
| 8.6.06 | 9:20 | 7.90 | | 0.07 | | 0.001 | | | 067PWT057 |
| 8.7.06 | 8:50 | 8.06 | | 0.30 | | 0.000 | | | 067PWT058 |
| 8.8.06 | 10:25 | 7.78 | | 0.15 | | 0.000 | | | 067PWT060 |
| 8.9.06 | 10:00 | 7.81 | | 0.13 | | 0.001 | | | 067PWT062 |
| 8.10.06 | 11:20 | 7.27 | | 0.01 | | 0.000 | | | 067PWT064 entirely PC |
| 8.10.06 | 11:25 | 7.27 | | 0.01 | | 0.000 | | | 067PWT065 underdrain, no piccolo discharge |
| 8.11.06 | 9:35 | 8.03 | | 0.19 | | 0.000 | | | 067PWT066 |
| 8.12.06 | 1005 | 7.84 | | 0.11 | | 0.000 | | | 067PWT067 Last Day of Treatment |
| 8.13.06 | 925 | 7.33 | | | | | | | 067PWT068 |
| 8.14.06 | 945 | 7.37 | | | | | | | 067PWT069 |
| 8.15.06 | 1140 | 7.28 | | | | | | | 067PWT070 |
| 8.16.06 | 1245 | 7.32 | | | | | | | 067PWT071 |
| 8.17.06 | 1120 | 7.24 | | | | | | | 067PWT073 (15:15), 074 (11:20) - Dup. |
| 8.19.06 | 1030 | 2.44 | | | | | | | 067PWT079 |
| 8.20.06 | 1100 | 7.36 | | | | | | | 067PWT080 |

8.18.06 10:20 7.21

## 2006 Daily Chemistry for: Effluent

**in mg/l except pH**

**Metals reported as: preliminary result (PR) x dilution factor (DF) = final result (FR); if no dilution factor used record only final result.**

| Date | Time | pH | Al | | Fe | | As | | Sample ID # / Comments |
|---|---|---|---|---|---|---|---|---|---|
| | | | PR x DF = | FR | PR x DF = | FR | PR x DF = | FR | |
| 8-21-06 | 9:45 | 7.37 | | | | | | | 067PWT081 |
| 8-22-06 | 12:00 | 7.59 | | | | | | | 067PWT082 |
| 8-23-06 | 945 | 7.20 | | | | | | | 067PWT083 84 |
| 8-24-06 | 10:45 | 7.36 | | | | | | | 067PWT085, 086 |
| 8-25-06 | 10:15 | 7.25 | | | | | | | 067PWT087 |
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## 2006 Daily Chemistry for: Influent

in mg/l except pH

Metals reported as: preliminary result (PR) x dilution factor (DF) = final result (FR); if no dilution factor used record only final result.

| Date | Time | pH | Al | | Fe | | Sample ID # / Comments |
|---|---|---|---|---|---|---|---|
| 6.28.06 | 1245 | 2.8 | .57 1000 PR x DF = | FR 570 | 1.294 1000 PR x DF = | FR 1294 | ~~0560C~~ |
| 6.29.06 | 1230 | 2.6 | | | (500) | over range @ 500 x dilution | Hach PR 2010 died — no field data |
| 6.30.06 | 1400 | 2.6 | | | | | Hach sent for repair |
| 7.1.06 | 1700 | 2.5 | | | | | |
| 7.2.06 | 1515 | 2.6 | | | | | |
| 7.3.06 | 1030 | 2.7 | | | | | 067PWT004-Inf |
| 7.4.06 | 1400 | 2.34 | | | | | |
| 7.5.06 | 1145 | 2.4 | | | | | |
| 7.6.06 | 10:15 | 2.4 | | | | | |
| 7.7.06 | 10:30 | 2.1 | | | | | |
| 7.8.06 | 13:50 | 2.5 | | | | | |
| 7.9.06 | 8:50 | 2.5 | | | | | |
| 7.10.06 | 10:30 | 2.5 | | | | | 067PWT015-Inf |
| 7.11.06 | 1015 | 2.64 | | | | | |
| 7.12.06 | 1015 | 2.6 | | | | | 2pt pH calibration (7+10) |
| 7.13.06 | | | | | | | system down - no influent collected |
| 7.14.06 | | 2.6 | | | | | |
| 7.15.06 | 1115 | 2.5 | | | | | |
| 7.16.06 | 1130 | 2.5 | | | | | |

## 2006 Daily Chemistry for: Influent / AMD

in mg/l except pH

Metals reported as: preliminary result (PR) x dilution factor (DF) = final result (FR); if no dilution factor used record only final result.

| Date | Time | pH | Al | | Fe | | As | | Sample ID # / Comments |
|---|---|---|---|---|---|---|---|---|---|
| | | | PR x DF = | FR | PR x DF = | FR | PR x DF = | FR | |
| 7.17.06 | 1115 | 2.5 | | | | | | | 067PWT026 |
| 7.18.06 | 1600 | 2.6 | | | | | | | |
| 7.19.06 | 945 | 2.6 | | | | | | | |
| 7.20.06 | 1010 | 2.62 | | | | | | | |
| 7.21.06 | 1000 | 2.6 | | | | | | | |
| 7.22.06 | 1745 | 2.7 | | | | | | | |
| 7.23.06 | 1620 | 2.6 | | | | | | | |
| 7.24.06 | 950 | 2.6 | | | | | | | 067PWT037 |
| 7.26.06 | 1100 | 2.5 | | | | | | | [redacted] |
| 7.27.06 | 1415 | 2.5 | | | | | | | |
| 7.28.06 | 1730 | 2.5 | | | | | | | |
| 7.29.06 | 1000 | 2.5 | | | | | | | |
| 7.30.06 | 1035 | 2.55 | | | | | | | |
| 7.31.06 | 1040 | 2.54 | | | | | | | 067PWT048 |
| 8.2.06 | 1005 | 2.52 | 0.52 -1000 | [redacted] 520 | 0.883 -1000 | 883 | | | |
| 8.3.06 | ~~1050~~ 950 | 2.58 | 0.49 -1000 | 490 | 0.729 -1000 | 729 | | | |
| 8.4.06 | 1130 | 2.54 | .47(1000) | 470 | .723(1000) | 723 | | | |
| 8.5.06 | 0950 | 2.53 | 0.47 -1000 | 470 | .687 -1000 | 687 | | | |

## 2006 Daily Chemistry for: Influent /AMD

**in mg/l except pH**

**Metals reported as: preliminary result (PR) x dilution factor (DF) = final result (FR); if no dilution factor used record only final result.**

| Date | Time | pH | Al | | Fe | | As | | Sample ID # / Comments |
|---|---|---|---|---|---|---|---|---|---|
| | | | PR x DF = | FR | PR x DF = | FR | PR x DF = | FR | |
| 8.6.06 | 9:30 | 2.40 | 0.47·1000 | 470 | .691·1000 | 691 | | | |
| 8·2·06 | 9:00 | 2.48 | 0.45·1000 | 450 | .648·1000 | 648 | | | 067PW T059 |
| 8·8·06 | 10:35 | 2.64 | .45(1000) | 450 | .692(1000) | 692 | | | |
| 8·9·06 | 10:20 | 2.46 | .46(1000) | 460 | .689(1000) | 689 | | | |
| 8·10·06 | 11:10 | 2.52 | .48(1000) | 480 | .696(1000) | 696 | | | |
| 8·11·06 | 9:50 | 2.50 | .657(1000) | 510 | .658(1000) | 658 | | | |
| 8·12·06 | 1020 | 2.52 | 0.42(1000) | 420 | .775(1000) | 775 | | | |

ALITY CONTROL BOARD — SAMPLE TRACKING FORM

| ple ID Number | Date Collected | staff initials | Project Description | Lab | Comments |
|---|---|---|---|---|---|
| 056BP201 | 10.18.05 | LS | TR - Eff | AC2 | last sample! |
| 056BP202 | 10.2.05 | LS | Picolo - TR | | |
| 056BP203 | 10.2.05 | LS | picolo - Diss | | |
| 056BP204 | 10.2.05 | LS | PCUD - TR | | |
| 056BP205 | 10.2.05 | LS | PCUD - Diss | | |
| 056BP206 | 10.5.05 | BG | PCUD - TR | | |
| 056BP207 | 10.5.05 | BG | PCUD - Diss | | |
| 056BP208 | 10.5.05 | BG | picolo - Diss. | | |
| 056BP209 | 10.5.05 | BG | picolo - TR | | |
| 056BP210 | 6.27.06 | LS,BG | TR Se, Dissolved | AC2 | Labs collected from line into P.C. |
| 056BP211 | 6.28.06 | LS,SW | TR Se, + Dissolved metals | | collected from P.C. |
| 056BP212 | 6.29.06 | BG | TR Se + Dissolved metals | | collected from P.C. |
| 056BP213 | 6-30.06 | DSC | TR Se & Dissolved metals | | collected from weir V-notch |
| ~~056BP214~~ | | | | | |
| 056BP215 | | | | | |
| 056BP216 | | | | | |
| 056BP217 | | | | | |
| 056BP218 | | | | | |
| 056BP219 | | | | | |
| 056BP220 | | | | | |
| 056BP221 | | | | | |
| 056BP222 | | | | | |
| 056BP223 | | | | | |
| 056BP224 | | | | | |
| 056BP225 | | | | | |

ke summer 2006

use 067PLOT Starting July 1, 2006

LAHONTAN REGION
WATER QUALITY CONTROL BOARD

**LEVIATHAN MINE MULTIPHASIC SYSTEM**
SAMPLE TRACKING FORM

CY 06-07

| Sample ID Number | Date Collected | staff initials | Project Description | Lab | Comments |
|---|---|---|---|---|---|
| ~~067PWT000~~ | | | | | |
| 067PWT001 | 7/1/06 | BG | TR Se + Dissolved Metals | WECK | collected from weir |
| 067PWT002 | 7/2/06 | BG | TR Se + Dissolved Metals | | " " |
| 067PWT003 | 7.3.06 | DSC | TR Se & Dissolved Metals + SO4 + TDS | | " " V-notch (Effluent sample) |
| 067PWT004 | 7.3.06 | DSC | TR Se + Diss Metals + SO4 + TDS | | collected from R-1 inlet (Influent sample) |
| 067PWT005 | 7.4.06 | DSC | TR Se + Dissolved metals | | collected from weir V-notch |
| 067PWT006 | 7.5.06 | LS, SW | TR Se + Dissolved metals | | Eff " |
| 067PWT007 | 7.5.06 | LS, SW | TR Se + Diss. metals | | FMB |
| 067PWT008 | 7.6.06 | LS, SW | TR Se + Diss. metals | Weck | Eff collected @ weir box |
| 067PWT009 | 7.6.06 | LS, SW | TR Se + Diss. metals | | Eff Dup " |
| 067PWT010 | 7.7.06 | LS, SW | TR Se + Diss. Metals | | Eff collected @ weir box |
| 067PWT011 | 7.7.06 | LS, SW | TR Se + Diss Metals | | ERB collected after acid bath |
| 067PWT012 | 7.8.06 | LS | TR Se + Diss. Metals | | Eff |
| 067PWT013 | 7.9.06 | LS | TR Se + Diss Metals | | Eff |
| 067PWT014 | 7.10.06 | LS | TR Se + Diss. Metals, SO4, TDS | | Eff Full suite |
| 067PWT015 | 7.10.06 | LS, SW | TR Se, Diss. Metals, SO4, TDS | | Inf Full suite |
| 067PWT016 | 7.11.06 | LS | TR Se, Diss Metals | | Eff |
| 067PWT017 | 7.11.06 | LS | TR Se, Diss. Metals | | FMB |
| 067PWT018 | 7.12.06 | BG | TR Se, Diss. Metals | | Eff |
| 067PWT019 | 7.13.06 | BG | TR Se, Diss Metals | | Eff |
| 067PWT020 | 7.13.06 | BG | TR Se, Diss Metals | | Eff. dup |
| 067PWT021 | 7.14.06 | BG | TR Se, Diss Metals | | Eff |
| 067PWT022 | 7.14.06 | BG | TR Se, Diss Metals | | ERB |
| 067PWT023 | 7.15.06 | LS | TR Se, Diss Metals | | Eff |
| 067PWT024 | 7.16.06 | LS | TR Se, Diss Metals | | Eff |
| 067PWT025 | 7.17.06 | LS | TR Se, Diss Metals, TDS, SO4 | | Eff |

discharge to creek

LAHONTAN REGION
WATER QUALITY CONTROL BOARD

**LEVIATHAN MINE BIPHASIC SYSTEM**
SAMPLE TRACKING FORM

FY 06-07

| Sample ID Number | Date Collected | staff initials | Project Description | Lab | Comments |
|---|---|---|---|---|---|
| 067PWT026 | 7.17.06 | LS, SW | TR Se, Diss Metals, TDS, $SO_4$ | Weck | Influent |
| 067PWT027 | 7.18.06 | BG | TR Se, Diss Metals | | Eff |
| 067PWT028 | 7.18.06 | BG | TR Se, Diss Metals | | FMB |
| 067PWT029 | 7.19.06 | BG | TR Se, Diss Metals | | Eff |
| 067PWT030 | 7.20.06 | SW, LS | TR Se, Diss. Metals | | Eff |
| 067PWT031 | 7.20.06 | SW, LS | TR Se, Diss. Metals | | Eff - Dup |
| 067PWT032 | 7.21.06 | SW, BG | TR Se, Diss Metal | | Eff |
| 067PWT033 | 7.21.06 | SW, BG | TR Se, Diss Metal | | ERB |
| 067PWT034 | 7.22.06 | BG | TR Se, Diss Metal | | eff |
| 067PWT035 | 7.23.06 | BG | TR Se, Diss Metal | | Eff |
| 067PWT036 | 7.24.06 | SW, LS | TR Se, Diss Metal, TDS, $SO_4$ | | eff |
| 067PWT037 | 7.24.06 | SW, LS | TR Se, Diss Metal, TDS, $SO_4$ | | inf |
| 067PWT038 | 7.25.06 | LS | TR Se, Diss. Metals | | Eff |
| 067PWT039 | 7.25.06 | LS | TR Se, Diss. Metals | | ~~Eff~~ FMB |
| 067PWT040 | 7.26.06 | SW, LS | TR Se, + Diss. Metals | | Eff |
| 067PWT041 | 7.27.06 | BG | TR Se + Diss Metals | | Eff |
| 067PWT042 | 7.27.06 | BG | TR Se + Diss Metals | | Dup - Eff |
| 067PWT043 | 7.28.06 | BG | TR Se + Diss Metals | | Eff |
| 067PWT044 | 7.28.06 | BG | TR Se + Diss Metals | | ERB |
| 067PWT045 | 7.29.06 | BG | TR Se + Diss Metals | | Eff |
| 067PWT046 | 7.30.06 | SW | TR Se + Diss Metals | | Eff |
| 067PWT047 | 7.31.06 | LS | TR Se, Diss. Metals, TDS, $SO_4$ | | Eff |
| 067PWT048 | 7.31.06 | LS | TR Se, Diss. Metals, TDS, $SO_4$ | | Inf. |
| 067PWT049 | 8.1.06 | LS | TR Se, Diss. Metals | | Eff |
| 067PWT050 | 8.1.06 | LS | TR Se, Diss. Metals | | FMB |

LAHONTAN REGION
WATER QUALITY CONTROL BOARD

**LEVIATHAN MINE MULTIPHASIC SYSTEM**
SAMPLE TRACKING FORM

06-07

| Sample ID Number | Date Collected | staff initials | Project Description | Lab | Comments |
|---|---|---|---|---|---|
| 067PWT051 | 8·2·06 | SW, LS | TR Se, Diss. Metals | Weck | Eff |
| 067PWT052 | 8·3·06 | SW | TR Se, Diss. Metals | | Eff |
| 067PWT053 | 8·3·06 | SW | TR Se, Diss. Metals | | Eff-Dup |
| 067PWT054 | 8·4·06 | LS | TR Se, Diss. Metals | | Eff |
| 067PWT055 | 8·4·06 | LS | TR Se, Diss. Metals | | ERB |
| 067PWT056 | 8·5·06 | SW | TR Se, Diss. Metals | | Eff |
| 067PWT057 | 8·6·06 | SW | TR Se, Diss. Metals | | Eff |
| 067PWT058 | 8·7·06 | SW | TR Se, Diss. Metals, TDS, $SO_4$ | | Eff |
| 067PWT059 | 8·7·06 | SW | TR Se, Diss. Metals, TDS, $SO_4$ | | Inf |
| 067PWT060 | 8·8·06 | LS | TR Se, Diss. Metals | | Eff |
| 067PWT061 | 8·8·06 | LS | TR Se, Diss. Metals | | FMB |
| 067PWT062 | 8·9·06 | LS | TR Se, Diss Metals | | Eff |
| 067PWT063 | 8·10·06 | LS | TR Se, Diss. Metals | | ERB |
| 067PWT064 | 8·10·06 | LS | TR Se, Diss Metals | | Eff |
| 067PWT065 | 8·10·06 | LS | TR Se, Diss Metals | | Eff Dup |
| 067PWT066 | 8·11·06 | SW | TR Se, Diss. Met. | | Eff |
| 067PWT067 | 8·12·06 | SW | TR Se + Diss. Metals | | Eff - Last Day of Treatment |
| 067PWT068 | 8·13·06 | SW | TR Se + Diss. Metals | | Eff |
| 067PWT069 | 8·14·06 | SW | TR Se + Diss. Metals | | Eff |
| 067PWT070 | 8·15·06 | LS | TR Se + Diss. Metals | | Eff |
| 067PWT071 | 8·16·06 | LS | TR Se, Diss Metals | | Eff |
| 067PWT072 | 8·16·06 | LS | TR Se, Diss. Metals | | FMB |
| 067PWT073 | 8·17·06 | LS | TR Se, Diss. Metals | | Eff |
| 067PWT074 | 8·17·06 | LS | TR Se, Diss Metals | | Eff-Duplicate |
| 067PWT075 | 8·19·06 | LS, DSC | Pit Clarifier Sludge - Location A | | 2005 Sludge Sampling |

LAHONTAN REGION
WATER QUALITY CONTROL BOARD

**LEVIATHAN MINE PHASIC SYSTEM**
SAMPLE TRACKING FORM

06-07

| Sample ID Number | Date Collected | staff initials | Project Description | Lab | Comments |
|---|---|---|---|---|---|
| 067PWT076 | 6·19·06 | LS, DSC | Pit Clarifier Sludge - Loc. B | Weck | 2005 Sludge Sampling |
| 067PWT077 | 6·19·06 | LS, DSC | Pit Clarifier Sludge - Loc. C | Weck | 2005 Sludge Sampling |
| 067PWT078 | 8·18·06 | LS | TR Se, Dissolved Metals | Weck | Eff (2006 Treatment) |
| 067PWT079 | 8·19·06 | SW | TR Se, Diss Metals | Weck | Eff (2006) |
| 067PWT080 | 8·20·06 | SW | TRSe, Diss. Met. | Weck | Eff |
| 067PWT081 | 8·21·06 | SW | TRSe, Diss. Met. | Weck | Eff |
| 067PWT082 | 8·22·06 | SW | TR Se, Diss. Metals | Week | Eff |
| 067PWT083 | 8·22·06 | SW | TRSe, Diss. Met. | Weck | ~~FMB~~ FMB |
| 067PWT084 | 8·23·06 | LS | TR Se, Diss. Metals | Weck | Eff |
| 067PWT085 | 8·24·06 | SW | TR Se, Diss. Metals | Weck | Eff |
| 067PWT086 | 8·24·06 | SW | TR Se, Diss. Metals | Weck | Eff - Dup |
| 067PWT087 | 8·25·06 | LS | TR Se, Diss Metals | Weck | Eff - Last Day of Sample |
| 067PWT088 | 10·17·06 | LS, DSC | 2006 PWT - P.C. Sludge - A | \| | Sludge 0-23" Collection |
| 067PWT089 | 10·17·06 | \| | " - B | \| | " 0-24" |
| 067PWT090 | 10·17·06 | \| | " - C | ↓ | " 0-24" |
| 067PWT091 | | | | | |
| 067PWT092 | | | | | |
| 067PWT093 | | | | | |
| 067PWT094 | | | | | |
| 067PWT095 | | | | | |
| 067PWT096 | | | | | |
| 067PWT097 | | | | | |
| 067PWT098 | | | | | |
| 067PWT099 | | | | | |
| 067PWT100 | | | | | |

# Attachment C

# Daily Summary of Discharge Flow Data

## 2006 Pit Clarifier Discharge Summary

| Date | average discharge (gpm) | minutes | daily flow (gallons) |
|---|---|---|---|
| 6/30/2006 | 123.19 | 795 | 97,935 |
| 7/1/2006 | 160.91 | 1440 | 231,709 |
| 7/2/2006 | 205.00 | 1440 | 295,200 |
| 7/3/2006 | 242.65 | 1440 | 349,417 |
| 7/4/2006 | 269.95 | 1440 | 388,729 |
| 7/5/2006 | 229.67 | 1440 | 330,723 |
| 7/6/2006 | 217.13 | 1440 | 312,660 |
| 7/7/2006 | 217.13 | 1440 | 312,660 |
| 7/8/2006 | 182.14 | 1440 | 262,280 |
| 7/9/2006 | 106.60 | 1440 | 153,510 |
| 7/10/2006 | 182.14 | 1440 | 262,280 |
| 7/11/2006 | 229.67 | 1440 | 330,723 |
| 7/12/2006 | 171.32 | 1440 | 246,702 |
| 7/13/2006 | 141.27 | 1440 | 203,435 |
| 7/14/2006 | 141.27 | 1440 | 203,435 |
| 7/15/2006 | 193.37 | 1440 | 278,448 |
| 7/16/2006 | 205.00 | 1440 | 295,200 |
| 7/17/2006 | 217.13 | 1440 | 312,660 |
| 7/18/2006 | 242.65 | 1440 | 349,417 |
| 7/19/2006 | 229.67 | 1440 | 330,723 |
| 7/20/2006 | 229.67 | 1440 | 330,723 |
| 7/21/2006 | 217.13 | 1440 | 312,660 |
| 7/22/2006 | 217.13 | 1440 | 312,660 |
| 7/23/2006 | 123.19 | 1440 | 177,392 |
| 7/24/2006 | 256.08 | 1440 | 368,751 |
| 7/25/2006 | 242.65 | 1440 | 349,417 |
| 7/26/2006 | 229.67 | 1440 | 330,723 |
| 7/27/2006 | 217.13 | 1440 | 312,660 |
| 7/28/2006 | 217.13 | 1440 | 312,660 |
| 7/29/2006 | 217.13 | 1440 | 312,660 |
| 7/30/2006 | 205.00 | 1440 | 295,200 |
| 7/31/2006 | 229.67 | 1440 | 330,723 |
| 8/1/2006 | 193.37 | 1440 | 278,448 |
| 8/2/2006 | 205.00 | 1440 | 295,200 |
| 8/3/2006 | 205.00 | 1440 | 295,200 |
| 8/4/2006 | 217.13 | 1440 | 312,660 |
| 8/5/2006 | 217.13 | 1440 | 312,660 |
| 8/6/2006 | 217.13 | 1440 | 312,660 |
| 8/7/2006 | 229.67 | 1440 | 330,723 |
| 8/8/2006 | 217.13 | 1440 | 312,660 |
| 8/9/2006 | 217.13 | 1440 | 312,660 |
| 8/10/2006 | 171.32 | 1440 | 246,702 |

## 2006 Pit Clarifier Discharge Summary continued

| Date | average discharge (gpm) | minutes | daily flow (gallons) | |
|---|---|---|---|---|
| 8/11/2006 | 193.37 | 1440 | 278,448 | |
| 8/12/2006 | 205.00 | 1440 | 295,200 | last day of treatment |
| 8/13/2006 | 49.19 | 1440 | 70,831 | |
| 8/14/2006 | 28.22 | 1440 | 40,637 | |
| 8/15/2006 | 21.75 | 1440 | 31,320 | |
| 8/16/2006 | 18.89 | 1440 | 27,202 | |
| 8/17/2006 | 13.91 | 1440 | 20,030 | |
| 8/18/2006 | 9.82 | 1440 | 14,141 | |
| 8/19/2006 | 8.10 | 1440 | 11,664 | |
| 8/20/2006 | 7.48 | 1440 | 10,771 | |
| 8/21/2006 | 6.85 | 1440 | 9,864 | |
| 8/22/2006 | 6.23 | 1440 | 8,971 | |
| 8/23/2006 | 5.61 | 1440 | 8,078 | |
| 8/24/2006 | 5.61 | 1440 | 8,078 | |
| 8/25/2006 | 4.98 | 1440 | 7,171 | |
| 8/26/2006 | 4.36 | 1440 | 6,278 | |
| 8/27/2006 | 3.74 | 1440 | 5,386 | |
| **Total Discharge** | | | **13,157,724** | **gallons** |

# Data Summary Report

# For

# Leviathan Mine
# Surface Water Monitoring
# 2005-2006 Water Year

***(Appendix B to the Year End Report for the 2006 Field Season)***

**Prepared by:**

**California Regional Water Quality Control Board, Lahontan Region**

**January 2007**

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# II. Introduction

This Data Summary Report (DSR) presents the results of surface water sampling and analysis for the 2005-2006 water-year at the Leviathan Mine Site, as described in the Work Plan for 2006 Site Work (Work Plan) (*Water Board, 2006*) by the California Regional Water Quality Control Board, Lahontan Region (Water Board). The 2005-2006 water-year is the period from October 1, 2005, to September 30, 2006. The information in this report was gathered following the objectives and quality assurance (QA) and quality control (QC) procedures documented in the Sampling and Analysis Plan for Leviathan Mine Site Surface Water Monitoring (SAP) (*Water Board, January 2004*). Overall site objectives and requirements are outlined in the Leviathan Mine Site Site-Wide Sampling and Analysis Plan (*MWH, April 2002*). The following information is included in the DSR:

- Results of field measurements and laboratory analyses,
- Location of sampling stations,
- Flow monitoring results, and
- Data Validation Checklist for Field QC and Level A/B Screening Checklists.

The SAP, field notebook, and monitoring program records for this project are located at the Water Board offices in South Lake Tahoe, California, and are available for review.

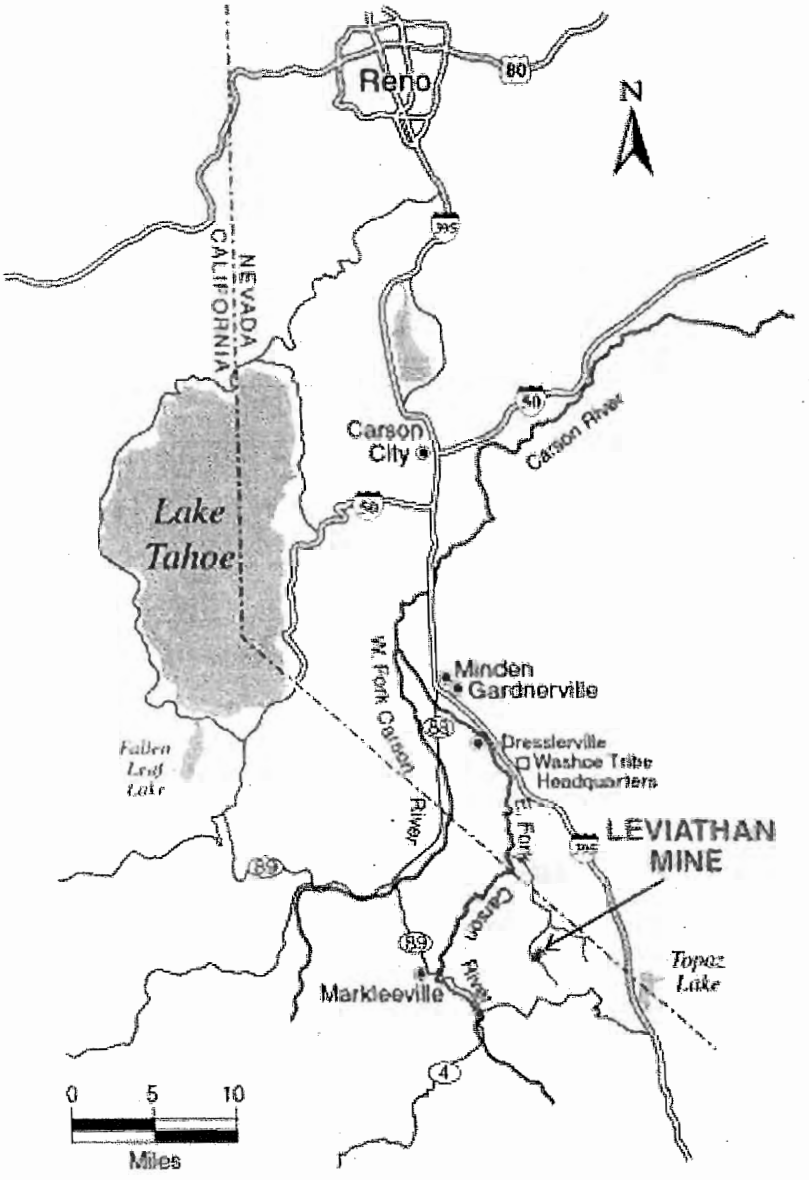
### a. Investigation Site Description

Leviathan Mine is located in Alpine County, California, approximately six miles east of Markleeville, California and five miles west of Topaz Lake, Nevada, as shown in Figure 1. The site is an inactive sulfur mine that the State of California acquired in the early 1980s in order to improve water quality problems caused by historic mining. In May 2000, the United States Environmental Protection Agency (USEPA) placed Leviathan Mine on the Comprehensive Environmental Response, Compensation, and Liability Act, National Priorities List, thus making Leviathan a federal Superfund site. USEPA identified the State of California and Atlantic Richfield Company (ARC) as Potentially Responsible Parties at the site.

Leviathan and Aspen creeks flow across the mine site and Aspen Creek joins Leviathan just below the mine. Approximately 1.5 miles downstream of the confluence of Leviathan and Aspen creeks, Leviathan Creek joins Mountaineer Creek. The combined flow of Leviathan and Mountaineer creeks forms Bryant Creek. Approximately 3.5 miles downstream of the confluence of Leviathan and Mountaineer creeks, Bryant Creek flows across the Nevada state line. Approximately 1.8 miles downstream of the Nevada state line there exists an irrigation structure that enables the diversion of water from Bryant Creek to an irrigation ditch. The irrigation ditch is used seasonally to divert flow from Bryant Creek to the River Ranch property, owned by Park Cattle Company. Doud Springs joins Bryant Creek just upstream of the irrigation diversion. From the irrigation diversion, the natural course of Bryant Creek continues to the northwest, and approximately 1.5 miles downstream from the irrigation diversion, Bryant Creek joins the East Fork of the Carson River. Additional information on Leviathan Mine can be found in the Water Board's Year-End Report for the 2006 Field Season at Leviathan Mine.

# I. Acronyms and Abbreviations

| | |
|---|---|
| AMD | Acid mine drainage |
| ARC | Atlantic Richfield Company |
| CUD | Channel Under-Drain |
| DSR | Data Summary Report |
| PQL | Practical Quantitation Limit |
| PUD | Pit Under-Drain |
| QA | Quality Assurance |
| QC | Quality Control |
| RPD | Relative Percent Difference |
| SAP | Sampling and Analysis Plan for Leviathan Mine Site Surface Water Monitoring |
| USGS | United States Geological Survey |
| USEPA | U.S. Environmental Protection Agency |
| Water Board | CA Regional Water Quality Control Board, Lahontan Region |
| Work Plan | Work Plan for 2006 Site Work by the Water Board |
| Year-End Report | Year-End Report for the 2006 Field Season at Leviathan Mine |




# FIGURE 1
# SITE LOCATION

### b. Investigation Objectives

The overall objective of the surface water monitoring program is to characterize and track changes in surface water quality and pollutant loading in the Leviathan Creek watershed. Samples are collected at various locations at Leviathan Mine as well as in the surrounding watersheds. Specific objectives outlined in the Work Plan are as follows:

- To continue monitoring surface water quality at eleven stations on a monthly basis and three stations on a semi-annual basis.
- To continue monitoring surface water and acid mine drainage flow rates.

The results of this investigation supplement the existing data contained within the Leviathan Mine database that is maintained by ARC. All data presented in this report were forwarded to ARC for incorporation into the Site-wide database. The Water Board, ARC, USEPA, and other trustee groups and agencies will use the data collected to evaluate site conditions and make decisions about future remedial actions.

## III. Data Summary

### a. Data Quality Objectives

The data quality objectives of the surface water monitoring program, as outlined in the SAP, were as follows:

- Identify the chemical characteristics of the various surface waters in the vicinity of Leviathan Mine, including acid mine drainage (AMD) and creek waters.
- Monitor flows of AMD discharges and flow in selected creeks.
- Track the impacts of remediation projects on downstream surface waters.
- Identify seasonal and annual variations in the chemical characteristics and field parameters of surface waters in the vicinity of Leviathan Mine.
- Calculate the loading of metals to the downstream surface waters from the various discharges at Leviathan Mine.

An evaluation of the completeness of the required field collection shows that 138 samples were to be collected during the water-year (eleven stations sampled monthly and three stations sampled twice). In total, 137 of the required 138 were collected, resulting in a completeness of 99%. The Overburden Seep was not sampled in December due to limited site access from icy

road conditions. All other stations were sampled as scheduled and an additional sample was collected at the Delta Slope Under-drain.

### b. Sampling and Analysis Summary

Table 1, Surface Water Sampling Stations, summarizes all of the surface water stations sampled this year, including their name, a description of their locations, frequency of sampling, and the parameters they were analyzed for. There are eleven sites that are sampled monthly and three sites that are sampled semi-annually, in the spring and fall. Additional sampling occurred this year at one other location in the mine area, the Delta Slope Under-drain. Figure 2, Surface Water Monitoring Locations, shows the locations of the monthly and semi-annual sampling locations. The Delta Slope Under-drain outflow is located just above the Delta Seep and flows into the Delta Seep. This under-drain was installed during the Delta Slope Stabilization Project to dewater and help stabilize the failing slope above the Delta Seep.

Samples were collected in the field using a peristaltic pump, disposable tubing, and if required, a disposable 0.45-micron filter. Samples for dissolved metals, Total Dissolved Solids (TDS), and Sulfate were field filtered through a 0.45-micron filter. Metals samples were collected for total and dissolved: Aluminum, Arsenic, Calcium, Cadmium, Chromium, Cobalt, Copper, Iron, Magnesium, Manganese, Nickel, and Zinc. Water Board staff collected metals samples in bottles pre-preserved with nitric acid by the contract laboratory. A duplicate sample and a field method blank were collected for each sampling event detailed in DSR. Detailed sample collection and handling procedures and QA/QC protocols are described in the SAP.

Due to a change in contracted laboratories, three separate laboratories analyzed samples collected by the Water Board during this water-year. ACZ Laboratories located in Steamboat Springs, CO analyzed all samples collected in October 2005, November 2005, and December 2005, and the TDS and Sulfate samples collected in January 2006. California Laboratory Services in Sacramento, CA analyzed TDS and Sulfate samples collected in February 2006. Weck Laboratories in Industry, California analyzed metals samples collected in January 2006 and February 2006, and all samples collected from March 2006 to September 2006.

The analytical results of the sampling along with any qualifiers are presented in Attachment B. The tables also show the field data results collected by Water Board staff, including pH, temperature, electrical conductivity, and specific conductance.

## Table 1. Surface Water Sampling Stations

| Water Board Station ID | Site Description | Sampling Frequency | Parameters Measured |
|---|---|---|---|
| **Station 1** | Leviathan Creek above Leviathan Mine. | Monthly | Total and Dissolved Metals for Al, As, Ca, Cd, Co, Cr, Cu, Fe, Mg, Mn, Ni, Zn; Total Dissolved Solids (TDS); Sulfate; field: pH, temperature, electrical conductivity, and specific conductance. |
| **Adit** | Drainage from Tunnel #5 (the Adit), prior to entering evaporation ponds. | Monthly | Same as above. |
| **Pit Under - Drain (PUD)** | Drainage from shallow ground water collection pipes in pit, prior to entering evaporation ponds. | Monthly | Same as above. |
| **Channel Under-Drain (CUD)** | Discharge from Channel Under-Drain below Leviathan Creek concrete channel. | Monthly | Same as above. |
| **Delta Seep (DS)** | Seepage from the toe of the Delta Slope, located north of Pond 4. | Semi-annually | Same as above. |
| **Station 15** | Leviathan Creek, above the confluence of Leviathan and Aspen creeks. | Monthly | Same as above. |
| **Station 16** | Aspen Creek, above the confluence of Leviathan and Aspen creeks. | Monthly | Same as above. |
| **Station 4L** | 4L Creek, just above the confluence of Leviathan Creek. | Semi-annually | Same as above. |
| **Station 22** | Aspen Creek above Leviathan Mine. | Monthly | Same as above. |
| **Overburden Seep (OS)** | Overburden seepage (a.k.a. Aspen Seep), above the bioreactors. | Monthly | Same as above. |
| **Station 23** | Leviathan Creek above the confluence of Leviathan and Mountaineer creeks. | Monthly | Same as above. |
| **Station 24** | Mountaineer above the confluence of Leviathan and Mountaineer creeks. | Monthly | Same as above. |
| **Station 25** | Bryant Creek below the confluence of Leviathan and Mountaineer creeks. | Monthly | Same as above. |
| **Station 26** | Bryant Creek above the confluence of Doud Springs and Bryant Creek. | Semi-annually | Same as above. |
| **Delta Slope Under-drain** | Installed as part of the Delta Slope stabilization project, dewaters portions of the slope above the Delta Seep. | Intermittent | Same as above. |

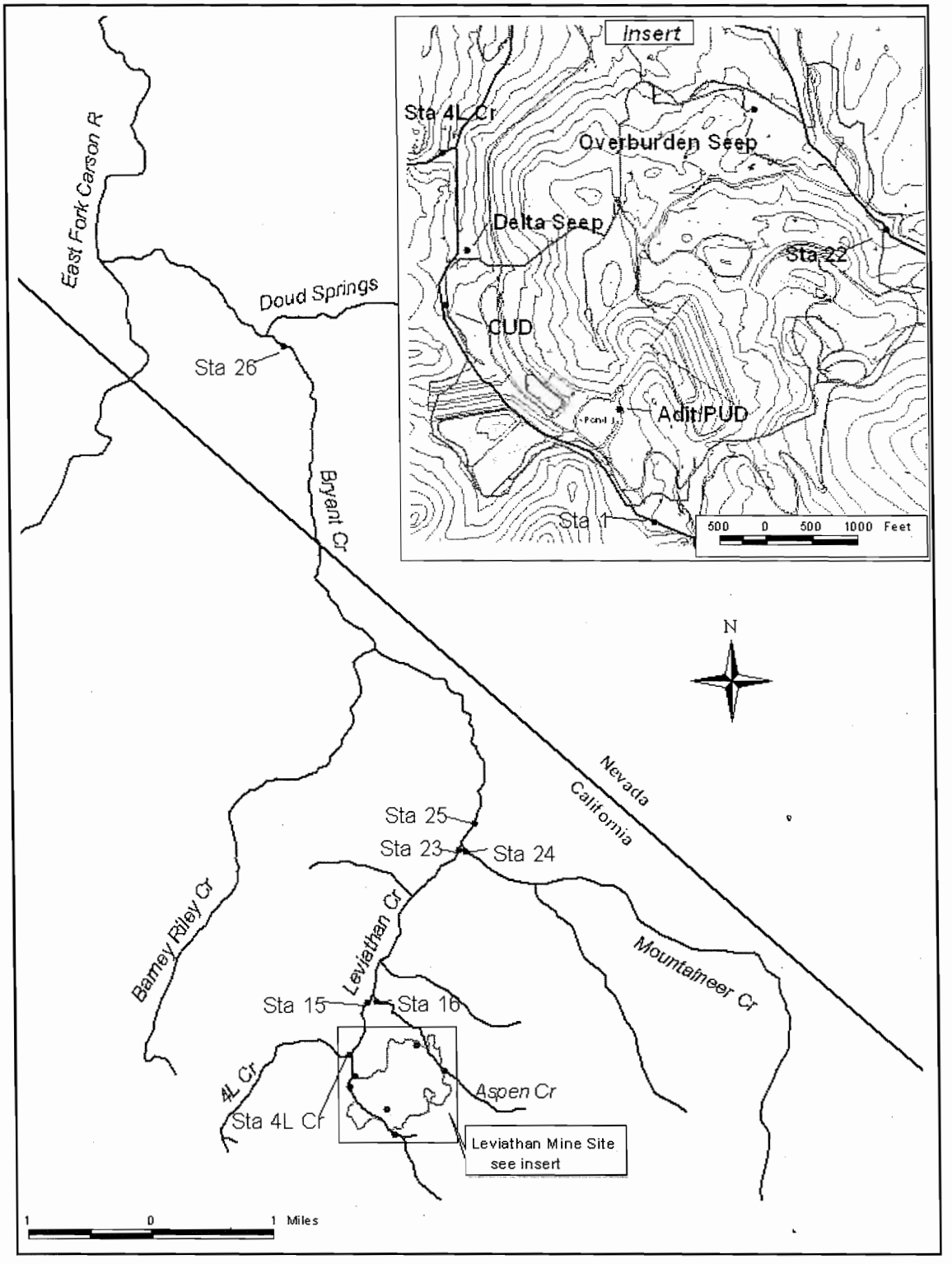



**Figure 2 Surface Water Monitoring Locations**

### c. USGS Flow Data

Under contract to the Water Board, the United States Geological Survey (USGS) conducted flow monitoring at Leviathan Mine. Attachment A contains the flow monitoring results collected by the USGS. Included in Attachment A are the daily and monthly average flow data for 11 stations with continuous flow recorders and daily and monthly average stage data for water levels in Pond 1 and Pond 4. Table 2, Flow Monitoring Locations, gives details on the various flow monitoring stations. Flow from the Channel Under-Drain (CUD) was directed into the ARC treatment system beginning in mid July 2006 and continuing until October 10, 2006. Many of the sites around the mine showed increased flows due to above average precipitation. The PUD flows showed significant increases compared to previous records. The USGS submits the flow data directly to ARC for incorporation into the Leviathan Mine database.

### d. Data Quality Evaluation

ACZ Laboratories and Weck Laboratories completed Data Validation Checklists for all reports. They are not included in this report but are available for viewing at the Water Board. Attachment C contains the Data Validation Checklists for Field QC and Level A/B Screening Checklists completed by Water Board staff for each sampling event. Data were assessed to confirm that holding times were met and that field quality control samples were collected. Any exceedences of method hold times are denoted with an "H" qualifier on the data tables

Water Board staff collected a field duplicate for each monthly and semi-annual sampling event. The location of the duplicate sample was rotated each month. The Relative Percent Difference (RPD) was calculated for the duplicate and corresponding sample. If both the sample and duplicate values were greater than or equal to five times the Practical Quantitation Limit (PQL), then the RPD must be less than or equal to 25% to be in control limits. If either the sample or duplicate value was less than five times the PQL, then the absolute difference between the sample and duplicate values had to be less than the PQL to be in control limits. Results that were out of control limits were flagged with "*" qualifier on the data tables in Attachment B. Out of the total number of results presented in this report, five sets of sample and duplicate results were flagged for exceeding the control limits for RPD.

Field Method Blanks (FMBs) were also collected once per sampling event and submitted for the same analyses as other samples. FMBs were collecting and processing distilled deionized water in the same method as effluent samples. No data were qualified based on FMB results.

## Table 2. Flow Monitoring Locations

| STATION LOCATION/DESCRIPTION | EQUIPMENT | USGS STARTUP DATE |
|---|---|---|
| Leviathan Creek above the mine **(Station 1)** | Continuous flow recorder and appurtenances, solar power supply. | October 98 |
| Pit Under-Drain at the flow control structure **(PUD)** | Continuous flow recorder and appurtenances, solar power supply, telemetry. | October 99 |
| Adit at the flow control Structure **(Adit)** | Continuous flow recorder and appurtenances, solar power supply, telemetry. | October 99 |
| Pond 1 Stage | Continuous stage recorder and appurtenances, solar power supply, telemetry. | October 99 |
| Pond 4 Stage | Continuous stage recorder and appurtenances, solar power supply, telemetry. | October 99 |
| Channel Under-Drain **(CUD)** | Continuous flow recorder and appurtenances, solar power supply, telemetry. | October 99 |
| Aspen Creek above the mine **(Station 22)** | Continuous flow recorder and appurtenances, solar power supply. | October 03 |
| 4L Creek above its confluence with Leviathan Creek **(4L Creek)** | Continuous flow recorder and appurtenances, solar power supply. | October 03 |
| Leviathan Creek above its confluence with Aspen Creek **(Station 15)** | Continuous flow recorder and appurtenances, solar power supply, telemetry. | October 98 |
| Aspen Creek above its confluence with Leviathan Creek **(Station 16)** | None. Monthly flow measurements to establish relationship w/STA 15. | October 98 |
| Overburden (Aspen) Seep, above the Bioreactors **(OS)** | Continuous flow recorder and appurtenances, solar power supply. | October 98 |
| Bryant Creek just below the confluence of Mountaineer and Leviathan Creeks **(Station 25)** | Continuous flow recorder and appurtenances, solar power supply. | October 98 |
| Leviathan Creek just above the confluence of Mountaineer and Leviathan Creeks **(Station 23)** | Continuous flow recorder and appurtenances, solar power supply | November 99 |
| Mountaineer Creek just above the confluence of Leviathan and Mountaineer Creeks **(Station 24)** | None. Monthly flow measurements to establish relationship w/STA 23. | December 99 |
| Bryant Creek just above confluence with Doud Springs **(Station 26)** | Continuous flow recorder and appurtenances, solar power supply | August 01 |

# IV. Deviations from the SAP

Deviations from the SAP were noted during the initial data review including the use of methods other than those specified in the SAP. The SAP specifies the use of USEPA Method 300.0 for quantifying sulfate by ion chromatography. ACZ Labs prefers to use Method 375.3, which is a gravimetric method for sulfate. When discussing the use of this method with ACZ Labs, they stated that this method produces more accurate results when there are high concentrations of sulfate present. The use of this method is appropriate for many of the sampling stations but results in a PQL that is too high for some of the cleaner, non-mine impacted stations. Recent discussions with ACZ Labs on this subject lead to the decision to use Method 300.0 for the non-mine impacted stations and Method 375.3 for other stations. Method 375.3 will be added to the table of methods in the SAP.

The methods detailed in the SAP for metals analysis are 6010 and 6020, though Weck Labs is using Methods 200.7 and 200.8 for metals analysis. These are essentially equivalent methods that were developed by different branches of EPA but produce similar results and are run on the same instrumentation (ICP and ICP-MS). Methods 200.7 and 200.8 will be added to the table of methods in the SAP.

# V. References

California Regional Water Quality Control Board, Lahontan Region. January 2004. Sampling and Analysis Plan for Leviathan Mine Site Surface Water Monitoring.

California Regional Water Quality Control Board, Lahontan Region. 2006. Work Plan for 2006 Site Work by the California Regional Water Quality Control Board, Lahontan Region.

MWH (Montgomery Watson Harza). April 2002. Leviathan Mine Site, Site-Wide Sampling and Analysis Plan.

# Attachment A

# United States Geological Survey
# Flow Monitoring Results

# 2005-2006 Adit Flows

1 U.S. DEPARTMENT OF THE INTERIOR - U.S. GEOLOGICAL SURVEY - WATER RESOURCES

STATION NUMBER 10308784 LEVIATHAN MINE ADIT DRAIN NR MARKLEEVILLE CA STREAM SOURCE AGENCY USGS STATE 06 COUNTY 003
LATITUDE 384215 LONGITUDE 1193928 NAD27 DRAINAGE AREA CONTRIBUTING DRAINAGE AREA DATUM 7100 NGVD29
Date Processed: 2007-01-02 10:43 By glrock
Lowest aging status in period is APPROVED
DD #4
Discharge, gallons per minute
WATER YEAR OCTOBER 2005 TO SEPTEMBER 2006
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 14.027 | 13.425 | 13.422 | 15.002 | 17.328 | 18.544 | 20.646 | 39.69 | 28.317 | 23.642 | 20.235 | 18.325 |
| 2 | 14.278 | 13.456 | 13.606 | 14.926 | 17.303 | 18.527 | 20.205 | 40.628 | 28.186 | 23.641 | 20.135 | 18.218 |
| 3 | 14.308 | 13.529 | 13.628 | 14.897 | 17.54 | 18.844 | 20.236 | 41.3 | 27.697 | 23.724 | 19.991 | 18.341 |
| 4 | 14.382 | 13.496 | 13.672 | 14.83 | 17.634 | 18.823 | 20.708 | 42.303 | 27.517 | 23.621 | 20.016 | 18.051 |
| 5 | 14.537 | 13.545 | 13.635 | 14.891 | 17.829 | 18.707 | 21.349 | 41.947 | 27.072 | 23.483 | 19.795 | 18.054 |
| 6 | 14.197 | 13.366 | 13.606 | 14.979 | 17.715 | 18.88 | 21.402 | 41.846 | 26.976 | 22.656 | 19.894 | 17.998 |
| 7 | 13.968 | 13.38 | 13.465 | 14.995 | 17.815 | 19.118 | 21.953 | 42.161 | 26.749 | 22.381 | 19.777 | 18.09 |
| 8 | 13.99 | 13.298 | 13.244 | 15.135 | 17.963 | 19.305 | 22.26 | 42.115 | 26.629 | 22.494 | 19.663 | 18.063 |
| 9 | 13.857 | 13.406 | 13.366 | 15.252 | 17.822 | 19.696 | 22.543 | 41.52 | 26.635 | 22.443 | 19.547 | 18.023 |
| 10 | 13.894 | 13.451 | 13.406 | 15.345 | 17.788 | 19.636 | 22.808 | 40.714 | 26.507 | 22.148 | 19.416 | 18.104 |
| 11 | 13.53 | 13.385 | 13.465 | 15.138 | 17.855 | 19.622 | 22.858 | 39.971 | 26.25 | 22.081 | 19.558 | 18.05 |
| 12 | 13.598 | 13.421 | 13.33 | 15.473 | 17.956 | 19.536 | 23.172 | 39.457 | 26.053 | 21.916 | 19.467 | 17.916 |
| 13 | 13.85 | 13.204 | 13.246 | 15.653 | 18.063 | 19.623 | 23.67 | 39.055 | 26.36 | 21.764 | 19.406 | 18.01 |
| 14 | 13.669 | 13.271 | 13.468 | 15.938 | 18.038 | 19.741 | 24.706 | 37.985 | 26.177 | 21.563 | 19.363 | 18.24 |
| 15 | 13.798 | 13.418 | 13.598 | 16.101 | 18.403 | 19.86 | 25.121 | 37.308 | 25.639 | 21.411 | 19.392 | 18.358 |
| 16 | 13.746 | 13.533 | 13.539 | 15.99 | 18.401 | 20.045 | 26.191 | 36.686 | 25.362 | 21.146 | 19.265 | 18.224 |
| 17 | 13.746 | 13.498 | 13.277 | 16.307 | 18.427 | 20.158 | 26.633 | 35.939 | 25.057 | 21.061 | 19.262 | 18.104 |
| 18 | 13.643 | 13.508 | 13.085 | 16.55 | 18.346 | 20.406 | 27.516 | 35.224 | 24.981 | 21.149 | 19.149 | 17.783 |
| 19 | 13.57 | 13.535 | 12.883 | 16.656 | 18.251 | 20.545 | 28.057 | 34.92 | 24.863 | 20.711 | 19.161 | 17.898 |
| 20 | 13.584 | 13.471 | 12.64 | 16.6 | 18.319 | 20.584 | 28.697 | 34.511 | 24.665 | 20.716 | 18.96 | 17.889 |
| 21 | 13.539 | 13.452 | 12.818 | 16.694 | 18.268 | 20.391 | 29.648 | 34.336 | 24.52 | 20.2 | 18.963 | 17.488 |
| 22 | 13.385 | 13.57 | 12.644 | 16.9 | 18.144 | 20.313 | 30.366 | 33.713 | 24.295 | 19.798 | 18.778 | 17.192 |
| 23 | 13.231 | 13.33 | 12.75 | 17.141 | 18.023 | 20.36 | 31.307 | 32.985 | 24.488 | 19.709 | 18.716 | 17.1 |
| 24 | 13.408 | 13.206 | 12.863 | 17.288 | 18.016 | 20.344 | 32.154 | 32.45 | 24.206 | 19.686 | 18.916 | 17.025 |
| 25 | 13.527 | 13.204 | 12.778 | 17.249 | 18.05 | 20.755 | 33.156 | 31.883 | 24.293 | 19.887 | 18.864 | 16.9 |
| 26 | 13.643 | 13.592 | 13.167 | 17.225 | 17.823 | 20.723 | 34.248 | 31.76 | 24.311 | 20.431 | 18.799 | 16.837 |
| 27 | 13.658 | 13.813 | 13.135 | 17.393 | 18.11 | 20.692 | 34.992 | 31.904 | 24.12 | 20.341 | 18.617 | 16.775 |
| 28 | 13.554 | 13.731 | 13.028 | 17.36 | 18.292 | 21.035 | 35.799 | 31.352 | 24.264 | 20.274 | 18.567 | 17.067 |
| 29 | 13.495 | 13.286 | 13.337 | 17.15 | --- | 20.909 | 37.211 | 30.628 | 23.813 | 20.128 | 18.595 | 17.408 |
| 30 | 13.601 | 13.194 | 13.037 | 17.394 | --- | 20.684 | 38.398 | 29.904 | 23.805 | 20.354 | 18.447 | 17.309 |
| 31 | 13.342 | --- | 13.95 | 17.433 | --- | 20.778 | --- | 29.173 | --- | 20.416 | 18.423 | --- |
| TOTAL | 426.555 | 402.974 | 411.088 | 499.885 | 503.522 | 617.184 | 808.01 | 1135.368 | 769.807 | 664.975 | 597.137 | 532.84 |
| MEAN | 13.76 | 13.432 | 13.261 | 16.125 | 17.983 | 19.909 | 26.934 | 36.625 | 25.66 | 21.451 | 19.262 | 17.761 |
| MAX | 14.537 | 13.813 | 13.95 | 17.433 | 18.427 | 21.035 | 38.398 | 42.303 | 28.317 | 23.724 | 20.235 | 18.358 |
| MIN | 13.231 | 13.194 | 12.64 | 14.83 | 17.303 | 18.527 | 20.205 | 29.173 | 23.805 | 19.686 | 18.423 | 16.775 |

# 2005-2006 Pit Under-drain Flows

1 U.S. DEPARTMENT OF THE INTERIOR - U.S. GEOLOGICAL SURVEY - WATER RESOURCES

STATION NUMBER 10308785 LEVIATHAN MINE PIT FLOW NR MARKLEEVILLE CA STREAM SOURCE AGENCY USGS STATE 06 COUNTY 003
LATITUDE 384215 LONGITUDE 1193928 NAD27 DRAINAGE AREA CONTRIBUTING DRAINAGE AREA DATUM 7100 NGVD29
Date Processed: 2007-01-02 10:43 By glrock
Lowest aging status in period is APPROVED
DD #4
Discharge, gallons per minute
WATER YEAR OCTOBER 2005 TO SEPTEMBER 2006
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.526 | 0.321 | 0.376 | 5.146 | 7.974 | 10.605 | 13.841 | 37.855 | 20.006 | 11.25 | 6.599 | 3.207 |
| 2 | 0.538 | 0.41 | 0.427 | 4.872 | 8.113 | 10.899 | 14.384 | 37.653 | 19.709 | 11.089 | 6.465 | 3.105 |
| 3 | 0.459 | 0.406 | 0.461 | 4.424 | 8.261 | 10.955 | 15.331 | 37.586 | 19.308 | 10.784 | 6.426 | 2.986 |
| 4 | 0.374 | 0.412 | 0.438 | 4.256 | 8.553 | 10.371 | 18.263 | 37.166 | 18.897 | 10.192 | 6.396 | 2.838 |
| 5 | 0.365 | 0.417 | 0.423 | 4.607 | 8.391 | 10.677 | 18.669 | 36.887 | 18.573 | 10.456 | 6.367 | 2.132 |
| 6 | 0.386 | 0.414 | 0.415 | 5.115 | 8.309 | 10.894 | 18.921 | 36.437 | 18.725 | 10.08 | 6.245 | 1.866 |
| 7 | 0.408 | 0.409 | 0.421 | 5.248 | 8.546 | 10.993 | 20.989 | 35.988 | 18.57 | 9.877 | 6.167 | 2.096 |
| 8 | 0.417 | 0.397 | 0.414 | 5.175 | 8.732 | 10.973 | 22.392 | 35.838 | 18.533 | 9.798 | 5.95 | 2.146 |
| 9 | 0.308 | 0.395 | 0.392 | 5.358 | 8.837 | 12.237 | 24.439 | 35.224 | 17.871 | 9.843 | 5.907 | 2.065 |
| 10 | 0.296 | 0.414 | 0.4 | 5.694 | 8.665 | 12.48 | 25.503 | 34.591 | 16.955 | 9.664 | 5.92 | 2.027 |
| 11 | 0.304 | 0.409 | 0.409 | 5.991 | 8.641 | 12.25 | 25.747 | 34.224 | 16.866 | 9.389 | 5.872 | e2.027 |
| 12 | 0.263 | 0.386 | 0.404 | 6.189 | 8.775 | 11.409 | 26.695 | 33.708 | 16.3 | 8.934 | 5.766 | e2.000 |
| 13 | 0.252 | 0.38 | 0.395 | 6.627 | 9.317 | 11.662 | 28.433 | 32.794 | 15.446 | 8.564 | 5.485 | e1.950 |
| 14 | 0.303 | 0.398 | 0.402 | 7.624 | 10.107 | 12.312 | 30.51 | 31.948 | 15.226 | 8.487 | 5.258 | e1.900 |
| 15 | 0.403 | 0.395 | 0.421 | 7.288 | 9.848 | 12.031 | 30.841 | 31.43 | 14.998 | 8.351 | 5.176 | e1.850 |
| 16 | 0.28 | 0.397 | 0.415 | 7.279 | 9.644 | 12.483 | 31.874 | 30.622 | 14.051 | 8.128 | 5.138 | e1.800 |
| 17 | 0.272 | 0.394 | 0.411 | 7.936 | 9.811 | 12.888 | 30.816 | 30.204 | 13.816 | 8.072 | 5.076 | 1.769 |
| 18 | 0.328 | 0.393 | 0.371 | 8.459 | 9.476 | 12.922 | 30.603 | 29.804 | 13.803 | 8.127 | 5.034 | 1.815 |
| 19 | 0.256 | 0.39 | 0.357 | 8.056 | 9.117 | 12.999 | 31.271 | 29.468 | 13.76 | 7.733 | 4.991 | e1.800 |
| 20 | 0.25 | 0.396 | 0.365 | 8.081 | 8.927 | 13.186 | 31.496 | 28.422 | 13.525 | 7.307 | 4.927 | 1.755 |
| 21 | 0.25 | 0.4 | 0.396 | 8.134 | 8.761 | 12.252 | 32.202 | 28.168 | 12.895 | 7.18 | 4.761 | e1.700 |
| 22 | 0.25 | 0.402 | 0.609 | 7.704 | 8.675 | 11.848 | 32.657 | 26.857 | 12.486 | 7.122 | 4.671 | e1.550 |
| 23 | 0.25 | 0.396 | 0.764 | 7.942 | 8.684 | 12.292 | 33.203 | 24.518 | 12.474 | 7.063 | 4.732 | e1.400 |
| 24 | 0.25 | 0.393 | 0.653 | 8.319 | 8.727 | 12.662 | 33.222 | 23.881 | 12.284 | 7.368 | 4.75 | 1.287 |
| 25 | 0.252 | 0.407 | 0.647 | 8.436 | 8.536 | 13.614 | 34.418 | 24.046 | 12.158 | 7.452 | 4.717 | 1.213 |
| 26 | 0.28 | 0.399 | 0.655 | 8.178 | 8.931 | 12.72 | 35.41 | 24.402 | 12.259 | 7.622 | 4.415 | e1.213 |
| 27 | 0.31 | 0.4 | 0.598 | 7.986 | 9.642 | 13.569 | 35.782 | 23.122 | 11.924 | 7.554 | 4.116 | 1.182 |
| 28 | 0.258 | 0.391 | 0.769 | 7.997 | 10.732 | 14.065 | 37.157 | 21.319 | 11.463 | 7.013 | 4.315 | 1.2 |
| 29 | 0.25 | 0.391 | 0.915 | 7.704 | --- | 13.667 | 37.964 | 20.533 | 11.273 | 6.995 | 4.358 | 1.2 |
| 30 | 0.25 | 0.374 | 0.823 | 8.154 | --- | 13.714 | 38.208 | 20.27 | 11.273 | 6.934 | 4.041 | 1.327 |
| 31 | 0.25 | --- | 4.6 | 7.92 | --- | 14.166 | --- | 20.224 | --- | 7.128 | 3.36 | --- |
| TOTAL | 9.838 | 11.886 | 19.546 | 211.899 | 250.732 | 379.795 | 841.241 | 935.189 | 455.427 | 265.556 | 163.401 | 56.406 |
| MEAN | 0.317 | 0.396 | 0.631 | 6.835 | 8.955 | 12.251 | 28.041 | 30.167 | 15.181 | 8.566 | 5.271 | 1.88 |
| MAX | 0.538 | 0.417 | 4.6 | 8.459 | 10.732 | 14.166 | 38.208 | 37.855 | 20.006 | 11.25 | 6.599 | 3.207 |
| MIN | 0.25 | 0.321 | 0.357 | 4.256 | 7.974 | 10.371 | 13.841 | 20.224 | 11.273 | 6.934 | 3.36 | 1.182 |

e Estimated

# 2005-2006 Overburden Seep Flows

1 U.S. DEPARTMENT OF THE INTERIOR - U.S. GEOLOGICAL SURVEY - WATER RESOURCES

STATION NUMBER 103087892 ASPEN C OVERBURDEN SEEP NR MARKLEEVILLE CA STREAM SOURCE AGENCY USGS STATE 06 COUNTY 003

LATITUDE 384245 LONGITUDE 1193911 NAD27 DRAINAGE AREA .06* CONTRIBUTING DRAINAGE AREA DATUM 7100 NGVD29

Date Processed: 2007-01-02 10:44 By glrock

Lowest aging status in period is APPROVED

DD #4

Discharge, gallons per minute

WATER YEAR OCTOBER 2005 TO SEPTEMBER 2006

DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | e11.150 | 10.693 | 14.862 | 15.515 | 13.435 | 14.7 | e16.100 | 26.328 | 21.46 | 19.817 | 14.361 | 14.385 |
| 2 | e11.150 | 10.308 | 11.608 | 14.232 | 13.823 | 14.539 | e16.200 | 25.961 | 21.791 | 19.756 | 13.97 | 14.407 |
| 3 | 11.164 | 9.864 | 8.992 | 12.854 | 13.121 | 14.567 | e16.800 | 25.285 | 21.525 | 19.595 | 13.934 | 14.395 |
| 4 | 10.989 | 9.651 | 8.699 | 12.298 | 13.21 | 14.509 | e17.500 | 24.895 | 21.466 | 19.658 | 14.114 | 14.426 |
| 5 | 10.936 | 9.296 | 8.614 | 12.031 | 12.565 | 14.809 | e17.789 | 24.544 | 21.486 | 19.653 | 14.059 | 13.957 |
| 6 | 10.952 | 9.811 | 8.491 | 12.169 | 12.425 | 14.804 | e17.869 | 24.397 | 21.325 | 19.556 | 13.839 | 13.011 |
| 7 | 11.18 | 10.619 | 8.54 | 11.986 | 12.402 | 14.67 | 17.87 | 24.196 | 21.19 | 19.288 | 13.813 | 13.171 |
| 8 | 11.089 | 10.488 | 8.423 | 11.622 | 12.299 | 14.777 | 18.24 | 24.169 | 21.152 | 19.342 | 14.562 | 12.97 |
| 9 | 10.925 | 10.308 | 8.38 | 11.504 | 12.348 | 15.008 | 18.601 | 23.885 | 21.042 | 19.139 | 13.645 | 12.745 |
| 10 | 11.018 | 10.079 | 8.307 | 11.731 | 12.316 | 14.901 | 19.242 | 23.785 | 21.023 | 18.567 | 13.474 | 12.669 |
| 11 | 11.08 | 9.858 | 8.308 | 12.175 | 12.29 | 14.619 | 19.6 | 23.659 | 20.964 | 18.12 | 13.851 | 12.634 |
| 12 | 10.933 | 9.653 | 8.295 | 12.097 | 12.369 | 14.605 | 20.221 | 23.741 | 20.939 | 17.949 | 13.836 | 12.592 |
| 13 | 10.901 | 9.72 | 8.234 | 12.657 | 12.454 | 14.692 | 20.852 | 23.511 | 20.999 | 17.603 | 14.041 | e12.550 |
| 14 | 10.952 | 9.563 | 8.128 | 12.696 | 12.575 | 14.851 | 23.028 | 23.359 | 20.78 | 17.356 | 14.037 | e12.550 |
| 15 | 11.123 | 9.296 | 8.094 | 12.478 | 12.245 | 14.922 | 23.976 | 23.294 | 20.863 | 16.983 | 14.226 | e12.550 |
| 16 | 10.882 | 9.167 | 8.105 | 12.354 | 12.306 | 14.958 | 25.694 | 23.474 | 20.552 | 16.81 | 14.547 | e12.550 |
| 17 | 10.927 | 9.032 | 8.097 | 12.627 | 12.146 | 14.936 | 25.394 | 23.334 | 20.385 | 16.715 | 14.324 | e12.550 |
| 18 | 11.076 | 8.906 | 8.934 | 12.809 | 12.345 | 15.025 | 24.683 | 23.013 | 20.246 | 16.669 | 14.206 | e12.550 |
| 19 | 10.86 | 8.903 | 8.82 | 12.552 | 12.189 | 14.949 | 24.697 | 23.089 | 20.298 | 16.245 | 14.325 | e12.550 |
| 20 | 10.764 | 8.913 | 8.696 | 12.437 | 12.173 | 15.007 | 24.665 | 22.885 | 20.305 | 17.088 | 14.425 | e12.550 |
| 21 | 10.82 | 8.854 | 10.884 | 12.49 | 12.107 | 14.996 | 25.621 | 23.498 | 20.242 | 16.123 | 14.229 | e12.550 |
| 22 | 10.872 | 8.765 | 12.812 | 12.463 | 12.115 | 14.947 | e26.068 | 22.988 | 20.071 | 15.675 | 14.214 | e12.550 |
| 23 | 10.935 | 8.817 | 9.891 | 12.441 | 12.193 | e15.000 | e26.830 | 22.415 | 20.201 | 15.442 | 14.265 | e12.550 |
| 24 | 11.165 | 8.891 | 9.279 | 12.527 | 12.594 | e15.000 | e27.560 | 22.197 | 20.006 | 15.329 | 14.218 | e12.550 |
| 25 | 11.288 | 9.416 | 9.396 | 12.698 | 12.809 | e15.000 | e27.725 | 22.427 | 19.985 | 14.936 | 14.444 | e12.550 |
| 26 | 11.206 | 8.623 | 9.179 | 12.645 | 13.288 | e15.100 | e27.747 | 22.343 | 20.049 | 14.903 | 14.433 | e12.550 |
| 27 | 11.398 | 8.467 | 10.096 | 12.544 | 14.169 | e15.100 | e27.758 | 22.414 | 20.107 | 14.669 | 14.324 | e12.550 |
| 28 | 11.197 | 8.702 | 10.86 | 12.573 | 15.029 | e15.400 | e27.736 | 21.968 | 20.408 | 14.674 | 14.219 | e12.550 |
| 29 | 10.98 | 9.278 | 9.28 | 12.917 | --- | 15.68 | 27.662 | 21.709 | 20.043 | 14.509 | 14.357 | e12.550 |
| 30 | 10.782 | 8.931 | 17.185 | 13.33 | --- | 15.766 | 27.078 | 21.502 | 19.976 | 14.41 | 14.341 | e12.550 |
| 31 | 10.866 | --- | 142.82 | 13.003 | --- | e15.900 | --- | 21.37 | --- | 14.376 | 14.579 | --- |
| TOTAL | 341.56 | 282.872 | 430.309 | 390.455 | 355.34 | 463.737 | 680.806 | 725.635 | 620.879 | 530.955 | 439.212 | 387.262 |
| MEAN | 11.018 | 9.429 | 13.881 | 12.595 | 12.691 | 14.959 | 22.694 | 23.408 | 20.696 | 17.128 | 14.168 | 12.909 |
| MAX | 11.398 | 10.693 | 142.82 | 15.515 | 15.029 | 15.9 | 27.758 | 26.328 | 21.791 | 19.817 | 14.579 | 14.426 |
| MIN | 10.764 | 8.467 | 8.094 | 11.504 | 12.107 | 14.509 | 16.1 | 21.37 | 19.976 | 14.376 | 13.474 | 12.55 |

e Estimated

# 2005-2006 Channel Under-drain Flows

1 U.S. DEPARTMENT OF THE INTERIOR - U.S. GEOLOGICAL SURVEY - WATER RESOURCES

STATION NUMBER 103087885 LEVIATHAN C CHANNEL UNDERDRAIN NR MARKLEEVILLE CA SOURCE AGENCY USGS STATE 06 COUNTY 003

LATITUDE 384234 LONGITUDE 1193941 NAD27 DRAINAGE AREA CONTRIBUTING DRAINAGE AREA DATUM 6800 NGVD29

Date Processed: 2007-01-19 14:26 By glrock

Lowest aging status in period is WORKING

DD #3

Discharge, gallons per minute

WATER YEAR OCTOBER 2005 TO SEPTEMBER 2006

DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | e10.142 | 20.907 | 17.413 | 33.61 | 29.621 | 36.411 | 28.855 | 38.463 | 40.247 | 42.367 | --- | 3.28 |
| 2 | 22.825 | 20.533 | 17.487 | 30.865 | 29.877 | 36.44 | 28.881 | 37.49 | 40.054 | 42.287 | --- | 56.738 |
| 3 | 22.814 | 19.902 | 22.311 | 28.846 | 29.34 | 36.47 | 28.9 | 37.227 | 40.425 | 42.061 | --- | 5.295 |
| 4 | 23.313 | 19.666 | 29.335 | 28.406 | 30.261 | 36.145 | 30.277 | 35.364 | 40.297 | 42.043 | --- | 6.214 |
| 5 | 23.434 | 19.752 | 19.233 | 28.392 | 30.304 | 36.176 | 32.801 | 37.337 | 40.473 | 42.043 | --- | 1.307 |
| 6 | 24.59 | 19.516 | 18.478 | 28.953 | 30.297 | 36.352 | 30.058 | 36.495 | 40.678 | 36.167 | --- | 0 |
| 7 | 24.182 | 19.431 | 20.255 | 29.26 | 30.409 | 36.145 | 28.673 | 35.6 | 40.279 | 40.262 | 0 | 0 |
| 8 | 23.786 | 19.431 | 21.759 | 29.888 | 27.982 | 35.644 | 29.207 | 36.241 | 40.02 | 38.382 | 0 | 0 |
| 9 | 23.81 | 19.349 | 22.553 | 30.515 | 28.056 | 35.02 | 29.649 | 36.158 | 40.022 | 39.795 | 37.956 | 0 |
| 10 | 22.854 | 19.238 | 21.645 | 30.568 | 28.543 | 33.668 | 30.114 | 36.308 | 40.444 | 40.319 | 36.236 | 0 |
| 11 | 21.987 | 19.359 | 21.421 | 30.835 | 28.798 | 33.367 | 31.043 | 36.765 | 40.088 | --- | 35.54 | 0 |
| 12 | 23.508 | 19.389 | 21.1 | 30.675 | 29.687 | 33.363 | 32.627 | 37.15 | 40.486 | --- | 0 | 0 |
| 13 | 23.906 | 19.409 | 20.95 | 30.862 | 29.874 | 34.053 | 33.007 | 37.366 | 40.195 | --- | 0 | 35.889 |
| 14 | 98.035 | 19.248 | 19.634 | 30.942 | 31.518 | 35.892 | 33.526 | 37.583 | 42.074 | --- | 0 | 33.317 |
| 15 | 157.57 | 18.856 | 18.836 | 30.942 | 33.61 | 35.381 | 33.759 | 37.227 | 41.474 | --- | 0 | 31.535 |
| 16 | 74.063 | 19.077 | 17.477 | 30.942 | 31.546 | 33.751 | 34.007 | 37.043 | 41.315 | --- | 0 | 30.872 |
| 17 | 25.203 | 19.007 | 17.477 | 30.97 | 30.942 | 33.717 | 35.305 | 37.088 | 43.156 | --- | 0 | 30.923 |
| 18 | 22.859 | 19.047 | 21.693 | 31.027 | 31.209 | 33.586 | e35.850 | 37.799 | 41.587 | --- | 0 | 21.131 |
| 19 | 22.212 | 19.128 | 27.695 | 30.942 | 33.498 | 33.809 | e36.302 | 37.428 | 40.694 | --- | 42.287 | 0 |
| 20 | 22.054 | 19.198 | 24.948 | 30.942 | 30.859 | 32.949 | 36.831 | 37.847 | 40.916 | --- | 40.473 | 0 |
| 21 | 21.94 | 18.896 | 26.128 | 33.138 | 26.352 | 32.732 | 38.866 | 37.134 | 40.616 | --- | 39.605 | 0 |
| 22 | 22.031 | 18.805 | 22.873 | 30.975 | 27.213 | 32.709 | 39.632 | 36.964 | 42.092 | --- | 39.835 | 0 |
| 23 | 22.076 | 18.493 | 23.347 | 31.167 | 35.37 | 33.67 | 40.052 | 38.286 | 42.547 | --- | 37.02 | 0 |
| 24 | 21.645 | 18.614 | 23.642 | 30.641 | 40.177 | 33.684 | 40.991 | 38.61 | 42.481 | --- | 0 | 0 |
| 25 | 21.335 | 18.252 | 23.882 | 30.195 | 38.465 | 33.957 | 40.318 | 63.574 | 42.452 | --- | 4.211 | 0 |
| 26 | 21.399 | 17.477 | 24.83 | 30.37 | 33.115 | 33.895 | 41.281 | 54.354 | 42.447 | --- | 3.843 | 0 |
| 27 | 20.961 | 17.477 | 25.454 | 30.381 | 33.582 | 31.835 | 40.565 | 47.016 | 42.447 | --- | 3.921 | 0 |
| 28 | 20.458 | 17.478 | 25.826 | 30.088 | 35.423 | 28.602 | 40.431 | 48.227 | 42.286 | --- | 4.393 | 0 |
| 29 | 20.479 | 17.459 | 24.962 | 30.622 | --- | 27.86 | 42.984 | 48.454 | 42.483 | --- | 3.873 | 0 |
| 30 | 20.336 | 17.497 | 26.686 | 30.515 | --- | 27.937 | 40.85 | 47.125 | 42.334 | --- | 3.273 | 0 |
| 31 | 20.768 | --- | 30.204 | 31.413 | --- | 28.848 | --- | 40.237 | --- | --- | 3.303 | --- |
| TOTAL | 946.575 | 569.891 | 699.534 | 947.887 | 875.928 | 1044.068 | 1045.642 | 1239.96 | 1237.109 | --- | --- | 256.501 |
| MEAN | 30.535 | 18.996 | 22.566 | 30.577 | 31.283 | 33.68 | 34.855 | 39.999 | 41.237 | --- | --- | 8.55 |
| MAX | 157.57 | 20.907 | 30.204 | 33.61 | 40.177 | 36.47 | 42.984 | 63.574 | 43.156 | --- | --- | 56.738 |
| MIN | 10.142 | 17.459 | 17.413 | 28.392 | 26.352 | 27.86 | 28.673 | 35.364 | 40.02 | --- | --- | 0 |

e Estimated

# 2005-2006 Station 1 Flows

1 U.S. DEPARTMENT OF THE INTERIOR - U.S. GEOLOGICAL SURVEY - WATER RESOURCES

STATION NUMBER 10308783 LEVIATHAN C AB MINE NR MARKLEEVILLE CA SOURCE AGENCY USGS STATE 06 COUNTY 003
LATITUDE 384205 LONGITUDE 1193920 NAD27 DRAINAGE AREA 4.16* CONTRIBUTING DRAINAGE AREA DATUM 7200 NGVD29
Date Processed: 2007-01-02 10:43 By glrock
Lowest aging status in period is APPROVED
DD #2
Discharge, cubic feet per second
WATER YEAR OCTOBER 2005 TO SEPTEMBER 2006
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.06 | 0.08 | 0.38 | 2.6 | 0.25 | 1.6 | 0.72 | 17 | 1.3 | 0.35 | 0.08 | e0.04 |
| 2 | 0.06 | 0.08 | e0.20 | 1.2 | 0.32 | 1.1 | 0.73 | 15 | 1.3 | 0.31 | 0.07 | e0.03 |
| 3 | 0.07 | 0.08 | e0.10 | 0.99 | 0.3 | 1.2 | 2.1 | 12 | 1.3 | 0.28 | 0.07 | e0.04 |
| 4 | 0.07 | 0.09 | e0.07 | 0.88 | 0.35 | 1 | 2.8 | 8.9 | 1.1 | 0.24 | 0.08 | e0.03 |
| 5 | 0.08 | 0.09 | e0.07 | 0.76 | 0.35 | 0.89 | 2.2 | 8.3 | 1.2 | 0.27 | 0.14 | e0.04 |
| 6 | 0.08 | 0.08 | e0.07 | 0.78 | 0.38 | 0.87 | 2 | 8.5 | 0.99 | 0.31 | 0.13 | e0.04 |
| 7 | 0.07 | 0.09 | e0.07 | 0.84 | 0.37 | 0.78 | 3 | 7.9 | 1.1 | 0.25 | 0.08 | 0.06 |
| 8 | 0.07 | 0.09 | e0.07 | e0.63 | 0.35 | 0.81 | 3.2 | 8.8 | 0.98 | 0.25 | 0.07 | 0.05 |
| 9 | 0.07 | e0.09 | 0.08 | e0.56 | 0.32 | 0.79 | 4.4 | 7.8 | 0.87 | e0.22 | 0.06 | 0.05 |
| 10 | 0.08 | e0.09 | 0.07 | e0.42 | 0.35 | 0.79 | 4.1 | 8.6 | 0.83 | e0.20 | 0.07 | 0.06 |
| 11 | 0.07 | 0.09 | 0.07 | e0.40 | 0.38 | 0.74 | 3.1 | 8.3 | 0.91 | 0.17 | e0.07 | 0.06 |
| 12 | 0.07 | 0.08 | 0.07 | e0.38 | 0.42 | 0.75 | 3.7 | 7.8 | 0.82 | 0.15 | 0.08 | 0.07 |
| 13 | 0.07 | e0.09 | 0.07 | e0.38 | 0.45 | 0.81 | 5.4 | 8.9 | 0.82 | 0.14 | 0.09 | 0.06 |
| 14 | 0.07 | e0.09 | 0.09 | e0.38 | 0.49 | 0.81 | 5.6 | 6.7 | 0.79 | 0.19 | e0.09 | 0.05 |
| 15 | 0.08 | 0.09 | e0.07 | e0.38 | 0.45 | 0.78 | 5.6 | 6.3 | 0.7 | 0.13 | 0.07 | 0.05 |
| 16 | 0.08 | e0.09 | e0.07 | e0.31 | 0.7 | 0.62 | 5.2 | 6 | 0.8 | 0.12 | e0.06 | 0.04 |
| 17 | 0.08 | 0.09 | e0.14 | e0.29 | 0.4 | e0.40 | 5 | 4.9 | 0.77 | 0.11 | e0.06 | 0.05 |
| 18 | 0.08 | e0.09 | 0.13 | e0.28 | 0.35 | e0.30 | 3.7 | 5.1 | 0.56 | 0.1 | e0.06 | 0.04 |
| 19 | 0.08 | 0.09 | 0.06 | e0.28 | 0.31 | e0.21 | 4.4 | 4.5 | 0.65 | 0.11 | e0.06 | 0.04 |
| 20 | 0.08 | 0.09 | 0.08 | e0.28 | 0.3 | e0.25 | 5.7 | 4.3 | 0.48 | 0.17 | e0.06 | e0.05 |
| 21 | 0.08 | 0.07 | 0.09 | e0.31 | 0.26 | e0.29 | 6.1 | 3.5 | 0.55 | 0.17 | e0.06 | e0.04 |
| 22 | 0.08 | 0.06 | 0.72 | e0.28 | 0.26 | 0.29 | 6.6 | 3.6 | 0.52 | 0.09 | e0.05 | e0.05 |
| 23 | 0.08 | 0.06 | 0.36 | e0.29 | 0.23 | 0.36 | 6.6 | 3 | 0.66 | 0.09 | e0.04 | e0.06 |
| 24 | 0.08 | 0.06 | 0.11 | e0.26 | 0.2 | 0.42 | 7.6 | 2.7 | 0.56 | 0.07 | e0.03 | e0.06 |
| 25 | 0.1 | 0.08 | 0.1 | e0.24 | 0.19 | 0.44 | 8.8 | e3.5 | 0.5 | 0.08 | e0.04 | 0.06 |
| 26 | 0.08 | 0.06 | 0.08 | e0.15 | 0.18 | 0.45 | 11 | 2.8 | 0.45 | 0.07 | e0.05 | 0.07 |
| 27 | 0.09 | e0.05 | 0.07 | e0.12 | 1.2 | 0.58 | 13 | 2.5 | 0.45 | 0.07 | e0.06 | e0.07 |
| 28 | 0.09 | e0.05 | 0.19 | e0.10 | 3.5 | 0.56 | 14 | e2.9 | 0.42 | 0.08 | e0.06 | 0.06 |
| 29 | 0.09 | 0.09 | 0.11 | e0.10 | --- | 0.5 | 16 | 2.1 | 0.33 | 0.08 | e0.04 | 0.07 |
| 30 | 0.08 | e0.07 | 0.53 | e0.15 | --- | 0.58 | 16 | e2.4 | 0.37 | 0.07 | e0.04 | e0.08 |
| 31 | 0.09 | --- | e8.3 | e0.19 | --- | 0.71 | --- | 1.9 | --- | 0.07 | e0.03 | --- |
| TOTAL | 2.41 | 2.4 | 12.69 | 15.21 | 13.61 | 20.68 | 178.35 | 196.5 | 23.08 | 5.01 | 2.05 | 1.57 |
| MEAN | 0.08 | 0.08 | 0.41 | 0.49 | 0.49 | 0.67 | 5.95 | 6.34 | 0.77 | 0.16 | 0.07 | 0.05 |
| MAX | 0.1 | 0.09 | 8.3 | 2.6 | 3.5 | 1.6 | 16 | 17 | 1.3 | 0.35 | 0.14 | 0.08 |
| MIN | 0.06 | 0.05 | 0.06 | 0.1 | 0.18 | 0.21 | 0.72 | 1.9 | 0.33 | 0.07 | 0.03 | 0.03 |
| AC-FT | 4.8 | 4.8 | 25 | 30 | 27 | 41 | 354 | 390 | 46 | 9.9 | 4.1 | 3.1 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1999 - 2006, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 0.08 | 0.12 | 0.16 | 0.19 | 0.21 | 0.59 | 2.26 | 2.62 | 0.39 | 0.11 | 0.06 | 0.06 |
| MAX | 0.11 | 0.2 | 0.41 | 0.49 | 0.49 | 0.97 | 5.94 | 6.34 | 0.8 | 0.21 | 0.1 | 0.11 |
| (WY) | 2000 | 1999 | 2006 | 2006 | 2006 | 2005 | 2006 | 2006 | 1999 | 2005 | 1999 | 1999 |
| MIN | 0.04 | 0.08 | 0.07 | 0.09 | 0.08 | 0.29 | 0.47 | 0.18 | 0.08 | 0.05 | 0.03 | 0.03 |
| (WY) | 2002 | 2006 | 2003 | 2001 | 2001 | 2002 | 2001 | 2001 | 2001 | 2004 | 2001 | 2004 |

| SUMMARY STATISTICS | FOR 2005 CALENDAR YEAR | | FOR 2006 WATER YEAR | | WATER YEARS 1999 - 2006 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 404.93 | | 473.56 | | | |
| ANNUAL MEAN | 1.11 | | 1.3 | | 0.51 | |
| HIGHEST ANNUAL MEAN | | | | | 1.3 | 2006 |
| LOWEST ANNUAL MEAN | | | | | 0.13 | 2001 |
| HIGHEST DAILY MEAN | 13 | 16-May | 17 | 1-May | 17 | 1-May 2006 |
| LOWEST DAILY MEAN | 0.03 | 25-Aug | 0.03 | 24-Aug | 0.01 | 15-Sep 2004 |
| ANNUAL SEVEN-DAY MINIMUM | 0.03 | 25-Aug | 0.04 | 29-Aug | 0.02 | 26-Sep 2004 |
| MAXIMUM PEAK FLOW | | | 40 | 31-Dec | 40 | 31-Dec 2005 |
| MAXIMUM PEAK STAGE | | | 5.09 | 31-Dec | 5.09 | 31-Dec 2005 |
| ANNUAL RUNOFF (AC-FT) | 803 | | 939 | | 371 | |
| 10 PERCENT EXCEEDS | 4.4 | | 4.4 | | 1.1 | |
| 50 PERCENT EXCEEDS | 0.16 | | 0.24 | | 0.11 | |
| 90 PERCENT EXCEEDS | 0.05 | | 0.06 | | 0.04 | |

e Estimated

# 2005-2006 Station 22 Flows

1 U.S. DEPARTMENT OF THE INTERIOR - U.S. GEOLOGICAL SURVEY - WATER RESOURCES

STATION NUMBER 103087891 ASPEN C ABV LEVIATHAN MINE NR MARKLEEVILLE CA STREAM SOURCE AGENCY USGS STATE 06 COUNTY 003
LATITUDE 384231 LONGITUDE 1193855 NAD83 DRAINAGE AREA .55* CONTRIBUTING DRAINAGE AREA DATUM 7190 NGVD29
Date Processed: 2007-01-02 10:43 By glrock
Lowest aging status in period is APPROVED
DD #2
Discharge, cubic feet per second
WATER YEAR OCTOBER 2005 TO SEPTEMBER 2006
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.21 | e0.23 | e0.34 | 0.43 | 0.36 | 0.26 | 0.18 | 0.37 | 0.26 | 0.21 | 0.19 | 0.19 |
| 2 | 0.22 | e0.24 | e0.38 | 0.38 | 0.23 | 0.25 | 0.18 | 0.35 | 0.25 | 0.2 | 0.19 | 0.2 |
| 3 | 0.2 | e0.26 | e0.23 | 0.46 | 0.14 | 0.24 | 0.39 | 0.31 | 0.25 | 0.2 | 0.2 | 0.2 |
| 4 | 0.19 | e0.26 | e0.17 | 0.37 | 0.21 | 0.21 | 0.45 | 0.28 | 0.26 | 0.2 | 0.2 | 0.23 |
| 5 | 0.21 | e0.25 | e0.16 | 0.31 | 0.21 | 0.21 | 0.41 | 0.26 | 0.26 | 0.2 | 0.21 | 0.24 |
| 6 | 0.25 | e0.23 | e0.16 | 0.35 | 0.23 | 0.19 | 0.4 | 0.26 | 0.26 | 0.21 | 0.22 | 0.21 |
| 7 | 0.21 | e0.23 | e0.16 | 0.35 | 0.2 | 0.17 | 0.46 | 0.27 | 0.26 | 0.2 | 0.2 | 0.25 |
| 8 | 0.2 | e0.23 | e0.16 | 0.33 | 0.23 | 0.16 | 0.45 | 0.26 | 0.26 | 0.2 | 0.19 | 0.32 |
| 9 | 0.19 | e0.25 | e0.16 | 0.3 | 0.23 | 0.2 | 0.43 | 0.27 | 0.25 | 0.2 | 0.19 | 0.39 |
| 10 | 0.19 | e0.23 | e0.16 | 0.24 | 0.24 | 0.21 | 0.43 | 0.25 | 0.25 | 0.19 | 0.14 | 0.33 |
| 11 | 0.2 | e0.23 | e0.16 | 0.26 | 0.25 | 0.19 | 0.39 | 0.23 | 0.26 | 0.2 | 0.14 | 0.27 |
| 12 | 0.27 | e0.24 | e0.16 | 0.26 | 0.26 | 0.19 | 0.4 | 0.23 | 0.25 | 0.2 | 0.13 | 0.29 |
| 13 | 0.28 | e0.24 | e0.16 | 0.27 | 0.28 | 0.17 | 0.42 | 0.22 | 0.26 | 0.2 | 0.15 | 0.26 |
| 14 | 0.22 | e0.25 | e0.16 | 0.24 | e0.27 | 0.17 | 0.42 | 0.23 | 0.25 | 0.22 | 0.16 | 0.29 |
| 15 | 0.19 | e0.28 | 0.16 | 0.17 | e0.25 | 0.17 | 0.42 | 0.23 | 0.25 | 0.23 | 0.12 | 0.31 |
| 16 | 0.2 | e0.24 | 0.16 | 0.16 | e0.24 | 0.17 | 0.43 | 0.24 | 0.24 | 0.22 | 0.12 | 0.22 |
| 17 | 0.23 | e0.24 | 0.19 | 0.13 | 0.23 | 0.16 | 0.43 | 0.23 | 0.27 | 0.21 | 0.12 | 0.22 |
| 18 | 0.22 | e0.21 | 0.21 | 0.28 | 0.23 | 0.17 | 0.43 | 0.23 | 0.29 | 0.21 | 0.14 | 0.22 |
| 19 | 0.2 | e0.24 | 0.16 | 0.29 | 0.22 | 0.18 | 0.42 | 0.24 | 0.27 | 0.21 | 0.2 | 0.22 |
| 20 | 0.21 | e0.22 | 0.15 | 0.31 | 0.23 | 0.17 | 0.42 | 0.25 | 0.24 | 0.22 | 0.19 | 0.23 |
| 21 | 0.21 | e0.24 | 0.17 | 0.25 | 0.22 | 0.16 | 0.43 | 0.26 | 0.24 | 0.22 | 0.18 | 0.22 |
| 22 | 0.22 | e0.24 | 0.21 | 0.24 | 0.22 | 0.18 | 0.45 | 0.27 | 0.24 | 0.21 | 0.16 | 0.23 |
| 23 | 0.19 | e0.24 | 0.17 | 0.25 | 0.22 | 0.22 | 0.48 | 0.28 | 0.23 | 0.21 | 0.12 | 0.23 |
| 24 | 0.2 | e0.23 | 0.19 | 0.23 | 0.23 | 0.25 | 0.4 | 0.27 | 0.23 | 0.22 | 0.11 | 0.22 |
| 25 | 0.2 | e0.24 | 0.2 | 0.14 | 0.22 | 0.24 | 0.4 | 0.26 | 0.24 | 0.2 | 0.16 | 0.22 |
| 26 | 0.19 | e0.21 | 0.22 | 0.15 | 0.23 | 0.24 | 0.42 | 0.27 | 0.23 | 0.2 | 0.16 | 0.22 |
| 27 | 0.19 | e0.20 | 0.23 | 0.14 | 0.48 | 0.23 | 0.41 | 0.27 | 0.23 | 0.2 | 0.18 | 0.21 |
| 28 | 0.19 | e0.24 | 0.25 | 0.14 | 0.4 | 0.23 | 0.4 | 0.27 | 0.23 | 0.2 | 0.16 | 0.2 |
| 29 | 0.18 | e0.26 | 0.23 | 0.21 | --- | 0.23 | 0.39 | 0.27 | 0.23 | 0.2 | 0.24 | 0.2 |
| 30 | 0.16 | e0.23 | 0.32 | 0.19 | --- | 0.21 | 0.37 | 0.27 | 0.22 | 0.2 | 0.27 | 0.19 |
| 31 | 0.21 | --- | 0.77 | 0.29 | --- | 0.18 | --- | 0.26 | --- | 0.19 | 0.22 | --- |
| TOTAL | 6.43 | 7.13 | 6.71 | 8.12 | 6.96 | 6.21 | 12.11 | 8.16 | 7.46 | 6.38 | 5.36 | 7.23 |
| MEAN | 0.21 | 0.24 | 0.22 | 0.26 | 0.25 | 0.2 | 0.4 | 0.26 | 0.25 | 0.21 | 0.17 | 0.24 |
| MAX | 0.28 | 0.28 | 0.77 | 0.46 | 0.48 | 0.26 | 0.48 | 0.37 | 0.29 | 0.23 | 0.27 | 0.39 |
| MIN | 0.16 | 0.2 | 0.15 | 0.13 | 0.14 | 0.16 | 0.18 | 0.22 | 0.22 | 0.19 | 0.11 | 0.19 |
| AC-FT | 13 | 14 | 13 | 16 | 14 | 12 | 24 | 16 | 15 | 13 | 11 | 14 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2004 - 2006, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 0.14 | 0.17 | 0.16 | 0.2 | 0.19 | 0.23 | 0.32 | 0.25 | 0.2 | 0.19 | 0.17 | 0.18 |
| MAX | 0.21 | 0.24 | 0.22 | 0.26 | 0.25 | 0.27 | 0.4 | 0.27 | 0.25 | 0.22 | 0.18 | 0.24 |
| (WY) | 2006 | 2006 | 2006 | 2006 | 2006 | 2004 | 2006 | 2005 | 2006 | 2005 | 2005 | 2006 |
| MIN | 0.06 | 0.09 | 0.08 | 0.14 | 0.09 | 0.2 | 0.19 | 0.21 | 0.16 | 0.15 | 0.17 | 0.1 |
| (WY) | 2005 | 2005 | 2005 | 2005 | 2005 | 2006 | 2004 | 2004 | 2004 | 2004 | 2004 | 2004 |

| SUMMARY STATISTICS | FOR 2005 CALENDAR YEAR | | | FOR 2006 WATER YEAR | | WATER YEARS 2004 - 2006 | | |
|---|---|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 78.2 | | | 88.26 | | | | |
| ANNUAL MEAN | 0.21 | | | 0.24 | | 0.2 | | |
| HIGHEST ANNUAL MEAN | | | | | | 0.24 | | 2006 |
| LOWEST ANNUAL MEAN | | | | | | 0.18 | | 2005 |
| HIGHEST DAILY MEAN | 0.77 | Dec | 31 | 0.77 | 31-Dec | 0.77 | 31-Dec | 2005 |
| LOWEST DAILY MEAN | 0.05 | Feb | 10 | 0.11 | 24-Aug | 0.03 | 15-Oct | 2004 |
| ANNUAL SEVEN-DAY MINIMUM | 0.06 | Feb | 10 | 0.13 | 11-Aug | 0.04 | 15-Oct | 2004 |
| MAXIMUM PEAK FLOW | | | | 1.1 | 31-Dec | 1.2 | 19-Mar | 2004 |
| MAXIMUM PEAK STAGE | | | | 4.99 | 31-Dec | 4.99 | 31-Dec | 2005 |
| ANNUAL RUNOFF (AC-FT) | 155 | | | 175 | | 146 | | |
| 10 PERCENT EXCEEDS | 0.31 | | | 0.37 | | 0.29 | | |
| 50 PERCENT EXCEEDS | 0.2 | | | 0.23 | | 0.19 | | |
| 90 PERCENT EXCEEDS | 0.13 | | | 0.16 | | 0.09 | | |

e Estimated

# 2005-2006 Station 4L Creek Flows

1 U.S. DEPARTMENT OF THE INTERIOR - U.S. GEOLOGICAL SURVEY - WATER RESOURCES

STATION NUMBER 103087889 4L C NR MARKLEEVILLE CA STREAM SOURCE AGENCY USGS STATE 06 COUNTY 003

LATITUDE 384239 LONGITUDE 1193947 NAD83 DRAINAGE AREA 1.14* CONTRIBUTING DRAINAGE AREA DATUM 6780 NGVD29

Date Processed: 2007-01-02 10:43 By glrock

Lowest aging status in period is APPROVED

DD #2

Discharge, cubic feet per second

WATER YEAR OCTOBER 2005 TO SEPTEMBER 2006

DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.01 | 0.02 | 0.13 | 1.2 | 0.09 | 0.98 | e0.23 | e2.0 | 0.52 | 0.03 | 0.03 | e0.03 |
| 2 | 0.01 | 0.02 | 0.08 | 0.66 | 0.13 | 0.73 | 0.25 | e5.0 | 0.4 | 0.02 | 0.03 | e0.04 |
| 3 | 0.01 | 0.03 | 0.03 | 0.26 | 0.17 | 0.52 | 1.4 | 3.9 | 0.37 | 0.02 | 0.02 | e0.03 |
| 4 | 0.02 | 0.03 | 0.02 | 0.19 | 0.18 | e0.40 | 1.3 | 7.1 | 0.33 | 0.02 | 0.02 | e0.03 |
| 5 | 0.02 | 0.03 | 0.02 | 0.15 | 0.16 | 0.31 | 0.97 | 7.5 | 0.29 | 0.03 | 0.04 | e0.03 |
| 6 | 0.02 | 0.03 | 0.02 | 0.15 | 0.14 | 0.28 | 0.76 | 7.8 | 0.25 | 0.04 | 0.05 | 0.03 |
| 7 | 0.02 | 0.03 | 0.03 | 0.16 | 0.13 | 0.22 | 0.93 | 8.1 | 0.21 | 0.04 | 0.04 | 0.03 |
| 8 | 0.02 | 0.03 | 0.03 | 0.14 | e0.14 | 0.21 | 1 | 8.2 | 0.18 | 0.06 | 0.03 | 0.03 |
| 9 | 0.02 | 0.03 | 0.03 | 0.12 | 0.14 | 0.2 | 0.94 | 7.9 | 0.16 | 0.07 | 0.03 | 0.04 |
| 10 | 0.02 | 0.04 | 0.03 | 0.11 | 0.13 | e0.22 | 0.86 | 6.7 | 0.15 | 0.05 | 0.02 | 0.03 |
| 11 | 0.02 | 0.04 | 0.03 | 0.11 | 0.15 | e0.20 | 0.79 | 6.4 | 0.14 | 0.05 | 0.02 | 0.03 |
| 12 | 0.01 | 0.04 | 0.03 | 0.11 | 0.18 | e0.16 | 0.93 | 5.8 | 0.12 | 0.05 | 0.03 | 0.03 |
| 13 | 0.01 | 0.04 | 0.03 | 0.11 | 0.2 | 0.14 | 1.4 | 4.9 | 0.12 | 0.05 | 0.03 | 0.02 |
| 14 | 0.01 | 0.04 | 0.03 | 0.11 | 0.22 | 0.15 | 1.8 | 4.3 | 0.12 | 0.05 | 0.03 | 0.02 |
| 15 | 0.01 | 0.04 | 0.03 | e0.10 | e0.20 | 0.13 | 1.7 | 4 | 0.11 | 0.04 | 0.02 | 0.03 |
| 16 | 0.02 | 0.04 | 0.03 | e0.10 | e0.15 | 0.13 | 1.4 | 5 | 0.1 | 0.04 | 0.03 | 0.03 |
| 17 | 0.02 | 0.04 | 0.03 | 0.09 | e0.11 | 0.13 | 1 | 2.6 | 0.09 | 0.03 | 0.04 | 0.03 |
| 18 | 0.02 | 0.04 | 0.04 | 0.09 | 0.11 | 0.12 | 0.99 | 2 | 0.07 | 0.03 | e0.06 | 0.03 |
| 19 | 0.01 | 0.04 | 0.04 | e0.09 | 0.11 | 0.12 | 1.2 | 1.8 | 0.06 | 0.04 | e0.06 | 0.02 |
| 20 | 0.01 | 0.04 | 0.03 | e0.09 | 0.09 | 0.12 | 1.8 | 1.6 | 0.05 | 0.05 | e0.06 | 0.03 |
| 21 | 0.01 | 0.04 | 0.06 | 0.09 | 0.09 | 0.11 | 2 | 1.6 | 0.05 | 0.06 | e0.06 | 0.02 |
| 22 | 0.01 | 0.05 | 0.1 | 0.08 | 0.08 | 0.11 | 2.1 | 1.5 | 0.05 | 0.04 | e0.05 | 0.02 |
| 23 | 0.01 | 0.05 | 0.06 | 0.08 | 0.08 | 0.14 | 2.5 | 1.3 | 0.05 | 0.04 | e0.05 | 0.03 |
| 24 | 0.01 | 0.05 | 0.04 | 0.08 | 0.08 | 0.32 | 3.3 | 1.2 | 0.04 | 0.03 | e0.04 | 0.02 |
| 25 | 0.02 | 0.06 | 0.04 | 0.08 | 0.07 | 0.35 | 4.7 | 1.1 | 0.04 | 0.03 | e0.04 | 0.02 |
| 26 | 0.02 | 0.05 | 0.04 | 0.08 | 0.08 | e0.31 | 4 | 0.97 | 0.04 | 0.03 | e0.04 | 0.02 |
| 27 | 0.03 | 0.05 | 0.04 | 0.08 | 1.5 | 0.33 | 4.3 | 1.1 | 0.04 | 0.02 | e0.04 | 0.01 |
| 28 | 0.03 | 0.07 | 0.14 | 0.08 | 2.3 | 0.31 | 3.6 | 1 | 0.04 | 0.02 | e0.03 | 0.01 |
| 29 | 0.03 | 0.09 | 0.08 | 0.08 | --- | 0.25 | 2.7 | 0.92 | 0.03 | 0.02 | e0.03 | 0.01 |
| 30 | 0.03 | 0.08 | 0.2 | 0.08 | --- | 0.23 | 4.1 | 0.79 | 0.03 | 0.02 | e0.03 | 0.01 |
| 31 | 0.03 | --- | 5.2 | 0.08 | --- | e0.23 | --- | 0.68 | --- | 0.03 | e0.03 | --- |
| TOTAL | 0.54 | 1.28 | 6.74 | 5.03 | 7.21 | 8.16 | 54.95 | 114.76 | 4.25 | 1.15 | 1.13 | 0.76 |
| MEAN | 0.02 | 0.04 | 0.22 | 0.16 | 0.26 | 0.26 | 1.83 | 3.7 | 0.14 | 0.04 | 0.04 | 0.03 |
| MAX | 0.03 | 0.09 | 5.2 | 1.2 | 2.3 | 0.98 | 4.7 | 8.2 | 0.52 | 0.07 | 0.06 | 0.04 |
| MIN | 0.01 | 0.02 | 0.02 | 0.08 | 0.07 | 0.11 | 0.23 | 0.68 | 0.03 | 0.02 | 0.02 | 0.01 |
| AC-FT | 1.1 | 2.5 | 13 | 10 | 14 | 16 | 109 | 228 | 8.4 | 2.3 | 2.2 | 1.5 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2004 - 2006, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 0.01 | 0.03 | 0.11 | 0.09 | 0.12 | 0.43 | 1.07 | 1.83 | 0.17 | 0.03 | 0.02 | 0.01 |
| MAX | 0.02 | 0.04 | 0.22 | 0.16 | 0.26 | 0.66 | 1.83 | 3.7 | 0.33 | 0.04 | 0.04 | 0.03 |
| (WY) | 2006 | 2006 | 2006 | 2006 | 2006 | 2004 | 2006 | 2006 | 2005 | 2005 | 2006 | 2006 |
| MIN | 0 | 0.02 | 0.03 | 0.03 | 0.04 | 0.26 | 0.54 | 0.08 | 0.04 | 0.01 | 0 | 0 |
| (WY) | 2005 | 2005 | 2004 | 2004 | 2004 | 2006 | 2004 | 2004 | 2004 | 2004 | 2004 | 2004 |

| SUMMARY STATISTICS | FOR 2005 CALENDAR YEAR | | FOR 2006 WATER YEAR | | WATER YEARS 2004 - 2006 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 113.98 | | 205.96 | | | |
| ANNUAL MEAN | 0.31 | | 0.56 | | 0.33 | |
| HIGHEST ANNUAL MEAN | | | | | 0.56 | 2006 |
| LOWEST ANNUAL MEAN | | | | | 0.12 | 2004 |
| HIGHEST DAILY MEAN | 5.2 | 31-Dec | 8.2 | 8-May | 8.2 | May 8 2006 |
| LOWEST DAILY MEAN | 0 | 26-Aug | 0.01 | 1-Oct | 0 | Oct 1 2003 |
| ANNUAL SEVEN-DAY MINIMUM | 0 | 1-Sep | 0.01 | 18-Oct | 0 | Jul 25 2004 |
| MAXIMUM PEAK FLOW | | | 15 | 31-Dec | 15 | Dec 31 2005 |
| MAXIMUM PEAK STAGE | | | 4.75 | 31-Dec | 4.75 | Dec 31 2005 |
| ANNUAL RUNOFF (AC-FT) | 226 | | 409 | | 238 | |
| 10 PERCENT EXCEEDS | 1 | | 1.5 | | 0.94 | |
| 50 PERCENT EXCEEDS | 0.06 | | 0.06 | | 0.04 | |
| 90 PERCENT EXCEEDS | 0.01 | | 0.02 | | 0 | |

e Estimated

# 2005-2006 Station 15 Flows

1 U.S. DEPARTMENT OF THE INTERIOR - U.S. GEOLOGICAL SURVEY - WATER RESOURCES

STATION NUMBER 10308789 LEVIATHAN C AB ASPEN C NR MARKLEEVILLE CA STREAM SOURCE AGENCY USGS STATE 06 COUNTY 003
LATITUDE 384301 LONGITUDE 1193933 NAD27 DRAINAGE AREA 7.07* CONTRIBUTING DRAINAGE AREA DATUM 6700 NGVD29
Date Processed: 2007-01-02 10:43 By glrock
Lowest aging status in period is APPROVED
DD #2
Discharge, cubic feet per second
WATER YEAR OCTOBER 2005 TO SEPTEMBER 2006
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.43 | 0.2 | e0.66 | 8.9 | 0.47 | 10 | 2.3 | 23 | 3 | 1.2 | 0.54 | 0.09 |
| 2 | 0.47 | 0.19 | e0.40 | 4.2 | e0.63 | 4.5 | 2.7 | 20 | 3.2 | 1.3 | 0.5 | 0.08 |
| 3 | 0.4 | 0.2 | e0.20 | 2.3 | e0.65 | 3.2 | 8.6 | 18 | 2.5 | 2 | 0.48 | 0.05 |
| 4 | 0.48 | 0.21 | e0.13 | 1.7 | e0.69 | e2.5 | 7.8 | 19 | 2.3 | 1.4 | 0.42 | 0.05 |
| 5 | 0.42 | 0.2 | e0.12 | 1.1 | e0.75 | 2.4 | 4.9 | 17 | 2.2 | 1.1 | 0.45 | 0.05 |
| 6 | 0.14 | 0.21 | e0.16 | 1.2 | e0.79 | 1.9 | 4.4 | 17 | 2 | 0.85 | 0.67 | 0.05 |
| 7 | 0.12 | 0.2 | 0.23 | 1.2 | e0.77 | 1.7 | 6.3 | 19 | 2 | 0.83 | 0.56 | 0.05 |
| 8 | 0.12 | 0.2 | 0.25 | 0.83 | e0.81 | 1.6 | 6.7 | 18 | 1.9 | 0.76 | 0.42 | 0.06 |
| 9 | 0.11 | 0.21 | 0.24 | 0.77 | e0.79 | 1.6 | 6 | 18 | 1.8 | 0.65 | 0.53 | 0.05 |
| 10 | 0.12 | 0.2 | 0.24 | 0.68 | e0.81 | e1.4 | 5.4 | 18 | 1.7 | 1.4 | 0.58 | 0.06 |
| 11 | 0.11 | 0.2 | 0.23 | 0.89 | e0.86 | e1.4 | 5.2 | 16 | 1.7 | 0.99 | 0.51 | 0.06 |
| 12 | 0.11 | 0.19 | 0.23 | 0.88 | 0.94 | e1.4 | 7.3 | 16 | 1.9 | 0.98 | 0.32 | 0.05 |
| 13 | 0.11 | 0.2 | 0.24 | 0.9 | 1 | 1.5 | 10 | 15 | 1.6 | 0.89 | 0.18 | 0.11 |
| 14 | 0.25 | 0.2 | 0.24 | e0.70 | 1.1 | e1.5 | 12 | 14 | 1.5 | 0.62 | 0.13 | 0.23 |
| 15 | 0.51 | e0.16 | 0.26 | e0.70 | e1.1 | e1.5 | 13 | 14 | 1.5 | 0.53 | 0.11 | 0.27 |
| 16 | 0.28 | e0.17 | 0.25 | e0.66 | e1.4 | 1.2 | 12 | 14 | 1.4 | 0.55 | 0.1 | 0.31 |
| 17 | 0.17 | e0.18 | e0.25 | e0.57 | e1.2 | e0.50 | 9.2 | 12 | 1.3 | 0.62 | 0.1 | 0.3 |
| 18 | 0.15 | e0.19 | e0.34 | 0.64 | 1.1 | e0.40 | 8.6 | 11 | 1.2 | 0.67 | 0.09 | 0.22 |
| 19 | 0.15 | e0.19 | e0.38 | e0.58 | e0.82 | e0.40 | 9.9 | 9.3 | 1.2 | 0.6 | 0.19 | 0.11 |
| 20 | 0.16 | e0.19 | 0.38 | e0.52 | e0.55 | e0.50 | 13 | 8.2 | 1.1 | 0.6 | 0.26 | 0.12 |
| 21 | 0.16 | e0.20 | e0.56 | e0.53 | e0.48 | e0.40 | 15 | 8.1 | 1.1 | 0.61 | 0.24 | 0.11 |
| 22 | 0.17 | e0.19 | e1.4 | e0.46 | e0.48 | e0.70 | 15 | 7.9 | 1 | 0.55 | 0.23 | 0.11 |
| 23 | 0.17 | e0.20 | e0.94 | e0.51 | 0.52 | 1 | 16 | 6.5 | 0.96 | 0.47 | 0.13 | 0.12 |
| 24 | 0.17 | e0.20 | 0.5 | e0.57 | 0.49 | 2.8 | 16 | 5.7 | 0.97 | 0.59 | 0.06 | 0.13 |
| 25 | 0.2 | e0.21 | 0.48 | e0.50 | 0.45 | 2.5 | 18 | 5.1 | 0.9 | 0.52 | 0.09 | 0.12 |
| 26 | 0.17 | e0.20 | 0.72 | e0.29 | e0.23 | 2.8 | 20 | 5.1 | 0.86 | 0.48 | 0.11 | 0.1 |
| 27 | 0.19 | 0.17 | 0.61 | e0.23 | 7.5 | 2.2 | 20 | 4.9 | 0.84 | 0.46 | 0.1 | 0.1 |
| 28 | 0.21 | 0.2 | e0.75 | e0.23 | 11 | 2.1 | 23 | 4.5 | 0.92 | 0.45 | 0.1 | 0.1 |
| 29 | 0.2 | e0.20 | 0.79 | e0.25 | --- | 2.1 | 23 | 4 | 0.86 | 0.45 | 0.09 | 0.1 |
| 30 | 0.2 | 0.2 | 4.5 | e0.36 | --- | 1.8 | 26 | 3.7 | 1 | 0.42 | 0.09 | 0.09 |
| 31 | 0.2 | --- | 27 | e0.43 | --- | 1.9 | --- | 3.3 | --- | 0.45 | 0.09 | --- |
| TOTAL | 6.85 | 5.86 | 43.68 | 34.28 | 38.38 | 61.4 | 347.3 | 375.3 | 46.41 | 23.99 | 8.47 | 3.45 |
| MEAN | 0.22 | 0.2 | 1.41 | 1.11 | 1.37 | 1.98 | 11.6 | 12.1 | 1.55 | 0.77 | 0.27 | 0.12 |
| MAX | 0.51 | 0.21 | 27 | 8.9 | 11 | 10 | 26 | 23 | 3.2 | 2 | 0.67 | 0.31 |
| MIN | 0.11 | 0.16 | 0.12 | 0.23 | 0.23 | 0.4 | 2.3 | 3.3 | 0.84 | 0.42 | 0.06 | 0.05 |
| AC-FT | 14 | 12 | 87 | 68 | 76 | 122 | 689 | 744 | 92 | 48 | 17 | 6.8 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1999 - 2006, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 0.16 | 0.23 | 0.38 | 0.4 | 0.57 | 1.44 | 3.89 | 4.39 | 0.84 | 0.3 | 0.18 | 0.18 |
| MAX | 0.34 | 0.36 | 1.41 | 1.11 | 1.37 | 2.08 | 11.6 | 12.1 | 2.18 | 0.77 | 0.31 | 0.46 |
| (WY) | 2000 | 1999 | 2006 | 2006 | 2006 | 2004 | 2006 | 2006 | 1999 | 2006 | 1999 | 1999 |
| MIN | 0.08 | 0.14 | 0.15 | 0.16 | 0.2 | 0.71 | 1.3 | 0.47 | 0.12 | 0.07 | 0.04 | 0.04 |
| (WY) | 2002 | 2005 | 2003 | 2001 | 2001 | 2001 | 2001 | 2004 | 2001 | 2001 | 2001 | 2004 |

| SUMMARY STATISTICS | FOR 2005 CALENDAR YEAR | | FOR 2006 WATER YEAR | | WATER YEARS 1999 - 2006 | | |
|---|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 648.32 | | 995.37 | | | | |
| ANNUAL MEAN | 1.78 | | 2.73 | | 0.96 | | |
| HIGHEST ANNUAL MEAN | | | | | 2.73 | | 2006 |
| LOWEST ANNUAL MEAN | | | | | 0.3 | | 2001 |
| HIGHEST DAILY MEAN | 27 | 31-Dec | 27 | 31-Dec | 27 | 31-Dec | 2005 |
| LOWEST DAILY MEAN | 0.1 | 9-Jan | 0.05 | 3-Sep | 0 | 5-Aug | 2001 |
| ANNUAL SEVEN-DAY MINIMUM | 0.11 | 7-Oct | 0.05 | 3-Sep | 0 | 28-Jul | 2004 |
| MAXIMUM PEAK FLOW | | | 68 | 31-Dec | 68 | 31-Dec | 2005 |
| MAXIMUM PEAK STAGE | | | 5.4 | 31-Dec | 5.4 | 31-Dec | 2005 |
| ANNUAL RUNOFF (AC-FT) | 1290 | | 1970 | | 699 | | |
| 10 PERCENT EXCEEDS | 5.5 | | 9.9 | | 2.1 | | |
| 50 PERCENT EXCEEDS | 0.35 | | 0.6 | | 0.26 | | |
| 90 PERCENT EXCEEDS | 0.16 | | 0.11 | | 0.08 | | |

e Estimated

# 2005-2006 Station 23 Flows

1 U.S. DEPARTMENT OF THE INTERIOR - U.S. GEOLOGICAL SURVEY - WATER RESOURCES

STATION NUMBER 10308792 LEVIATHAN C AB MOUNTAINEER C NR MARKLEEVILLE CA STREAM SOURCE AGENCY USGS STATE 06 COUNTY 003
LATITUDE 384412 LONGITUDE 1193839 NAD27 DRAINAGE AREA 10.8* CONTRIBUTING DRAINAGE AREA DATUM 6220 NGVD29
Date Processed: 2007-01-02 10:44 By glrock
Lowest aging status in period is APPROVED
DD #1
Discharge, cubic feet per second
WATER YEAR OCTOBER 2005 TO SEPTEMBER 2006
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.75 | 0.54 | e3.3 | 12 | 1.2 | 12 | e6.7 | 29 | 3.7 | 1.5 | 0.92 | 0.35 |
| 2 | 0.78 | 0.6 | e2.2 | 12 | e4.2 | 8.5 | 7.8 | 26 | 3.5 | 1.5 | 0.89 | 0.34 |
| 3 | 0.69 | 0.72 | e0.46 | 7.8 | e3.5 | 6.8 | 23 | 27 | 3.3 | 1.5 | 0.85 | 0.25 |
| 4 | 0.8 | 0.79 | e0.38 | 6 | e2.6 | 6.1 | 19 | 26 | 3.2 | 1.5 | 0.77 | 0.23 |
| 5 | 0.81 | 0.81 | e0.38 | 5.2 | e2.1 | 5.1 | 15 | 20 | 3 | 1.4 | 0.82 | 0.23 |
| 6 | 0.46 | 0.76 | e0.35 | 5.5 | e1.9 | 4.8 | 13 | 18 | 2.7 | 1.4 | 0.98 | 0.22 |
| 7 | 0.42 | 0.64 | e0.37 | 5.4 | e1.6 | 4.1 | 15 | 16 | 2.3 | 1.4 | 0.86 | 0.27 |
| 8 | 0.4 | 0.69 | e0.37 | 4.3 | e1.5 | 3.7 | 16 | 16 | 2.1 | 1.4 | 0.65 | 0.28 |
| 9 | 0.41 | 0.82 | e0.39 | 3.6 | e1.4 | 3.3 | 14 | 15 | 2 | 1.3 | 0.72 | 0.24 |
| 10 | 0.38 | 0.76 | e0.39 | 3.3 | e1.4 | e2.6 | 14 | 14 | 2 | 1.8 | 0.74 | 0.24 |
| 11 | 0.35 | 0.77 | 0.42 | 3.4 | e1.2 | e2.3 | 13 | 14 | 1.8 | 1.5 | 0.71 | 0.24 |
| 12 | 0.38 | 0.78 | 0.43 | 3.5 | e1.3 | e3.4 | 16 | 13 | 1.6 | 1.5 | 0.54 | 0.23 |
| 13 | 0.39 | 0.97 | 0.45 | 3.5 | e1.5 | 2.5 | 20 | 13 | 1.6 | 1.4 | 0.4 | 0.31 |
| 14 | 0.51 | 0.99 | 0.43 | 2.8 | e1.8 | 2.4 | 23 | 12 | 1.6 | 1.2 | 0.32 | 0.55 |
| 15 | 0.95 | 1 | 0.38 | 3.6 | e1.4 | e3.9 | 24 | 12 | 1.7 | 1.1 | 0.3 | 0.58 |
| 16 | 0.86 | 0.91 | e0.38 | 2.8 | e2.4 | 2.5 | 23 | 12 | 1.6 | 1.1 | 0.29 | 0.6 |
| 17 | 0.63 | 0.99 | 0.38 | 1.7 | e1.8 | 0.82 | 20 | 9.7 | 1.6 | 1.2 | 0.29 | 0.53 |
| 18 | 0.61 | 0.86 | 1 | 1.8 | e1.7 | 0.71 | 20 | 8.8 | 1.5 | 1.2 | 0.28 | 0.34 |
| 19 | 0.51 | 0.94 | 1.4 | e1.6 | 1.3 | 0.74 | 20 | 8.7 | 1.5 | 1 | 0.37 | 0.12 |
| 20 | 0.54 | 0.86 | 1.3 | e1.4 | 0.96 | e0.89 | 24 | 8.1 | 1.5 | 1.2 | 0.5 | 0.16 |
| 21 | 0.57 | 0.87 | 6.2 | 1.1 | 0.93 | 0.64 | 25 | 8 | 1.5 | 1.1 | 0.47 | 0.15 |
| 22 | 0.54 | 0.86 | 13 | 0.89 | 0.92 | 1.1 | 26 | 7.6 | 1.5 | 0.98 | 0.47 | 0.15 |
| 23 | 0.43 | 0.94 | 2.7 | 1 | 1 | 1.6 | 27 | 6.3 | 1.4 | 0.91 | 0.36 | 0.19 |
| 24 | 0.44 | 0.94 | 1.3 | 1.1 | 1.5 | 6.2 | 27 | 6 | 1.4 | 1 | 0.24 | 0.2 |
| 25 | 0.56 | 1 | 0.96 | 1 | 1.7 | 7.9 | 29 | 5.5 | 1.4 | 0.94 | 0.27 | 0.2 |
| 26 | 0.49 | 0.75 | 0.98 | 0.57 | 0.99 | e6.0 | 34 | 5.3 | 1.3 | 0.88 | 0.32 | 0.19 |
| 27 | 0.51 | 0.62 | 2.3 | 0.51 | e16 | 6.1 | 34 | 5.2 | 1.3 | 0.83 | 0.31 | 0.18 |
| 28 | 0.48 | e0.96 | 12 | 0.51 | 25 | 5.5 | 33 | 4.9 | 1.5 | 0.81 | 0.3 | 0.16 |
| 29 | 0.48 | e1.1 | 2.8 | 0.56 | --- | 5.6 | 31 | 4.6 | 1.4 | 0.81 | 0.28 | 0.14 |
| 30 | 0.48 | e0.90 | 17 | 0.77 | --- | 5.3 | 33 | 4.3 | 1.4 | 0.79 | 0.31 | 0.14 |
| 31 | 0.52 | --- | 102 | 0.88 | --- | 6.2 | --- | 4 | --- | 0.84 | 0.34 | --- |
| TOTAL | 17.13 | 25.14 | 176.4 | 100.09 | 84.8 | 129.3 | 645.5 | 380 | 57.9 | 36.99 | 15.87 | 8.01 |
| MEAN | 0.55 | 0.84 | 5.69 | 3.23 | 3.03 | 4.17 | 21.5 | 12.3 | 1.93 | 1.19 | 0.51 | 0.27 |
| MAX | 0.95 | 1.1 | 102 | 12 | 25 | 12 | 34 | 29 | 3.7 | 1.8 | 0.98 | 0.6 |
| MIN | 0.35 | 0.54 | 0.35 | 0.51 | 0.92 | 0.64 | 6.7 | 4 | 1.3 | 0.79 | 0.24 | 0.12 |
| AC-FT | 34 | 50 | 350 | 199 | 168 | 256 | 1280 | 754 | 115 | 73 | 31 | 16 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2000 - 2006, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 0.3 | 0.55 | 1.36 | 1.16 | 1.22 | 2.95 | 6.54 | 4.41 | 0.88 | 0.42 | 0.31 | 0.29 |
| MAX | 0.55 | 0.84 | 5.69 | 3.23 | 3.03 | 4.22 | 21.5 | 12.9 | 2.18 | 1.19 | 0.51 | 0.57 |
| (WY) | 2006 | 2006 | 2006 | 2006 | 2006 | 2005 | 2006 | 2005 | 2005 | 2006 | 2006 | 2005 |
| MIN | 0.12 | 0.22 | 0.41 | 0.43 | 0.62 | 1.56 | 1.83 | 0.76 | 0.21 | 0.13 | 0.11 | 0.1 |
| (WY) | 2004 | 2004 | 2004 | 2002 | 2002 | 2001 | 2004 | 2004 | 2001 | 2001 | 2001 | 2004 |

| SUMMARY STATISTICS | FOR 2005 CALENDAR YEAR | | FOR 2006 WATER YEAR | | WATER YEARS 2000 - 2006 | | |
|---|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 1207.63 | | 1677.13 | | | | |
| ANNUAL MEAN | 3.31 | | 4.59 | | 1.81 | | |
| HIGHEST ANNUAL MEAN | | | | | 4.59 | | 2006 |
| LOWEST ANNUAL MEAN | | | | | 0.65 | | 2001 |
| HIGHEST DAILY MEAN | 102 | 31-Dec | 102 | 31-Dec | 102 | 31-Dec | 2005 |
| LOWEST DAILY MEAN | 0.21 | 10-Aug | 0.12 | 19-Sep | 0.02 | 11-Aug | 2001 |
| ANNUAL SEVEN-DAY MINIMUM | 0.24 | 15-Aug | 0.17 | 19-Sep | 0.05 | 9-Sep | 2004 |
| MAXIMUM PEAK FLOW | | | 250 | 31-Dec | 250 | 31-Dec | 2005 |
| MAXIMUM PEAK STAGE | | | 10.15 | 31-Dec | 10.15 | 31-Dec | 2005 |
| ANNUAL RUNOFF (AC-FT) | 2400 | | 3330 | | 1310 | | |
| 10 PERCENT EXCEEDS | 11 | | 15 | | 3.8 | | |
| 50 PERCENT EXCEEDS | 0.82 | | 1.3 | | 0.56 | | |
| 90 PERCENT EXCEEDS | 0.36 | | 0.34 | | 0.13 | | |

e Estimated

# 2005-2006 Station 25 Flows

1 U.S. DEPARTMENT OF THE INTERIOR - U.S. GEOLOGICAL SURVEY - WATER RESOURCES

STATION NUMBER 10308794 BRYANT C BL MOUNTAINEER C NR MARKLEEVILLE CA STREAM SOURCE AGENCY USGS STATE 06 COUNTY 003
LATITUDE 384412 LONGITUDE 1193839 NAD27 DRAINAGE AREA 12.4* CONTRIBUTING DRAINAGE AREA DATUM 6300 NGVD29
Date Processed: 2007-01-02 10:44 By glrock
Lowest aging status in period is APPROVED
DD #1
Discharge, cubic feet per second
WATER YEAR OCTOBER 2005 TO SEPTEMBER 2006
DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1.4 | 1.6 | e4.8 | e20 | 2.7 | 33 | 10 | 39 | 8.2 | 3.9 | 3 | 2.3 |
| 2 | 1.7 | 1.8 | e3.8 | e20 | 5.5 | 28 | 11 | 35 | 8.3 | 3.9 | 3 | 2.2 |
| 3 | 1.4 | 2.1 | e1.1 | e10 | 4.3 | 23 | 28 | 33 | 7.5 | 4.4 | 2.9 | 2.1 |
| 4 | 1.5 | 2.1 | e1.0 | e8.3 | 4 | 21 | 26 | 30 | 7.1 | 3.9 | 2.9 | 2.1 |
| 5 | 1.5 | 1.4 | e1.0 | e7.6 | 2.9 | 17 | 20 | 31 | 6.8 | 3.8 | 3 | 2.1 |
| 6 | 1.3 | 1.5 | 1.5 | e8.2 | 2.6 | 16 | 17 | 31 | 6.6 | 3.8 | 3.2 | 2.1 |
| 7 | 1.2 | 1.6 | 1.6 | e7.8 | 2.2 | 13 | 19 | 31 | 6.5 | 3.7 | 3 | 2.2 |
| 8 | 1.2 | 1.7 | 1.5 | e6.6 | 2.1 | 11 | 20 | 31 | 6.2 | 3.7 | 2.8 | 2.3 |
| 9 | e1.2 | 1.7 | 1.4 | e5.6 | 2.1 | 9.7 | 18 | 29 | 6.1 | 3.7 | 2.9 | 2.2 |
| 10 | e1.2 | 1.6 | 1.4 | e5.1 | 2 | 7.4 | 17 | 26 | 5.9 | 4.2 | 2.9 | 2.2 |
| 11 | e1.2 | 1.6 | 1.3 | e5.4 | 2 | 6.7 | 16 | 25 | 5.7 | 3.7 | 2.9 | 2.2 |
| 12 | e1.2 | 1.5 | 1.3 | e6.0 | 2.1 | 8.9 | 18 | 24 | 5.8 | 3.7 | 2.7 | 2.1 |
| 13 | e1.3 | 1.5 | 1.4 | e6.1 | 2.2 | 5.8 | 21 | 24 | 5.6 | 3.6 | 2.5 | 2.2 |
| 14 | e1.6 | 1.7 | 1.3 | e6.0 | 2.3 | 5.5 | 23 | 22 | 5.5 | 3.4 | 2.4 | 2.4 |
| 15 | e2.0 | 1.7 | 1.2 | e5.9 | 1.9 | 7.7 | 24 | 21 | 5.4 | 3.3 | 2.3 | 2.5 |
| 16 | e2.0 | 1.8 | 1.3 | e7.5 | 3.4 | 5.3 | 23 | 21 | 5.2 | 3.2 | 2.3 | 2.7 |
| 17 | e1.7 | 1.9 | 1.5 | 3.9 | 2.2 | 5.1 | 20 | 19 | 5 | 3.4 | 2.3 | 2.7 |
| 18 | e1.7 | 1.4 | 1.9 | 3.6 | 2.1 | 4.9 | 19 | 18 | 4.8 | 3.5 | 2.3 | 2.5 |
| 19 | e1.6 | 1.5 | 2 | 3.1 | 1.9 | 4.7 | 19 | 16 | 4.7 | 3.4 | 2.4 | 2.3 |
| 20 | e1.6 | 2 | 2.2 | e5.6 | 1.9 | 4.7 | 22 | 15 | 4.6 | 4.3 | 2.5 | 2.4 |
| 21 | e1.7 | 1.7 | 7.6 | 2.9 | 1.9 | 4.5 | 23 | 15 | 4.5 | 3.6 | 2.4 | 2.4 |
| 22 | e1.6 | 1.7 | 15 | 2.5 | 2.1 | 4.6 | 23 | 15 | 4.2 | 3.3 | 2.4 | 2.5 |
| 23 | e1.6 | 1.5 | 6.9 | 2.6 | 2.2 | 6 | 26 | 13 | 4.2 | 3.2 | 2.3 | 2.5 |
| 24 | e1.6 | 1.4 | 3.8 | 2.5 | 2.3 | 9.9 | 26 | 12 | 4.2 | 3.3 | 2.1 | 2.5 |
| 25 | e1.7 | 1.6 | 3.5 | 2.3 | 2.3 | 12 | 31 | 11 | 4.1 | 3.1 | 2.2 | 2.5 |
| 26 | e1.6 | 1.3 | 3 | 2 | 2.5 | 9.7 | 32 | 11 | 4.1 | 3 | 2.3 | 2.3 |
| 27 | 1.6 | 1.1 | 5.8 | 1.9 | 32 | 9.6 | 33 | 11 | 4 | 2.9 | 2.2 | 2.3 |
| 28 | e1.6 | 1.7 | 16 | 1.9 | 47 | 8.9 | 42 | 10 | 4.2 | 2.9 | 2.2 | 2.3 |
| 29 | e1.6 | e2.0 | 6.8 | 1.9 | --- | 8.9 | 42 | 9.8 | 4.1 | 2.9 | 2.2 | 2.3 |
| 30 | e1.6 | e1.8 | e30 | 2.1 | --- | 8.8 | 48 | 9.4 | 3.9 | 2.8 | 2.2 | 2.3 |
| 31 | e1.6 | --- | e130 | 1.9 | --- | 9.3 | --- | 8.8 | --- | 2.9 | 2.3 | --- |
| TOTAL | 47.3 | 49.5 | 262.9 | 176.8 | 144.7 | 330.6 | 717 | 647 | 163 | 108.4 | 79 | 69.7 |
| MEAN | 1.53 | 1.65 | 8.48 | 5.7 | 5.17 | 10.7 | 23.9 | 20.9 | 5.43 | 3.5 | 2.55 | 2.32 |
| MAX | 2 | 2.1 | 130 | 20 | 47 | 33 | 48 | 39 | 8.3 | 4.4 | 3.2 | 2.7 |
| MIN | 1.2 | 1.1 | 1 | 1.9 | 1.9 | 4.5 | 10 | 8.8 | 3.9 | 2.8 | 2.1 | 2.1 |
| AC-FT | 94 | 98 | 521 | 351 | 287 | 656 | 1420 | 1280 | 323 | 215 | 157 | 138 |

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1999 - 2006, BY WATER YEAR (WY)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEAN | 1.45 | 1.76 | 2.67 | 2.9 | 3.07 | 6.36 | 9.68 | 9.32 | 2.91 | 1.64 | 1.47 | 1.55 |
| MAX | 2.47 | 2.59 | 8.48 | 5.7 | 5.17 | 10.7 | 23.9 | 20.9 | 6.12 | 3.5 | 2.55 | 2.66 |
| (WY) | 2000 | 2000 | 2006 | 2006 | 2006 | 2006 | 2006 | 2006 | 1999 | 2006 | 2006 | 1999 |
| MIN | 0.99 | 1.39 | 1.28 | 1.77 | 2.06 | 3.53 | 3.07 | 1.91 | 1.09 | 0.91 | 0.79 | 0.84 |
| (WY) | 2004 | 2004 | 2003 | 2001 | 2001 | 2001 | 2004 | 2001 | 2001 | 2003 | 2002 | 2002 |

| SUMMARY STATISTICS | FOR 2005 CALENDAR YEAR | | FOR 2006 WATER YEAR | | WATER YEARS 1999 - 2006 | |
|---|---|---|---|---|---|---|
| ANNUAL TOTAL | 2065.9 | | 2795.9 | | | |
| ANNUAL MEAN | 5.66 | | 7.66 | | 3.44 | |
| HIGHEST ANNUAL MEAN | | | | | 7.66 | 2006 |
| LOWEST ANNUAL MEAN | | | | | 1.89 | 2001 |
| HIGHEST DAILY MEAN | 130 | 31-Dec | 130 | 31-Dec | 130 | 31-Dec 2005 |
| LOWEST DAILY MEAN | 1 | 4-Dec | 1 | 4-Dec | 0.54 | 18-Aug 2003 |
| ANNUAL SEVEN-DAY MINIMUM | 1.2 | 6-Oct | 1.2 | 6-Oct | 0.69 | 16-Aug 2002 |
| MAXIMUM PEAK FLOW | | | 290 | 31-Dec | 290 | 31-Dec 2005 |
| MAXIMUM PEAK STAGE | | | 7.35 | 31-Dec | 7.39 | 12-Nov 2000 |
| ANNUAL RUNOFF (AC-FT) | 4100 | | 5550 | | 2490 | |
| 10 PERCENT EXCEEDS | 15 | | 22 | | 6.7 | |
| 50 PERCENT EXCEEDS | 2 | | 3.2 | | 1.9 | |
| 90 PERCENT EXCEEDS | 1.5 | | 1.6 | | 0.96 | |

e Estimated

# 2005-2006 Station 26 Flows

1 U.S. DEPARTMENT OF THE INTERIOR - U.S. GEOLOGICAL SURVEY - WATER RESOURCES

STATION NUMBER 10308800 BRYANT C NR GARDNERVILLE, NV SOURCE AGENCY USGS STATE 32 COUNTY 005

LATITUDE 384738 LONGITUDE 1194018 NAD27 DRAINAGE AREA 31.5* CONTRIBUTING DRAINAGE AREA DATUM 5445.91 NGVD29

Date Processed: 2006-12-14 17:20 By snberris

Lowest aging status in period is IN REVIEW

DD #2

Discharge, cubic feet per second

WATER YEAR OCTOBER 2005 TO SEPTEMBER 2006

DAILY MEAN VALUES

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2.9 | 3.2 | e7.5 | 49 | 7.1 | 27 | 13 | 63 | 9.1 | e4.4 | 3.3 | 2.9 |
| 2 | 3 | 3.5 | e10 | 41 | 9.7 | 22 | 14 | 61 | 9 | e4.5 | 3.3 | 2.9 |
| 3 | 3 | 3.5 | e5.0 | 20 | 9.7 | 19 | 34 | 55 | 8.5 | e4.9 | 3.1 | 2.8 |
| 4 | 2.9 | 3.4 | e4.0 | 15 | 9.4 | 16 | 34 | 50 | 8.1 | e4.5 | 3.1 | 2.8 |
| 5 | 3.1 | 3.1 | e3.8 | 13 | 8.7 | 16 | 27 | 49 | 7.8 | e4.4 | 3.3 | 2.8 |
| 6 | 2.8 | 3 | e3.9 | 14 | 8.1 | 16 | 22 | 48 | e7.5 | e4.3 | 3.5 | 2.8 |
| 7 | 2.8 | 2.9 | e4.0 | 13 | 7.8 | 15 | 24 | 51 | e7.2 | e4.2 | 3.4 | 2.8 |
| 8 | 2.9 | 2.9 | e4.0 | 11 | 7.6 | 14 | 24 | 53 | e7.0 | e4.2 | 3.2 | 3 |
| 9 | 2.9 | 3.1 | e4.0 | 10 | 7.5 | 13 | 23 | 47 | e6.9 | e4.3 | 3.2 | 2.9 |
| 10 | 2.9 | 3 | e3.9 | 9.4 | 7.4 | 12 | 22 | 41 | e6.7 | e4.6 | 3.2 | 2.9 |
| 11 | 2.9 | e2.8 | e3.9 | 10 | 7.4 | 11 | 21 | 38 | e6.5 | e4.3 | 3.3 | 2.9 |
| 12 | 2.9 | e2.7 | e3.9 | 9.4 | 7.4 | 10 | 23 | 35 | e6.5 | e4.2 | 3 | 2.8 |
| 13 | 3 | 2.6 | e4.0 | 9 | 7.6 | 10 | 26 | 32 | e6.3 | e4.1 | 3 | 2.7 |
| 14 | 2.8 | 2.2 | e3.9 | 9 | 7.8 | 9.9 | 29 | 30 | e6.2 | e3.9 | 2.8 | 3 |
| 15 | 3.3 | 2.2 | e3.8 | 7.9 | 7.5 | 9.6 | 30 | 27 | e6.1 | e3.8 | 2.8 | 3.2 |
| 16 | 3.4 | 2.2 | e3.9 | 7.5 | 5.9 | 9.5 | 29 | 28 | e5.9 | e3.7 | 2.8 | 3.4 |
| 17 | 3.1 | 2.3 | e4.0 | 7.8 | 6.9 | 9.3 | 26 | 24 | e5.7 | e3.8 | 2.8 | 3.5 |
| 18 | 3.1 | 2.2 | e4.5 | 7.8 | 7.5 | 8.9 | 24 | 21 | e5.5 | e3.9 | 2.8 | 3.4 |
| 19 | 3 | 2.4 | e5.0 | 7 | 7.5 | 8.5 | 24 | 19 | e5.3 | e3.9 | 2.8 | 3.2 |
| 20 | 3 | 2.5 | e6.0 | e6.0 | 7.2 | 8.2 | 26 | 18 | e5.2 | e4.7 | 3 | 3.3 |
| 21 | 3 | 2.8 | e15 | e6.4 | 6.8 | 8.1 | 28 | 17 | e5.0 | e4.0 | 2.9 | 3.3 |
| 22 | 3.3 | 2.5 | 27 | 6.8 | 7.1 | 7.9 | 30 | 17 | e4.8 | e3.7 | 2.9 | 3.4 |
| 23 | 3.5 | 2.5 | e12 | 6.3 | 7.2 | 8.6 | 33 | 15 | e4.8 | e3.6 | 2.9 | 3.4 |
| 24 | 3.4 | 2.4 | e8.0 | 6.3 | 7.6 | 11 | 33 | 13 | e4.8 | e3.7 | 2.8 | 3.4 |
| 25 | 3.7 | 2.5 | e7.5 | 6.4 | 7.6 | 15 | 35 | 13 | e4.7 | e3.5 | 3 | 3.2 |
| 26 | 3.7 | 2.8 | e7.0 | 6.4 | 7.7 | 13 | 44 | 12 | e4.7 | e3.4 | 3.1 | 3.2 |
| 27 | 3.7 | 2.5 | e10 | 6 | 49 | 13 | 51 | 12 | e4.6 | e3.3 | 3 | 3.2 |
| 28 | 3.7 | e3.0 | 31 | 6.2 | 71 | 12 | 57 | 12 | e4.7 | e3.2 | 3 | 3.1 |
| 29 | 3.3 | e3.5 | 14 | 6.2 | --- | 12 | 59 | 11 | e4.6 | 3.1 | 3 | 3.1 |
| 30 | 3.3 | e3.5 | 18 | 6.6 | --- | 11 | 63 | 10 | e4.5 | 3.1 | 3 | 3.1 |
| 31 | 3.3 | --- | 378 | 6.6 | --- | 12 | --- | 9.7 | --- | 3.2 | 2.9 | --- |
| TOTAL | 97.6 | 83.7 | 620.5 | 347 | 319.7 | 388.5 | 928 | 931.7 | 184.2 | 122.4 | 94.2 | 92.4 |
| MEAN | 3.15 | 2.79 | 20 | 11.2 | 11.4 | 12.5 | 30.9 | 30.1 | 6.14 | 3.95 | 3.04 | 3.08 |
| MAX | 3.7 | 3.5 | 378 | 49 | 71 | 27 | 63 | 63 | 9.1 | 4.9 | 3.5 | 3.5 |
| MIN | 2.8 | 2.2 | 3.8 | 6 | 5.9 | 7.9 | 13 | 9.7 | 4.5 | 3.1 | 2.8 | 2.7 |
| AC-FT | 194 | 166 | 1230 | 688 | 634 | 771 | 1840 | 1850 | 365 | 243 | 187 | 183 |

e Estimated

# 2005-2006 Pond 1 Stage

1 U.S. DEPARTMENT OF THE INTERIOR - U.S. GEOLOGICAL SURVEY - WATER RESOURCES

STATION NUMBER 103087853 LEVIATHAN MINE POND 1 NR MARKLEEVILLE CA STREAM SOURCE AGENCY USGS STATE 06 COUNTY 003

LATITUDE 384215 LONGITUDE 1193929 NAD27 DRAINAGE AREA CONTRIBUTING DRAINAGE AREA DATUM 7050 NGVD29

Date Processed: 2007-01-02 10:44 By glrock

Lowest aging status in period is APPROVED

DD #1

Gage height, feet

WATER YEAR OCTOBER 2005 TO SEPTEMBER 2006

DAILY OBSERVATION AT 2400 HOURS

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | e4.59 | 4.52 | 4.49 | 5.4 | 6.03 | 6.75 | 7.56 | 8.01 | 7.93 | 7.24 | 5.1 | 4.52 |
| 2 | e4.54 | 4.51 | 4.48 | 5.53 | 6.06 | 6.76 | 7.58 | e8.02 | 7.92 | 7.12 | 5.29 | 4.52 |
| 3 | 4.49 | 4.49 | 4.48 | 5.54 | 6.07 | 6.84 | 7.67 | e8.02 | 7.92 | 7.02 | 5.34 | 4.52 |
| 4 | 4.5 | 4.48 | 4.49 | 5.55 | 6.09 | 6.86 | 7.74 | 8.02 | 7.91 | 6.89 | 5.1 | e4.52 |
| 5 | 4.5 | 4.48 | 4.49 | 5.56 | 6.1 | 6.87 | 7.77 | 8.02 | 7.9 | 6.72 | 5.21 | 4.52 |
| 6 | 4.5 | 4.49 | 4.49 | 5.58 | 6.11 | 6.91 | 7.8 | 8.01 | 7.9 | 6.46 | 5.22 | 4.52 |
| 7 | 4.5 | 4.49 | 4.49 | 5.58 | 6.13 | 6.93 | 7.84 | 8.02 | 7.88 | 6.41 | 5.33 | 4.52 |
| 8 | 4.5 | 4.49 | 4.49 | 5.59 | 6.14 | 6.95 | 7.87 | 8.01 | 7.87 | 6.71 | 5.34 | 4.52 |
| 9 | 4.5 | 4.48 | 4.49 | 5.6 | 6.15 | 6.98 | e7.89 | 8.01 | 7.86 | 6.48 | 4.97 | 4.52 |
| 10 | 4.5 | 4.48 | 4.49 | 5.61 | 6.17 | 6.99 | e7.91 | 8 | 7.86 | 6.45 | 4.54 | 4.52 |
| 11 | 4.5 | 4.48 | 4.49 | 5.63 | 6.18 | 7 | 7.94 | 7.99 | 7.85 | 6.38 | 4.5 | 4.52 |
| 12 | 4.5 | 4.49 | 4.49 | 5.64 | 6.19 | 7.02 | 7.97 | 8 | 7.84 | 6.21 | 4.5 | 4.52 |
| 13 | 4.51 | 4.49 | 4.49 | 5.65 | 6.21 | 7.04 | 7.99 | 7.99 | 7.8 | 6.25 | 4.5 | 4.52 |
| 14 | 4.51 | 4.48 | 4.49 | 5.71 | 6.22 | 7.12 | 8.01 | 7.99 | 7.82 | 6.08 | 4.5 | 4.52 |
| 15 | 4.51 | 4.48 | 4.49 | 5.72 | 6.24 | 7.13 | 8.02 | 7.98 | 7.81 | 6.04 | 4.5 | 4.5 |
| 16 | 4.51 | 4.49 | 4.49 | 5.74 | 6.25 | 7.15 | 8.1 | 8.01 | 7.8 | 5.84 | 4.5 | 4.51 |
| 17 | 4.51 | 4.48 | 4.49 | 5.76 | 6.27 | 7.18 | 8.09 | 8.01 | 7.79 | 5.75 | 4.5 | 4.52 |
| 18 | 4.51 | 4.48 | 4.49 | 5.79 | 6.29 | 7.2 | 8.1 | 8 | 7.78 | 5.65 | 4.51 | 4.52 |
| 19 | 4.51 | 4.49 | 4.5 | 5.8 | 6.31 | 7.21 | 8.09 | 8.01 | 7.76 | 5.61 | 4.51 | 4.52 |
| 20 | 4.51 | 4.49 | 4.5 | 5.82 | 6.33 | 7.23 | 8.1 | 8 | 7.75 | 5.52 | 4.51 | 4.52 |
| 21 | 4.51 | 4.49 | 4.56 | 5.83 | 6.35 | 7.24 | 8.11 | 8.01 | 7.74 | 5.45 | 4.51 | 4.52 |
| 22 | 4.51 | 4.49 | 4.65 | 5.85 | 6.37 | 7.25 | 8.15 | 8 | 7.73 | 5.32 | 4.51 | 4.52 |
| 23 | 4.51 | 4.49 | 4.66 | 5.86 | 6.38 | 7.26 | 8.17 | 7.99 | 7.71 | 5.27 | 4.51 | 4.52 |
| 24 | 4.51 | 4.49 | 4.67 | 5.89 | 6.39 | 7.29 | e8.17 | e7.98 | 7.7 | 5.26 | 4.51 | 4.52 |
| 25 | 4.53 | 4.49 | 4.68 | 5.91 | 6.41 | 7.35 | e8.16 | 7.97 | 7.69 | 5.07 | 4.52 | 4.52 |
| 26 | 4.53 | 4.46 | 4.75 | 5.92 | 6.43 | 7.37 | e8.14 | 7.97 | 7.69 | 5.03 | 4.52 | 4.52 |
| 27 | 4.53 | 4.47 | 4.78 | 5.93 | 6.62 | 7.38 | e8.09 | 7.95 | 7.63 | 5.01 | 4.52 | 4.52 |
| 28 | 4.53 | 4.47 | 4.84 | 5.94 | 6.73 | 7.44 | 8.04 | 7.96 | 7.54 | 5 | 4.52 | 4.52 |
| 29 | 4.52 | 4.48 | 4.85 | 5.95 | --- | 7.45 | 7.97 | 7.96 | 7.47 | 4.99 | 4.52 | 4.52 |
| 30 | 4.52 | 4.49 | 4.99 | 6 | --- | 7.48 | 7.99 | 7.95 | 7.34 | 4.95 | 4.52 | 4.52 |
| 31 | 4.52 | --- | 5.34 | 6.02 | --- | 7.55 | --- | 7.96 | --- | 4.92 | 4.52 | --- |
| MEAN | 4.51 | 4.49 | 4.6 | 5.74 | 6.26 | 7.13 | 7.97 | 7.99 | 7.77 | 5.91 | 4.71 | 4.52 |
| MAX | 4.59 | 4.52 | 5.34 | 6.02 | 6.73 | 7.55 | 8.17 | 8.02 | 7.93 | 7.24 | 5.34 | 4.52 |
| MIN | 4.49 | 4.46 | 4.48 | 5.4 | 6.03 | 6.75 | 7.56 | 7.95 | 7.34 | 4.92 | 4.5 | 4.5 |

e Estimated

# 2005-2006 Pond 4 Stage

1 U.S. DEPARTMENT OF THE INTERIOR - U.S. GEOLOGICAL SURVEY - WATER RESOURCES

STATION NUMBER 103087887 LEVIATHAN MINE POND 4 NR MARKLEEVILLE CA STREAM SOURCE AGENCY USGS STATE 06 COUNTY 003
LATITUDE 384234 LONGITUDE 1193941 NAD27 DRAINAGE AREA CONTRIBUTING DRAINAGE AREA DATUM 6800 NGVD29
Date Processed: 2007-01-02 10:44 By glrock
Lowest aging status in period is APPROVED
DD #1
Gage height, feet
WATER YEAR OCTOBER 2005 TO SEPTEMBER 2006
DAILY OBSERVATION AT 2400 HOURS

| DAY | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 6.54 | 3.96 | 4.32 | 5.78 | 6.25 | 6.66 | 6.97 | 7.53 | 7.06 | 6.51 | 7.1 | 6.16 |
| 2 | 6.53 | e3.96 | 4.49 | 5.93 | 6.21 | 6.67 | 6.96 | 7.53 | 7.04 | 6.49 | 7.08 | 6.27 |
| 3 | 6.46 | e3.96 | 4.46 | 5.95 | 6.23 | 6.74 | 6.98 | 7.49 | 7.02 | 6.45 | 7.12 | 6.46 |
| 4 | 6.6 | e3.93 | 4.44 | 5.96 | 6.24 | 6.74 | 6.98 | 7.5 | 7 | 6.42 | 7.39 | 6.66 |
| 5 | 6.49 | e3.92 | 4.48 | 5.97 | 6.26 | 6.75 | 6.97 | 7.49 | 6.99 | 6.4 | 7.62 | 6.84 |
| 6 | 6.51 | e3.94 | 4.47 | 6 | 6.26 | 6.77 | 6.97 | 7.47 | 6.96 | 6.39 | 7.33 | 7.02 |
| 7 | 6.48 | e3.94 | 4.43 | 6.01 | 6.27 | 6.77 | 7 | 7.46 | 6.93 | 6.38 | 7.31 | 7.22 |
| 8 | 6.54 | e3.94 | 4.43 | 6.01 | 6.27 | 6.78 | 6.99 | 7.44 | 6.9 | 6.37 | 7.51 | 7.39 |
| 9 | 6.53 | e3.92 | 4.44 | 6.02 | 6.27 | 6.79 | 7.01 | 7.4 | 6.89 | 6.35 | 7.19 | 7.55 |
| 10 | 6.52 | e3.90 | 4.45 | 6.02 | 6.27 | 6.78 | 7.04 | 7.39 | 6.87 | 6.33 | 6.63 | 7.75 |
| 11 | 6.5 | e3.90 | 4.44 | 6.03 | 6.26 | 6.79 | 7.09 | 7.37 | 6.84 | 5.69 | 6.47 | 7.93 |
| 12 | 6.52 | e3.87 | 4.46 | 6.03 | 6.27 | 6.78 | 7.19 | 7.34 | 6.82 | 4.75 | 6.71 | 8.09 |
| 13 | 6.51 | e3.85 | e4.46 | 6.05 | 6.2 | 6.79 | 7.24 | 7.33 | 6.79 | 3.68 | 6.95 | 7.96 |
| 14 | 5.87 | e3.86 | e4.46 | 6.09 | 6.28 | 6.84 | 7.26 | 7.34 | 6.78 | 3.33 | 7.18 | 7.34 |
| 15 | 4.54 | e3.85 | 4.46 | 6.11 | 6.28 | 6.84 | 7.28 | 7.3 | 6.76 | 3.57 | 7.38 | 6.73 |
| 16 | 4.05 | e3.84 | 4.48 | 6.11 | 6.3 | 6.83 | 7.36 | 7.32 | 6.76 | 3.71 | 7.61 | 6.1 |
| 17 | 3.9 | 3.86 | 4.44 | 6.12 | 6.3 | 6.84 | 7.38 | 7.3 | 6.75 | 3.73 | 7.79 | 5.46 |
| 18 | 3.78 | 3.85 | 4.58 | 6.16 | 6.3 | 6.85 | 7.38 | 7.27 | 6.71 | 3.68 | 7.99 | 5.27 |
| 19 | 3.83 | 3.85 | 4.63 | 6.15 | 6.3 | 6.85 | 7.39 | 7.27 | 6.69 | 3.93 | 7.74 | 5.51 |
| 20 | 3.86 | 3.85 | 4.64 | 6.16 | 6.31 | 6.85 | 7.39 | 7.24 | 6.68 | e4.23 | 7.16 | 5.74 |
| 21 | 3.86 | 3.84 | 4.82 | 6.16 | 6.32 | 6.85 | 7.4 | 7.24 | 6.67 | 4.64 | 6.58 | 5.95 |
| 22 | 3.75 | 3.84 | 4.87 | 6.17 | 6.31 | 6.85 | 7.45 | 7.22 | 6.68 | 4.94 | 5.98 | 6.19 |
| 23 | 3.87 | 3.84 | 4.87 | 6.18 | 6.31 | 6.86 | 7.52 | 7.21 | 6.65 | 5.26 | 5.97 | 6.38 |
| 24 | 3.87 | 3.86 | 4.88 | 6.17 | 6.31 | 6.87 | 7.52 | 7.19 | 6.63 | 5.53 | 6.22 | 6.59 |
| 25 | 3.87 | 3.87 | 4.89 | 6.17 | 6.31 | 6.89 | 7.56 | 7.19 | 6.61 | 5.81 | 6.29 | 6.77 |
| 26 | 3.86 | 3.85 | 4.97 | 6.17 | 6.31 | 6.89 | 7.56 | 7.13 | 6.6 | 6.1 | 6.28 | 6.94 |
| 27 | 3.81 | 3.9 | 5.03 | 6.18 | 6.55 | 6.9 | 7.56 | 7.13 | 6.57 | 6.35 | 6.27 | 7.12 |
| 28 | 3.91 | 3.9 | 5.12 | 6.17 | 6.66 | 6.93 | 7.56 | 7.12 | 6.57 | 6.59 | 6.25 | 7.32 |
| 29 | 3.8 | 3.92 | 5.14 | 6.19 | --- | 6.94 | 7.56 | 7.1 | 6.54 | 6.85 | 6.22 | 7.47 |
| 30 | 3.98 | 3.93 | 5.27 | 6.22 | --- | 6.94 | 7.56 | 7.09 | 6.53 | 7.08 | 6.19 | 7.66 |
| 31 | 3.95 | --- | 5.71 | 6.24 | --- | 6.98 | --- | 7.07 | --- | 7.33 | 6.19 | --- |
| MEAN | 5.07 | 3.89 | 4.68 | 6.09 | 6.3 | 6.83 | 7.27 | 7.31 | 6.78 | 5.51 | 6.89 | 6.79 |
| MAX | 6.6 | 3.96 | 5.71 | 6.24 | 6.66 | 6.98 | 7.56 | 7.53 | 7.06 | 7.33 | 7.99 | 8.09 |
| MIN | 3.75 | 3.84 | 4.32 | 5.78 | 6.2 | 6.66 | 6.96 | 7.07 | 6.53 | 3.33 | 5.97 | 5.27 |

e Estimated

# Attachment B

# Laboratory and Field Data Results

## List of Tables for Laboratory and Field Data Results

# Table 1: Adit

| Adit Dissolved Metals - mg/L | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Date | Time | Al | Q | As | Q | Ca | Q | Cd | Q | Co | Q | Cr | Q | Cu | Q | Fe | Q | Mg | Q | Mn | Q | Ni | Q | Zn | Q | TDS | Q | Sulfate | Q |
| 056LM053-ADIT | 10/25/2005 | 10:04:00 AM | 293 | | 14.3 | | 127 | | 0.0499 | | 2.17 | | 1.1 | | 1.19 | | 745 | | 38 | | 7.84 | | 5.48 | | 0.75 | | 5650 | | 4540 | |
| 056LM073-ADIT | 11/30/2005 | 10:30:00 AM | 303 | | 14.3 | | 125 | | 0.0468 | | 2.03 | | 1.18 | | 1.17 | | 810 | | 38.4 | | 7.87 | | 5.72 | | 0.758 | | 5440 | | 4210 | |
| 056LM079 | 12/27/2005 | 12:55:00 PM | 300 | | 13.2 | | 122 | | 0.0424 | | 2.07 | | 0.99 | | 1.05 | | 760 | | 37 | | 7.74 | | 4.93 | | 0.9 | | 5740 | H | 4120 | |
| 056LM094-ADIT | 1/24/2006 | 11:10 AM | 360 | | 13 | | 130 | | 0.049 | | 1.6 | | 1.0 | | 1.4 | | 860 | | 41 | | 8.6 | | 4.9 | | 0.78 | | 6310 | | 3990 | |
| 056LM112-Adit | 2/22/2006 | 11:55 AM | 330 | | 12 | | 120 | | 0.049 | | 1.3 | | 1.2 | | 1.4 | | 730 | | 38 | | 7.9 | | 5.3 | | 0.59 | | 5300 | | 5700 | |
| 056LM121 | 3/22/2006 | 11:35:00 AM | 330 | | 11 | | 120 | | 0.044 | | 1.2 | | 1 | | 0.96 | | 740 | | 39 | | 8 | | 4 | | 0.56 | | 6200 | | 5600 | |
| 056LM157 | 4/25/2006 | 10:40:00 AM | 400 | | 15 | | 130 | | 0.093 | | 1.6 | | 1.4 | | 2.3 | | 990 | | 44 | | 9.3 | | 6.3 | | 0.93 | | 8000 | | 5200 | |
| 056LM194-Adit | 5/30/2006 | 10:40 AM | 310 | | 16 | | 130 | | 0.069 | | 1.3 | | 1.2 | | 3.2 | | 790 | | 42 | | 9.9 | | 5.9 | | 1.0 | | 5200 | | 4900 | |
| 056LM210-Adit | 6/26/2006 | 10:45 AM | 280 | | 20 | | 130 | | 0.086 | | 2.8 | | 1.4 | | 2.0 | | 900 | | 42 | | 9.5 | | 7.0 | | 0.85 | | 7000 | | 4700 | |
| 067LM005-Adit | 7/25/2006 | 10:35 AM | 320 | | 19 | | 130 | | 0.080 | | 2.5 | | 1.3 | | 1.5 | | 830 | | 41 | | 9.2 | | 6.1 | | 0.80 | | 5900 | | 4100 | |
| 067LM010-Adit-D | 7/25/2006 | 10:40 AM | 350 | | 18 | | 130 | | 0.079 | | 2.5 | | 1.3 | | 1.6 | | 820 | | 40 | | 8.6 | | 6.2 | | 0.80 | | 6500 | | 4300 | |
| 067LM124-Adit | 08/29/2006 | 10:35:00 AM | 310 | | 14 | | 130 | | 0.059 | | 2.1 | | 0.80 | | 0.93 | | 700 | | 38 | | 6.7 | | 3.8 | | 0.53 | | 5500 | | 3900 | |
| 067LM035-Adit | 09/28/2006 | 11:00:00 AM | 250 | | 12 | | 120 | | 0.045 | | 1.8 | | 0.95 | | 1.0 | | 540 | | 38 | | 5.5 | | 4.5 | | 0.64 | | 5100 | | 3900 | |
| 067LM036-Adit dup | 09/28/2006 | 11:10:00 AM | 200 | | 11 | | 120 | | 0.046 | | 1.7 | | 0.94 | | 1.1 | | 650 | | 38 | | 5.2 | | 4.2 | | 0.64 | | 5300 | | 3900 | |

| Adit Total Metals - mg/L | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Date | Time | Al | Q | As | Q | Ca | Q | Cd | Q | Co | Q | Cr | Q | Cu | Q | Fe | Q | Mg | Q | Mn | Q | Ni | Q | Zn | Q |
| 056LM053-ADIT | 10/25/2005 | 10:04:00 AM | 311 | | 12.1 | | 138 | | 0.0728 | | 2.29 | | 0.918 | | 1.63 | | 783 | | 41 | | 8.37 | | 4.51 | | 1.02 | |
| 056LM073-ADIT | 11/30/2005 | 10:30:00 AM | 301 | | 13.2 | | 125 | | 0.0425 | | 2.17 | | 1.06 | | 1.13 | | 770 | | 37 | | 7.7 | | 5.32 | | 0.642 | |
| 056LM079 | 12/27/2005 | 12:55:00 PM | 322 | | 14.3 | | 131 | | 0.046 | | 2.21 | | 1.09 | | 1.14 | | 786 | | 39 | | 8.29 | | 5.01 | | 0.87 | |
| 056LM094-ADIT | 1/24/2006 | 11:10 AM | 360 | | 14 | | 130 | | 0.051 | | 1.6 | | 1.0 | | 1.4 | | 840 | | 41 | | 8.6 | | 4.9 | | 0.80 | |
| 056LM112-Adit | 2/22/2006 | 11:55 AM | 320 | | 14 | | 120 | | 0.048 | | 1.4 | | 1.2 | | 1.5 | | 740 | | 38 | | 7.8 | | 5.6 | | 0.75 | |
| 056LM121 | 3/22/2006 | 11:35:00 AM | 330 | | 12 | | 120 | | 0.048 | | 1.3 | | 1.2 | | 1 | | 740 | | 40 | | 8.1 | | 4 | | 0.58 | |
| 056LM157 | 4/25/2006 | 10:40:00 AM | 410 | | 15 | | 130 | | 0.094 | | 1.6 | | 1.5 | | 2.3 | | 990 | | 45 | | 9.4 | | 6.5 | | 0.95 | |
| 056LM194-Adit | 5/30/2006 | 10:40 AM | 340 | | 15 | | 140 | | 0.068 | | 1.4 | | 1.3 | | 3.2 | | 830 | | 46 | | 11 | | 5.8 | | 0.99 | |
| 056LM210-Adit | 6/26/2006 | 10:45 AM | 310 | | 19 | | 140 | | 0.092 | | 2.7 | | 1.4 | | 1.9 | | 880 | | 42 | | 9.2 | | 6.8 | | 0.91 | |
| 067LM005-Adit | 7/25/2006 | 10:35 AM | 310 | | 21 | | 130 | | 0.080 | | 2.5 | | 1.3 | | 1.7 | | 810 | | 40 | | 9.0 | | 6.4 | | 0.87 | |
| 067LM010-Adit-D | 7/25/2006 | 10:40 AM | 330 | | 18 | | 140 | | 0.079 | | 2.5 | | 1.4 | | 1.7 | | 830 | | 41 | | 8.6 | | 6.7 | | 0.89 | |
| 067LM124-Adit | 08/29/2006 | 10:35:00 AM | 360 | | 15 | | 130 | | 0.061 | | 2.3 | | 0.82 | | 1.4 | | 700 | | 38 | | 7.5 | | 4.0 | | 0.54 | |
| 067LM035-Adit | 09/28/2006 | 11:00:00 AM | 450 | | 11 | | 110 | | 0.046 | | 2.1 | | 1.1 | | 0.94 | | 610 | | 39 | | 7.9 | | 5.3 | | 0.58 | |
| 067LM036-Adit dup | 09/28/2006 | 11:10:00 AM | 450 | | 11 | | 110 | | 0.045 | | 2.0 | | 1.1 | | 0.91 | | 610 | | 36 | | 7.7 | | 5.2 | | 0.56 | |

| Adit Field and Flow Data | | | | | | | | | | Daily Mean Flow | | Monthly Mean Flow | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Time | pH | | Temp | | EC | | SpC | | | | | |
| 10/25/2005 | 10:04:00 AM | 2.3 | SU | 12 | °C | 3902 | uS/cm | 5200 | uS/cm | 13.527 | gpm | 13.76 | gpm |
| 11/30/2005 | 10:30:00 AM | 2.5 | SU | 11.9 | °C | 3750 | uS/cm | 5000 | uS/cm | 13.194 | gpm | 13.432 | gpm |
| 12/27/2005 | 12:55:00 PM | 2.44 | SU | 11.9 | °C | 3690 | uS/cm | 4923 | uS/cm | 13.135 | gpm | 13.261 | gpm |
| 1/24/2006 | 11:50:00 AM | 2.4 | SU | 11.8 | °C | 4020 | uS/cm | 5370 | uS/cm | 17.288 | gpm | 16.125 | gpm |
| 2/22/2006 | 11:55:00 AM | 2.3 | SU | 11.9 | °C | 3930 | uS/cm | 5240 | uS/cm | 18.144 | gpm | 17.983 | gpm |
| 3/22/2006 | 11:35:00 AM | 2.3 | SU | 11.9 | °C | 4295 | uS/cm | 5730 | uS/cm | 20.313 | gpm | 19.909 | gpm |
| 4/25/2006 | 10:40:00 AM | 1.7 | SU | 11.8 | °C | 6360 | uS/cm | 8500 | uS/cm | 33.156 | gpm | 26.934 | gpm |
| 5/30/2006 | 10:40:00 AM | 1.9 | SU | 11.8 | °C | 6140 | uS/cm | 8210 | uS/cm | 29.904 | gpm | 36.625 | gpm |
| 6/26/2006 | 10:45:00 AM | 1.8 | SU | 11.8 | °C | 5430 | uS/cm | 7260 | uS/cm | 24.311 | gpm | 25.66 | gpm |
| 7/25/2006 | 10:35:00 AM | 1.95 | SU | 11.9 | °C | 4770 | uS/cm | 6360 | uS/cm | 19.887 | gpm | 21.451 | gpm |
| 7/25/2006 | 10:40:00 AM | 1.95 | SU | 11.9 | °C | 4770 | uS/cm | 6360 | uS/cm | 19.887 | gpm | 21.451 | gpm |
| 8/29/2006 | 10:35:00 AM | 2.3 | SU | 11.9 | °C | 4121 | uS/cm | 5500 | uS/cm | 18.595 | gpm | 19.262 | gpm |
| 9/28/2006 | 11:00:00 AM | 2.1 | SU | 11.9 | °C | 3781 | uS/cm | 5040 | uS/cm | 17.067 | gpm | 17.761 | gpm |
| 9/28/2006 | 11:10:00 AM | 2.1 | SU | 11.9 | °C | 3781 | uS/cm | 5040 | uS/cm | 17.067 | gpm | 17.761 | gpm |

**Field Data:**

EC - Electrical Conductivity

SpC - Specific Conductance

Units: SU - Standard Units; °C - degrees celsius; uS/cm - micro siemen per centimeter;
gpm - gallons per minute

Lerr - Instrument reading when instument cannot compute SpC due to low water temperature

e - estimated

**Q - Qualifiers:**

U - Analyte not detected at the given Method Detection Limit (MDL)

B - Analyte detected between the MDL and the Practical Quantitation Limit

J - Analyte detected between the MDL and the Practical Quantitation Limit

* - Relative Percent Difference between sample and field duplicate exceeds 25%

H - Analysis performed outside of method holding time

# Table 2: Pit Under-drain

| PUD Dissolved Metals - mg/L | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Date | Time | Al | Q | As | Q | Ca | Q | Cd | Q | Co | Q | Cr | Q | Cu | Q | Fe | Q | Mg | Q | Mn | Q | Ni | Q | Zn | Q | TDS | Q | Sulfate | Q |
| 056LM055-PUD | 10/25/2005 | 10:20:00 AM | 290 | | 0.754 | | 295 | | 0.0158 | | 1.26 | | 0.391 | | 0.329 | | 991 | | 109 | | 40.7 | | 2.48 | | 1.8 | | 7480 | | 6750 | |
| 056LM072-PUD | 11/30/2005 | 10:50:00 AM | 305 | | 0.95 | | 314 | | 0.0172 | | 1.4 | | 0.364 | | 0.4 | | 1120 | | 124 | | 51.9 | | 3.19 | | 2.4 | | 7810 | | 7250 | |
| 056LM080 | 12/27/2005 | 1:05:00 PM | 349 | | 0.955 | | 335 | | 0.0169 | | 1.46 | | 0.413 | | 0.73 | | 1020 | | 117 | | 48.8 | | 2.79 | | 2.42 | | 8300 | H | 6730 | |
| 056LM095-PUD | 1/24/2006 | 11:10:00 AM | 200 | | 1.5 | | 180 | | 0.011 | | 0.38 | | 0.51 | | 0.10 | | 470 | | 67 | | 9.8 | | 1.5 | | 0.66 | | 4320 | | 2910 | |
| 056LM113-Pud | 2/22/2006 | 11:45:00 AM | 290 | | 2.9 | | 200 | | 0.022 | | 0.46 | | 0.62 | | 0.089 | | 630 | | 70 | | 10 | | 2.2 | | 0.64 | | 5100 | | 5600 | |
| 056LM122 | 3/22/2006 | 11:25:00 AM | 370 | | 4.4 | | 200 | | 0.03 | | 0.56 | | 0.99 | | 0.065 | | 800 | | 71 | | 9.2 | | 2.3 | | 0.64 | | 6800 | | 4900 | |
| 056LM158 | 4/25/2006 | 10:30:00 AM | 590 | | 10 | | 210 | | 0.075 | | 1.2 | | 1.5 | | 6.5 | | 1300 | | 74 | | 12 | | 4.6 | | 1.3 | | 11000 | | 7400 | |
| 056LM193-PUD | 5/30/2006 | 10:50:00 AM | 640 | | 16 | | 230 | | 0.091 | | 1.3 | | 1.6 | | 1.1 | | 1500 | | 81 | | 13 | | 7.2 | | 1.5 | | 6000 | | 8600 | |
| 056LM211-PUD | 6/26/2006 | 10:30:00 AM | 400 | | 12 | | 250 | | 0.064 | | 2.0 | | 1.5 | | 0.17 | | 1200 | | 85 | | 14 | | 5.6 | | 1.5 | | 9800 | | 6400 | |
| 067LM006-PUD | 7/25/2006 | 10:30:00 AM | 430 | | 8.9 | | 260 | | 0.048 | | 1.5 | | 1.3 | | 0.14 | | 1100 | | 86 | | 17 | | 4.6 | | 1.5 | | 7800 | | 5400 | |
| 067LM122-PUD | 08/29/2006 | 10:25:00 AM | 360 | | 4.3 | | 260 | | 0.025 | | 0.99 | | 0.85 | | 0.16 | * | 780 | | 82 | | 16 | | 3.2 | | 1.0 | | 6700 | | 5300 | |
| 067LM123-PUD-D | 08/29/2006 | 10:20:00 AM | 350 | | 4.5 | | 270 | | 0.021 | | 0.99 | | 0.84 | | 0.085 | * | 790 | | 86 | | 16 | | 3.2 | | 1.3 | | 6700 | | 5400 | |
| 067LM037-PUD | 09/28/2006 | 10:45:00 AM | 240 | | 3.2 | | 170 | | 0.017 | | 0.92 | | 0.61 | | 0.26 | | 710 | | 93 | | 18 | | 2.8 | | 1.2 | | 6100 | | 4700 | |

| PUD Total Metals - mg/L | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Date | Time | Al | Q | As | Q | Ca | Q | Cd | Q | Co | Q | Cr | Q | Cu | Q | Fe | Q | Mg | Q | Mn | Q | Ni | Q | Zn | Q |
| 056LM055-PUD | 10/25/2005 | 10:20:00 AM | 302 | | 1.08 | | 310 | | 0.0251 | | 1.27 | | 0.551 | | 0.466 | | 1020 | | 114 | | 42.2 | | 2.34 | | 2.59 | |
| 056LM072-PUD | 11/30/2005 | 10:50:00 AM | 309 | | 1.03 | | 268 | | 0.016 | | 1.47 | | 0.388 | | 0.358 | | 1080 | | 123 | | 51.2 | | 3.46 | | 2.36 | |
| 056LM080 | 12/27/2005 | 1:05:00 PM | 351 | | 1.15 | | 337 | | 0.018 | | 1.49 | | 0.452 | | 0.87 | | 1030 | | 118 | | 49.6 | | 3.37 | | 2.5 | |
| 056LM095-PUD | 1/24/2006 | 11:10:00 AM | 230 | | 1.5 | | 210 | | 0.011 | | 0.38 | | 0.51 | | 0.10 | | 510 | | 73 | | 11 | | 1.5 | | 0.66 | |
| 056LM113-Pud | 2/22/2006 | 11:45:00 AM | 300 | | 3.1 | | 200 | | 0.022 | | 0.46 | | 0.78 | | 0.11 | | 620 | | 72 | | 10 | | 2.2 | | 0.75 | |
| 056LM122 | 3/22/2006 | 11:25:00 AM | 370 | | 4.3 | | 200 | | 0.038 | | 0.54 | | 1.1 | | 0.084 | | 800 | | 76 | | 9.6 | | 2.9 | | 0.91 | |
| 056LM158 | 4/25/2006 | 10:30:00 AM | 610 | | 11 | | 210 | | 0.076 | | 1.2 | | 1.6 | | 6.7 | | 1300 | | 75 | | 12 | | 4.7 | | 1.3 | |
| 056LM193-PUD | 5/30/2006 | 10:50:00 AM | 650 | | 16 | | 250 | | 0.094 | | 1.5 | | 1.9 | | 1.2 | | 1600 | | 84 | | 14 | | 7.2 | | 1.5 | |
| 056LM211-PUD | 6/26/2006 | 10:30:00 AM | 440 | | 12 | | 250 | | 0.073 | | 2.0 | | 1.6 | | 0.20 | | 1200 | | 85 | | 13 | | 5.6 | | 1.6 | |
| 067LM006-PUD | 7/25/2006 | 10:30:00 AM | 420 | | 8.1 | | 270 | | 0.047 | | 1.5 | | 1.2 | | 0.22 | | 1100 | | 85 | | 15 | | 4.7 | | 1.4 | |
| 067LM122-PUD | 08/29/2006 | 10:25:00 AM | 390 | | 4.6 | | 260 | | 0.025 | | 1.0 | | 0.87 | | 0.15 | * | 820 | | 82 | | 23 | | 3.2 | | 1.0 | |
| 067LM123-PUD-D | 08/29/2006 | 10:20:00 AM | 390 | | 4.5 | | 270 | | 0.022 | | 1.0 | | 0.86 | | 0.088 | * | 840 | | 83 | | 23 | | 3.2 | | 1.4 | |
| 067LM037-PUD | 09/28/2006 | 10:45:00 AM | 460 | | 3.3 | | 240 | | 0.017 | | 0.91 | | 0.56 | | 0.25 | | 690 | | 86 | | 35 | | 2.8 | | 1.1 | |

| PUD Field and Flow Data | | | | | | | | | | | Daily Mean Flow | | Monthly Mean Flow | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Time | pH | | Temp | | EC | | SpC | | | | | | |
| 10/25/2005 | 10:20:00 AM | 2.7 | SU | 10.1 | °C | 4000 | uS/cm | 5600 | uS/cm | | 0.252 | gpm | 0.317 | gpm |
| 11/30/2005 | 10:50:00 AM | 2.9 | SU | 8.2 | °C | 3858 | uS/cm | 5700 | uS/cm | | 0.374 | gpm | 0.396 | gpm |
| 12/27/2005 | 1:05:00 PM | 2.6 | SU | 7.8 | °C | 3945 | uS/cm | 5890 | uS/cm | | 0.598 | gpm | 0.631 | gpm |
| 1/24/2006 | 12:00:00 PM | 3.1 | SU | 9 | °C | 2428 | uS/cm | 3496 | uS/cm | | 8.319 | gpm | 6.835 | gpm |
| 2/22/2006 | 11:45:00 AM | 2.5 | SU | 8.9 | °C | 3160 | uS/cm | 4563 | uS/cm | | 8.675 | gpm | 8.955 | gpm |
| 3/22/2006 | 11:25:00 AM | 2.6 | SU | 8.9 | °C | 3601 | uS/cm | 5200 | uS/cm | | 11.848 | gpm | 12.251 | gpm |
| 4/25/2006 | 10:30:00 AM | 1.8 | SU | 9.1 | °C | 6410 | uS/cm | 9210 | uS/cm | | 34.418 | gpm | 28.041 | gpm |
| 5/30/2006 | 10:50:00 AM | 2.1 | SU | 9.5 | °C | 6330 | uS/cm | 9000 | uS/cm | | 20.27 | gpm | 30.167 | gpm |
| 6/26/2006 | 10:30:00 AM | 1.9 | SU | 9.7 | °C | 5350 | uS/cm | 7580 | uS/cm | | 12.259 | gpm | 15.181 | gpm |
| 7/25/2006 | 10:30:00 AM | 2.08 | SU | 9.7 | °C | 4750 | uS/cm | 6630 | uS/cm | | 7.452 | gpm | 8.566 | gpm |
| 8/29/2006 | 10:25:00 AM | 2.4 | SU | 10.7 | °C | 4096 | uS/cm | 5650 | uS/cm | | 4.358 | gpm | 5.271 | gpm |
| 8/29/2006 | 10:20:00 AM | 2.4 | SU | 10.7 | °C | 4096 | uS/cm | 5650 | uS/cm | | 4.358 | gpm | 5.271 | gpm |
| 9/28/2006 | 10:45:00 AM | 2.3 | SU | 10.7 | °C | 1899 | uS/cm | 2608 | uS/cm | | 1.2 | gpm | 1.88 | gpm |

**Field Data:**

EC - Electrical Conductivity

SpC - Specific Conductance

Units: SU - Standard Units; °C - degrees celsius; uS/cm - micro siemen per centimeter; gpm - gallons per minute

Lerr - Instrument reading when instument cannot compute SpC due to low water temperature

e - estimated

**Q - Qualifiers:**

U - Analyte not detected at the given Method Detection Limit (MDL)

B - Analyte detected between the MDL and the Practical Quantitation Limit

J - Analyte detected between the MDL and the Practical Quantitation Limit

* - Relative Percent Difference between sample and field duplicate exceeds 25%

H - Analysis performed outside of method holding time

# Table 3: Overburden Seep

| OS Dissolved Metals - mg/L | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Date | Time | Al | Q | As | Q | Ca | Q | Cd | Q | Co | Q | Cr | Q | Cu | Q | Fe | Q | Mg | Q | Mn | Q | Ni | Q | Zn | Q | TDS | Q | Sulfate | Q |
| 056LM052-OS | 10/25/2005 | 12:05:00 PM | 50 | | 0.001 | B | 363 | | 0.0025 | | 0.37 | | 0.0042 | | 0.927 | | 132 | | 90.5 | | 21.2 | | 0.494 | | 0.688 | | 2730 | | 2320 | |
| 056LM057-OS-D | 10/25/2005 | 12:10:00 PM | 48.4 | | 0.002 | B | 357 | | 0.0027 | | 0.37 | | 0.0044 | | 0.952 | | 128 | | 87.7 | | 20.8 | | 0.508 | | 0.698 | | 2750 | | 2500 | |
| 056LM075-OS | 11/30/2005 | 1:15:00 PM | 48 | | 0.001 | B | 355 | | 0.0021 | | 0.31 | | 0.0054 | | 0.93 | | 143 | | 88.3 | | 20.5 | | 0.51 | | 0.739 | | 2650 | | 2740 | |
| 056LM076-OS-D | 11/30/2005 | 1:20:00 PM | 47.7 | | 0.001 | B | 355 | | 0.0021 | | 0.33 | | 0.0053 | | 0.928 | | 144 | | 88 | | 20.1 | | 0.508 | | 0.74 | | 2720 | | 2750 | |
| 056LM093-OS | 1/24/2006 | 11:10:00 AM | 48 | | 0.0014 | J | 320 | | 0.0021 | | 0.32 | | 0.0056 | | 0.97 | | 130 | | 83 | | 19 | | 0.54 | | 0.69 | | 2690 | | 1840 | |
| 056LM115-OS | 2/22/2006 | 1:00:00 PM | 50 | | 0.00069 | | 340 | | 0.0022 | | 0.31 | | 0.0053 | | 0.98 | | 130 | | 85 | | 20 | | 0.52 | | 0.70 | | 2500 | | 2600 | |
| 056LM119 | 3/22/2006 | 10:10:00 AM | 45 | | 0.00091 | | 340 | | 0.002 | | 0.29 | | 0.0058 | | 0.94 | | 130 | | 83 | | 19 | | 0.47 | | 0.57 | | 2900 | | 2200 | |
| 056LM161 | 4/25/2006 | 12:05:00 PM | 55 | | 0.0011 | | 370 | | 0.0033 | | 0.34 | | 0.0087 | | 1.8 | | 130 | | 90 | | 21 | | 0.56 | | 0.74 | | 1300 | | 1900 | |
| 056LM190-OS | 5/30/2006 | 12:05:00 PM | 61 | | 0.0014 | J | 360 | | 0.0038 | | 0.39 | | 0.010 | | 2.1 | | 140 | | 93 | | 21 | | 0.64 | | 0.85 | | 1600 | | 2300 | |
| 056LM215-0S | 6/26/2006 | 11:45:00 AM | 51 | | 0.0012 | J | 390 | | 0.0035 | | 0.38 | | 0.0078 | | 1.9 | | 150 | | 100 | | 23 | | 0.60 | | 0.82 | | 3300 | | 2200 | |
| 067LM009-OS | 7/25/2006 | 12:45:00 PM | 57 | | 0.0015 | J | 380 | | 0.0037 | | 0.37 | | 0.0070 | | 2.1 | | 140 | | 100 | | 23 | | 0.58 | | 0.82 | | 3000 | | 2200 | |
| 067LM126-OS | 08/29/2006 | 11:55:00 AM | 46 | | 0.0016 | J | 360 | | 0.0030 | | 0.39 | | 0.0045 | J | 1.7 | | 150 | | 98 | | 23 | | 0.60 | | 0.89 | | 3100 | | 2200 | |
| 067LM040-OS | 09/27/2006 | 11:20:00 AM | 50 | | 0.0016 | J | 350 | | 0.0030 | | 0.37 | | 0.0059 | | 1.5 | | 150 | | 97 | | 20 | | 0.56 | | 0.83 | | 2800 | | 2300 | |

| OS Total Metals - mg/L | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Date | Time | Al | Q | As | Q | Ca | Q | Cd | Q | Co | Q | Cr | Q | Cu | Q | Fe | Q | Mg | Q | Mn | Q | Ni | Q | Zn | Q |
| 056LM052-OS | 10/25/2005 | 12:05:00 PM | 49.4 | | 0.001 | B | 359 | | 0.0039 | | 0.37 | | 0.0073 | | 0.869 | | 128 | | 88.8 | | 20.9 | | 0.73 | | 0.974 | |
| 056LM057-OS-D | 10/25/2005 | 12:10:00 PM | 47.1 | | 0.002 | B | 343 | | 0.0044 | | 0.35 | | 0.0084 | | 0.818 | | 122 | | 84.5 | | 19.9 | | 0.815 | | 1.11 | |
| 056LM075-OS | 11/30/2005 | 1:15:00 PM | 44.6 | | 0.001 | B | 329 | | 0.0019 | | 0.36 | | 0.0046 | | 0.973 | | 129 | | 80.5 | | 19 | | 0.469 | | 0.703 | |
| 056LM076-OS-D | 11/30/2005 | 1:20:00 PM | 46.2 | | 0.001 | B | 344 | | 0.0019 | | 0.37 | | 0.0045 | | 0.944 | | 134 | | 84.1 | | 19.7 | | 0.462 | | 0.695 | |
| 056LM093-OS | 1/24/2006 | 11:10:00 AM | 53 | | 0.0017 | J | 360 | | 0.0020 | | 0.33 | | 0.0056 | | 0.96 | | 140 | | 90 | | 22 | | 0.53 | | 0.69 | |
| 056LM115-OS | 2/22/2006 | 1:00:00 PM | 52 | | 0.0016 | | 330 | | 0.0021 | | 0.31 | | 0.0060 | | 0.94 | | 130 | | 84 | | 19 | | 0.52 | | 0.67 | |
| 056LM119 | 3/22/2006 | 10:10:00 AM | 47 | | 0.00092 | | 340 | | 0.0021 | | 0.31 | | 0.0063 | | 0.95 | | 130 | | 85 | | 21 | | 0.48 | | 0.57 | |
| 056LM161 | 4/25/2006 | 12:05:00 PM | 59 | | 0.0019 | | 370 | | 0.0033 | | 0.34 | | 0.0088 | | 1.8 | | 130 | | 91 | | 21 | | 0.57 | | 0.75 | |
| 056LM190-OS | 5/30/2006 | 12:05:00 PM | 71 | | 0.0016 | J | 400 | | 0.0040 | | 0.39 | | 0.0098 | | 2.1 | | 150 | | 100 | | 23 | | 0.64 | | 0.83 | |
| 056LM215-0S | 6/26/2006 | 11:45:00 AM | 52 | | 0.0021 | J | 390 | | 0.0034 | | 0.39 | | 0.0072 | | 2.2 | | 140 | | 100 | | 23 | | 0.66 | | 0.88 | |
| 067LM009-OS | 7/25/2006 | 12:45:00 PM | 56 | | 0.0016 | J | 390 | | 0.0036 | | 0.37 | | 0.0081 | | 2.4 | | 140 | | 100 | | 23 | | 0.66 | | 0.97 | |
| 067LM126-OS | 08/29/2006 | 11:55:00 AM | 78 | | 0.0010 | J | 350 | | 0.0030 | | 0.38 | | 0.0055 | | 2.0 | | 150 | | 92 | | 33 | | 0.58 | | 0.85 | |
| 067LM040-OS | 09/27/2006 | 11:20:00 AM | 94 | | 0.0025 | J | 360 | | 0.0031 | | 0.35 | | 0.0059 | | 1.4 | | 150 | | 95 | | 42 | | 0.60 | | 0.77 | |

| OS Field and Flow Data | | | | | | | | | | | Daily Mean Flow | | Monthly Mean Flow | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Time | pH | | Temp | | EC | | SpC | | | | | | |
| 10/25/2005 | 12:05:00 PM | 3 | SU | 8.4 | °C | 1944 | uS/cm | 2846 | uS/cm | | 11.288 | gpm | 11.018 | gpm |
| 10/25/2005 | 12:10:00 PM | 3 | SU | 8.4 | °C | 1944 | uS/cm | 2846 | uS/cm | | 11.288 | gpm | 11.018 | gpm |
| 11/30/2005 | 1:15:00 PM | 3.1 | SU | 5.4 | °C | 1751 | uS/cm | 2800 | uS/cm | | 8.931 | gpm | 9.429 | gpm |
| 11/30/2005 | 1:20:00 PM | 3.1 | SU | 5.4 | °C | 1751 | uS/cm | 2800 | uS/cm | | 8.931 | gpm | 9.429 | gpm |
| 1/24/2006 | 10:45:00 AM | 3.1 | SU | 4.6 | °C | 1695 | uS/cm | 2778 | uS/cm | | 12.527 | gpm | 12.595 | gpm |
| 2/22/2006 | 1:00:00 PM | 2.9 | SU | 5.2 | °C | 1735 | uS/cm | 2780 | uS/cm | | 12.115 | gpm | 12.691 | gpm |
| 3/22/2006 | 10:10:00 AM | 3 | SU | 5.3 | °C | 1757 | uS/cm | 2818 | uS/cm | | 14.497 | gpm | 14.959 | gpm |
| 4/25/2006 | 12:05:00 PM | 2.6 | SU | 8.4 | °C | 1977 | uS/cm | 2893 | uS/cm | | e27.725 | gpm | 22.694 | gpm |
| 5/30/2006 | 12:05:00 PM | 2.9 | SU | 9.8 | °C | 2210 | uS/cm | 3106 | uS/cm | | 21.502 | gpm | 23.408 | gpm |
| 6/26/2006 | 11:45:00 AM | 2.8 | SU | 11.9 | °C | 2375 | uS/cm | 3165 | uS/cm | | 20.049 | gpm | 20.696 | gpm |
| 7/25/2006 | 12:45:00 PM | 2.7 | SU | 13.7 | °C | 2335 | uS/cm | 2971 | uS/cm | | 14.936 | gpm | 17.128 | gpm |
| 8/29/2006 | 11:55:00 AM | 3 | SU | 10.6 | °C | 2195 | uS/cm | 3036 | uS/cm | | 14.357 | gpm | 14.168 | gpm |
| 9/27/2006 | 11:20:00 AM | 2.7 | SU | 8.5 | °C | 2017 | uS/cm | 2945 | uS/cm | | e12.550 | gpm | 12.909 | gpm |

**Field Data:**

EC - Electrical Conductivity

SpC - Specific Conductance

Units: SU - Standard Units; °C - degrees celsius; uS/cm - micro siemen per centimeter; gpm - gallons per minute

Lerr - Instrument reading when instument cannot compute SpC due to low water temperature

e - estimated

**Q - Qualifiers:**

U - Analyte not detected at the given Method Detection Limit (MDL)

B - Analyte detected between the MDL and the Practical Quantitation Limit

J - Analyte detected between the MDL and the Practical Quantitation Limit

* - Relative Percent Difference between sample and field duplicate exceeds 25%

H - Analysis performed outside of method holding time

# Table 4: Channel Under-drain

| CUD Dissolved Metals - mg/L | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Date | Time | Al | Q | As | Q | Ca | Q | Cd | Q | Co | Q | Cr | Q | Cu | Q | Fe | Q | Mg | Q | Mn | Q | Ni | Q | Zn | Q | TDS | Q | Sulfate | Q |
| 056LM054-CUD | 10/25/2005 | 10:50:00 AM | 38.6 | | 0.532 | | 345 | | 0.0006 | B | 0.83 | | 0.0184 | | 0.006 | | 384 | | 82.2 | | 18.8 | | 1.72 | | 0.305 | | 3330 | | 2480 | |
| 056LM071-CUD | 11/30/2005 | 11:55:00 AM | 40.3 | | 0.502 | | 364 | | 0.0001 | B | 0.75 | | 0.0215 | | 0.0005 | U | 395 | | 86.7 | | 19.1 | | 1.62 | | 0.33 | | 3500 | | 2990 | |
| 056LM081 | 12/27/2005 | 1:53:00 PM | 41.4 | | 0.556 | | 359 | | 0.0001 | B | 0.82 | | 0.0213 | | 0.003 | U | 383 | | 83.3 | | 19.3 | | 1.47 | | 0.36 | | 3430 | H | 2690 | |
| 056LM097-CUD | 1/24/2006 | 11:10 AM | 52 | | 0.60 | | 270 | | 0.00033 | J | 0.87 | | 0.026 | | 0.00026 | J | 380 | | 72 | | 17 | | 1.7 | | 0.34 | | 3220 | | 2070 | |
| 056LM114-Cud | 2/22/2006 | 10:50 AM | 55 | | 0.61 | | 290 | | 0.00035 | | 0.78 | | 0.030 | | 0.00016 | J | 400 | | 73 | | 17 | | 2.0 | | 0.38 | | 3000 | | 2700 | |
| 056LM123 | 3/22/2006 | 12:55:00 PM | 55 | | 0.55 | | 290 | | 0.00086 | | 0.81 | | 0.029 | | 0.0005 | U | 400 | | 74 | | 18 | | 1.6 | | 0.3 | | 3200 | | 2500 | |
| 056LM159 | 4/25/2006 | 11:25:00 A | 81 | | 1.2 | | 310 | | 0.0034 | | 1.3 | | 0.049 | | 0.054 | | 500 | | 83 | | 19 | | 2.3 | | 0.51 | | 1400 | | 2500 | |
| 056LM192-CUD | 5/30/2006 | 11:15 AM | 100 | | 1.5 | | 310 | | 0.0062 | | 1.4 | | 0.083 | | 0.047 | | 580 | | 86 | | 20 | | 3.0 | | 0.61 | | 2400 | | 3200 | |
| 056LM213-CUD | 6/26/2006 | 11:05 AM | 60 | | 1.2 | | 340 | | 0.0022 | | 1.3 | | 0.049 | | 0.015 | | 570 | | 89 | | 22 | | 2.7 | | 0.51 | | 4400 | | 2800 | |
| 067LM007-CUD | 7/25/2006 | 11:25 AM | 66 | | 0.84 | | 320 | | 0.0014 | J | 1.1 | | 0.035 | | 0.00052 | J | 530 | | 86 | | 21 | | 2.6 | | 0.50 | | 3900 | | 2500 | |
| 067LM125-CUD | 08/29/2006 | 11:05:00 AM | 44 | | 0.62 | | 320 | | 0.00051 | J | 0.94 | | 0.028 | | 0.00073 | J | 480 | | 84 | | 19 | | 2.2 | | 0.45 | | 3700 | | 2500 | |
| 067LM038-CUD | 09/27/2006 | 10:40:00 AM | 46 | | 0.58 | | 310 | | 0.00029 | J | 0.75 | | 0.026 | | 0.00021 | J | 450 | | 83 | | 18 | | 2.1 | | 0.39 | | 3400 | | 2500 | |

| CUD Total Metals - mg/L | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Date | Time | Al | Q | As | Q | Ca | Q | Cd | Q | Co | Q | Cr | Q | Cu | Q | Fe | Q | Mg | Q | Mn | Q | Ni | Q | Zn | Q |
| 056LM054-CUD | 10/25/2005 | 10:50:00 AM | 37.4 | | 0.73 | | 332 | | 0.001 | | 0.78 | | 0.0258 | | 0.01 | | 365 | | 78.7 | | 18.1 | | 1.43 | | 0.426 | |
| 056LM071-CUD | 11/30/2005 | 11:55:00 AM | 39.2 | | 0.527 | | 353 | | 0.0001 | B | 0.83 | | 0.0197 | | 0.0007 | B | 390 | | 82.8 | | 18.7 | | 1.7 | | 0.286 | |
| 056LM081 | 12/27/2005 | 1:53:00 PM | 42.2 | | 0.588 | | 353 | | 0.0005 | U | 0.85 | | 0.022 | | 0.005 | U | 385 | | 84.7 | | 19.6 | | 1.77 | | 0.4 | |
| 056LM097-CUD | 1/24/2006 | 11:10 AM | 55 | | 0.60 | | 300 | | 0.00038 | | 0.84 | | 0.026 | | 0.011 | | 410 | | 76 | | 18 | | 1.7 | | 0.34 | |
| 056LM114-Cud | 2/22/2006 | 10:50 AM | 57 | | 0.66 | | 290 | | 0.00044 | | 0.78 | | 0.030 | | 0.0092 | | 400 | | 75 | | 17 | | 2.0 | | 0.35 | |
| 056LM123 | 3/22/2006 | 12:55:00 PM | 56 | | 0.62 | | 290 | | 0.00085 | | 0.83 | | 0.032 | | 0.015 | | 400 | | 75 | | 19 | | 1.6 | | 0.31 | |
| 056LM159 | 4/25/2006 | 11:25:00 A | 85 | | 1.2 | | 310 | | 0.0034 | | 1.3 | | 0.051 | | 0.082 | | 500 | | 85 | | 19 | | 2.4 | | 0.51 | |
| 056LM192-CUD | 5/30/2006 | 11:15 AM | 120 | | 1.5 | | 360 | | 0.0065 | | 1.5 | | 0.085 | | 0.051 | | 640 | | 95 | | 22 | | 3.0 | | 0.57 | |
| 056LM213-CUD | 6/26/2006 | 11:05 AM | 66 | | 1.2 | | 340 | | 0.0022 | | 1.3 | | 0.047 | | 0.025 | | 550 | | 88 | | 21 | | 2.7 | | 0.58 | |
| 067LM007-CUD | 7/25/2006 | 11:25 AM | 70 | | 0.96 | | 330 | | 0.0013 | J | 1.1 | | 0.041 | | 0.021 | | 520 | | 85 | | 20 | | 2.7 | | 0.55 | |
| 067LM125-CUD | 08/29/2006 | 11:05:00 AM | 75 | | 0.66 | | 300 | | 0.00047 | J | 0.98 | | 0.029 | | 0.0045 | J | 450 | | 79 | | 7.0 | | 2.2 | | 0.46 | |
| 067LM038-CUD | 09/27/2006 | 10:40:00 AM | 86 | | 0.61 | | 320 | | 0.00032 | J | 0.80 | | 0.024 | | 0.0022 | J | 440 | | 81 | | 36 | | 2.2 | | 0.37 | |

| CUD Field and Flow Data | | | | | | | | | | | Daily Mean Flow | | Monthly Mean Flow | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Time | pH | | Temp | | EC | | SpC | | | | | | |
| 10/25/2005 | 10:50:00 AM | 4.5 | SU | 9 | °C | 2046 | uS/cm | 2957 | uS/cm | | 21.335 | gpm | 30.535 | gpm |
| 11/30/2005 | 11:55:00 AM | 4.8 | SU | 8.7 | °C | 2092 | uS/cm | 3038 | uS/cm | | 17.497 | gpm | 18.996 | gpm |
| 12/27/2005 | 1:53:00 PM | 4.7 | SU | 8.5 | °C | 2052 | uS/cm | 2995 | uS/cm | | 25.454 | gpm | 22.566 | gpm |
| 1/24/2006 | 12:55:00 PM | 4.6 | SU | 8.7 | °C | 1955 | uS/cm | 2840 | uS/cm | | 30.641 | gpm | 30.577 | gpm |
| 2/22/2006 | 10:50:00 AM | 4.3 | SU | 8.6 | °C | 2018 | uS/cm | 2939 | uS/cm | | 27.213 | gpm | 31.283 | gpm |
| 3/22/2006 | 12:55:00 PM | 4.5 | SU | 8.5 | °C | 2068 | uS/cm | 3020 | uS/cm | | 32.709 | gpm | 33.68 | gpm |
| 4/25/2006 | 11:25:00 AM | 4.1 | SU | 8.4 | °C | 2282 | uS/cm | 3341 | uS/cm | | 40.318 | gpm | 34.855 | gpm |
| 5/30/2006 | 11:15:00 AM | 3.6 | SU | 8.6 | °C | 2655 | uS/cm | 3864 | uS/cm | | 47.125 | gpm | 39.999 | gpm |
| 6/26/2006 | 11:05:00 AM | 3.6 | SU | 8.7 | °C | 2426 | uS/cm | 3521 | uS/cm | | 42.447 | gpm | 41.237 | gpm |
| 7/25/2006 | 11:25:00 AM | 4 | SU | 8.7 | °C | 2275 | uS/cm | 3304 | uS/cm | | NA | gpm | NA | gpm |
| 8/29/2006 | 11:05:00 AM | 4.3 | SU | 8.6 | °C | 2156 | uS/cm | 3140 | uS/cm | | NA | gpm | NA | gpm |
| 9/27/2006 | 10:40:00 AM | 4.3 | SU | 8.4 | °C | 2141 | uS/cm | 3085 | uS/cm | | NA | gpm | NA | gpm |

**Field Data:**

EC - Electrical Conductivity

SpC - Specific Conductance

Units: SU - Standard Units; °C - degrees celsius; uS/cm - micro siemen per centimeter; gpm - gallons per minute

Lerr - Instrument reading when instument cannot compute SpC due to low water temperature

e - estimated

NA - data not available due to CUD being pumped to treatment system

**Q - Qualifiers:**

U - Analyte not detected at the given Method Detection Limit (MDL)

B - Analyte detected between the MDL and the Practical Quantitation Limit

J - Analyte detected between the MDL and the Practical Quantitation Limit

* - Relative Percent Difference between sample and field duplicate exceeds 25%

H - Analysis performed outside of method holding time

# Table 5: Station 1

| Sta 1 Dissolved Metals - mg/L | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Date | Time | Al | Q | As | Q | Ca | Q | Cd | Q | Co | Q | Cr | Q | Cu | Q | Fe | Q | Mg | Q | Mn | Q | Ni | Q | Zn | Q | TDS | Q | Sulfate | Q |
| 056LM045-STA1 | 10/25/2005 | 11:10:00 AM | 0.15 | B | 0.0033 | | 14.6 | | 0.0001 | B | 0.01 | B | 0.0008 | | 0.0013 | B | 0.18 | | 5.3 | | 0.015 | B | 0.0017 | B | 0.006 | B | 110 | | 6.5 | |
| 056LM065-STA 1 | 11/30/2005 | 11:10:00 AM | 0.09 | B | 0.0021 | B | 11.7 | | 0.0001 | U | 0.01 | U | 0.0003 | B | 0.0005 | U | 0.12 | | 4.2 | | 0.012 | B | 0.0006 | B | 0.004 | B | 110 | | 6.4 | |
| 056LM078 | 12/27/2005 | 1:25:00 PM | 0.13 | B | 0.0018 | B | 11.9 | | 0.0001 | U | 0.01 | U | 0.0002 | B | 0.0005 | U | 0.14 | | 4.3 | | 0.013 | B | 0.0008 | B | 0.007 | B | 150 | H | 8 | |
| 056LM096-STA1 | 1/24/2006 | 11:10:00 AM | 0.70 | | 0.0022 | J | 12 | | 0.000023 | U | 0.0026 | J | 0.00078 | J | 0.0013 | J | 0.52 | | 4.3 | | 0.012 | | 0.0012 | J | 0.0038 | J | 140 | | 12.4 | |
| 056LM105-Stal | 2/22/2006 | 11:25:00 AM | 0.47 | | 0.0023 | | 13 | | 0.000023 | U | 0.0011 | | 0.00044 | | 0.00075 | | 0.40 | | 4.1 | | 0.011 | | 0.0011 | | 0.0034 | | 120 | | 9.9 | |
| 056LM120 | 3/22/2006 | 12:05:00 PM | 0.53 | | 0.0019 | | 12 | | 0.0001 | U | 0.0043 | | 0.00073 | | 0.0025 | | 0.41 | | 4.0 | | 0.019 | | 0.0021 | | 0.01 | | 120 | | 12 | |
| 056LM156 | 4/25/2006 | 10:10:00 AM | 0.21 | | 0.0012 | | 9.4 | | 0.0001 | U | 0.0053 | | 0.00036 | | 0.0014 | | 0.15 | | 2.7 | | 0.016 | | 0.0019 | | 0.0096 | | 68 | | 4.6 | |
| 056LM195-STA 1 | 5/30/2006 | 10:00:00 AM | 0.24 | * | 0.0012 | J | 9.0 | | 0.000023 | U | 0.0024 | J | 0.00023 | J | 0.00052 | J | 0.21 | | 2.7 | | 0.017 | | 0.00080 | J | 0.0027 | J | 130 | | 3.6 | |
| 056LM196-STA 1 Dup | 5/30/2006 | 10:10:00 AM | 0.33 | * | 0.0010 | J | 9.0 | | 0.000023 | U | 0.0032 | J | 0.00030 | J | 0.00062 | J | 0.22 | | 2.7 | | 0.019 | | 0.0010 | J | 0.0033 | J | 120 | | 3.5 | |
| 056LM212-STA 1 | 6/26/2006 | 10:05:00 AM | 0.077 | | 0.0028 | J | 13 | | 0.000023 | U | 0.0028 | J | 0.00016 | J | 0.00047 | J | 0.15 | | 4.1 | | 0.017 | | 0.0012 | J | 0.0039 | J | 130 | | 5.2 | J |
| 067LM004-STA 1 | 7/25/2006 | 9:50:00 AM | 0.053 | | 0.0031 | J | 16 | | 0.000023 | U | 0.00038 | J | 0.00016 | J | 0.00048 | J | 0.18 | | 5.2 | | 0.0090 | | 0.00068 | J | 0.0043 | J | 160 | | 6.0 | J |
| 067LM121-Sta 1 | 08/29/2006 | 9:45:00 AM | 0.038 | | 0.0034 | J | 15 | | 0.000023 | U | 0.00017 | J | 0.00017 | J | 0.00055 | J | 0.14 | | 5.2 | | 0.0053 | | 0.00071 | J | 0.0019 | J | 110 | | 6.6 | J |
| 067LM034-Sta 1 | 09/27/2006 | 9:40:00 AM | 0.034 | | 0.0033 | J | 13 | | 0.000026 | J | 0.00013 | J | 0.00027 | J | 0.00046 | J | 0.14 | | 5.0 | | 0.0076 | | 0.00048 | J | 0.0050 | J | 110 | | 7.4 | J |

| Sta 1 Total Metals - mg/L | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Date | Time | Al | Q | As | Q | Ca | Q | Cd | Q | Co | Q | Cr | Q | Cu | Q | Fe | Q | Mg | Q | Mn | Q | Ni | Q | Zn | Q |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 056LM045-STA1 | 10/25/2005 | 11:10:00 AM | 0.36 | | 0.0027 | B | 13.5 | | 0.0001 | U | 0.01 | U | 0.0007 | | 0.0016 | B | 0.4 | | 4.8 | | 0.011 | B | 0.0008 | B | 0.004 | B |
| 056LM065-STA 1 | 11/30/2005 | 11:10:00 AM | 0.22 | | 0.0023 | B | 11.8 | | 0.0001 | U | 0.01 | U | 0.0003 | B | 0.0005 | B | 0.26 | | 4.2 | | 0.009 | B | 0.0006 | U | 0.004 | B |
| 056LM078 | 12/27/2005 | 1:25:00 PM | 0.44 | | 0.0022 | B | 13.2 | | 0.0001 | U | 0.01 | U | 0.0006 | | 0.0008 | B | 0.56 | | 4.4 | | 0.03 | U | 0.0006 | U | 0.006 | B |
| 056LM096-STA1 | 1/24/2006 | 11:10:00 AM | 0.90 | | 0.0027 | J | 13 | | 0.000023 | U | 0.00026 | J | 0.00080 | J | 0.0015 | J | 0.79 | | 4.6 | | 0.015 | | 0.0013 | J | 0.0037 | J |
| 056LM105-Stal | 2/22/2006 | 11:25:00 AM | 0.64 | | 0.0023 | | 13 | | 0.000023 | U | 0.00021 | | 0.00063 | | 0.00099 | | 0.59 | | 4.2 | | 0.015 | | 0.0011 | | 0.0030 | |
| 056LM120 | 3/22/2006 | 12:05:00 PM | 1.2 | | 0.0018 | | 12 | | 0.0001 | U | 0.0002 | | 0.00046 | | 0.00089 | | 0.52 | | 4.2 | | 0.017 | | 0.0011 | | 0.0026 | |
| 056LM156 | 4/25/2006 | 10:10:00 AM | 0.81 | | 0.002 | | 9.9 | | 0.0001 | U | 0.00065 | | 0.00066 | | 0.0024 | | 0.76 | | 2.9 | | 0.045 | | 0.0019 | | 0.0056 | |
| 056LM195-STA 1 | 5/30/2006 | 10:00:00 AM | 0.40 | | 0.0012 | J | 10 | | 0.000023 | U | 0.00020 | J | 0.00040 | J | 0.00076 | J | 0.39 | | 3.0 | | 0.019 | | 0.00096 | J | 0.0026 | J |
| 056LM196-STA 1 Dup | 5/30/2006 | 10:10:00 AM | 0.40 | | 0.0014 | J | 10 | | 0.000023 | U | 0.00020 | J | 0.00040 | J | 0.00073 | J | 0.38 | | 2.9 | | 0.019 | | 0.00090 | J | 0.0036 | J |
| 056LM212-STA 1 | 6/26/2006 | 10:05:00 AM | 0.18 | | 0.0041 | J | 13 | | 0.000023 | U | 0.00018 | J | 0.00023 | J | 0.00056 | J | 0.34 | | 4.2 | | 0.019 | | 0.0011 | J | 0.0028 | J |
| 067LM004-STA 1 | 7/25/2006 | 9:50:00 AM | 0.11 | | 0.0037 | J | 15 | | 0.000023 | U | 0.00015 | J | 0.00025 | J | 0.00060 | J | 0.32 | | 5.0 | | 0.015 | | 0.00077 | J | 0.0035 | J |
| 067LM121-Sta 1 | 08/29/2006 | 9:45:00 AM | 0.23 | | 0.0036 | J | 17 | | 0.000023 | U | 0.00016 | J | 0.00049 | J | 0.00058 | J | 0.37 | | 6.2 | | 0.010 | | 0.0012 | J | 0.0030 | J |
| 067LM034-Sta 1 | 09/27/2006 | 9:40:00 AM | 0.059 | | 0.0030 | J | 13 | | 0.000023 | U | 0.00011 | J | 0.00028 | J | 0.00045 | J | 0.20 | | 4.8 | | 0.0073 | | 0.00049 | J | 0.0031 | J |

| Sta 1 Field and Flow Data | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Time | pH | | Temp | | EC | | SpC | | Daily Mean Flow | | Monthly Mean Flow | |
| 10/25/2005 | 11:10:00 AM | 7.6 | SU | 5.2 | °C | 95 | uS/cm | 152 | uS/cm | 0.1 | cfs | 0.08 | cfs |
| 11/30/2005 | 11:10:00 AM | 6.9 | SU | 0.2 | °C | 72 | uS/cm | LErr | uS/cm | e0.07 | cfs | 0.08 | cfs |
| 12/27/2005 | 1:25:00 PM | 6.7 | SU | 0.3 | °C | 74 | uS/cm | LErr | uS/cm | 0.07 | cfs | 0.41 | cfs |
| 1/24/2006 | 11:10:00 AM | 6.5 | SU | 1.1 | °C | 74.2 | uS/cm | LErr | uS/cm | e0.26 | cfs | 0.49 | cfs |
| 2/22/2006 | 11:25:00 AM | 7 | SU | 0.2 | °C | 73 | uS/cm | LErr | uS/cm | 0.26 | cfs | 0.49 | cfs |
| 3/22/2006 | 12:05:00 PM | 7.5 | SU | 1.3 | °C | 41 | uS/cm | LErr | uS/cm | 0.29 | cfs | 0.67 | cfs |
| 4/25/2006 | 10:10:00 AM | 7.3 | SU | 3.5 | °C | 55 | uS/cm | 94 | uS/cm | 8.8 | cfs | 5.95 | cfs |
| 5/30/2006 | 10:00:00 AM | 7.4 | SU | 5.6 | °C | 63 | uS/cm | 100 | uS/cm | e2.4 | cfs | 6.34 | cfs |
| 5/30/2006 | 10:10:00 AM | 7.4 | SU | 5.6 | °C | 63 | uS/cm | 100 | uS/cm | e2.4 | cfs | 6.34 | cfs |
| 6/26/2006 | 10:05:00 AM | 7.2 | SU | 10.6 | °C | 96 | uS/cm | 132 | uS/cm | 0.45 | cfs | 0.77 | cfs |
| 7/25/2006 | 9:50:00 AM | 7.2 | SU | 13.8 | °C | 124 | uS/cm | 158 | uS/cm | 0.08 | cfs | 0.16 | cfs |
| 08/29/2006 | 9:45:00 AM | 7.2 | SU | 9.4 | °C | 110 | uS/cm | 157 | uS/cm | e0.04 | cfs | 0.07 | cfs |
| 09/27/2006 | 9:40:00 AM | 7.1 | SU | 3.6 | °C | 88 | uS/cm | 149 | uS/cm | e0.07 | cfs | 0.05 | cfs |

**Field Data:**

EC - Electrical Conductivity

SpC - Specific Conductance

Units: SU - Standard Units; °C - degrees celsius; uS/cm - micro siemen per centimeter; cfs - cubic feet per second

Lerr - Instrument reading when instument cannot compute SpC due to low water temperature

e - estimated

**Q - Qualifiers:**

U - Analyte not detected at the given Method Detection Limit (MDL)

B - Analyte detected between the MDL and the Practical Quantitation Limit

J - Analyte detected between the MDL and the Practical Quantitation Limit

* - Relative Percent Difference between sample and field duplicate exceeds 25%

H - Analysis performed outside of method holding time

# Table 6: Station 15

| Sta 15 Dissolved Metals - mg/L | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Date | Time | Al | Q | As | Q | Ca | Q | Cd | Q | Co | Q | Cr | Q | Cu | Q | Fe | Q | Mg | Q | Mn | Q | Ni | Q | Zn | Q | TDS | Q | Sulfate | Q |
| 056LM047-STA15 | 10/25/2005 | 12:40:00 PM | 9.63 | | 0.0156 | | 228 | | 0.0004 | B | 0.21 | | 0.0011 | | 0.0122 | | 31.2 | | 45.5 | | 6.63 | | 0.356 | | 0.082 | | 1180 | | 932 | |
| 056LM070-STA 15 | 11/30/2005 | 1:55:00 PM | 5.34 | | 0.0163 | | 158 | | 0.0003 | B | 0.15 | | 0.0012 | | 0.0099 | | 23.2 | | 35.1 | | 5.15 | | 0.309 | | 0.067 | | 930 | | 809 | |
| 056LM084 | 12/27/2005 | 2:30:00 PM | 0.78 | U | 0.0298 | | 150 | | 0.0008 | | 0.15 | | 0.0004 | B | 0.0273 | | 32 | | 37.3 | | 4.9 | | 0.28 | | 0.079 | | 930 | H | 640 | |
| 056LM098-STA15 | 1/24/2006 | 11:10:00 AM | 0.20 | | 0.024 | | 99 | | 0.00063 | J | 0.11 | | 0.00024 | J | 0.0064 | | 29 | | 27 | | 3.8 | | 0.25 | | 0.069 | | 700 | | 444 | |
| 056LM099-STA15D | 1/24/2006 | 11:10:00 AM | 0.20 | | 0.025 | | 99 | | 0.00066 | J | 0.12 | | 0.00032 | J | 0.0064 | | 29 | | 27 | | 3.9 | | 0.26 | | 0.066 | | 690 | | 443 | |
| 056LM107-Sta15 | 2/22/2006 | 2:10:00 PM | 0.11 | | 0.022 | | 79 | | 0.00085 | | 0.095 | | 0.000075 | J | 0.0059 | | 23 | | 21 | | 2.9 | | 0.22 | | 0.059 | | 530 | | 330 | |
| 056LM124 | 3/22/2006 | 2:35:00 PM | 0.020 | U | 0.014 | | 73 | | 0.00053 | | 0.083 | | 0.00012 | | 0.0017 | | 21 | | 20 | | 2.6 | | 0.18 | | 0.042 | | 470 | | 320 | |
| 056LM162 | 4/25/2006 | 12:40:00 PM | 0.14 | | 0.0046 | | 29 | | 0.00022 | | 0.018 | | 0.0002 | | 0.0073 | | 1.5 | | 7.8 | | 0.67 | | 0.041 | | 0.014 | | 160 | | 90 | |
| 056LM197-STA 15 | 5/30/2006 | 1:15:00 PM | 0.071 | | 0.0095 | | 37 | | 0.00025 | J | 0.053 | | 0.00018 | J | 0.0012 | J | 9.1 | | 10 | | 1.1 | | 0.11 | | 0.018 | | 350 | | 170 | |
| 056LM216-STA 15 | 6/26/2006 | 1:15:00 PM | 1.6 | | 0.025 | | 93 | | 0.00050 | J | 0.15 | | 0.00031 | J | 0.013 | | 38 | | 26 | | 3.6 | | 0.31 | | 0.075 | | 770 | | 450 | |
| 067LM012-STA 15 | 7/25/2006 | 1:40:00 PM | 0.047 | | 0.0037 | J | 500 | | 0.00041 | J | 0.038 | | 0.000072 | J | 0.0012 | J | 0.90 | | 31 | | 2.0 | | 0.079 | | 0.016 | | 2100 | | 1300 | |
| 067LM128-Sta 15 | 08/29/2006 | 1:05:00 PM | 10 | | 0.041 | | 250 | | 0.00053 | J | 0.32 | | 0.0011 | J | 0.017 | | 95 | | 55 | | 9.2 | | 0.66 | | 0.17 | | 1700 | | 1100 | |
| 067LM041-Sta15 | 09/27/2006 | 12:10:00 PM | 0.042 | | 0.0044 | J | 140 | | 0.00027 | J | 0.067 | | 0.00020 | J | 0.00069 | J | 0.93 | | 37 | | 3.0 | | 0.14 | | 0.025 | | 800 | | 500 | |

| Sta 15 Total Metals - mg/L | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Date | Time | Al | Q | As | Q | Ca | Q | Cd | Q | Co | Q | Cr | Q | Cu | Q | Fe | Q | Mg | Q | Mn | Q | Ni | Q | Zn | Q |
| 056LM047-STA15 | 10/25/2005 | 12:40:00 PM | 8.68 | | 0.0236 | | 208 | | 0.0005 | B | 0.18 | | 0.0021 | | 0.0154 | | 28.6 | | 40.1 | | 5.92 | | 0.394 | | 0.086 | |
| 056LM070-STA 15 | 11/30/2005 | 1:55:00 PM | 6.4 | | 0.0212 | | 159 | | 0.0003 | B | 0.16 | | 0.0016 | | 0.0096 | | 23.4 | | 34.8 | | 5.05 | | 0.293 | | 0.064 | |
| 056LM084 | 12/27/2005 | 2:30:00 PM | 8.4 | | 0.0426 | | 150 | | 0.0008 | | 0.14 | | 0.0035 | | 0.0556 | | 36 | | 36.8 | | 5.1 | | 0.28 | | 0.082 | |
| 056LM098-STA15 | 1/24/2006 | 11:10:00 AM | 9.0 | | 0.044 | | 110 | | 0.00064 | | 0.11 | | 0.0051 | | 0.035 | | 33 | | 28 | | 4.0 | | 0.27 | | 0.069 | |
| 056LM099-STA15D | 1/24/2006 | 11:10:00 AM | 9.2 | | 0.044 | | 110 | | 0.00064 | | 0.11 | | 0.0049 | J | 0.035 | | 32 | | 28 | | 4.1 | | 0.26 | | 0.069 | |
| 056LM107-Sta15 | 2/22/2006 | 2:10:00 PM | 8.0 | | 0.043 | | 80 | | 0.00082 | | 0.094 | | 0.0061 | | 0.031 | | 27 | | 22 | | 3.0 | | 0.22 | | 0.059 | |
| 056LM124 | 3/22/2006 | 2:35:00 PM | 5.9 | | 0.035 | | 81 | | 0.00052 | | 0.089 | | 0.0029 | | 0.021 | | 25 | | 21 | | 2.6 | | 0.18 | | 0.048 | |
| 056LM162 | 4/25/2006 | 12:40:00 PM | 2.8 | | 0.014 | | 30 | | 0.00029 | | 0.019 | | 0.0022 | | 0.04 | | 5.6 | | 8.2 | | 0.7 | | 0.046 | | 0.024 | |
| 056LM197-STA 15 | 5/30/2006 | 1:15:00 PM | 3.9 | | 0.040 | | 40 | | 0.00031 | J | 0.055 | | 0.0030 | J | 0.0081 | | 16 | | 11 | | 1.2 | | 0.12 | | 0.029 | |
| 056LM216-STA 15 | 6/26/2006 | 1:15:00 PM | 8.0 | | 0.083 | | 94 | | 0.00049 | J | 0.15 | | 0.0054 | | 0.018 | | 41 | | 25 | | 3.5 | | 0.32 | | 0.077 | |
| 067LM012-STA 15 | 7/25/2006 | 1:40:00 PM | 1.9 | | 0.0062 | | 460 | | 0.00043 | J | 0.037 | | 0.0022 | J | 0.010 | | 3.6 | | 28 | | 1.9 | | 0.077 | | 0.022 | |
| 067LM128-Sta 15 | 08/29/2006 | 1:05:00 PM | 16 | | 0.054 | | 240 | | 0.00056 | J | 0.33 | | 0.0061 | | 0.020 | | 100 | | 54 | | 9.5 | | 0.68 | | 0.17 | |
| 067LM041-Sta15 | 09/27/2006 | 12:10:00 PM | 2.5 | | 0.0078 | | 140 | | 0.00029 | J | 0.065 | | 0.00062 | J | 0.0097 | | 3.5 | | 34 | | 3.6 | | 0.13 | | 0.033 | |

| Sta 15 Field and Flow Data | | | | | | | | | | | Daily Mean Flow | | Monthly Mean Flow | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Time | pH | | Temp | | EC | | SpC | | | | | | |
| 10/25/2005 | 12:40:00 PM | 3.8 | SU | 10.5 | °C | 1024 | uS/cm | 1415 | uS/cm | | 0.2 | cfs | 0.22 | cfs |
| 11/30/2005 | 1:55:00 PM | 4.1 | SU | 2.4 | °C | 671 | uS/cm | 1181 | uS/cm | | 0.2 | cfs | 0.2 | cfs |
| 12/27/2005 | 2:30:00 PM | 5.9 | SU | 2.6 | °C | 639 | uS/cm | 1116 | uS/cm | | 0.61 | cfs | 1.41 | cfs |
| 1/24/2006 | 2:05:00 PM | 6.3 | SU | 1.9 | °C | 487 | uS/cm | LErr | uS/cm | | e0.57 | cfs | 1.11 | cfs |
| 1/24/2006 | 2:10:00 PM | 6.3 | SU | 1.9 | °C | 487 | uS/cm | LErr | uS/cm | | e0.57 | cfs | 1.37 | cfs |
| 2/22/2006 | 2:10:00 PM | 6.2 | SU | 3.2 | °C | 421 | uS/cm | 722 | uS/cm | | e0.48 | cfs | 1.37 | cfs |
| 3/22/2006 | 2:35:00 PM | 6.6 | SU | 6 | °C | 421 | uS/cm | 660 | uS/cm | | e0.70 | cfs | 1.98 | cfs |
| 4/25/2006 | 12:40:00 PM | 6.9 | SU | 7 | °C | 175 | uS/cm | 266 | uS/cm | | 18 | cfs | 11.6 | cfs |
| 5/30/2006 | 1:15:00 PM | 6.6 | SU | 13.4 | °C | 307 | uS/cm | 395 | uS/cm | | 3.7 | cfs | 12.1 | cfs |
| 6/26/2006 | 1:15:00 PM | 4.4 | SU | 17 | °C | 727 | uS/cm | 857 | uS/cm | | 0.86 | cfs | 1.55 | cfs |
| 7/25/2006 | 1:40:00 PM | 7 | SU | 22 | °C | 2076 | uS/cm | 2203 | uS/cm | | 0.52 | cfs | 0.77 | cfs |
| 8/29/2006 | 1:05:00 PM | 4.4 | SU | 16 | °C | 1427 | uS/cm | 1724 | uS/cm | | 0.09 | cfs | 0.27 | cfs |
| 9/27/2006 | 12:10:00 PM | 7.1 | SU | 9.2 | °C | 705 | uS/cm | 1010 | uS/cm | | 0.1 | cfs | 0.12 | cfs |

**Field Data:**

EC - Electrical Conductivity

SpC - Specific Conductance

Units: SU - Standard Units; °C - degrees celsius; uS/cm - micro siemen per centimeter; cfs - cubic feet per second

Lerr - Instrument reading when instument cannot compute SpC due to low water temperature

e - estimated

**Q - Qualifiers:**

U - Analyte not detected at the given Method Detection Limit (MDL)

B - Analyte detected between the MDL and the Practical Quantitation Limit

J - Analyte detected between the MDL and the Practical Quantitation Limit

* - Relative Percent Difference between sample and field duplicate exceeds 25%

H - Analysis performed outside of method holding time

# Table 7: Station 16

| Sta 16 Dissolved Metals - mg/L | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Date | Time | Al | Q | As | Q | Ca | Q | Cd | Q | Co | Q | Cr | Q | Cu | Q | Fe | Q | Mg | Q | Mn | Q | Ni | Q | Zn | Q | TDS | Q | Sulfate | Q |
| 056LM048-STA16 | 10/25/2005 | 12:55:00 PM | 0.03 | U | 0.0385 | | 84.9 | | 0.0001 | U | 0.01 | B | 0.0001 | U | 0.0032 | | 0.05 | B | 21.5 | | 0.625 | | 0.0126 | | 0.006 | B | 440 | | 245 | |
| 056LM077-STA 16 | 11/30/2005 | 2:05:00 PM | 0.03 | U | 0.0195 | | 75.5 | | 0.0001 | U | 0.01 | U | 0.0002 | B | 0.0019 | B | 0.09 | | 19.5 | | 0.627 | | 0.0143 | | 0.007 | B | 430 | | 227 | |
| 056LM086 | 12/27/2005 | 2:35:00 PM | 0.07 | B | 0.0166 | | 78.2 | | 0.0001 | U | 0.01 | B | 0.0002 | B | 0.0019 | B | 0.09 | | 20 | | 0.942 | | 0.0175 | | 0.009 | B | 450 | H | 215 | |
| 056LM087 | 12/27/2005 | 2:25:00 PM | 0.05 | B | 0.0165 | | 77.8 | | 0.0001 | U | 0.01 | U | 0.0002 | B | 0.0015 | B | 0.08 | | 20 | | 0.938 | | 0.0175 | | 0.008 | B | 450 | H | 217 | |
| 056LM100-STA16 | 1/24/2006 | 11:10:00 AM | 0.043 | | 0.0056 | | 87 | | 0.000061 | J | 0.015 | | 0.00024 | J | 0.0011 | J | 0.48 | | 22 | | 1.5 | | 0.036 | | 0.016 | | 500 | | 306 | |
| 056LM106-Sta16 | 2/22/2006 | 2:00:00 PM | 0.033 | | 0.017 | | 79 | | 0.000051 | J | 0.0082 | | 0.000030 | J | 0.0016 | | 0.073 | | 19 | | 1.0 | | 0.025 | | 0.0081 | | 470 | | 250 | |
| 056LM125 | 3/22/2006 | 2:25:00 PM | 0.041 | | 0.016 | | 84 | | 0.0001 | U | 0.0065 | | 0.00012 | | 0.002 | | 0.042 | | 21 | | 1.1 | | 0.024 | | 0.0063 | | 470 | | 310 | |
| 056LM163 | 4/25/2006 | 12:35:00 PM | 0.095 | | 0.0075 | | 89 | | 0.00024 | | 0.013 | | 0.0002 | U | 0.0045 | | 0.12 | | 22 | | 1.2 | | 0.044 | | 0.024 | | 460 | | 300 | |
| 056LM198-STA 16 | 5/30/2006 | 1:05:00 PM | 0.033 | | 0.0055 | | 110 | | 0.00015 | J | 0.014 | | 0.00011 | J | 0.0015 | J | 0.15 | | 28 | | 2.6 | | 0.046 | | 0.021 | | 810 | | 480 | |
| 056LM217-STA 16 | 6/26/2006 | 1:00:00 PM | 0.019 | | 0.016 | | 110 | | 0.000068 | J | 0.0041 | J | 0.000060 | J | 0.0022 | J | 0.020 | | 28 | | 1.3 | | 0.018 | | 0.0049 | J | 720 | | 420 | |
| 067LM011-STA 16 | 7/25/2006 | 1:30:00 PM | 0.029 | | 0.017 | | 84 | | 0.000026 | J | 0.0023 | J | 0.000087 | J | 0.0021 | J | 0.025 | | 21 | | 0.63 | | 0.0063 | | 0.0011 | J | 550 | | 290 | |
| 067LM129-Sta 16 | 08/29/2006 | 12:55:00 PM | 0.013 | | 0.013 | | 73 | | 0.000023 | U | 0.0031 | J | 0.00016 | J | 0.0015 | J | 0.050 | | 19 | | 0.75 | | 0.0078 | | 0.0020 | J | 430 | | 220 | |
| 067LM042-Sta 16 | 09/27/2006 | 12:00:00 PM | 0.0097 | J | 0.0078 | | 75 | | 0.000023 | U | 0.0046 | J | 0.00017 | J | 0.0015 | J | 0.038 | | 20 | | 0.58 | | 0.011 | | 0.0032 | J | 440 | | 230 | |

| Sta 16 Total Metals - mg/L | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Date | Time | Al | Q | As | Q | Ca | Q | Cd | Q | Co | Q | Cr | Q | Cu | Q | Fe | Q | Mg | Q | Mn | Q | Ni | Q | Zn | Q |
| 056LM048-STA16 | 10/25/2005 | 12:55:00 PM | 0.34 | | 0.0422 | | 80.4 | | 0.0001 | U | 0.01 | B | 0.0004 | B | 0.0073 | | 0.45 | | 20.3 | | 0.641 | | 0.0156 | | 0.008 | B |
| 056LM077-STA 16 | 11/30/2005 | 2:05:00 PM | 0.24 | | 0.0228 | | 75.3 | | 0.0001 | U | 0.01 | U | 0.0003 | B | 0.0036 | | 0.5 | | 19.2 | | 0.672 | | 0.0133 | | 0.009 | B |
| 056LM086 | 12/27/2005 | 2:35:00 PM | 0.28 | | 0.0189 | | 79.2 | | 0.0001 | U | 0.01 | U | 0.0004 | B | 0.0027 | B | 0.34 | | 20.3 | | 0.982 | | 0.0173 | | 0.008 | B |
| 056LM087 | 12/27/2005 | 2:25:00 PM | 0.26 | | 0.0201 | | 78.3 | | 0.0001 | U | 0.01 | U | 0.0004 | B | 0.0028 | B | 0.34 | | 20.1 | | 0.97 | | 0.018 | | 0.008 | B |
| 056LM100-STA16 | 1/24/2006 | 11:10:00 AM | 0.45 | | 0.012 | | 91 | | 0.000093 | | 0.012 | | 0.00036 | J | 0.0064 | | 1.1 | | 23 | | 1.5 | | 0.036 | | 0.016 | |
| 056LM106-Sta16 | 2/22/2006 | 2:00:00 PM | 0.34 | | 0.023 | | 80 | | 0.000060 | J | 0.0076 | | 0.00035 | | 0.0049 | | 0.50 | | 20 | | 1.1 | | 0.025 | | 0.0086 | |
| 056LM125 | 3/22/2006 | 2:25:00 PM | 0.32 | | 0.017 | | 85 | | 0.0001 | U | 0.0067 | | 0.00031 | | 0.0048 | | 0.49 | | 21 | | 1.1 | | 0.022 | | 0.0088 | |
| 056LM163 | 4/25/2006 | 12:35:00 PM | 2.8 | | 0.035 | | 96 | | 0.00036 | | 0.014 | | 0.0019 | | 0.084 | | 3.5 | | 23 | | 1.4 | | 0.057 | | 0.058 | |
| 056LM198-STA 16 | 5/30/2006 | 1:05:00 PM | 0.49 | | 0.016 | | 120 | | 0.00026 | J | 0.016 | | 0.00026 | J | 0.023 | | 1.5 | | 32 | | 2.9 | | 0.050 | | 0.033 | |
| 056LM217-STA 16 | 6/26/2006 | 1:00:00 PM | 0.26 | | 0.021 | | 110 | | 0.00010 | J | 0.0040 | J | 0.00023 | J | 0.012 | | 0.65 | | 28 | | 1.4 | | 0.021 | | 0.011 | |
| 067LM011-STA 16 | 7/25/2006 | 1:30:00 PM | 0.20 | | 0.020 | | 83 | | 0.000046 | J | 0.0031 | J | 0.00019 | J | 0.0080 | | 0.47 | | 20 | | 0.76 | | 0.0084 | | 0.0051 | J |
| 067LM129-Sta 16 | 08/29/2006 | 12:55:00 PM | 0.17 | | 0.015 | | 68 | | 0.000032 | J | 0.0035 | J | 0.00036 | J | 0.0049 | J | 0.37 | | 18 | | 0.87 | | 0.0088 | | 0.0040 | J |
| 067LM042-Sta 16 | 09/27/2006 | 12:00:00 PM | 0.11 | | 0.010 | | 70 | | 0.000027 | J | 0.0048 | J | 0.00028 | J | 0.0062 | | 0.42 | | 18 | | 1.3 | | 0.011 | | 0.0057 | J |

| Sta 16 Field and Flow Data | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Date | Time | pH | | Temp | | EC | | SpC | |
| 10/25/2005 | 12:55:00 PM | 7.9 | SU | 10.6 | °C | 485 | uS/cm | 669 | uS/cm |
| 11/30/2005 | 2:05:00 PM | 7.8 | SU | 1.5 | °C | 347.7 | uS/cm | LErr | uS/cm |
| 12/27/2005 | 2:25:00 PM | 2.44 | SU | 1 | °C | 349 | uS/cm | LErr | uS/cm |
| 12/27/2005 | 2:35:00 PM | 2.44 | SU | 1 | °C | 349 | uS/cm | LErr | uS/cm |
| 1/24/2006 | 1:55:00 PM | 6.9 | SU | 0.3 | °C | 327 | uS/cm | LErr | uS/cm |
| 2/22/2006 | 2:00:00 PM | 7.2 | SU | 0.2 | °C | 353 | uS/cm | LErr | uS/cm |
| 3/22/2006 | 2:25:00 PM | 7.6 | SU | 4.9 | °C | 436 | uS/cm | 708 | uS/cm |
| 4/25/2006 | 12:35:00 PM | 7.4 | SU | 11 | °C | 501 | uS/cm | 683 | uS/cm |
| 5/30/2006 | 1:05:00 PM | 7.5 | SU | 15.7 | °C | 59 | uS/cm | 71 | uS/cm |
| 6/26/2006 | 1:00:00 PM | 7.7 | SU | 17.8 | °C | 826 | uS/cm | 958 | uS/cm |
| 7/25/2006 | 1:30:00 PM | 7.6 | SU | 21.3 | °C | 664 | uS/cm | 714 | uS/cm |
| 8/29/2006 | 12:55:00 PM | 7.7 | SU | 16.9 | °C | 345 | uS/cm | 410 | uS/cm |
| 9/27/2006 | 12:00:00 PM | 7.7 | SU | 10.9 | °C | 452 | uS/cm | 619 | uS/cm |

**Field Data:**

EC - Electrical Conductivity

SpC - Specific Conductance

Units: SU - Standard Units; °C - degrees celsius; uS/cm - micro siemen per centimeter;
cfs - cubic feet per second

Lerr - Instrument reading when instument cannot compute SpC due to low water temperature

e - estimated

**Q - Qualifiers:**

U - Analyte not detected at the given Method Detection Limit (MDL)

B - Analyte detected between the MDL and the Practical Quantitation Limit

J - Analyte detected between the MDL and the Practical Quantitation Limit

* - Relative Percent Difference between sample and field duplicate exceeds 25%

H - Analysis performed outside of method holding time

# Table 8: Station 22

| Sta 22 Dissolved Metals - mg/L | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Date | Time | Al | Q | As | Q | Ca | Q | Cd | Q | Co | Q | Cr | Q | Cu | Q | Fe | Q | Mg | Q | Mn | Q | Ni | Q | Zn | Q | TDS | Q | Sulfate | Q |
| 056LM046-STA22 | 10/25/2005 | 11:45:00 AM | 0.03 | U | 0.0006 | B | 26.3 | | 0.0001 | U | 0.01 | B | 0.0001 | U | 0.0007 | B | 0.02 | U | 5.8 | | 0.005 | U | 0.0006 | U | 0.003 | B | 100 | | 1.1 | B |
| 056LM066-STA 22 | 11/30/2005 | 1:00:00 PM | 0.03 | U | 0.0005 | U | 24 | | 0.0001 | U | 0.01 | U | 0.0003 | B | 0.0005 | U | 0.02 | U | 5.3 | | 0.005 | B | 0.0006 | U | 0.002 | U | 60 | | 1.2 | B |
| 056LM082 | 12/27/2005 | 11:55:00 AM | 0.03 | U | 0.0008 | B | 24.3 | | 0.0001 | U | 0.01 | U | 0.0003 | B | 0.0005 | U | 0.13 | | 5.4 | | 0.005 | U | 0.0006 | U | 0.002 | B | 120 | H | 5 | U |
| 056LM092-Sta22 | 1/24/2006 | 11:10:00 AM | 0.037 | | 0.00060 | J | 22 | | 0.000023 | U | 0.000084 | J | 0.00024 | J | 0.00017 | J | 0.0070 | J | 5.3 | | 0.00095 | J | 0.00085 | J | 0.0010 | J | 130 | | 2.6 | B |
| 056LM108-Sta22 | 2/22/2006 | 12:35:00 PM | 0.0082 | U | 0.00046 | | 23 | | 0.000023 | U | 0.000055 | J | 0.000062 | J | 0.000099 | J | 0.022 | | 5.3 | | 0.0015 | J | 0.0012 | | 0.00093 | J | 120 | | 1.9 | |
| 056LM118 | 3/22/2006 | 10:40:00 AM | 0.022 | | 0.00058 | | 22 | | 0.0001 | U | 0.0001 | U | 0.00012 | | 0.0005 | U | 0.046 | | 5.4 | | 0.01 | U | 0.00091 | | 0.005 | U | 110 | | 1.6 | |
| 056LM160 | 4/25/2006 | 11:45:00 AM | 0.025 | | 0.0012 | | 22 | | 0.0001 | U | 0.00012 | | 0.0002 | U | 0.00079 | | 0.02 | U | 5.5 | | 0.01 | U | 0.0014 | | 0.005 | U | 97 | | 1.5 | |
| 056LM191-Sta 22 | 5/30/2006 | 11:50:00 AM | 0.0082 | U | 0.00048 | J | 21 | | 0.000023 | U | 0.00014 | J | 0.00013 | J | 0.000085 | U | 0.025 | | 4.9 | | 0.0024 | J | 0.00070 | J | 0.0011 | J | 140 | | 1.2 | |
| 056LM214-Sta 22 | 6/26/2006 | 12:05:00 PM | 0.0049 | J | 0.00068 | J | 23 | | 0.000023 | U | 0.000092 | J | 0.00010 | J | 0.00017 | J | 0.0089 | J | 5.1 | | 0.0011 | J | 0.0011 | J | 0.00073 | U | 130 | | 1.2 | J |
| 056LM218-Sta 22 D | 6/26/2006 | 12:10:00 PM | 0.0047 | J | 0.00076 | J | 23 | | 0.000023 | U | 0.00067 | J | 0.00011 | J | 0.00015 | J | 0.0082 | J | 5.3 | | 0.0022 | J | 0.0011 | J | 0.00073 | U | 130 | | 1.4 | J |
| 067LM008-Sta22 | 7/25/2006 | 11:55:00 AM | 0.0024 | U | 0.00074 | J | 23 | | 0.000023 | U | 0.000055 | J | 0.00013 | J | 0.00038 | J | 0.0064 | J | 5.2 | | 0.0012 | J | 0.00014 | U | 0.0027 | J | 150 | | 1.2 | J |
| 067LM127-Sta 22 | 08/29/2006 | 11:35:00 AM | 0.0051 | J | 0.00057 | J | 23 | | 0.000023 | U | 0.00061 | J | 0.00018 | J | 0.000092 | J | 0.0066 | J | 5.0 | | 0.0019 | J | 0.00068 | J | 0.0037 | J | 110 | | 1.3 | J |
| 067LM039-Sta 22 | 09/27/2006 | 11:40:00 AM | 0.0053 | J | 0.00072 | J | 23 | | 0.000023 | U | 0.000081 | J | 0.00030 | J | 0.00049 | J | 0.0048 | U | 5.4 | | 0.00076 | J | 0.00025 | J | 0.0017 | J | 110 | | 1.1 | J |

| Sta 22 Total Metals - mg/L | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Date | Time | Al | Q | As | Q | Ca | Q | Cd | Q | Co | Q | Cr | Q | Cu | Q | Fe | Q | Mg | Q | Mn | Q | Ni | Q | Zn | Q |
| 056LM046-STA22 | 10/25/2005 | 11:45:00 AM | 0.36 | | 0.0006 | B | 24.3 | | 0.0001 | U | 0.01 | U | 0.0007 | | 0.0005 | U | 0.34 | | 5.2 | | 0.005 | B | 0.0007 | B | 0.003 | B |
| 056LM066-STA 22 | 11/30/2005 | 1:00:00 PM | 0.12 | B | 0.0006 | B | 23.6 | | 0.0001 | U | 0.01 | U | 0.002 | | 0.0005 | U | 0.12 | | 5.1 | | 0.005 | U | 0.0006 | U | 0.003 | B |
| 056LM082 | 12/27/2005 | 11:55:00 AM | 0.72 | | 0.0009 | B | 26 | | 0.0001 | U | 0.01 | U | 0.0006 | | 0.0005 | U | 0.52 | | 5.7 | | 0.006 | B | 0.0006 | U | 0.002 | U |
| 056LM092-Sta22 | 1/24/2006 | 11:10:00 AM | 0.077 | | 0.00068 | J | 24 | | 0.000023 | U | 0.000084 | J | 0.00024 | J | 0.00019 | J | 0.076 | | 5.6 | | 0.0028 | J | 0.00092 | J | 0.00073 | U |
| 056LM108-Sta22 | 2/22/2006 | 12:35:00 PM | 0.085 | | 0.00057 | | 23 | | 0.000023 | U | 0.000093 | J | 0.00027 | | 0.00017 | J | 0.097 | | 5.3 | | 0.0033 | J | 0.0011 | | 0.0011 | J |
| 056LM118 | 3/22/2006 | 10:40:00 AM | 0.057 | | 0.00062 | | 22 | | 0.0001 | U | 0.0001 | | 0.0002 | U | 0.0005 | U | 0.1 | | 5.7 | | 0.01 | U | 0.00091 | | 0.002 | U |
| 056LM160 | 4/25/2006 | 11:45:00 AM | 0.13 | | 0.0026 | | 22 | | 0.0001 | U | 0.0002 | | 0.00022 | | 0.00079 | | 0.13 | | 5.6 | | 0.01 | U | 0.0016 | | 0.0025 | |
| 056LM191-Sta 22 | 5/30/2006 | 11:50:00 AM | 0.10 | | 0.00061 | J | 24 | | 0.000023 | U | 0.00014 | J | 0.00019 | J | 0.00017 | J | 0.25 | | 5.5 | | 0.0072 | J | 0.00090 | J | 0.0019 | J |
| 056LM214-Sta 22 | 6/26/2006 | 12:05:00 PM | 0.061 | | 0.00068 | J | 23 | | 0.000023 | U | 0.000087 | J | 0.00017 | J | 0.00015 | J | 0.10 | | 5.1 | | 0.0044 | J | 0.00098 | J | 0.0010 | J |
| 056LM218-Sta 22 D | 6/26/2006 | 12:10:00 PM | 0.068 | | 0.00059 | J | 24 | | 0.000023 | U | 0.00010 | J | 0.00015 | J | 0.00015 | J | 0.11 | | 5.3 | | 0.0046 | J | 0.0010 | J | 0.0011 | J |
| 067LM008-Sta22 | 7/25/2006 | 11:55:00 AM | 0.054 | | 0.00077 | J | 24 | | 0.000023 | U | 0.00013 | J | 0.00023 | J | 0.00023 | J | 0.18 | | 5.3 | | 0.0066 | | 0.00028 | J | 0.0019 | J |
| 067LM127-Sta 22 | 08/29/2006 | 11:35:00 AM | 0.29 | | 0.00070 | J | 23 | | 0.000023 | U | 0.00017 | J | 0.00052 | J | 0.00029 | J | 0.24 | | 5.0 | | 0.0092 | | 0.00054 | J | 0.0027 | J |
| 067LM039-Sta 22 | 09/27/2006 | 11:40:00 AM | 0.084 | | 0.00058 | J | 22 | | 0.000023 | U | 0.00012 | J | 0.00031 | J | 0.00020 | J | 0.14 | | 4.9 | | 0.0061 | | 0.00033 | J | 0.0023 | J |

| Sta 22 Field and Flow Data | | | | | | | | | | | Daily Mean | | Monthly | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Time | pH | | Temp | | EC | | SpC | | Flow | | Mean Flow | |
| 10/25/2005 | 11:45:00 AM | 8.4 | SU | 12.2 | °C | 147 | uS/cm | 195 | uS/cm | 0.2 | cfs | 0.21 | cfs |
| 11/30/2005 | 1:00:00 PM | 8 | SU | 5 | °C | 117.1 | uS/cm | 189.5 | uS/cm | e0.23 | cfs | 0.24 | cfs |
| 12/27/2005 | 11:55:00 AM | 8.03 | SU | 4 | °C | 111 | uS/cm | 186 | uS/cm | 0.23 | cfs | 0.22 | cfs |
| 1/24/2006 | 11:10:00 AM | 7.9 | SU | 1.9 | °C | 106 | uS/cm | LErr | uS/cm | 0.23 | cfs | 0.26 | cfs |
| 2/22/2006 | 12:35:00 PM | 8 | SU | 7.3 | °C | 126 | uS/cm | 190 | uS/cm | 0.22 | cfs | 0.25 | cfs |
| 3/22/2006 | 10:40:00 AM | 8.2 | SU | 6.8 | °C | 123 | uS/cm | 189 | uS/cm | 0.18 | cfs | 0.2 | cfs |
| 4/25/2006 | 11:45:00 AM | 7.7 | SU | 10.6 | °C | 95 | uS/cm | 133 | uS/cm | 0.4 | cfs | 0.4 | cfs |
| 5/30/2006 | 11:50:00 AM | 8 | SU | 15.2 | °C | 157 | uS/cm | 194 | uS/cm | 0.27 | cfs | 0.26 | cfs |
| 6/26/2006 | 12:05:00 PM | 8.1 | SU | 18.1 | °C | 167.5 | uS/cm | 193 | uS/cm | 0.23 | cfs | 0.25 | cfs |
| 6/26/2006 | 12:10:00 PM | 8.1 | SU | 18.1 | °C | 167.5 | uS/cm | 193 | uS/cm | 0.23 | cfs | 0.25 | cfs |
| 7/25/2006 | 11:55:00 AM | 7.8 | SU | 19.4 | °C | 170 | uS/cm | 190 | uS/cm | 0.2 | cfs | 0.21 | cfs |
| 8/29/2006 | 11:35:00 AM | 8 | SU | 16.3 | °C | 158 | uS/cm | 189 | uS/cm | 0.24 | cfs | 0.17 | cfs |
| 9/27/2006 | 11:40:00 AM | 8.2 | SU | 13.8 | °C | 148 | uS/cm | 189 | uS/cm | 0.21 | cfs | 0.24 | cfs |

**Field Data:**

EC - Electrical Conductivity

SpC - Specific Conductance

Units: SU - Standard Units; °C - degrees celsius; uS/cm - micro siemen per centimeter; cfs - cubic feet per second

Lerr - Instrument reading when instument cannot compute SpC due to low water temperature

e - estimated

**Q - Qualifiers:**

U - Analyte not detected at the given Method Detection Limit (MDL)

B - Analyte detected between the MDL and the Practical Quantitation Limit

J - Analyte detected between the MDL and the Practical Quantitation Limit

* - Relative Percent Difference between sample and field duplicate exceeds 25%

H - Analysis performed outside of method holding time

# Table 9: Station 23

| Sta 23 Dissolved Metals - mg/L | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Date | Time | Al | Q | As | Q | Ca | Q | Cd | Q | Co | Q | Cr | Q | Cu | Q | Fe | Q | Mg | Q | Mn | Q | Ni | Q | Zn | Q | TDS | Q | Sulfate | Q |
| 056LM049-STA23 | 10/25/2005 | 1:53:00 PM | 0.06 | B | 0.0018 | B | 147 | | 0.0001 | B | 0.07 | | 0.0001 | U | 0.0042 | | 0.93 | | 30.9 | | 2.43 | | 0.121 | | 0.02 | | 730 | | 481 | |
| 056LM067-STA 23 | 11/30/2005 | 2:30:00 PM | 0.03 | U | 0.0014 | B | 116 | | 0.0001 | B | 0.05 | | 0.0001 | B | 0.0007 | B | 1.99 | | 26.1 | | 2.03 | | 0.109 | | 0.02 | | 600 | | 404 | |
| 056LM088 | 12/27/2005 | 3:05:00 PM | 0.03 | U | 0.0019 | B | 108 | | 0.0002 | B | 0.05 | B | 0.0001 | B | 0.0013 | B | 3.75 | | 25.2 | | 2 | | 0.101 | | 0.022 | | 600 | H | 337 | |
| 056LM101-STA23 | 1/24/2006 | 11:10:00 AM | 0.030 | | 0.0046 | J | 85 | | 0.00029 | J | 0.051 | | 0.00027 | J | 0.0015 | J | 8.2 | | 22 | | 2.1 | | 0.13 | | 0.027 | | 510 | | 328 | |
| 056LM109-Sta23 | 2/22/2006 | 2:45:00 PM | 0.015 | J | 0.0059 | | 80 | | 0.00046 | | 0.054 | | 0.000023 | J | 0.00098 | | 7.6 | | 20 | | 2.0 | | 0.13 | | 0.029 | | 490 | | 290 | |
| 056LM126 | 3/22/2006 | 3:05:00 PM | 0.020 | U | 0.0026 | | 62 | | 0.00016 | | 0.033 | | 0.0001 | U | 0.0009 | | 1.9 | | 17 | | 1.3 | | 0.074 | | 0.012 | | 370 | | 240 | |
| 056LM130 | 3/22/2006 | 3:15:00 PM | 0.020 | U | 0.0027 | | 62 | | 0.00017 | | 0.032 | | 0.0001 | U | 0.00064 | | 1.9 | | 17 | | 1.3 | | 0.073 | | 0.012 | | 370 | | 230 | |
| 056LM164 | 4/25/2006 | 1:35:00 PM | 0.17 | | 0.0039 | | 32 | | 0.0001 | | 0.013 | | 0.00027 | | 0.006 | | 0.32 | | 8.8 | | 0.55 | | 0.03 | | 0.0079 | | 170 | | 94 | |
| 056LM199-Sta 23 | 5/30/2006 | 1:50:00 PM | 0.038 | | 0.0032 | J | 50 | | 0.00011 | J | 0.035 | | 0.00014 | J | 0.00059 | J | 0.46 | | 13 | | 1.1 | | 0.080 | | 0.0072 | J | 380 | | 210 | |
| 056LM219-Sta 23 | 6/26/2006 | 1:45:00 PM | 0.0077 | J | 0.0024 | J | 86 | | 0.00022 | J | 0.069 | | 0.000065 | J | 0.00047 | J | 4.3 | | 23 | | 1.9 | | 0.15 | | 0.028 | | 570 | | 350 | |
| 067LM013-Sta 23 | 7/25/2006 | 2:15:00 PM | 0.030 | | 0.0026 | J | 290 | | 0.00016 | J | 0.016 | | 0.000085 | J | 0.0013 | J | 0.0048 | U | 30 | | 1.2 | | 0.053 | | 0.0041 | J | 1300 | | 800 | |
| 067LM131-Sta 23 | 08/29/2006 | 1:25:00 PM | 0.0052 | J | 0.0012 | J | 130 | | 0.000099 | J | 0.057 | | 0.00012 | J | 0.00068 | J | 1.1 | | 29 | | 2.6 | | 0.13 | | 0.015 | | 720 | | 480 | |
| 067LM043-Sta 23 | 09/27/2006 | 12:50:00 PM | 0.010 | | 0.0026 | J | 93 | | 0.000024 | J | 0.0064 | | 0.00024 | J | 0.0012 | J | 0.0048 | U | 23 | | 0.49 | | 0.024 | | 0.0027 | J | 510 | | 310 | |

| Sta 23 Total Metals - mg/L | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Date | Time | Al | Q | As | Q | Ca | Q | Cd | Q | Co | Q | Cr | Q | Cu | Q | Fe | Q | Mg | Q | Mn | Q | Ni | Q | Zn | Q |
| 056LM049-STA23 | 10/25/2005 | 1:53:00 PM | 1.83 | | 0.0166 | | 142 | | 0.0002 | B | 0.07 | | 0.0006 | | 0.0063 | | 5.51 | | 29.3 | | 2.33 | | 0.137 | | 0.031 | |
| 056LM067-STA 23 | 11/30/2005 | 2:30:00 PM | 1.15 | | 0.0088 | | 112 | | 0.0001 | B | 0.05 | | 0.0004 | B | 0.0025 | B | 4.19 | | 25.2 | | 1.94 | | 0.0958 | | 0.021 | |
| 056LM088 | 12/27/2005 | 3:05:00 PM | 3.37 | | 0.0183 | | 112 | | 0.0003 | B | 0.05 | | 0.0015 | | 0.0253 | | 8.76 | | 26.4 | | 2.13 | | 0.105 | | 0.072 | |
| 056LM101-STA23 | 1/24/2006 | 11:10:00 AM | 5.4 | | 0.024 | | 91 | | 0.00035 | | 0.055 | | 0.0030 | J | 0.022 | | 14 | | 23 | | 2.3 | | 0.13 | | 0.036 | |
| 056LM109-Sta23 | 2/22/2006 | 2:45:00 PM | 5.1 | | 0.027 | | 78 | | 0.00052 | | 0.055 | | 0.0040 | | 0.020 | | 12 | | 20 | | 2.0 | | 0.13 | | 0.036 | |
| 056LM126-Sta 23 | 3/22/2006 | 3:05:00 PM | 2.4 | | 0.014 | | 62 | | 0.00021 | | 0.034 | | 0.0013 | | 0.0093 | | 6.9 | | 18 | | 1.3 | | 0.078 | | 0.021 | |
| 056LM130-Sta 23 | 3/22/2006 | 3:15:00 PM | 2.4 | | 0.014 | | 62 | | 0.00021 | | 0.034 | | 0.0013 | | 0.0093 | | 6.8 | | 17 | | 1.3 | | 0.079 | | 0.021 | |
| 056LM164 | 4/25/2006 | 1:35:00 PM | 2.3 | | 0.015 | | 33 | | 0.00022 | | 0.014 | | 0.0019 | | 0.034 | | 4.5 | | 9.1 | | 0.6 | | 0.036 | | 0.021 | |
| 056LM199-Sta 23 | 5/30/2006 | 1:50:00 PM | 2.5 | | 0.026 | | 55 | | 0.00024 | J | 0.039 | | 0.0019 | J | 0.0099 | | 8.1 | | 14 | | 1.2 | | 0.088 | | 0.024 | |
| 056LM219-Sta 23 | 6/26/2006 | 1:45:00 PM | 3.2 | | 0.033 | | 88 | | 0.00025 | J | 0.069 | | 0.0021 | J | 0.0097 | | 13 | | 23 | | 1.9 | | 0.16 | | 0.038 | |
| 067LM013-Sta 23 | 7/25/2006 | 2:15:00 PM | 0.92 | | 0.011 | | 290 | | 0.00022 | J | 0.016 | | 0.00085 | J | 0.0071 | | 3.0 | | 28 | | 1.1 | | 0.057 | | 0.012 | |
| 067LM131-Sta 23 | 08/29/2006 | 1:25:00 PM | 3.3 | | 0.021 | | 130 | | 0.00019 | J | 0.063 | | 0.0014 | J | 0.0074 | | 15 | | 28 | | 2.6 | | 0.14 | | 0.033 | |
| 067LM043-Sta 23 | 09/27/2006 | 12:50:00 PM | 0.092 | | 0.0041 | J | 90 | | 0.000036 | J | 0.0068 | | 0.00025 | J | 0.0016 | J | 0.53 | | 21 | | 0.93 | | 0.024 | | 0.0044 | J |

| Sta 23 Field and Flow Data | | | | | | | | | | | Daily Mean Flow | | Monthly Mean Flow | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Time | pH | | Temp | | EC | | SpC | | | | | | |
| 10/25/2005 | 1:53:00 PM | 7.3 | SU | 9.7 | °C | 689 | uS/cm | 937 | uS/cm | | 0.56 | cfs | 0.55 | cfs |
| 11/30/2005 | 2:30:00 PM | 7.4 | SU | 0.4 | °C | 449.9 | uS/cm | LErr | uS/cm | | e0.90 | cfs | 0.84 | cfs |
| 12/27/2005 | 3:05:00 PM | 7.1 | SU | 2.2 | °C | 453 | uS/cm | 804 | uS/cm | | 2.3 | cfs | 5.69 | cfs |
| 1/24/2006 | 2:45:00 PM | 7.1 | SU | 0 | °C | 370 | uS/cm | LErr | uS/cm | | 1.1 | cfs | 3.23 | cfs |
| 2/22/2006 | 2:45:00 PM | 7.1 | SU | 0 | °C | 357 | uS/cm | LErr | uS/cm | | 0.92 | cfs | 3.03 | cfs |
| 3/22/2006 | 3:05:00 PM | 7.3 | SU | 5.4 | °C | 336 | uS/cm | 536 | uS/cm | | 1.1 | cfs | 4.17 | cfs |
| 3/22/2006 | 3:15:00 PM | 7.3 | SU | 5.4 | °C | 336 | uS/cm | 536 | uS/cm | | 1.1 | cfs | 4.17 | cfs |
| 4/25/2006 | 1:35:00 PM | 7.5 | SU | 8.4 | °C | 195 | uS/cm | 285 | uS/cm | | 29 | cfs | 21.5 | cfs |
| 5/30/2006 | 1:50:00 PM | 7.1 | SU | 13.5 | °C | 377 | uS/cm | 484 | uS/cm | | 4.3 | cfs | 12.3 | cfs |
| 6/26/2006 | 1:45:00 PM | 6.4 | SU | 18.4 | °C | 623 | uS/cm | 713 | uS/cm | | 1.3 | cfs | 1.93 | cfs |
| 7/25/2006 | 2:15:00 PM | 7.8 | SU | 22.3 | °C | 1452 | uS/cm | 1531 | uS/cm | | 0.94 | cfs | 1.19 | cfs |
| 8/29/2006 | 1:25:00 PM | 6.6 | SU | 16.8 | °C | 795 | uS/cm | 942 | uS/cm | | 0.28 | cfs | 0.51 | cfs |
| 9/27/2006 | 12:50:00 PM | 7.7 | SU | 8.6 | °C | 497 | uS/cm | 725 | uS/cm | | 0.18 | cfs | 0.27 | cfs |

**Field Data:**

EC - Electrical Conductivity

SpC - Specific Conductance

Units: SU - Standard Units; °C - degrees celsius; uS/cm - micro siemen per centimeter; cfs - cubic feet per second

Lerr - Instrument reading when instument cannot compute SpC due to low water temperature

e - estimated

**Q - Qualifiers:**

U - Analyte not detected at the given Method Detection Limit (MDL)

B - Analyte detected between the MDL and the Practical Quantitation Limit

J - Analyte detected between the MDL and the Practical Quantitation Limit

* - Relative Percent Difference between sample and field duplicate exceeds 25%

H - Analysis performed outside of method holding time

# Table 10: Station 24

| Sta 24 Dissolved Metals - mg/L | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Date | Time | Al | Q | As | Q | Ca | Q | Cd | Q | Co | Q | Cr | Q | Cu | Q | Fe | Q | Mg | Q | Mn | Q | Ni | Q | Zn | Q | TDS | Q | Sulfate | Q |
| 056LM050-STA24 | 10/25/2005 | 1:40:00 PM | 0.03 | B | 0.0012 | B | 17.8 | | 0.0001 | U | 0.01 | U | 0.0001 | U | 0.0012 | B | 0.02 | B | 6.2 | | 0.007 | B | 0.0006 | U | 0.003 | B | 130 | H | 1.1 | B |
| 056LM068-STA 24 | 11/30/2005 | 2:20:00 PM | 0.03 | U | 0.0009 | B | 16.7 | | 0.0001 | U | 0.01 | U | 0.0002 | B | 0.0005 | U | 0.02 | U | 5.9 | | 0.006 | B | 0.0006 | U | 0.003 | B | 80 | | 1.2 | B |
| 056LM089 | 12/27/2005 | 3:15:00 PM | 0.08 | B | 0.0011 | B | 16.8 | | 0.0001 | U | 0.01 | U | 0.0002 | B | 0.0005 | B | 0.08 | | 6.1 | | 0.009 | B | 0.0006 | U | 0.004 | B | 120 | H | 1.7 | B |
| 056LM102-STA24 | 1/24/2006 | 11:10:00 AM | 0.099 | | 0.0017 | J | 18 | | 0.000023 | U | 0.0025 | J | 0.00036 | J | 0.00072 | J | 0.086 | | 7.1 | | 0.0097 | J | 0.0013 | J | 0.0015 | J | 120 | | 2 | B |
| 056LM110-Sta24 | 2/22/2006 | 2:35:00 PM | 0.039 | | 0.0015 | | 18 | | 0.000023 | U | 0.00067 | | 0.00011 | J | 0.00026 | J | 0.053 | | 6.9 | | 0.0049 | J | 0.00089 | | 0.0016 | J | 120 | | 2 | |
| 056LM127 | 3/22/2006 | 3:00:00 PM | 0.054 | | 0.0016 | | 18 | | 0.0001 | U | 0.0043 | | 0.00022 | | 0.00055 | | 0.11 | | 7.1 | | 0.1 | U | 0.0016 | | 0.005 | U | 120 | | 1.9 | |
| 056LM165 | 4/25/2006 | 1:20:00 PM | 0.088 | | 0.0019 | * | 16 | | 0.0001 | U | 0.00023 | * | 0.00023 | | 0.00093 | | 0.098 | | 5.9 | | 0.01 | U | 0.0012 | | 0.005 | U | 98 | | 1.9 | |
| 056LM166 | 4/25/2006 | 1:25:00 PM | 0.11 | | 0.0026 | * | 16 | | 0.0001 | U | 0.0018 | * | 0.00024 | | 0.00091 | | 0.11 | | 5.9 | | 0.01 | U | 0.0014 | | 0.005 | U | 100 | | 1.9 | |
| 056LM200-Sta 24 | 5/30/2006 | 1:40:00 PM | 0.035 | | 0.0013 | J | 14 | | 0.000023 | U | 0.0045 | J | 0.00020 | J | 0.00039 | J | 0.052 | | 5.2 | | 0.014 | | 0.0014 | J | 0.0039 | J | 120 | | 1.3 | |
| 056LM220-Sta 24 | 6/26/2006 | 1:35:00 PM | 0.012 | | 0.0016 | J | 17 | | 0.000023 | U | 0.00011 | J | 0.000083 | J | 0.00025 | J | 0.032 | | 6.4 | | 0.0067 | | 0.00079 | J | 0.0010 | J | 130 | | 1.1 | J |
| 067LM014-Sta 24 | 7/25/2006 | 2:05:00 PM | 0.012 | | 0.0016 | J | 18 | | 0.000023 | U | 0.000095 | J | 0.00011 | J | 0.00020 | J | 0.034 | | 6.7 | | 0.0056 | | 0.00020 | J | 0.00073 | U | 140 | | 0.86 | J |
| 067LM130-Sta 24 | 08/29/2006 | 1:40:00 PM | 0.0086 | J | 0.0014 | J | 17 | | 0.000023 | U | 0.0018 | J | 0.00020 | J | 0.00022 | J | 0.024 | | 6.3 | | 0.0049 | J | 0.00077 | J | 0.0013 | J | 110 | | 1.1 | J |
| 067LM044-Sta 24 | 09/27/2006 | 12:40:00 PM | 0.0071 | J | 0.0012 | J | 17 | | 0.000023 | U | 0.000099 | J | 0.00022 | J | 0.00028 | J | 0.014 | | 6.4 | | 0.0024 | J | 0.00037 | J | 0.0017 | J | 99 | | 1.1 | J |

| Sta 24 Total Metals - mg/L | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Date | Time | Al | Q | As | Q | Ca | Q | Cd | Q | Co | Q | Cr | Q | Cu | Q | Fe | Q | Mg | Q | Mn | Q | Ni | Q | Zn | Q |
| 056LM050-STA24 | 10/25/2005 | 1:40:00 PM | 0.17 | B | 0.0012 | B | 17.3 | | 0.0001 | U | 0.01 | U | 0.0003 | B | 0.0016 | B | 0.18 | | 6 | | 0.012 | B | 0.0006 | B | 0.004 | B |
| 056LM068-STA 24 | 11/30/2005 | 2:20:00 PM | 0.08 | B | 0.0011 | B | 17 | | 0.0001 | U | 0.01 | U | 0.0003 | B | 0.0005 | U | 0.13 | | 5.8 | | 0.012 | B | 0.0006 | U | 0.003 | B |
| 056LM089 | 12/27/2005 | 3:15:00 PM | 0.33 | | 0.0015 | B | 18.2 | | 0.0001 | U | 0.01 | U | 0.0006 | | 0.0005 | U | 0.8 | | 6.5 | | 0.05 | U | 0.0006 | U | 0.005 | B |
| 056LM102-STA24 | 1/24/2006 | 11:10:00 AM | 0.13 | | 0.0018 | J | 19 | | 0.000023 | U | 0.00015 | J | 0.00043 | J | 0.0011 | J | 0.17 | | 7.4 | | 0.011 | | 0.00084 | J | 0.0017 | J |
| 056LM110-Sta24 | 2/22/2006 | 2:35:00 PM | 0.12 | | 0.0016 | | 18 | | 0.000023 | U | 0.00011 | | 0.00035 | | 0.00041 | J | 0.14 | | 6.7 | | 0.0071 | J | 0.00098 | | 0.0011 | J |
| 056LM127 | 3/22/2006 | 3:00:00 PM | 0.12 | | 0.0015 | | 18 | | 0.0001 | U | 0.00012 | | 0.00021 | | 0.0005 | U | 0.16 | | 7.5 | | 0.01 | | 0.00084 | | 0.002 | U |
| 056LM165 | 4/25/2006 | 1:20:00 PM | 0.54 | | 0.0027 | | 17 | | 0.0001 | U | 0.00056 | | 0.0005 | | 0.0018 | | 0.63 | | 6.2 | | 0.035 | | 0.0016 | | 0.0028 | |
| 056LM166 | 4/25/2006 | 1:25:00 PM | 0.53 | | 0.0027 | | 17 | | 0.0001 | U | 0.00053 | | 0.00045 | | 0.0017 | | 0.61 | | 6.3 | | 0.034 | | 0.0014 | | 0.0032 | |
| 056LM200-Sta 24 | 5/30/2006 | 1:40:00 PM | 0.43 | | 0.0014 | J | 15 | | 0.000023 | U | 0.00038 | J | 0.00039 | J | 0.00063 | J | 0.40 | | 5.5 | | 0.026 | | 0.00089 | J | 0.0036 | J |
| 056LM220-Sta 24 | 6/26/2006 | 1:35:00 PM | 0.15 | | 0.0016 | J | 17 | | 0.000023 | U | 0.00025 | J | 0.00018 | J | 0.00039 | J | 0.24 | | 6.4 | | 0.024 | | 0.0010 | J | 0.0015 | J |
| 067LM014-Sta 24 | 7/25/2006 | 2:05:00 PM | 0.10 | | 0.0018 | J | 17 | | 0.000023 | U | 0.00019 | J | 0.00018 | J | 0.00033 | J | 0.16 | | 6.4 | | 0.020 | | 0.00045 | J | 0.0020 | J |
| 067LM130-Sta 24 | 08/29/2006 | 1:40:00 PM | 0.11 | | 0.0013 | J | 17 | | 0.000023 | U | 0.00017 | J | 0.00025 | J | 0.00032 | J | 0.16 | | 6.4 | | 0.016 | | 0.00054 | J | 0.0021 | J |
| 067LM044-Sta 24 | 09/27/2006 | 12:40:00 PM | 0.043 | | 0.0012 | J | 16 | | 0.000023 | U | 0.00014 | J | 0.00026 | J | 0.00023 | J | 0.093 | | 5.9 | | 0.011 | | 0.00032 | J | 0.0020 | J |

| Sta 1 Field and Flow Data | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Date | Time | pH | | Temp | | EC | | SpC | |
| 10/25/2005 | 1:40:00 PM | 7.9 | SU | 8.9 | °C | 114 | uS/cm | 165 | uS/cm |
| 11/30/2005 | 2:20:00 PM | 8.1 | SU | 2.2 | °C | 92.1 | uS/cm | 163.2 | uS/cm |
| 12/27/2005 | 3:15:00 PM | 8.1 | SU | 2.9 | °C | 95 | uS/cm | 165 | uS/cm |
| 1/24/2006 | 2:40:00 PM | 7.8 | SU | 0.4 | °C | 94.3 | uS/cm | LErr | uS/cm |
| 2/22/2006 | 2:35:00 PM | 8 | SU | 0.9 | °C | 96 | uS/cm | LErr | uS/cm |
| 3/22/2006 | 3:00:00 PM | 8.1 | SU | 4.6 | °C | 109 | uS/cm | 180 | uS/cm |
| 4/25/2006 | 1:20:00 PM | 7.6 | SU | 8.2 | °C | 104 | uS/cm | 153 | uS/cm |
| 4/25/2006 | 1:25:00 PM | 7.6 | SU | 8.2 | °C | 104 | uS/cm | 153 | uS/cm |
| 5/30/2006 | 1:40:00 PM | 7.6 | SU | 12.1 | °C | 111 | uS/cm | 148 | uS/cm |
| 6/26/2006 | 1:35:00 PM | 7.9 | SU | 16.1 | °C | 135 | uS/cm | 162 | uS/cm |
| 7/25/2006 | 2:05:00 PM | 7.7 | SU | 18.8 | °C | 146 | uS/cm | 165 | uS/cm |
| 8/29/2006 | 1:40:00 PM | 7.5 | SU | 14.6 | °C | 136 | uS/cm | 170 | uS/cm |
| 9/27/2006 | 12:40:00 PM | 7.6 | SU | 8.3 | °C | 109 | uS/cm | 161 | uS/cm |

**Field Data:**

EC - Electrical Conductivity

SpC - Specific Conductance

Units: SU - Standard Units; °C - degrees celsius; uS/cm - micro siemen per centimeter;
cfs - cubic feet per second

Lerr - Instrument reading when instument cannot compute SpC due to low water temperature

e - estimated

**Q - Qualifiers:**

U - Analyte not detected at the given Method Detection Limit (MDL)

B - Analyte detected between the MDL and the Practical Quantitation Limit

J - Analyte detected between the MDL and the Practical Quantitation Limit

* - Relative Percent Difference between sample and field duplicate exceeds 25%

H - Analysis performed outside of method holding time

# Table 11: Station 25

| Sta 25 Dissolved Metals - mg/L | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Date | Time | Al | Q | As | Q | Ca | Q | Cd | Q | Co | Q | Cr | Q | Cu | Q | Fe | Q | Mg | Q | Mn | Q | Ni | Q | Zn | Q | TDS | Q | Sulfate | Q |
| 056LM051-STA25 | 10/25/2005 | 1:25:00 PM | 0.03 | B | 0.0012 | B | 54.3 | | 0.0001 | U | 0.03 | B | 0.0001 | U | 0.0016 | B | 0.14 | | 13.1 | | 0.652 | | 0.0332 | | 0.006 | B | 300 | | 140 | |
| 056LM069-STA 25 | 11/30/2005 | 2:40:00 PM | 0.03 | U | 0.0008 | B | 46 | | 0.0001 | U | 0.01 | B | 0.0001 | B | 0.0005 | U | 0.28 | | 12 | | 0.558 | | 0.0296 | | 0.007 | B | 240 | | 125 | |
| 056LM090 | 12/27/2005 | 3:40:00 PM | 0.03 | U | 0.0009 | B | 51.3 | | 0.0001 | U | 0.02 | B | 0.0001 | B | 0.0009 | B | 0.76 | | 13.5 | | 0.733 | | 0.0368 | | 0.01 | B | 300 | H | 134 | |
| 056LM103-STA 25 | 1/24/2006 | 11:10:00 AM | 0.016 | J | 0.0024 | J | 50 | | 0.00011 | J | 0.024 | | 0.00031 | J | 0.00097 | J | 2.9 | | 14 | | 1.0 | | 0.058 | | 0.0094 | J | 300 | | 157 | |
| 056LM111-STA 25 | 2/22/2006 | 3:00:00 PM | 0.015 | J | 0.0025 | | 46 | | 0.00020 | | 0.023 | | 0.000022 | J | 0.00071 | | 2.4 | | 13 | | 0.89 | | 0.058 | | 0.010 | | 290 | | 130 | |
| 056LM117-STA 25D | 2/22/2006 | 3:05:00 PM | 0.011 | J | 0.0026 | | 47 | | 0.00015 | | 0.024 | | 0.000016 | J | 0.00074 | | 2.5 | | 13 | | 0.90 | | 0.059 | | 0.011 | | 280 | | 140 | |
| 056LM128 | 3/22/2006 | 3:30:00 PM | 0.020 | U | 0.0017 | | 41 | | 0.0001 | U | 0.015 | | 0.0001 | U | 0.0005 | U | 0.47 | | 12 | | 0.64 | | 0.033 | | 0.005 | U | 250 | | 120 | |
| 056LM167 | 4/25/2006 | 1:50:00 PM | 0.16 | | 0.0039 | | 26 | | 0.0001 | U | 0.0084 | | 0.00027 | | 0.005 | | 0.26 | | 7.7 | | 0.35 | | 0.019 | | 0.005 | U | 140 | | 62 | |
| 056LM201-Sta 25 | 5/30/2006 | 2:05:00 PM | 0.032 | | 0.0021 | J | 31 | | 0.000035 | J | 0.015 | | 0.00014 | J | 0.00058 | J | 0.060 | | 9.1 | | 0.50 | | 0.035 | | 0.0026 | J | 240 | | 99 | |
| 056LM221-Sta 25 | 6/26/2006 | 2:00:00 PM | 0.011 | | 0.0010 | J | 42 | | 0.000034 | J | 0.021 | | 0.000079 | J | 0.00042 | J | 0.084 | | 12 | | 0.64 | | 0.048 | | 0.0040 | J | 280 | | 120 | |
| 067LM015-Sta 25 | 7/25/2006 | 2:30:00 PM | 0.012 | | 0.0021 | J | 110 | | 0.000038 | J | 0.0047 | J | 0.00015 | J | 0.00078 | J | 0.023 | | 15 | | 0.37 | | 0.017 | | 0.0017 | J | 560 | | 260 | |
| 067LM132-Sta 25 | 08/29/2006 | 2:05:00 PM | 0.0096 | J | 0.0013 | J | 45 | | 0.000023 | U | 0.011 | | 0.00017 | J | 0.00043 | J | 0.0050 | J | 12 | | 0.51 | | 0.026 | | 0.0016 | J | 240 | | 110 | |
| 067LM045-Sta 25 | 09/27/2006 | 1:25:00 PM | 0.0047 | J | 0.0015 | J | 34 | | 0.000023 | U | 0.0012 | J | 0.00022 | J | 0.00054 | J | 0.0048 | U | 10 | | 0.10 | | 0.0049 | J | 0.0015 | J | 180 | | 63 | |

| Sta 25 Total Metals - mg/L | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Date | Time | Al | Q | As | Q | Ca | Q | Cd | Q | Co | Q | Cr | Q | Cu | Q | Fe | Q | Mg | Q | Mn | Q | Ni | Q | Zn | Q |
| 056LM051-STA25 | 10/25/2005 | 1:25:00 PM | 0.63 | | 0.0053 | | 56.1 | | 0.0001 | U | 0.02 | B | 0.0004 | B | 0.0021 | B | 1.76 | | 13.5 | | 0.678 | | 0.0403 | | 0.01 | B |
| 056LM069-STA 25 | 11/30/2005 | 2:40:00 PM | 0.36 | | 0.0033 | | 45 | | 0.0001 | U | 0.02 | B | 0.0003 | B | 0.0011 | B | 1.05 | | 11.6 | | 0.541 | | 0.0281 | | 0.008 | B |
| 056LM090 | 12/27/2005 | 3:40:00 PM | 1.35 | | 0.0076 | | 51.9 | | 0.0001 | B | 0.02 | B | 0.0009 | | 0.0079 | | 3.51 | | 13.7 | | 0.765 | | 0.0387 | | 0.014 | |
| 056LM103-STA 25 | 1/24/2006 | 11:10:00 AM | 2.4 | | 0.010 | | 53 | | 0.00017 | | 0.024 | | 0.0016 | J | 0.011 | | 6.3 | | 15 | | 1.1 | | 0.067 | | 0.019 | |
| 056LM111-STA 25 | 2/22/2006 | 3:00:00 PM | 2.2 | | 0.012 | | 47 | | 0.00021 | | 0.024 | | 0.0019 | | 0.0088 | | 5.3 | | 13 | | 0.90 | | 0.060 | | 0.016 | |
| 056LM117-STA 25D | 2/22/2006 | 3:05:00 PM | 2.2 | | 0.012 | | 46 | | 0.00022 | | 0.025 | | 0.0018 | | 0.0088 | | 5.3 | | 13 | | 0.90 | | 0.060 | | 0.017 | |
| 056LM128 | 3/22/2006 | 3:30:00 PM | 1.2 | | 0.0071 | | 45 | | 0.0001 | U | 0.016 | | 0.00072 | | 0.0049 | | 3.2 | | 12 | | 0.69 | | 0.038 | | 0.01 | |
| 056LM167 | 4/25/2006 | 1:50:00 PM | 1.6 | | 0.011 | | 29 | | 0.00014 | | 0.009 | | 0.0013 | | 0.022 | | 3.1 | | 8.3 | | 0.42 | | 0.024 | | 0.014 | |
| 056LM201-Sta 25 | 5/30/2006 | 2:05:00 PM | 1.3 | | 0.013 | | 34 | | 0.00011 | J | 0.018 | | 0.0011 | J | 0.0050 | | 4.0 | | 9.5 | | 0.59 | | 0.041 | | 0.012 | |
| 056LM221-Sta 25 | 6/26/2006 | 2:00:00 PM | 1.1 | | 0.013 | | 43 | | 0.000087 | J | 0.023 | | 0.00084 | J | 0.0036 | J | 4.7 | | 12 | | 0.64 | | 0.053 | | 0.014 | |
| 067LM015-Sta 25 | 7/25/2006 | 2:30:00 PM | 0.34 | | 0.0049 | J | 110 | | 0.000077 | J | 0.0054 | | 0.00042 | J | 0.0026 | J | 1.3 | | 14 | | 0.39 | | 0.019 | | 0.0051 | J |
| 067LM132-Sta 25 | 08/29/2006 | 2:05:00 PM | 0.79 | | 0.0059 | | 43 | | 0.000045 | J | 0.013 | | 0.00058 | J | 0.0020 | J | 3.2 | | 11 | | 0.55 | | 0.030 | | 0.0090 | J |
| 067LM045-Sta 25 | 09/27/2006 | 1:25:00 PM | 0.049 | | 0.0017 | J | 33 | | 0.000023 | U | 0.0014 | J | 0.00025 | J | 0.00051 | J | 0.13 | | 9.3 | | 0.11 | | 0.0051 | | 0.0027 | J |

| Sta 25 Field and Flow Data | | | | | | | | | | | Daily Mean Flow | | Monthly Mean Flow | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Time | pH | | Temp | | EC | | SpC | | | | | | |
| 10/25/2005 | 1:25:00 PM | 7.8 | SU | 9.2 | °C | 270 | uS/cm | 387 | uS/cm | | e1.7 | cfs | 1.53 | cfs |
| 11/30/2005 | 2:40:00 PM | 7.8 | SU | 2 | °C | 221.1 | uS/cm | 394.4 | uS/cm | | e1.8 | cfs | 1.65 | cfs |
| 12/27/2005 | 3:40:00 PM | 7.8 | SU | 2.7 | °C | 248 | uS/cm | 432 | uS/cm | | 5.8 | cfs | 8.48 | cfs |
| 1/24/2006 | 2:55:00 PM | 7.4 | SU | 0.4 | °C | 237 | uS/cm | LErr | uS/cm | | 2.5 | cfs | 5.7 | cfs |
| 2/22/2006 | 3:00:00 PM | 7.4 | SU | 0.8 | °C | 229 | uS/cm | LErr | uS/cm | | 2.1 | cfs | 5.17 | cfs |
| 2/22/2006 | 3:05:00 PM | 7.4 | SU | 0.8 | °C | 229 | uS/cm | LErr | uS/cm | | 2.1 | cfs | 5.17 | cfs |
| 3/22/2006 | 3:30:00 PM | 7.7 | SU | 5 | °C | 225 | uS/cm | 364 | uS/cm | | 4.6 | cfs | 10.7 | cfs |
| 4/25/2006 | 1:50:00 PM | 7.8 | SU | 8.7 | °C | 166 | uS/cm | 240 | uS/cm | | 31 | cfs | 23.9 | cfs |
| 5/30/2006 | 2:05:00 PM | 7.7 | SU | 13.2 | °C | 245 | uS/cm | 316 | uS/cm | | 9.4 | cfs | 20.9 | cfs |
| 6/26/2006 | 2:00:00 PM | 7.5 | SU | 17.5 | °C | 318.8 | uS/cm | 372 | uS/cm | | 4.1 | cfs | 5.43 | cfs |
| 7/25/2006 | 2:30:00 PM | 7.9 | SU | 20.7 | °C | 637 | uS/cm | 694 | uS/cm | | 3.1 | cfs | 3.5 | cfs |
| 8/29/2006 | 2:05:00 PM | 7.7 | SU | 16 | °C | 310 | uS/cm | 375 | uS/cm | | 2.2 | cfs | 2.55 | cfs |
| 9/27/2006 | 1:25:00 PM | 7.7 | SU | 9.5 | °C | 211 | uS/cm | 301 | uS/cm | | 2.3 | cfs | 2.32 | cfs |

**Field Data:**

EC - Electrical Conductivity

SpC - Specific Conductance

Units: SU - Standard Units; °C - degrees celsius; uS/cm - micro siemen per centimeter; cfs - cubic feet per second

Lerr - Instrument reading when instument cannot compute SpC due to low water temperature

e - estimated

**Q - Qualifiers:**

U - Analyte not detected at the given Method Detection Limit (MDL)

B - Analyte detected between the MDL and the Practical Quantitation Limit

J - Analyte detected between the MDL and the Practical Quantitation Limit

* - Relative Percent Difference between sample and field duplicate exceeds 25%

H - Analysis performed outside of method holding time

# Table 12: Semi Annual Stations and other samples

| Dissolved Metals - mg/L | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Station | Sample ID | Date | Time | Al | Q | As | Q | Ca | Q | Cd | Q | Co | Q | Cr | Q | Cu | Q | Fe | Q | Mg | Q | Mn | Q | Ni | Q | Zn | Q | TDS | Q | Sulfate | Q |
| 4L Creek | 056LM059-4L | 10/26/2005 | 2:45:00 PM | 0.03 | U | 0.0033 | | 53.1 | | 0.0001 | U | 0.01 | U | 0.0002 | B | 0.0006 | B | 0.02 | U | 13.7 | | 0.005 | U | 0.001 | B | 0.004 | B | 320 | | 144 | |
| 4L Creek | 056LM204-4L | 05/31/2006 | 11:20:00 AM | 0.10 | | 0.0026 | J | 20 | | 0.000023 | U | 0.00028 | J | 0.00021 | J | 0.00082 | J | 0.014 | J | 5.6 | | 0.024 | | 0.0020 | J | 0.0027 | J | 170 | | 40 | |
| Delta Seep | 056LM058-DS | 10/26/2005 | 2:20:00 PM | 7.55 | | 0.0603 | | 312 | | 0.0013 | | 0.26 | | 0.0011 | | 0.0524 | | 20.3 | | 86.4 | | 16.2 | | 0.476 | | 0.163 | | 1780 | | 1270 | |
| Delta Seep | 056LM203-DS | 05/31/2006 | 11:45:00 AM | 25 | | 0.047 | | 310 | | 0.0033 | | 0.33 | | 0.011 | | 0.21 | | 39 | | 92 | | 19 | | 0.71 | | 0.37 | | 2200 | | 1500 | |
| Delta Seep | 056LM207-DS Dup | 05/31/2006 | 11:55:00 AM | 24 | | 0.045 | | 290 | | 0.0033 | | 0.34 | | 0.011 | | 0.21 | | 38 | | 93 | | 18 | | 0.74 | | 0.38 | | 2200 | | 1500 | |
| Delta Slope Under-drain | 056LM063-DSUD | 10/26/2005 | 2:05:00 PM | 60 | | 0.002 | B | 416 | | 0.0101 | | 0.55 | | 0.0187 | | 0.49 | | 21.8 | | 121 | | 28.6 | | 1.09 | | 0.95 | | 2860 | | 1490 | |
| Station 26 | 056LM060-26 | 10/26/2005 | 12:10:00 PM | 0.03 | U | 0.004 | | 43.6 | | 0.0001 | U | 0.01 | U | 0.0004 | B | 0.0005 | U | 0.03 | B | 13.2 | | 0.025 | B | 0.0044 | | 0.004 | B | 250 | | 89.7 | |
| Station 26 | 056LM062-26-D | 10/26/2005 | 12:15:00 PM | 0.03 | U | 0.0039 | | 43.8 | | 0.0001 | U | 0.01 | U | 0.0004 | B | 0.0005 | U | 0.03 | B | 13.2 | | 0.024 | B | 0.0042 | | 0.007 | B | 250 | | 90 | |
| Station 26 | 056LM205-Sta 26 | 05/31/2006 | 9:55:00 AM | 0.088 | | 0.0029 | J | 27 | | 0.000023 | U | 0.0065 | | 0.00022 | J | 0.00074 | J | 0.14 | | 8.5 | | 0.27 | | 0.020 | | 0.0022 | J | 210 | | 71 | |

| Total Metals - mg/L | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Station | Sample ID | Date | Time | Al | Q | As | Q | Ca | Q | Cd | Q | Co | Q | Cr | Q | Cu | Q | Fe | Q | Mg | Q | Mn | Q | Ni | Q | Zn | Q |
| 4L Creek | 056LM059-4L | 10/26/2005 | 2:45:00 PM | 0.05 | B | 0.0032 | | 56.8 | | 0.0001 | U | 0.01 | U | 0.0003 | B | 0.0005 | U | 0.03 | B | 15 | | 0.005 | U | 0.0007 | B | 0.003 | B |
| 4L Creek | 056LM204-4L | 05/31/2006 | 11:20:00 AM | 0.99 | | 0.0036 | J | 21 | | 0.000023 | U | 0.00036 | J | 0.00068 | J | 0.0013 | J | 0.57 | | 5.8 | | 0.031 | | 0.0022 | J | 0.0041 | J |
| Delta Seep | 056LM058-DS | 10/26/2005 | 2:20:00 PM | 9.72 | | 0.0579 | | 336 | | 0.0012 | | 0.29 | | 0.0033 | | 0.0531 | | 23.3 | | 95.2 | | 17.9 | | 0.441 | | 0.151 | |
| Delta Seep | 056LM203-DS | 05/31/2006 | 11:45:00 AM | 27 | | 0.046 | | 320 | | 0.0034 | | 0.34 | | 0.012 | | 0.21 | | 43 | | 97 | | 19 | | 0.72 | | 0.35 | |
| Delta Seep | 056LM207-DS Dup | 05/31/2006 | 11:55:00 AM | 28 | | 0.045 | | 330 | | 0.0033 | | 0.34 | | 0.012 | | 0.21 | | 44 | | 100 | | 20 | | 0.70 | | 0.39 | |
| Delta Slope Under-drain | 056LM063-DSUD | 10/26/2005 | 2:05:00 PM | 64.3 | | 0.004 | B | 436 | | 0.011 | | 0.61 | | 0.0232 | | 0.586 | | 23.2 | | 130 | | 30.6 | | 1.32 | | 1.04 | |
| Station 26 | 056LM060-26 | 10/26/2005 | 12:10:00 PM | 0.07 | B | 0.004 | | 44.3 | | 0.0001 | U | 0.01 | U | 0.0005 | B | 0.0005 | U | 0.18 | | 13.6 | | 0.029 | B | 0.0043 | | 0.003 | B |
| Station 26 | 056LM062-26-D | 10/26/2005 | 12:15:00 PM | 0.09 | B | 0.004 | | 44.5 | | 0.0001 | U | 0.01 | U | 0.0005 | B | 0.0009 | B | 0.17 | | 13.6 | | 0.028 | B | 0.0043 | | 0.004 | B |
| Station 26 | 056LM205-Sta 26 | 05/31/2006 | 9:55:00 AM | 0.97 | | 0.0099 | | 29 | | 0.000079 | J | 0.0089 | | 0.00091 | J | 0.0035 | J | 2.9 | | 9.1 | | 0.33 | | 0.026 | | 0.0084 | J |

| Field and Flow Data | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Station | Sample ID | Date | Time | pH | | Temp | | EC | | SpC | | Daily Mean Flow | | Monthly Mean Flow | |
| 4L Creek | 056LM059-4L | 10/26/2005 | 2:45:00 PM | 7 | SU | 6.9 | °C | 288 | uS/cm | 440 | uS/cm | 0.02 | cfs | 0.02 | cfs |
| 4L Creek | 056LM204-4L | 5/31/2006 | 11:20:00 AM | 7.2 | SU | 9.8 | °C | 140 | uS/cm | 198 | uS/cm | 0.68 | cfs | 3.7 | cfs |
| Delta Seep | 056LM058-DS | 10/26/2005 | 2:20:00 PM | 5.1 | SU | 8.7 | °C | 1353 | uS/cm | 1965 | uS/cm | NA | cfs | NA | cfs |
| Delta Seep | 056LM203-DS | 5/31/2006 | 11:45:00 AM | 3.5 | SU | 10.4 | °C | 1598 | uS/cm | 2217 | uS/cm | NA | cfs | NA | cfs |
| Delta Seep | 056LM207-DS Dup | 5/31/2006 | 11:55:00 AM | 3.5 | SU | 10.4 | °C | 1598 | uS/cm | 2217 | uS/cm | NA | cfs | NA | cfs |
| Delta Slope Under-drain | 056LM063-DSUD | 10/26/2005 | 2:05:00 PM | 2.9 | SU | 10.4 | °C | 2168 | uS/cm | 2977 | uS/cm | NA | cfs | NA | cfs |
| Station 26 | 056LM060-26 | 10/26/2005 | 12:10:00 PM | 7.85 | SU | 10.5 | °C | 264 | uS/cm | 364 | uS/cm | 3.7 | cfs | 3.15 | cfs |
| Station 26 | 056LM062-26-D | 10/26/2005 | 12:15:00 PM | 7.85 | SU | 10.5 | °C | 264 | uS/cm | 364 | uS/cm | 3.7 | cfs | 3.15 | cfs |
| Station 26 | 056LM205-Sta 26 | 5/31/2006 | 9:55:00 AM | 7.6 | SU | 10 | °C | 190 | uS/cm | 267 | uS/cm | 9.7 | cfs | 30.1 | cfs |

**Field Data:**

EC - Electrical Conductivity

SpC - Specific Conductance

Lerr - Instrument reading when instument cannot compute SpC due to low water temperature

Units: SU - Standard Units; °C - degrees celsius; uS/cm - micro siemen per centimeter;
cfs - cubic feet per second

e - estimated

NA - Not Available

**Q - Qualifiers:**

U - Analyte not detected at the given Method Detection Limit (MDL)

B - Analyte detected between the MDL and the Practical Quantitation Limit

J - Analyte detected between the MDL and the Practical Quantitation Limit

* - Relative Percent Difference between sample and field duplicate exceeds 25%

H - Analysis performed outside of method holding time

# Attachment C

# Level A/B and Data Validation Checklists

**Leviathan Mine**
**Level A/B Screening Checklist**

I. General Information

**Project:** October Monthly
**Sample Date:** 10/25/05
**Client/Lab:** Water Board / ACZ Labs
**Sample Matrix:** AQ
**Sample Location(s):** 25, 24, 23, 22, 16, 15, 1, OS, CUD, PUD, Adit, duplicate at OS

II. Screening Results

Data are:
1) Unusable_____
2) Level A _____
3) Level B ___X___

III. Level A Screening

| Criteria | Yes/No |
|---|---|
| 1. Sampling date | Yes – COC/field book |
| 2. Sample team/or leader | Yes – field book |
| 3. Physical description of sample location | Yes - SAP |
| 4. Sample depth (soils) | NA |
| 5. Sample collection technique | Yes - SAP |
| 6. Field preparation technique | Yes - SAP |
| 7. Sample preservation technique | Yes – SAP/COC |
| 8. Sample shipping records | Yes - COC |

IV. Level B Screening

| Criteria | Yes/No |
|---|---|
| 1. Field instrumentation methods and standardization complete | Yes |
| 2. Sample container preparation | Yes |
| 3. Collection of field replicates (1/20 minimum) | Yes |
| 4. Proper and decontaminated sampling equipment | Yes |
| 5. Field custody documentation | Yes |
| 6. Shipping custody documentation | Yes |
| 7. Traceable sample designation number | Yes |
| 8. Field notebook(s), custody records in secure repository | Yes – Water Board office |
| 9. Completed field forms | Field book |

**Leviathan Mine**
**Data Validation**
**Checklist for Field Quality Control**

Site: Leviathan Mine
Project: October Monthly
Sample Dates: 10/25/05
Data Validator: LS

Report No.: L53935, L54583
Sample Matrix: AQ
Analysis Dates: see below
Validation Dates: 1/25/07

Laboratory: ACZ Labs
Analyses: TDS, Sulfate, Dis. & Total: Al, As, Ca, Cd, Cr, Co, Cu, Fe, Mg, Mn, Ni, Zn

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## 1. Holding Times

| Analyte | Matrix | Method | Collection date | Analysis date | Affected data flagged? (Y/N) |
|---|---|---|---|---|---|
| Sulfate | AQ | 300.0 | 10/25/05 | 11/11,16,22/05 | NA |
| Total Dissolved Solids | AQ | 160.1 | 10/25/05 | 10/28/05 | NA |
| Metals | AQ | 200.7 | 10/25/05 | 11/1,2/05 | NA |
| Metals | AQ | 200.8 | 10/25/05 | 11/2,3,5/05 | NA |
| Total Dissolved Solids (re-analysis) | AQ | 160.1 | 10/25/05 | 12/18/05 | Y |
| Metals (re-analyses) | AQ | 200.7 | 10/25/05 | 12/20,30/05 | NA |
| Metals (re-analyses) | AQ | 200.8 | 10/25/05 | 12/17/05, 1/3/06 | NA |

## 2. Field QC Samples

**Field Blanks**

Were field blanks submitted as specified in the Sampling & Analysis Plan? Y_X_ N____
Were any data qualified because of field blank problems? Y____ N__X__

**Field Duplicates**

Were field duplicates submitted as specified in the Sampling & Analysis Plan? Y_X__ N____
Were any data qualified because of field duplicate results? Y____ N__X__
Were results for field duplicates within the target control limits in the QAPP? Y__X__ N____

**Field Reference Materials**

Were field Reference Materials or Performance Evaluation Samples submitted as specified in the Sampling & Analysis Plan? Y____ N____ NA

Were the results within the manufacturer's control limits? Y____ N____ NA

**Leviathan Mine**
**Level A/B Screening Checklist**

I. General Information

**Project:** November Monthly
**Sample Date:** 11/30/05
**Client/Lab:** Water Board / ACZ Labs
**Sample Matrix:** AQ
**Sample Location(s):** 25, 24, 23, 22, 16, 15, 1, OS, CUD, PUD, Adit, duplicate at OS

II. Screening Results

Data are:
1) Unusable_____
2) Level A _____
3) Level B ___X___

III. Level A Screening

| Criteria | Yes/No |
|---|---|
| 1. Sampling date | Yes – COC/field book |
| 2. Sample team/or leader | Yes – field book |
| 3. Physical description of sample location | Yes - SAP |
| 4. Sample depth (soils) | NA |
| 5. Sample collection technique | Yes - SAP |
| 6. Field preparation technique | Yes - SAP |
| 7. Sample preservation technique | Yes – SAP/COC |
| 8. Sample shipping records | Yes - COC |

IV. Level B Screening

| Criteria | Yes/No |
|---|---|
| 1. Field instrumentation methods and standardization complete | Yes |
| 2. Sample container preparation | Yes |
| 3. Collection of field replicates (1/20 minimum) | Yes |
| 4. Proper and decontaminated sampling equipment | Yes |
| 5. Field custody documentation | Yes |
| 6. Shipping custody documentation | Yes |
| 7. Traceable sample designation number | Yes |
| 8. Field notebook(s), custody records in secure repository | Yes – Water Board office |
| 9. Completed field forms | Field book |

**Leviathan Mine**
**Data Validation**
**Checklist for Field Quality Control**

Site: Leviathan Mine
Project: November Monthly
Sample Dates: 11/30/05
Data Validator: LS

Report No.: L54455
Sample Matrix: AQ
Analysis Dates: see below
Validation Dates: 1/24/07

Laboratory: ACZ Labs
Analyses: TDS, Sulfate, Dis. & Total: Al, As, Ca, Cd, Cr, Co, Cu, Fe, Mg, Mn, Ni, Zn

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## 1. Holding Times

| Analyte | Matrix | Method | Collection date | Analysis date | Affected data flagged? (Y/N) |
|---|---|---|---|---|---|
| Sulfate | AQ | 300.0 | 11/30/05 | 12/13/05 | NA |
| Total Dissolved Solids | AQ | 160.1 | 11/30/05 | 12/7,12/05 | Y |
| Metals | AQ | 200.7 | 11/30/05 | 12/10,12,13,14,15,20,29/05 | NA |
| Metals | AQ | 200.8 | 11/30/05 | 12/9,11,13,14/05 | NA |

## 2. Field QC Samples

**Field Blanks**

Were field blanks submitted as specified in the Sampling & Analysis Plan? Y_X_ N____
Were any data qualified because of field blank problems? Y____ N__X_

**Field Duplicates**

Were field duplicates submitted as specified in the Sampling & Analysis Plan? Y_X__ N____
Were any data qualified because of field duplicate results? Y____ N__X_
Were results for field duplicates within the target control limits in the QAPP? Y_Y__ N____

**Field Reference Materials**

Were field Reference Materials or Performance Evaluation Samples submitted as specified in the Sampling & Analysis Plan? Y____ N____ NA

Were the results within the manufacturer's control limits? Y____ N____ NA

**Leviathan Mine**
**Level A/B Screening Checklist**

I. General Information

**Project:** Fall Semi-Annual
**Sample Date:** 10/26/05
**Client/Lab:** Water Board / ACZ Labs
**Sample Matrix:** AQ
**Sample Location(s):** Delta Seep, 4L Creek, Sta 26, Delta Seep Under-drain

II. Screening Results

Data are:
1) Unusable_____
2) Level A _____
3) Level B ___X___

III. Level A Screening

| Criteria | Yes/No |
|---|---|
| 1. Sampling date | Yes – COC/field book |
| 2. Sample team/or leader | Yes – field book |
| 3. Physical description of sample location | Yes - SAP |
| 4. Sample depth (soils) | NA |
| 5. Sample collection technique | Yes - SAP |
| 6. Field preparation technique | Yes - SAP |
| 7. Sample preservation technique | Yes – SAP/COC |
| 8. Sample shipping records | Yes - COC |

IV. Level B Screening

| Criteria | Yes/No |
|---|---|
| 1. Field instrumentation methods and standardization complete | Yes |
| 2. Sample container preparation | Yes |
| 3. Collection of field replicates (1/20 minimum) | Yes |
| 4. Proper and decontaminated sampling equipment | Yes |
| 5. Field custody documentation | Yes |
| 6. Shipping custody documentation | Yes |
| 7. Traceable sample designation number | Yes |
| 8. Field notebook(s), custody records in secure repository | Yes – Water Board office |
| 9. Completed field forms | Field book |

**Leviathan Mine**
**Data Validation**
**Checklist for Field Quality Control**

Site: Leviathan Mine
Project: Fall Semi-Annual
Sample Dates: 10/26/05
Data Validator: LS

Report No.: L53980
Sample Matrix: AQ
Analysis Dates: see below
Validation Dates: 1/24/07

Laboratory: ACZ Labs
Analyses: TDS, Sulfate, Dis. & Total: Al, As, Ca, Cd, Cr, Co, Cu, Fe, Mg, Mn, Ni, Zn

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## 1. Holding Times

| Analyte | Matrix | Method | Collection date | Analysis date | Affected data flagged? (Y/N) |
|---|---|---|---|---|---|
| Sulfate | AQ | 300.0 | 10/26/05 | 11/22/05 | NA |
| Total Dissolved Solids | AQ | 160.1 | 10/26/05 | 10/31/05 | NA |
| Metals | AQ | 200.7 | 10/26/05 | 11/4,6,9/04 | NA |
| Metals | AQ | 200.8 | 10/26/05 | 11/5,8,11/04; 12/3/05 | NA |

## 2. Field QC Samples

**Field Blanks**

Were field blanks submitted as specified in the Sampling & Analysis Plan? Y_X_ N____
Were any data qualified because of field blank problems? Y____ N__X__

**Field Duplicates**

Were field duplicates submitted as specified in the Sampling & Analysis Plan? Y_X__ N____
Were any data qualified because of field duplicate results? Y____ N__X__
Were results for field duplicates within the target control limits in the QAPP? Y_X__ N____

**Field Reference Materials**

Were field Reference Materials or Performance Evaluation Samples submitted as specified in the Sampling & Analysis Plan? Y____ N____ NA

Were the results within the manufacturer's control limits? Y____ N____ NA

**Leviathan Mine**
**Level A/B Screening Checklist**

I. General Information

**Project:** December Monthly
**Sample Date:** 12/27/05
**Client/Lab:** Water Board / ACZ Labs
**Sample Matrix:** AQ
**Sample Location(s):** 25, 24, 23, 22, 16, 15, 1, CUD, PUD, Adit, duplicate at 16

II. Screening Results

Data are:
1) Unusable_____
2) Level A _____
3) Level B ___X___

III. Level A Screening

| Criteria | Yes/No |
|---|---|
| 1. Sampling date | Yes – COC/field book |
| 2. Sample team/or leader | Yes – field book |
| 3. Physical description of sample location | Yes - SAP |
| 4. Sample depth (soils) | NA |
| 5. Sample collection technique | Yes - SAP |
| 6. Field preparation technique | Yes - SAP |
| 7. Sample preservation technique | Yes – SAP/COC |
| 8. Sample shipping records | Yes - COC |

IV. Level B Screening

| Criteria | Yes/No |
|---|---|
| 1. Field instrumentation methods and standardization complete | Yes |
| 2. Sample container preparation | Yes |
| 3. Collection of field replicates (1/20 minimum) | Yes |
| 4. Proper and decontaminated sampling equipment | Yes |
| 5. Field custody documentation | Yes |
| 6. Shipping custody documentation | Yes |
| 7. Traceable sample designation number | Yes |
| 8. Field notebook(s), custody records in secure repository | Yes – Water Board office |
| 9. Completed field forms | Field book |

**Leviathan Mine**
**Data Validation**
**Checklist for Field Quality Control**

Site: Leviathan Mine
Project: December Monthly
Sample Dates: 12/27/05
Data Validator: LS

Report No.: L54743,L55349,L55625
Sample Matrix: AQ
Analysis Dates: see below
Validation Dates: 1/24/07

Laboratory: ACZ
Analyses: TDS, Sulfate, Dis. & Total: Al, As, Ca, Cd, Cr, Co, Cu, Fe, Mg, Mn, Ni, Zn

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## 1. Holding Times

| Analyte | Matrix | Method | Collection date | Analysis date | Affected data flagged? (Y/N) |
|---|---|---|---|---|---|
| Sulfate | AQ | 300.0 | 12/27/05 | 1/5,6,23/06 | NA |
| Total Dissolved Solids | AQ | 160.1 | 12/27/05 | 1/4/06 | Y |
| Metals | AQ | 200.7 | 12/27/05 | 1/4,5,6,25/06 | NA |
| Metals | AQ | 200.8 | 12/27/05 | 1/5,6,9,11/06 | NA |
| Metals (re-analyses) | AQ | 200.7 | 12/27/05 | 2/24,28/06 | NA |
| Metals (re-analyses) | AQ | 200.7 | 12/27/05 | 3/14,17,24,28/06 | NA |
| Metals (re-analyses) | AQ | 200.8 | 12/27/05 | 3/15,17/06 | NA |

## 2. Field QC Samples

**Field Blanks**

Were field blanks submitted as specified in the Sampling & Analysis Plan? Y_X_ N____
Were any data qualified because of field blank problems? Y____ N__X__

**Field Duplicates**

Were field duplicates submitted as specified in the Sampling & Analysis Plan? Y_X__ N____
Were any data qualified because of field duplicate results? Y____ N__X__
Were results for field duplicates within the target control limits in the QAPP? Y__X_ N____

**Field Reference Materials**

Were field Reference Materials or Performance Evaluation Samples submitted as specified in the Sampling & Analysis Plan? Y____ N____ NA

Were the results within the manufacturer's control limits? Y____ N____ NA

**Leviathan Mine**
**Level A/B Screening Checklist**

I. General Information

**Project:** January Monthly
**Sample Date:** 1/24/06
**Client/Lab:** Water Board / ACZ Labs
**Sample Matrix:** AQ
**Sample Location(s):** 25, 24, 23, 22, 16, 15, 1, OS, CUD, PUD, Adit, duplicate at 15

II. Screening Results

Data are:
1) Unusable_____
2) Level A _____
3) Level B ___X___

III. Level A Screening

| Criteria | Yes/No |
|---|---|
| 1. Sampling date | Yes – COC/field book |
| 2. Sample team/or leader | Yes – field book |
| 3. Physical description of sample location | Yes - SAP |
| 4. Sample depth (soils) | NA |
| 5. Sample collection technique | Yes - SAP |
| 6. Field preparation technique | Yes - SAP |
| 7. Sample preservation technique | Yes – SAP/COC |
| 8. Sample shipping records | Yes - COC |

IV. Level B Screening

| Criteria | Yes/No |
|---|---|
| 1. Field instrumentation methods and standardization complete | Yes |
| 2. Sample container preparation | Yes |
| 3. Collection of field replicates (1/20 minimum) | Yes |
| 4. Proper and decontaminated sampling equipment | Yes |
| 5. Field custody documentation | Yes |
| 6. Shipping custody documentation | Yes |
| 7. Traceable sample designation number | Yes |
| 8. Field notebook(s), custody records in secure repository | Yes – Water Board office |
| 9. Completed field forms | Field book |

**Leviathan Mine**
**Data Validation**
**Checklist for Field Quality Control**

Site: Leviathan Mine
Project: January Monthly
Sample Dates: 1/24/06
Data Validator: LS

Report No.: L55073
Sample Matrix: AQ
Analysis Dates: see below
Validation Dates: 1/24/07

Laboratory: ACZ
Analyses: TDS, Sulfate, Dis. & Total: Al, As, Ca, Cd, Cr, Co, Cu, Fe, Mg, Mn, Ni, Zn

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## 1. Holding Times

| Analyte | Matrix | Method | Collection date | Analysis date | Affected data flagged? (Y/N) |
|---|---|---|---|---|---|
| Sulfate | AQ | 300.0 | 1/24/06 | 1/27,30/06; 2/8/06 | NA |
| Total Dissolved Solids | AQ | 160.1 | 1/24/06 | 1/26/06 | Yes |

## 2. Field QC Samples

**Field Blanks**

Were field blanks submitted as specified in the Sampling & Analysis Plan? Y_X_ N____
Were any data qualified because of field blank problems? Y____ N_X___

**Field Duplicates**

Were field duplicates submitted as specified in the Sampling & Analysis Plan? Y_X__ N____
Were any data qualified because of field duplicate results? Y____ N__X__
Were results for field duplicates within the target control limits in the QAPP? Y_X__ N____

**Field Reference Materials**

Were field Reference Materials or Performance Evaluation Samples submitted as specified in the Sampling & Analysis Plan? Y____ N____ NA

Were the results within the manufacturer's control limits? Y____ N____ NA

**Leviathan Mine**
**Level A/B Screening Checklist**

I. General Information

**Project:** January Monthly
**Sample Date:** 1/24/06
**Client/Lab:** Water Board / Weck Labs
**Sample Matrix:** AQ
**Sample Location(s):** 25, 24, 23, 22, 16, 15, 1, OS, CUD, PUD, Adit, duplicate at 15

II. Screening Results

Data are:
1) Unusable_____
2) Level A _____
3) Level B ___X___

III. Level A Screening

| Criteria | Yes/No |
|---|---|
| 1. Sampling date | Yes – COC/field book |
| 2. Sample team/or leader | Yes – field book |
| 3. Physical description of sample location | Yes - SAP |
| 4. Sample depth (soils) | NA |
| 5. Sample collection technique | Yes - SAP |
| 6. Field preparation technique | Yes - SAP |
| 7. Sample preservation technique | Yes – SAP/COC |
| 8. Sample shipping records | Yes - COC |

IV. Level B Screening

| Criteria | Yes/No |
|---|---|
| 1. Field instrumentation methods and standardization complete | Yes |
| 2. Sample container preparation | Yes |
| 3. Collection of field replicates (1/20 minimum) | Yes |
| 4. Proper and decontaminated sampling equipment | Yes |
| 5. Field custody documentation | Yes |
| 6. Shipping custody documentation | Yes |
| 7. Traceable sample designation number | Yes |
| 8. Field notebook(s), custody records in secure repository | Yes – Water Board office |
| 9. Completed field forms | Field book |

**Leviathan Mine**
**Data Validation**
**Checklist for Field Quality Control**

Site: Leviathan Mine
Project: January Monthly
Sample Dates: 1/24/06
Data Validator: LS

Report No.: 6051027
Sample Matrix: AQ
Analysis Dates: see below
Validation Dates: 1/24/07

Laboratory: Weck Labs
Analyses: TDS, Sulfate, Dis. & Total: Al, As, Ca, Cd, Cr, Co, Cu, Fe, Mg, Mn, Ni, Zn

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## 1. Holding Times

| Analyte | Matrix | Method | Collection date | Analysis date | Affected data flagged? (Y/N) |
|---|---|---|---|---|---|
| Metals | AQ | 200.7 | 1/24/06 | 5/17/06 | NA |
| Metals | AQ | 200.8 | 1/24/06 | 5/16/06 | NA |

## 2. Field QC Samples

**Field Blanks**

Were field blanks submitted as specified in the Sampling & Analysis Plan? Y_X_ N____
Were any data qualified because of field blank problems? Y____ N_X___

**Field Duplicates**

Were field duplicates submitted as specified in the Sampling & Analysis Plan? Y_X__ N____
Were any data qualified because of field duplicate results? Y____ N_X___
Were results for field duplicates within the target control limits in the QAPP? Y_X__ N____

**Field Reference Materials**

Were field Reference Materials or Performance Evaluation Samples submitted as specified in the Sampling & Analysis Plan? Y____ N____ NA

Were the results within the manufacturer's control limits? Y____ N____ NA

**Leviathan Mine**
**Level A/B Screening Checklist**

I. General Information

**Project:** February Monthly
**Sample Date:** 2/22/06
**Client/Lab:** Water Board / CLS Labs
**Sample Matrix:** AQ
**Sample Location(s):** 25, 24, 23, 22, 16, 15, 1, OS, CUD, PUD, Adit, duplicate at 25

II. Screening Results

Data are:
1) Unusable_____
2) Level A _____
3) Level B ___X___

III. Level A Screening

| Criteria | Yes/No |
|---|---|
| 1. Sampling date | Yes – COC/field book |
| 2. Sample team/or leader | Yes – field book |
| 3. Physical description of sample location | Yes - SAP |
| 4. Sample depth (soils) | NA |
| 5. Sample collection technique | Yes - SAP |
| 6. Field preparation technique | Yes - SAP |
| 7. Sample preservation technique | Yes – SAP/COC |
| 8. Sample shipping records | Yes - COC |

IV. Level B Screening

| Criteria | Yes/No |
|---|---|
| 1. Field instrumentation methods and standardization complete | Yes |
| 2. Sample container preparation | Yes |
| 3. Collection of field replicates (1/20 minimum) | Yes |
| 4. Proper and decontaminated sampling equipment | Yes |
| 5. Field custody documentation | Yes |
| 6. Shipping custody documentation | Yes |
| 7. Traceable sample designation number | Yes |
| 8. Field notebook(s), custody records in secure repository | Yes – Water Board office |
| 9. Completed field forms | Field book |

**Leviathan Mine**
**Data Validation**
**Checklist for Field Quality Control**

Site: Leviathan Mine
Project: February Monthly
Sample Dates: 2/22/06
Data Validator: LS

Report No.: CPB0728
Sample Matrix: AQ
Analysis Dates: see below
Validation Dates: 1/24/07

Laboratory: CLS Labs
Analyses: TDS, Sulfate, Dis. & Total: Al, As, Ca, Cd, Cr, Co, Cu, Fe, Mg, Mn, Ni, Zn

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## 1. Holding Times

| Analyte | Matrix | Method | Collection date | Analysis date | Affected data flagged? (Y/N) |
|---|---|---|---|---|---|
| Sulfate | AQ | 300.0 | 2/22/06 | 2/28/06; 3/1/06 | NA |
| Total Dissolved Solids | AQ | 160.1 | 2/22/06 | 2/28/06 | NA |

## 2. Field QC Samples

**Field Blanks**

Were field blanks submitted as specified in the Sampling & Analysis Plan? Y_X_ N____
Were any data qualified because of field blank problems? Y____ N_X___

**Field Duplicates**

Were field duplicates submitted as specified in the Sampling & Analysis Plan? Y_X__ N____
Were any data qualified because of field duplicate results? Y_____ N_X___
Were results for field duplicates within the target control limits in the QAPP? Y_X__ N____

**Field Reference Materials**

Were field Reference Materials or Performance Evaluation Samples submitted as specified in the Sampling & Analysis Plan? Y____ N____ NA

Were the results within the manufacturer's control limits? Y____ N____ NA

**Leviathan Mine**
**Level A/B Screening Checklist**

I. General Information

**Project:** February Monthly
**Sample Date:** 2/22/06
**Client/Lab:** Water Board / Weck Labs
**Sample Matrix:** AQ
**Sample Location(s):** 25, 24, 23, 22, 16, 15, 1, OS, CUD, PUD, Adit, duplicate at 25

II. Screening Results

Data are:
1) Unusable_____
2) Level A _____
3) Level B ___X___

III. Level A Screening

| Criteria | Yes/No |
|---|---|
| 1. Sampling date | Yes – COC/field book |
| 2. Sample team/or leader | Yes – field book |
| 3. Physical description of sample location | Yes - SAP |
| 4. Sample depth (soils) | NA |
| 5. Sample collection technique | Yes - SAP |
| 6. Field preparation technique | Yes - SAP |
| 7. Sample preservation technique | Yes – SAP/COC |
| 8. Sample shipping records | Yes - COC |

IV. Level B Screening

| Criteria | Yes/No |
|---|---|
| 1. Field instrumentation methods and standardization complete | Yes |
| 2. Sample container preparation | Yes |
| 3. Collection of field replicates (1/20 minimum) | Yes |
| 4. Proper and decontaminated sampling equipment | Yes |
| 5. Field custody documentation | Yes |
| 6. Shipping custody documentation | Yes |
| 7. Traceable sample designation number | Yes |
| 8. Field notebook(s), custody records in secure repository | Yes – Water Board office |
| 9. Completed field forms | Field book |

**Leviathan Mine**
**Data Validation**
**Checklist for Field Quality Control**

Site: Leviathan Mine
Project: February Monthly
Sample Dates: 2/22/06
Data Validator: LS

Report No.: 6061418
Sample Matrix: AQ
Analysis Dates: see below
Validation Dates: 1/24/07

Laboratory: Weck Labs
Analyses: TDS, Sulfate, Dis. & Total: Al, As, Ca, Cd, Cr, Co, Cu, Fe, Mg, Mn, Ni, Zn

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## 1. Holding Times

| Analyte | Matrix | Method | Collection date | Analysis date | Affected data flagged? (Y/N) |
|---|---|---|---|---|---|
| Metals | AQ | 200.7 | 2/22/06 | 6/20,22/06 | NA |
| Metals | AQ | 200.8 | 2/22/06 | 6/15,16,19/06 | NA |

## 2. Field QC Samples

**Field Blanks**

Were field blanks submitted as specified in the Sampling & Analysis Plan? Y_X_ N____
Were any data qualified because of field blank problems? Y____ N_X___

**Field Duplicates**

Were field duplicates submitted as specified in the Sampling & Analysis Plan? Y_X__ N____
Were any data qualified because of field duplicate results? Y_____ N_X___
Were results for field duplicates within the target control limits in the QAPP? Y_X__ N____

**Field Reference Materials**

Were field Reference Materials or Performance Evaluation Samples submitted as specified in the Sampling & Analysis Plan? Y____ N____ NA

Were the results within the manufacturer's control limits? Y____ N____ NA

**Leviathan Mine**
**Level A/B Screening Checklist**

I. General Information

**Project:** March Monthly
**Sample Date:** 3/22/06
**Client/Lab:** Water Board / Weck Labs
**Sample Matrix:** AQ
**Sample Location(s):** 25, 24, 23, 22, 16, 15, 1, OS, Adit, PUD, CUD, duplicate at 23

II. Screening Results

Data are:
1) Unusable_____
2) Level A _____
3) Level B ___X___

III. Level A Screening

| Criteria | Yes/No |
|---|---|
| 1. Sampling date | Yes – COC/field book |
| 2. Sample team/or leader | Yes – field book |
| 3. Physical description of sample location | Yes - SAP |
| 4. Sample depth (soils) | NA |
| 5. Sample collection technique | Yes - SAP |
| 6. Field preparation technique | Yes - SAP |
| 7. Sample preservation technique | Yes – SAP/COC |
| 8. Sample shipping records | Yes - COC |

IV. Level B Screening

| Criteria | Yes/No |
|---|---|
| 1. Field instrumentation methods and standardization complete | Yes |
| 2. Sample container preparation | Yes |
| 3. Collection of field replicates (1/20 minimum) | Yes |
| 4. Proper and decontaminated sampling equipment | Yes |
| 5. Field custody documentation | Yes |
| 6. Shipping custody documentation | Yes |
| 7. Traceable sample designation number | Yes |
| 8. Field notebook(s), custody records in secure repository | Yes – Water Board office |
| 9. Completed field forms | Field book |

**Leviathan Mine**
**Data Validation**
**Checklist for Field Quality Control**

Site: Leviathan Mine
Project: March Monthly
Sample Dates: 3/22/06
Data Validator: LS

Report No.: 6032426
Sample Matrix: AQ
Analysis Dates: see below
Validation Dates: 1/24/07

Laboratory: Weck Labs
Analyses: TDS, Sulfate, Dis. & Total: Al, As, Ca, Cd, Cr, Co, Cu, Fe, Mg, Mn, Ni, Zn

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## 1. Holding Times

| Analyte | Matrix | Method | Collection date | Analysis date | Affected data flagged? (Y/N) |
|---|---|---|---|---|---|
| Sulfate | AQ | 300.0 | 3/22/06 | 3/30/06; 4/7/06 | NA |
| Total Dissolved Solids | AQ | SM2540C | 3/22/06 | 3/29,30/06 | NA |
| Metals | AQ | 200.7 | 3/22/06 | 4/5,6/06 | NA |
| Metals | AQ | 200.8 | 3/22/06 | 4/4,5,11,12,13/06 | NA |

## 2. Field QC Samples

**Field Blanks**

Were field blanks submitted as specified in the Sampling & Analysis Plan? Y_X_ N____
Were any data qualified because of field blank problems? Y____ N_X___

**Field Duplicates**

Were field duplicates submitted as specified in the Sampling & Analysis Plan? Y_X__ N____
Were any data qualified because of field duplicate results? Y____ N_X___
Were results for field duplicates within the target control limits in the QAPP? Y_X__ N____

**Field Reference Materials**

Were field Reference Materials or Performance Evaluation Samples submitted as specified in the Sampling & Analysis Plan? Y____ N____ NA

Were the results within the manufacturer's control limits? Y____ N____ NA

**Leviathan Mine**
**Level A/B Screening Checklist**

I. General Information

**Project:** April Monthly
**Sample Date:** 4/25/06
**Client/Lab:** Water Board / Weck Labs
**Sample Matrix:** AQ
**Sample Location(s):** 25, 24, 23, 22, 16, 15, 1, CUD, OS, Adit, PUD, Duplicate at 24

II. Screening Results

Data are:
1) Unusable_____
2) Level A _____
3) Level B ___X___

III. Level A Screening

| Criteria | Yes/No |
|---|---|
| 1. Sampling date | Yes – COC/field book |
| 2. Sample team/or leader | Yes – field book |
| 3. Physical description of sample location | Yes - SAP |
| 4. Sample depth (soils) | NA |
| 5. Sample collection technique | Yes - SAP |
| 6. Field preparation technique | Yes - SAP |
| 7. Sample preservation technique | Yes – SAP/COC |
| 8. Sample shipping records | Yes - COC |

IV. Level B Screening

| Criteria | Yes/No |
|---|---|
| 1. Field instrumentation methods and standardization complete | Yes |
| 2. Sample container preparation | Yes |
| 3. Collection of field replicates (1/20 minimum) | Yes |
| 4. Proper and decontaminated sampling equipment | Yes |
| 5. Field custody documentation | Yes |
| 6. Shipping custody documentation | Yes |
| 7. Traceable sample designation number | Yes |
| 8. Field notebook(s), custody records in secure repository | Yes – Water Board office |
| 9. Completed field forms | Field book |

**Leviathan Mine**
**Data Validation**
**Checklist for Field Quality Control**

Site: Leviathan Mine
Project: April Monthly
Sample Dates: 4/25/06
Data Validator: LS

Report No.: 6042812
Sample Matrix: AQ
Analysis Dates: see below
Validation Dates: 1/24/07

Laboratory: Weck Labs
Analyses: TDS, Sulfate, Dis. & Total: Al, As, Ca, Cd, Cr, Co, Cu, Fe, Mg, Mn, Ni, Zn

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## 1. Holding Times

| Analyte | Matrix | Method | Collection date | Analysis date | Affected data flagged? (Y/N) |
|---|---|---|---|---|---|
| Sulfate | AQ | 300.0 | 4/25/06 | 5/2,4,5/06 | NA |
| Total Dissolved Solids | AQ | SM2540C | 4/25/06 | 5/2/06 | Yes |
| Metals | AQ | 200.7 | 4/25/06 | 5/3,4/06 | NA |
| Metals | AQ | 200.8 | 4/25/06 | 5/3/06 | NA |

## 2. Field QC Samples

**Field Blanks**

Were field blanks submitted as specified in the Sampling & Analysis Plan? Y_X_ N____
Were any data qualified because of field blank problems? Y____ N_X___

**Field Duplicates**

Were field duplicates submitted as specified in the Sampling & Analysis Plan? Y_X__ N____
Were any data qualified because of field duplicate results? Y_X__ N____
Were results for field duplicates within the target control limits in the QAPP? Y_____N_X___

- RPD for Dissolved Cobalt and Dissolved Arsenic was out of control limits

**Field Reference Materials**

Were field Reference Materials or Performance Evaluation Samples submitted as specified in the Sampling & Analysis Plan? Y____ N____ NA

Were the results within the manufacturer's control limits? Y____ N____ NA

**Leviathan Mine**
**Level A/B Screening Checklist**

I. General Information

**Project:** May Monthly
**Sample Date:** 5/30/06
**Client/Lab:** Water Board / Weck Labs
**Sample Matrix:** AQ
**Sample Location(s):** 25, 24, 23, 22, 16, 15, 1, Adit, PUD, CUD, OS, Duplicate at 1

II. Screening Results

Data are:
1) Unusable_____
2) Level A _____
3) Level B ___X___

III. Level A Screening

| Criteria | Yes/No |
|---|---|
| 1. Sampling date | Yes – COC/field book |
| 2. Sample team/or leader | Yes – field book |
| 3. Physical description of sample location | Yes - SAP |
| 4. Sample depth (soils) | NA |
| 5. Sample collection technique | Yes - SAP |
| 6. Field preparation technique | Yes - SAP |
| 7. Sample preservation technique | Yes – SAP/COC |
| 8. Sample shipping records | Yes - COC |

IV. Level B Screening

| Criteria | Yes/No |
|---|---|
| 1. Field instrumentation methods and standardization complete | Yes |
| 2. Sample container preparation | Yes |
| 3. Collection of field replicates (1/20 minimum) | Yes |
| 4. Proper and decontaminated sampling equipment | Yes |
| 5. Field custody documentation | Yes |
| 6. Shipping custody documentation | Yes |
| 7. Traceable sample designation number | Yes |
| 8. Field notebook(s), custody records in secure repository | Yes – Water Board office |
| 9. Completed field forms | Field book |

**Leviathan Mine**
**Data Validation**
**Checklist for Field Quality Control**

Site: Leviathan Mine
Project: May Monthly
Sample Dates: 5/30/06
Data Validator: LS

Report No.: 6060115
Sample Matrix: AQ
Analysis Dates: see below
Validation Dates: 1/24/07

Laboratory: Weck Labs
Analyses: TDS, Sulfate, Dis. & Total: Al, As, Ca, Cd, Cr, Co, Cu, Fe, Mg, Mn, Ni, Zn

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## 1. Holding Times

| Analyte | Matrix | Method | Collection date | Analysis date | Affected data flagged? (Y/N) |
|---|---|---|---|---|---|
| Sulfate | AQ | 300.0 | 5/30/06 | 6/1,2,6/06 | NA |
| Total Dissolved Solids | AQ | SM2540C | 5/30/06 | 6/2/06 | NA |
| Metals | AQ | 200.7 | 5/30/06 | 6/7,13/06 | NA |
| Metals | AQ | 200.8 | 5/30/06 | 6/5,6,7/06 | NA |

## 2. Field QC Samples

**Field Blanks**

Were field blanks submitted as specified in the Sampling & Analysis Plan? Y_X_ N____
Were any data qualified because of field blank problems? Y____ N_X___

**Field Duplicates**

Were field duplicates submitted as specified in the Sampling & Analysis Plan? Y_X__ N____
Were any data qualified because of field duplicate results? Y_X__ N____
Were results for field blanks within the target control limits in the QAPP? Y____ N_X___

- RPD for Dissolved Aluminum was outside control limits

**Field Reference Materials**

Were field Reference Materials or Performance Evaluation Samples submitted as specified in the Sampling & Analysis Plan? Y____ N____ NA

Were the results within the manufacturer's control limits? Y____ N____ NA

**Leviathan Mine**
**Level A/B Screening Checklist**

I. General Information

**Project:** Spring Semi-Annual
**Sample Date:** 5/31/06
**Client/Lab:** Water Board / Weck Labs
**Sample Matrix:** AQ
**Sample Location(s):** Delta Seep (DS), 4L Creek, 26, duplicate at DS

II. Screening Results

Data are:
1) Unusable_____
2) Level A _____
3) Level B ___X___

III. Level A Screening

| Criteria | Yes/No |
|---|---|
| 1. Sampling date | Yes – COC/field book |
| 2. Sample team/or leader | Yes – field book |
| 3. Physical description of sample location | Yes - SAP |
| 4. Sample depth (soils) | NA |
| 5. Sample collection technique | Yes - SAP |
| 6. Field preparation technique | Yes - SAP |
| 7. Sample preservation technique | Yes – SAP/COC |
| 8. Sample shipping records | Yes - COC |

IV. Level B Screening

| Criteria | Yes/No |
|---|---|
| 1. Field instrumentation methods and standardization complete | Yes |
| 2. Sample container preparation | Yes |
| 3. Collection of field replicates (1/20 minimum) | Yes |
| 4. Proper and decontaminated sampling equipment | Yes |
| 5. Field custody documentation | Yes |
| 6. Shipping custody documentation | Yes |
| 7. Traceable sample designation number | Yes |
| 8. Field notebook(s), custody records in secure repository | Yes – Water Board office |
| 9. Completed field forms | Field book |

**Leviathan Mine**
**Data Validation**
**Checklist for Field Quality Control**

Site: Leviathan Mine
Project: Spring Semi-Annual
Sample Dates: 5/31/06
Data Validator: LS

Report No.: 6060112
Sample Matrix: AQ
Analysis Dates: see below
Validation Dates: 1/24/07

Laboratory: Weck Labs
Analyses: TDS, Sulfate, Dis. & Total: Al, As, Ca, Cd, Cr, Co, Cu, Fe, Mg, Mn, Ni, Zn

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## 1. Holding Times

| Analyte | Matrix | Method | Collection date | Analysis date | Affected data flagged? (Y/N) |
|---|---|---|---|---|---|
| Sulfate | AQ | 300.0 | 5/31/06 | 6/1,2/06 | NA |
| Total Dissolved Solids | AQ | SM2540C | 5/31/06 | 6/7/06 | NA |
| Metals | AQ | 200.7 | 5/31/06 | 6/6,7,13/06 | NA |
| Metals | AQ | 200.8 | 5/31/06 | 6/5,6/06 | NA |

## 2. Field QC Samples

**Field Blanks**

Were field blanks submitted as specified in the Sampling & Analysis Plan? Y_X_ N____
Were any data qualified because of field blank problems? Y____ N_X___

**Field Duplicates**

Were field duplicates submitted as specified in the Sampling & Analysis Plan? Y_X__ N____
Were any data qualified because of field duplicate results? Y____ N_X__
Were results for field blanks within the target control limits in the QAPP? Y_X__ N____

**Field Reference Materials**

Were field Reference Materials or Performance Evaluation Samples submitted as specified in the Sampling & Analysis Plan? Y____ N____ NA

Were the results within the manufacturer's control limits? Y____ N____ NA

**Leviathan Mine**
**Level A/B Screening Checklist**

I. General Information

**Project:** June Monthly
**Sample Date:** 6/26/06
**Client/Lab:** Water Board / Weck Labs
**Sample Matrix:** AQ
**Sample Location(s):** 25, 24, 23, 22, 16, 15, 1, Adit, PUD, CUD, OS, Duplicate at 22

II. Screening Results

Data are:
1) Unusable_____
2) Level A _____
3) Level B ___X___

III. Level A Screening

| Criteria | Yes/No |
|---|---|
| 1. Sampling date | Yes – COC/field book |
| 2. Sample team/or leader | Yes – field book |
| 3. Physical description of sample location | Yes - SAP |
| 4. Sample depth (soils) | NA |
| 5. Sample collection technique | Yes - SAP |
| 6. Field preparation technique | Yes - SAP |
| 7. Sample preservation technique | Yes – SAP/COC |
| 8. Sample shipping records | Yes - COC |

IV. Level B Screening

| Criteria | Yes/No |
|---|---|
| 1. Field instrumentation methods and standardization complete | Yes |
| 2. Sample container preparation | Yes |
| 3. Collection of field replicates (1/20 minimum) | Yes |
| 4. Proper and decontaminated sampling equipment | Yes |
| 5. Field custody documentation | Yes |
| 6. Shipping custody documentation | Yes |
| 7. Traceable sample designation number | Yes |
| 8. Field notebook(s), custody records in secure repository | Yes – Water Board office |
| 9. Completed field forms | Field book |

**Leviathan Mine**
**Data Validation**
**Checklist for Field Quality Control**

Site: Leviathan Mine
Project: June Monthly
Sample Dates: 6/26/06
Data Validator: LS

Report No.: 6062818
Sample Matrix: AQ
Analysis Dates: see below
Validation Dates: 1/24/07

Laboratory: Weck Labs
Analyses: TDS, Sulfate, Dis. & Total: Al, As, Ca, Cd, Cr, Co, Cu, Fe, Mg, Mn, Ni, Zn

---

## 1. Holding Times

| Analyte | Matrix | Method | Collection date | Analysis date | Affected data flagged? (Y/N) |
|---|---|---|---|---|---|
| Sulfate | AQ | 300.0 | 6/26/06 | 6/28,29/06 | NA |
| Total Dissolved Solids | AQ | SM2540C | 6/26/06 | 7/3/06 | NA |
| Metals | AQ | 200.7 | 6/26/06 | 7/10,11/06 | NA |
| Metals | AQ | 200.8 | 6/26/06 | 7/7,11/06 | NA |

## 2. Field QC Samples

**Field Blanks**

Were field blanks submitted as specified in the Sampling & Analysis Plan? Y_X_ N____
Were any data qualified because of field blank problems? Y____ N_X___

**Field Duplicates**

Were field duplicates submitted as specified in the Sampling & Analysis Plan? Y_X__ N____
Were any data qualified because of field duplicate results? Y____ N_X__
Were results for field blanks within the target control limits in the QAPP? Y__X_ N____

**Field Reference Materials**

Were field Reference Materials or Performance Evaluation Samples submitted as specified in the Sampling & Analysis Plan? Y____ N____ NA

Were the results within the manufacturer's control limits? Y____ N____ NA

**Leviathan Mine**
**Level A/B Screening Checklist**

I. General Information

**Project:** July Monthly
**Sample Date:** 7/25/06
**Client/Lab:** Water Board / Weck Labs
**Sample Matrix:** AQ
**Sample Location(s):** 25, 24, 23, 22, 16, 15, 1, Adit, PUD, CUD, OS, Duplicate at Adit

II. Screening Results

Data are:
1) Unusable_____
2) Level A _____
3) Level B ___X___

III. Level A Screening

| Criteria | Yes/No |
|---|---|
| 1. Sampling date | Yes – COC/field book |
| 2. Sample team/or leader | Yes – field book |
| 3. Physical description of sample location | Yes - SAP |
| 4. Sample depth (soils) | NA |
| 5. Sample collection technique | Yes - SAP |
| 6. Field preparation technique | Yes - SAP |
| 7. Sample preservation technique | Yes – SAP/COC |
| 8. Sample shipping records | Yes - COC |

IV. Level B Screening

| Criteria | Yes/No |
|---|---|
| 1. Field instrumentation methods and standardization complete | Yes |
| 2. Sample container preparation | Yes |
| 3. Collection of field replicates (1/20 minimum) | Yes |
| 4. Proper and decontaminated sampling equipment | Yes |
| 5. Field custody documentation | Yes |
| 6. Shipping custody documentation | Yes |
| 7. Traceable sample designation number | Yes |
| 8. Field notebook(s), custody records in secure repository | Yes – Water Board office |
| 9. Completed field forms | Field book |

**Leviathan Mine**
**Data Validation**
**Checklist for Field Quality Control**

Site: Leviathan Mine
Project: July Monthly
Sample Dates: 7/25/06
Data Validator: LS

Report No.: 6072709
Sample Matrix: AQ
Analysis Dates: see below
Validation Dates: 1/24/07

Laboratory: Weck Labs
Analyses: TDS, Sulfate, Dis. & Total: Al, As, Ca, Cd, Cr, Co, Cu, Fe, Mg, Mn, Ni, Zn

---

## 1. Holding Times

| Analyte | Matrix | Method | Collection date | Analysis date | Affected data flagged? (Y/N) |
|---|---|---|---|---|---|
| Sulfate | AQ | 375.3 | 7/25/06 | 7/27,28,31/06; 8/1/06 | NA |
| Total Dissolved Solids | AQ | SM2540C | 7/25/06 | 8/1/06 | NA |
| Metals | AQ | 200.7 | 7/25/06 | 8/3,5/06 | NA |
| Metals | AQ | 200.8 | 7/25/06 | 8/2,3,4/06 | NA |

## 2. Field QC Samples

**Field Blanks**

Were field blanks submitted as specified in the Sampling & Analysis Plan? Y_X_ N____
Were any data qualified because of field blank problems? Y____ N_X___

**Field Duplicates**

Were field duplicates submitted as specified in the Sampling & Analysis Plan? Y_X__ N____
Were any data qualified because of field duplicate results? Y____ N_X___
Were results for field blanks within the target control limits in the QAPP? Y_X___N____

**Field Reference Materials**

Were field Reference Materials or Performance Evaluation Samples submitted as specified in the Sampling & Analysis Plan? Y____ N____ NA

Were the results within the manufacturer's control limits? Y____ N____ NA

**Leviathan Mine**
**Level A/B Screening Checklist**

I. General Information

**Project:** August Monthly
**Sample Date:** 8/29/06
**Client/Lab:** Water Board / Weck Labs
**Sample Matrix:** AQ
**Sample Location(s):** 25, 24, 23, 22, 16, 15, 1, Adit, PUD, CUD, OS, Duplicate at PUD

II. Screening Results

Data are:
1) Unusable_____
2) Level A _____
3) Level B ___X___

III. Level A Screening

| Criteria | Yes/No |
|---|---|
| 1. Sampling date | Yes – COC/field book |
| 2. Sample team/or leader | Yes – field book |
| 3. Physical description of sample location | Yes - SAP |
| 4. Sample depth (soils) | NA |
| 5. Sample collection technique | Yes - SAP |
| 6. Field preparation technique | Yes - SAP |
| 7. Sample preservation technique | Yes – SAP/COC |
| 8. Sample shipping records | Yes - COC |

IV. Level B Screening

| Criteria | Yes/No |
|---|---|
| 1. Field instrumentation methods and standardization complete | Yes |
| 2. Sample container preparation | Yes |
| 3. Collection of field replicates (1/20 minimum) | Yes |
| 4. Proper and decontaminated sampling equipment | Yes |
| 5. Field custody documentation | Yes |
| 6. Shipping custody documentation | Yes |
| 7. Traceable sample designation number | Yes |
| 8. Field notebook(s), custody records in secure repository | Yes – Water Board office |
| 9. Completed field forms | Field book |

**Leviathan Mine**
**Data Validation**
**Checklist for Field Quality Control**

Site: Leviathan Mine
Project: August Monthly
Sample Dates: 8/29/06
Data Validator: LS

Report No.: 6083118
Sample Matrix: AQ
Analysis Dates: see below
Validation Dates: 1/24/07

Laboratory: Weck Labs
Analyses: TDS, Sulfate, Dis. & Total: Al, As, Ca, Cd, Cr, Co, Cu, Fe, Mg, Mn, Ni, Zn

---

## 1. Holding Times

| Analyte | Matrix | Method | Collection date | Analysis date | Affected data flagged? (Y/N) |
|---|---|---|---|---|---|
| Sulfate | AQ | 300.0 | 8/29/06 | 9/7,12,14/06 | NA |
| Total Dissolved Solids | AQ | SM2540C | 8/29/06 | 9/1,5/06 | NA |
| Metals | AQ | 200.7 | 8/29/06 | 9/8,14,15/06 | NA |
| Metals | AQ | 200.8 | 8/29/06 | 10/4,9/06 | NA |

## 2. Field QC Samples

**Field Blanks**

Were field blanks submitted as specified in the Sampling & Analysis Plan? Y_X_ N____
Were any data qualified because of field blank problems? Y____ N_X___

**Field Duplicates**

Were field duplicates submitted as specified in the Sampling & Analysis Plan? Y_X__ N____
Were any data qualified because of field duplicate results? Y__Y__ N____
Were results for field blanks within the target control limits in the QAPP? Y____N_X___

- RPD for Dissolved and Total Copper were out of control limits

**Field Reference Materials**

Were field Reference Materials or Performance Evaluation Samples submitted as specified in the Sampling & Analysis Plan? Y____ N____ NA

Were the results within the manufacturer's control limits? Y____ N____ NA

**Leviathan Mine**
**Level A/B Screening Checklist**

I. General Information

**Project:** September Monthly
**Sample Date:** 9/27/06
**Client/Lab:** Water Board / Weck Labs
**Sample Matrix:** AQ
**Sample Location(s):** 25, 24, 23, 22, 16, 15, 1, CUD, OS

II. Screening Results

Data are:
1) Unusable_____
2) Level A _____
3) Level B ___X___

III. Level A Screening

| Criteria | Yes/No |
|---|---|
| 1. Sampling date | Yes – COC/field book |
| 2. Sample team/or leader | Yes – field book |
| 3. Physical description of sample location | Yes - SAP |
| 4. Sample depth (soils) | NA |
| 5. Sample collection technique | Yes - SAP |
| 6. Field preparation technique | Yes - SAP |
| 7. Sample preservation technique | Yes – SAP/COC |
| 8. Sample shipping records | Yes - COC |

IV. Level B Screening

| Criteria | Yes/No |
|---|---|
| 1. Field instrumentation methods and standardization complete | Yes |
| 2. Sample container preparation | Yes |
| 3. Collection of field replicates (1/20 minimum) | Yes |
| 4. Proper and decontaminated sampling equipment | Yes |
| 5. Field custody documentation | Yes |
| 6. Shipping custody documentation | Yes |
| 7. Traceable sample designation number | Yes |
| 8. Field notebook(s), custody records in secure repository | Yes – Water Board office |
| 9. Completed field forms | Field book |

**Leviathan Mine**
**Data Validation**
**Checklist for Field Quality Control**

Site: Leviathan Mine
Project: September Monthly
Sample Dates: 9/27/06
Data Validator: LS

Report No.:6092813
Sample Matrix: AQ
Analysis Dates: see below
Validation Dates: 1/24/07

Laboratory: Weck Labs
Analyses: TDS, Sulfate, Dis. & Total: Al, As, Ca, Cd, Cr, Co, Cu, Fe, Mg, Mn, Ni, Zn

---

## 1. Holding Times

| Analyte | Matrix | Method | Collection date | Analysis date | Affected data flagged? (Y/N) |
|---|---|---|---|---|---|
| Sulfate | AQ | 300.0 | 9/27/06 | 10/6,9/06 | NA |
| Total Dissolved Solids | AQ | SM2540C | 9/27/06 | 10/3/06 | NA |
| Metals | AQ | 200.7 | 9/27/06 | 10/13,14/06 | NA |
| Metals | AQ | 200.8 | 9/27/06 | 10/31/06; 11/3/06 | NA |

## 2. Field QC Samples

**Field Blanks**

Were field blanks submitted as specified in the Sampling & Analysis Plan? Y_X_ N____
Were any data qualified because of field blank problems? Y____ N_X___

**Field Duplicates**

Were field duplicates submitted as specified in the Sampling & Analysis Plan? Y_X__ N____
Were any data qualified because of field duplicate results? Y____ N_X___
Were results for field blanks within the target control limits in the QAPP? Y_X___N____

**Field Reference Materials**

Were field Reference Materials or Performance Evaluation Samples submitted as specified in the Sampling & Analysis Plan? Y____ N____ NA

Were the results within the manufacturer's control limits? Y____ N____ NA

**Leviathan Mine**
**Level A/B Screening Checklist**

I. General Information

**Project:** September Monthly
**Sample Date:** 9/28/06
**Client/Lab:** Water Board / Weck Labs
**Sample Matrix:** AQ
**Sample Location(s):** Adit, PUD, duplicate at Adit

II. Screening Results

Data are:
1) Unusable_____
2) Level A _____
3) Level B ___X___

III. Level A Screening

| Criteria | Yes/No |
|---|---|
| 1. Sampling date | Yes – COC/field book |
| 2. Sample team/or leader | Yes – field book |
| 3. Physical description of sample location | Yes - SAP |
| 4. Sample depth (soils) | NA |
| 5. Sample collection technique | Yes - SAP |
| 6. Field preparation technique | Yes - SAP |
| 7. Sample preservation technique | Yes – SAP/COC |
| 8. Sample shipping records | Yes - COC |

IV. Level B Screening

| Criteria | Yes/No |
|---|---|
| 1. Field instrumentation methods and standardization complete | Yes |
| 2. Sample container preparation | Yes |
| 3. Collection of field replicates (1/20 minimum) | Yes |
| 4. Proper and decontaminated sampling equipment | Yes |
| 5. Field custody documentation | Yes |
| 6. Shipping custody documentation | Yes |
| 7. Traceable sample designation number | Yes |
| 8. Field notebook(s), custody records in secure repository | Yes – Water Board office |
| 9. Completed field forms | Field book |

**Leviathan Mine**
**Data Validation**
**Checklist for Field Quality Control**

Site: Leviathan Mine
Project: September Monthly
Sample Dates: 9/28/06
Data Validator: LS

Report No.:6092903
Sample Matrix: AQ
Analysis Dates: see below
Validation Dates: 1/24/07

Laboratory: Weck Labs
Analyses: TDS, Sulfate, Dis. & Total: Al, As, Ca, Cd, Cr, Co, Cu, Fe, Mg, Mn, Ni, Zn

## 1. Holding Times

| Analyte | Matrix | Method | Collection date | Analysis date | Affected data flagged? (Y/N) |
|---|---|---|---|---|---|
| Sulfate | AQ | 300.0 | 9/28/06 | 10/9/06 | NA |
| Total Dissolved Solids | AQ | SM2540C | 9/28/06 | 10/3/06 | NA |
| Metals | AQ | 200.7 | 9/28/06 | 10/13,14/06 | NA |
| Metals | AQ | 200.8 | 9/28/06 | 10/31/06; 11/3/06 | NA |

## 2. Field QC Samples

**Field Blanks**

Were field blanks submitted as specified in the Sampling & Analysis Plan? Y_X_ N____
Were any data qualified because of field blank problems? Y____ N_X___

**Field Duplicates**

Were field duplicates submitted as specified in the Sampling & Analysis Plan? Y_X__ N____
Were any data qualified because of field duplicate results? Y____ N_X___
Were results for field blanks within the target control limits in the QAPP? Y_X___N____

**Field Reference Materials**

Were field Reference Materials or Performance Evaluation Samples submitted as specified in the Sampling & Analysis Plan? Y____ N____ NA

Were the results within the manufacturer's control limits? Y____ N____ NA

# Data Summary Report for Pond 3 Emergency Treatment at the Leviathan Mine 2006

**Prepared for**:
Lahontan Regional Water Quality Control Board
2501 Lake Tahoe Blvd.
South Lake Tahoe, CA 96150

**Prepared by**:
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November 2006

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# 1.0 INTRODUCTION

## 1.1 GENERAL

The *Data Summary Report for Pond 3 Emergency Treatment at the Leviathan Mine 2006* has been prepared by TKT Consulting, LLC under contract to the Lahontan Regional Water Quality Control Board (Water Board). The goal of this work was to neutralize Acid Mine Drainage (AMD) in Pond 3 and discharge the treated water to Leviathan Creek during spring runoff to prevent overflow of untreated AMD. Because this was an emergency action, the guidelines for discharge were to neutralize the AMD to a pH between 7 and 9 and minimize the impact to Leviathan Creek.

## 1.2 BACKGROUND

The ponds at the Leviathan Mine have been utilized to contain water contaminated with AMD since their construction in 1985. Pond 1, Pond 2 North and Pond 2 South (the upper ponds) drain into Pond 3 during an overflow event. When full, Pond 3 overflows to Leviathan Creek in the adjacent concrete channel. All of the ponds receive direct precipitation, most of which comes in the form of snow during the winter. In addition, the upper ponds receive acidic drainage from the adit and pit under-drain (PUD). The ponds were originally designed as evaporation ponds where AMD from the adit and PUD was collected and stored. The AMD that was contained within the ponds evapo-concentrated and the strength of this AMD increased significantly over time. The majority of this evapo-concentrated AMD was treated and all of the ponds were drained down in the early 2000's. The evapo-concentrated AMD that remained in the bottom of Pond 3 eventually evaporated to near dryness and the acidic, metal containing salts remained in the sand cover. In addition, some untreated AMD was added to Pond 3 during the years that pond AMD was treated. This resulted in a reduced volume of AMD that needed to be treated because the AMD evaporated; however the acidic salts remained in the sand cover following these events. In 2000, sludge generated during system startup and optimization was added to Pond 3.

The winter of 2004-2005 was the first winter with above average rainfall since the ponds were drained down and treated in the early 2000's. This resulted in substantial increases of the flows of the adit and PUD and also increased the direct precipitation to the ponds. At the beginning of the 2005 Emergency Treatment, it was estimated that Pond 3 contained approximately 900,000 gallons of AMD at pH 2.8 s.u.. This AMD contained high concentrations of aluminum and low concentrations of iron. In 2005, the AMD in Pond 3 was neutralized and approximately 600,000 gallons was discharged, while the remainder evaporated. The sludge that was generated in 2005 was not removed and remained in the pond at the time of the emergency treatment in 2006.

In 2006, the water table at the mine site remained elevated from the previous high water year. In addition, the winter of 2006 was another high precipitation year. It was unknown at the start of treatment how much AMD would need to be treated to prevent discharge of untreated AMD to Leviathan Creek.

More than 7.5 million gallons of AMD were treated over 85 days. The AMD that was treated in 2006 varied over time and for simplicity in this report we have separated the AMD that was treated into three categories according to the chemistry of the AMD.

1. The AMD that was treated initially, was mainly ice and snow melt that was contained in pond 3 and that overflowed from the surfaces of the upper ponds. This AMD was low in metals and sulfate concentrations but contained some dissolved reduced iron. TKT was able to treat this AMD at a high rate because the acidity was low and ferrous iron concentration and oxygen consumption was relatively low. The rate at which this AMD could be treated was controlled by the ability to mix the AMD in pond 3 with the treated alkaline RCTS effluent.

2. Once the ice melted from the surface of the ponds, the stratified AMD mixed and the AMD that spilled over from the upper ponds increased in metals, sulfate and TDS concentrations and acidity. In addition, AMD was brought down from the upper ponds through a siphon hose rather than only flowing over from the surfaces of the upper ponds. This AMD was the most difficult to treat at higher flow rates. The iron in the AMD during this stage of treatment was mostly in the reduced form and the concentration was high, the acidity and oxygen consumption were also high. The ability to oxidize iron in this AMD controlled the rate at which the AMD could be treated.

3. As time went on, the pond took on oxygen prior to treatment and the iron within the ponds oxidized. Towards the end of treatment the majority of the iron was oxidized, however the acidity remained high. TKT was able to treat this AMD at a high rate due to the low oxygen consumption. The rate at which lime could be added controlled the rate at which this AMD could be treated.

Table 1.1 Characterization of the Three Types of AMD Encountered on Site

| AMD Type | Dates Encountered | Description | Average Treatment Rate | Iron | Aluminum |
|---|---|---|---|---|---|
| Initial AMD (ponds stratified) | April 14 to May 8 (21 Days) | AMD was mostly rain and snow melt with low acidity and low metals concentrations | approximately 136 gpm (up to 740 gpm) | Mostly ferrous iron (1 to 21 mg/L) | 2 to 310 mg/L |
| Mixture of surface overflow and AMD siphoned from Pond 1 | May 9 to July 4 (58 Days) | AMD was high in high in acidity and high in metals concentrations | approximately 33 gpm | Mostly ferrous iron (21 to 910 mg/L) | 310 to 490 mg/L |
| AMD siphoned from Pond 1 | July 5 to July 10 (5 Days) | AMD was high in acidity and high in metals concentrations | approximately 83 gpm (up to 330 gpm) | Mostly ferric iron (up to 1000 mg/L) | Up to 490 mg/L |

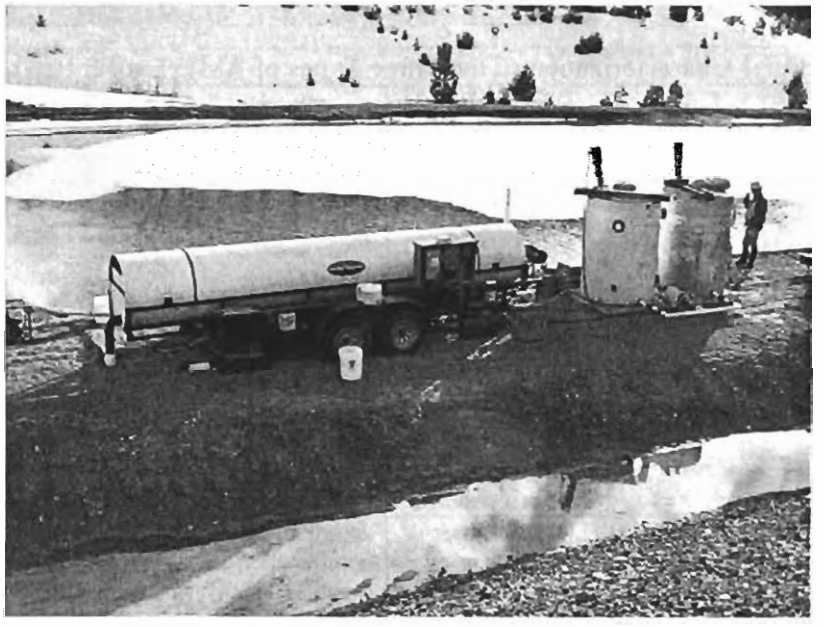
## 1.3 TREATMENT OVERVIEW

The treatment system consisted of a patented RCTS-30HS (rotating cylinder treatment system-thirty inch diameter rotor high speed) unit, two to three 500-hundred-gallon lime slurry tanks, a lime delivery pump, a 3" siphon line from pond 1 and various pumps to bring AMD to the system from the upper ponds and Pond 3. Trash pumps (3") and 3" siphon lines were used to discharge AMD from pond 3 to Leviathan Creek via the existing overflow infrastructure.

### *1.3.1 RCTS-HS System*

Acid mine drainage typically contains sulfuric acid along with elevated concentrations of dissolved ferrous iron and other metals. The oxidation of ferrous iron to ferric iron is a commonly used process in most lime treatment systems because ferric iron is precipitated from solution at a lower pH than ferrous iron. Treating AMD at a lower pH allows for treatment of iron and aluminum in a single stage. This oxidation is typically accomplished by pumping air with compressors and mixing the air, lime and AMD with agitation mixers in large tanks. Although this method of treatment is effective, it requires significant power and a large amount of space to house the reaction tanks. The patented Rotating Cylinder Treatment System (RCTS) utilizes shallow trough-like cells or cylinders (that contain the AMD being treated) and rotating cylinders within these cells to transfer oxygen and agitate the AMD. This system has been tested on multiple sites in Nevada and California. When compared with conventional systems it requires less power, and less space and is more efficient at mixing lime. Figure 1-1 displays the RCTS-HS system utilized for the Pond 3 Emergency Treatment in 2006.

**Figure 1-1**
**2006 RCTS-HS Treatment System**



### *1.3.2 Treatment Concept*

The treatment concept in 2006 was to treat the AMD in pond 3 and any AMD that could potentially overflow to Leviathan Creek from the upper ponds. Initially, AMD was pumped from Pond 3 (near the influent point of the overflow from the upper ponds), to the RCTS-HS where lime was added to the AMD, the dissolved ferrous iron was oxidized, and metals and sulfate were precipitated. The treated water and precipitated solids were then either gravity fed back to the pond or pumped and mixed back into the pond at strategic locations.

During the initial hours of treatment, overflow from Pond 3 to Leviathan Creek occurred at a pH less than 7 s.u.. Once the pH at the discharge end of the Pond 3 surpassed 7 s.u,, active discharge began with the use of pumps and siphon hoses. By actively discharging at a higher rate than the inflow, Pond 3 was drawn down, creating freeboard. This allowed the AMD to be treated and contained in Pond 3 until the water was suitable for a controlled discharge. Figures 1-2 and 1-3 display the discharge pumping setup.

On April 25 a siphon line was installed to gravity feed AMD from Pond 1 directly into the RCTS Treatment System. By doing this, the level in the upper ponds was drawn down which reduced the amount of AMD that overflowed from the upper ponds to Pond 3. By June 4, overflow had decreased to less than 3 gallons per minute.

Figure 1-2. Three inch trash pumps were utilized to discharge water from Pond 3 to the overflow structure where the water was released to Leviathan Creek.

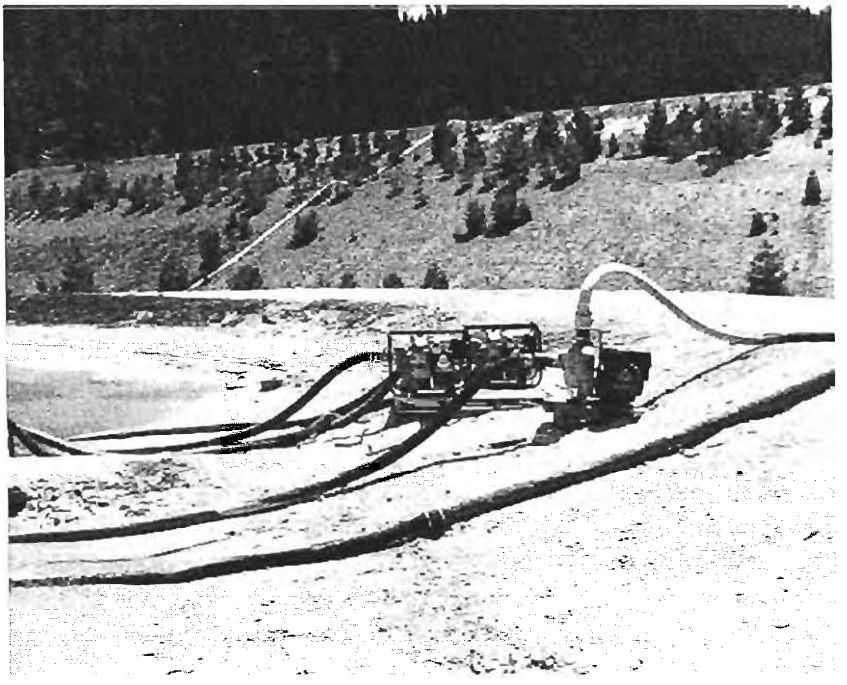
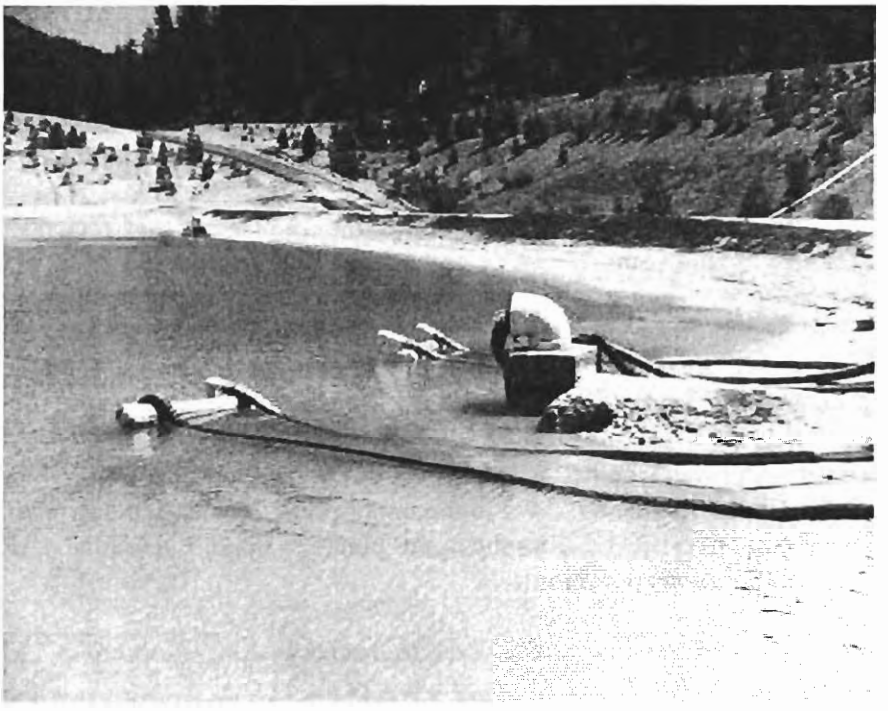


Figure 1-3. The suction lines for discharge were floated near the surface of the pond to minimize the discharge of sediment to Leviathan Creek.



## 2.0 HEALTH AND SAFETY PERFORMANCE SUMMARY

A site-specific health and safety plan (SSHSP) was utilized as the framework for safety during the Pond 3 Emergency Treatment. Important aspects of this SSHSP are briefly described below.

The SSHSP provides site- and task-specific information unique to activities at the Site. The SSHSP provides a description of the required tasks, identifies the potential physical and chemical hazards that may be encountered, and specifies the health and safety (H&S) control measures to be followed throughout the course of the operations. The SSHSP also identifies the H&S supervisory personnel and their responsibilities, training and medical surveillance requirements, personal protective equipment (PPE) and control measures, monitoring plan, site control, decontamination protocols, and emergency response procedures. The information helped to identify potential chemical and physical hazards and to establish the controls and level of protection required to reduce the risks of exposure to these hazards. However, the SSHSP remains subject to revision as conditions change or new information becomes available. Revisions can be initiated by field team members, the H&S Coordinators, or the Project Manager. The SSHSP was kept on-site at all times during the project and was revised for sludge removal.

All RCTS field personnel were trained through the Occupational Safety and Health Administration (OSHA) 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) program, in accordance with 29 CFR 1910.120(e).

All personnel were briefed prior to their first entry onto the site. The site briefing included reviewing the SSHSP. Site-specific training was covered with an initial site tour and review of site conditions and hazards. Elements covered in the site briefing included:

- Persons responsible for site-safety;
- Site-specific safety and health hazards;
- Proper use of personal protective equipment (PPE);
- Safe work practices;
- Engineering controls;
- Decontamination procedures; and
- Emergency response.

No incidents were recorded during the Pond 3 Emergency Treatment 2006.

## 3.0 OPERATIONAL SUMMARY

### 3.1 MOBILIZATION

In April of 2006, following a series of large spring storms it became apparent that AMD was going to overflow from the holding ponds at the Leviathan Mine to Leviathan Creek. TKT was informed to start the mobilization process on April 5, 2006. TKT was able to plow the road and mobilize the entire system in approximately one week.

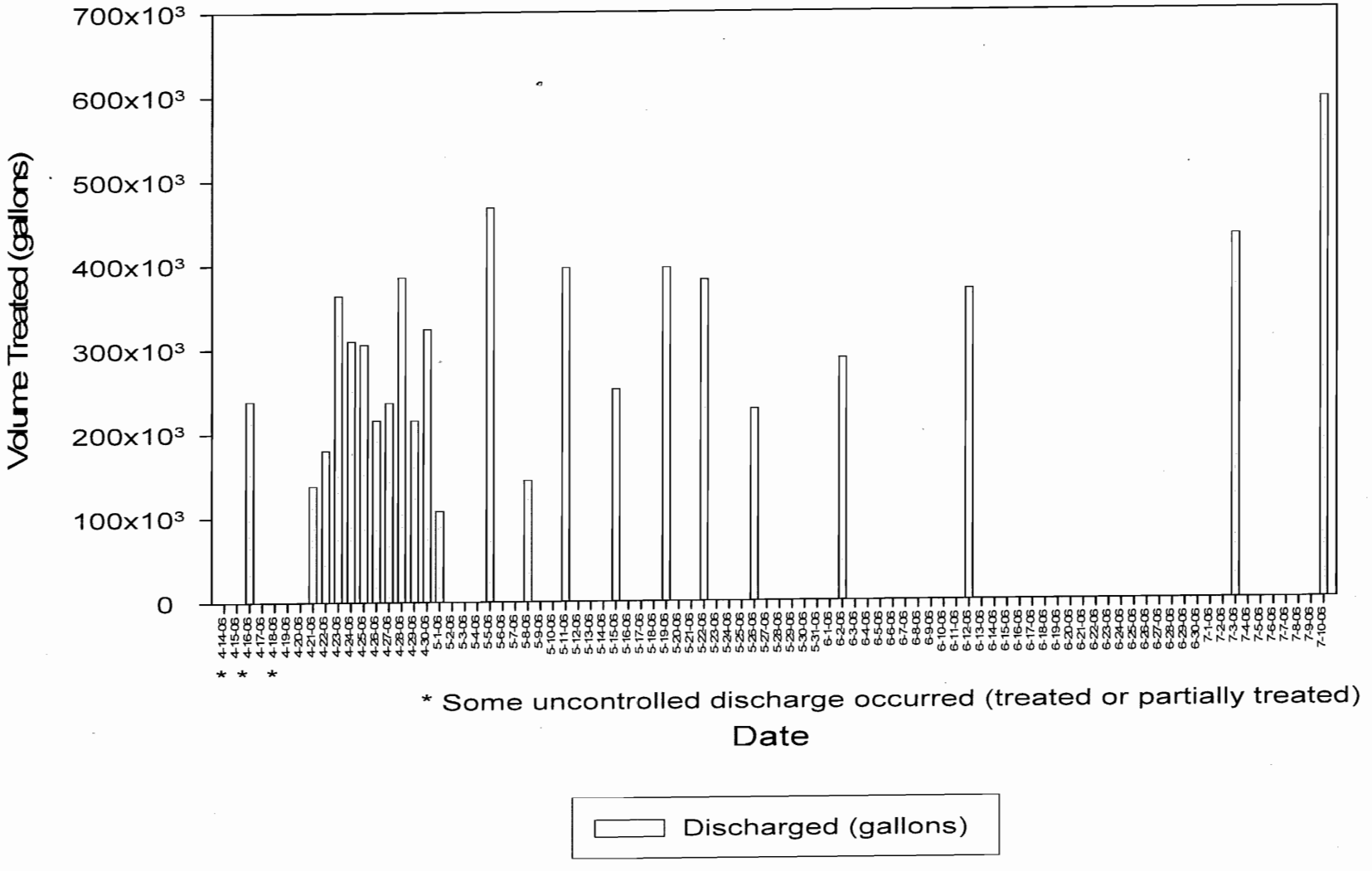
- TKT inspected the road on April 6
- The road was plowed to remove snow on April 9
- 18 pallets of lime were delivered to the Nevada/California border and were shuttled to the site via four-wheel drive equipment on April 12 and 13
- The RCTS-HS unit and lime delivery system was mobilized to the site on April 14
- Treatment began at 11:30 a.m. on April 14.
- By 10 a.m on April 15 the average pond pH was 8.3 s.u.

### 3.2 AMD TREATMENT

Acid mine drainage composed of mainly rain and snow-melt began to overflow from the surface of Pond 3 to Leviathan Creek sometime on April 12, 2006, due to heavy spring rain and snow. AMD treatment began on April 14, and was operated continuously through April 16. The system was shut down for approximately 33 hours between April 16 and 19. The system was

restarted on April 19 and operated continuously until July 10. Overall the treatment system was operated for 85 days. During this time approximately 7.5 million gallons of AMD was treated and discharged by actively pumping or siphoning. There was also an indefinite volume of treated water and partially treated AMD that overflowed to the creek on April 14, 15 and 18. The process of adding lime had begun on this partially treated AMD and most of the metals had precipitated from solution, however, it had not yet reached the target pH range for discharge. Figure 3-1 displays the dates of the individual discharges and the volume discharged on those dates.

## Figure 3-1. Discharge Dates and Volumes



### *3.2.1 Initial AMD (low acidity, ferrous iron AMD)*

The treatment rate in the "Spring Emergency Treatment 2006" varied with changing AMD chemistry and conditions. The AMD that was initially contained in Pond 3 was untreated low acidity AMD that consisted mainly of snow and ice melt. In addition, the upper ponds were partially stratified initially and the surface of the ponds which drained into Pond 3 was also characterized with a low acidity. AMD was pumped from Pond 3 (near the upper pond's overflow discharge point into Pond 3) and lime was added to the AMD and mixed via the RCTS unit. The high pH discharge from the RCTS unit was then mixed into Pond 3. By treating the pond in this manner TKT was able to treat the initial approximately 1 million gallons at high rate.

Lime addition began at 11:30 a.m. on April 14. The initial pH of Pond 3, measured at numerous points around the pond, was approximately 3.8 with an acidity of 134 mg/L $Ca(OH)_2$. By 10 a.m on April 15, the average pH of Pond 3 was 8.31. During this time, the RCTS effluent was added to Pond 3 at a pH value to adjust the entire pond to above 8 s.u.. This translates to an AMD treatment rate of approximately 740 gallons of AMD treated per minute. However, the pond was not thoroughly mixed. At the sampling point near the discharge the pH was approximately 6.5. At approximately 8 a.m. on April 16, the pH near the discharge point was approximately 8.6.

Once the pond pH near the discharge point reached a pH value greater than 7 the AMD began to be actively discharged by pumping or siphoning out of Pond 3 and directing the discharge through the overflow structure to Leviathan Creek. By actively discharging at a higher rate than the inflow, pond 3 could be drawn down below the overflow elevation, creating freeboard. This allowed the AMD to be treated and contained in Pond 3 until the water was suitable for a controlled discharge.

On April 25 it was apparent that a higher rate of flow could be treated. A siphon line was installed to gravity feed AMD from Pond 1 directly into the RCTS Treatment System. The acidity of the initial AMD from the surface of Pond 3 was 92 mg/L. The overflow acidity from the upper ponds was initially 41 mg/L and by April 26 the acidity increased to 136 mg/L.

### *3.2.2 Mixed AMD Treatment (high acidity, ferrous iron AMD)*

The initial AMD contained in Pond 3 and the overflow from the upper ponds consisted of mainly ice and snow melt with a small amount of acid mine drainage mixed in. By April 30, the mixing of the stratified layers in the upper ponds was sufficient to increase the acidity of the overflow to 404 mg/L. In addition, on April 25 a siphon was placed in Pond 1 to draw AMD from Pond 1directly to the RCTS treatment system. The intake from this siphon line was placed 3 meters from the edge of Pond 1 and approximately 0.5 meters from the surface. The acidity from this siphon line was 437 mg/L initially. By May 8, the acidity increased to 1800 mg/L and by June 29, the acidity had reached 5207 mg/L.

The AMD during this period was high in acidity and also high in ferrous iron. Initially, greater than 90% of the iron was in the ferrous state. During this period the rate that the AMD could be treated was controlled by the amount of oxidation that could be achieved within the system.

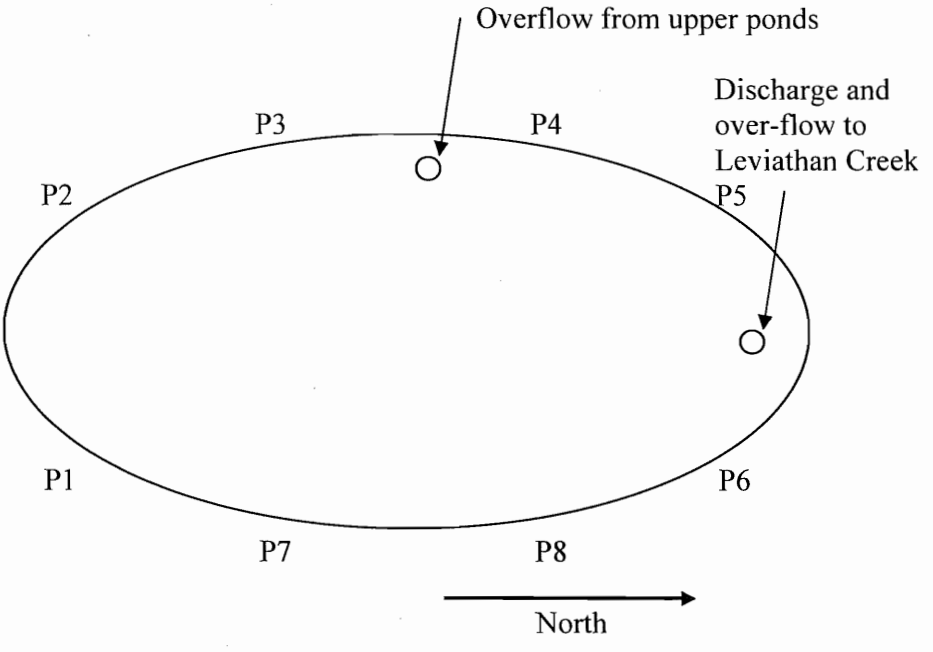
### *3.2.3 Mixed Oxidized AMD Treatment (high acidity, ferric iron AMD)*

By July 4 the majority of the iron had oxidized within the upper ponds and the ponds were well mixed. The AMD that was treated after July 4 was high in acidity and contained iron mainly in the ferric state. On July 6 the acidity was measured at 5346 mg/L. During this period of treatment, virtually all of the AMD that was treated came from the siphon line. Because the majority of the iron was in the ferric state the AMD could be treated at a high rate during this period. The limitation of the rate of treatment during this period was the rate at which lime could be added. Because the acidity was high, the flow that could be treated continuously was limited to approximately 200 gpm without overheating the lime pump that was being used.

## 4.0 SAMPLING SUMMARY

Pond 3 monitoring was conducted multiple times per day on most treatment days. Pond 3 monitoring stations are displayed in Figure 4-1.

Figure 4-1. Pond 3 Monitoring Stations




Field monitoring included the determination of flow, pH, oxidation-reduction potential (ORP), conductivity, dissolved oxygen (DO), and temperature. Flow rates to the RCTS and Pond 3were

measured with a 19-liter (L) container and a stopwatch when practical. Discharge flow rates were estimated from pump and pipe manufacturer's specs. All other field measurements were measured with a Yellow Springs Instrument (YSI) 556-field meter, calibrated before each visit. Field measurements were recorded on field sampling forms and in field logbooks (See Appendix D).

Certified laboratory samples were taken by the Water Board staff at least once on discharge days following protocols defined in the Water Board's "Sampling and Analysis Plan for Surface Water Monitoring" (January 2004) and were sent to Weck Laboratories in Industry, CA for analysis. Grab samples were collected from near the discharge point in Pond 3 and the pH was monitored continuously on discharge days. Sampling stations were as follows:

- Pond 1
- Pond 2 S
- Station 15
- Pond 3

Three composite sludge samples were collected by TKT at the effluent of the RCTS. Approximately 12 gallons of RCTS effluent were collected in three 5 gallon plastic buckets. The sludge was allowed to settle overnight and the water was then decanted from the sludge. The remaining sludge was then combined into one 15 gallon container. This process was continued for several days and then was allowed to dry on site, open to the atmosphere, to obtain the first two composite samples. The third composite sample was collected in a single day and was also combined in a 15 gallon container and was allowed to dry open to the atmosphere. A sludge sample was also collected directly from Pond 3 by the Water Board on August 8.

## 5.0 TREATMENT RESULTS

The directives from the Environmental Protection Agency were to prevent untreated acid mine drainage from the upper ponds from overflowing to Leviathan Creek. Because this was an emergency effort and overflow appeared to be imminent, the directives were to neutralize the AMD to a pH between 7 and 9 s.u. prior to overflow or discharge to Leviathan Creek.

Despite intensive efforts to mobilize in time to treat the water prior to overflow, an untreated overflow event did occur between some time on April 12 and approximately 11:30 a.m. on April 14. Although the pH of this water was low (between 3.2 and 3.6), it was composed mainly of ice and snowmelt and was characterized with low acidity and low metals concentrations (see Appendix D). Treatment began on April 14, while uncontrolled overflow of treated or partially treated water continued between April 14 and April 20. On April 14, following treatment, the pH at the discharge point varied between 4.5 and 4.9. On April 15 the pH varied between 6.4 and 7.7. On April 16 the pH varied between 8.6 and 9.0. On April 16 Pond 3 was actively pumped down and discharged to Leviathan Creek and the system was shut down. On April 18,

Pond 3 unexpectedly began to overflow and the pH was measured at 4.6. On April 18 at approximately 11:30 p.m. the system was started back up and by 11:30 a.m on April 19 the pH was back up to 9.0. The pH on April 19 varied from 5.6 to 9.0. By April 20 the uncontrolled overflow was stopped by actively pumping treated water through the overflow structure to Leviathan Creek. The pH varied between 6.2 and 9.0 on April 20. Following April 20, all water was discharged actively at a pH between 7 and 9 with a target pH between 8.0 and 8.5.

Although only required to meet pH objectives between 7 and 9, the RCTS-HS treatment system was effective at removing metals to below the discharge objectives set forth in the Removal Action Memorandum (RAM) (See Appendix A). Once treatment began during the 2006 Spring Treatment, the maximum daily RAM discharge objectives were not exceeded, with the exception of iron which slightly exceeded the objective once. Aluminum, iron and copper exceeded the RAM discharge objectives prior to treatment. Copper and aluminum exceeded discharge objective on April 14 just following the initiation of treatment. Selenium (which is not removed effectively by lime precipitation without the presence of high concentrations of other metals which co-precipitate) exceeded the four day average RAM objective between April 14 and April 22. Figures 1-7 graphically display the data over time. Field data sets are provided in Appendix B and C.

Water was treated 24 hours per day, 7 days per week from April 19 to July 7. The controlled discharges occurred when the capacity of Pond 3 was near full and the pH of Pond 3 near the discharge point was between 7 and 9. A target discharge pH of approximately 8.3 s.u. was set, however the Pond 3 pH sometimes varied and in a few circumstances the discharge was stopped do to the pH approaching 7 or 9 s.u.. Samples were taken during discharge whenever practical however on April 27 and April 28 the samples were taken after the discharge had been stopped and on May 5 the samples were taken prior to discharge.

The RCTS-HS mobile unit was mobilized very quickly and under harsh conditions and the treatment system was effective at discharging water between pH 7 and 9 s.u. and only one sample exceeded the Maximum RAM discharge criteria once all discharges were controlled. In 2006 approximately 28.4 million L (7.5 million gal) of AMD was treated compared to approximately 2.27 million L (600,000 gal) in 2005. Forty two and one half tons of dry lime were consumed and two and one half tons of dry lime remain on site for future operations, if needed.

**Table 5.1 Removal Action Memorandum Discharge Criteria**

| Target Metals | Maximum (a) (µg/L) | Average (b) (µg/L) | Target Metals | Maximum (a) (µg/L) | Average (b) (µg/L) |
|---|---|---|---|---|---|
| **Primary Target Metals** | | | **Secondary Water Quality Indicator Metals** | | |
| Aluminum | 4,000 | 2,000 | Cadmium | 9.0 | 4.0 |
| Arsenic | 340 | 150 | Chromium | 970 | 310 |
| Copper | 26 | 16 | Lead | 136 | 5.0 |
| Iron | 2,000 | 1,000 | Selenium | No Standard | 5.0 |
| Nickel | 840 | 94 | Zinc | 210 | 210 |

(a) Based on a daily composite of three grab samples
(b) Based on the average of four consecutive daily composite samples

## 6.0 SLUDGE REMOVAL

The treatment process in 2005 and 2006 resulted in sludge being settled out in Pond 3. Multiple options were considered to remove the sludge from Pond 3 and dispose of it, in order to regain the lost volume within the pond. The decision was made to pump and drain Pond 3 to the extent possible and let the remaining water evaporate over the summer.

Following evaporation, Pond 3 contained an average of 10-14 inches of sludge or approximately 1,200 $m^3$. This sludge was generated and/or stored in Pond 3 during treatment of the approximately 7.5 million gallons of AMD in 2006, approximately 800,000 gallons of AMD in 2005 and an un-quantified volume existed from previous treatment years. To determine the characteristics of the sludge being generated, grab samples were collected from the effluent of the RCTS by TKT on a daily basis from June 13 through June 16 and were mixed. Grab samples were also collected by TKT on a daily basis from June 30 through July 3 and were mixed. A third sample was taken on 7-7-06 by TKT. A composite sample of the sludge contained in Pond 3 was also collected by the Water Board on August 8. All samples were sent to Weck Laboratories, Inc for analysis. The "Total Threshold Limit Concentration" TTLC and "Soluble Threshold Limit Concentration" STLC analysis were performed to characterize the sludge for disposal. (See results in Tables 6.1, 6.2 and 6.3) Results from these tests classified the sludge as "non-RCRA Hazardous Waste" which necessitated the disposal in a hazardous waste facility according to California regulations.

Funding for sludge removal was secured on October 24. TKT visited the site on October 25 to inspect the site and determine the appropriate means of sludge removal. Although an agreement between TKT and the traditional sludge removal contractor was in place, the contractor pulled out of the project on October 26 stating concerns for weather and a shortage of staff.

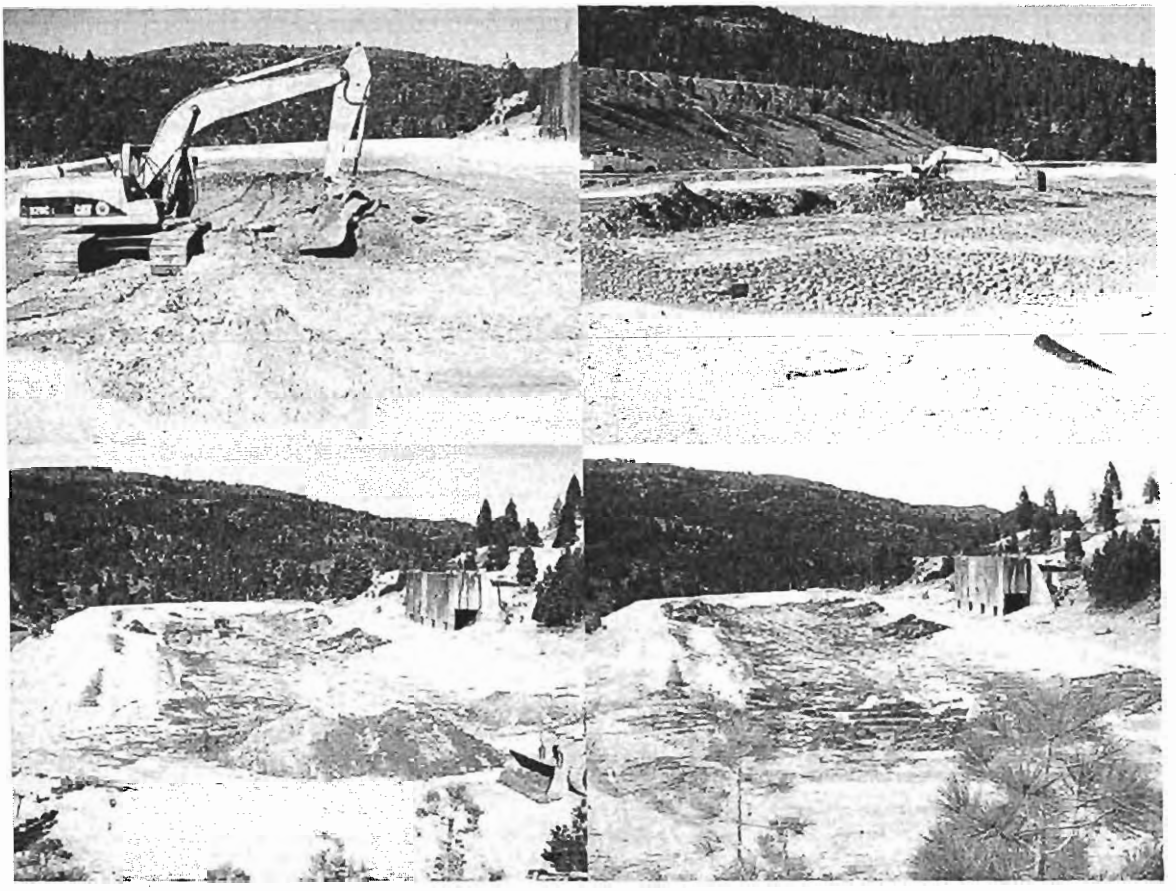
TKT, also concerned about the weather, then quickly proceeded to contract John DeLaHunt Equipment Services (Sparks, NV) for sludge removal and also proceeded to secure the appropriate sludge profiles with U.S. Ecology (Beatty, NV) for sludge disposal.

On November 8, an excavator was mobilized to the site. On November 9, staging of the sludge began within the pond and a front end loader was mobilized to the site to load the end dump trucks that would haul the sludge to U.S. Ecology. On November 10, TKT received notice from U.S. Ecology that the sludge profiles were approved and the sludge could be transferred to U.S. Ecology. The stockpiled sludge was transferred from Pond 3 to nine 20 $yd^3$ end-dump trucks, also on November 10. The pre-loaded trucks (unable to unload at U.S. Ecology over the weekend) and one empty truck then returned to the contractor's yard. On November 13 the sludge was transferred to U.S Ecology.

TKT estimates that approximately 60-70% of the sludge contained in Pond 3 was removed. The remainder (wet sludge) was stockpiled within Pond 3 for removal at a later time. It was estimated that approximately 1,200 $m^3$ of sludge was contained in Pond 3 prior to excavation. However,

the top approximately 80 % of this sludge contained a considerable volume of air. When the sludge was moved, it compacted and continued to dry, both of which resulted in a smaller final volume of sludge. In total 162 to 180 $yd^3$ (159 tons) of sludge were transferred to U.S. Ecology.

Figure 6-1 Pond 3 Sludge Removal



| Table 6.1 Sludge Characterization (6-13-06 to 6-16-06 combined grab samples) | | | | |
|---|---|---|---|---|
| **Parameter** | **Total Metals[1] (mg/kg)** | **Exceed TTLC?** | **STLC (mg/L)** | **Exceed STLC?** |
| Antimony | 7.4 | No | 0.14 | No |
| Arsenic | 1100 | ***Yes*** | 4.0 | No |
| Barium | 9.2 | No | 0.14 | No |
| Beryllium | 1.5 | No | <0.10 | No |
| Cadmium | 18 | No | 0.24 | No |
| Chromium | 150 | No | 3.9 | No |
| Cobalt | 250 | No | 1.8 | No |
| Copper | 490 | No | 12 | No |
| Lead | <1.3 | No | <0.10 | No |
| Mercury | <0.013 | No | <0.005 | No |
| Molybdenum | <6.6 | No | <0.10 | No |
| Nickel | 610 | No | 6.1 | No |
| Selenium | <1.3 | No | <0.30 | No |
| Silver | <0.66 | No | <0.05 | No |
| Thallium | 41 | No | <0.50 | No |
| Vanadium | 96 | No | 0.26 | No |
| Zinc | 130 | No | 0.55 | No |

[1] Metals data reported as dry weight

mg/kg = Milligram per kilogram
mg/L = Milligram per liter

STLC = Soluble threshold limit concentration
TTLC = Total threshold limit concentration

| Table 6.2 Sludge Characterization (6-30-06 through 7-3-06 combined grab samples) | | | | |
|---|---|---|---|---|
| **Parameter** | **Total Metals[1] (mg/kg)** | **Exceed TTLC?** | **STLC (mg/L)** | **Exceed STLC?** |
| Antimony | 7.8 | No | <0.10 | No |
| Arsenic | 1300 | ***Yes*** | 0.62 | No |
| Barium | 7.7 | No | <0.10 | No |
| Beryllium | 1.5 | No | <0.10 | No |
| Cadmium | 18 | No | 0.16 | No |
| Chromium | 150 | No | 2.2 | No |
| Cobalt | 250 | No | 1.3 | No |
| Copper | 450 | No | 9.8 | No |
| Lead | <1.2 | No | <0.10 | No |
| Mercury | <0.012 | No | <0.0050 | No |
| Molybdenum | <6.0 | No | <0.10 | No |
| Nickel | 620 | No | 5.1 | No |
| Selenium | <1.2 | No | <0.30 | No |
| Silver | <0.6 | No | <0.050 | No |
| Thallium | 24 | No | 0.21 | No |
| Vanadium | 89 | No | <0.050 | No |
| Zinc | 130 | No | <0.50 | No |

[1] Metals data reported as dry weight

mg/kg = Milligram per kilogram
mg/L = Milligram per liter

STLC = Soluble threshold limit concentration
TTLC = Total threshold limit concentration

| Table 6.3 Sludge Characterization (7-7-06 combined grab samples) | | | | |
|---|---|---|---|---|
| **Parameter** | **Total Metals[1] (mg/kg)** | **Exceed TTLC?** | **STLC (mg/L)** | **Exceed STLC?** |
| Antimony | 8.0 | No | <0.10 | No |
| Arsenic | 1400 | ***Yes*** | 0.31 | No |
| Barium | 8.6 | No | <0.10 | No |
| Beryllium | 1.6 | No | <0.10 | No |
| Cadmium | 19 | No | 0.15 | No |
| Chromium | 160 | No | 1.7 | No |
| Cobalt | 260 | No | 1.8 | No |
| Copper | 430 | No | 9.5 | No |
| Lead | <1.2 | No | <0.10 | No |
| Mercury | 0.0083 | No | <0.0050 | No |
| Molybdenum | <6.0 | No | <0.10 | No |
| Nickel | 650 | No | 5.3 | No |
| Selenium | <1.2 | No | <0.30 | No |
| Silver | <0.6 | No | <0.050 | No |
| Thallium | 19 | No | <0.50 | No |
| Vanadium | 94 | No | <0.050 | No |
| Zinc | 140 | No | <0.50 | No |

[1] Metals data reported as dry weight

mg/kg = Milligram per kilogram
mg/L = Milligram per liter

STLC = Soluble threshold limit concentration
TTLC = Total threshold limit concentration

| Table 6.4 Sludge Characterization (Composite Sample taken from Pond 3 8-8-06) | | | | |
|---|---|---|---|---|
| **Parameter** | **Total Metals[1] (mg/kg)** | **Exceed TTLC?** | **STLC (mg/L)** | **Exceed STLC?** |
| Antimony | 9.7 | No | 0.19 | No |
| Arsenic | 1000 | ***Yes*** | 8.7 | Yes |
| Barium | 40 | No | 0.22 | No |
| Beryllium | 1.5 | No | 0.015 | No |
| Cadmium | 14 | No | 0.17 | No |
| Chromium | 150 | No | 1.6 | No |
| Cobalt | 240 | No | 2.6 | No |
| Copper | 380 | No | 4.0 | No |
| Lead | <0.84 | No | <0.032 | No |
| Mercury | 0.39 | No | <0.0036 | No |
| Molybdenum | <6.3 | No | <0.022 | No |
| Nickel | 610 | No | 6.5 | No |
| Selenium | <2.2 | No | <0.13 | No |
| Silver | 2.4 | No | <0.013 | No |
| Thallium | 29 | No | 0.23 | No |
| Vanadium | 91 | No | 0.87 | No |
| Zinc | 120 | No | 1.6 | No |

[1] Metals data reported as dry weight

mg/kg = Milligram per kilogram
mg/L = Milligram per liter

STLC = Soluble threshold limit concentration
TTLC = Total threshold limit concentration

## 7.0 RECOMENDATIONS

TKT makes the following recommendations for future emergency treatment efforts.

1. Notification to proceed at least three weeks prior to overflow. It may be necessary to mobilize the treatment system through several feet of snow. This effort can be streamlined if more time is provided.

2. Keep at least two pallets of lime on site. The local availability of lime (particularly type N) is limited at times and must be transported from several hundred miles away. Because acquisition takes time, and it is difficult to transport to the site under 4 wheel drive conditions, it is import to keep a supply of lime stored at the site.

3. Based on the data from 2006, when possible operate the system at a target pH of 8.3 to 8.9. Some metals like nickel are precipitated more effectively from solution at a higher pH, however aluminum re-dissolves back into solution as the pH is raised above 6. During 2006, the aluminum Maximum RAM Discharge criteria was not exceeded but the iron criteria was exceeded. Because of the emergency nature of the treatment it was not always practical to discharge at the optimum pH, but targets should be set that are between pH 8.3 and 8.9 to optimize nickel and iron removal.

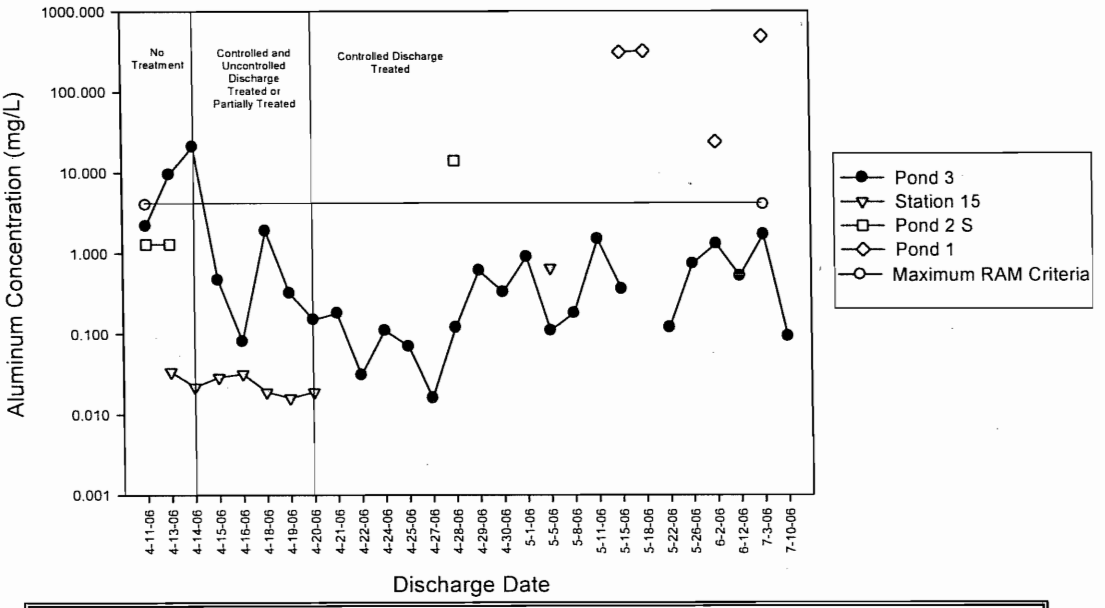
4. In order to be able to treat at a higher rate of flow, a larger lime pump should be utilized to prevent overheating. In addition, a larger RCTS unit/lime tanks or multiple RCTS units and additional lime tanks can be added to the system.

5. The use of a silt curtain, confinement dam or similar device to contain the sludge that is generated on the south side of Pond 3, should be investigated. This may aid in dewatering and make sludge removal easier.

# APPENDIX A

## Figures and Laboratory Data Sets
## (Water Board Data)

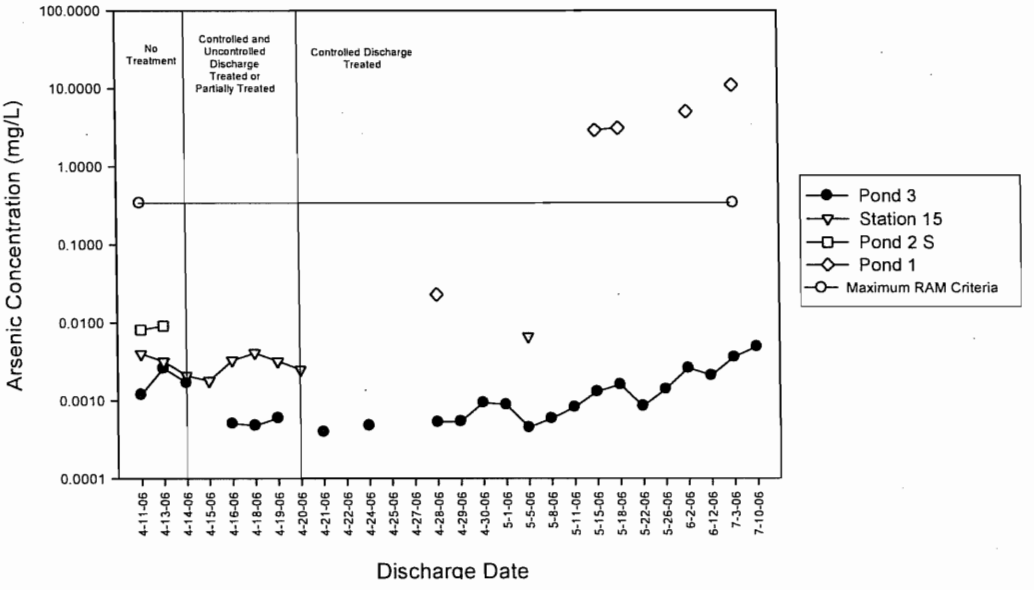
Figure 1. Leviathan Pond 3 Emergency Water Treatment 2006
Aluminum Concentrations (mg/L)




**Spring 2006 Emergency Pond AMD Treatment Dissolved Aluminum Data (mg/L)**

| Date | Pond 3 | Station 15 | Pond 2 S | Pond 1 | Maximum RAM Criteria | Comments |
|---|---|---|---|---|---|---|
| 4-11-06 | 2.2 | <0.02 | 1.3 | | 4 | No treatment |
| 4-13-06 | **9.5** | 0.034 | 1.3 | | 4 | No treatment |
| 4-14-06 | **21** | 0.022 | | | 4 | Partial treatment at time of sampling |
| 4-15-06 | 0.47 | 0.029 | | | 4 | Partially treated some uncontrolled discharge |
| 4-16-06 | 0.081 | 0.032 | | | 4 | |
| 4-18-06 | 1.9 | 0.019 | | | 4 | Partially Treated some uncontrolled discharge |
| 4-19-06 | 0.320 | 0.016 | | | 4 | Some uncontrolled discharge |
| 4-20-06 | 0.150 | 0.019 | | | 4 | Some uncontrolled discharge |
| 4-21-06 | 0.180 | | | | 4 | Controlled discharge |
| 4-22-06 | 0.031 | | | | 4 | Controlled discharge |
| 4-24-06 | 0.110 | | | | 4 | Controlled discharge |
| 4-25-06 | 0.070 | | | | 4 | Controlled discharge |
| 4-27-06 | 0.016 | | | | 4 | Controlled discharge |
| 4-28-06 | 0.120 | | **14** | | 4 | Controlled discharge |
| 4-29-06 | 0.610 | | | | 4 | Controlled discharge |
| 4-30-06 | 0.330 | | | | 4 | Controlled discharge |
| 5-1-06 | 0.900 | | | | 4 | Controlled discharge |
| 5-5-06 | 0.110 | 0.650 | | | 4 | Controlled discharge |
| 5-8-06 | 0.180 | | | | 4 | Controlled discharge |
| 5-11-06 | 1.5 | | | | 4 | Controlled discharge |
| 5-15-06 | 0.360 | | | **310** | 4 | Controlled discharge |
| 5-18-06 | <0.020 | | | **320** | 4 | Controlled discharge |
| 5-22-06 | 0.120 | | | | 4 | Controlled discharge |
| 5-26-06 | 0.740 | | | | 4 | Controlled discharge |
| 6-2-06 | 1.3 | | | **24** | 4 | Controlled discharge |
| 6-12-06 | 0.520 | | | | 4 | Controlled discharge |
| 7-3-06 | 1.7 | | | **490** | 4 | Controlled discharge |
| 7-10-06 | 0.093 | | | | 4 | Controlled discharge |

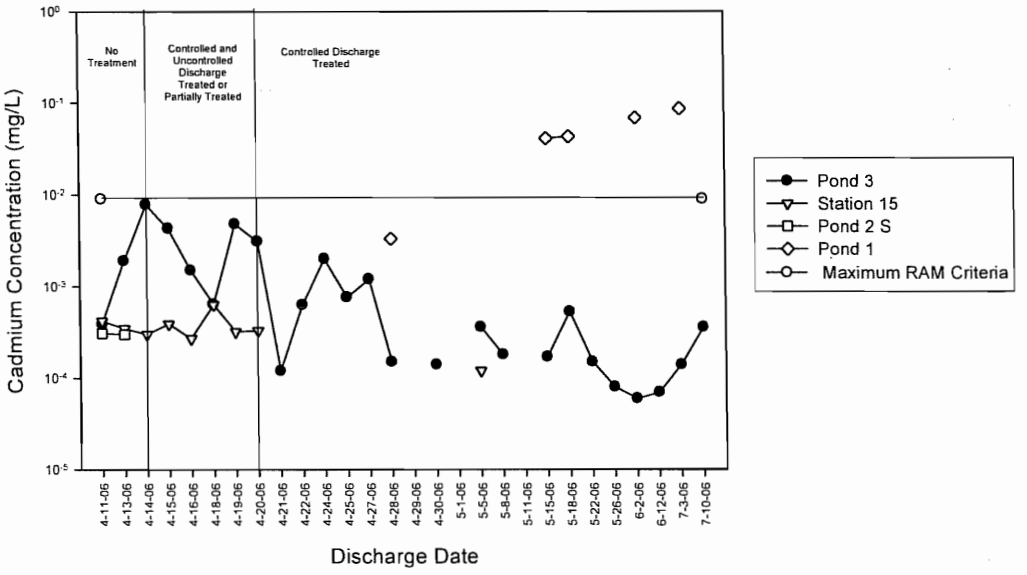
Figure 2. Pond 3 Emergency Water Treatment 2006
Arsenic Concentrations (mg/L)




**Spring 2006 Emergency Pond AMD Treatment Dissolved Arsenic Data (mg/L)**

| Date | Pond 3 | Station 15 | Pond 2 S | Pond 1 | Maximum RAM Criteria | Comments |
|---|---|---|---|---|---|---|
| 4-11-06 | 0.0012 | 0.004 | 0.0081 | | 0.34 | No treatment |
| 4-13-06 | 0.0026 | 0.0032 | 0.0091 | | 0.34 | No treatment |
| 4-14-06 | 0.0017 | 0.0021 | | | 0.34 | Partial treatment at time of sampling |
| 4-15-06 | <0.0004 | 0.0018 | | | 0.34 | Partially treated some uncontrolled discharge |
| 4-16-06 | 0.00051 | 0.0033 | | | 0.34 | |
| 4-18-06 | 0.00048 | 0.0041 | | | 0.34 | Partially Treated some uncontrolled discharge |
| 4-19-06 | 0.0006 | 0.0032 | | | 0.34 | Some uncontrolled discharge |
| 4-20-06 | <0.00040 | 0.0025 | | | 0.34 | Some uncontrolled discharge |
| 4-21-06 | 0.0004 | | | | 0.34 | Controlled discharge |
| 4-22-06 | <0.0004 | | | | 0.34 | Controlled discharge |
| 4-24-06 | 0.00048 | | | | 0.34 | Controlled discharge |
| 4-25-06 | <0.00040 | | | | 0.34 | Controlled discharge |
| 4-27-06 | <0.00040 | | | | 0.34 | Controlled discharge |
| 4-28-06 | 0.00053 | | | 0.023 | 0.34 | Controlled discharge |
| 4-29-06 | 0.00054 | | | | 0.34 | Controlled discharge |
| 4-30-06 | 0.00094 | | | | 0.34 | Controlled discharge |
| 5-1-06 | 0.00089 | | | | 0.34 | Controlled discharge |
| 5-5-06 | 0.00045 | 0.0066 | | | 0.34 | Controlled discharge |
| 5-8-06 | 0.00059 | | | | 0.34 | Controlled discharge |
| 5-11-06 | 0.00082 | | | | 0.34 | Controlled discharge |
| 5-15-06 | 0.0013 | | | **2.9** | 0.34 | Controlled discharge |
| 5-18-06 | 0.0016 | | | **3.1** | 0.34 | Controlled discharge |
| 5-22-06 | 0.00085 | | | | 0.34 | Controlled discharge |
| 5-26-06 | 0.0014 | | | | 0.34 | Controlled discharge |
| 6-2-06 | 0.0026 | | | **5** | 0.34 | Controlled discharge |
| 6-12-06 | 0.0021 | | | | 0.34 | Controlled discharge |
| 7-3-06 | 0.0036 | | | **11** | 0.34 | Controlled discharge |
| 7-10-06 | 0.0049 | | | | 0.34 | Controlled discharge |

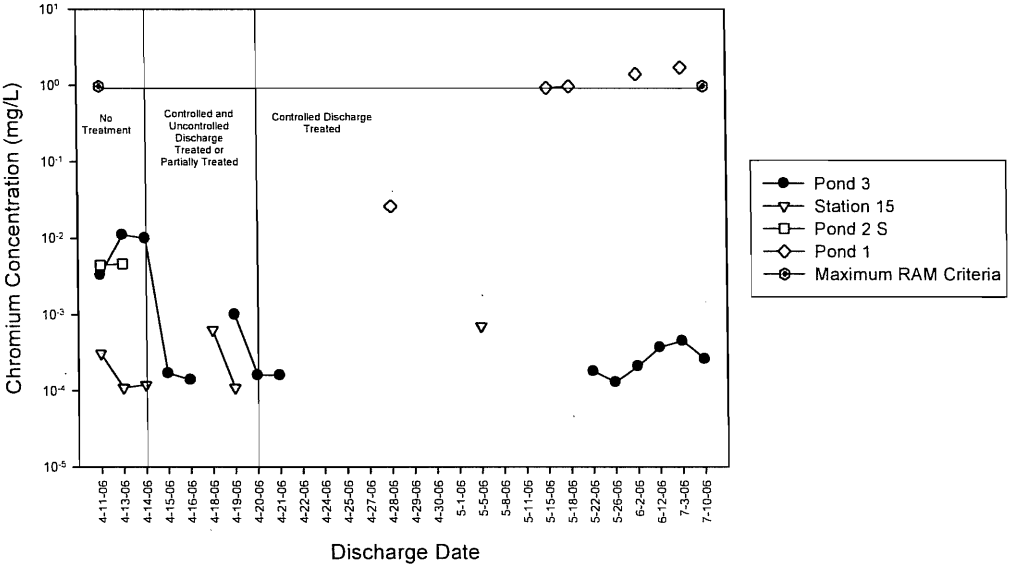
Figure 3. Pond 3 Emergency Water Treatment 2006
Cadmium Concentrations (mg/L)




**Spring 2006 Emergency Pond AMD Treatment Dissolved Cadmium Data (mg/L)**

| Date | Pond 3 | Station 15 | Pond 2 S | Pond 1 | Maximum RAM Criteria | Comments |
|---|---|---|---|---|---|---|
| 4-11-06 | 0.00039 | 0.00042 | 0.00031 | | 0.009 | No treatment |
| 4-13-06 | 0.0019 | 0.00035 | 0.0003 | | 0.009 | No treatment |
| 4-14-06 | 0.0078 | 0.0003 | | | 0.009 | Partial treatment at time of sampling |
| 4-15-06 | 0.0043 | 0.00039 | | | 0.009 | Partially treated some uncontrolled discharge |
| 4-16-06 | 0.0015 | 0.00027 | | | 0.009 | |
| 4-18-06 | 0.00064 | 0.00063 | | | 0.009 | Partially Treated some uncontrolled discharge |
| 4-19-06 | 0.0048 | 0.00032 | | | 0.009 | Some uncontrolled discharge |
| 4-20-06 | 0.0031 | 0.00033 | | | 0.009 | Some uncontrolled discharge |
| 4-21-06 | 0.00012 | | | | 0.009 | Controlled discharge |
| 4-22-06 | 0.00063 | | | | 0.009 | Controlled discharge |
| 4-24-06 | 0.002 | | | | 0.009 | Controlled discharge |
| 4-25-06 | 0.00076 | | | | 0.009 | Controlled discharge |
| 4-27-06 | 0.0012 | | | | 0.009 | Controlled discharge |
| 4-28-06 | 0.00015 | | | 0.0033 | 0.009 | Controlled discharge |
| 4-29-06 | <0.0001 | | | | 0.009 | Controlled discharge |
| 4-30-06 | 0.00014 | | | | 0.009 | Controlled discharge |
| 5-1-06 | <0.0001 | | | | 0.009 | Controlled discharge |
| 5-5-06 | 0.00036 | 0.00012 | | | 0.009 | Controlled discharge |
| 5-8-06 | 0.00018 | | | | 0.009 | Controlled discharge |
| 5-11-06 | <0.0001 | | | | 0.009 | Controlled discharge |
| 5-15-06 | 0.00017 | | | **0.041** | 0.009 | Controlled discharge |
| 5-18-06 | 0.00053 | | | **0.043** | 0.009 | Controlled discharge |
| 5-22-06 | 0.00015 | | | | 0.009 | Controlled discharge |
| 5-26-06 | 0.00008 | | | | 0.009 | Controlled discharge |
| 6-2-06 | 0.00006 | | | **0.069** | 0.009 | Controlled discharge |
| 6-12-06 | 0.00007 | | | | 0.009 | Controlled discharge |
| 7-3-06 | 0.00014 | | | **0.087** | 0.009 | Controlled discharge |
| 7-10-06 | 0.00036 | | | | 0.009 | Controlled discharge |

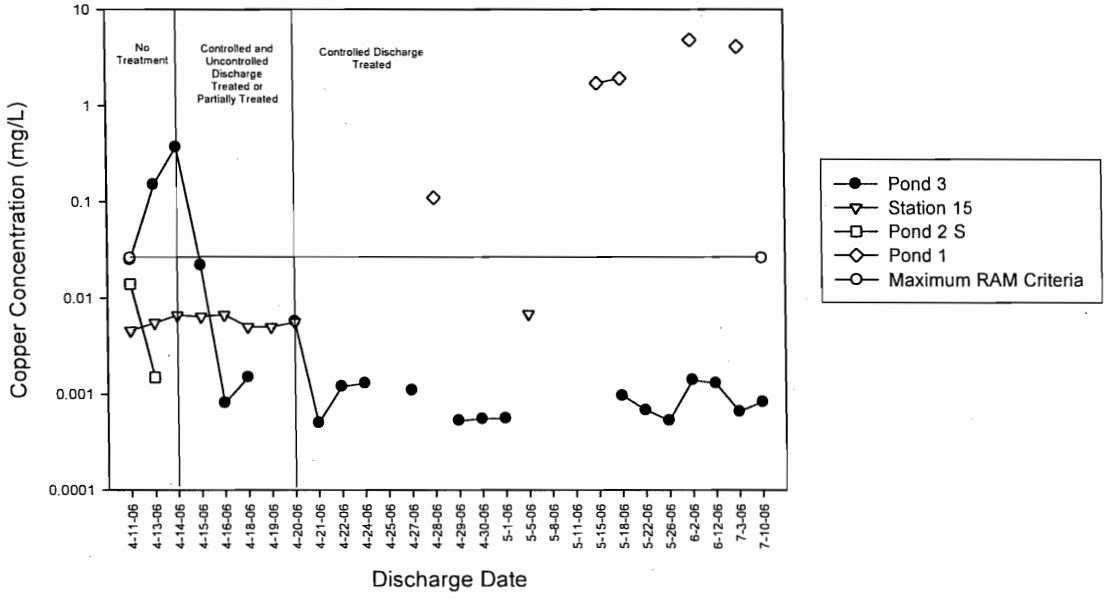
Figure 4. Pond 3 Emergency Water Treatment 2006
Chromium Concentrations (mg/L)




**Spring 2006 Emergency Pond AMD Treatment Dissolved Chromium Data (mg/L)**

| Date | Pond 3 | Station 15 | Pond 2 S | Pond 1 | Maximum RAM Criteria | Comments |
|---|---|---|---|---|---|---|
| 4-11-06 | 0.0033 | 0.00031 | 0.0044 | | 0.970 | No treatment |
| 4-13-06 | 0.011 | 0.00011 | 0.0046 | | 0.970 | No treatment |
| 4-14-06 | 0.010 | 0.00012 | | | 0.970 | Partial treatment at time of sampling |
| 4-15-06 | 0.00017 | <0.00010 | | | 0.970 | Partially treated some uncontrolled discharge |
| 4-16-06 | 0.00014 | <0.00010 | | | 0.970 | |
| 4-18-06 | <0.00010 | 0.00063 | | | 0.970 | Partially Treated some uncontrolled discharge |
| 4-19-06 | 0.001 | 0.00011 | | | 0.970 | Some uncontrolled discharge |
| 4-20-06 | 0.00016 | <0.00010 | | | 0.970 | Some uncontrolled discharge |
| 4-21-06 | 0.00016 | | | | 0.970 | Controlled discharge |
| 4-22-06 | <0.0001 | | | | 0.970 | Controlled discharge |
| 4-24-06 | <0.0001 | | | | 0.970 | Controlled discharge |
| 4-25-06 | <0.0001 | | | | 0.970 | Controlled discharge |
| 4-27-06 | <0.0001 | | | | 0.970 | Controlled discharge |
| 4-28-06 | <0.0001 | | | 0.026 | 0.970 | Controlled discharge |
| 4-29-06 | <0.0001 | | | | 0.970 | Controlled discharge |
| 4-30-06 | <0.0001 | | | | 0.970 | Controlled discharge |
| 5-1-06 | <0.0001 | | | | 0.970 | Controlled discharge |
| 5-5-06 | <0.0001 | 0.0007 | | | 0.970 | Controlled discharge |
| 5-8-06 | <0.0001 | | | | 0.970 | Controlled discharge |
| 5-11-06 | <0.0001 | | | | 0.970 | Controlled discharge |
| 5-15-06 | <0.0001 | | | **0.920** | 0.970 | Controlled discharge |
| 5-18-06 | <0.0001 | | | **0.960** | 0.970 | Controlled discharge |
| 5-22-06 | 0.00018 | | | | 0.970 | Controlled discharge |
| 5-26-06 | 0.00013 | | | | 0.970 | Controlled discharge |
| 6-2-06 | 0.00021 | | | **1.4** | 0.970 | Controlled discharge |
| 6-12-06 | 0.00037 | | | | 0.970 | Controlled discharge |
| 7-3-06 | 0.00045 | | | **1.7** | 0.970 | Controlled discharge |
| 7-10-06 | 0.00026 | | | | 0.970 | Controlled discharge |

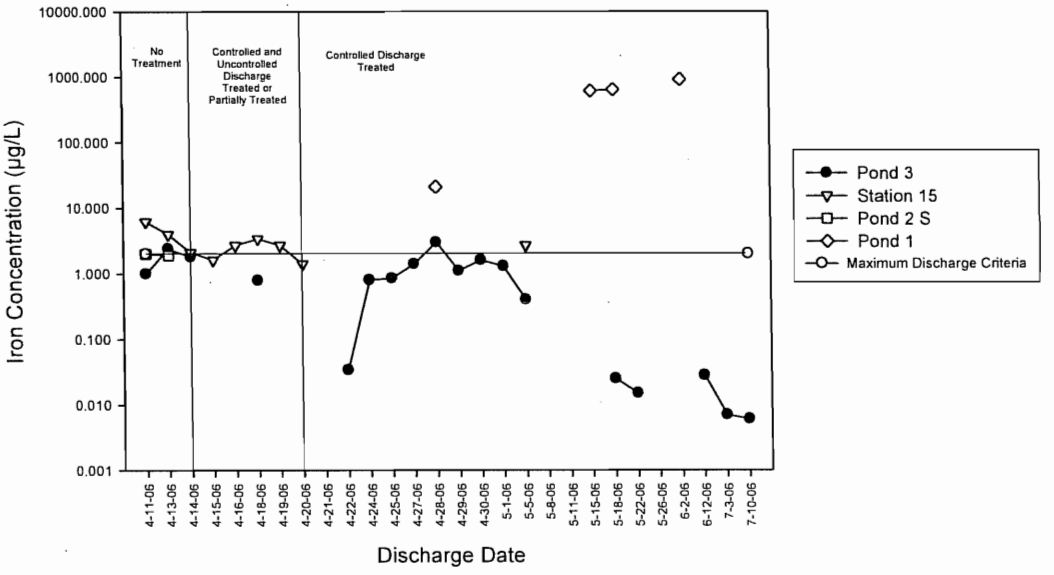
Figure 5. Pond 3 Emergency Water Treatment 2006
Copper Concentrations (mg/L)




**Spring 2006 Emergency Pond AMD Treatment Dissolved Copper Data (mg/L)**

| Date | Pond 3 | Station 15 | Pond 2 S | Pond 1 | Maximum RAM Criteria | Comments |
|---|---|---|---|---|---|---|
| 4-11-06 | 0.025 | 0.0046 | 0.014 | | 0.026 | No treatment |
| 4-13-06 | **0.150** | 0.0055 | 0.0015 | | 0.026 | No treatment |
| 4-14-06 | **0.370** | 0.0066 | | | 0.026 | Partial treatment at time of sampling |
| 4-15-06 | 0.022 | 0.0064 | | | 0.026 | Partially treated some uncontrolled discharge |
| 4-16-06 | 0.00081 | 0.0067 | | | 0.026 | |
| 4-18-06 | 0.0015 | 0.005 | | | 0.026 | Partially Treated some uncontrolled discharge |
| 4-19-06 | <0.0005 | 0.005 | | | 0.026 | Some uncontrolled discharge |
| 4-20-06 | 0.0057 | 0.0056 | | | 0.026 | Some uncontrolled discharge |
| 4-21-06 | 0.0005 | | | | 0.026 | Controlled discharge |
| 4-22-06 | 0.0012 | | | | 0.026 | Controlled discharge |
| 4-24-06 | 0.0013 | | | | 0.026 | Controlled discharge |
| 4-25-06 | <0.0005 | | | | 0.026 | Controlled discharge |
| 4-27-06 | 0.0011 | | | | 0.026 | Controlled discharge |
| 4-28-06 | <0.0005 | | | **0.110** | 0.026 | Controlled discharge |
| 4-29-06 | 0.00053 | | | | 0.026 | Controlled discharge |
| 4-30-06 | 0.00055 | | | | 0.026 | Controlled discharge |
| 5-1-06 | 0.00056 | | | | 0.026 | Controlled discharge |
| 5-5-06 | <0.0005 | 0.0068 | | | 0.026 | Controlled discharge |
| 5-8-06 | <0.0005 | | | | 0.026 | Controlled discharge |
| 5-11-06 | <0.0005 | | | | 0.026 | Controlled discharge |
| 5-15-06 | <0.0005 | | | **1.7** | 0.026 | Controlled discharge |
| 5-18-06 | 0.00096 | | | **1.9** | 0.026 | Controlled discharge |
| 5-22-06 | 0.00068 | | | | 0.026 | Controlled discharge |
| 5-26-06 | 0.00053 | | | | 0.026 | Controlled discharge |
| 6-2-06 | 0.0014 | | | **4.8** | 0.026 | Controlled discharge |
| 6-12-06 | 0.0013 | | | | 0.026 | Controlled discharge |
| 7-3-06 | 0.00066 | | | **4.1** | 0.026 | Controlled discharge |
| 7-10-06 | 0.00083 | | | | 0.026 | |

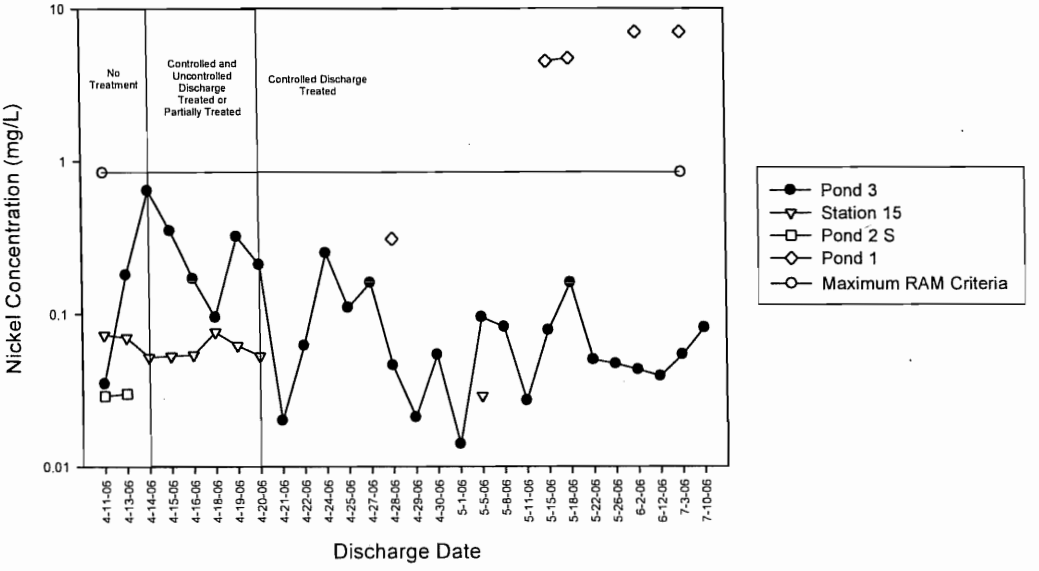
Figure 6. Pond 3 Emergency Water Treatment 2006
Iron Concentrations




**Spring 2006 Emergency Pond AMD Treatment Dissolved Iron Data (mg/L)**

| Date | Pond 3 | Station 15 | Pond 2 S | Pond 1 | Maximum RAM Criteria | Comments |
|---|---|---|---|---|---|---|
| 4-11-06 | 1 | **6.2** | **2** | | 2 | No treatment |
| 4-13-06 | **2.4** | **4** | 1.9 | | 2 | No treatment |
| 4-14-06 | 1.8 | **2.1** | | | 2 | Partial treatment at time of sampling |
| 4-15-06 | <0.002 | 1.6 | | | 2 | Partially treated some uncontrolled discharge |
| 4-16-06 | <0.002 | **2.7** | | | 2 | |
| 4-18-06 | 0.790 | **3.4** | | | 2 | Partially Treated some uncontrolled discharge |
| 4-19-06 | <0.002 | **2.7** | | | 2 | Some uncontrolled discharge |
| 4-20-06 | <0.002 | 1.4 | | | 2 | Some uncontrolled discharge |
| 4-21-06 | <0.002 | | | | 2 | Controlled discharge |
| 4-22-06 | 0.034 | | | | 2 | Controlled discharge |
| 4-24-06 | 0.800 | | | | 2 | Controlled discharge |
| 4-25-06 | 0.850 | | | | 2 | Controlled discharge |
| 4-27-06 | 1.4 | | | | 2 | Controlled discharge |
| 4-28-06 | **3** | | | **21** | 2 | Controlled discharge |
| 4-29-06 | 1.1 | | | | 2 | Controlled discharge |
| 4-30-06 | 1.6 | | | | 2 | Controlled discharge |
| 5-1-06 | 1.3 | | | | 2 | Controlled discharge |
| 5-5-06 | 0.400 | **2.7** | | | 2 | Controlled discharge |
| 5-8-06 | <0.002 | | | | 2 | Controlled discharge |
| 5-11-06 | <0.002 | | | | 2 | Controlled discharge |
| 5-15-06 | <0.002 | | | **610** | 2 | Controlled discharge |
| 5-18-06 | 0.025 | | | **640** | 2 | Controlled discharge |
| 5-22-06 | 0.015 | | | | 2 | Controlled discharge |
| 5-26-06 | <0.002 | | | | 2 | Controlled discharge |
| 6-2-06 | <0.002 | | | **910** | 2 | Controlled discharge |
| 6-12-06 | 0.028 | | | | 2 | Controlled discharge |
| 7-3-06 | 0.007 | | | **1,000** | 2 | Controlled discharge |
| 7-10-06 | 0.006 | | | | 2 | |

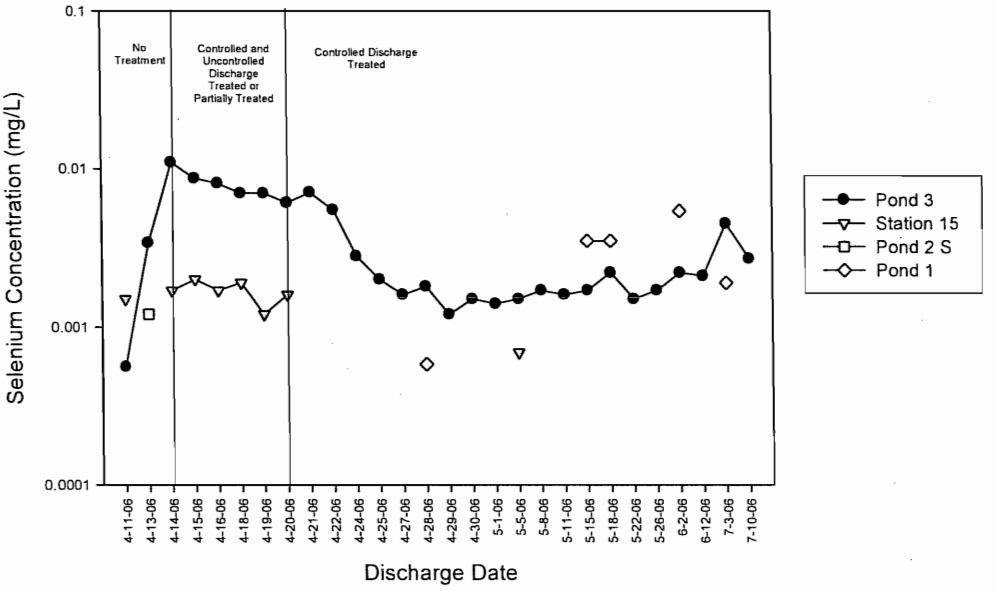
Figure 7. Pond 3 Emergency Water Treatment 2006
Nickel Concentrations (mg/L)




**Spring 2006 Emergency Pond AMD Treatment Dissolved Nickel Data (mg/L)**

| Date | Pond 3 | Station 15 | Pond 2 S | Pond 1 | Maximum RAM Criteria | Comments |
|---|---|---|---|---|---|---|
| 4-11-06 | 0.035 | 0.073 | 0.029 | | 0.84 | No treatment |
| 4-13-06 | 0.180 | 0.070 | 0.030 | | 0.84 | No treatment |
| 4-14-06 | 0.640 | 0.052 | | | 0.84 | Partial treatment at time of sampling |
| 4-15-06 | 0.350 | 0.053 | | | 0.84 | Partially treated some uncontrolled discharge |
| 4-16-06 | 0.170 [c] | 0.054 | | | 0.84 | |
| 4-18-06 | 0.095 | 0.076 | | | 0.84 | Partially Treated some uncontrolled discharge |
| 4-19-06 | 0.320 | 0.062 | | | 0.84 | Some uncontrolled discharge |
| 4-20-06 | 0.210 | 0.053 | | | 0.84 | Some uncontrolled discharge |
| 4-21-06 | 0.020 | | | | 0.84 | Controlled discharge |
| 4-22-06 | 0.062 | | | | 0.84 | Controlled discharge |
| 4-24-06 | 0.250 | | | | 0.84 | Controlled discharge |
| 4-25-06 | 0.110 | | | | 0.84 | Controlled discharge |
| 4-27-06 | 0.160 | | | | 0.84 | Controlled discharge |
| 4-28-06 | 0.046 | | | 0.310 | 0.84 | Controlled discharge |
| 4-29-06 | 0.021 | | | | 0.84 | Controlled discharge |
| 4-30-06 | 0.054 | | | | 0.84 | Controlled discharge |
| 5-1-06 | 0.014 | | | | 0.84 | Controlled discharge |
| 5-5-06 | 0.095 | 0.029 | | | 0.84 | Controlled discharge |
| 5-8-06 | 0.082 | | | | 0.84 | Controlled discharge |
| 5-11-06 | 0.027 | | | | 0.84 | Controlled discharge |
| 5-15-06 | 0.078 | | | **4.5** | 0.84 | Controlled discharge |
| 5-18-06 | 0.160 | | | **4.7** | 0.84 | Controlled discharge |
| 5-22-06 | 0.050 | | | | 0.84 | Controlled discharge |
| 5-26-06 | 0.047 | | | | 0.84 | Controlled discharge |
| 6-2-06 | 0.043 | | | **7** | 0.84 | Controlled discharge |
| 6-12-06 | 0.039 | | | | 0.84 | Controlled discharge |
| 7-3-06 | 0.054 | | | **7** | 0.84 | Controlled discharge |
| 7-10-06 | 0.081 | | | | 0.84 | Controlled discharge |

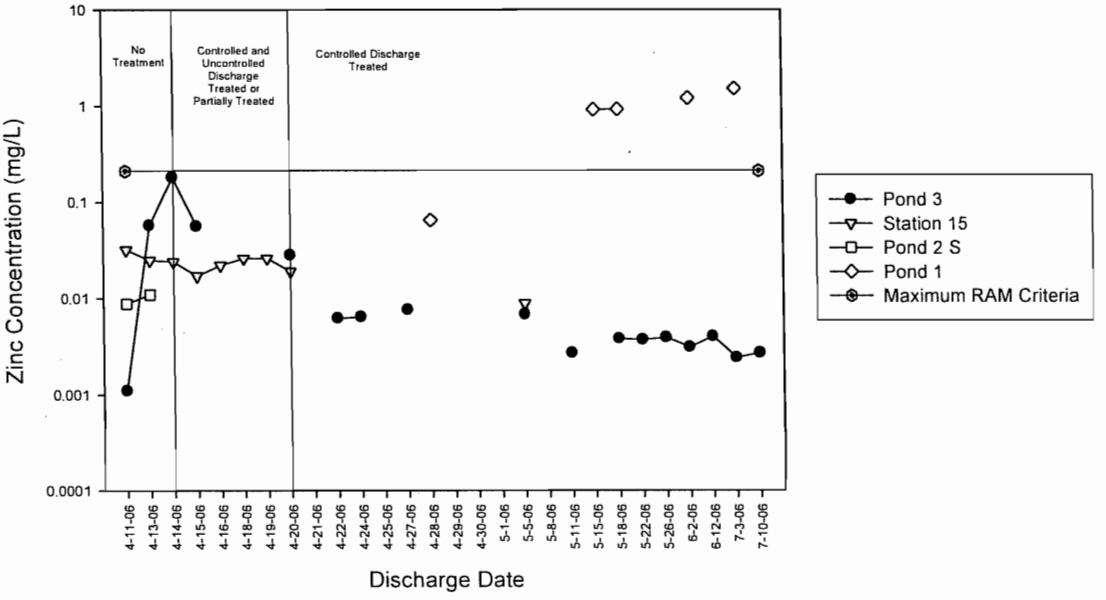
Figure 8. Pond 3 Emergency Water Treatment 2006
Selenium Concentrations (mg/L)




**Spring 2006 Emergency Pond AMD Treatment Dissolved Selenium Data (µg/L)**

| Date | Pond 3 | Station 15 | Pond 2 S | Pond 1 | Comments |
|---|---|---|---|---|---|
| 4-11-06 | 0.00056 | 0.0015 | <0.0004 | | No treatment |
| 4-13-06 | 0.0034 | <0.0004 | 0.0012 | | No treatment |
| 4-14-06 | 0.011 | 0.0017 | | | Partial treatment at time of sampling |
| 4-15-06 | 0.0087 | 0.002 | | | Partially treated some uncontrolled discharge |
| 4-16-06 | 0.0081 | 0.0017 | | | |
| 4-18-06 | 0.007 | 0.0019 | | | Partially Treated some uncontrolled discharge |
| 4-19-06 | 0.007 | 0.0012 | | | Some uncontrolled discharge |
| 4-20-06 | 0.0061 | 0.0016 | | | Some uncontrolled discharge |
| 4-21-06 | 0.0071 | | | | Controlled discharge |
| 4-22-06 | 0.0055 | | | | Controlled discharge |
| 4-24-06 | 0.0028 | | | | Controlled discharge |
| 4-25-06 | 0.002 | | | | Controlled discharge |
| 4-27-06 | 0.0016 | | | | Controlled discharge |
| 4-28-06 | 0.0018 | | | 0.00058 | Controlled discharge |
| 4-29-06 | 0.0012 | | | | Controlled discharge |
| 4-30-06 | 0.0015 | | | | Controlled discharge |
| 5-1-06 | 0.0014 | | | | Controlled discharge |
| 5-5-06 | 0.0015 | 0.00069 | | | Controlled discharge |
| 5-8-06 | 0.0017 | | | | Controlled discharge |
| 5-11-06 | 0.0016 | | | | Controlled discharge |
| 5-15-06 | 0.0017 | | | 0.0035 | Controlled discharge |
| 5-18-06 | 0.0022 | | | 0.0035 | Controlled discharge |
| 5-22-06 | 0.0015 | | | | Controlled discharge |
| 5-26-06 | 0.0017 | | | | Controlled discharge |
| 6-2-06 | 0.0022 | | | 0.0054 | Controlled discharge |
| 6-12-06 | 0.0021 | | | | Controlled discharge |
| 7-3-06 | 0.0045 | | | 0.0019 | Controlled discharge |
| 7-10-06 | 0.0027 | | | | Controlled discharge |

Figure 9. Pond 3 Emergency Water Treatment 2006
Zinc Concentrations (mg/L)




**Spring 2006 Emergency Pond AMD Treatment Dissolved Zinc Data (m/L)**

| Date | Pond 3 | Station 15 | Pond 2 S | Pond 1 | Maximum RAM Criteria | Comments |
|---|---|---|---|---|---|---|
| 4-11-06 | 0.0011 | 0.032 | 0.0088 | | 0.21 | No treatment |
| 4-13-06 | 0.057 | 0.025 | 0.011 | | 0.21 | No treatment |
| 4-14-06 | 0.180 | 0.024 | | | 0.21 | Partial treatment at time of sampling |
| 4-15-06 | 0.056 | 0.017 | | | 0.21 | Partially treated some uncontrolled discharge |
| 4-16-06 | <0.005 | 0.022 | | | 0.21 | |
| 4-18-06 | <0.005 | 0.026 | | | 0.21 | Partially Treated some uncontrolled discharge |
| 4-19-06 | <0.005 | 0.026 | | | 0.21 | Some uncontrolled discharge |
| 4-20-06 | 0.028 | 0.019 | | | 0.21 | Some uncontrolled discharge |
| 4-21-06 | <0.0050 | | | | 0.21 | Controlled discharge |
| 4-22-06 | 0.0062 | | | | 0.21 | Controlled discharge |
| 4-24-06 | 0.0064 | | | | 0.21 | Controlled discharge |
| 4-25-06 | <0.005 | | | | 0.21 | Controlled discharge |
| 4-27-06 | 0.0076 | | | | 0.21 | Controlled discharge |
| 4-28-06 | <0.005 | | | 0.065 | 0.21 | Controlled discharge |
| 4-29-06 | <0.005 | | | | 0.21 | Controlled discharge |
| 4-30-06 | <0.005 | | | | 0.21 | Controlled discharge |
| 5-1-06 | <0.005 | | | | 0.21 | Controlled discharge |
| 5-5-06 | 0.0068 | 0.0088 | | | 0.21 | Controlled discharge |
| 5-8-06 | <0.005 | | | | 0.21 | Controlled discharge |
| 5-11-06 | 0.0027 | | | | 0.21 | Controlled discharge |
| 5-15-06 | <0.005 | | | **0.910** | 0.21 | Controlled discharge |
| 5-18-06 | 0.0038 | | | **0.920** | 0.21 | Controlled discharge |
| 5-22-06 | 0.0037 | | | | 0.21 | Controlled discharge |
| 5-26-06 | 0.0039 | | | | 0.21 | Controlled discharge |
| 6-2-06 | 0.0031 | | | **1.2** | 0.21 | Controlled discharge |
| 6-12-06 | 0.004 | | | | 0.21 | Controlled discharge |
| 7-3-06 | 0.0024 | | | **1.5** | 0.21 | Controlled discharge |
| 7-10-06 | 0.0027 | | | | 0.21 | Controlled discharge |

## APPENDIX B

## Field Data (WATER BOARD)

## Spring 2006 Emergency Pond AMD Treatment Field Data

WATER BOARD Data

| Date | Sample ID | Station | Time | pH | Temp (oC) | EC (uS) | SC (uS) | Comments |
|---|---|---|---|---|---|---|---|---|
| 4/11/2006 | 056LM134 | Sta 15 | 9:50 | 6.7 | 3.0 | 230.3 | 397.1 | |
| 4/11/2006 | 056LM131 | Pond 3 | 10:25 | 3.8 | 2.5 | 91 | 160 | |
| 4/11/2006 | 056LM132 | Pond 3 Dup | 10:30 | 3.8 | 2.5 | 91 | 160 | |
| 4/11/2006 | 056LM035 | Pond 2 S | 11:00 | 2.9 | 3.6 | 123.4 | 210.2 | |
| 4/11/2006 | 056LM133 | FMB | 11:15 | | | | | |
| 4/13/2006 | 056LM138 | Pond 3 | 9:35 | 3.6 | 3.5 | 313 | 531 | |
| 4/13/2006 | 056LM139 | Pond 2 S | 10:00 | 3.1 | 1.8 | 106 | LErr | LErr - temperature is below instruments capability to calculate SC |
| 4/13/2006 | 056LM137 | Sta 15 | 11:15 | 6.6 | 5.3 | 222 | 356 | |
| 4/14/2006 | 056LM140 | Pond 3 | 14:45 | 4.2 | 5.2 | 709 | 1142 | |
| 4/14/2006 | 056LM141 | Sta 15 | 15:10 | 6.3 | 5.6 | 193 | 306 | |
| 4/15/2006 | 056LM142 | Pond 3 | 16:30 | 5.9 | 3.6 | 720 | 1218 | |
| 4/15/2006 | 056LM143 | Sta 15 | 17:10 | 6.7 | 3.9 | 179 | 299 | |
| 4/16/2006 | 056LM144 | Pond 3 | 9:15 | 7.6 | 1.0 | 663 | LErr | LErr - temperature is below instruments capability to calculate SC |
| 4/16/2006 | 056LM145 | Sta 15 | 9:40 | 6.8 | 2.1 | 188 | 335 | |
| 4/18/2006 | 056LM146 | Pond 3 | 11:30 | 4.6 | 3.8 | 679 | 1141 | |
| 4/18/2006 | 056LM147 | Sta 15 | 12:30 | 6.4 | 5.6 | 216 | 343 | |
| 4/19/2006 | 056LM148 | Pond 3 | 13:45 | 8.9 | 6.3 | 723 | 1126 | |
| 4/19/2006 | 056LM136 | Pond 3 Dup | 13:55 | 8.9 | 6.3 | 723 | 1126 | |
| 4/19/2006 | 056LM149 | Sta 15 | 14:30 | 6.6 | 9.0 | 291 | 420 | |
| 4/19/2006 | 056LM150 | FMB | 14:45 | | | | | |
| 4/20/2006 | 056LM151 | Pond 3 | 13:45 | 5.0 | 9.3 | 787 | 1125 | |
| 4/20/2006 | 056LM152 | Sta 15 | 14:45 | 6.3 | 8.7 | 231 | 335 | |
| 4/21/2006 | 056LM153 | Pond 3 | 12:40 | 9.9 | 7.5 | 721 | 1083 | |
| 4/22/2006 | 056LM154 | Pond 3 | 10:15 | 8.2 | 9.1 | 703 | 99.7 | |
| 4/24/2006 | 056LM155 | Pond 3 | 15:15 | 7.8 | 8.6 | 526 | 767 | |
| 4/27/2006 | 056LM170 | Pond 3 | 15:15 | 7.5 | 12.7 | 554 | 722 | |
| 4/28/2006 | 056LM171 | Pond 1 | 11:40 | 2.9 | 13.5 | 560 | 715 | |
| 4/28/2006 | 056LM172 | Pond 3 | 12:40 | 9.0 | 12.7 | 566 | 740 | |
| 4/29/2006 | 056LM173 | Pond 3 | 10:30 | 7.1 | 11.6 | 544 | 731 | |
| 4/30/2006 | 056LM174 | Pond 3 | 17:45 | 7.4 | 17.0 | 776 | 916 | |
| 4/30/2006 | 056LM175 | FMB | 17:55 | | | | | |
| 5/1/2006 | 056LM176 | Pond 3 | 11:20 | 8.9 | 12.9 | 618 | 805 | |
| 5/5/2006 | 056LM177 | Sta 15 | 10:25 | 7.1 | 5.1 | 110 | 179 | |
| 5/5/2006 | 056LM178 | Pond 3 | 11:00 | 7.7 | 11.5 | 866 | 1166 | |
| 5/5/2006 | 056LM179 | Pond 3 Dup | 11:05 | 7.7 | 11.5 | 866 | 1166 | |
| 5/8/2006 | 056LM180 | Pond 3 | 14:50 | 8.4 | 16.4 | 1235 | 1476 | |
| 5/11/2006 | 056LM181 | Pond 3 | 12:15 | 8.2 | 14.7 | 1440 | 1794 | |
| 5/15/2006 | 056LM182 | Pond 3 | 14:40 | 8.5 | 15.9 | 1887 | 2284 | |
| 5/15/2006 | 056LM183 | Pond 1 | 13:45 | 2.6 | 18.0 | 3724 | 4297 | |
| 5/18/2006 | 056LM184 | Pond 3 | 12:30 | 8.5 | 17.3 | 2222 | 2605 | |
| 5/18/2006 | 056LM185 | Pond 1 | 12:45 | 2.4 | 20.3 | 4091 | 4493 | |
| 5/22/2006 | 056LM186 | Pond 3 | 11:40 | 7.8 | 12.9 | 2078 | 2704 | |
| 5/22/2006 | 056LM187 | FMB | 11:50 | | | | | |
| 5/26/2006 | 056LM188 | Pond 3 | 13:00 | 8.4 | 15.6 | 2607 | 3170 | |
| 6/2/2006 | 056LM189 | Pond 3 | 11:10 | 8.7 | 16.1 | 3230 | 3892 | |
| 6/2/2006 | 056LM208 | Pond 1 | 11:20 | 2.3 | 19.0 | 5320 | 6020 | |
| 6/12/2006 | 056LM209 | Pond 3 | 12:00 | 8.5 | 16.0 | 3494 | 4228 | |
| 7/3/2006 | 067LM001 | Pond 1 | 11:45 | 2.7 | | | | used field lab probe, no conductivity |
| 7/3/2006 | 067LM002 | Pond 3 | 11:35 | 8.2 | | | | " " |
| 7/10/2006 | 067LM003 | Pond 3 | 11:50 | 7.0 | | | | " " |

# APPENDIX C

## Field Data (TKT)

## Spring 2006 Emergency Pond AMD Treatment Field Data
TKT Data

| Date | Location | Time | pH | Temp (°C) | EC (uS) | DO | ORP | Acidity (mg/L $Ca(OH)_2$) | Comments |
|---|---|---|---|---|---|---|---|---|---|
| 4/14/2006 | Pond 3(Prior to treatment) | 11:40 | 3.8 | | 802 | | | 92 | |
| 4/14/2006 | DIS (Overflow) | 16:55 | 4.9 | 4.6 | 1039 | 11.78 | 278 | | |
| 4/14/2006 | Pond 3 | 17:20 | 5.0 | | | | | 81 | |
| 4/15/2006 | DIS (Overflow) | 8:25 | 5.7 | 2.8 | 1110 | 12.23 | 225 | | |
| 4/15/2006 | DIS (Overflow) | 9:49 | 6.4 | 3.1 | 1116 | 12.48 | 196 | | Measurement taken after circulating water for 40 seconds |
| 4/15/2006 | DIS (Overflow) | 10:52 | 6.6 | 3.0 | 1120 | 11.63 | 203 | | |
| 4/15/2006 | DIS (Overflow) | 11:52 | 6.8 | 3.7 | 1146 | 12.41 | 282 | | |
| 4/15/2006 | INF (Overflow) | 12:08 | 3.5 | | | | | 41 | |
| 4/15/2006 | DIS (Overflow) | 12:22 | 6.7 | 4.4 | 1152 | 12.29 | 237 | | |
| 4/15/2006 | DIS (Overflow) | 12:55 | 6.9 | 4.0 | 1142 | 12.7 | 203 | | |
| 4/15/2006 | DIS (Overflow+active) | 15:05 | 7.1 | | | | | | Started active discharge |
| 4/15/2006 | DIS (Overflow + active) | 16:00 | 6.3 | | | | | | |
| 4/15/2006 | DIS (Overflow + active) | 17:20 | 7.1 | 3.4 | 1200 | 11.33 | 278 | | |
| 4/15/2006 | DIS (Overflow + active) | 17:47 | 6.0 | 3.2 | 1222 | 11.08 | 223 | | Active discharge stopped |
| 4/15/2006 | DIS (Overflow) | 18:10 | 7.7 | 3.1 | 1246 | 12.3 | 272 | | Active discharge started |
| 4/15/2006 | DIS (Overflow + active) | 18:30 | 6.8 | 3.1 | 12.37 | 11.99 | 293 | | |
| 4/15/2006 | DIS (Overflow + active) | 19:35 | | | | | | | Discharge stopped |
| 4/16/2006 | Pond 3 | 7:56 | 8.6 | 1.8 | 1031 | 12.42 | 217 | | |
| 4/16/2006 | DIS (active) | 8:12 | | | | | | | Active discharge started |
| 4/16/2006 | DIS (active) | 8:52 | 8.8 | | 1036 | | | | |
| 4/16/2006 | DIS (active) | 9:23 | 8.8 | | 1032 | | | | |
| 4/16/2006 | DIS (active) | 10:15 | 8.9 | | 1028 | | | | |
| 4/16/2006 | DIS (active) | 11:15 | 9.0 | | 1030 | | | | |
| 4/16/2006 | DIS (active) | 12:05 | 8.8 | | 1022 | | | | |
| 4/16/2006 | | 13:23 | | | | | | | Shut down system |
| 4/18/2006 | | 23:30 | | | | | | | System turned on |
| 4/19/2006 | DIS (Overflow) | 10:03 | 5.6 | 3.7 | | | 213 | | |
| 4/19/2006 | DIS (Overflow) | 10:44 | 6.0 | 4.2 | | | 178 | | |
| 4/19/2006 | DIS (Overflow) | 11:33 | 9.1 | | | | | | |
| 4/19/2006 | DIS (Overflow) | 11:51 | 8.4 | | | | | | Discharge started |
| 4/19/2006 | DIS (Overflow + Active) | 12:44 | 8.1 | 5.5 | | | 61 | | |
| 4/19/2006 | DIS (Overflow + Active) | 14:26 | 9.4 | | | | | | Discharge stopped |
| 4/20/2006 | DIS (Overflow) | 8:54 | 6.2 | 5.3 | | | 192 | | |
| 4/20/2006 | DIS (Overflow) | 10:03 | 8.9 | 6.2 | | | 103 | | Discharge started |
| 4/20/2006 | DIS (Overflow + Active) | 10:37 | 8.0 | 6.6 | | | 136 | | |
| 4/20/2006 | DIS (Overflow + Active) | 11:28 | 7.2 | 6.7 | | | 162 | | |
| 4/20/2006 | DIS (Overflow + Active) | 12:32 | 7.7 | 7.7 | | | 165 | | |
| 4/20/2006 | DIS (Active) | 13:32 | 6.5 | 7.9 | | | 280 | | |
| 4/20/2006 | DIS (Active) | 14:15 | 9.0 | | | | | | |
| 4/20/2006 | DIS (Active) | 14:50 | 8.5 | 8.3 | | | 186 | | |
| 4/20/2006 | DIS (Active) | 15:30 | 7.9 | 8.8 | | | 192 | | |
| 4/21/2006 | DIS (Active) | 11:23 | 9.8 | 7.7 | | | 129 | | |
| 4/21/2006 | DIS (Active) | 12:20 | 9.7 | 7.4 | | | 125 | | |
| 4/21/2006 | DIS (Active) | 14:18 | 8.7 | 7.7 | | | 150 | | |
| 4/21/2006 | DIS (Active) | 14:39 | 8.4 | 7.9 | | | 169 | | |
| 4/21/2006 | DIS (Active) | 15:43 | 8.9 | 8.7 | | | 121 | | |
| 4/21/2006 | DIS (Active) | 17:26 | 9.2 | 8.3 | | | 146 | | Discharge stopped |
| 4/22/2006 | DIS (Active) | 8:04 | 8.3 | 6.1 | | | 40 | | Discharge started |
| 4/22/2006 | DIS (Active) | 9:00 | 8.9 | 7.3 | | | 117 | | |
| 4/22/2006 | DIS (Active) | 10:40 | 8.1 | 7.5 | | | 26 | | |
| 4/22/2006 | DIS (Active) | 11:16 | 7.9 | 8.5 | | | 51 | | |
| 4/22/2006 | DIS (Active) | 11:46 | 7.9 | 8.1 | | | 66 | | |
| 4/22/2006 | DIS (Active) | 12:30 | 7.8 | 9.3 | | | 72 | | |
| 4/22/2006 | DIS (Active) | 12:58 | 7.9 | 8.8 | | | 98 | | Discharge stopped |

## Spring 2006 Emergency Pond Water Treatment Field Data

| Date | Location | Time | pH | Temp (°C) | EC (uS) | DO | ORP | Acidity (mg/L $Ca(OH)_2$) | Comments |
|---|---|---|---|---|---|---|---|---|---|
| 4/23/2006 | DIS (Active) | 12:13 | 7.2 | 5.3 | | | 74 | | Discharge started |
| 4/23/2006 | DIS (Active) | 12:46 | 8.3 | 5.8 | | | 101 | | |
| 4/23/2006 | DIS (Active) | 13:22 | 8.0 | 4.4 | | | 157 | | |
| 4/23/2006 | DIS (Active) | 13:58 | 8.0 | 5.6 | | | 165 | | |
| 4/23/2006 | DIS (Active) | 15:39 | 7.7 | 7.4 | | | 81 | | Discharge stopped |
| 4/24/2006 | DIS (Active) | 9:14 | 7.3 | | | | | | Discharge started |
| 4/24/2006 | DIS (Active) | 9:30 | 7.5 | | | | | | |
| 4/24/2006 | DIS (Active) | 9:48 | 7.9 | | | | | | |
| 4/24/2006 | DIS (Active) | 10:07 | 7.9 | 5.3 | | | 66 | | |
| 4/24/2006 | DIS (Active) | 10:35 | 7.9 | 6.0 | | | -8 | | |
| 4/24/2006 | DIS (Active) | 11:08 | 8.4 | 6.5 | | | 58 | | |
| 4/24/2006 | DIS (Active) | 11:30 | 8.6 | 6.4 | | | 97 | | |
| 4/24/2006 | DIS (Active) | 11:58 | 8.2 | 6.9 | | | 156 | | |
| 4/24/2006 | DIS (Active) | 12:33 | 7.9 | 7.2 | | | 163 | | |
| 4/24/2006 | DIS (Active) | 13:02 | 7.8 | 7.4 | | | 152 | | |
| 4/24/2006 | DIS (Active) | 13:32 | 7.6 | 8.0 | | | 155 | | |
| 4/24/2006 | DIS (Active) | 14:00 | 7.5 | 7.6 | | | 164 | | |
| 4/24/2006 | DIS (Active) | 15:04 | 7.9 | 8.6 | | | 184 | | |
| 4/24/2006 | DIS (Active) | 15:15 | | | | | | | Stopped Discharge |
| 4/25/2006 | DIS (Active) | 7:42 | 7.8 | 3.8 | | | 20 | | Started Discharge |
| 4/25/2006 | DIS (Active) | 8:22 | 7.5 | 4.5 | | | 49 | | |
| 4/25/2006 | DIS (Active) | 9:28 | 7.3 | 5.0 | | | 101 | | |
| 4/25/2006 | DIS (Active) | 10:00 | 7.3 | 5.3 | | | 161 | | |
| 4/25/2006 | | 12:10 | | | | | | | Started siphon line from Pond1 |
| 4/25/2006 | DIS (Active) | 13:11 | 8.9 | 7.5 | | | 105 | | |
| 4/25/2006 | DIS (Active) | 14:19 | 7.3 | 8.4 | | | 151 | | |
| 4/25/2006 | DIS (Active) | 15:17 | 7.0 | 9.2 | | | 126 | | |
| 4/25/2006 | DIS (Active) | 16:09 | 8.6 | 8.9 | | | 117 | | Stopped discharge |
| 4/26/2006 | Inf (Siphon) | 9:58 | | | | | | 437 | |
| 4/26/2006 | Inf (overflow) | 10:20 | | | | | | 136 | |
| 4/26/2006 | DIS (Active) | 13:53 | 7.8 | 9.8 | | | 153 | | Started Discharge |
| 4/26/2006 | DIS (Active) | 14:52 | 9.0 | 10.1 | | | 139 | | |
| 4/26/2006 | DIS (Active) | 15:11 | 8.7 | 10.3 | | | 154 | | |
| 4/26/2006 | DIS (Active) | 15:45 | 8.4 | 10.6 | | | 190 | | |
| 4/26/2006 | DIS (Active) | 16:23 | 8.1 | 10.3 | | | 210 | | Discharge stopped |
| 2/27/2006 | DIS (Active) | 7:23 | 8.7 | 6.1 | | | 183 | | Discharge started |
| 2/27/2006 | DIS (Active) | 8:32 | 8.6 | 7.3 | | | 181 | | |
| 2/27/2006 | DIS (Active) | 9:20 | 8.3 | 7.7 | | | 192 | | |
| 2/27/2006 | DIS (Active) | 9:50 | 8.1 | 8.4 | | | 185 | | |
| 2/27/2006 | DIS (Active) | 10:30 | 8.1 | 9.6 | | | 241 | | |
| 2/27/2006 | DIS (Active) | 12:07 | 8.1 | 9.9 | | | 221 | | Discharge stopped |
| 4/28/2006 | DIS (Active) | 7:32 | 8.3 | 7.9 | | | 125 | | Discharge started |
| 4/28/2006 | DIS (Active) | 9:47 | 6.9 | 10.9 | | | 110 | | Discharge stopped |
| 4/28/2006 | DIS (Active) | 12:33 | 7.7 | 14.7 | | | 114 | | Discharge started |
| 4/28/2006 | DIS (Active) | 13:27 | 9.0 | 13.6 | | | 42 | | |
| 4/28/2006 | DIS (Active) | 14:17 | 9.0 | 13.8 | | | 79 | | |
| 4/28/2006 | DIS (Active) | 14:41 | 8.9 | 14.5 | | | 115 | | Discharge stopped |
| 4/29/2006 | DIS (Active) | 9:22 | 7.6 | 11.1 | | | 28 | | Discharge started |
| 4/29/2006 | DIS (Active) | 9:49 | 7.8 | 10.7 | | | 39 | | |
| 4/29/2006 | DIS (Active) | 10:17 | 7.8 | 11.7 | | | 84 | | |
| 4/29/2006 | DIS (Active) | 10:58 | 7.9 | 11.9 | | | 82 | | |
| 4/29/2006 | DIS (Active) | 11:32 | 7.0 | 12.7 | | | 75 | | |
| 4/29/2006 | DIS (Active) | 11:36 | 7.1 | 12.1 | | | 68 | | |
| 4/29/2006 | DIS (Active) | 12:11 | 7.3 | 12.5 | | | 0 | | Discharge stopped |

## Spring 2006 Emergency Pond AMD Treatment Field Data

| Date | Location | Time | pH | Temp (°C) | EC (uS) | DO | ORP | Acidity (mg/L $Ca(OH)_2$) | Comments |
|---|---|---|---|---|---|---|---|---|---|
| 4/30/2006 | Inf (overflow) | 10:00 | 3.3 | | | | | 404 | |
| 4/30/2006 | DIS (Active) | 10:47 | 7.7 | 13.0 | 10.57 | 868 | -36 | | Discharge started |
| 4/30/2006 | DIS (Active) | 11:03 | 7.5 | 12.8 | 11.19 | 870 | -30 | | |
| 4/30/2006 | DIS (Active) | 11:16 | 7.3 | 13.0 | 10.8 | 871 | -18 | | |
| 4/30/2006 | DIS (Active) | 11:28 | 7.3 | 13.0 | 10.57 | 871 | 0.6 | | |
| 4/30/2006 | DIS (Active) | 11:44 | 7.1 | 13.4 | 10.9 | 874 | -23 | | |
| 4/30/2006 | DIS (Active) | 12:06 | 6.8 | 13.7 | 10.77 | 875 | -8 | | Discharge stopped |
| 4/30/2006 | DIS (Active) | 14:22 | 7.2 | 15.2 | 10.84 | 888 | 71 | | Discharge started |
| 4/30/2006 | DIS (Active) | 15:41 | 7.9 | 16.1 | 9.7 | 895 | 119 | | |
| 4/30/2006 | DIS (Active) | 16:19 | 8.0 | 16.4 | 9.96 | 894 | 149 | | |
| 4/30/2006 | DIS (Active) | 16:58 | 8.2 | 16.5 | 10.09 | 899 | 152 | | |
| 4/30/2006 | DIS (Active) | 17:41 | 8.3 | 16.7 | 9.78 | 902 | 150 | | Discharge stopped |
| 5/1/2006 | DIS (Active) | 8:20 | 8.5 | 10.0 | 11.35 | 899 | 194 | | Discharge started |
| 5/1/2006 | DIS (Active) | 9:08 | 8.9 | 10.9 | 11.92 | 901 | 89 | | |
| 5/1/2006 | DIS (Active) | 9:46 | 9.1 | 11.1 | 11.85 | 899 | 100 | | Discharge stopped |
| 5/5/2006 | DIS (Active) | 11:50 | 7.6 | 12.0 | 9.25 | 1029 | 76 | | Discharge started |
| 5/5/2006 | DIS (Active) | 12:10 | 7.8 | 12.2 | 9.36 | 1039 | 81 | | |
| 5/5/2006 | DIS (Active) | 12:22 | 7.9 | 12.5 | 9.59 | 1031 | 77 | | |
| 5/5/2006 | DIS (Active) | 13:06 | 7.5 | 14.0 | 9.14 | 1034 | 83 | | |
| 5/5/2006 | DIS (Active) | 13:35 | 7.8 | 14.5 | 9.58 | 1035 | 107 | | |
| 5/5/2006 | DIS (Active) | 14:01 | 8.0 | 13.9 | 9.22 | 1038 | 63 | | |
| 5/5/2006 | DIS (Active) | 15:20 | 7.5 | 15.5 | 8.7 | 1040 | 57 | | |
| 5/5/2006 | DIS (Active) | 15:26 | 7.4 | 14.9 | 8.84 | 1039 | 39 | | |
| 5/5/2006 | DIS (Active) | 16:10 | 7.5 | 15.2 | 8.59 | 1044 | 39 | | |
| 5/5/2006 | DIS (Active) | 16:29 | 7.5 | 15.3 | 8.55 | 1041 | 33 | | Discharge stopped |
| 5/8/2006 | Inf (Siphon) | 13:46 | 2.8 | | | | | 1800 | |
| 5/8/2006 | Inf (overflow) | 14:21 | 3.1 | | | | | 426 | |
| 5/8/2006 | DIS (Active) | 15:04 | 8.2 | 16.2 | 7.68 | 1429 | 79 | | Discharge started |
| 5/8/2006 | DIS (Active) | 15:38 | 8.0 | 16.2 | 7.32 | 1442 | 120 | | |
| 5/8/2006 | DIS (Active) | 16:00 | 8.0 | 16.4 | 7.09 | 1437 | 133 | | |
| 5/8/2006 | DIS (Active) | 16:45 | 8.0 | 16.9 | 6.79 | 1440 | 139 | | Discharge Stopped |
| 5/10/2006 | Inf (Siphon) | 10:00 | 2.8 | | | | | 2238 | |
| 5/10/2006 | Inf (overflow) | 10:14 | 3.0 | | | | | 491 | |
| 5/11/2006 | DIS (Active) | 10:29 | 8.7 | 12.5 | 8.72 | 1736 | 151 | | Discharge started |
| 5/11/2006 | DIS (Active) | 10:40 | 8.7 | 12.9 | 9.34 | 1738 | 139 | | |
| 5/11/2006 | DIS (Active) | 11:09 | 8.6 | 13.5 | 9.47 | 1740 | 137 | | |
| 5/11/2006 | DIS (Active) | 11:51 | 8.5 | 14.5 | 9.14 | 1744 | 132 | | |
| 5/11/2006 | DIS (Active) | 11:59 | 8.4 | 17.0 | | 1756 | 129 | | |
| 5/11/2006 | DIS (Active) | 13:37 | 7.9 | 16.5 | 8.62 | 1760 | 49 | | |
| 5/11/2006 | DIS (Active) | 14:18 | 7.6 | 15.9 | 8.51 | 1791 | 26 | | |
| 5/11/2006 | DIS (Active) | 14:50 | 7.7 | 16.6 | 8.84 | 1774 | 66 | | |
| 5/11/2006 | DIS (Active) | 15:38 | 7.6 | 17.8 | 8.27 | 1792 | 155 | | |
| 5/11/2006 | DIS (Active) | 16:06 | 7.9 | 17.4 | 8.27 | 1791 | 165 | | Discharge stopped |
| 5/15/2006 | Inf (overflow) | 9:40 | 2.9 | 16.3 | 8 | 1502 | 442 | 600 | |
| 5/15/2006 | Inf (Siphon) | 10:00 | 2.7 | | | | | 2401 | |
| 5/15/2006 | DIS (Active) | 14:46 | 8.7 | 15.7 | 7.77 | 2129 | -10 | | Discharge started |
| 5/15/2006 | DIS (Active) | 15:18 | 8.6 | 16.5 | 8.32 | 2168 | 31 | | |
| 5/15/2006 | DIS (Active) | 15:57 | 8.2 | 17.1 | 8.54 | 2180 | 18 | | |
| 5/15/2006 | DIS (Active) | 16:23 | 8.3 | 16.6 | 8.64 | 2157 | 50 | | |
| 5/15/2006 | DIS (Active) | 17:29 | 7.8 | 17.2 | 8.15 | 2157 | 50 | | |
| 5/15/2006 | DIS (Active) | 17:55 | 8.0 | 17.0 | 7.83 | 2169 | 71 | | Discharge stopped |
| 5/18/2006 | Inf (overflow) | 8:38 | 2.9 | | | | | 840 | |
| 5/18/2006 | Inf (Siphon) | 8:56 | 2.7 | | | | | 2401 | |

## Spring 2006 Emergency Pond AMD Treatment Field Data

| Date | Location | Time | pH | Temp (°C) | EC (uS) | DO | ORP | Acidity (mg/L $Ca(OH)_2$) | Comments |
|---|---|---|---|---|---|---|---|---|---|
| 5/18/2006 | DIS (Active) | 13:00 | 7.6 | 18.5 | 7.82 | 2301 | 60 | | Discharge started |
| 5/18/2006 | DIS (Active) | 13:37 | 7.6 | 18.1 | 7.56 | 2294 | 57 | | |
| 5/18/2006 | DIS (Active) | 14:27 | 7.5 | 18.1 | 7.56 | 2306 | 11 | | |
| 5/18/2006 | DIS (Active) | 15:00 | 7.7 | 17.9 | 7.54 | 2303 | 34 | | |
| 5/18/2006 | DIS (Active) | 15:37 | 8.8 | 18.7 | 7.39 | 2301 | 34 | | |
| 5/18/2006 | DIS (Active) | 16:05 | 9.0 | 18.8 | 7.45 | 2301 | 46 | | Discharge stopped |
| 5/22/2006 | DIS (Active) | 11:57 | 8.4 | 13.9 | 8.69 | 2469 | 60 | | Discharge started |
| 5/22/2006 | DIS (Active) | 12:17 | 8.3 | 13.5 | 9.12 | 2484 | 71 | | |
| 5/22/2006 | DIS (Active) | 12:49 | 8.4 | 13.9 | 8.77 | 2489 | 74 | | |
| 5/22/2006 | DIS (Active) | 13:34 | 8.4 | 14.3 | 8.9 | 2489 | 86 | | |
| 5/22/2006 | DIS (Active) | 14:05 | 8.5 | 14.8 | 8.57 | 2491 | 76 | | |
| 5/22/2006 | DIS (Active) | 14:36 | 8.6 | 15.0 | 9.2 | 2492 | 29 | | |
| 5/22/2006 | DIS (Active) | 15:17 | 8.7 | 15.6 | 8.9 | 2492 | 59 | | Discharge stopped |
| 5/26/2006 | Inf (Siphon) | 11:46 | 2.5 | 17.3 | 9.55 | 4799 | 387 | 3711 | |
| 5/26/2006 | Inf (overflow) | 12:27 | 2.8 | 14.8 | 5.19 | 2017 | 414 | 1309 | |
| 5/26/2006 | DIS (Active) | 13:14 | 8.3 | 15.7 | 10.04 | 2751 | 48 | | Discharge started |
| 5/26/2006 | DIS (Active) | 14:07 | 8.1 | 15.7 | 9.17 | 2761 | 51 | | |
| 5/26/2006 | DIS (Active) | 14:56 | 8.1 | 16.7 | 8.57 | 2769 | 53 | | |
| 5/26/2006 | DIS (Active) | 15:33 | 8.0 | 16.9 | 8.9 | 2765 | 32 | | |
| 5/26/2006 | DIS (Active) | 16:07 | 8.2 | 16.8 | 8.63 | 2777 | 40 | | Discharge stopped |
| 6/2/2006 | DIS (Active) | 9:24 | 8.6 | 14.2 | 8.65 | 3692 | 121 | | Discharge started |
| 6/2/2006 | DIS (Active) | 10:08 | 8.6 | 14.9 | 8.4 | 3693 | 88 | | |
| 6/2/2006 | DIS (Active) | 11:25 | 8.6 | 15.7 | 8.73 | 3599 | | | |
| 6/2/2006 | DIS (Active) | 11:54 | 8.5 | 17.1 | 7.92 | 3700 | 51 | | |
| 6/2/2006 | Inf (Siphon) | 12:01 | 2.6 | 19.0 | 8.1 | 5754 | 393 | 4366 | |
| 6/2/2006 | Inf (overflow) | 12:22 | 2.9 | 15.6 | 7.73 | 2460 | 403 | 1583 | |
| 6/2/2006 | DIS (Active) | 12:46 | 8.3 | 17.5 | 7.55 | 3709 | 25 | | |
| 6/2/2006 | DIS (Active) | 13:20 | 8.4 | 18.0 | 7.65 | 3704 | 45 | | |
| 6/2/2006 | DIS (Active) | 13:40 | 8.4 | 18.0 | 7.9 | 3703 | 47 | | Discharge stopped |
| 6/12/2006 | DIS (Active) | 12:20 | 8.5 | 17.3 | 8 | 3989 | -4 | | Discharge started |
| 6/12/2006 | DIS (Active) | 12:31 | 8.4 | 16.8 | 8.54 | 3972 | 24 | | |
| 6/12/2006 | DIS (Active) | 12:57 | 8.3 | 18.4 | 8.32 | 3967 | 18 | | |
| 6/12/2006 | DIS (Active) | 13:29 | 8.3 | 18.5 | 7.56 | 3954 | 36 | | |
| 6/12/2006 | Inf (Siphon) | 13:37 | 2.6 | 22.7 | 3.58 | 5678 | 415 | 5260 | |
| 6/12/2006 | DIS (Active) | 14:11 | 8.7 | 18.8 | 7.09 | 3946 | 24 | | |
| 6/12/2006 | DIS (Active) | 14:28 | 8.3 | 18.6 | 7.63 | 3933 | 29 | | |
| 6/12/2006 | DIS (Active) | 15:02 | 8.3 | 20.1 | 6.91 | 3938 | 33 | | Discharge stopped |
| 6/20/2006 | Inf (Siphon) | 8:13 | 2.7 | 16.4 | 2.45 | 5071 | 426 | 3998 | |
| 6/22/2006 | Inf (Siphon) | 8:23 | 2.6 | 16.6 | 4.13 | 4813 | 430 | 4405 | |
| 6/29/2006 | Inf (Siphon) | 11:55 | 2.6 | 18.6 | 2.13 | 3884 | 441 | 5207 | |
| 7/3/2006 | Inf (Siphon) | 8:21 | 2.6 | 16.7 | 6.15 | 4066 | 442 | 4734 | |
| 7/3/2006 | DIS (Active) | 9:14 | 8.4 | 15.2 | 8.21 | 2555 | 93 | | Discharge started |
| 7/3/2006 | DIS (Active) | 9:49 | 8.4 | 15.4 | 10.2 | 2560 | 59 | | |
| 7/3/2006 | DIS (Active) | 10:47 | 8.1 | 16.6 | 10.96 | 2558 | 55 | | |
| 7/3/2006 | DIS (Active) | 11:25 | 8.3 | 17.4 | 10.41 | 2560 | 28 | | |
| 7/3/2006 | DIS (Active) | 12:23 | 8.3 | 18.3 | 10.44 | 2557 | 45 | | |
| 7/3/2006 | DIS (Active) | 13:30 | 8.1 | 19.5 | 9.45 | 2559 | 23 | | |
| 7/3/2006 | DIS (Active) | 14:47 | 8.2 | 21.3 | 8.65 | 2556 | 33 | | |
| 7/3/2006 | DIS (Active) | 15:41 | 8.1 | 22.2 | 8.41 | 2558 | 35 | | |
| 7/3/2006 | DIS (Active) | 16:47 | 8.0 | 23.1 | 8.01 | 2529 | 58 | | Discharge stopped |
| 7/6/2006 | Inf (Siphon) | 9:55 | 2.6 | 21.6 | 7.75 | 3133 | 444 | 5346 | |
| 7/10/2006 | DIS (Active) | 8:40 | 7.8 | 13.2 | 9.35 | 2926 | 89 | | Discharge started |
| 7/10/2006 | DIS (Active) | 10:07 | 8.6 | 14.3 | 9.51 | 2920 | 34 | | |

| Spring 2006 Emergency Pond AMD Treatment Field Data | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Date | Location | Time | pH | Temp (°C) | EC (uS) | DO | ORP | Acidity (mg/L $Ca(OH)_2$) | Comments |
| 7/10/2006 | DIS (Active) | 10:54 | 8.3 | 14.9 | 8.6 | 2892 | 64 | | |
| 7/10/2006 | DIS (Active) | 11:52 | 8.1 | 16.3 | 8.55 | 2854 | 60 | | |
| 7/10/2006 | DIS (Active) | 13:02 | 8.3 | 17.6 | 8.66 | 2846 | 74 | | |
| 7/10/2006 | DIS (Active) | 13:53 | 8.0 | 18.7 | 7.85 | 2774 | 75 | | |
| 7/10/2006 | DIS (Active) | 14:54 | 8.8 | 19.1 | 7.65 | 2830 | 48 | | |
| 7/10/2006 | DIS (Active) | 15:53 | 8.5 | 21.2 | 7.12 | 2772 | 68 | | |
| 7/10/2006 | DIS (Active) | 16:50 | 8.3 | 21.6 | 7.44 | 2779 | 27 | | |
| 7/10/2006 | DIS (Active) | 17:51 | 8.3 | 20.8 | 7 | 2709 | 110 | | Discharge stopped |

## APPENDIX D

## Discharge Data and pH

## Discharge Data and pH

| | Sample Date | Sample Time | pH (water board data) | pH (TKT data) | Comment | Al | Q | As | Q | Cu | Q | Cd | Q | Co | Q | Cr | Q | Cu | Q | Fe | Q | Pb | Q | Mg | Q | Mn | Q | Ni | Q | Zn | Q | Se | Q | TDS | Q | Sulfate | Q |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Daily Max Discharge Criteria: | | | 6 - 9 SU | 6-9 SU | | 4.00 | | 0.34 | | n/a | | 0.009 | | n/a | | 0.97 | | 0.026 | | 2.0 | | 0.136 | | n/a | | n/a | | 0.84 | | 0.21 | | n/a | | n/a | | n/a | |
| Pond 3 | 4/13/2006 | 9:35 | 3.6 | | | 9.500 | | 0.00260 | | | | 0.00190 | | | | 0.01100 | | 0.15000 | | 2.400 | | | | | | | | 0.180 | | 0.0570 | | 0.00340 | | | | | |
| Pond 3 | 4/14/2006 | 14:45 | 4.2 | 4.80 | treatment began | 21.000 | | 0.00170 | | | | 0.00780 | | | | 0.01000 | | 0.37000 | | 1.800 | | | | | | | | 0.640 | | 0.1800 | | 0.01100 | | | | | |
| Pond 3 | 4/15/2006 | 16:30 | 5.9 | 6.30 | | 0.470 | | <0.0004 | U | | | 0.00430 | | | | 0.00017 | | 0.02200 | | <0.002 | U | | | | | | | 0.350 | | 0.0560 | | 0.00870 | | | | | |
| Pond 3 | 4/16/2006 | 9:15 | 7.6 | 8.77 | | 0.081 | | 0.00051 | | | | 0.00150 | | | | 0.00014 | | 0.00081 | | <0.002 | U | | | | | | | 0.170 | | <0.005 | U | 0.00810 | | | | | |
| Pond 3 | 4/18/2006 | 11:30 | 4.6 | | | 1.900 | | 0.00048 | | | | 0.00064 | | | | <0.0001 | U | 0.00150 | | 0.790 | | <0.0002 | U | | | | | 0.095 | | <0.005 | U | 0.00700 | | | | | |
| Pond 3 | 4/19/2006 | 13:45 | 8.9 | 8.89 | | 0.320 | | 0.00060 | | 0.15000 | | 0.00480 | | | | 0.00100 | | <0.0005 | U | <0.002 | U | | | 0.0570 | | 0.6200 | | 0.320 | | <0.005 | U | 0.00700 | | 880 | | 570 | |
| Pond 3 Dupliente | 4/19/2006 | 13:55 | 8.9 | | | 0.200 | | <0.0004 | U | 0.15000 | | 0.00059 | | | | 0.00023 | | 0.00130 | | <0.002 | U | | | 0.0540 | | 0.5600 | | 0.088 | | <0.005 | U | 0.00670 | | 850 | | 570 | |
| Pond 3 | 4/20/2006 | 13:45 | 5.0 | 6.40 | overflow stopped | 0.150 | | <0.0004 | U | | | 0.00310 | | | | 0.00016 | | 0.00570 | | <0.002 | U | <0.0002 | U | | | | | 0.210 | | 0.0280 | | 0.00610 | | | | | |
| Pond 3 | 4/21/2006 | 12:40 | 9.9 | 9.74 | | 0.180 | | 0.00040 | | | | 0.00012 | | | | 0.00016 | | 0.00050 | | <0.002 | U | | | | | | | 0.020 | | <0.005 | U | 0.00710 | | | | | |
| Pond 3 | 4/22/2006 | 10:15 | 8.2 | 8.06 | | 0.031 | | <0.0004 | U | | | 0.00063 | | | | <0.0001 | U | 0.00120 | | 0.034 | | | | | | | | 0.062 | | 0.0062 | | 0.00550 | | | | | |
| Pond 3 | 4/24/2006 | 15:15 | 7.8 | 7.57 | | 0.110 | | 0.00048 | | | | 0.00200 | | | | <0.0001 | U | 0.00130 | | 0.800 | | | | | | | | 0.250 | | 0.0064 | | 0.00280 | | | | | |
| Pond 3 | 4/25/2006 | | | | | 0.070 | | <0.0004 | U | | | 0.00076 | | | | <0.0001 | U | <0.0005 | U | 0.850 | | | | | | | | 0.110 | | <0.005 | U | 0.00200 | | | | | |
| Pond 3 | 4/27/2006 | 15:15 | 7.5 | | sample taken after discharge had stopped | 0.016 | | <0.0004 | U | | | 0.00120 | | | | <0.0001 | U | 0.00110 | | 1.400 | | | | | | | | 0.160 | | 0.0076 | | 0.00160 | | | | | |
| Pond 3 | 4/28/2006 | 12:40 | 9.0 | | sample taken after discharge had stopped | 0.120 | | 0.00053 | | | | 0.00015 | | | | <0.0001 | U | <0.0005 | U | 3.000 | | | | | | | | 0.046 | | <0.005 | U | 0.00180 | | | | | |
| Pond 3 | 4/29/2006 | 10:30 | 7.1 | 7.77 | | 0.610 | | 0.00054 | | | | <0.0001 | U | | | <0.0001 | U | 0.00053 | | 1.100 | | | | | | | | 0.021 | | <0.005 | U | 0.00120 | | | | | |
| Pond 3 | 4/30/2006 | 17:45 | 7.4 | 8.30 | | 0.330 | | 0.00094 | | 0.17 | | 0.00014 | | 0.011 | | <0.0002 | U | 0.00055 | | 1.600 | | <0.0002 | U | 0.0240 | | 0.4300 | | 0.054 | | <0.005 | U | 0.00150 | | 690 | | 470 | |
| Pond 3 | 5/1/2006 | 11:20 | 8.9 | 8.18 | | 0.900 | | 0.00089 | | | | <0.0001 | U | | | <0.0001 | U | 0.00056 | | 1.300 | | <0.0002 | U | | | | | 0.014 | | <0.005 | U | 0.00140 | | | | | |
| Pond 3 | 5/5/2006 | 11:00 | 7.7 | 6.61 | sample taken prior to discharge | <0.005 | U | 0.00041 | | | | 0.00035 | | | | <0.0002 | U | <0.0005 | U | 0.400 | | <0.0002 | U | | | | | 0.095 | | 0.0031 | | 0.00150 | | | | | |
| Pond 3 Duplicate | 5/5/2006 | 11:05 | 7.7 | | | 0.110 | | 0.00045 | | | | 0.00036 | | | | <0.0002 | U | <0.0005 | U | 0.330 | | <0.0002 | U | | | | | 0.095 | | 0.0068 | | 0.00140 | | | | | |
| Pond 3 | 5/8/2006 | 14:50 | 8.4 | 8.21 | | 0.180 | | 0.00059 | | | | 0.00018 | | | | <0.0001 | U | <0.0005 | U | <0.002 | U | | | | | | | 0.082 | | <0.005 | U | 0.00170 | | | | | |
| Pond 3 | 5/11/2006 | 12:15 | 8.2 | 8.30 | | 1.500 | | 0.00082 | | | | <0.0001 | U | | | <0.0001 | U | <0.0005 | U | <0.002 | U | | | | | | | 0.027 | | 0.0027 | | 0.00160 | | | | | |
| Pond 3 | 5/15/2006 | 14:40 | 8.5 | 8.57 | | 0.360 | | 0.00130 | | | | 0.00017 | | | | <0.0001 | U | <0.0005 | U | <0.002 | U | | | | | | | 0.078 | | <0.005 | U | 0.00170 | | | | | |
| Pond 3 | 5/18/2006 | 12:30 | 8.5 | 7.84 | | <0.020 | U | 0.00160 | | | | 0.00053 | | | | <0.0001 | U | 0.00096 | | 0.025 | | | | | | | | 0.160 | | 0.0038 | | 0.00220 | | | | | |
| Pond 3 | 5/22/2006 | 11:40 | 7.8 | 8.38 | | 0.120 | | 0.00085 | | | | 0.00015 | | | | 0.00018 | B | 0.00068 | | 0.015 | B | <0.0002 | U | | | | | 0.050 | | 0.0037 | | 0.00150 | | | | | |
| Pond 3 | 5/26/2006 | 13:00 | 8.4 | 8.26 | | 0.740 | | 0.00140 | | | | 0.00008 | B | | | 0.00013 | B | 0.00053 | | <0.002 | U | <0.0002 | U | | | | | 0.047 | | 0.0039 | | 0.00170 | | | | | |
| Pond 3 | 6/2/2006 | 11:10 | 8.7 | 8.60 | | 1.300 | | 0.00260 | | | | 0.00006 | B | | | 0.00021 | | 0.00140 | | <0.002 | U | 0.000077 | B | | | | | 0.043 | | 0.0031 | | 0.00220 | | | | | |
| Pond 3 | 6/12/2006 | 12:00 | 8.5 | 8.54 | | 0.520 | | 0.00210 | | | | 0.00007 | B | | | 0.00037 | | 0.00130 | | 0.028 | | 0.0012 | B | | | | | 0.039 | | 0.0040 | | 0.00210 | | | | | |
| Pond 3 | 7/3/2006 | 11:45 | 2.7 | | | 1.700 | | 0.00360 | B | | | 0.00014 | B | | | 0.00045 | B | 0.00066 | B | 0.007 | B | 0.0045 | | | | | | 0.054 | B | 0.0024 | B | 0.00450 | | | | | |
| Pond 3 | 7/10/2006 | 11:50 | 7.0 | 8.14 | | 0.093 | | 0.00490 | B | | | 0.00036 | B | | | 0.00026 | B | 0.00083 | B | 0.006 | B | <0.0002 | U | | | | | 0.081 | B | 0.0027 | B | 0.00270 | B | | | | |

All values reported in milligrams/liter, except pH.
All parameters reported as dissolved, except Selenium reported as total recoverable.
n/a - not applicable, no discharge criteria exists for this parameter.
Bold values exceede the the daily maximum discharge value
Rows highlighted in blue indicate discharge samples
Qualifiers:
U - Analyte not detected at the given Method Detection Limit.
B - Analyte detected between the Method Detection Limit and the Practical Quantitation Limit
* - Relative Percent Difference outside of control limits

## APPENDIX D

## Other Sampling Data and pH

## Other Sampling Data and pH

| | Sample Date | Sample Time | pH (water board data) | pH (TKT data) | Comment | Al | Q | As | Q | Ca | Q | Cd | Q | Co | Q | Cr | Q | Cu | Q | Fe | Q | Pb | Q | Mg | Q | Mn | Q | Ni | Q | Zn | Q | Se | Q | TDS | Q | Sulfate | Q |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Daily Max Discharge Criteria:** | | | **6 - 9 SU** | **6-9 SU** | | **4.00** | | **0.34** | | **n/a** | | **0.009** | | **n/a** | | **0.97** | | **0.026** | | **2.0** | | **0.136** | | **n/a** | | **n/a** | | **0.84** | | **0.21** | | **n/a** | | **n/a** | | **n/a** | |
| Pond 3 | 4/11/2006 | 10:25 | **3.8** | | | 2.200 | | 0.00120 | | 0.01200 | | 0.00039 | | 0.014 | | 0.00330 | | 0.02500 | | 1.000 | | | | 0.0012 | | 0.1200 | | 0.035 | | 0.0110 | | 0.00056 | | 81 | | 49 | |
| Pond 3 Duplicate | 4/11/2006 | 10:30 | **3.8** | | | 2.200 | | 0.00120 | | 0.01200 | | 0.00039 | | 0.014 | | 0.00310 | | 0.02500 | | 1.000 | | | | 0.0012 | | 0.1200 | | 0.033 | | 0.0110 | | | | 77 | | 50 | |
| Station 15 | 4/11/2006 | 9:50 | 6.7 | | | <0.02 | U | 0.00400 | | 0.04400 | | 0.00042 | | 0.03 | | 0.00031 | | 0.00460 | | **6.200** | | | | 0.0110 | | 1.2000 | | 0.073 | | 0.0320 | | 0.00150 | | 270 | | 150 | |
| FMB | 4/11/2006 | 11:15 | | | | <0.02 | U | <0.0004 | U | <0.0001 | U | <0.0001 | U | <0.0001 | U | <0.0002 | U | <0.0005 | U | <0.002 | U | | | <0.0001 | U | <0.010 | U | <0.0008 | U | <0.0005 | U | | | <10 | U | <0.5 | U |
| Pond 2 S | 4/11/2006 | 11:00 | **2.9** | | | 1.300 | | 0.00810 | | | | 0.00031 | | | | 0.00440 | | 0.01400 | | 2.000 | | | | | | | | 0.029 | | 0.0088 | | <0.0004 | U | | | | |
| Station 15 | 4/13/2006 | 11:15 | 6.6 | | | 0.034 | | 0.00320 | | | | 0.00035 | | | | 0.00011 | | 0.00550 | | **4.000** | | | | | | | | 0.070 | | 0.0250 | | <0.0004 | U | | | | |
| Pond 2 S | 4/13/2006 | 10:00 | **3.1** | | | 1.300 | | 0.00910 | | | | 0.00030 | | | | 0.00460 | | 0.01500 | | 1.900 | | | | | | | | 0.030 | | 0.0110 | | 0.00120 | | | | | |
| Station 15 | 4/14/2006 | 15:10 | 6.3 | | | 0.022 | | 0.00210 | | | | 0.00030 | | | | 0.00012 | | 0.00660 | | **2.100** | | | | | | | | 0.052 | | 0.0240 | | 0.00170 | | | | | |
| Station 15 | 4/15/2006 | 17:10 | 6.7 | | | 0.029 | | 0.00180 | | | | 0.00039 | | | | <0.0001 | U | 0.00640 | | 1.600 | | | | | | | | 0.053 | | 0.0170 | | 0.00200 | | | | | |
| Station 15 | 4/16/2006 | 9:40 | 6.8 | | | 0.032 | | 0.00330 | | | | 0.00027 | | | | <0.0001 | U | 0.00670 | | **2.700** | | | | | | | | 0.054 | | 0.0220 | | 0.00170 | | | | | |
| Station 15 | 4/18/2006 | 12:30 | 6.4 | | | 0.019 | | 0.00410 | | | | 0.00063 | | - | | 0.00063 | | 0.00500 | | **3.400** | | <0.0002 | U | | | | | 0.076 | | 0.0260 | | 0.00190 | | | | | |
| Station 15 | 4/19/2006 | 14:30 | 6.6 | | | 0.016 | | 0.00320 | | 0.04900 | | 0.00032 | | | | 0.00011 | | 0.00500 | | **2.700** | | | | 0.0140 | | 1.1000 | | 0.062 | | 0.0260 | | 0.00120 | | 290 | | 170 | |
| FMB | 4/19/2006 | 14:45 | | | | 0.005 | | <0.0004 | U | 0.00017 | | <0.0001 | U | | | <0.0001 | U | <0.0005 | U | <0.002 | U | | | <0.0001 | U | <0.0002 | U | <0.0008 | U | <0.005 | U | <0.0004 | U | <10 | U | <10 | U |
| Station 15 | 4/20/2006 | 14:45 | 6.3 | | | 0.019 | | 0.00250 | | | | 0.00033 | | | | <0.00010 | U | 0.00560 | | 1.400 | | <0.0002 | U | | | | | 0.053 | | 0.0190 | | 0.00160 | | | | | |
| Pond 1 | 4/28/2006 | 11:40 | **2.9** | | | **14.000** | | 0.02300 | | | | 0.00330 | | | | 0.02600 | | **0.11000** | | **21.000** | | | | | | | | 0.310 | | 0.0650 | | 0.00058 | | | | | |
| FMB | 4/30/2006 | 17:55 | | | | <0.005 | U | <0.0004 | U | <0.0001 | U | <0.0001 | U | <0.0001 | U | <0.0002 | U | <0.0005 | U | <0.002 | U | 0.0002 | | <0.0001 | U | <0.0002 | U | 0.025 | | <0.005 | U | <0.0004 | U | <10 | U | <0.5 | |
| Station 15 | 5/5/2006 | 10:25 | 7.1 | | | 0.650 | | 0.00660 | | | | 0.00012 | | | | 0.00070 | | 0.00680 | | **2.700** | | <0.0002 | U | | | | | 0.029 | | 0.0088 | | 0.00069 | | | | | |
| Pond 1 | 5/15/2006 | 13:45 | **2.6** | | | **310.000** | | **2.90000** | | | | **0.04100** | | | | 0.92000 | | **1.70000** | | **610.000** | | | | | | | | **4.500** | | **0.9100** | | 0.00350 | | | | | |
| Pond 1 | 5/18/2006 | 12:45 | **2.4** | | | **320.000** | | **3.10000** | | | | **0.04300** | | | | 0.96000 | | **1.90000** | | **640.000** | | | | | | | | **4.700** | | **0.9200** | | 0.00350 | | | | | |
| FMB | 5/22/2006 | 11:50 | | | | <0.005 | U | <0.0004 | U | | | <0.0001 | U | | | 0.00010 | B | <0.0005 | U | <0.002 | U | <0.0002 | U | | | | | <0.0008 | U | <0.002 | U | <0.0004 | U | | | | |
| Pond 1 | 6/2/2006 | 11:20 | **2.3** | | | **24.000** | | **5.00000** | | | | **0.06900** | | | | **1.40000** | | **4.80000** | | **910.000** | | 0.0066 | | | | | | **7.000** | | **1.2000** | | 0.00540 | | | | | |
| Pond 1 | 7/3/2006 | 11:35 | 8.2 | 8.25 | | **490.000** | | **11.00000** | | | | **0.08700** | | | | **1.70000** | | **4.10000** | | **1000.000** | | <0.0002 | U | | | | | **7.000** | | **1.5000** | | 0.00190 | B | | | | |

All values reported in milligrams/liter, except pH.
All parameters reported as dissolved, except Selenium reported as total recoverable.
n/a - not applicable, no discharge criteria exists for this parameter.
Bold values excede the the daily maximum discharge value
Rows highlighted in blue indicate discharge samples
Qualifiers:
U - Analyte not detected at the given Method Detection Limit.
B - Analyte detected between the Method Detection Limit and the Practical Quantitation Limit.
* - Relative Percent Difference outside of control limits