NIBLACK EXPLORATION PROJECT

2009 Annual Report

Prepared for

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ACRONYMS AND ABBREVIATIONS

ADEC	Alaska Department of Environmental Conservation
BMP	best management practice
CBG	CBR Gold Corporation
CBR	Committee Bay Resources Ltd.
gpm	gallons per minute
HTR	Heatherdale Resources Ltd.
LAD	land application/dispersion
NAG	non-acid-generating
NC Tool	Natural Conditions Tool
NOAA	National Oceanic and Atmospheric Administration
PAG	potentially acid-generating
Permit	State of Alaska's Waste Management Permit 2006-DB0037
QA/QC	quality assurance and quality control
QAPP	quality assurance project plan
ROS	regression on order statistics
SWPPP	stormwater pollution prevention plan
TDS	total dissolved solids
UPL	upper prediction limit
USEPA	U.S. Environmental Protection Agency

1 INTRODUCTION

This report is submitted in accordance with annual reporting requirements for the Niblack Exploration Project. The Niblack Exploration Project is a copper-zinc-gold-silver prospect located off Moira Sound on southeastern Prince of Wales Island, approximately 30 miles southwest of the town of Ketchikan (Figure 1-1). Underground development on the Niblack Exploration Project was initiated by Niblack Mining Corporation on September 21, 2007, and was completed on July 12, 2008. The initial phase of underground exploration (drilling) was completed on October 7, 2008 and the second phase of underground drilling was initiated on September 26, 2009. Niblack Mining Corporation was acquired as the principal asset of Abacus Alaska Inc. by Committee Bay Resources Ltd. (CBR) on October 1, 2008, which subsequently underwent a corporate name change to CBR Gold Corporation (CBG). In July 2009, Heatherdale Resources Ltd. (HTR) entered into a joint venture agreement with CBG to acquire up to a 70 percent ownership interest in the Niblack Exploration Project, and the two companies formed the operating entity Niblack Project LLC.

Following the completion of the initial phase of underground development and exploration, the property was placed into Temporary Closure status. Contractor demobilization was completed in early December 2008, and, following discussions with the State, Temporary Closure status was approved in February 2009. Subsequent to entering the joint venture agreement with HTR, CBG requested, and received, approval from the Alaska Department of Environmental Conservation (ADEC; Kleespies 2009, pers. comm.) to conduct a dewatering operation to remove water that had accumulated in the underground exploration drift while the project was in Temporary Closure. The dewatering was initiated on August 26, 2009 and completed on September 11, 2009. During this period, approximately 2.4 million gallons of water were removed from the underground exploration drift (Turner 2009, pers. comm). Additional water quality monitoring was conducted during and after mine dewatering. Water quality results from this monitoring are included in the Third Quarter 2009 Water Quality Monitoring Report (Integral 2009b).

The permits, plans, and approvals reported and referred to herein include the following:

- Alaska Department of Natural Resources Reclamation Plan Approval #J072711
- ADEC Waste Management Permit (2006-DB0037) (hereinafter Permit; ADEC 2007)
- Niblack Exploration Project Plans
  - Underground Exploration Plan of Operations (Niblack 2007)
  - Reclamation and Closure Plan (RTR 2007)
  - Storm Water Pollution Prevention Plan (SWPPP; RTR 2006)
  - Water Quality Baseline and Site Monitoring Plan (Knight Piésold 2007b)

- Quality Assurance Project Plan (QAPP; Integral 2007)
- Operational Characterization Plan (Knight Piésold 2007a).

2 SUMMARY OF ACTIVITIES

2.1 SURFACE DISTURBANCE

Surface disturbance is shown on the site-wide as-built maps (Figures 2-1 and 2-2) and includes the following:

- 5,000 ft of access road
- Ditches, culverts, and settling basins for storm water management
- Construction of laydown areas for equipment/supply storage, including a fuel storage facility, magazine sites (currently decommissioned), portal area, shop area (old camp), and a mineralized stockpile identified on the map as the Lookout Stockpile (tarped)
- Sediment ponds, wastewater treatment plant, and land application system
- Barge landing and dock facilities
- Temporary potentially acid-generating (PAG) waste rock storage site
- Non-acid-generating (NAG) waste rock dump site, access roads, NAG fines stockpile, berms, and run-on diversion ditches
- Topsoil and growth media stockpiles.

The total surface area cleared or disturbed at the project site is 14.8 acres. This total includes access roads and a historical land camp site constructed prior to 2007, which are not covered under the Niblack Underground Exploration Program permits. Photographs of site facilities are provided in Appendix A.

Underground development began in September 2007, continued through the early part of 2008, and was completed on July 12, 2008 (blasting of final round). As a result, the placement of NAG material at construction sites and on the NAG waste dumps was completed shortly thereafter, as was the loading of the temporary PAG waste rock storage facility, the construction of which was completed in spring 2008. The majority of the NAG material removed from the underground development was utilized in the construction of site facilities and thus the NAG waste dumps actually only contain material that was required to construct access roads. Some additional NAG material was placed on the lower NAG road in 2008 and was sorted through a 6-in. grizzly to create a small "fines" stockpile for road maintenance (Figure 2-1).

The temporary PAG waste rock storage site (see Figure 2-1) was constructed on a stable foundation of crushed rock overlain by a 6-in. layer of compacted sand, and lined with 80-mil high-density polyethylene (geo-membrane) between two layers of geotextile fabric. This was overlain by another 6-in. layer of compacted sand as a service layer. The PAG liner construction deviated slightly from the original specifications within Niblack's waste management permit application in that 6-in. layers of sand were used instead of the 12-in. layers originally specified.

However, no significant reduction in membrane integrity was anticipated and none was observed during the placement of the initial lift of PAG material on the liner (see Section 2.2 for quantities of materials).

Construction of the sediment ponds, and piping from the portal to the ponds, was complete prior to commencement of tunneling activity in 2007 (Figure 2-2). The water treatment plant and several of the land application/dispersion (LAD) zones were completed in early 2008. Land application of water from the settling ponds began in October 2007. The water treatment plant was tested for effectiveness in September 2009 and is ready to begin the treatment of mine wastewater should the need arise. To date, chemical water treatment has not been required.

As presented in Table 2-1 of the 2007 Annual Report (Integral 2008a) and Table 2-1 of the 2008 Annual Report (Integral 2009a), from December 2007 through early February 2008 the LAD system emitters froze and approximately 2 million gallons of water was discharged to the historical mine shaft. This was reported to ADEC, as required by the Niblack Exploration Project Waste Management Permit (Section 1.4.5; ADEC 2007). No water has been directed to the historical mine shaft since that time. Land application of wastewater recommenced in February 2008, once the drip emitters had thawed, and continued through 2009. Water balance data for the project is included in Table 2-1.

2.2 UNDERGROUND DEVELOPMENT

Underground construction and excavation commenced on September 21, 2007, and was completed on July 12, 2008, with only a temporary interruption of activities for the holidays between December 17, 2007, and January 6, 2008. The total underground development consists of 2,772 linear ft on the main access drift, 372 ft of short cross-cuts and utility bays, and 144 ft for two sumps, one near the portal and the other near the end of the drift (Figure 2-1). A total of 51,700 tons of waste rock (30,900 cubic yards expanded waste volume) was generated from underground development in 2008. The total volume excavated from 2007 through 2008 was approximately 66,150 tons (39,300 cubic yards).

Data from the Muck Segregation Plan (as described in the Niblack Project Operational Characterization Plan [Knight Piésold 2007a]) is included within a master acid base accounting geochemical database (Appendix B). The Niblack exploration drift totals 3,288 linear ft (main drift plus cross-cuts and sumps) and was constructed with a total of 286 blast rounds. Of this total, 43 rounds constituting 495 linear ft of drifting (approximately 9,960 tons or 5,920 cubic yards) were determined to consist of PAG materials, the majority of which (26 rounds for 299 linear ft) consists of sulphide mineralization within the Lookout Rhyolite, and related footwall alteration, at the end of the drift. The first four rounds excavated from the Lookout Rhyolite (48 linear ft of the drift representing approximately 965 tons or 574 cubic yards of material) consisted of well-mineralized rock and was set aside for future test work. This material was placed on a lined laydown area between the temporary PAG storage site and the old camp and

was covered with 80-mil geo-membrane (sealed) so as to prevent any introduction of surface water onto the pile. Regular checks are conducted around the perimeter of this pile to monitor for any potential leaks; none have been observed to date. The remainder of the PAG material (approximately 8,995 tons or 5,346 cubic yards of material) was placed on the temporary PAG storage site. NAG waste rock, dominated by mafic volcanic rocks and mafic dykes, totaled 2,793 linear ft of the total excavation and represents some 56,200 tons, or 33,400 cubic yards, of material. All NAG waste rock has been used in construction activities, including the laydown areas expansion, the NAG site access roads and berms, the base for the temporary PAG storage facility, and road maintenance.

2.2.1 Water Discharge

Groundwater flows from the underground excavation exceeded pre-project estimates and necessitated grouting to remain below the permitted wastewater discharge limit of 150 gallons per minute (gpm). To reduce flows, grout was applied along almost the entire length of the mine drift. The resulting grout curtain has been successful in eliminating significant water seepage into the drift. On August 13, 2008, approval was granted by the State for an increase in the permitted wastewater discharge limit to 250 gpm. An additional increase in the permitted wastewater discharge limit up to 300 gpm was approved by the State on December 31, 2009.

The exploration project went into Temporary Closure starting in October 2008. During this time, water was allowed to accumulate in the underground exploration drift. CBG requested, and received, approval from ADEC (Kleespies 2009, pers. comm.) to conduct a dewatering operation to remove water that had accumulated in the underground exploration drift while the project was in Temporary Closure. The dewatering was initiated on August 26, 2009 and completed on September 11, 2009. During this period, approximately 2.4 million gallons of water were removed from the underground exploration drift (Turner 2009, pers. comm). Additional water quality monitoring was conducted during and after mine dewatering. Water quality results from this monitoring are included in the Third Quarter 2009 Water Quality Monitoring Report (Integral 2009b). Following mine dewatering, several leaking split sets within the drift were sealed to reduce groundwater discharge into the drift.

In early 2010, site staff incorporated several measures to reduce the possibility of freezing conditions or over-saturation preventing proper functioning of the LAD system. System improvements included replacing the existing LAD system emitters, which discharged at a rate of 6 gpm, with higher-volume 12 gpm emitters in approximately 75 percent of the LAD zone areas. Regular alternation of LAD zones was initiated to allow extra time for discharge water and precipitation to percolate through system soils. Additionally, a daily process of system checks has been initiated to monitor LAD system function.

Upline of the LAD system, screen filters were installed to reduce clogging in the LAD emitters. Coil water heaters were also installed to prevent discharge water from freezing in the LAD lines. During the 2009/2010 winter, coil heaters were not used and no freezing was observed in

the LAD system lines or emitters. As discussed in Section 2.2.2, wintertime air temperatures were mild in the winter of 2009/2010 as compared to previous years.

2.2.2 Site Temperature and Precipitation

Figure 2-3 presents long-term (1949 – 2009) average temperature and precipitation data for Ketchikan, AK, from the Western Regional Climate Center (http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ak4590). Typical temperatures for the region range from 28.4 ^{0}F to 65.3 ^{0}F. Total precipitation averages 153 inches annually, and is generally greatest from September through February. Because of the mild temperatures, most precipitation falls as rain, with less than 40 inches of annual snowfall on average. Air temperature and precipitation measured from February 2008 through March 2010 at the Land Camp Weather Station located at the Niblack Project site[1] is presented on Figure 2-4 (upper plot). In 2009, precipitation totaled 140 inches at the Niblack site and average daily temperatures ranged from 17 ^{0}F to 76 ^{0}F. Figure 2-4 (lower plot) compares observed daily minimum temperatures to the 20-yr (1989 – 2009) average daily minimum for Ketchikan measured at the National Oceanic and Atmospheric Administration (NOAA) Ketchikan Airport station (http://pajk.arh.noaa.gov/cliMap/akClimate.php). From November 2009 through February 2010, the daily minimum temperature fell below freezing on 41 days, and 45 days were below the Ketchikan 20-yr average minimum. The winter of 2009/2010 was somewhat warmer than the previous winter. From November 2008 through February 2009, temperatures fell below freezing on 62 days and fell below the 20-yr average minimum on 59 days.

2.3 EXPLORATION DRILLING

2.3.1 Underground Exploration Drilling

A total of 18,161.5 ft of underground exploration drilling (25 drill holes) was completed during 2008. Six drill holes (4,423.5 ft) were completed from the Mammoth Drill Station (east cross-cut #1), located approximately 485 ft into the exploration drift, between January 12 and February 13, 2008. An additional 17 drill holes (11,461 ft) were completed from the East Drill Station (east cross-cut #5), located approximately 2,440 ft into the drift, between June 15 and September 15, 2008. Finally, two drill holes (2,277 ft) were completed from the West Drill Station (west cross-cut #2), located approximately 2,370 ft into the drift, between September 15 and October 7, 2008. These drill holes were plugged with "packers" (sections of pipe with ball valves), which proved effective at reducing discharge from the drill holes.

[1] Onsite weather station was not available from 9/18/2009 to 2/27/2009 due to instrument malfunction. Daily temperature and precipitation data for the Ketchikan Airport NOAA weather station are shown for this time period.

In 2009, underground exploration drilling was conducted between September 26 and December 23. Eight drill holes (8609.5 ft) were completed during this period: seven from drill station one (DS-1) and one from drill station two (DS-2), which are located 250 ft and 430 ft north of Remuck Station #4 in the exploration drift. These drill holes were plugged with "packers" to prevent discharge from the drill holes but will be sealed with grout in 2010. Also in 2009, several leaky split sets were sealed at the East Drill Station resulting in a reduction of water discharge.

2.3.2 Surface Drilling

No surface exploration drilling was performed in 2009.

2.4 RECLAMATION

Reclamation in 2009 included both construction reclamation and interim reclamation (as described the Niblack Project Reclamation and Closure Plan [RTR 2007]).

2.4.1 Construction Reclamation

Construction reclamation activities are those activities that occur during and directly after the exploration tunnel and associated facilities are constructed. This phase of reclamation involves the removal and storage of topsoil and growth media from disturbed areas. During construction, vegetation was cleared from the surfaces that were developed, primarily from the PAG and water treatment facility. Topsoil and soil-like growth media were removed where possible and stockpiled for reclamation. Stockpiles are located along the outer edge of access roads and laydown areas (Figure 2-2). Following the construction of the majority of the site facilities and access roads in 2007, there have been only minor construction reclamation activities. This was limited to the completion of the NAG site, which consisted of the felling of trees and construction of access roads, run-on diversion ditches, and berms. Concurrent reclamation of the lower NAG haul road included placement of topsoil along the lower side of the road and berm.

2.4.2 Interim Reclamation

Interim reclamation is defined as temporary measures for reducing the potential for erosion and sedimentation, and other activities required to protect surface water and groundwater resources. Interim reclamation has been undertaken to stabilize road cuts, stockpiles, and other disturbances resulting from construction activities. Interim reclamation measures completed in 2009 included seeding over road cuts, installing and maintaining sedimentation control systems, and employing other best management practices (BMPs) commonly used for construction and exploration projects.

2.5 WORK PLANNED FOR 2010

Worked planned for 2010 is consistent with that presented in the Niblack Underground Exploration Project Plan of Operations (Niblack 2007). There are no changes anticipated to the Plan of Operations. A 25,000-ft underground diamond drill program was initiated in 2009 and it will continue into 2010. Two diamond drill rigs will be utilized and the intent of the program is to expand and delineate the existing resources, as well as to find new resources in the Lookout Zone area. Underground work has proceeded from drill stations located at approximately 200-ft intervals along exploration drift. Holes have been drilled in fan patterns designed to cross-cut the mineralization along the apparent strike of the zone.

3 WATER QUALITY REPORTING

This section presents the results of water quality monitoring conducted in 2009 at the Niblack Exploration Project in accordance with the requirements of the Permit (ADEC 2007). The objectives of this water quality monitoring summary are to provide ADEC with the following:

- A summary of sampling and analysis activities conducted during 2009, including any visual observations of anomalous conditions or any other conditions considered relevant to interpretation of water quality monitoring data
- A summary of data quality reviews completed in accordance with the QAPP (Integral 2007)
- Tabulated results of laboratory analyses and field parameter measurements from the surface water and groundwater quality monitoring sites included in the Permit
- Graphical, time-series presentation of water quality monitoring results for constituents required under the Permit, to facilitate trend detection
- Statistical comparison of surface water and groundwater results
- A discussion of any naturally elevated concentrations or exceedances of applicable water quality criteria
- Water quality monitoring work planned for 2010.

3.1 CHANGES TO THE WATER QUALITY MONITORING PROGRAM

Sampling and analysis of groundwater and surface water in 2009 were performed as required by the Permit, with the parameter list, monitoring frequency, and monitoring location changes as approved by Kenwyn George of ADEC (George 2008, pers. comm.). The changes were implemented beginning in the third quarter of 2008 and are described in detail in the 2008 Annual Report (Integral 2009a).

3.1.1 Groundwater and Surface Water Sampling and Analysis

Seven sampling events were conducted during 2009 (Table 3-1) at the water quality monitoring sites indicated on Figure 3-1. Samples were collected by field personnel from TECS-AK. Regular quarterly monitoring was conducted in March (Q1), May (Q2), July (Q3), and October (Q4) at surface water stations WQ4, WQ6, WQ10, and WQ13, groundwater stations MW1, MW2, MW3, MW4, and settling pond station EFF1. Water quality associated with mine dewatering was monitored on September 5, 2009 shortly after the start of dewatering at surface water stations WQ4, WQ6, and WQ10, and following cessation of dewatering on September 12–13, 2009, at surface water stations WQ4, WQ6, and WQ10 and groundwater stations MW2, MW3, and MW4. Settling pond station EFF1 was monitored daily for field parameters from

September 4 to 11, 2009 during dewatering of the mine drift following Temporary Closure. During these sampling events, samples were collected at the water quality monitoring sites defined in the Permit and the project QAPP (Integral 2007), as summarized in Table 3-2, with the exception of collection of surface water at the PAG site under the drain, which will be monitored only if a breach in the PAG pile liner should occur (see Note A1, Table 3-2). Table 3-2 summarizes the sample stations and designated purpose (reference, compliance, and information-only) of each station as specified in the water quality monitoring permit; the monitoring stations that were removed from the sampling network beginning in Q3 2008 are marked with a footnote. Table 3-3 presents the analyte monitoring list and sample collection methods. Table 3-4 includes the original complete monitoring list as well as the reduced list of water quality parameters implemented beginning in Q3 2008, and lists the analysis method used for each parameter. Table 3-5 details the monitoring schedule and analyte list for surface water and groundwater stations sampled in 2009.

Field quality assurance and quality control (QA/QC) samples were collected during each 2009 sampling event, as summarized in Table 3-1. For each sampling event, the QA/QC samples included a field duplicate for the surface water stations and a field duplicate for the groundwater stations, and field blanks for all analytes including total and dissolved trace elements. The water quality and field QA/QC samples for each 2009 sampling event were analyzed for the parameters identified in the permit (ADEC 2007) and project QAPP (Integral 2007) identified in Tables 3-4 and 3-5.

3.1.2 Visual Inspections

Visual inspections of the site for stress to vegetation and channelization in wastewater application areas were conducted at a minimum frequency of weekly as required in Section 1.6.11 of the Permit. No stress to vegetation and no channelization were observed in the land application area. Visual inspections of the site were conducted at a minimum frequency of every 15 days as prescribed by Section 6 of the SWPPP (RTR 2006). From these inspections it is noted that only minor erosion was observed on site in 2009. Ditches and settling ponds were cleared during annual maintenance to facilitate proper function. Visual site inspection forms are provided in Appendix D.

3.2 DATA QUALITY EVALUATION

As specified in the Niblack Exploration Project QAPP (Integral 2007), a quality assurance review of the laboratory data from chemical analyses of surface water and groundwater samples was conducted for all water quality sampling events conducted in 2009. The data were validated according to the data validation procedures in the U.S. Environmental Protection Agency (USEPA) guidance for data review (USEPA 2002). Data that did not meet the applicable laboratory or data validation quality control limits were qualified as undetected (assigned a *U* qualifier), estimated (assigned a *J* qualifier), or rejected (assigned an *R* qualifier) during the

quality assurance review. The tabulated analytical summary data discussed in the next section also present the data validation qualifiers assigned to the project data.

As specified in the QAPP (Integral 2007), a readiness review was conducted on the entire set of water quality data collected in 2009. This review assures that all data underwent complete quality assurance review and validation and that all qualifiers assigned during validation were entered into the database and verified.

The quality assurance review included assessment of the field blank results, as well as evaluation of natural samples, for each sampling event. Field blanks are collected for each sampling event for all parameters including total and dissolved trace elements. As indicated in the 2007 and 2008 annual reports (Integral 2008a, 2009a) and the Q1 2008 quarterly report (Integral 2008b), zinc was detected in all field blanks collected from July 2007 through March 2008 at concentrations ranging from 0.64 to 51.9 µg/L. Zinc concentrations were systematically higher in the dissolved fraction than in the total fraction in the field blanks collected over this period. In addition, a systematic positive bias was observed in the dissolved versus total results for natural samples of surface water collected from July through December 2007 (65 percent), as well as for Q1 2008 (67 percent). Based on these results, surface water sample collection procedures were modified beginning in Q2 2008 to follow the groundwater protocols (i.e., use of a peristaltic pump and in-line cartridge filters for dissolved samples) in an effort to reduce or eliminate the potential for introducing zinc contamination to dissolved surface water during filtration. For field blank samples collected since Q2 2008, zinc concentrations ranged from 0.3 to 4.75 µg/L. No systematic positive bias was observed in the dissolved versus total field blanks sampled since Q2 2008. The improvements in the field blank results since sampling protocols were adjusted in Q2 2008 suggest that the changes in the surface water sampling protocols reduced zinc contamination during filtration, and thus will continue to be used for both surface water and groundwater sampling. The field blank data will be monitored quarterly to determine if the pattern of higher dissolved concentrations noted in recent sampling continues.

Table 3-6 presents the site-specific qualification scheme developed for zinc samples collected since Q1 2008. In Q3 2009 the qualifiers for zinc samples collected in Q1 and Q2 2009 were re-evaluated based on the full set of blank data collected since sample collection methods were changed in Q2 2008. Of the 44 total and dissolved zinc samples collected at permit stations from Q1 and Q2 2009, this adjustment lead to the requalification of nine samples. Of these nine samples, five qualifiers were adjusted from *U*-qualification to *J*-qualification, and four qualifiers were revised from no qualifier to *J*-qualification. Revised qualifiers are included in the water quality results tables in Appendix C (Tables C-1 through C-6). For all zinc samples collected since Q1 2009, qualifiers were assigned based on the 95th percentile of the distribution of the field blank concentrations across all sampling events from April 2008 through the sample event of interest. This results in unique zinc qualification action levels for each individual sampling event. For each sample event, results less than or equal to two times the 95th percentile values were qualified as undetected (assigned a *U* qualifier) and results greater than two times the

95th percentile but less than five times the 95th percentile distribution were qualified as estimated (assigned a *J* qualifier). Results greater than five times the 95th percentile distribution were not qualified.

After additional sampling results become available, the zinc qualification scheme may be revised to reflect the reductions in field blank zinc contamination that have been observed since the revised sampling protocols were implemented in Q2 2008. Any such changes will be documented in the quarterly and annual reports.

3.3 SAMPLING RESULT SUMMARY

Tabulated surface water quality monitoring results for data collected through 2009 are provided in Table C-1 in Appendix C. Table C-1 includes results for all surface water stations identified in the Permit for the reduced list of monitoring parameters approved by ADEC (George 2008, pers. comm.) and identified in Table 3-4. Surface water replicate results and relative percent differences are presented in Table C-2. Surface water method detection limits are provided in Table C-3.

A corresponding set of tables for settling pond station EFF1 and groundwater monitoring locations specified under the Permit are also provided in Appendix C (Tables C-4 through C-6).

As required by the Permit, the measured value of total dissolved solids (TDS) was compared to a calculated TDS value ("$TDS_{calc.}$") as a technique to check the correctness of analyses. $TDS_{calc.}$ was calculated using the following equation, which was adapted from the methods outlined in Standard Method 1030E from the 20th edition of the Standard Methods for the Examination of Water and Wastewater (AWWA 1998).[2]

$$TDS_{calc.} = 0.6 \times (ALK\ as\ CaCO_3) + Na^+ + K^+ + Ca^{2+} + Mg^{2+} + Cl^- + SO_4^{2-} + SiO_3^{2-} + NO_3^- + F^- + FeOOH + Al(OH)_3$$

For comparison, the calculated and measured TDS values are presented in Appendix C in Table C-1 for surface water and Table C-4 for groundwater. The measured TDS concentration is

[2] To calculate $TDS_{calc.}$, nondetect values were set equal to one-half the detection limit. Whenever available, the dissolved concentration fraction was used in the calculation. The formula was modified from Standard Method 1030E to include the contributions of iron and aluminum, which occur at appreciable concentrations in many water quality samples from the site, to TDS_{calc}. SiO_3^{2-} was calculated from the measured value of elemental silicon (Si) using the conversion factor 2.709, FeOOH was calculated from the measured value of elemental iron (Fe) using the conversion factor 1.59, and $Al(OH)_3$ was calculated from the measured value of elemental aluminum (Al) using the conversion factor 2.89. Also, in many cases, NO_3^- was not analyzed individually, but rather as a sum of the nitrate and nitrite. When only this sum was available, the total nitrate plus nitrate value (as NO_3^-) was used in the TDS calculation. This may provide a slight overestimate in the contribution of nitrate to the calculated TDS value; however, a brief analysis of sample pairs where nitrate and nitrite were analyzed individually showed that, on average, nitrate made up 87 percent of the total summed value.

generally expected to be greater than the calculated TDS value because the measured TDS should capture all dissolved analytes, whereas the calculated value includes only those ions indicated in the sum. According to Standard Method 1030E, an acceptable ratio of measured TDS to calculated TDS is:

$$1.0 > \frac{measured\,TDS}{calculated\,TDS} < 1.2$$

In 2009, the majority of the calculated ratios (21 out of 27 [78 percent] for surface water and 22 out of 28 [79 percent] for groundwater samples) fell outside this range. This finding is attributed to the generally low measured TDS of surface water and groundwater at the Niblack Exploration Project and the possibility that additional ions may be present in the water that are not accounted for in the calculation.

3.4 WATER QUALITY COMPLIANCE EVALUATION

ADEC has determined that water quality parameters at the Niblack Exploration Project shall be monitored at locations and frequencies listed in Table B of the Permit for groundwater and Table C of the Permit for surface streams (ADEC 2007). Furthermore, Section 1.13.2 of the Permit requires that site-specific, natural-conditions-based water quality criteria shall be established for a subset of water quality parameters—pH, aluminum (total recoverable), cadmium (dissolved), copper (dissolved), lead (dissolved), nickel (dissolved), silver (dissolved), and zinc (dissolved)—listed in Table E of the Permit.

The compliance evaluation presented in this section includes the following elements:

1. A screening evaluation of compliance samples collected after the initiation of underground exploration against ADEC water quality criteria to identify a subset of trace elements to be evaluated further using visual trend analysis and statistical comparisons.
2. Visual trend analysis using time series graphical plots.
3. Statistical comparisons using the following approaches:
    a. ADEC Natural Conditions method
    b. Alternate population testing methods described in the Niblack QAPP
    c. An upper threshold value screening method using an upper prediction limit (UPL) statistic.
4. An overall assessment of compliance with natural-conditions water quality criteria based on the weight of evidence provided by the tools listed above.

As agreed to by Niblack (now CBG and HTR) and ADEC on August 13, 2008, the ADEC Concurrent Measurement method is no longer being used as a statistical tool to evaluate

compliance with surface water quality standards. The concurrent monitoring approach was excluded because, for some parameters and in some monitoring events, upstream water quality values were higher than the downstream values, making the statistical methods used in concurrent monitoring inapplicable.

3.4.1 Screening against Alaska Department of Environmental Conservation Criteria

To identify a subset of these trace elements that will be evaluated further in this annual monitoring report using statistical comparisons and visual trend analysis, the surface water and groundwater data collected from 2006 to 2009 were screened against ADEC chronic aquatic life criteria (ADEC 2008) for trace elements included in Tables B, C, and E of the Permit.[3] Table 3-7 presents a summary of the screening results for all surface water and groundwater data collected from 2006 to 2009.

In 2009, concentrations of Permit-regulated trace elements at surface water compliance locations were below ADEC screening criteria for all constituents except total aluminum and dissolved copper. As shown in Table 3-8, total aluminum exceeded the ADEC chronic criterion of 87 µg/L (total recoverable) in the July 2009 sampling event at surface water compliance stations WQ4, WQ6, WQ10, and WQ13. In 2009, dissolved copper concentrations exceeded the hardness-based ADEC chronic criteria in multiple sampling events at surface water compliance stations WQ4, WQ6, WQ10, and WQ13, in contrast to the one exceedance for copper observed in earlier compliance samples. Pre-activity (prior to September 21, 2007) reference samples at all stations (WQ4, WQ6, WQ7, WQ8, WQ10, WQ12, and WQ13) and post-activity initiation (after September 21, 2007) reference samples collected upstream of site operations (WQ7, WQ8, and WQ12) also exhibited multiple exceedances of the total aluminum and dissolved copper chronic criteria (Table 3-8). Since site activity began in September 2007, land application of wastewater has occurred upgradient of WQ4, WQ6, and WQ10. No land application of wastewater has occurred upgradient of Unnamed Creek #2 and the WQ13 monitoring station.

Historical surface water quality samples collected prior to 2006 are shown on Table 3-8 for comparison purposes. These samples were collected prior to initiation of exploration activity at the site. Individual, naturally elevated concentrations of dissolved cadmium, lead, mercury, and zinc were observed in these pre-exploration samples, which exceeded the chronic aquatic life screening criteria.

Concentrations of Permit-regulated trace elements in groundwater compliance samples collected after the initiation of underground exploration in September 2007 were below ADEC

[3] There is no ADEC screening criterion for silver. Also, per discussion with ADEC Water Quality Officer James Gendron, dissolved mercury was screened against the human health criterion for consumption of aquatic organisms (0.051 µg/L).

screening criteria levels for all constituents except total aluminum, dissolved copper, dissolved lead, dissolved mercury, and dissolved zinc. Locations and dates of these exceedances are presented in Table 3-9. In 2009, the exceedance patterns for groundwater samples were similar to those observed following the initiation of exploration activity at the site (September 2007 through December 2008) for total aluminum, dissolved copper, and dissolved lead; there were no exceedances of the screening criterion for mercury in 2009. The two dissolved zinc criteria exceedances measured at well MW4 in March and May 2009 were the only zinc compliance station exceedances observed since site activity began in September 2007. As with surface water, multiple naturally elevated concentrations of total aluminum, dissolved cadmium, dissolved copper, dissolved lead, and dissolved zinc were observed in pre-activity reference samples. Since site activity began, land application of wastewater has occurred upgradient of MW2, MW3, and MW4. No land application of wastewater has occurred upgradient of the MW1 area.

3.4.2 Time Series Analysis and Trend Detection

Time series concentration plots (Figures 3-2 through 3-12) were prepared for the 10 trace elements—aluminum, arsenic, cadmium, copper, lead, mercury, nickel, selenium, silver, and zinc—that are identified for monitoring in surface water and groundwater in Tables B, C, and E of the Permit. These plots present all reference and compliance samples collected from February 2006 to October 2009, with values below detection limits shown as hollow symbols. A vertical gray line on each plot indicates the initiation of project activities on September 21, 2007.

For surface water trend analysis, upstream reference/downstream compliance station pairs are plotted together. While these pairs represent the best available sampling locations to evaluate potential project influences, systematic biases related to surface and groundwater inflows between station pairs may influence trend analysis and direct comparison of upstream and downstream stations. In particular, physical differences are known to exist between upstream and downstream stations on both Unnamed Creek #1 and Waterfall Creek. On Unnamed Creek #1, upstream station WQ12 exhibits lower flows than downstream station WQ10. Similarly, upstream station WQ8 on Waterfall Creek generally exhibits lower flows than downstream station WQ4, and known small tributaries enter Waterfall Creek between these two stations. No known inflows exist on Camp Creek between upstream station WQ7 and downstream station WQ6, and fairly consistent flows have been observed between these two stations.

For the five trace elements (aluminum, copper, lead, mercury, and zinc) that exceeded ADEC screening criteria in surface water or groundwater compliance samples collected since site activity began in September 2007, visual analysis of time series plots provides important insights to the magnitude, patterns, and trends observed both before and after project initiation, and provides context to the results of statistical comparison tests. For total aluminum in surface water (Figure 3-2), concentrations at station WQ4 were elevated compared to upstream measurements at WQ8 in December 2006 and October through February 2008. However, dissolved aluminum concentrations at station WQ4 have remained low through the entire

monitoring period. These relatively high total aluminum measurements at WQ4 are likely associated with natural variability and the capture of solids in the unfiltered water sample and are not expected to be indicative of contamination issues. In July 2009, concentrations of both total and dissolved aluminum were somewhat high relative to previous measurements at all four downstream surface water compliance stations (WQ4, WQ6, WQ10, WQ13). Concentrations decreased to typical low levels in the September and October 2009 sampling events. Other than the few exceptions discussed above, total and dissolved aluminum concentrations at compliance stations WQ6, WQ10, and WQ13 closely track upstream reference station trends and fall well within pre-activity concentration ranges. Similarly, total and dissolved aluminum in groundwater compliance samples at MW3 and MW4 (Figure 3-3) fall well within pre-activity concentration ranges. Total aluminum concentrations at compliance wells MW1 and MW2 also fall with pre-activity concentration ranges during all sampling events in 2008.

Dissolved copper concentrations at surface water compliance stations WQ4, WQ6, and WQ10 (Figure 3-6) closely track their respective upstream reference station trends and generally fall well within pre-activity concentration ranges. As observed for aluminum, dissolved copper concentrations were somewhat high relative to previous measurements at all four downstream surface water compliance stations (WQ4, WQ6, WQ10, WQ13) in July 2009, but decreased to well within pre-activity concentration ranges in the September and October 2009 sampling events. At groundwater station MW4 (Figure 3-6), dissolved copper concentrations gradually increased prior to project initiation, but stabilized at concentrations within or below pre-activity concentration ranges in 2008 and 2009 sampling events. A possible seasonal pattern may be evident in the groundwater monitoring data, with dissolved copper concentration peaks observed in summer or early autumn in 2007, 2008, and 2009 at all four groundwater compliance stations.

Dissolved lead was rarely detected in surface water compliance stations (Figure 3-7). Review of the time series plots indicates that dissolved lead generally is not present in surface water in elevated concentrations either pre- or post-initiation of the project. In groundwater, dissolved lead (Figure 3-7) concentrations follow similar patterns as observed for dissolved copper. A possible seasonal pattern for groundwater dissolved lead may be evident, with concentration peaks observed in summer or early autumn in 2007, 2008, and 2009 at all four groundwater compliance stations.

Mercury was not seen above laboratory detection limits in surface water or groundwater in 2008 or 2009 (Figure 3-8), and has been detected only once in surface water and once in groundwater (both in 2007). Trend analysis is not possible on this limited data set; however, it is clear that mercury generally is not present at elevated concentrations either pre- or post-initiation of the project.

Dissolved zinc was rarely detected (detection frequency: 13 percent) in surface water samples (Figure 3-12). No clear spatial or temporal patterns are evident in the available surface water

data; however, it is clear that dissolved zinc generally is not present in surface water in elevated concentrations either pre- or post-initiation of the project. In groundwater, dissolved zinc (Figure 3-12) concentrations were below detection limits in all samples collected in 2008 and 2009 at wells MW1, MW2, and MW3. In MW4 samples, detected concentrations of dissolved zinc that were higher than the maximum pre-activity concentration (10.7 µg/L) were observed in six sampling events from October 2007 through July 2009, with concentrations ranging from 12.6 µg/L to 22.7 µg/L. No consistent patterns of elevated zinc concentrations are evident in the MW4 data, however, and the September and October 2009 sample concentrations were below detection. These occasionally high dissolved zinc concentrations at MW4 may be associated with natural variability.

In summary, most trace elements included in Permit Tables B, C, and E were found to be below ADEC screening criteria in all compliance samples collected since site activity began in September 2007. Elements that did not exceed screening criteria include dissolved arsenic, cadmium, nickel, selenium, and silver. Five trace elements—total aluminum and dissolved copper, lead, mercury, and zinc—did exceed ADEC screening criteria in surface water or groundwater compliance samples at least once since site activity began in September 2007. For these five elements, concentrations in compliance samples generally fall within pre-activity concentration ranges and do not suggest project impacts during the period of underground exploration activity from September 2007 through October 2009.

Certain trace elements (dissolved aluminum, copper, and lead) were observed in relatively high concentrations at surface water stations WQ4, WQ6, WQ10, and WQ13 in July 2009 during the temporary mine closure period (October 2008 through mid-September 2009). Samples collected at these stations during Q4 2009 and Q1 2010 show that concentrations have returned to the range of values observed prior to temporary mine closure. The July 2009 observations may be related to the higher-than-normal concentrations of some trace elements evident in mine water discharge during the temporary closure period, as observed at the settling pond information-only station EFF1 from March through July 2009 (Figures 3-3 through 3-12).[4]

3.4.3 Statistical Comparisons

This section presents a discussion of statistical comparisons performed on surface water and groundwater sampling results that exceeded promulgated ADEC screening criteria as discussed above. Table 3-10 provides an overview of the specific statistical tests to be performed on each relevant surface water data set, and Table 3-11 provides the same information for groundwater. For surface water, total aluminum and dissolved copper samples were tested for statistically significant differences from the reference data set. For groundwater, total aluminum, dissolved

[4] Settling pond trace element concentrations decreased sharply in October 2009, following mine dewatering, plugging of seeps leaking within the drift, and resumption of drilling. This indicates that the action of plugging small mineralized seeps in the drift paired with increased volume of cleaner waters from recently opened drill holes has effectively reduced trace element concentrations in mine discharge waters.

copper, dissolved lead, and dissolved zinc were tested. Due to the low (less than five samples detected) detection frequency of dissolved mercury in groundwater, this parameter was not analyzed through statistical tests. Finally, there is no ADEC screening criteria for dissolved aluminum; however, dissolved aluminum was statistically tested for both surface water and groundwater to aid in interpretation of total aluminum test results.

3.4.3.1 ADEC Natural Conditions Approach

The ADEC natural conditions approach (also referred to as the statistical characterization approach in ADEC guidance) determines natural-conditions-based standards based on statistical characterization of the distribution of historical (pre-activity) data at the site and current (post-initiation) reference station concentrations. The natural conditions approach produces a site-specific standard that is variable in time as more reference sampling results become available. With the natural conditions approach, compliance data are screened against these calculated site-specific standards external to the Natural Conditions Tool (NC Tool). The ADEC Natural Conditions Tool Microsoft Excel spreadsheet (Natural_Condition_Tool_V1.xls) was used in the analyses presented here.

The NC Tool passes reference data through a series of automated data processing and evaluation steps:

- Data screening for minimum data requirements and seasonality
- Data trimming to remove nondetect values and an equal number of high detected concentrations
- Additional data trimming (up to 25 percent of the data) from the upper and lower tails of the data set until the data (with appropriate transformations) passes a normality test
- Distribution testing of the trimmed data set to determine appropriate central tendency tests
- Calculation of natural condition-based site criteria.

The NC Tool uses a lower-bound measure of central tendency to identify a site-specific chronic aquatic life criterion. This measure varies depending on the characteristics of the data set. The 95 percent lower confidence limit on the mean using the Student's *t*-distribution is used for parametric data sets with a sample size greater than or equal to 50; the 95 percent lower confidence limit on the median is used for nonparametric data sets and/or those with a sample size less than 50. In cases where the natural-conditions-based standard is less than the published water quality criteria, the published criteria apply and are used for evaluation of permit compliance.

Application of the NC Tool

Data and data processing: The surface water reference data sets evaluated with the NC Tool included total and dissolved aluminum and dissolved copper for all pre-activity (April 20, 2005

to September 11, 2007) surface water samples collected at stations WQ4, WQ6, WQ7, WQ8, WQ10, WQ12, and WQ13, and all post-initiation samples (October 1, 2007 to July 24, 2008) collected at upstream stations WQ7, WQ8, and WQ12. Groundwater reference data sets for total and dissolved aluminum, dissolved copper, dissolved lead, and dissolved zinc included all pre-activity (February 27 to September 11, 2007) groundwater samples collected at stations MW1, MW2, MW3, MW4, and MW7, and all post-initiation samples (September 30, 2007 to July 25, 2008) collected at the designated reference well MW7.

Seasonality: The NC Tool default season definitions were applied to the reference data sets, with summer defined as April to September and winter as October to March.

Treatment of outliers: The NC Tool default data trimming operations were applied to eliminate outliers and skewing data values.

Treatment of nondetect values: No nondetect data values existed in the surface water reference data sets for total or dissolved aluminum. For groundwater reference data only one nondetect value was found in each the total and dissolved aluminum groundwater data sets. These values were included at the full detection limit and flagged as required by the NC Tool. Due to minimum data requirements of the NC Tool, high nondetect values were removed from the surface water dissolved copper, groundwater dissolved copper, groundwater dissolved lead, and groundwater dissolved zinc reference data sets, as described in detail below.

Spreadsheet modifications: Because the data collected for the Niblack Exploration Project do not meet all minimum sample requirements embedded in the NC Tool, the following modifications were made:

- Period of record: To meet this minimum two-year sample requirement, surface water data collected during the April 20, 2005 sampling event were included in the surface water reference data set. Groundwater data are currently available for only one year; therefore, data sample dates were modified to adjust one winter and one summer sample from each groundwater analyte reference data set from February 2007 or April 2007 to February 2005 or April 2005, respectively.
- Detection frequency: The NC Tool requires that only up to 20 percent of observations in reference data sets may be nondetect values. In addition, the tool trims all detected data values that are below the highest detection limit. Because of these requirements, the surface water dissolved copper, and the groundwater dissolved copper, dissolved lead, and dissolved zinc reference data sets failed the minimum data requirements and could not be processed by the NC Tool. Nondetect values in these two data sets were therefore pre-processed to remove high nondetect values prior to data import into the NC Tool. High nondetect values were defined as any nondetect value that was higher than the lowest detected value in the reference data set. Following removal of high nondetect values, remaining nondetects were included in the NC Tool analysis at the full detection limit and flagged as required by the NC Tool.

- Default criteria: The ADEC NC Tool requires entry of a single published chronic aquatic life criterion value for each analyte. Generally, the ADEC chronic aquatic life criterion was applied here. In cases where this criterion is calculated based on hardness (e.g., dissolved copper, lead, or zinc), the criterion varies between sampling events. The published criterion has no effect on the natural conditions standard calculation; therefore, a simple average of the calculated hardness-based criteria was entered for each analyte, and the natural conditions criterion was not directly compared to the published criterion.

NC Tool Screening Results

Results of surface water sample concentration screening against site-specific criteria calculated with the NC Tool for total aluminum, dissolved aluminum, and dissolved copper are presented in Table 3-12. Groundwater screening results using the natural conditions approach for total aluminum, dissolved aluminum, dissolved copper, dissolved lead, and dissolved zinc are presented in Table 3-13. Both reference (pre-activity, prior to September 21, 2007) and compliance (ongoing site activity, after September 21, 2007) data were screened against the NC Tool criteria. For surface water, the site-specific criteria calculated for total and dissolved aluminum were 55.4 µg/L and 42.5 µg/L, respectively. These values are below the ADEC chronic aquatic life criterion of 87 µg/L for total recoverable aluminum; therefore, the lower NC Tool site-specific criteria do not apply to total or dissolved aluminum and were not used in screening. Screening against the NC Tool site-specific dissolved copper criterion of 0.84 µg/L yielded multiple exceedances both before and after initiation of underground exploration activity at both reference (upstream) and compliance (downstream) stations.

Similarly, groundwater exceedances of site-specific criteria for total aluminum (548 µg/L), dissolved aluminum (217 µg/L), dissolved copper (1.65 µg/L), dissolved lead (0.314 µg/L), and dissolved zinc (4.93 µg/L) were observed both before and after project initiation and at both reference and compliance wells.

A primary limitation of ADEC's NC Tool for determining site-specific water quality criteria is the assumed equivalence of a lower-bound estimate of the central tendency of the reference data set and a site-specific chronic aquatic life criterion. Because this approach relies on point comparisons of individual compliance sample results with a lower-bound central tendency estimate from the reference data, a high rate of false positive "exceedances" can be expected *even if the compliance data come from the same underlying distribution (i.e., population) as the reference data.* This limitation is well illustrated by the high rate of false positives when the pre-activity data (which cannot reflect impacts from the project) are screened against the criteria developed using the NC Tool (Tables 3-12 and 3-13), as discussed above.

Other limitations arise from the treatment of nondetect results in the NC Tool. The tool is designed to remove all nondetect results prior to computing the site-specific criteria and also to remove an equal number of results from the upper end of the distribution. Trimming of the upper end is intended to avoid creating a data set that would be upward biased if only the

nondetects were trimmed, but it has the undesirable consequence of artificially reducing the variance of the reference data set. Well-established and widely applied methods that avoid bias and do not require the trimming procedures used in the NC Tool are available (e.g., Helsel 2005) and should be considered in future revisions of ADEC's methods for establishing natural conditions criteria.

In summary, application of the NC Tool and interpretation of NC Tool site-specific criteria exceedances are limited by features inherent to the tool, including use of the lower-bound central tendency to select criteria, data trimming techniques, and treatment of nondetect values. The results of screening site data against NC Tool site-specific criteria reflect these tool limitations, as well as the naturally elevated concentrations present in reference samples collected prior to initiation of site activity and during site activity at stations located upstream of site influence.

3.4.3.2 Alternate Population Testing Methods

The Niblack QAPP (Integral 2007) recommends a general statistical approach to compare compliance and reference data for the Niblack Exploration Project, to be applied in parallel to the ADEC spreadsheet tools. The general statistical method recommended in the QAPP is a single-value *t*-test (or its non-parametric equivalent), with a false positive rate (α) of 0.05. The test evaluates whether or not a compliance sample measurement is significantly different than the central tendency of the reference data. This method is generally consistent with ADEC's guidance for natural conditions assessment, although the treatment of outliers may differ and the treatment of nondetects does differ from ADEC's guidance, as described below.

The QAPP statistical analysis is a collection of methods for data evaluation and testing, which may be applied in slightly different ways for different data sets, depending on the characteristics of the data. This flexible, or adaptive, approach is typical of statistical analysis tasks, and is carried out within a general analysis framework. This general framework consists of the following steps:

- Identification and elimination of outliers
- Evaluation and compensation for undetected measurements
- Evaluation of normality of the reference data distribution, and selection of an appropriate hypothesis test
- Application of the selected test.

Depending on the characteristics of a particular data set, these steps may not always be carried out in the same order. Some steps may be performed repeatedly. For example, examination of the data for outliers may be performed both before and after undetected measurements are compensated for.

Software tools to carry out the steps above have been implemented in the R programming language. The tools are a set of R functions that have been tailored specifically for the data and analyses needed for this project. These allow for statistical analyses to be carried out in an interactive and adaptive fashion by issuing commands to execute these functions at the R console.

Population Test Hypotheses

For normal and lognormal reference data sets, the QAPP statistical method compares individual compliance point samples to the reference population mean using a one-sided *t*-test of the null hypothesis (H_0) that the mean (μ) of the reference data is equivalent to the effluent concentration (C_{eff})—or, equivalently, that the effluent data are typical of the reference distribution. The alternative hypothesis (H_1) is that the mean of the reference data is less than the effluent concentration—or, equivalently, that the effluent concentration is significantly higher than the reference data:

$$H_0: C_{eff} = \mu_{ref}$$

$$H_1: C_{eff} > \mu_{ref}$$

For a 95 percent confidence limit on the reference data mean ($\alpha = 0.05$), a *p* value of less than 0.05 indicates that the null hypothesis should be rejected.

For reference data sets that do not fit a normal or lognormal distribution, the Wilcoxon signed rank test is applied as a nonparametric equivalent to the one-sided *t*-test. This test compares each compliance point sample to the reference population by evaluating whether the compliance point sample is a plausible estimate of the reference population distribution median:

$$H_0: C_{eff} - Median_{ref} = 0$$

$$H_1: C_{eff} - Median_{ref} > 0$$

For a 95 percent confidence limit on the reference data median ($\alpha = 0.05$), a *p* value of less than 0.05 indicates that the null hypothesis should be rejected.

Population Test Application

The surface water reference data sets for total and dissolved aluminum and dissolved copper included all pre-activity (February 15, 2006 to September 11, 2007) surface water samples collected at stations WQ4, WQ6, WQ7, WQ8, WQ10, WQ12, and WQ13, and all post-initiation samples (October 1, 2007 to July 24, 2008) collected at upstream stations WQ7, WQ8, and WQ12. The groundwater reference data sets for total and dissolved aluminum, dissolved copper, dissolved lead, and dissolved zinc included all pre-activity (February 27 to September 11, 2007) groundwater samples collected at stations MW1, MW2, MW3, MW4, and MW7, and all

post-initiation samples (September 30, 2007 to July 25, 2008) collected at offsite well MW7. Compliance samples were compared individually to reference populations; these include surface water stations WQ4, WQ6, and WQ10 and monitoring wells MW1, MW2, MW3, MW4, for the 21 surface water and 25 groundwater post-initiation sampling events, which occurred between September 30, 2007 and October 17, 2009. Individual pre-activity reference samples were also compared to the reference population mean to provide context for evaluation of the compliance data.

Following distribution testing and log-transformation to most closely approximate a normal distribution (when applicable), reference data sets were screened for outliers using classical statistical outlier tests and visual evaluation of time series plots. The box plot outlier function in R was used to identify as a potential outlier any value greater than the last data point that is within a coefficient of 1.5 times the length of the box (the Tukey criterion for outliers; Cleveland 1993). Time series plots of the data were also reviewed before final exclusion of any high or low outliers from the data sets.

Reference data were screened for nondetect values following outlier removal. No nondetect data values existed in the surface water reference data sets for total or dissolved aluminum, and 34 nondetect values were present in the dissolved copper data set, with a detection frequency of 74 percent. Regression on order statistics (ROS) substitution was applied to estimate nondetect values for the surface water dissolved copper data set (Helsel 2005). For groundwater reference data, 1 nondetect value was found in both the total and dissolved aluminum data sets, 3 nondetect data values were present in the dissolved copper data set, and 4 nondetect values were found in the dissolved lead groundwater data sets, with a detection frequency of over 90 percent in each of these data sets. Thirty-three nondetect values were present in the groundwater dissolved zinc reference data set (41 percent detection frequency). ROS substitution was applied to each of the groundwater reference data sets.

Time series plots generated with both unprocessed reference data and processed (i.e., outliers removed and nondetect substitution applied where applicable) were visually examined to identify potential seasonality in the reference data set. Due to the short time period of available reference data, definitive evaluation of seasonality was not possible at this time, and the data were assumed to be non-seasonal.

Population Testing Results

Tables 3-14 and 3-15 present the results of surface water and groundwater data testing conducted with the alternative statistical population approach for each of the surface water and groundwater permit trace elements identified as potential parameters of concern by screening against ADEC chronic aquatic life criteria. Both reference (pre-activity) and compliance (ongoing site activity) data were screened with the alternative population approach. For surface water, compliance sample concentrations measured at all three compliance stations failed the alternative population screening for both total and dissolved aluminum and dissolved copper during multiple sampling events. Screening against the reference data population

yielded multiple exceedances before and after initiation of underground exploration activity at both reference and compliance stations for aluminum and copper.

For groundwater, the comparison of individual samples to the reference population also produced exceedances of the reference population central tendency for all parameters (total and dissolved aluminum, dissolved copper, dissolved lead, and dissolved zinc) in samples collected both before and after project initiation and at both reference and compliance wells.

The primary limitation of screening using an alternate population testing method is fundamentally similar to that of the ADEC natural conditions method in that the underlying statistical hypothesis involves a comparison of an individual compliance measurement (i.e., point measurement) with the central tendency (mean or median) of the reference data set. As a result, frequent "failures" of this test can be expected, both when individual pre-activity reference point measurements and post-initiation compliance point measurements are compared with the reference data sets using this approach. Because of this, the "failures" reported in Tables 3-14 and 3-15 cannot necessarily be interpreted as exceedances of (or departures from) the site-specific natural conditions, but may warrant further assessment. Furthermore, in the case of parameters with a high frequency of nondetect values, such as groundwater dissolved zinc, ROS substitution for nondetect values may influence the estimate of the reference data set central tendency used in comparison to individual sample concentrations.

In summary, like the NC Tool, the alternative population test approach is limited by the use of the population central tendency to determine individual site sample exceedances. The results of screening site data using the alternative population screen reflects this central tendency approach as well as the naturally elevated concentrations present in reference samples collected prior to initiation of site activity and during site activity at stations located upstream of site influence.

3.4.3.3 Upper Prediction Limit Analysis

As an alternative to the comparisons of central tendency embodied in the NC Tool and the alternate population test approach described in the previous sections, USEPA guidance (e.g., USEPA 1989, 1992, 2006, 2007) recommends the use of estimates of an upper percentile of a reference data set (e.g., the 90th or 95th percentile) as an appropriate approach to make comparisons between background data and individual measurements from a compliance point. One such estimate is a UPL. A UPL is the upper bound of a prediction interval, defined as a statistical interval, based upon historical and/or background data, within which a newly and independently obtained site compliance observation will fall with a given probability (or confidence coefficient; Gibbons 1994). A UPL represents an estimate of a threshold value in the upper tail of the data distribution. Therefore, a UPL should represent a number larger than the lower confidence limit on the mean (as applied in the NC Tool) and the upper confidence limit on the mean (as applied in the alternate population test approach). Upper threshold values,

such as UPLs, are commonly used when individual point-by-point compliance observations are compared with a background compliance limit.

UPLs were calculated for a 95 percent prediction limit according to the general equation

$$UPL = x + t_{(1-\alpha)(n-1)} \times s \times \sqrt{1 + \frac{1}{n}}$$

Where:

x	=	the reference data set mean
s	=	the standard deviation
n	=	the number of reference samples
$t_{(1-\alpha)(n-1)}$	=	the critical value from the Student's *t*-distribution with n – 1 degrees of freedom
α	=	0.05

For lognormal data sets, the UPL is calculated using the log-transformed data.

Application of the Upper Prediction Limit Screen

UPLs were calculated using the processed (log-transformed, outliers removed, and/or ROS substitution applied to nondetects, where applicable) surface water and groundwater reference data sets generated for the alternate population testing approach (Section 3.4.3.2). Compliance samples were screened individually against the calculated UPL thresholds.

Upper Prediction Limit Screen Results

Tables 3-16 and 3-17 present the results of compliance data screening against the 95 percentile UPL for each of the surface water and groundwater permit trace elements identified as potential parameters of concern by screening against ADEC chronic aquatic life criteria.

For surface water, the total aluminum UPL (144 µg/L) was exceeded multiple times at WQ4, WQ10, and WQ12, both before and after initiation of site activity, as well as once at WQ6 and twice at WQ13. Stations WQ4, WQ8, WQ10, WQ12, and WQ13 each exceeded the surface water dissolved aluminum UPL (92 µg/L) on one or more occasions post-activity. Pre-activity dissolved aluminum exceedances were observed at stations WQ10 and WQ12. For dissolved copper in surface water, exceedances of the UPL (1.4 µg/L) occurred at least once at stations WQ4, WQ6, WQ10, and WQ13 following initiation of site activity. Pre-activity dissolved copper exceedances were observed at all stations except for WQ12.

For groundwater, one exceedance of the total aluminum UPL (7,394 µg/L) was observed at MW2 in December 2007, and four exceedances of the total aluminum UPL were observed at MW3 prior to initiation of site activity. For dissolved aluminum, three consecutive exceedances of the UPL (1,236 µg/L) were observed at MW3 during site activity from July to September 2008.

Pre-activity dissolved aluminum exceedances were observed at wells MW2, MW3, and MW4. Two exceedances of the dissolved copper UPL (4.3 µg/L) were observed at MW4 in September and October 2007 immediately following initiation of site activity, while pre-activity exceedances were observed at wells MW3 and MW4. For dissolved lead, individual UPL (0.96 µg/L) exceedances were measured at both MW1 and MW4 in October 2007. Pre-activity dissolved lead exceedances were observed at wells MW2 and MW3. Finally, two exceedances of the dissolved zinc UPL (9.6 µg/L) were observed at MW2, and six at MW4, following initiation of site activity. Pre-activity dissolved zinc exceedances were observed at MW4 and at off-site reference well MW7.

No clear spatial or temporal patterns related to UPL exceedances were observed for either surface water or groundwater samples. As expected, this screen against an upper threshold of the reference data set distributions yielded a lower number of test failures than were observed for the more conservative screens applied by the NC Tool and the alternative population testing approach. A small number of exceedances of the 95th percentile UPL, e.g., 5 percent, are expected even if the compliance data do not differ statistically from the reference data, because the UPL does not capture the maximum upper extent of the reference data distribution. For the data presented here, 7.8 percent (46 of 590 samples) of surface water samples and 5.6 percent (36 of 640 samples) of groundwater samples were found to exceed the UPL screen.

In summary, screening using an UPL testing method avoids the frequent failures yielded from both the ADEC natural conditions method and the alternative population approach related to comparison of an individual compliance measurement with the central tendency (mean or median) of the reference data set. A key limitation of the UPL approach occurs in the case of parameters with a high frequency of nondetect values, such as groundwater dissolved zinc, where ROS substitution for nondetect values may influence the estimate of the reference data set UPL used in comparison to individual sample concentrations.

3.4.4 Overall Weight-of-Evidence Compliance Assessment

Initial screening of surface water and groundwater compliance data against promulgated Alaska water quality criteria identified a limited number of chemicals and locations where further evaluation was needed to determine compliance with natural conditions-based water quality standards. These included total aluminum and dissolved copper in surface water (Table 3-8) and total aluminum, dissolved copper, dissolved lead, dissolved mercury, and dissolved zinc in groundwater (Table 3-9). Evaluation of time series data plots indicates that, for each of these constituents, compliance samples collected after the initiation of exploration in late September 2007 fall within the range of pre-activity concentrations and therefore do not appear to depart from natural conditions. Statistical comparisons using a variety of conservative central tendency and upper threshold statistical tests produced varying rates of test failures, including high rates of "false positive" test failures for individual reference samples. These statistical results are not unexpected given the limitations of the approaches employed and the characteristics of the data set, as documented in the preceding sections.

Based on the compliance monitoring data collected after the initiation of underground exploration from September 2007 through October 2009, and the graphical and statistical analyses presented in this report, the weight of evidence indicates that site exploration activities have not resulted in significant changes to natural surface water and groundwater quality in the vicinity of the project. Continued trend evaluation and statistical analysis (including consideration of refined or alternate methods) will be required to confirm these initial findings as the monitoring program proceeds.

3.5 PAG WATER QUALITY

The potentially acid generating waste rock storage facility (PAG Site; Figure 2-1 and Figure 3-13), was constructed in spring 2008 for the temporary storage of the blast rock determined to be potentially acid generating during drift excavation. The PAG pile consists of approximately 39 rounds (estimated 9,000 tons) composed of primarily sulphide-bearing Lookout Rhyolite rock unit. Based on the QA/QC verification test work conducted as part of the Operational Characterization Plan (Knight Piésold 2007a), the material in the PAG pile is anticipated to average ~1% total sulphur, predominantly as sulphide-sulphur, low neutralization potentials (NP) below approximately 20 kg $CaCO_3$/t equivalent and corresponding neutralization potential ratios of less than 0.5 (MESH Environmental 2009). Runoff from the PAG Site is captured in a settling pond (the PAG Pond) and routed to the settling ponds and wastewater treatment facility located upline of the site LAD discharge system (Figure 2-1).

Following the completion of underground drilling in October 2008, Niblack Project LLC (then CBG) placed the project on Temporary Closure. At that time, CBG requested, and was subsequently granted, approval to leave the PAG rock pile uncovered. The uncovered pile provided an opportunity to evaluate the kinetics, or weathering behavior, of the PAG rock on a large scale and provided information for waste management practices for possible future development.

PAG pile runoff is monitored at the PAG Pond, with monitoring of field parameters on a weekly basis and full water chemistry on a monthly basis. PAG runoff water quality was not monitored from December 2008 to March 2009 when the sampling pond was frozen. Monitoring results are submitted to ADEC in monthly reports as part of the PAG Monitoring Program accepted by Alaska Department of Natural Resources/ADEC on February 6, 2009. The monitoring record for the PAG site summarized here includes data from August 19, 2008 through to December 29, 2009. From August 2008 through December 2009, an estimated 3.3 million gallons of precipitation runoff has been collected from the PAG Site, comprising approximately 5 percent of the total site discharge captured in the settling ponds and routed to the LAD system.

PAG Site water quality results are provided in Table 3-18 (analytical data) and Table 3-19 (field parameters). Figures 3-14 through 3-20 present selected parameters shown in conjunction with the corresponding period of record for precipitation and temperature.[5]

The 2009 pH results for the PAG Site remained within the circum-neutral range, varying from a low of 5.8 in April to over 9.2 in July (Figure 3-14). There is an apparent seasonal trend observed in the data with generally lower pH values reported during the winter months and higher values seen during the summer months. These values are also consistent with measurements made in 2008. Sulphate, nitrite+nitrate, and total dissolved solids (Figures 3-14 and 3-15) values all showed an initial flush when monitoring began in 2008 followed by a sharp decrease in concentration when sampling resumed in the spring of 2009. Nitrite+nitrate values remained low through 2009 after the initial flush while sulphate and TDS values increased over the summer months, but decreased again during the fall and winter months, possibly showing a seasonal trend.

Total aluminum (Figure 3-16) and total iron (Figure 3-17) plots for the PAG Facility both show a similar trend of higher observed values during the winter months without a corresponding increase in dissolved values. The high values recorded in 2009 resemble those recorded during the winter of 2008/2009. Comparing the 2009 concentration results to the maximum ADEC aquatic life chronic screening levels as provided in the 2008 Annual Report (Integral 2009a) and summarized in Table 3-7, only total aluminum has occasionally been recorded above the screening level. Aluminum values have been below this level from May 2009 to October 2009 and above the 87 μg/L screening level in November and December. Recorded values were 124 μg/L and 91.2 μg/L for November and December 2009 respectively. These values resemble the higher aluminum values recorded in the winter of 2008/2009 for the PAG Site and there was no significant corresponding increase in dissolved aluminum during this time.

Dissolved arsenic, cadmium, copper and nickel (Figures 3-18 and 3-19) all showed an initial flush at the beginning of the study in 2008. When sampling resumed in April 2009 (after the pond had thawed), values of all the elements were below screening levels. As testing continued in 2009 there was minimal variation in the dissolved trace element content. Dissolved nickel and cadmium showed a marginal increase in concentration in the December 2009 sample, though within the range previously reported. Dissolved lead and zinc (Figure 3-20) showed little variation throughout 2009.

Of note are apparent increases in dissolved aluminum, nickel, iron and lead in the September 13, 2009 sampling event to values in excess of the corresponding total concentrations. This is believed to be the result of a sampling error and is not expected to be representative of the true dissolved sample concentrations. The subsequent October 2009 sampling event recorded

[5] Onsite weather station was not available from 9/18/2009 to 2/27/2010 due to instrument malfunction. Precipitation and temperature data for the Ketchikan Airport NOAA weather station is shown for this time period.

dissolved values lower than the totals for each parameter and the values were consistent with the August 2009 sampling event as well as previous year's samples.

In summary, monitoring through the end of 2009 shows that the PAG pile runoff water has remained buffered with pH values remaining circum-neutral, with slightly lower values (between 5.8 and 7.5) being recorded over the winter months and values typically above 7.5 in the summer months. Total iron and total aluminum also appear to increase and decrease with changing seasons. During the winter months, both total aluminum and total iron values are at their highest. In the summer months both elements decrease significantly, all the while showing minimal changes in their dissolved counterparts. Total aluminum has been the only element that exceeded the ADEC aquatic life chronic screening levels during more than one sampling event. The remainder of the trace elements tested were below screening levels

Studying the uncovered PAG Site continues to reveal relevant and useful information regarding the acid rock drainage potential and weathering kinetics of the PAG waste rock at this site. Niblack Project LLC plans to continue the monitoring program for this PAG Site and to keep the PAG waste rock uncovered through 2010.

3.6 MONITORING WORK PLANNED FOR 2010

The monitoring program will continue to be implemented through 2010 in accordance with the requirements of the Waste Management Permit, Site Monitoring Plan, and QAPP with the parameter list, monitoring frequency, and monitoring location changes as approved by Kenwyn George of ADEC (George 2008, pers. comm.).

4 STORMWATER POLLUTION PREVENTION PLAN REPORTING

4.1 VISUAL INSPECTIONS

During 2009, recorded visual inspections of the site were conducted at a minimum frequency of every 15 days as prescribed by Section 6 of the SWPPP (RTR 2006). Visual site inspection forms are provided in Appendix D. Past efforts, such as the maintenance of both upstream and downstream culvert settling ponds, increases in road lifts and ditch depths to properly control water flow, and the addition and maintenance of flow control measures (e.g., geotextile/silt fences and straw bales coupled with vegetative cover and rock barriers) have led to a visible reduction in the turbidity of stormwater discharge.

Minor issues were recorded during inspections conducted in 2009 and descriptions of corrective actions were included in subsequent inspection reports. General inspection of stormwater BMPs by site personnel is conducted on an almost daily basis. A visual inspection of the stormwater controls, waste storage areas, and water treatment areas is documented weekly on a visual inspection form.

Non-stormwater source contributions to surface water are minimal at the Niblack Exploration Project site. All inspections take into account any potential contributions from site activities. For example, fueling facilities and vehicle maintenance areas are examined during each of the regular recorded inspections. Inspection records are archived in a binder at the Niblack Exploration Project camp office.

4.2 SIGNIFICANT SPILL REPORTS SUMMARY

There were no significant/reportable spills of hydrocarbons, or other deleterious fluids, during 2009.

4.3 CHANGES MADE TO THE STORMWATER POLLUTION PREVENTION PLAN BEST MANAGEMENT PRACTICES

There are no changes planned to the SWPPP or to the BMPs described in the SWPPP at this time. All of the BMPs currently described in the SWPPP are good options for stormwater and associated sediment control at the site. As a result of the BMPs implemented on site, and the stabilization of the site post-construction, the turbidity observed in stormwater has been significantly reduced.

This annual report will be kept on file at the Niblack Exploration Project camp office.

5 ADEQUACY OF FINANCIAL RESPONSIBILITY

There have been no significant changes to inflation, required reclamation activities, or scope of the project from that presented in the Niblack Project Reclamation and Closure Plan (RTR 2007). Acreage of disturbance for the various facilities requiring reclamation at project closure is the same or less than that used to calculate reclamation costs. Monitoring results to date provide no indication of revision required to the financial responsibility cost estimate of $1,221,408.

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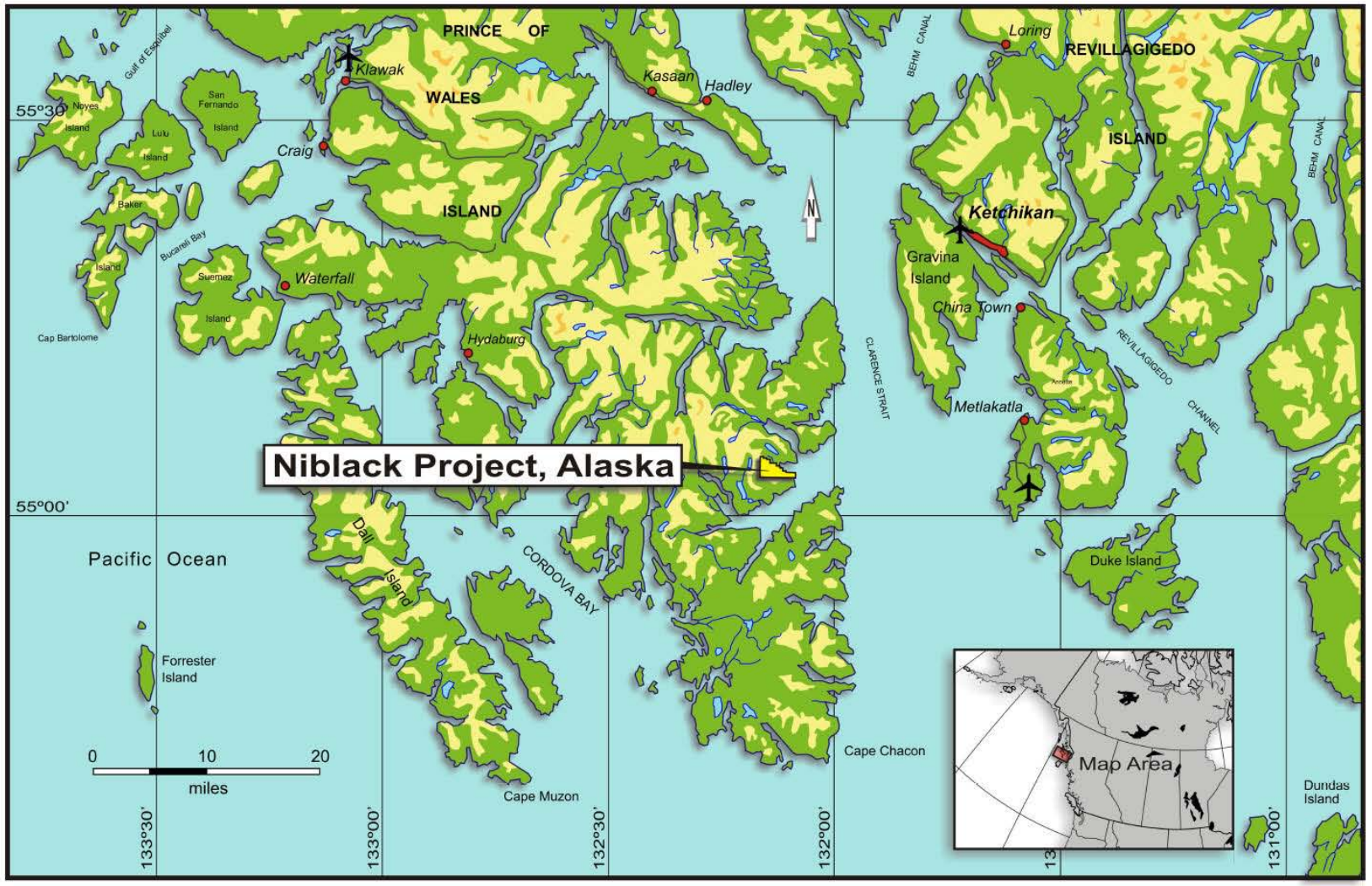
FIGURES

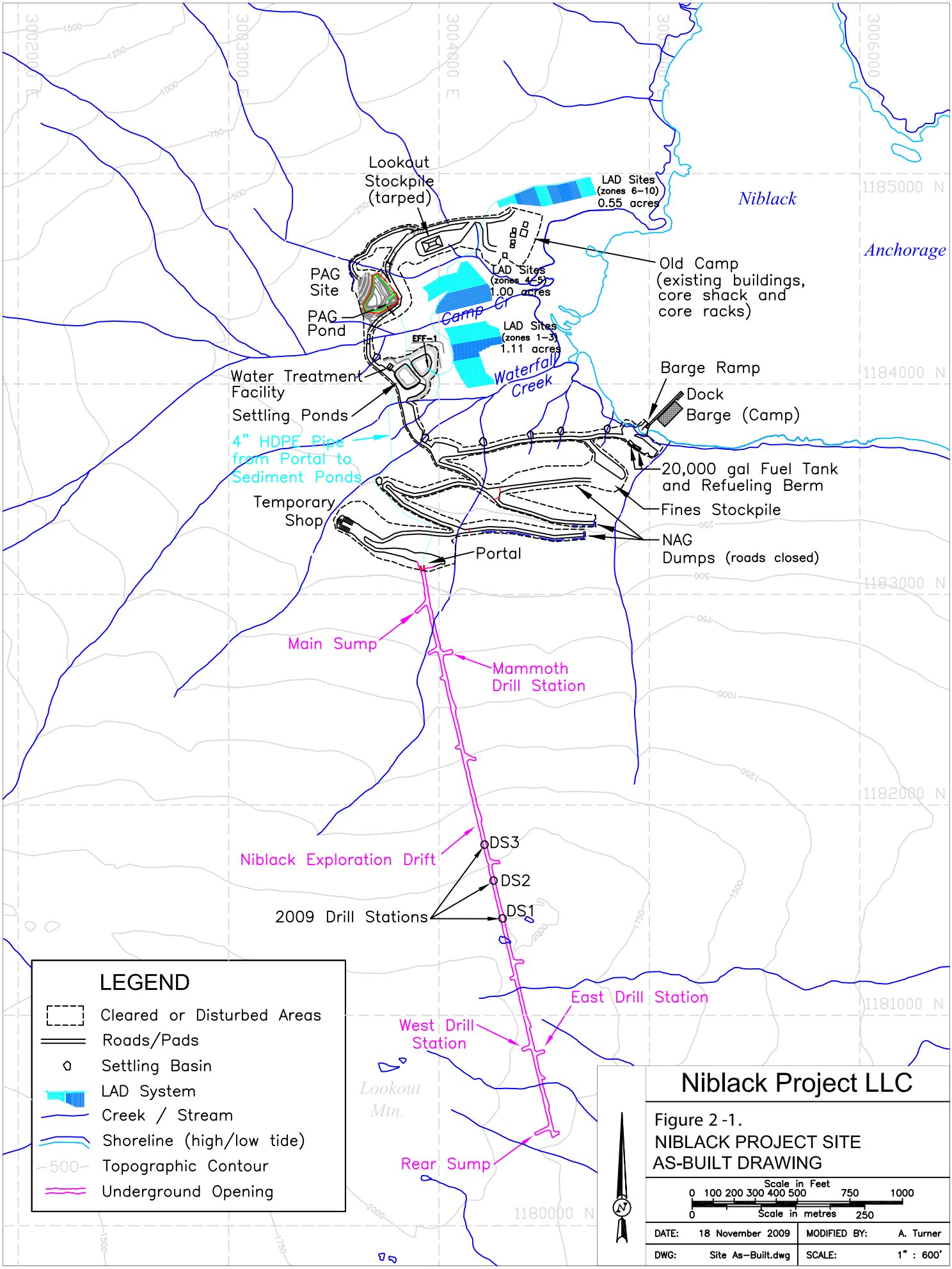


Niblack Project Location Map

May, 2006

NIBLACK PROJECT LLC integral consulting inc.

Figure 1-1
Niblack Project Location Map
Niblack Exploration Project
2009 Annual Report


Lookout Stockpile (tarped)
LAD Sites (zones 6–10) 0.55 acres
Niblack
Anchorage
Old Camp (existing buildings, core shack and core racks)
PAG Site
PAG Pond
LAD Sites (zones 4–5) 1.00 acres
Camp Cr
LAD Sites (zones 1–3) 1.11 acres
EFF-1
Waterfall Creek
Water Treatment Facility
Settling Ponds
Barge Ramp
Dock
Barge (Camp)
4" HDPE Pipe from Portal to Sediment Ponds
20,000 gal Fuel Tank and Refueling Berm
Temporary Shop
Fines Stockpile
NAG Dumps (roads closed)
Portal
Main Sump
Mammoth Drill Station
Niblack Exploration Drift
DS3
DS2
DS1
2009 Drill Stations
East Drill Station
West Drill Station
Lookout Mtn.
Rear Sump
3002000 E
3003000 E
3004000 E
3005000 E
3006000 E
1185000 N
1184000 N
1183000 N
1182000 N
1181000 N
1180000 N
LEGEND
Cleared or Disturbed Areas
Roads/Pads
Settling Basin
LAD System
Creek / Stream
Shoreline (high/low tide)
500 Topographic Contour
Underground Opening
N
Niblack Project LLC
Figure 2 -1.
NIBLACK PROJECT SITE
AS-BUILT DRAWING
Scale in Feet
0 100 200 300 400 500 750 1000
0 Scale in metres 250
DATE: 18 November 2009
MODIFIED BY: A. Turner
DWG: Site As-Built.dwg
SCALE: 1" : 600'

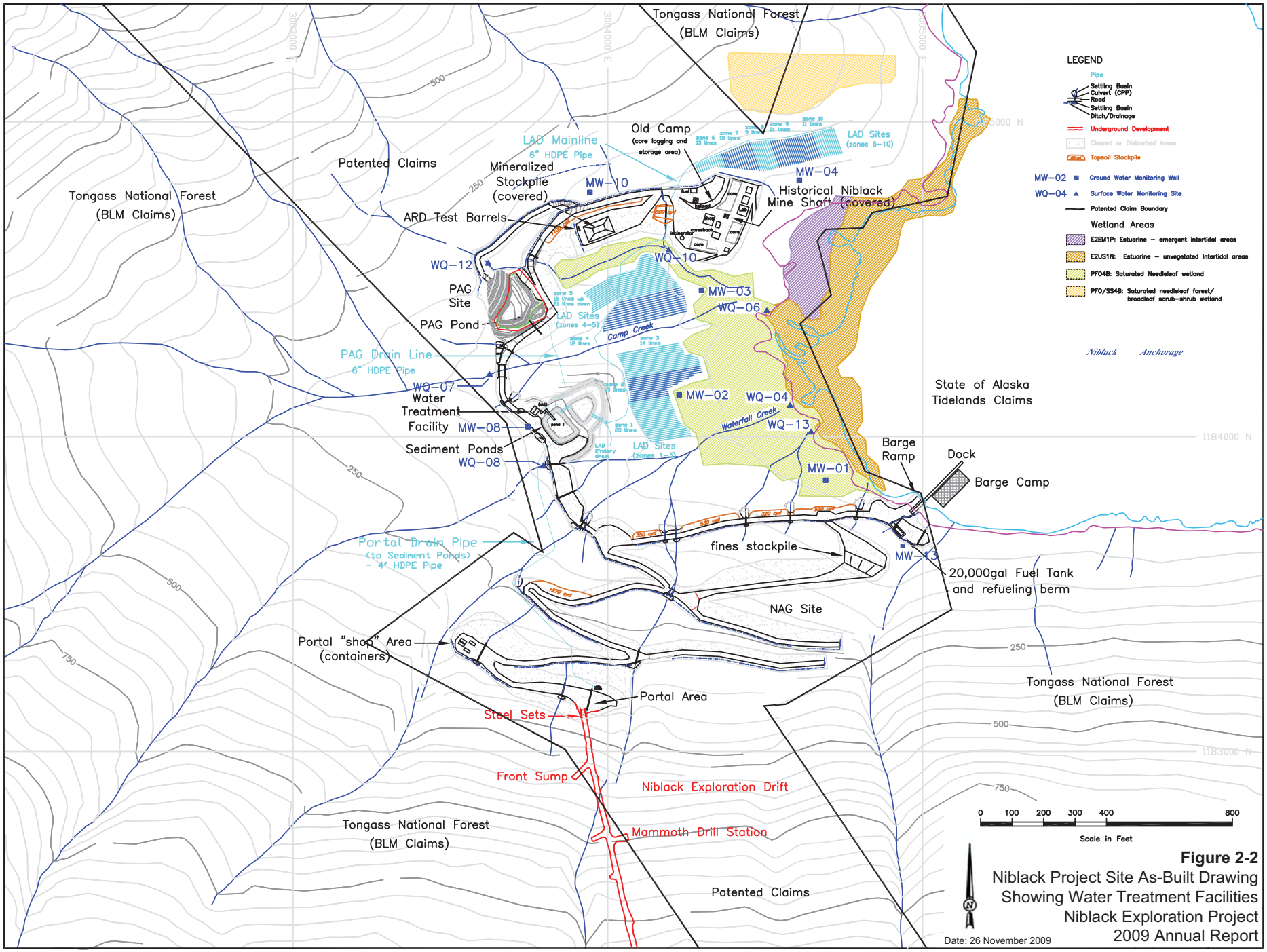


Figure 2-2
Niblack Project Site As-Built Drawing
Showing Water Treatment Facilities
Niblack Exploration Project
2009 Annual Report

Date: 26 November 2009

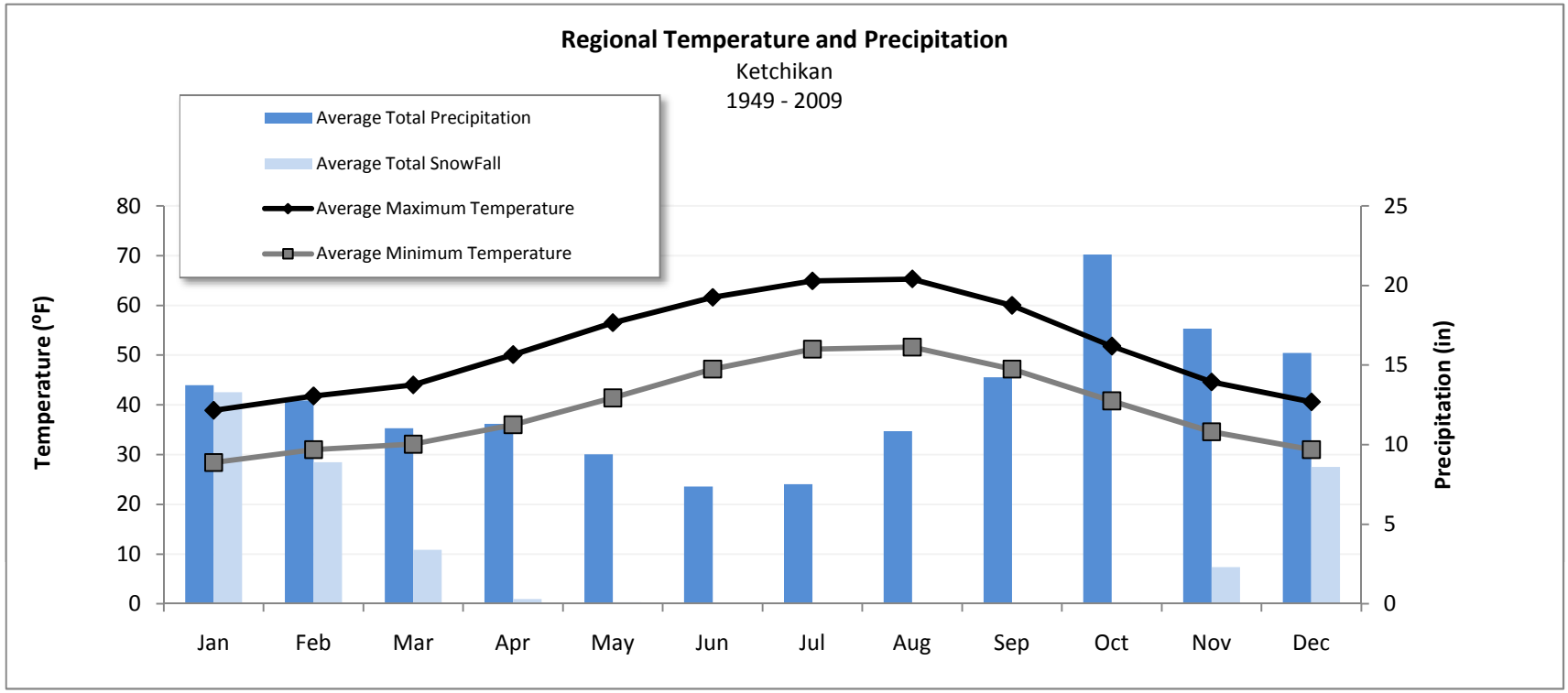
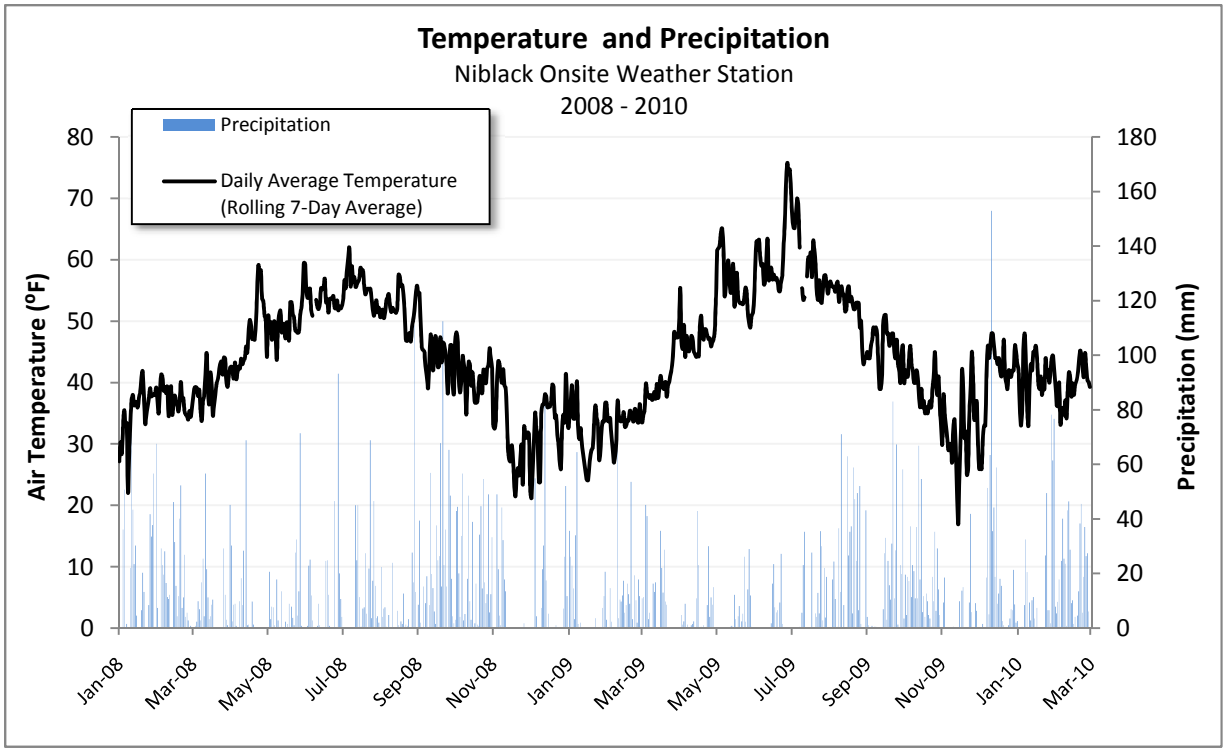
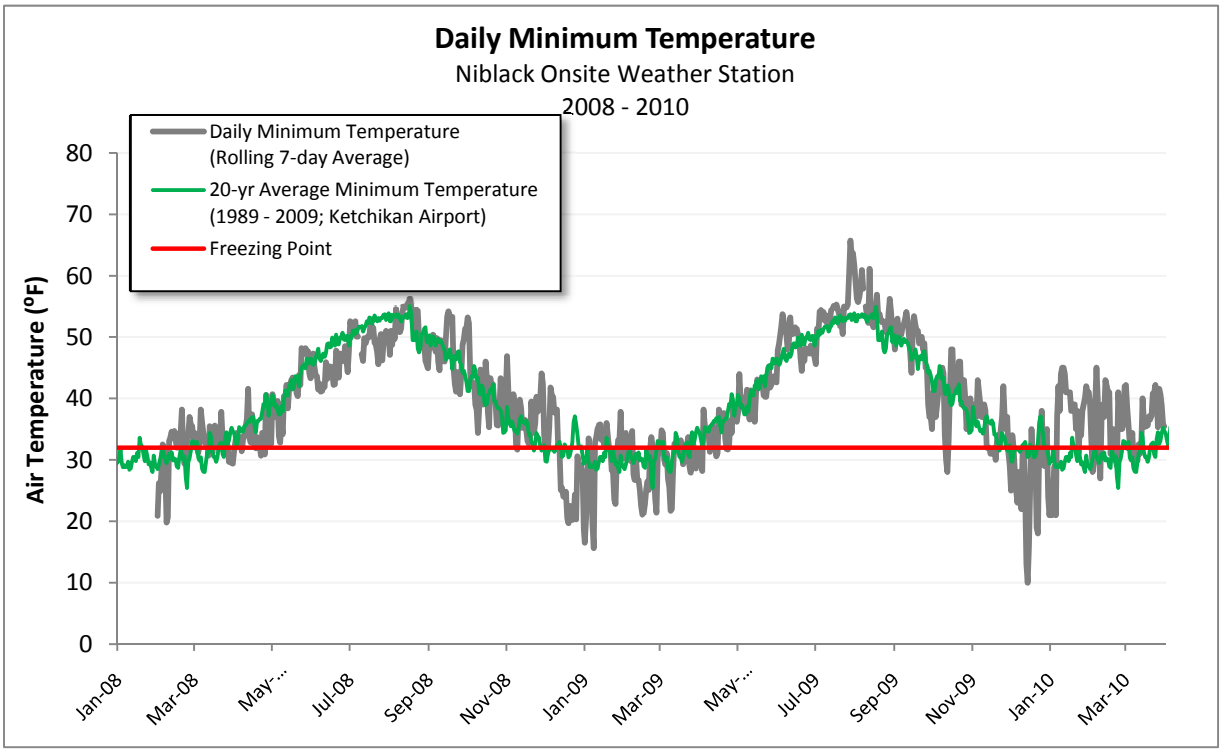


Figure 2-3
Ketchikan Long-Term Average
Temperature and Precipitation Data
Niblack Exploration Project
2009 Annual Report

NIBLACK PROJECT LLC integral consulting inc.





Note: Onsite weather station was not available from 9/18/2009 - 2/27/2009 due to instrument malfunction. Daily temperature and precipitation data for the Ketchikan Airport NOAA weather station are shown for this time period.

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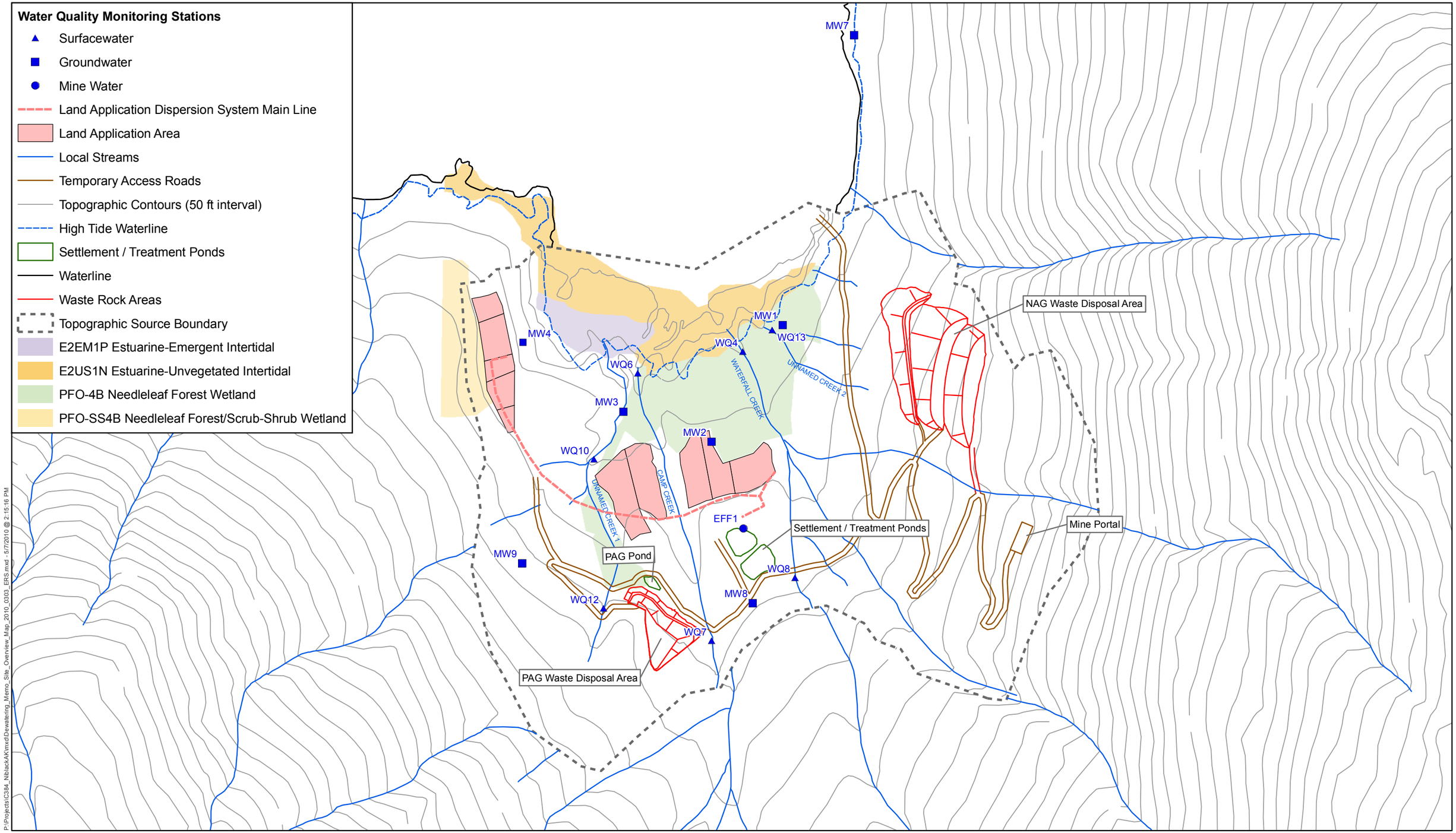
Figure 2-4
Niblack Project Site
Temperature and Precipitation Data
Niblack Exploration Project
2009 Annual Report



P:\Projects\C384_NiblackAK\mxd\Dewatering_Memo_Site_Overview_Map_2010_0303_ERS.mxd - 5/7/2010 @ 2:15:16 PM

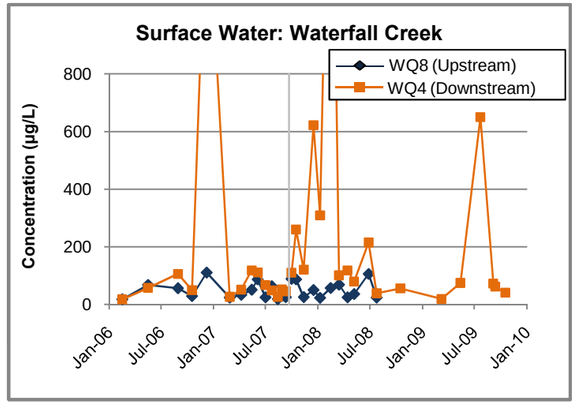
N

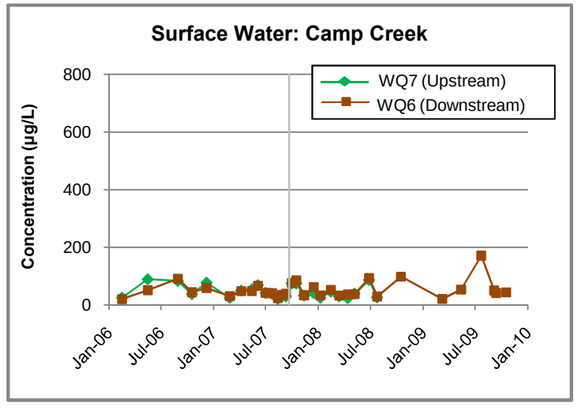
0 130 260 520 Feet

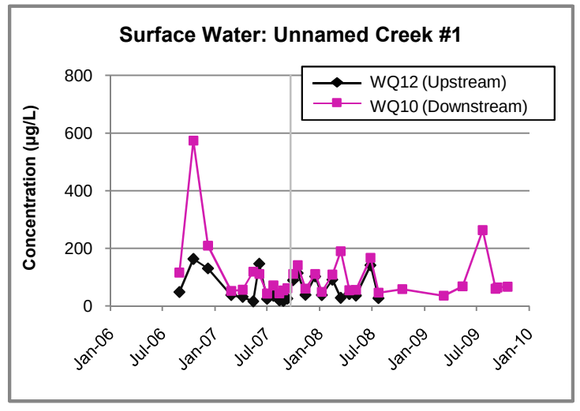
Feature Sources:
Base layers from Knight Piésold, 2007. Water Quality Baseline and Site Monitoring Plan.
Land Application Area from Turner, 2009. Personal communication.

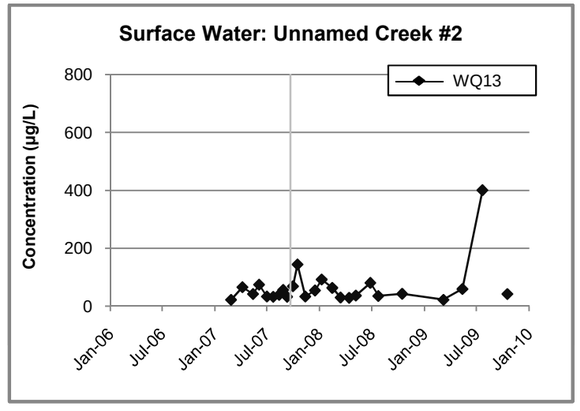
Figure 3-1
Water Quality Monitoring Stations
Niblack Exploration Project
2009 Annual Report

Surface Water Aluminum (Total)





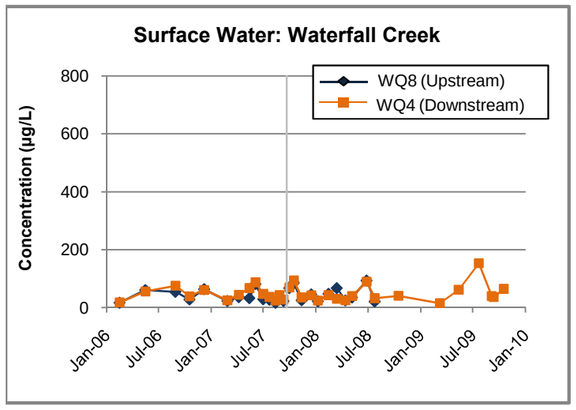


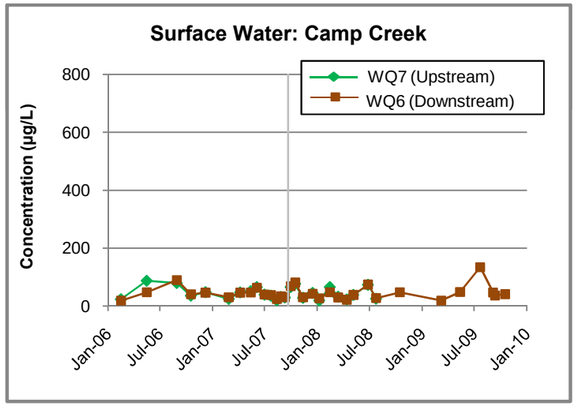


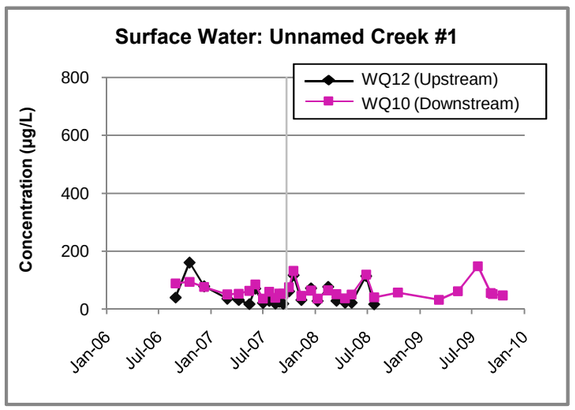
Station WQ-04 outlying values not shown at this scale:
12/7/2006, 1,470 µg/L
2/14/2008, 2,120 µg/L

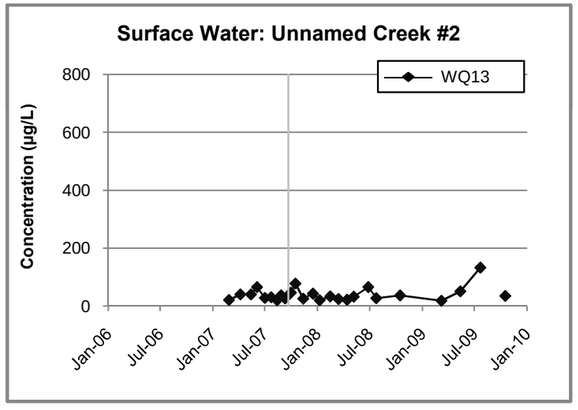
Station WQ13 not sampled on September 5 or 12, 2009

Surface Water Aluminum (Dissolved)









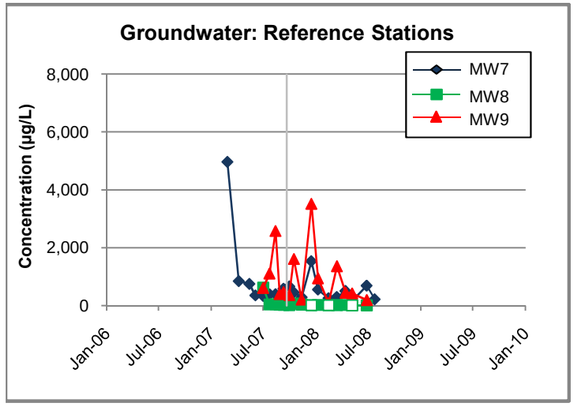
Station WQ13 not sampled on September 5 or 12, 2009

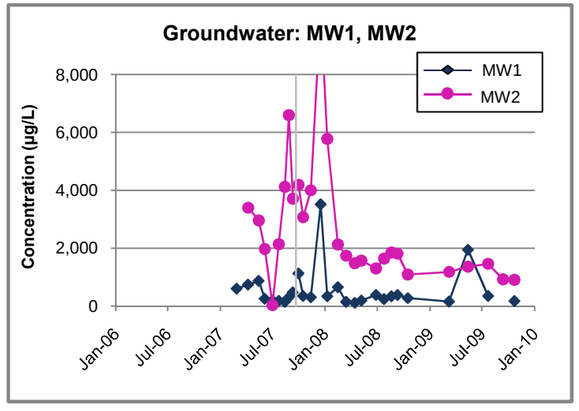
Notes:
Nondetect values shown at full detection limits as hollow symbols.
The vertical gray line on each plot indicates initiation of project activity on September 21, 2007.

NIBLACK PROJECT LLC integral consulting inc.

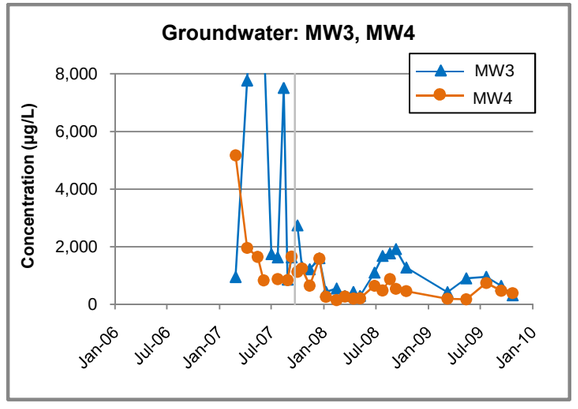
Figure 3-2
Time Series Plots: Total and Dissolved Aluminum
Surface Water
Niblack Exploration Project
2009 Annual Report

Groundwater Aluminum (Total)

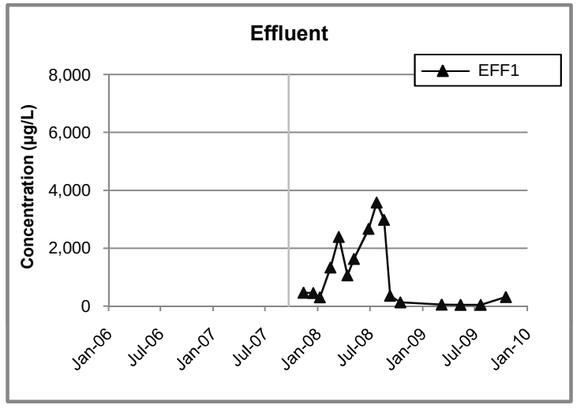




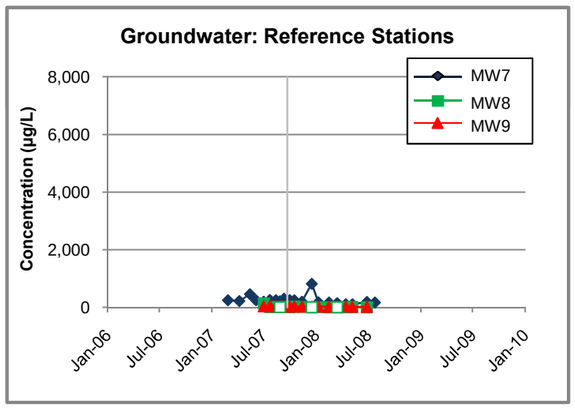
Station MW2 outlying value not shown at this scale:
12/14/2007, 10,300 µg/L

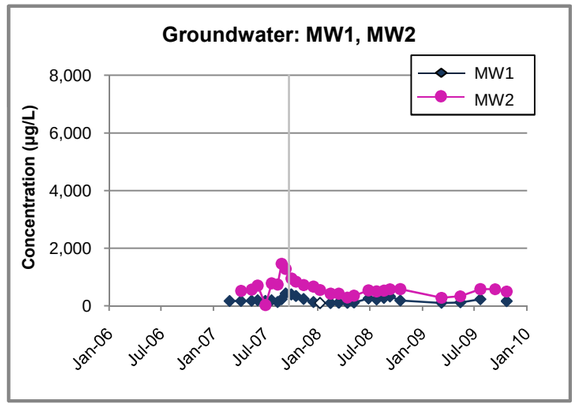


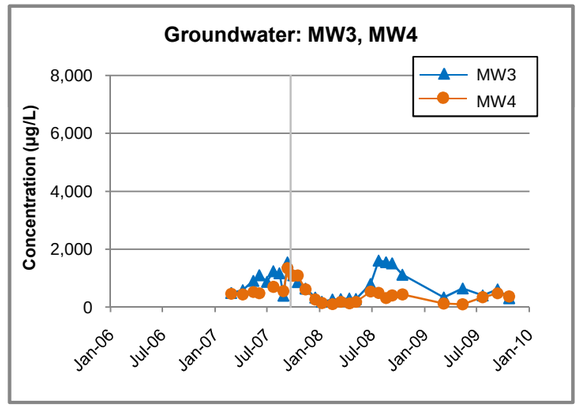
Station MW3 outlying value not shown at this scale:
5/14/2007, 15,300 µg/L

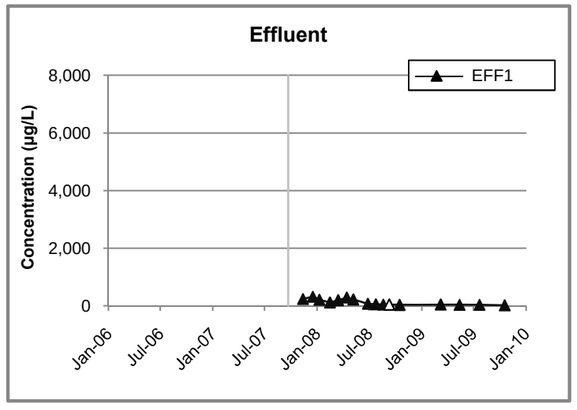


Groundwater Aluminium (Dissolved)







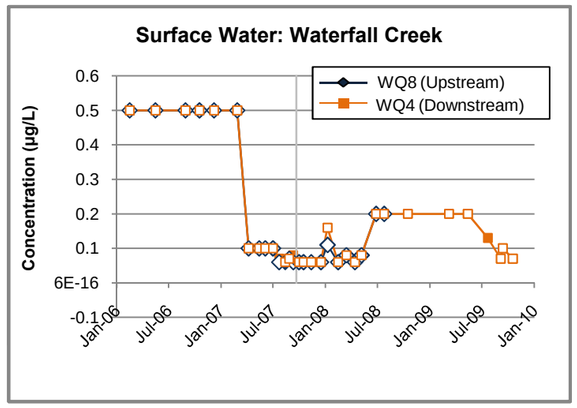


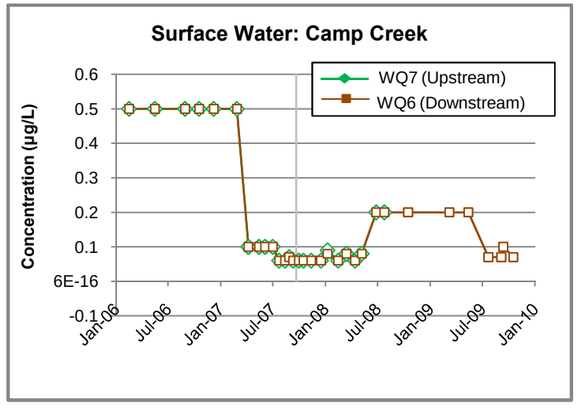
Notes:
Nondetect values shown at full detection limits as hollow symbols.
The vertical gray line on each plot indicates initiation of project activity on September 21, 2007.

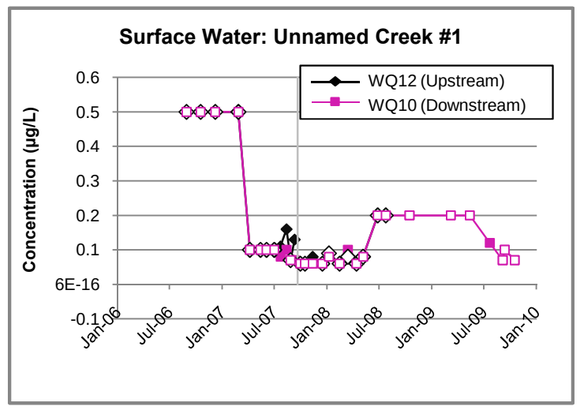
NIBLACK PROJECT LLC integral consulting inc.

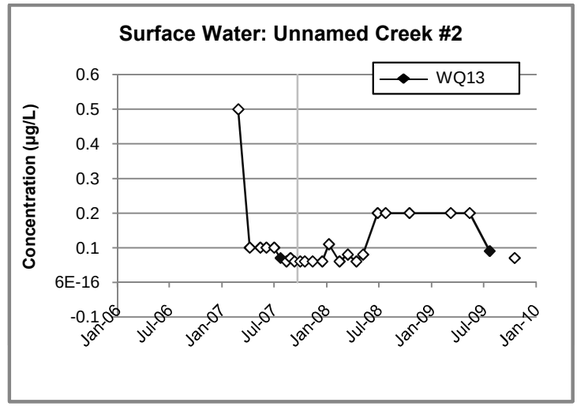
Figure 3-3
Time Series Plots: Total and Dissolved Aluminum
Groundwater
Niblack Exploration Project
2009 Annual Report

Surface Water Arsenic (Dissolved)



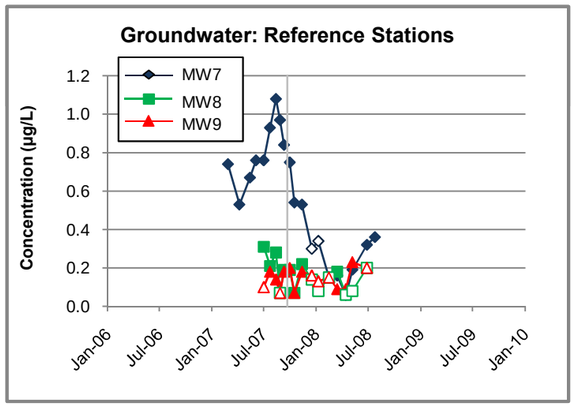


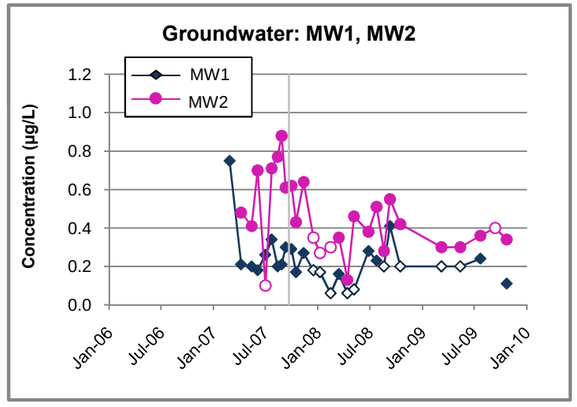


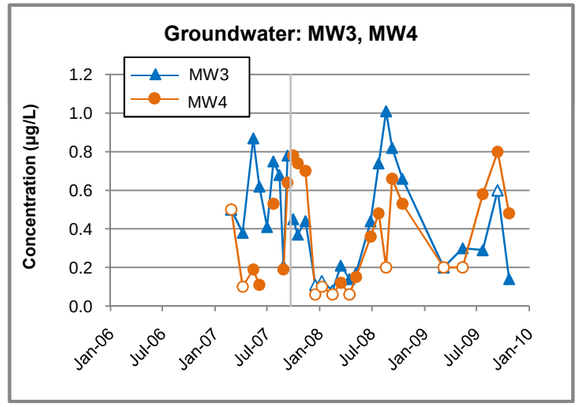


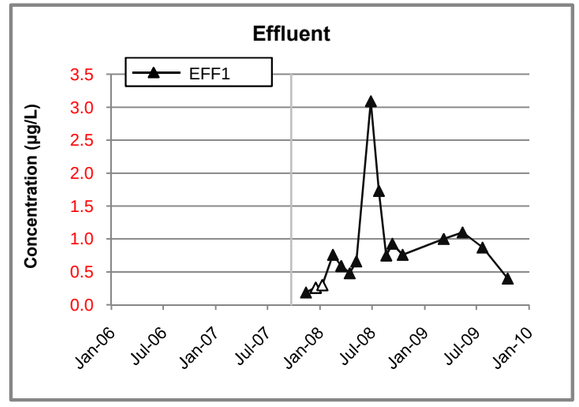
Station WQ13 not sampled on September 5 or 12, 2009

Groundwater Arsenic (Dissolved)









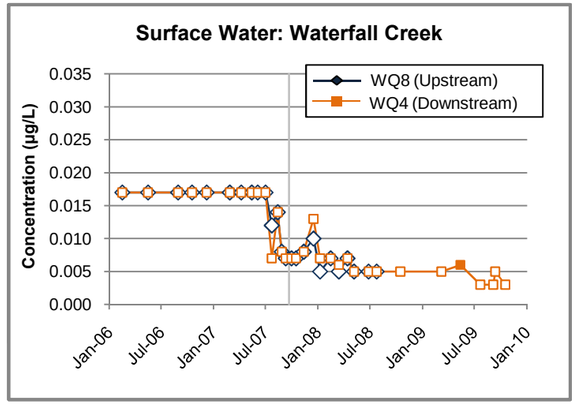
Note: Effluent plot y-axis scale differs from other groundwater plots.

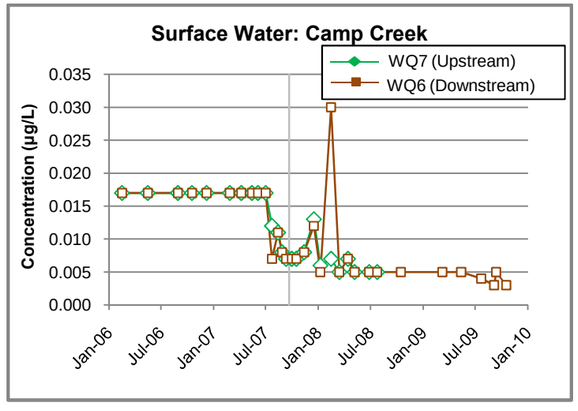
Notes:
Nondetect values shown at full detection limits as hollow symbols.
The vertical gray line on each plot indicates initiation of project activity on September 21, 2007.

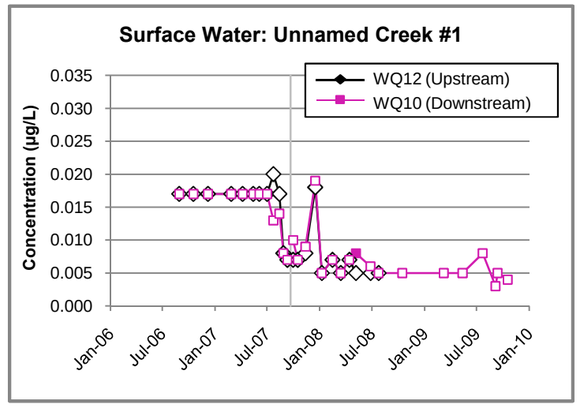
NIBLACK PROJECT LLC integral consulting inc.

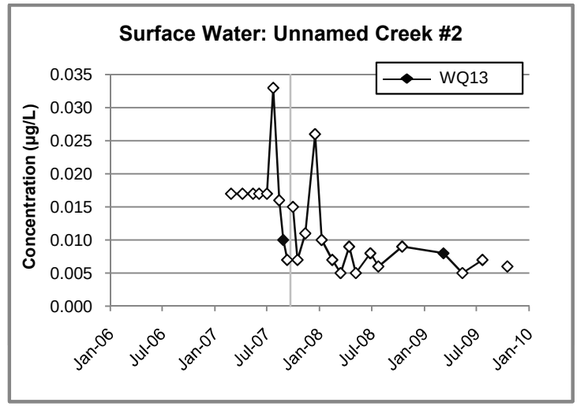
Figure 3-4
Time Series Plots: Dissolved Arsenic
Surface Water and Groundwater
Niblack Exploration Project
2009 Annual Report

Surface Water Cadmium (Dissolved)



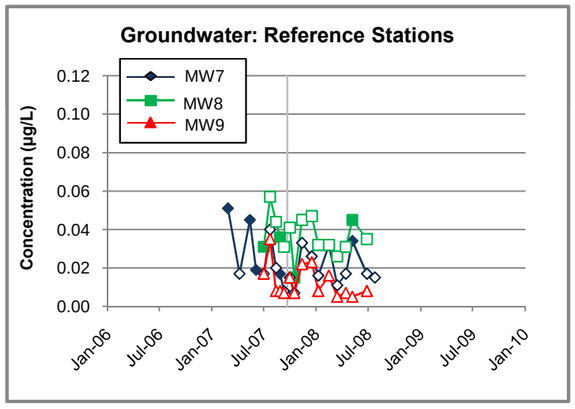


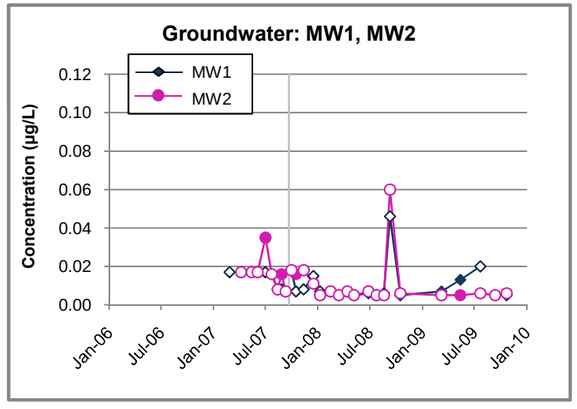


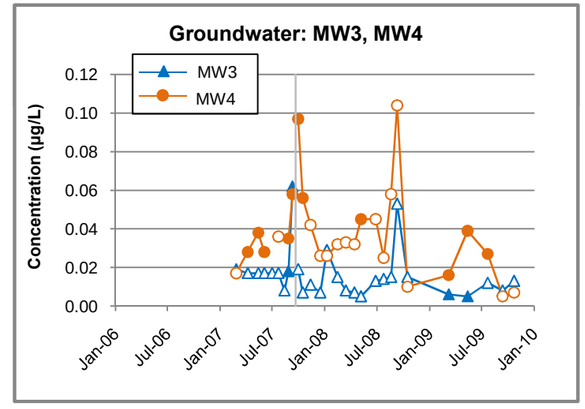


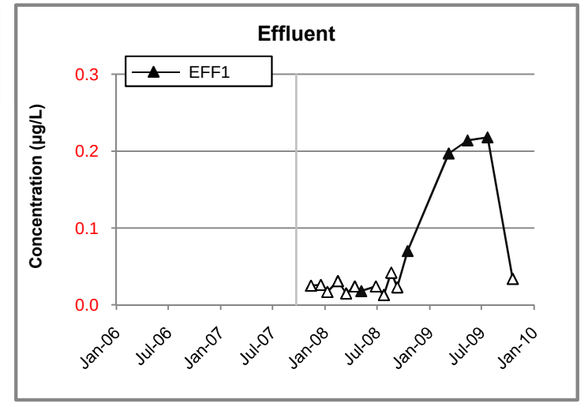
Station WQ13 not sampled on September 5 or 12, 2009

Groundwater Cadmium (Dissolved)









Note: Effluent plot y-axis scale differs from other groundwater plots.

Notes:
Nondetect values shown at full detection limits as hollow symbols.
The vertical gray line on each plot indicates initiation of project activity on September 21, 2007.

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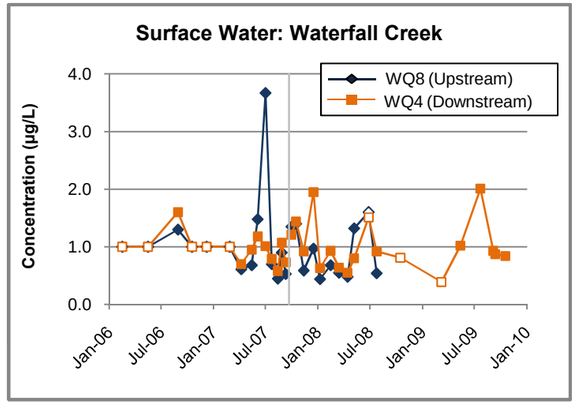
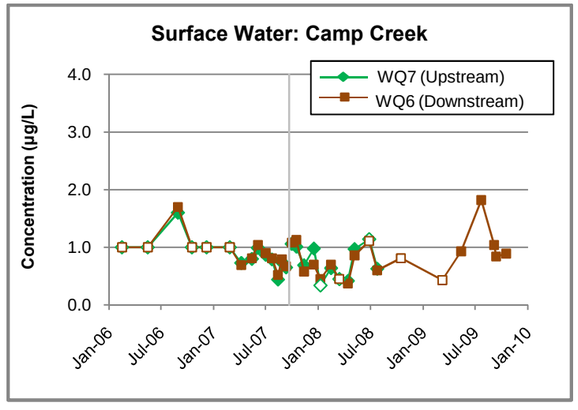
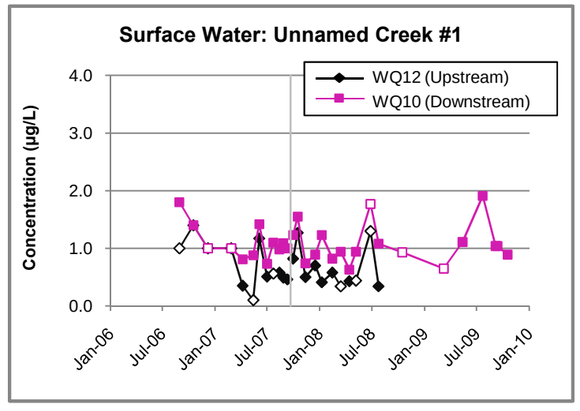
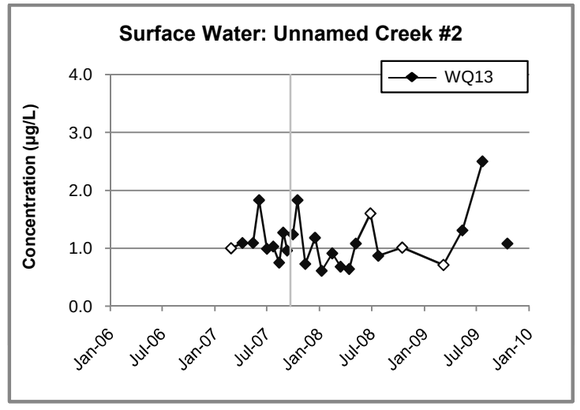
Figure 3-5
Time Series Plots: Dissolved Cadmium
Surface Water and Groundwater
Niblack Exploration Project
2009 Annual Report

Surface Water Copper (Dissolved)



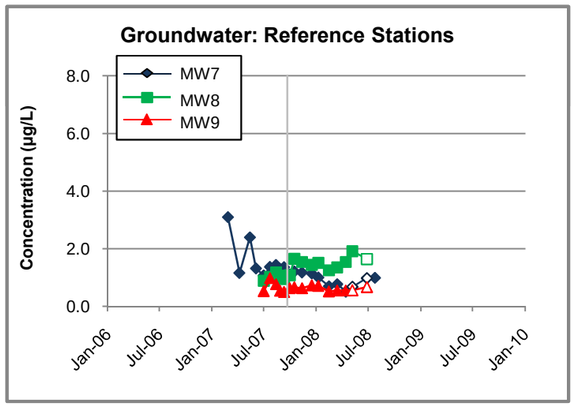


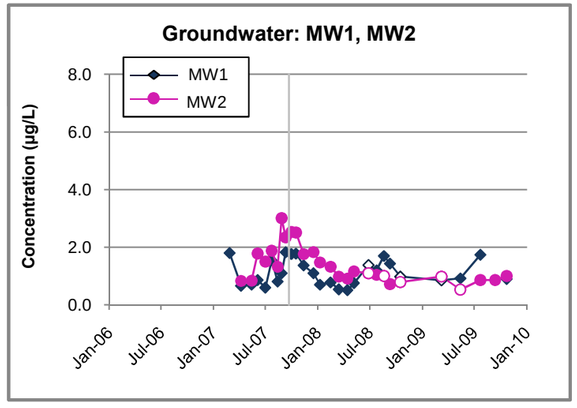


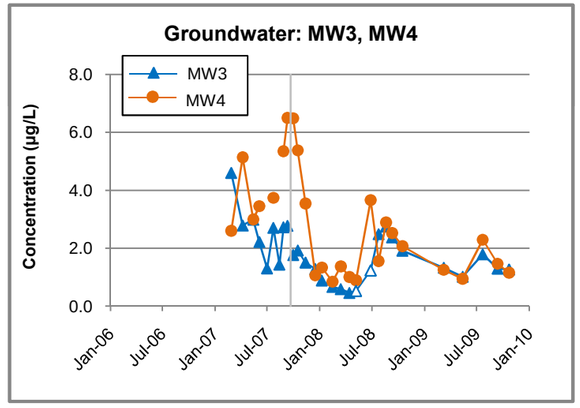


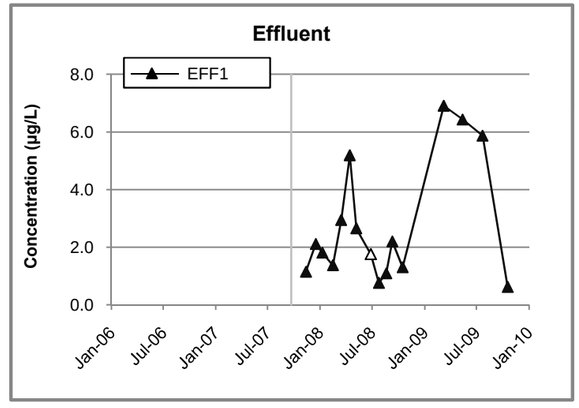
Station WQ13 not sampled on September 5 or 12, 2009

Groundwater Copper (Dissolved)









Notes:
Nondetect values shown at full detection limits as hollow symbols.
The vertical gray line on each plot indicates initiation of project activity on September 21, 2007.

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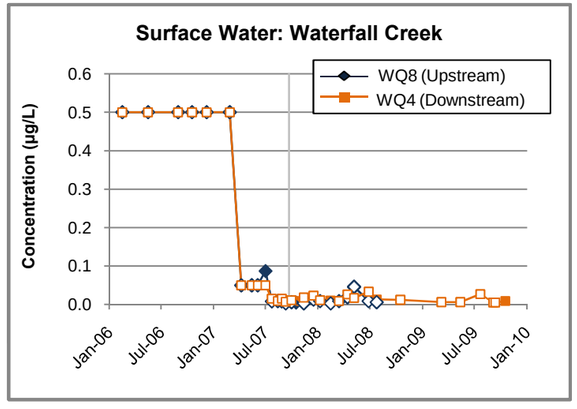
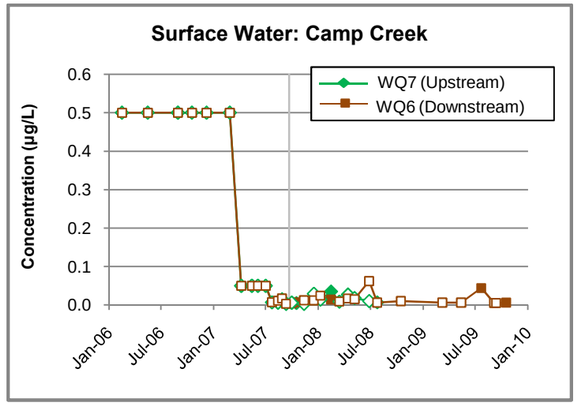
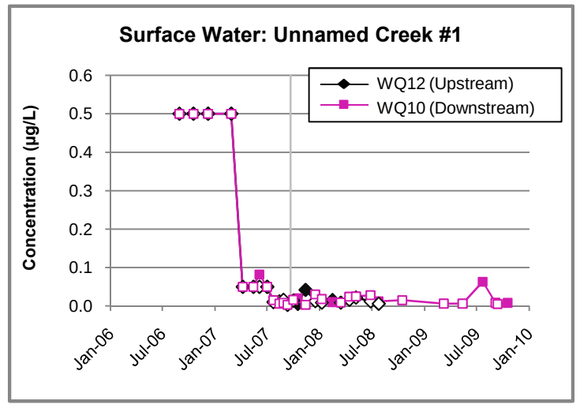
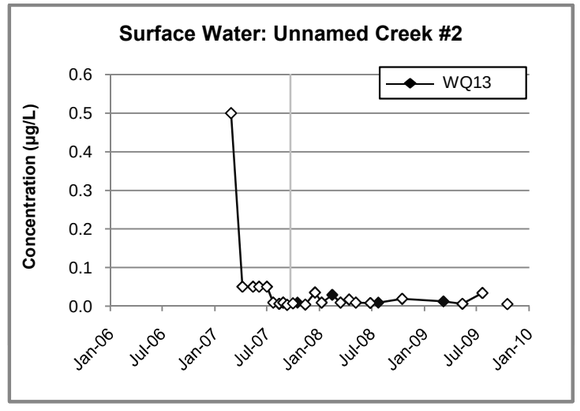
Figure 3-6
Time Series Plots: Dissolved Copper
Surface Water and Groundwater
Niblack Exploration Project
2009 Annual Report

Surface Water Lead (Dissolved)



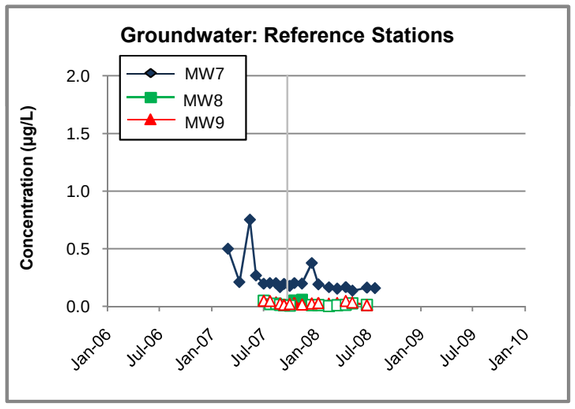


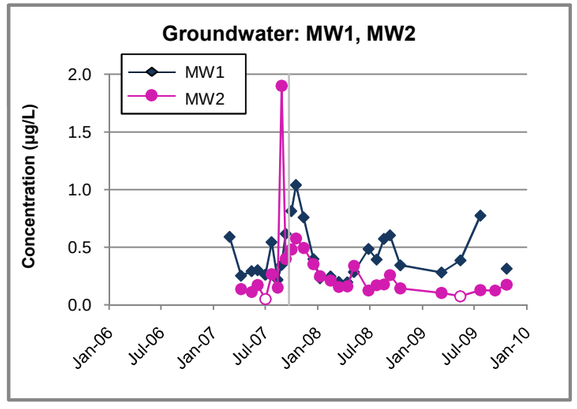


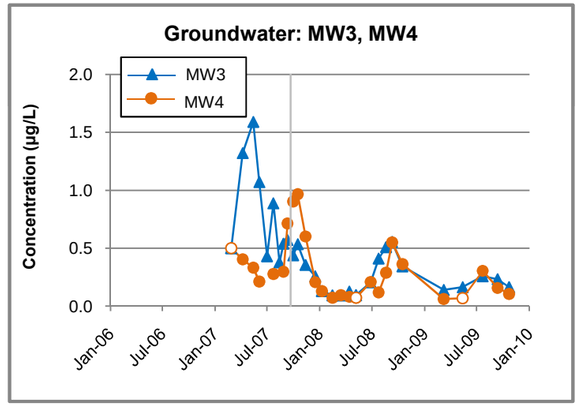


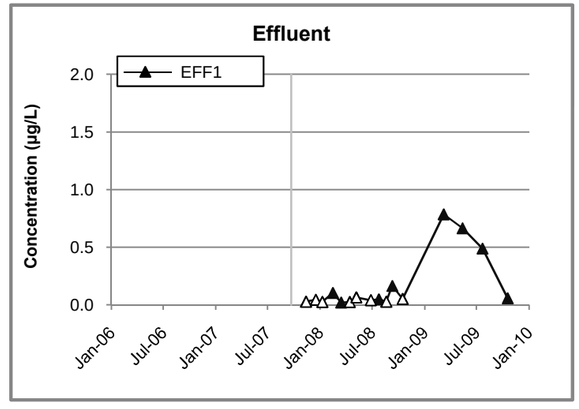
Station WQ13 not sampled on September 5 or 12, 2009

Groundwater Lead (Dissolved)









Notes:
Nondetect values shown at full detection limits as hollow symbols.
The vertical gray line on each plot indicates initiation of project activity on September 21, 2007.

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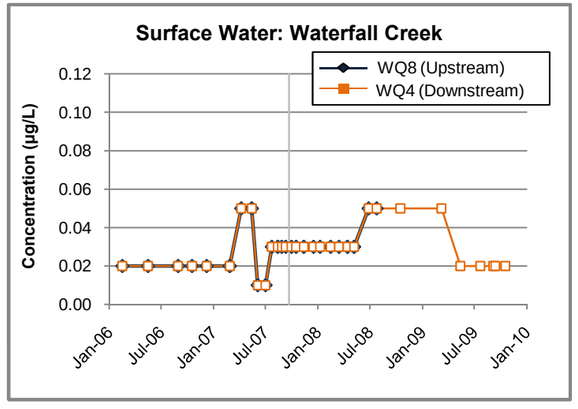
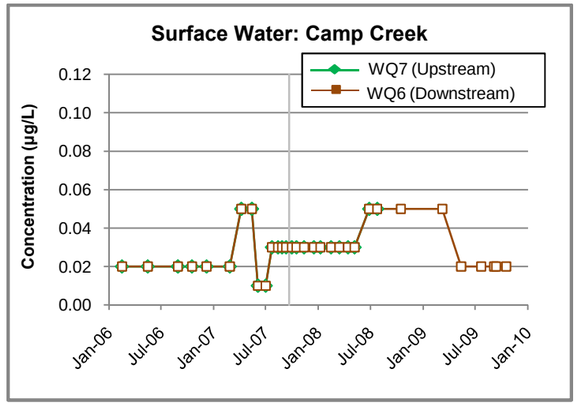
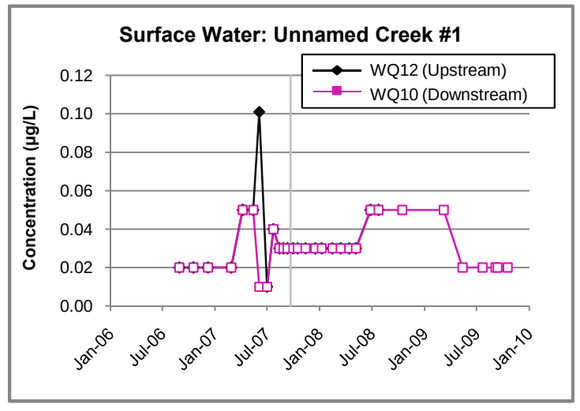
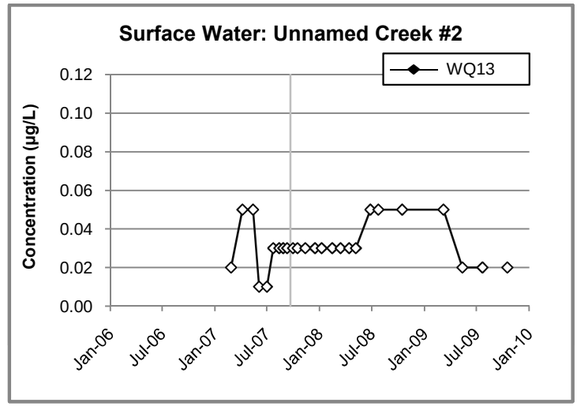
Figure 3-7
Time Series Plots: Dissolved Lead
Surface Water and Groundwater
Niblack Exploration Project
2009 Annual Report

Surface Water Mercury (Dissolved)



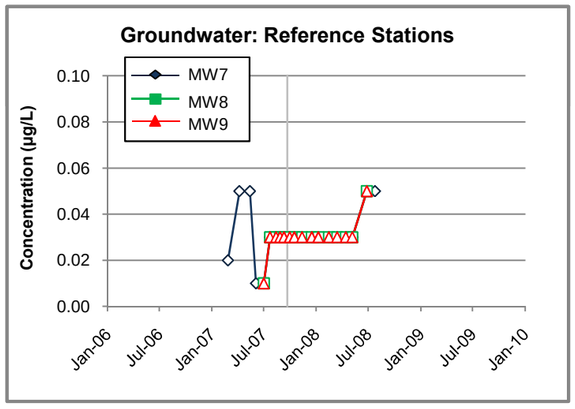


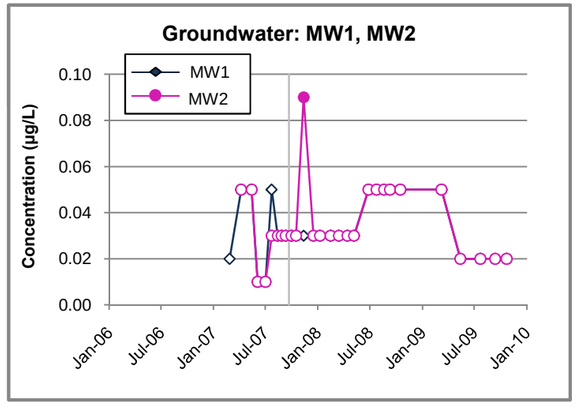


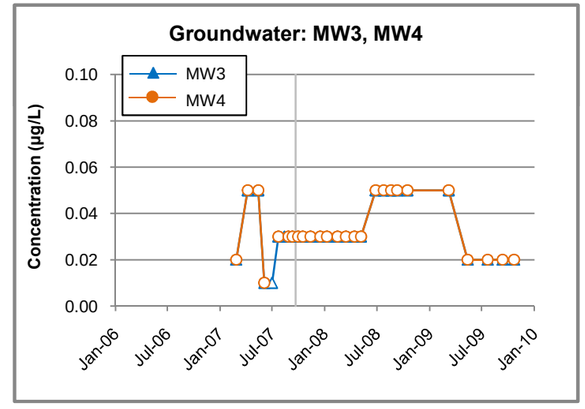


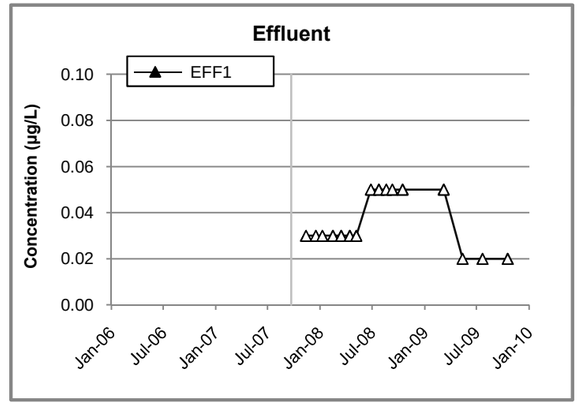
Station WQ13 not sampled on September 5 or 12, 2009

Groundwater Mercury (Dissolved)









Notes:
Nondetect values shown at full detection limits as hollow symbols.
The vertical gray line on each plot indicates initiation of project activity on September 21, 2007.

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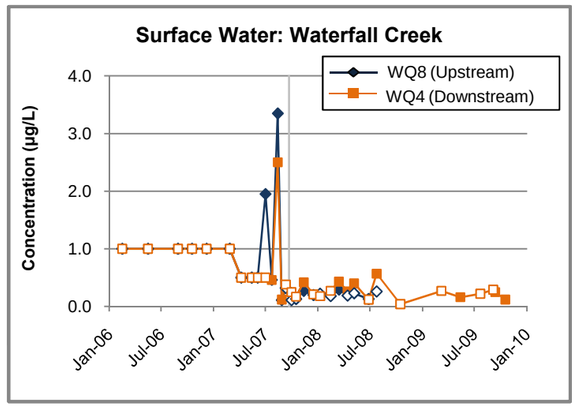
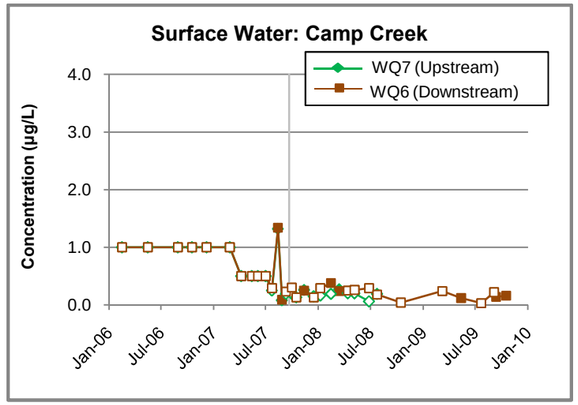
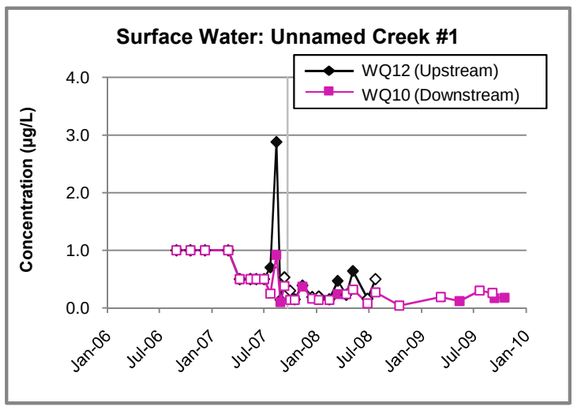
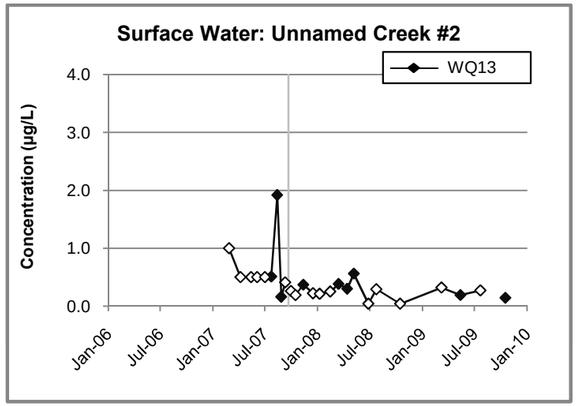
Figure 3-8
Time Series Plots: Dissolved Mercury
Surface Water and Groundwater
Niblack Exploration Project
2009 Annual Report

Surface Water Nickel (Dissolved)



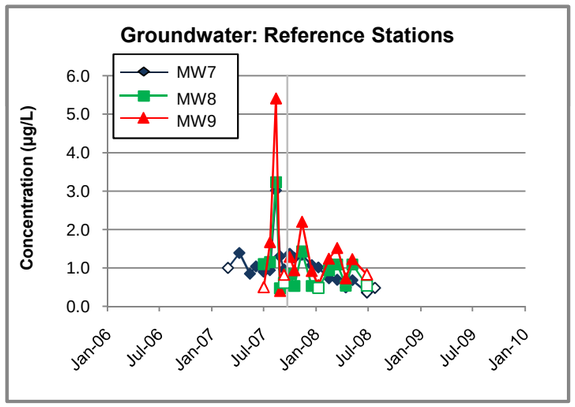


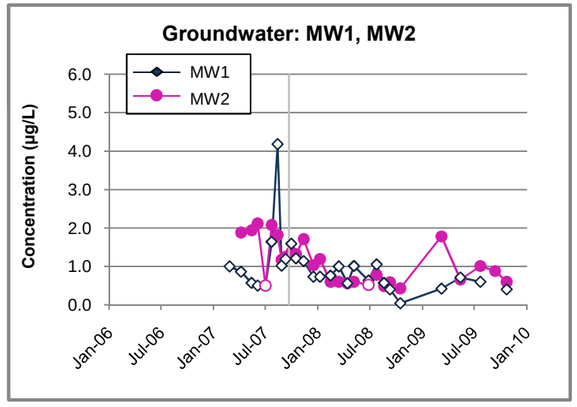


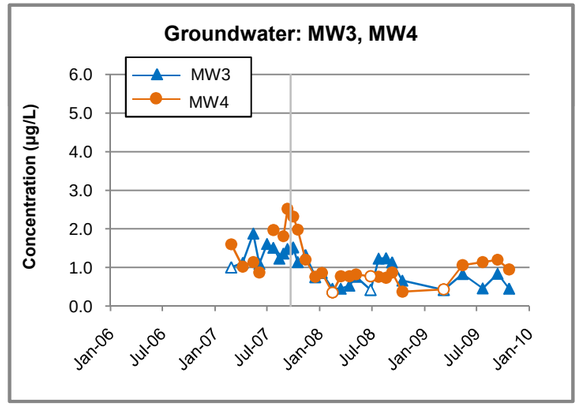


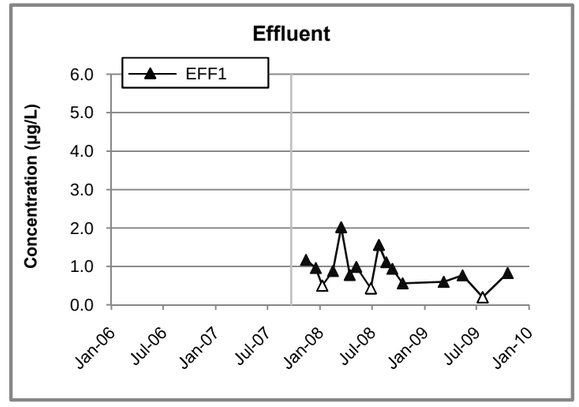
Station WQ13 not sampled on September 5 or 12, 2009

Groundwater Nickel (Dissolved)









Notes:
Nondetect values shown at full detection limits as hollow symbols.
The vertical gray line on each plot indicates initiation of project activity on September 21, 2007.

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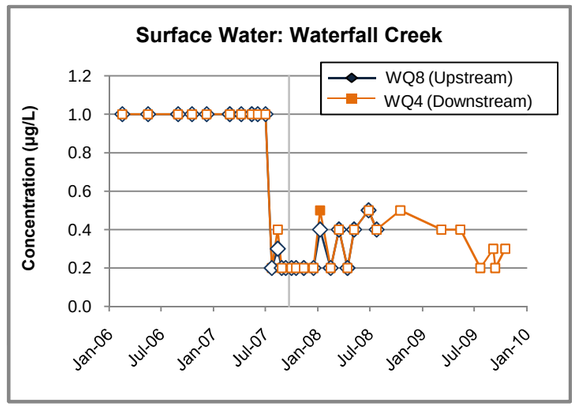
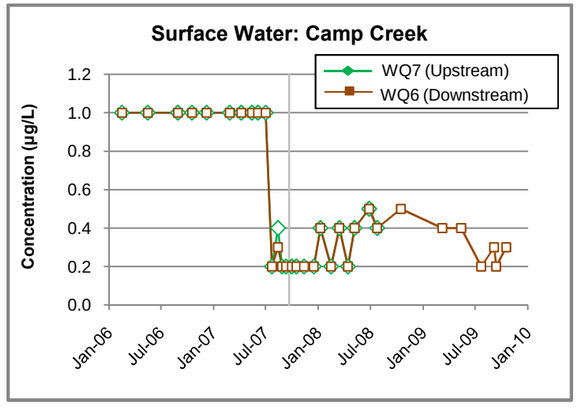
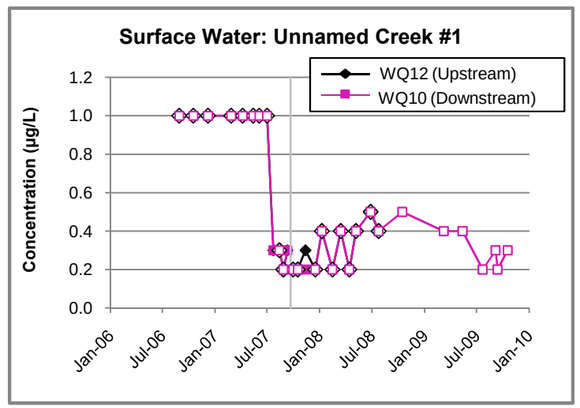
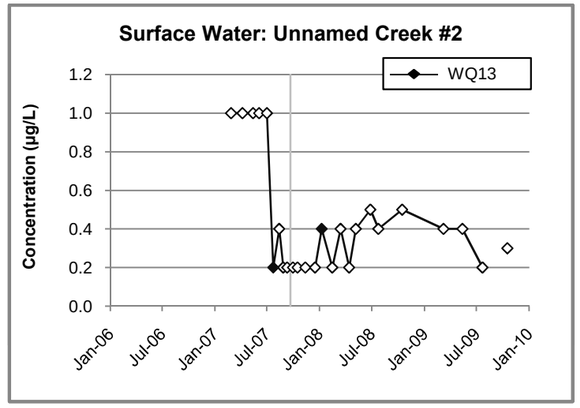
Figure 3-9
Time Series Plots: Dissolved Nickel
Surface Water and Groundwater
Niblack Exploration Project
2009 Annual Report

Surface Water Selenium (Dissolved)



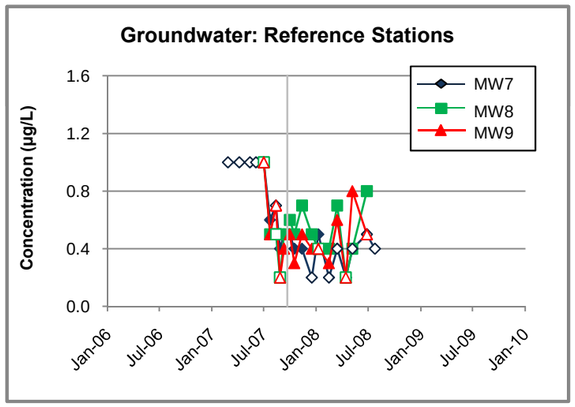


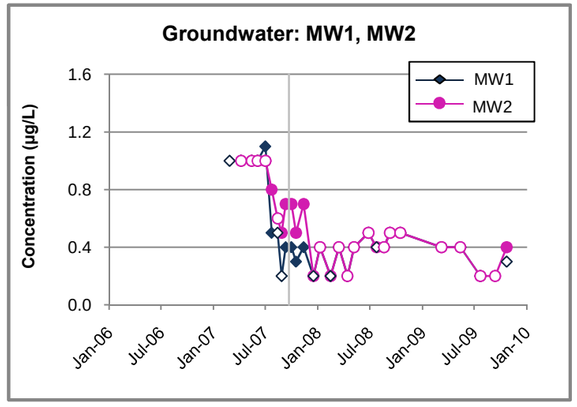


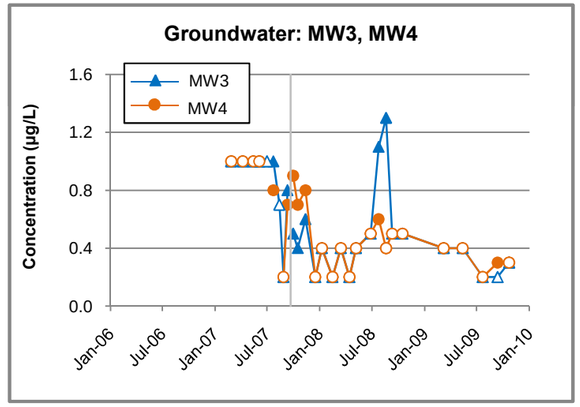


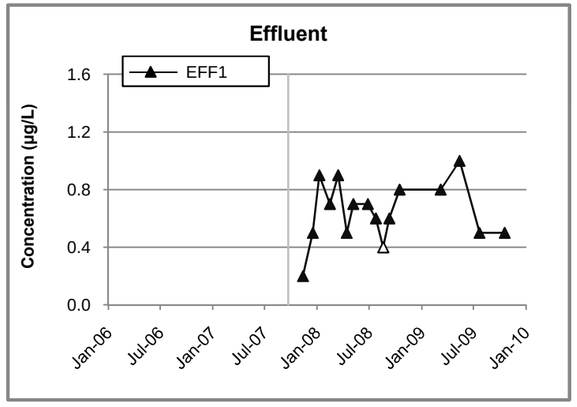
Station WQ13 not sampled on September 5 or 12, 2009

Groundwater Selenium (Dissolved)









Notes:
Nondetect values shown at full detection limits as hollow symbols.
The vertical gray line on each plot indicates initiation of project activity on September 21, 2007.

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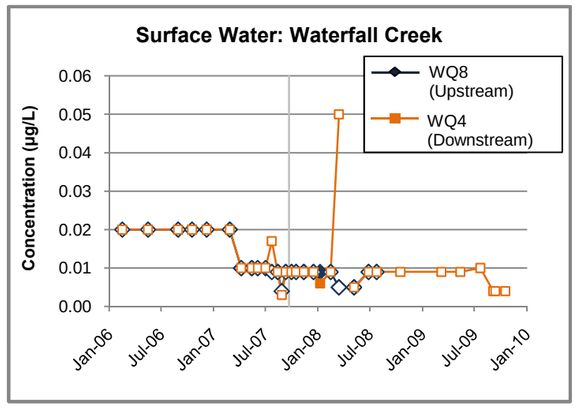
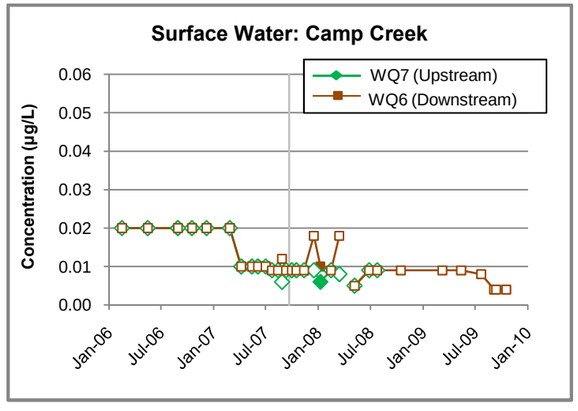
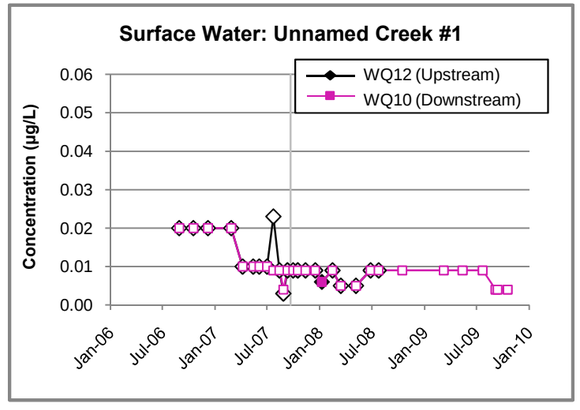
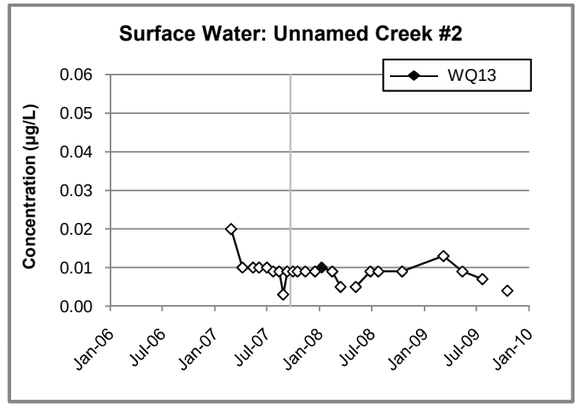
Figure 3-10
Time Series Plots: Dissolved Selenium
Surface Water and Groundwater
Niblack Exploration Project
2009 Annual Report

Surface Water Silver (Dissolved)



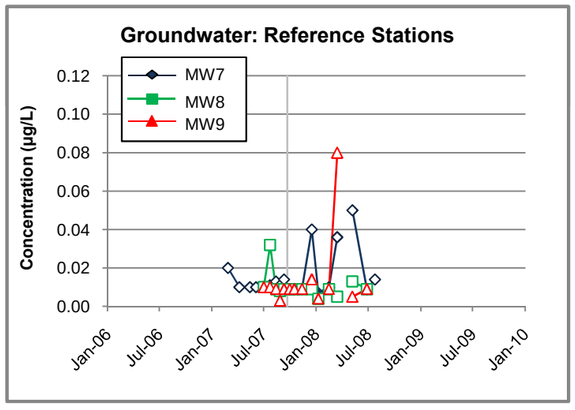


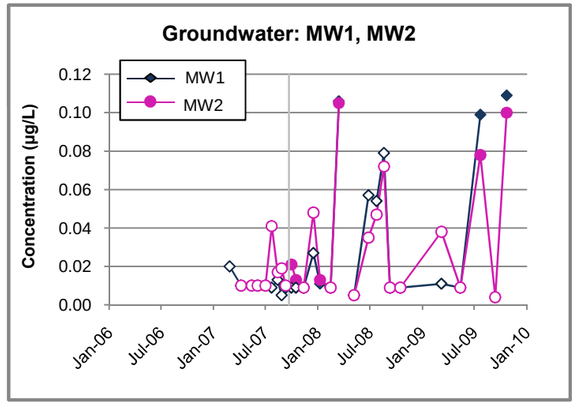


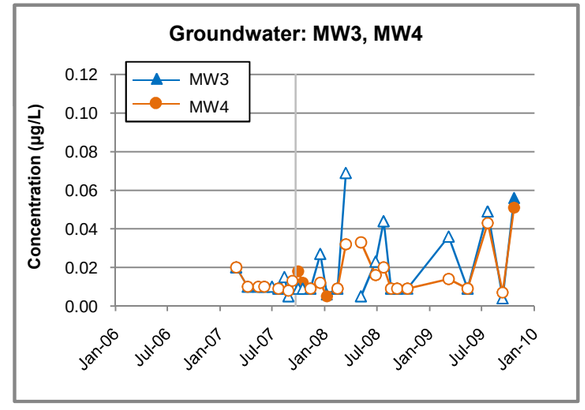


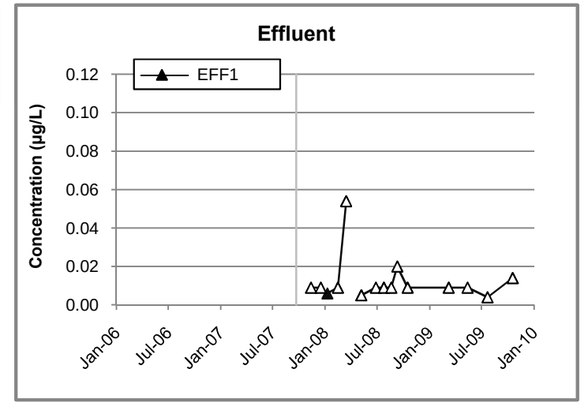
Station WQ13 not sampled on September 5 or 12, 2009

Groundwater Silver (Dissolved)









Notes:
Nondetect values shown at full detection limits as hollow symbols.
The vertical gray line on each plot indicates initiation of project activity on September 21, 2007.

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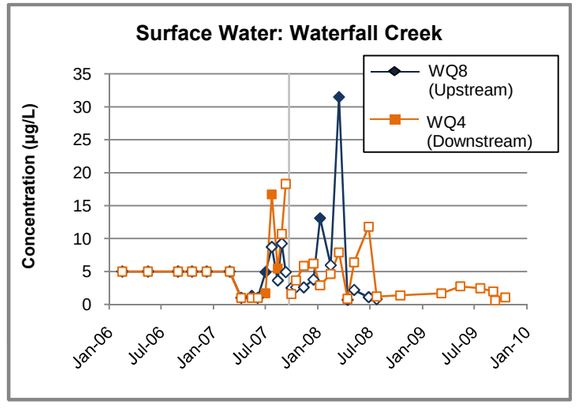
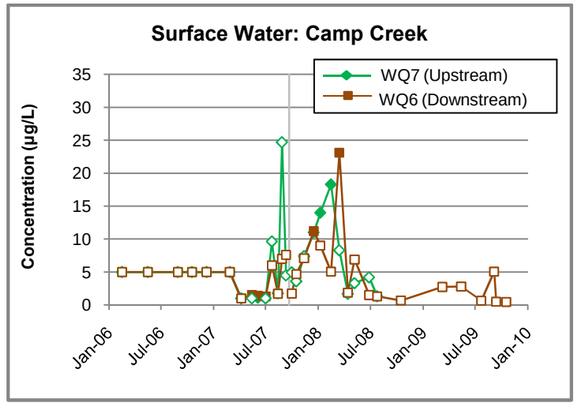
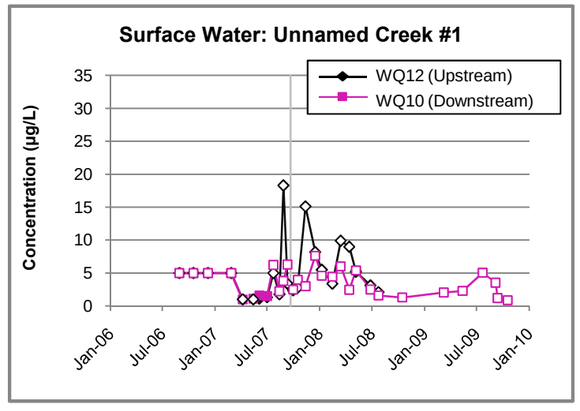
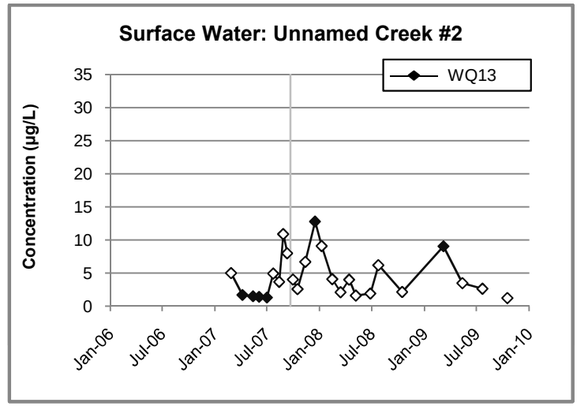
Figure 3-11
Time Series Plots: Dissolved Silver
Surface Water and Groundwater
Niblack Exploration Project
2009 Annual Report

Surface Water Zinc (Dissolved)



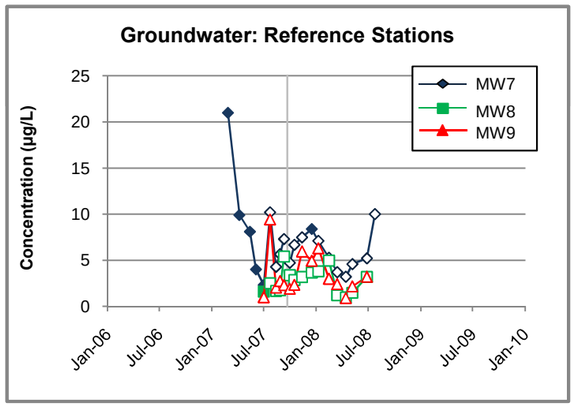


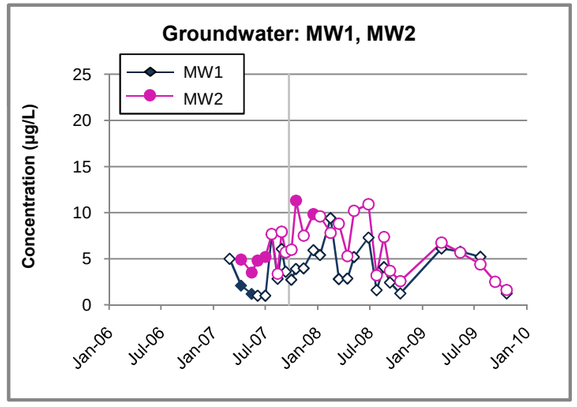


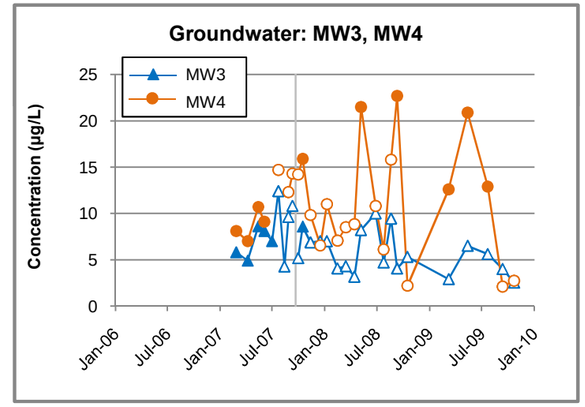


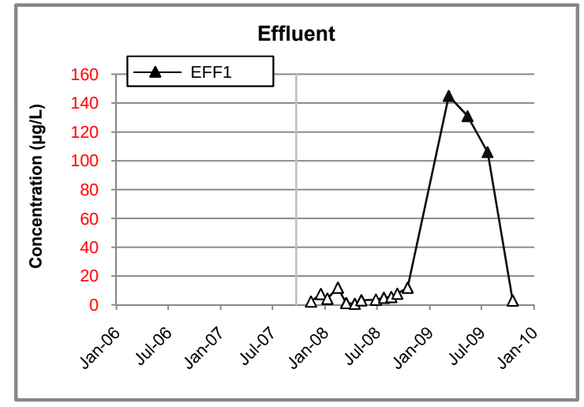
Station WQ13 not sampled on September 5 or 12, 2009

Groundwater Zinc (Dissolved)







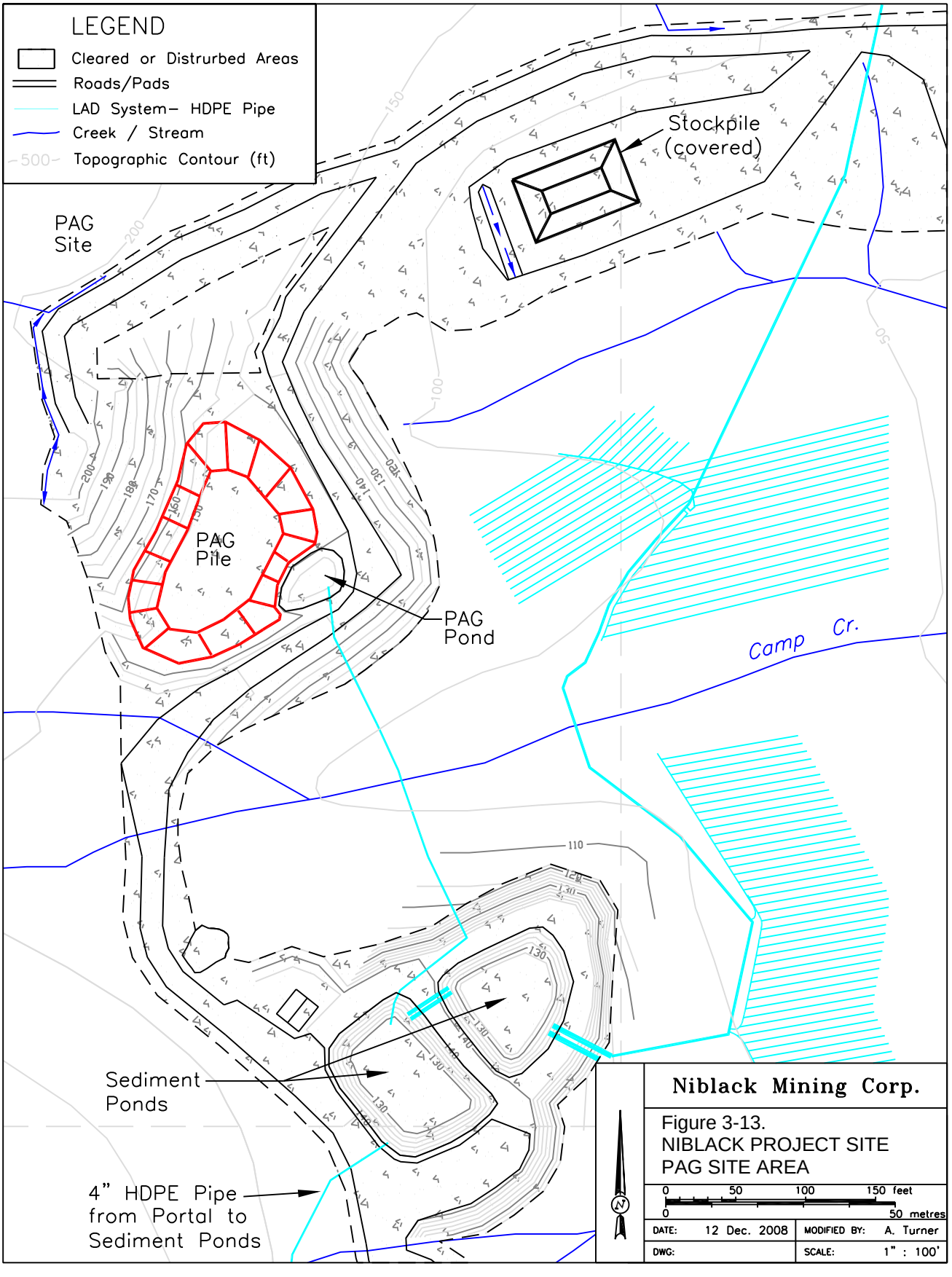


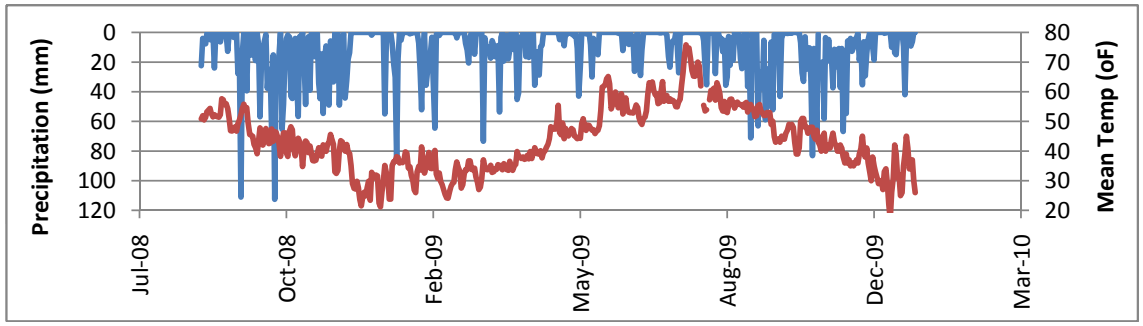
Note: Effluent plot y-axis scale differs from other groundwater plots.

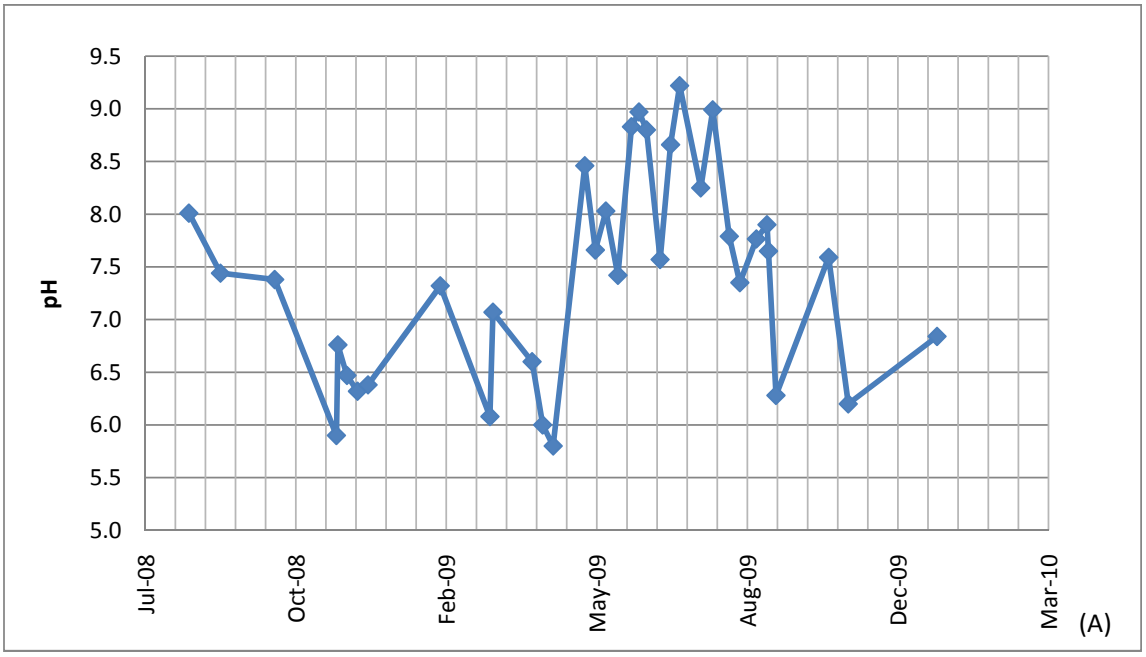
Notes:
Nondetect values shown at full detection limits as hollow symbols.
The vertical gray line on each plot indicates initiation of project activity on September 21, 2007.

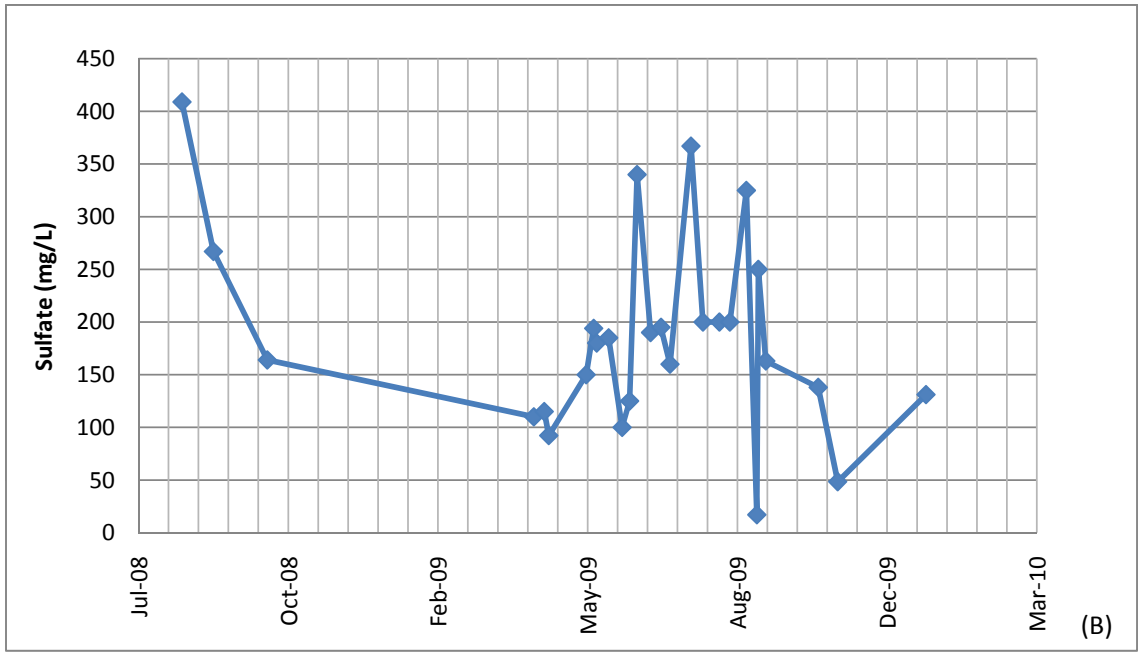
NIBLACK PROJECT LLC integral consulting inc.

Figure 3-12
Time Series Plots: Dissolved Zinc
Surface Water and Groundwater
Niblack Exploration Project
2009 Annual Report


LEGEND
Cleared or Distrurbed Areas
Roads/Pads
LAD System– HDPE Pipe
Creek / Stream
500 Topographic Contour (ft)
PAG Site
Stockpile (covered)
PAG Pile
PAG Pond
Camp Cr.
Sediment Ponds
4" HDPE Pipe from Portal to Sediment Ponds
Niblack Mining Corp.
Figure 3-13.
NIBLACK PROJECT SITE
PAG SITE AREA
0 50 100 150 feet
0 50 metres
DATE: 12 Dec. 2008
MODIFIED BY: A. Turner
DWG:
SCALE: 1" : 100'

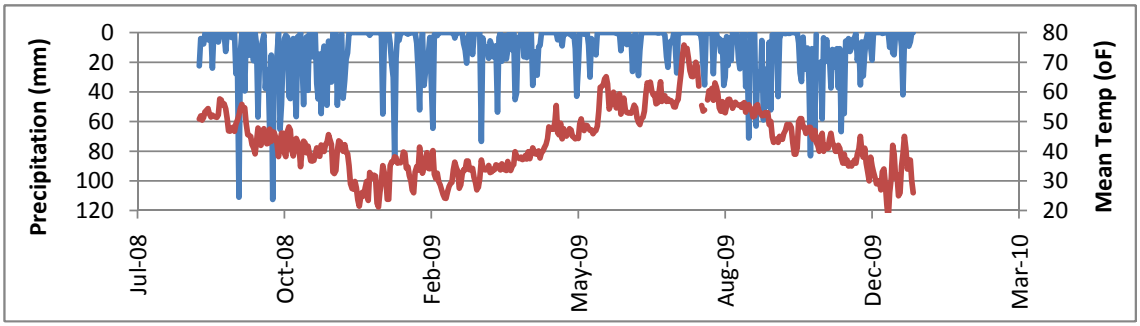


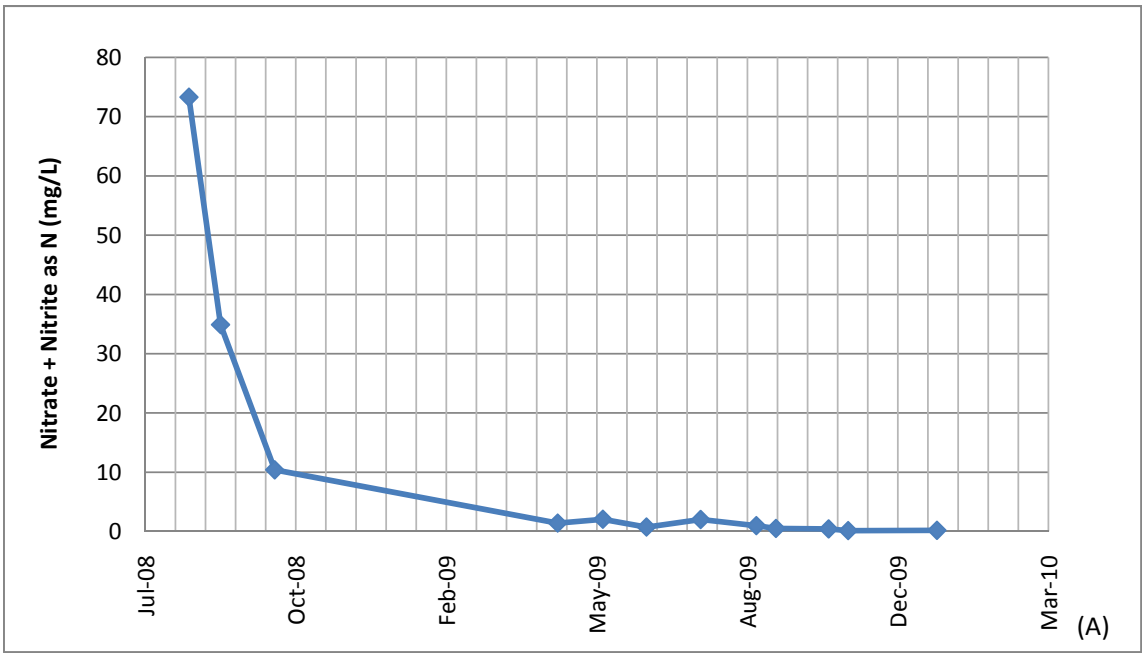


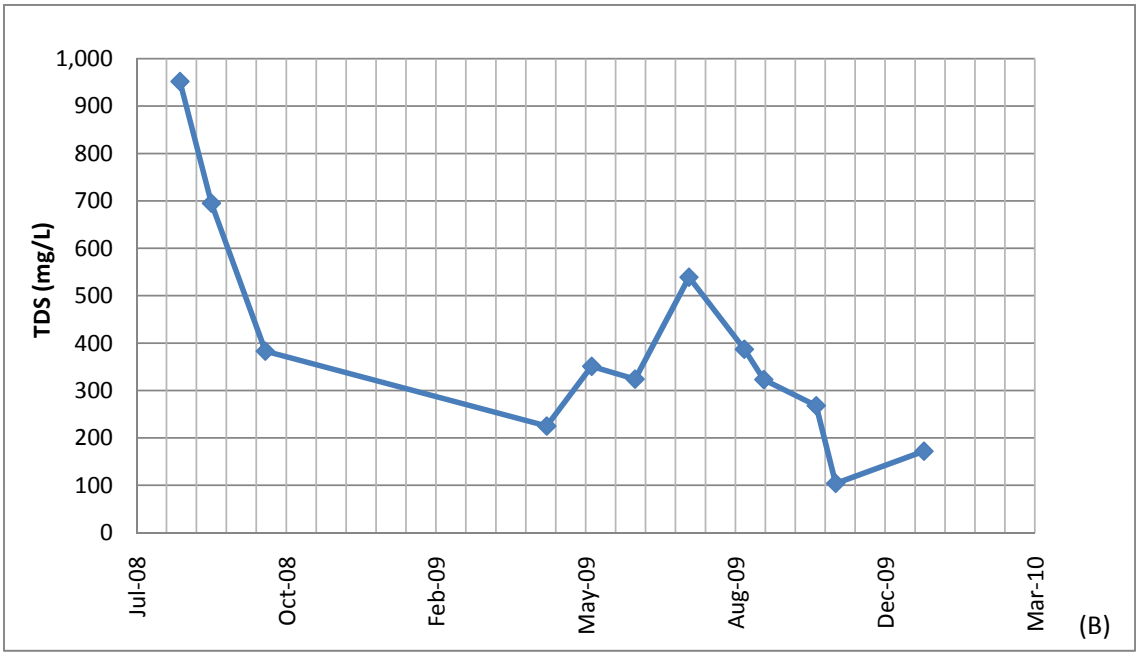


pHase Geochemistry

Figure 3-14
Time Trends for (A) pH and (B) Sulphate in the PAG Site
Shown with Precipitation and Temperature
Niblack Exploration Project
2009 Annual Report







pHase Geochemistry

Figure 3-15
Time Trends for (A) Nitrate + Nitrite and (B) TDS in the PAG Site Shown with Precipitation and Temperature
Niblack Exploration Project
2009 Annual Report

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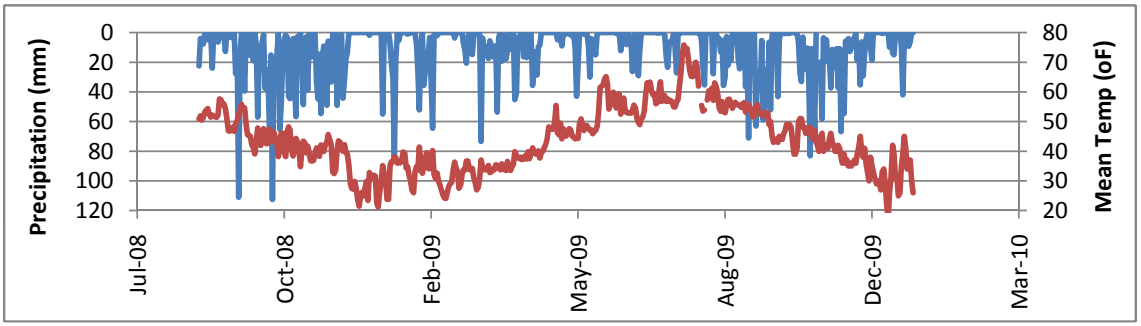
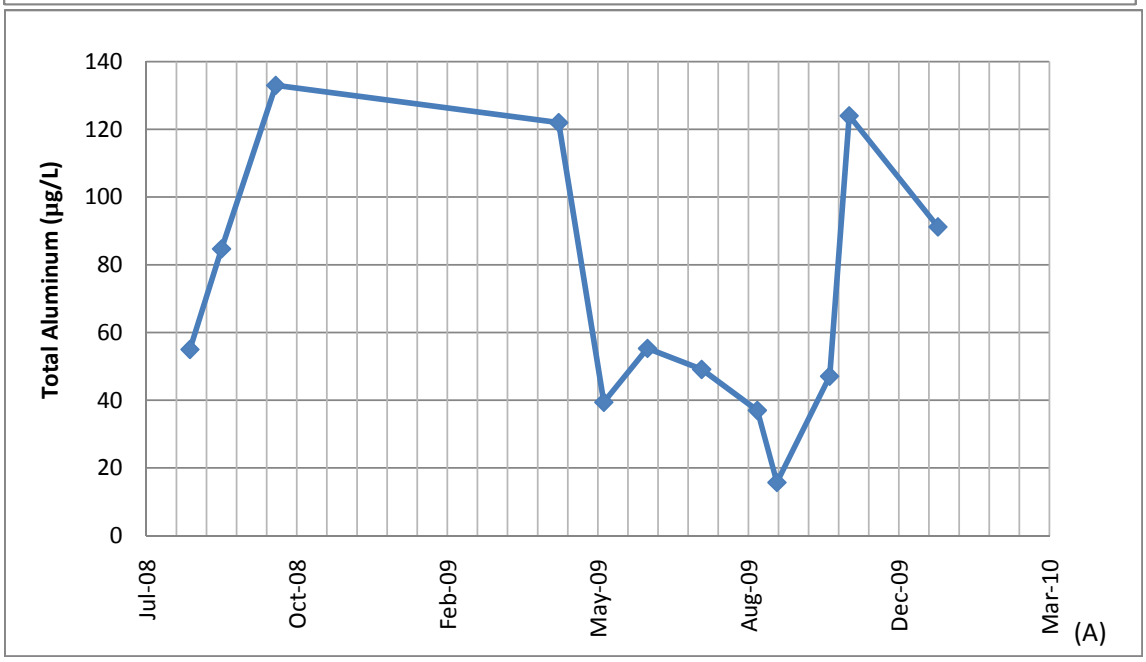
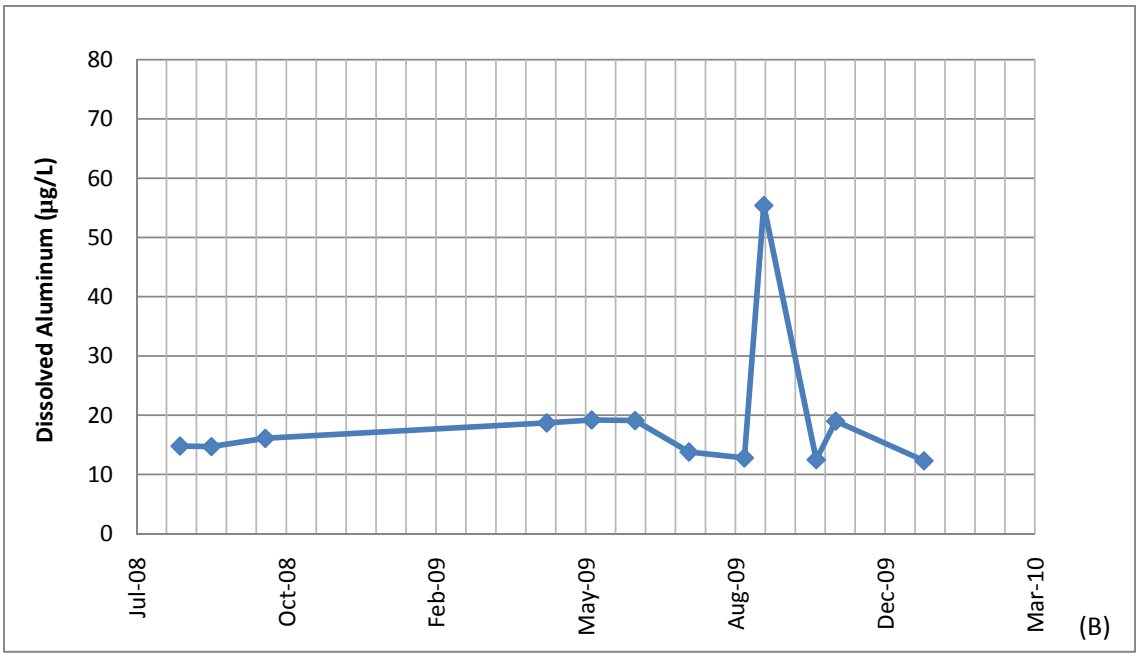


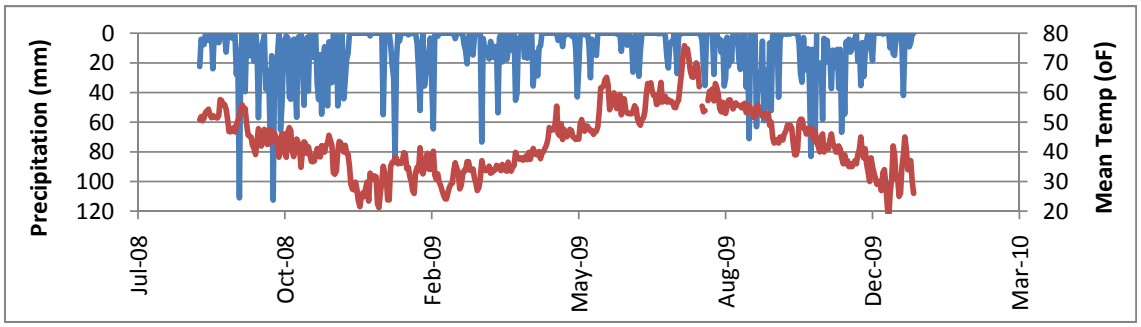


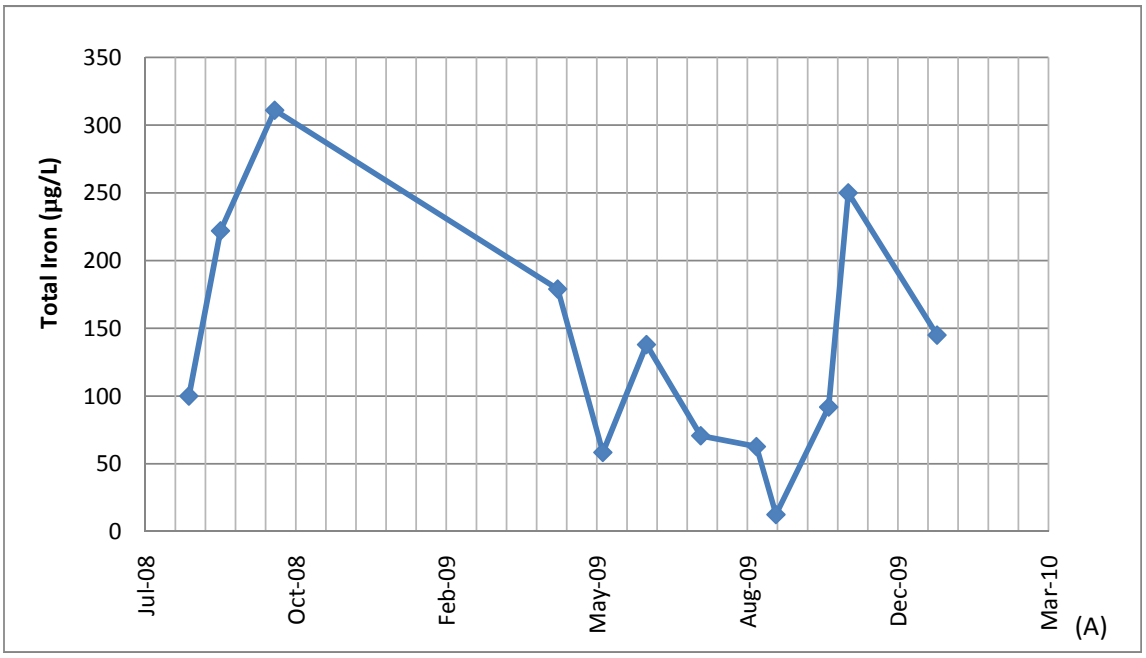


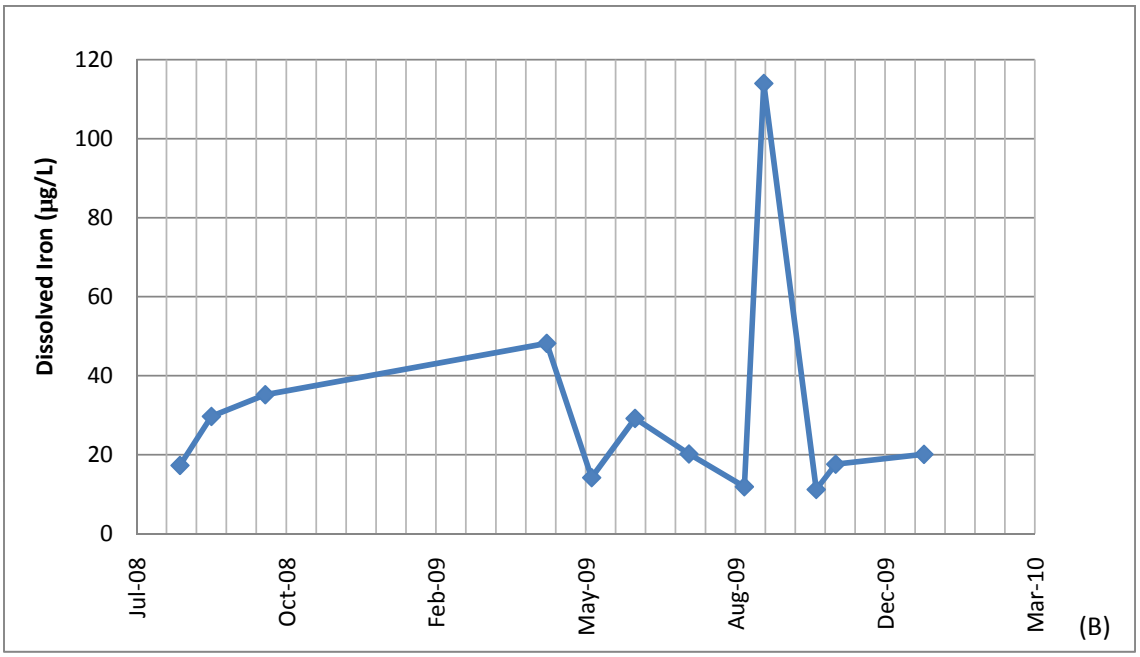
pHase Geochemistry

Figure 3-16
Time Trends for (A) Total Aluminum and (B) Dissolved Aluminumin the PAG Site Shown with Precipitation and Temperature
Niblack Exploration Project
2009 Annual Report

NIBLACK PROJECT LLC integral consulting inc.

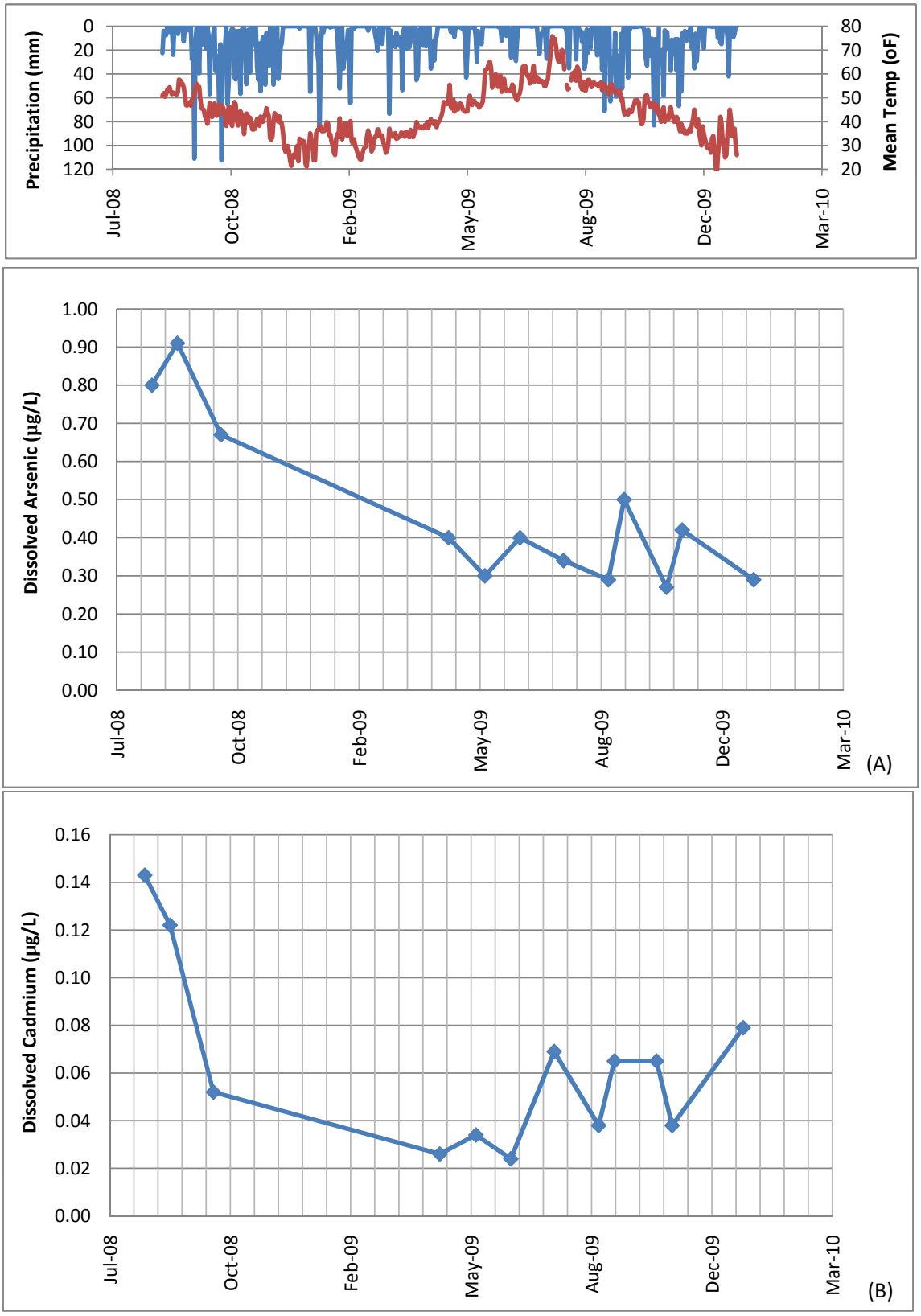






pHase Geochemistry

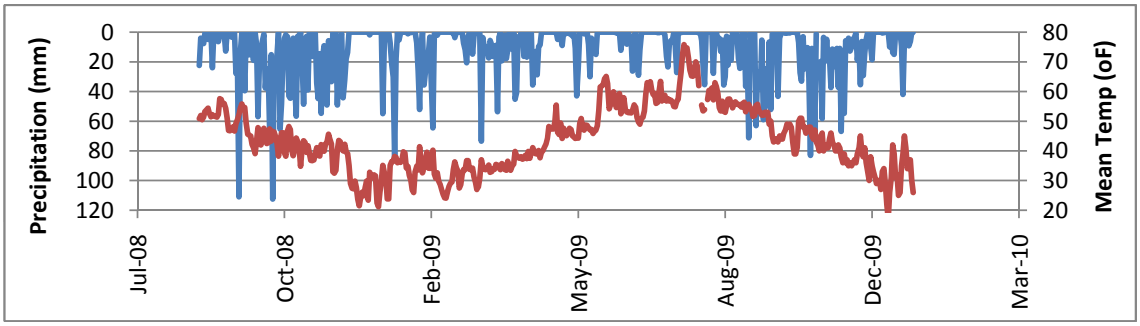
Figure 3-17
Time Trends for (A) Total Iron and (B) Dissolved Iron in the PAG Site Shown with Precipitation and Temperature
Niblack Exploration Project
2009 Annual Report

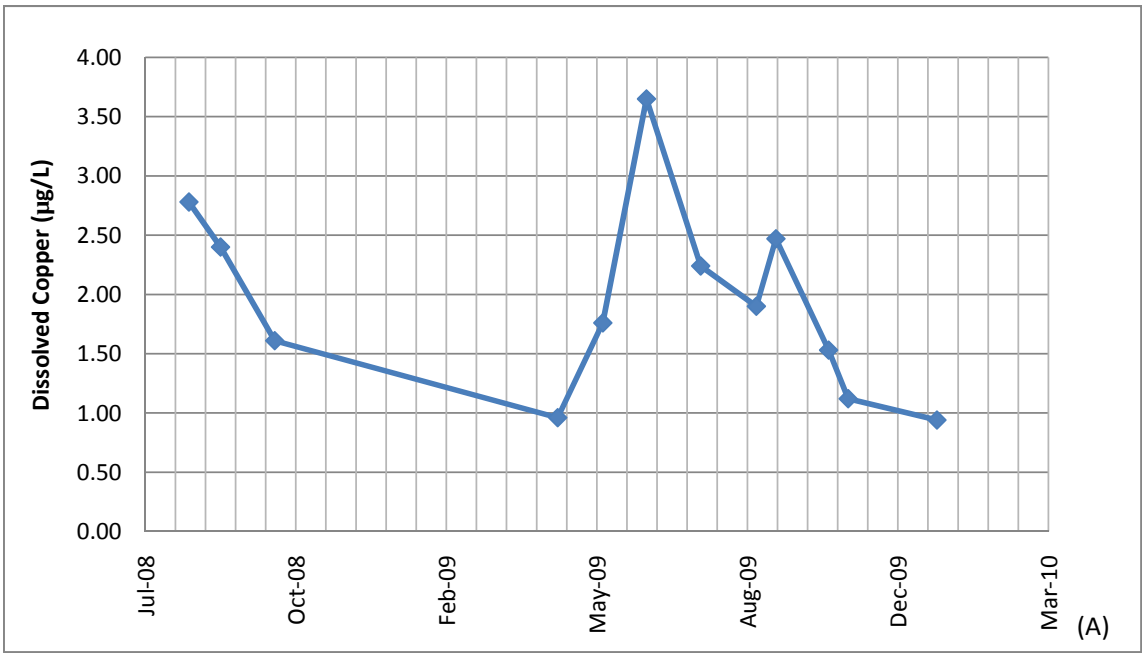


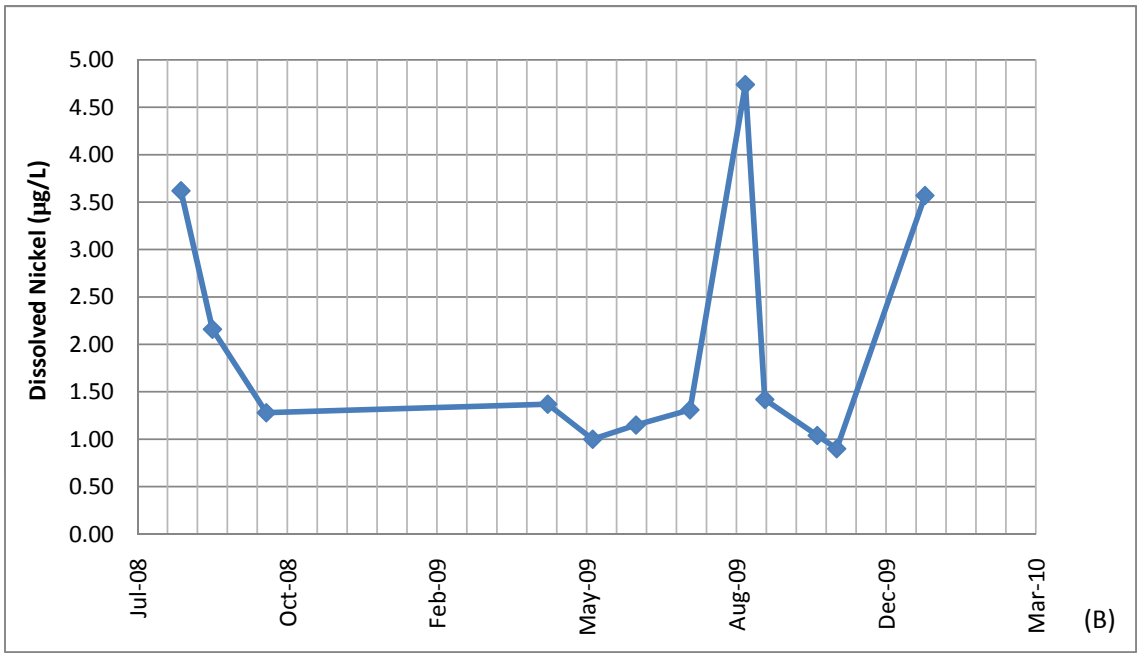
pHase Geochemistry

Figure 3-18
Time Trends for (A) Dissolved Arsenic and (B) Dissolved Cadmium in the PAG Site Shown with Precipitation and Temperature
Niblack Exploration Project
2009 Annual Report

NIBLACK PROJECT LLC integral consulting inc.



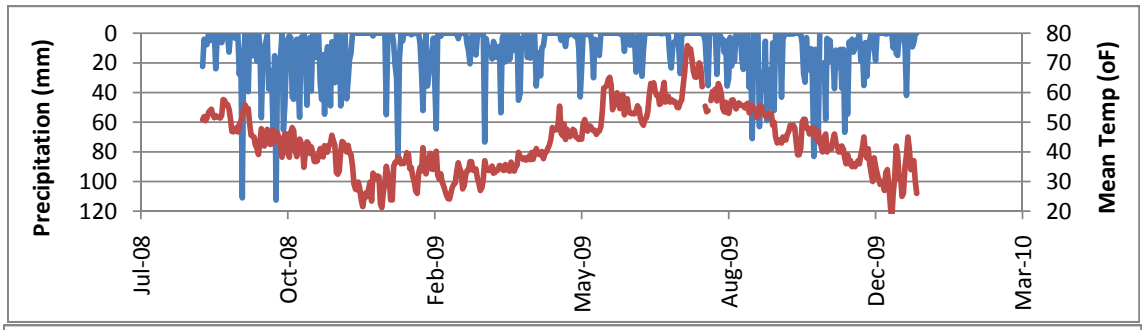


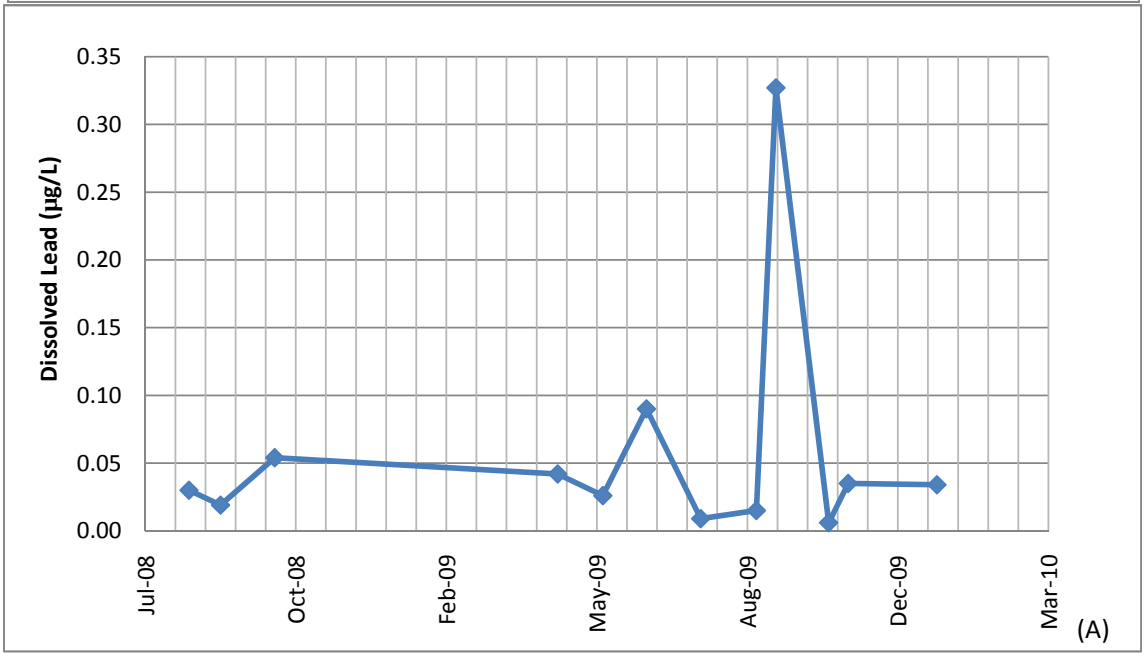


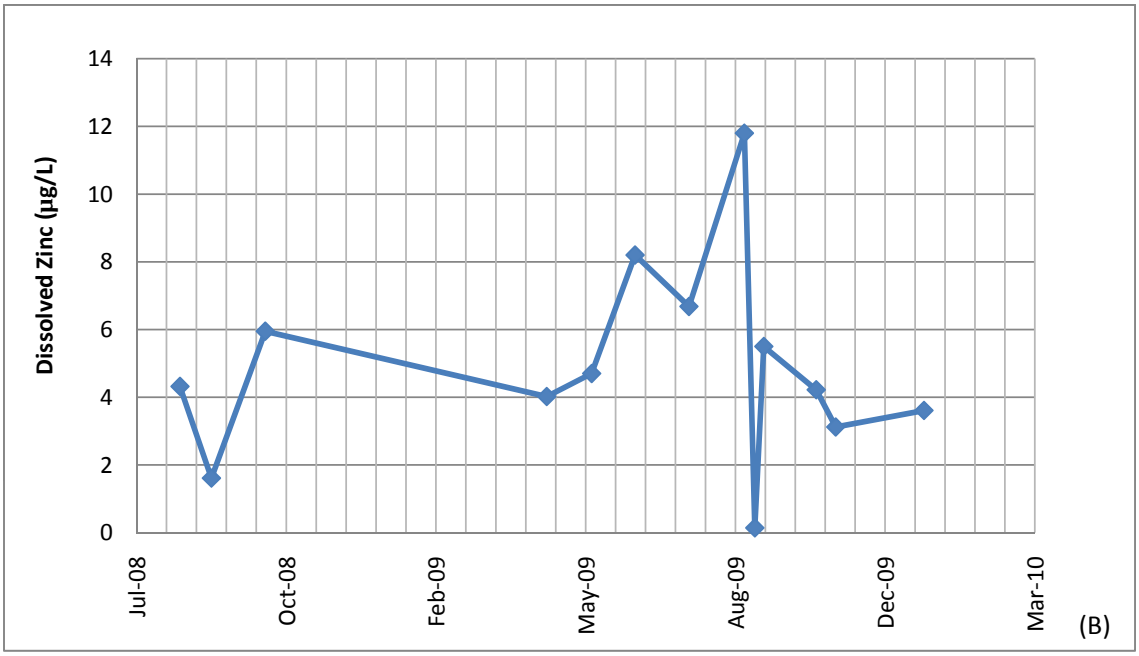
pHase Geochemistry

Figure 3-19
Time Trends for (A) Dissolved Copper and (B) Dissolved Nickel in the PAG Site Shown with Precipitation and Temperature
Niblack Exploration Project
2009 Annual Report

NIBLACK PROJECT LLC integral consulting inc.







pHase Geochemistry

Figure 3-20
Time Trends for (A) Dissolved Lead and
(B) Dissolved Zinc in the PAG Site
Shown with Precipitation and Temperature
Niblack Exploration Project
2009 Annual Report

NIBLACK PROJECT LLC integral consulting inc.

TABLES

Table 2-1. Water Balance Monthly Summary, 2009

	Flow from Portal [a]		Precipitation to Sediment Ponds [b]			Precipitation to PAG Site [b]			Total Flow to Sediment Ponds [c]		Flow to LAD Site [d]	
Month	(gal)	(gal/min)	(inches)	(gal)	(gal/min)	(inches)	(gal)	(gal/min)	(gal)	(gal/min)	(gal)	(gal/min)
Jan-09	*909,673*	*14*	12.9	*120,151*	*1.9*	12.9	*139,375*	*2.2*	*1,169,200*	*18*	1,169,200	26
Feb-09	*1,900,759*	*33*	8.5	*79,880*	*1.4*	8.5	*92,661*	*1.6*	*2,073,300*	*36*	2,073,300	51
Mar-09	*2,374,606*	*38*	13.8	*128,655*	*2.0*	13.8	*149,239*	*2.4*	*2,652,500*	*42*	2,652,500	59
Apr-09	*2,186,859*	*36*	11.1	*103,954*	*1.7*	11.1	*120,587*	*2.0*	*2,411,400*	*39*	2,411,400	56
May-09	*1,923,299*	*30*	7.1	*66,297*	*1.0*	7.1	*76,904*	*1.2*	*2,066,500*	*33*	2,066,500	46
Jun-09	*2,328,634*	*38*	4.8	*44,799*	*0.73*	4.8	*51,967*	*0.8*	*2,425,400*	*40*	2,425,400	56
Jul-09	*2,512,114*	*40*	4.0	*37,216*	*0.59*	4.0	*43,170*	*0.7*	*2,592,500*	*41*	2,592,500	58
Aug-09	*2,692,699*	*43*	9.2	*85,927*	*1.4*	9.2	*99,675*	*1.6*	*2,878,300*	*46*	2,878,300	64
Sep-09	*4,493,402*	*73*	25.0	*233,657*	*3.8*	25.0	*271,042*	*4.4*	*4,998,100*	*82*	4,998,100	116
Oct-09	*6,793,690*	*107*	17.9	*167,459*	*2.6*	17.9	*194,252*	*3.1*	*7,155,400*	*113*	7,155,400	160
Nov-09	*8,558,062*	*140*	20.6	*192,610*	*3.1*	20.6	*223,428*	*3.7*	*8,974,100*	*147*	8,974,100	208
Dec-09	*7,149,228*	*113*	13.1	*122,672*	*1.9*	13.1	*142,300*	*2.3*	*7,414,200*	*117*	7,414,200	166

Notes:

Italized values indicate an estimated number.

LAD = Land Application Dispersion System

PAG = potentially acid-generating

[a] Portal flow estimated based on LAD system flow meter measurements and esimates of precipitation to the sediment ponds and PAG facility according to the following equation: Portal Flow = LAD Flow - (Precipitation to Sediment Ponds + Precipitation to PAG Site).

[b] Precipitation data from on-site weather station. On-site precipitation data not available due to instrument error from September 18 - December 16, 2009. National Weather Service data from the Ketchikan Airport station PAKT was used during this time period. Precipitation to settling ponds based on settling pond surface area of 15,000 ft^2; precipitation to PAG site based on PAG facility surface area of 17,400 ft^2.

[c] Flow to sediment ponds estimated as the sum of portal flow, precipitation to sediment ponds, and precipitation to PAG site.

[d] Flow to LAD site metered near the outlet of the sediment ponds.

Table 3-1. Sampling Event Summary, 2009

Date of Sampling Event	Stations Sampled	QA/QC Samples Collected
March 8-11, 2009	WQ4, WQ6, WQ10, WQ13 EFF1, MW1, MW2, MW3, MW4	Field duplicates of MW1 and WQ13, total and dissolved field blanks
May 13-14, 2009	WQ4, WQ6, WQ10, WQ13 EFF1, MW1, MW2, MW3, MW4	Field duplicates of MW4 and WQ10, total and dissolved field blanks
July 23-25, 2009 [a]	WQ4, WQ6, WQ10, WQ13 EFF1, MW1, MW2, MW3, MW4	Field duplicate of MW4, total and dissolved field blanks
August 31 – September 11, 2009 [b]	EFF1	QA/QC samples not collected
September 5, 2009 [b]	WQ4, WQ6, WQ10	Field duplicate of WQ4, total and dissolved field blanks
September 12-13, 2009 [b]	WQ4, WQ6, WQ10 MW2, MW3, MW4	Field duplicates of MW4 and WQ4, total and dissolved field blanks
October 17-18, 2009	WQ4, WQ6, WQ10, WQ13 EFF1, MW1, MW2, MW3, MW4	Field duplicates of MW1 and WQ10, total and dissolved field blanks

Notes:
The analyte list for each sampling event is presented in Table 3-5.
QA/QC = quality assurance and quality control

[a] Regular quarterly monitoring
[b] Mine dewatering monitoring

Table 3-2. Water Quality Monitoring Stations

Monitoring Point	Location	Purpose				
		Pre-project Reference Conditions	Concurrent Reference Conditions	Compliance Location	Information Only	Post-closure Monitoring
Effluent						
EFF1	Discharge from the treatment ponds				X	
Surface Waters						
WQ4	Waterfall Creek – downstream	X		X		X
WQ6	Camp Creek – downstream	X		X		
WQ7[a]	Camp Creek – upstream	X	X[a]			
WQ8[a]	Waterfall Creek – upstream	X	X[a]			
WQ10	Unnamed Creek 1 – downstream	X		X		
WQ12[a]	Unnamed Creek 1 – upstream	X	X[a]			
WQ13	Unnamed Creek 2	X				X
PAG	PAG site under drain				See Note A1	

Table 3-2. Water Quality Monitoring Stations

Monitoring Point	Location	Purpose				
		Pre-project Reference Conditions	Concurrent Reference Conditions	Compliance Location	Information Only	Post-closure Monitoring
Groundwater Wells						
MW1	Wetlands below NAG site	X	See Note A2[a]	See Note A2		X
MW2	Wetlands below settlement/treatment ponds	X	See Note A2[a]	See Note A2		X
MW3	Wetlands below PAG site	X	See Note A2[a]	See Note A2		X
MW4	Wetlands below infiltration system area	X	See Note A2[a]	See Note A2		X
MW7[a]	Wetlands – offsite and to the east of the project	X	X[a]			
MW8[a]	Upgradient of land application area and MW3				See Note A3[a]	
MW9[a]	Upgradient of land application area and MW4				See Note A3[a]	

Notes:

ADEC = Alaska Department of Environmental Conservation

NAG = non-acid generating

PAG = potentially acid-generating

[a] Removed from the water quality monitoring network subsequent to Q3 2008, as per agreement with ADEC.

Note A1: Monitoring PAG site under drain is a component of the leak detection system, required to monitor potential degradation of groundwaters should a breach in the liner occur.

Note A2: MW1, MW2, MW3, and MW4 will be used for monitoring for changes to natural water quality in wetlands water when compared to historical values and remote wetland wells.

Note A3: MW8 and MW9 will be used to determine background groundwater quality for information purposes only.

Table 3-3. Water Quality Parameters Monitored in Surface Water, Groundwater, and Effluent

Characteristic	Sample Type	Notes
Field Parameters		
Conductivity	Field test	
Dissolved oxygen (DO)	Field test	
pH	Field test	
Temperature	Field test	
Turbidity	Field test	
Sulfate	Hach field test	Parameter monitored daily at station EFF1 as part of mine dewatering.
Dissolved zinc	Hach field test	Parameter monitored daily at station EFF1 as part of mine dewatering.
Conventional Analyses		
Hardness (as $CaCO_3$)	Grab	
Total dissolved solids (TDS)	Grab	
TDS cations/anions	Calculated value	
Total suspended solids	Grab	
Cations/Anions		
Alkalinity (as $CaCO_3$)	Grab	
Chloride	Grab	
Sulphate	Grab	
Ammonia	Grab	
Nitrogen (nitrate/nitrite)	Grab	
Metals (Total and Dissolved)		
Aluminum	Grab	
Arsenic	Grab	
Cadmium	Grab	
Calcium	Grab	
Chromium	Grab	Reported parameter for station EFF1 only
Copper	Grab	
Iron	Grab	
Lead	Grab	
Magnesium	Grab	
Mercury	Grab	
Nickel	Grab	
Sodium	Grab	
Potassium	Grab	
Selenium	Grab	
Silver	Grab	
Zinc	Grab	

Table 3-4. Laboratory Methods for Water Quality Samples

Analysis	Analyte Included on Reduced Monitoring List	Sample Preparation		Quantitative Analysis	
		Protocol	Procedure	Protocol	Procedure
Conventional Analyses					
Hardness as $CaCO_3$	X	--	--	EPA 130.2	Titrimetric
Total dissolved solids	X	--	--	SM 2540C	Gravimetric
Total suspended solids	X	--	--	SM 2540D	Gravimetric
Cations/Anions					
Alkalinity as $CaCO_3$	X	--	--	SM 2320	Titrimetric
Bromide, fluoride		--	--	EPA 300.0	Ion chromatography
Chloride, sulfate	X	--	--	EPA 300.0	Ion chromatography
Nitrate/nitrite as N	X	EPA 353.2	Cadmium reduction	EPA 353.2	Colorimetric
Ammonia as N	X	EPA 350.1	Buffered to pH 9.5	EPA 350.1	Colorimetric
o-Phosphate as P, dissolved		EPA 365.3	Persulfate digestion	EPA 365.3	Colorimetric
Phosphate as P, dissolved			Persulfate digestion & 0.45-mm filtration		
Phosphate as P, total			Persulfate digestion		
Total/Dissolved Metals					
Antimony, barium, beryllium, bismuth, cobalt, manganese, molybdenum, thallium, uranium, vanadium		EPA 3020A	Nitric acid digestion	EPA 200.8	ICP/MS
Aluminum, arsenic, cadmium, chromium, copper, lead, nickel, selenium, silver, zinc	X	EPA 3020A	Nitric acid digestion	EPA 200.8	ICP/MS
Boron, lithium, phosphorus, silicon, strontium, tin, titanium		EPA 3010A	Nitric/hydrochloric acid digestion	EPA 200.7	ICP/AES
Calcium, iron, magnesium, potassium, sodium	X	EPA 3010A	Nitric/hydrochloric acid digestion	EPA 200.7	ICP/AES
Mercury	X	EPA 7470A	Acid digestion/oxidation	EPA 245.1	CVAAS

Notes:
Field measurements collected for each event include dissolved oxygen, pH, temperature, conductivity, and turbidity.

-- = not applicable
CVAAS = cold vapor atomic absorption spectrometry
EPA = U.S. Environmental Protection Agency
ICP/AES = inductively-coupled plasma/atomic emission spectrometry
ICP/MS = inductively-coupled plasma/mass spectrometry
SM = Standard Method

Table 3-5. Water Quality Monitoring Station Analyte List Summary, 2009

	March 2009	May 2009	July 2009	August 31–September 11, 2009	September 5, 2009	September 12–13, 2009	October 2009
Monitoring Point	Q1	Q2	Q3	Q3	Q3	Q3	Q3
WQ4	Reduced list	Reduced list	Reduced list	--	Reduced list	Reduced list	Reduced list
WQ6	Reduced list	Reduced list	Reduced list	--	Reduced list	Reduced list	Reduced list
WQ7	--	--	--	--	--	--	--
WQ8	--	--	--	--	--	--	--
WQ10	Reduced list	Reduced list	Reduced list	--	Reduced list	Reduced list	Reduced list
WQ12	--	--	--	--	--	--	--
WQ13	Reduced list	Reduced list	Reduced list	--	--	--	Reduced list
EFF1	Reduced list and chromium	Reduced list and chromium	Reduced list and chromium	Field parameters	--	--	Reduced list and chromium
MW1	Reduced list	Reduced list	Reduced list	--	--	--	Reduced list
MW2	Reduced list	Reduced list	Reduced list	--	--	Reduced list	Reduced list
MW3	Reduced list	Reduced list	Reduced list	--	--	Reduced list	Reduced list
MW4	Reduced list	Reduced list	Reduced list	--	--	Reduced list	Reduced list
MW7	--	--	--	--	--	--	--
MW8	--	--	--	--	--	--	--
MW9	--	--	--	--	--	--	--

Notes:
Water quality parameters included on the reduced analyte list are specified in Table 3-4.
-- no sample collected

Table 3-6. Zinc Concentrations in Field Blanks, 2008 - 2009

				Blank Concentration		95th Percentile		*U*-qualified 2 x 95th Percentile		*J*-qualified 5 x 95th Percentile		
Sampling Event	Quarter	Sample ID	Description	Total Zinc (µg/L)	Dissolved Zinc (µg/L)	Total	Dissolved	Total	Dissolved	Total	Dissolved	Notes
January 2008		WQ21	DI blank, SW protocol	0.7	2.1	5.0	6.2	10.0	12.4	25.0	30.9	
February 2008		WQ24	DI blank, GW protocol	2	2.77	5.0	6.2	10.0	12.4	25.0	30.9	
February 2008		WQ21	DI blank, SW protocol	2.9	2.49	5.0	6.2	10.0	12.4	25.0	30.9	Qualifiers for January 2008 - March 2008 samples based on blank values from July 2007 - December 2007 analyzed by Columbia Analytical Services. These action levels were derived by calculating 2 times the 95th percentile of the distribution of blanks and 5 times the 95th percentile of the distribution for the *J* qualifiers.
February 2008		WQ22	DI blank, SW protocol	1.3	3.77	5.0	6.2	10.0	12.4	25.0	30.9	
February 2008	Q1 2008	WQ23	DI blank, SW protocol	1.8	2.59	5.0	6.2	10.0	12.4	25.0	30.9	
March 2008		WQ21	DI blank, SW protocol	3	1	5.0	6.2	10.0	12.4	25.0	30.9	
March 2008		WQ22	DI blank, acid rinse, SW protocol	1.6	51.9	5.0	6.2	10.0	12.4	25.0	30.9	
March 2008		MW21	DI blank, GW protocol	1.7	0.7	5.0	6.2	10.0	12.4	25.0	30.9	
March 2008		MW22	DI blank, acid rinse, GW protocol	1	0.8	5.0	6.2	10.0	12.4	25.0	30.9	
April 2008		WQ21	DI blank, GW protocol	1	0.5	3.0	3.4	5.9	6.8	14.8	17.1	
May 2008	Q2 2008	WQ21	DI blank, GW protocol	3.3	0.5	3.0	3.4	5.9	6.8	14.8	17.1	Qualifiers for April 2008 - October 2008 samples based on blank values from January 2008 - March 2008 (excluding dissolved zinc blank outlier value of 51.9 µg/L). These action levels were derived by calculating 2 times the 95th percentile of the distribution of blanks and 5 times the 95th percentile of the distribution for the *J* qualifiers.
June 2008		WQ21	DI blank, GW protocol	2.6	2.7	3.0	3.4	5.9	6.8	14.8	17.1	
July 2008		WQ21	DI blank, GW protocol	4	0.7	3.0	3.4	5.9	6.8	14.8	17.1	
August 2008	Q3 2008	WQ21	DI blank, GW protocol	4.75	4.21	3.0	3.4	5.9	6.8	14.8	17.1	
September 2008		WQ21	DI blank, GW protocol	2.98	2.7	3.0	3.4	5.9	6.8	14.8	17.1	
October 2008	Q4 2008	WQ21	DI blank, GW protocol	1.17	1.55	3.0	3.4	5.9	6.8	14.8	17.1	
March 2009	Q1 2009	WQ21	DI blank, GW protocol	3.83	4.53	4.5	4.4	9.0	8.8	22.4	22.1	
May 2009	Q2 2009	WQ21	DI blank, GW protocol	0.92	2.07	4.5	4.4	8.9	8.8	22.3	22.0	
July 2009		WQ21	DI blank, GW protocol	0.94	0.36	4.4	4.4	8.8	8.8	22.1	21.9	
September 2009	Q3 2009	WQ21	DI blank, GW protocol	0.9	2.2	4.4	4.4	8.8	8.7	21.9	21.9	
September 2009		WQ21	DI blank, GW protocol	0.3	0.3	4.3	4.4	8.7	8.7	21.7	21.8	
September 2009		WQ21	DI blank, GW protocol	1.57	2.92	4.3	4.3	8.6	8.7	21.5	21.7	
October 2009	Q4 2009	WQ21	DI blank, GW protocol	1.32	0.58	4.3	4.3	8.6	8.7	21.5	21.7	Qualifiers for samples collected after October 2008 calculated individually for each sample event based on 95th percentile calculations for all blank data collected starting in April 2008. These action levels were derived by calculating 2 times the 95th percentile of the distribution of blanks and 5 times the 95th percentile of the distribution for the *J* qualifiers.

Notes:
All concentrations are presented as reported by the laboratory. Validation qualifiers have not been applied.
J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte.
U = The analyte was not detected above the reported sample quantitation limit.
DI = deionized water
GW = groundwater
SW = surface water

Table 3-7. ADEC Criteria Screening Summary

			Site Data						Screening Criteria						
Analyte	Fraction	Units	Number of Samples	Number of Detected Samples (n_{det})	Minimum Detected Value	Maximum Detected Value	Minimum Detection Limit	Maximum Detection Limit	Criteria	Exceedance Flag	Minimum Screening Value[a]	Maximum Screening Value[a]	Exceedance Count[b]	Exceedance Frequency[b]	Stations Where Exceedances Have Been Recorded
Surface Water															
Aluminum	Total	µg/L	192	192	15.6	2120	--	--	Freshwater chronic AL[c]	Yes	87	87	47	24%	WQ4; WQ6; WQ7; WQ8; WQ10; WQ12; WQ13
Arsenic	Dissolved	µg/L	192	15	0.06	0.16	0.06	0.5	Freshwater chronic AL[c]	--	150	150	0	0%	
Cadmium	Dissolved	µg/L	192	4	0.006	0.01	0.003	0.033	Freshwater chronic AL[c]	--	0.01	0.17	0	0%	
Copper	Dissolved	µg/L	192	144	0.34	3.7	0.1	1.8	Freshwater chronic AL[c]	Yes	0.18	6	25	13%	WQ4; WQ6; WQ7; WQ8; WQ10; WQ12; WQ13
Lead	Dissolved	µg/L	192	27	0.004	0.087	0.003	0.5	Freshwater chronic AL[c]	--	0.01	1	0	0%	
Mercury	Dissolved	µg/L	192	1	0.10	0.10	0.01	0.05	HH aquatic consumption[c]	Yes	0.05	0.05	1	1%	WQ12
Nickel	Dissolved	µg/L	192	51	0.08	3.4	0.03	1	Freshwater chronic AL[c]	--	1	34	0	0%	
Selenium	Dissolved	µg/L	192	11	0.2	0.5	0.2	1	Freshwater chronic AL[c]	--	4.6	4.6	0	0%	
Silver	Dissolved	µg/L	185	7	0.006	0.01	0.003	0.05	--	--	--	--	--	--	
Zinc	Dissolved	µg/L	192	28	1	31.5	0.46	24.7	Freshwater chronic AL[c]	--	2	78	0	0%	
Groundwater															
Aluminum	Total	µg/L	174	171	8	15300	9.7	11.1	Freshwater chronic AL[c]	Yes	87	87	155	89%	EFF1; MW1; MW2; MW3; MW4; MW7; MW8; MW9
Arsenic	Dissolved	µg/L	174	126	0.07	3.1	0.06	0.6	Freshwater chronic AL[c]	--	150	150	0	0%	
Cadmium	Dissolved	µg/L	174	36	0.005	0.2	0.005	0.104	Freshwater chronic AL[c]	Yes	0.01	0.41	3	2%	EFF1; MW4
Copper	Dissolved	µg/L	174	158	0.45	6.9	0.52	1.8	Freshwater chronic AL[c]	Yes	0.18	17	31	18%	MW1; MW2; MW3; MW4; MW7
Lead	Dissolved	µg/L	174	135	0.02	1.9	0.003	0.5	Freshwater chronic AL[c]	Yes	0.01	6	28	16%	MW1; MW2; MW3; MW4; MW7
Mercury	Dissolved	µg/L	174	1	0.09	0.09	0.01	0.05	HH aquatic consumption[c]	Yes	0.05	0.05	1	1%	MW2
Nickel	Dissolved	µg/L	174	147	0.37	5.4	0.04	1	Freshwater chronic AL[c]	--	1	96	0	0%	
Selenium	Dissolved	µg/L	174	72	0.2	1.3	0.2	1	Freshwater chronic AL[c]	--	4.6	4.6	0	0%	
Silver	Dissolved	µg/L	166	19	0.005	0.11	0.003	0.08	--	--	--	--	--	--	
Zinc	Dissolved	µg/L	174	34	1.2	145	0.71	15.8	Freshwater chronic AL[c]	Yes	2	219	8	5%	EFF1; MW3; MW4

Notes:
Summary based on January 2006 - October 2009 natural samples from permit stations.

-- = value either not applicable or not available
AL = aquatic life
DL = detection limit
HH = human health
NA = not applicable

[a] Criteria for Cd, Cu, Pb, Ni, and Zn are calculated based on the hardness of the sample.
[b] Values below detection limits were not included in screening.
[c] Criterion Source: Alaska Department of Environmental Conservation (ADEC), 2008. Alaska Water Quality Manual for Toxic and Deleterious Organic and Inorganic Substances. State of Alaska. As amended through December 12, 2008.

Table 3-8. ADEC Chronic Aquatic Life Criteria Screening Results - Surface Water

Station ID	Sample Event	Date	Sample Purpose	Aluminum Total	Arsenic Dissolved	Cadmium Dissolved	Copper Dissolved	Lead Dissolved	Mercury Dissolved	Nickel Dissolved	Selenium Dissolved	Silver Dissolved	Zinc Dissolved
WQ4	October 1996 II	16-Oct-96	Historical	ND	Pass	**Fail**	ND	ND	ND	ND	ND	ND	**Fail**
WQ4	September 1997	03-Sep-97	Historical	--	ND	ND	ND	ND	ND	ND	ND	ND	ND
WQ4	April 2005 II	20-Apr-05	Historical	Pass	ND	ND	ND	ND	ND	ND	ND	ND	ND
WQ4	February 2006 II	15-Feb-06	Reference	Pass	ND	ND	ND	ND	ND	ND	ND	ND	ND
WQ4	May 2006 II	16-May-06	Reference	Pass	ND	ND	ND	ND	ND	ND	ND	ND	ND
WQ4	August 2006 II	29-Aug-06	Reference	**Fail**	ND	ND	Pass	ND	ND	ND	ND	ND	ND
WQ4	October 2006	17-Oct-06	Reference	Pass	ND	ND	ND	ND	ND	ND	ND	ND	ND
WQ4	December 2006	07-Dec-06	Reference	**Fail**	ND	ND	ND	ND	ND	ND	ND	ND	ND
WQ4	February 2007	26-Feb-07	Reference	Pass	ND	ND	ND	ND	ND	ND	ND	ND	ND
WQ4	February 2007	26-Feb-07	Field Replicate	Pass	ND	ND	ND	ND	ND	ND	ND	ND	ND
WQ4	April 2007	10-Apr-07	Reference	Pass	ND	ND	Pass	ND	ND	ND	ND	ND	ND
WQ4	May 2007	14-May-07	Reference	**Fail**	ND	ND	Pass	ND	ND	ND	ND	ND	ND
WQ4	May 2007	14-May-07	Field Replicate	**Fail**	ND	ND	Pass	ND	ND	ND	ND	ND	ND
WQ4	June 2007	04-Jun-07	Reference	**Fail**	ND	ND	**Fail**	ND	ND	ND	ND	ND	ND
WQ4	July 2007 I	01-Jul-07	Reference	Pass	ND	ND	Pass	ND	ND	ND	ND	ND	Pass
WQ4	July 2007 II	24-Jul-07	Reference	Pass	Pass	ND	Pass	ND	ND	Pass	Pass	ND	Pass
WQ4	July 2007 II	24-Jul-07	Field Replicate	Pass	Pass	Pass	Pass	ND	ND	Pass	Pass	ND	ND
WQ4	August 2007 I	14-Aug-07	Reference	Pass	ND	ND	Pass	ND	ND	Pass	ND	ND	Pass
WQ4	August 2007 II	27-Aug-07	Reference	Pass	ND	ND	Pass	ND	ND	Pass	ND	ND	ND
WQ4	September 2007 I	11-Sep-07	Reference	Pass	Pass	ND	Pass	ND	ND	ND	Pass	ND	ND
WQ4	September 2007 II	02-Oct-07	Compliance	**Fail**	ND	ND	Pass	ND	ND	ND	ND	ND	ND
WQ4	October 2007	17-Oct-07	Compliance	**Fail**	ND	ND	Pass	Pass	ND	ND	ND	ND	ND
WQ4	November 2007	13-Nov-07	Compliance	**Fail**	ND	ND	Pass	ND	ND	Pass	ND	ND	ND
WQ4	December 2007	15-Dec-07	Compliance	**Fail**	ND	ND	Pass	ND	ND	ND	ND	ND	ND
WQ4	January 2008	09-Jan-08	Compliance	**Fail**	ND	ND	Pass	ND	ND	ND	Pass	NA	ND
WQ4	February 2008	14-Feb-08	Compliance	**Fail**	ND	ND	Pass	Pass	ND	ND	ND	ND	ND
WQ4	March 2008	15-Mar-08	Compliance	**Fail**	ND	ND	Pass	ND	ND	Pass	ND	ND	ND
WQ4	April 2008	14-Apr-08	Compliance	**Fail**	ND	ND	Pass	ND	ND	Pass	ND	R	ND
WQ4	May 2008	08-May-08	Compliance	Pass	ND	ND	Pass	ND	ND	Pass	ND	ND	ND
WQ4	June 2008	28-Jun-08	Compliance	**Fail**	ND	ND	ND	ND	ND	ND	ND	ND	ND
WQ4	July 2008	24-Jul-08	Compliance	Pass	ND	ND	Pass	Pass	ND	Pass	ND	ND	ND
WQ4	October 2008	15-Oct-08	Compliance	Pass	ND	ND	ND	ND	ND	ND	ND	ND	ND
WQ4	March 2009	09-Mar-09	Compliance	Pass	ND	ND	ND	ND	ND	ND	ND	ND	ND
WQ4	May 2009	13-May-09	Compliance	Pass	ND	Pass	**Fail**	ND	ND	Pass	ND	ND	ND
WQ4	July 2009	23-Jul-09	Compliance	**Fail**	Pass	ND	**Fail**	ND	ND	ND	ND	ND	ND
WQ4	September 2009 I	05-Sep-09	Compliance	Pass	ND	ND	Pass	ND	ND	ND	ND	ND	ND
WQ4	September 2009 I	05-Sep-09	Field Replicate	Pass	ND	ND	Pass	ND	ND	ND	ND	ND	ND
WQ4	September 2009 II	12-Sep-09	Compliance	Pass	ND	ND	Pass	ND	ND	Pass	ND	ND	ND
WQ4	September 2009 II	12-Sep-09	Field Replicate	Pass	ND	ND	Pass	ND	ND	Pass	ND	ND	ND
WQ4	October 2009	17-Oct-09	Compliance	Pass	ND	ND	Pass	Pass	ND	Pass	ND	ND	ND
WQ6	October 1996 II	16-Oct-96	Historical	ND	ND	ND	ND	**Fail**	ND	ND	ND	ND	ND
WQ6	September 1997	03-Sep-97	Historical	--	ND	ND	ND	ND	ND	ND	ND	ND	ND
WQ6	September 1997	03-Sep-97	Field Replicate	--	ND	ND	ND	ND	ND	ND	ND	ND	ND
WQ6	April 2005 II	20-Apr-05	Historical	Pass	ND	ND	**Fail**	ND	ND	ND	ND	ND	ND
WQ6	February 2006 II	15-Feb-06	Reference	Pass	ND	ND	ND	ND	ND	ND	ND	ND	ND
WQ6	May 2006 II	16-May-06	Reference	Pass	ND	ND	ND	ND	ND	ND	ND	ND	ND
WQ6	May 2006 II	16-May-06	Field Replicate	Pass	ND	ND	ND	ND	ND	ND	ND	ND	ND
WQ6	August 2006 II	29-Aug-06	Reference	**Fail**	ND	ND	**Fail**	ND	ND	ND	ND	ND	ND
WQ6	October 2006	17-Oct-06	Reference	Pass	ND	ND	ND	ND	ND	ND	ND	ND	ND
WQ6	December 2006	07-Dec-06	Reference	Pass	ND	ND	ND	ND	ND	ND	ND	ND	ND
WQ6	February 2007	26-Feb-07	Reference	Pass	ND	ND	ND	ND	ND	ND	ND	ND	ND
WQ6	April 2007	10-Apr-07	Reference	Pass	ND	ND	Pass	ND	ND	ND	ND	ND	ND
WQ6	May 2007	14-May-07	Reference	Pass	ND	ND	Pass	ND	ND	ND	ND	ND	Pass
WQ6	June 2007	04-Jun-07	Reference	Pass	ND	ND	**Fail**	ND	ND	ND	ND	ND	Pass
WQ6	July 2007 I	01-Jul-07	Reference	Pass	ND	ND	Pass	ND	ND	ND	ND	ND	Pass

Table 3-8. ADEC Chronic Aquatic Life Criteria Screening Results - Surface Water

Station ID	Sample Event	Date	Sample Purpose	Aluminum Total	Arsenic Dissolved	Cadmium Dissolved	Copper Dissolved	Lead Dissolved	Mercury Dissolved	Nickel Dissolved	Selenium Dissolved	Silver Dissolved	Zinc Dissolved
WQ6	July 2007 II	24-Jul-07	Reference	Pass	ND	ND	Pass	ND	ND	ND	ND	ND	ND
WQ6	August 2007 I	14-Aug-07	Reference	Pass	ND	ND	Pass	ND	ND	Pass	ND	ND	ND
WQ6	August 2007 II	27-Aug-07	Reference	Pass	ND	ND	Pass	ND	ND	Pass	ND	ND	ND
WQ6	September 2007 I	11-Sep-07	Reference	Pass	ND	ND	Pass	ND	ND	ND	ND	ND	ND
WQ6	September 2007 II	02-Oct-07	Compliance	Pass	ND	ND	Pass	Pass	ND	ND	ND	ND	ND
WQ6	October 2007	17-Oct-07	Compliance	Pass	ND	ND	Pass	Pass	ND	ND	ND	ND	ND
WQ6	October 2007	17-Oct-07	Field Replicate	**Fail**	ND	ND	Pass	Pass	ND	ND	ND	ND	ND
WQ6	November 2007	13-Nov-07	Compliance	Pass	ND	ND	Pass	ND	ND	Pass	ND	ND	ND
WQ6	December 2007	15-Dec-07	Compliance	Pass	ND	ND	Pass	ND	ND	ND	ND	ND	Pass
WQ6	December 2007	15-Dec-07	Field Replicate	Pass	ND	ND	Pass	ND	ND	ND	ND	ND	ND
WQ6	January 2008	09-Jan-08	Compliance	Pass	ND	ND	Pass	ND	ND	ND	ND	ND	ND
WQ6	February 2008	14-Feb-08	Compliance	Pass	ND	ND	Pass	Pass	ND	Pass	ND	NA	ND
WQ6	March 2008	15-Mar-08	Compliance	Pass	ND	ND	ND	ND	ND	Pass	ND	ND	Pass
WQ6	April 2008	14-Apr-08	Compliance	Pass	ND	ND	Pass	ND	ND	ND	ND	R	ND
WQ6	May 2008	08-May-08	Compliance	Pass	ND	ND	Pass	ND	ND	ND	ND	ND	ND
WQ6	June 2008	28-Jun-08	Compliance	**Fail**	ND	ND	ND	ND	ND	ND	ND	ND	ND
WQ6	July 2008	24-Jul-08	Compliance	Pass	ND	ND	Pass	ND	ND	ND	ND	ND	ND
WQ6	October 2008	15-Oct-08	Compliance	**Fail**	ND	ND	ND	ND	ND	ND	ND	ND	ND
WQ6	October 2008	15-Oct-08	Field Replicate	Pass	ND	ND	ND	ND	ND	ND	ND	ND	ND
WQ6	March 2009	09-Mar-09	Compliance	Pass	ND	ND	ND	ND	ND	ND	ND	ND	ND
WQ6	May 2009	13-May-09	Compliance	Pass	ND	ND	**Fail**	ND	ND	Pass	ND	ND	ND
WQ6	July 2009	23-Jul-09	Compliance	**Fail**	ND	ND	**Fail**	Pass	ND	ND	ND	ND	ND
WQ6	September 2009 I	05-Sep-09	Compliance	Pass	ND	ND	Pass	ND	ND	ND	ND	ND	ND
WQ6	September 2009 II	12-Sep-09	Compliance	Pass	ND	ND	Pass	ND	ND	Pass	ND	ND	ND
WQ6	October 2009	17-Oct-09	Compliance	Pass	ND	ND	**Fail**	Pass	ND	Pass	ND	ND	ND
WQ7	February 2006 II	15-Feb-06	Reference	Pass	ND	ND	ND	ND	ND	ND	ND	ND	ND
WQ7	May 2006 II	16-May-06	Reference	**Fail**	ND	ND	ND	ND	ND	ND	ND	ND	ND
WQ7	August 2006 II	29-Aug-06	Reference	Pass	ND	ND	**Fail**	ND	ND	ND	ND	ND	ND
WQ7	October 2006	17-Oct-06	Reference	Pass	ND	ND	ND	ND	ND	ND	ND	ND	ND
WQ7	December 2006	07-Dec-06	Reference	Pass	ND	ND	ND	ND	ND	ND	ND	ND	ND
WQ7	February 2007	26-Feb-07	Reference	Pass	ND	ND	ND	ND	ND	ND	ND	ND	ND
WQ7	April 2007	10-Apr-07	Reference	Pass	ND	ND	Pass	ND	ND	ND	ND	ND	ND
WQ7	May 2007	14-May-07	Reference	Pass	ND	ND	Pass	ND	ND	ND	ND	ND	ND
WQ7	June 2007	04-Jun-07	Reference	Pass	ND	ND	**Fail**	ND	ND	ND	ND	ND	Pass
WQ7	July 2007 I	01-Jul-07	Reference	Pass	ND	ND	Pass	ND	ND	ND	ND	ND	ND
WQ7	July 2007 II	24-Jul-07	Reference	Pass	ND	ND	Pass	ND	ND	ND	ND	ND	ND
WQ7	August 2007 I	14-Aug-07	Reference	Pass	ND	ND	Pass	ND	ND	Pass	ND	ND	ND
WQ7	August 2007 I	14-Aug-07	Field Replicate	Pass	ND	ND	Pass	Pass	ND	Pass	ND	ND	ND
WQ7	August 2007 II	27-Aug-07	Reference	Pass	ND	ND	Pass	ND	ND	Pass	ND	ND	ND
WQ7	September 2007 I	11-Sep-07	Reference	Pass	ND	ND	Pass	ND	ND	ND	ND	ND	ND
WQ7	September 2007 II	02-Oct-07	Reference	Pass	ND	ND	**Fail**	ND	ND	ND	ND	ND	ND
WQ7	October 2007	17-Oct-07	Reference	Pass	ND	ND	Pass	Pass	ND	ND	ND	ND	ND
WQ7	November 2007	13-Nov-07	Reference	Pass	ND	ND	Pass	ND	ND	Pass	ND	ND	ND
WQ7	December 2007	15-Dec-07	Reference	Pass	ND	ND	Pass	ND	ND	ND	ND	ND	Pass
WQ7	January 2008	09-Jan-08	Reference	Pass	ND	ND	ND	ND	ND	ND	ND	NA	Pass
WQ7	February 2008	14-Feb-08	Reference	Pass	ND	ND	Pass	Pass	ND	ND	ND	ND	Pass
WQ7	March 2008	15-Mar-08	Reference	Pass	ND	ND	ND	ND	ND	Pass	ND	ND	ND
WQ7	April 2008	14-Apr-08	Reference	Pass	ND	ND	Pass	ND	ND	ND	ND	R	ND
WQ7	April 2008	14-Apr-08	Field Replicate	Pass	ND	ND	Pass	ND	ND	ND	ND	R	ND
WQ7	May 2008	08-May-08	Reference	Pass	ND	ND	Pass	ND	ND	ND	ND	ND	ND
WQ7	May 2008	08-May-08	Field Replicate	Pass	ND	ND	Pass	ND	ND	ND	ND	ND	ND
WQ7	June 2008	28-Jun-08	Reference	Pass	ND	ND	ND	ND	ND	ND	ND	ND	ND
WQ7	July 2008	24-Jul-08	Reference	Pass	ND	ND	Pass	Pass	ND	ND	ND	ND	ND

Table 3-8. ADEC Chronic Aquatic Life Criteria Screening Results - Surface Water

Station ID	Sample Event	Date	Sample Purpose	Aluminum Total	Arsenic Dissolved	Cadmium Dissolved	Copper Dissolved	Lead Dissolved	Mercury Dissolved	Nickel Dissolved	Selenium Dissolved	Silver Dissolved	Zinc Dissolved
WQ8	February 2006 II	15-Feb-06	Reference	Pass	ND	ND	ND	ND	ND	ND	ND	ND	ND
WQ8	May 2006 II	17-May-06	Reference	Pass	ND	ND	ND	ND	ND	ND	ND	ND	ND
WQ8	August 2006 II	29-Aug-06	Reference	Pass	ND	ND	Pass	ND	ND	ND	ND	ND	ND
WQ8	August 2006 II	29-Aug-06	Field Replicate	Pass	ND	ND	Pass	ND	ND	ND	ND	ND	ND
WQ8	October 2006	17-Oct-06	Reference	Pass	ND	ND	ND	ND	ND	ND	ND	ND	ND
WQ8	December 2006	07-Dec-06	Reference	**Fail**	ND	ND	ND	ND	ND	ND	ND	ND	ND
WQ8	February 2007	26-Feb-07	Reference	Pass	ND	ND	ND	ND	ND	ND	ND	ND	ND
WQ8	April 2007	10-Apr-07	Reference	Pass	ND	ND	Pass	ND	ND	ND	ND	ND	ND
WQ8	May 2007	14-May-07	Reference	Pass	ND	ND	Pass	ND	ND	ND	ND	ND	Pass
WQ8	June 2007	04-Jun-07	Reference	**Fail**	ND	ND	**Fail**	ND	ND	ND	ND	ND	ND
WQ8	July 2007 I	01-Jul-07	Reference	Pass	ND	ND	**Fail**	Pass	ND	Pass	ND	ND	Pass
WQ8	July 2007 II	24-Jul-07	Reference	Pass	ND	ND	Pass	ND	ND	Pass	ND	ND	ND
WQ8	August 2007 I	14-Aug-07	Reference	Pass	Pass	ND	Pass	ND	ND	Pass	ND	ND	ND
WQ8	August 2007 II	27-Aug-07	Reference	Pass	ND	ND	Pass	ND	ND	Pass	ND	ND	ND
WQ8	September 2007 I	11-Sep-07	Reference	Pass	ND	ND	Pass	ND	ND	ND	ND	ND	ND
WQ8	September 2007 II	02-Oct-07	Reference	**Fail**	ND	ND	**Fail**	ND	ND	ND	ND	ND	ND
WQ8	October 2007	17-Oct-07	Reference	**Fail**	ND	ND	**Fail**	Pass	ND	ND	ND	ND	ND
WQ8	November 2007	13-Nov-07	Reference	Pass	ND	ND	Pass	ND	ND	Pass	ND	ND	ND
WQ8	November 2007	13-Nov-07	Field Replicate	Pass	ND	ND	Pass	ND	ND	Pass	ND	ND	ND
WQ8	December 2007	15-Dec-07	Reference	Pass	ND	ND	Pass	ND	ND	ND	ND	ND	ND
WQ8	January 2008	09-Jan-08	Reference	Pass	ND	ND	Pass	ND	ND	ND	ND	NA	Pass
WQ8	February 2008	14-Feb-08	Reference	Pass	ND	ND	Pass	ND	ND	ND	ND	ND	ND
WQ8	March 2008	15-Mar-08	Reference	Pass	ND	ND	Pass	ND	ND	Pass	ND	ND	Pass
WQ8	April 2008	14-Apr-08	Reference	Pass	ND	ND	Pass	ND	ND	ND	ND	R	ND
WQ8	May 2008	08-May-08	Reference	Pass	ND	ND	Pass	ND	ND	ND	ND	ND	ND
WQ8	June 2008	28-Jun-08	Reference	**Fail**	ND	ND	ND	ND	ND	ND	ND	ND	ND
WQ8	July 2008	24-Jul-08	Reference	Pass	ND	ND	Pass	ND	ND	ND	ND	ND	ND
WQ10	August 2006 II	29-Aug-06	Reference	**Fail**	ND	ND	**Fail**	ND	ND	ND	ND	ND	ND
WQ10	October 2006	17-Oct-06	Reference	**Fail**	ND	ND	**Fail**	ND	ND	ND	ND	ND	ND
WQ10	December 2006	07-Dec-06	Reference	**Fail**	ND	ND	ND	ND	ND	ND	ND	ND	ND
WQ10	February 2007	26-Feb-07	Reference	Pass	ND	ND	ND	ND	ND	ND	ND	ND	ND
WQ10	April 2007	10-Apr-07	Reference	Pass	ND	ND	Pass	ND	ND	ND	ND	ND	Pass
WQ10	May 2007	14-May-07	Reference	**Fail**	ND	ND	Pass	ND	ND	ND	ND	ND	Pass
WQ10	June 2007	04-Jun-07	Reference	**Fail**	ND	ND	**Fail**	Pass	ND	ND	ND	ND	Pass
WQ10	July 2007 I	01-Jul-07	Reference	Pass	ND	ND	Pass	ND	ND	ND	ND	ND	Pass
WQ10	July 2007 II	24-Jul-07	Reference	Pass	Pass	ND	Pass	ND	ND	ND	Pass	ND	ND
WQ10	August 2007 I	14-Aug-07	Reference	Pass	Pass	ND	Pass	ND	ND	Pass	ND	ND	ND
WQ10	August 2007 II	27-Aug-07	Reference	Pass	ND	ND	Pass	ND	ND	Pass	ND	ND	ND
WQ10	September 2007 I	11-Sep-07	Reference	Pass	Pass	ND	Pass	ND	ND	ND	Pass	ND	ND
WQ10	September 2007 I	11-Sep-07	Field Replicate	Pass	Pass	ND	Pass	ND	ND	ND	Pass	ND	ND
WQ10	September 2007 II	01-Oct-07	Compliance	**Fail**	ND	ND	**Fail**	ND	ND	ND	ND	ND	ND
WQ10	October 2007	17-Oct-07	Compliance	**Fail**	ND	ND	Pass	Pass	ND	ND	ND	ND	ND
WQ10	November 2007	13-Nov-07	Compliance	Pass	ND	ND	Pass	ND	ND	Pass	Pass	ND	ND
WQ10	December 2007	15-Dec-07	Compliance	**Fail**	ND	ND	Pass	ND	ND	ND	ND	ND	ND
WQ10	January 2008	09-Jan-08	Compliance	Pass	ND	ND	Pass	ND	ND	ND	ND	NA	ND
WQ10	February 2008	14-Feb-08	Compliance	**Fail**	ND	ND	Pass	Pass	ND	ND	ND	ND	ND
WQ10	March 2008	15-Mar-08	Compliance	**Fail**	Pass	ND	Pass	ND	ND	Pass	ND	ND	ND
WQ10	March 2008	15-Mar-08	Field Replicate	**Fail**	Pass	ND	Pass	ND	ND	Pass	ND	ND	ND
WQ10	April 2008	14-Apr-08	Compliance	Pass	ND	ND	Pass	ND	ND	ND	ND	R	ND
WQ10	May 2008	08-May-08	Compliance	Pass	ND	Pass	Pass	ND	ND	ND	ND	ND	ND
WQ10	June 2008	28-Jun-08	Compliance	**Fail**	ND	ND	ND	ND	ND	ND	ND	ND	ND
WQ10	July 2008	24-Jul-08	Reference	Pass	ND	ND	Pass	Pass	ND	ND	ND	ND	ND
WQ10	October 2008	15-Oct-08	Reference	Pass	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table 3-8. ADEC Chronic Aquatic Life Criteria Screening Results - Surface Water

Station ID	Sample Event	Date	Sample Purpose	Aluminum Total	Arsenic Dissolved	Cadmium Dissolved	Copper Dissolved	Lead Dissolved	Mercury Dissolved	Nickel Dissolved	Selenium Dissolved	Silver Dissolved	Zinc Dissolved
WQ10	March 2009	09-Mar-09	Compliance	Pass	ND	ND	ND	ND	ND	ND	ND	ND	ND
WQ10	May 2009	13-May-09	Compliance	Pass	ND	ND	**Fail**	ND	ND	Pass	ND	ND	ND
WQ10	May 2009	13-May-09	Field Replicate	Pass	ND	ND	**Fail**	ND	ND	Pass	ND	ND	ND
WQ10	July 2009	23-Jul-09	Compliance	**Fail**	Pass	ND	**Fail**	Pass	ND	ND	ND	ND	ND
WQ10	September 2009 I	05-Sep-09	Compliance	Pass	ND	ND	Pass	ND	ND	ND	ND	ND	ND
WQ10	September 2009 II	12-Sep-09	Compliance	Pass	ND	ND	Pass	ND	ND	Pass	ND	ND	ND
WQ10	October 2009	17-Oct-09	Compliance	Pass	ND	ND	Pass	Pass	ND	Pass	ND	NA	ND
WQ10	October 2009	17-Oct-09	Field Replicate	Pass	ND	ND	Pass	Pass	ND	Pass	ND	ND	ND
WQ12	August 2006 II	29-Aug-06	Reference	Pass	ND	ND	ND	ND	ND	ND	ND	ND	ND
WQ12	October 2006	17-Oct-06	Reference	**Fail**	ND	ND	**Fail**	ND	ND	ND	ND	ND	ND
WQ12	December 2006	07-Dec-06	Reference	**Fail**	ND	ND	ND	ND	ND	ND	ND	ND	ND
WQ12	February 2007	26-Feb-07	Reference	Pass	ND	ND	ND	ND	ND	ND	ND	ND	ND
WQ12	April 2007	10-Apr-07	Reference	Pass	ND	ND	Pass	ND	ND	ND	ND	ND	ND
WQ12	May 2007	14-May-07	Reference	Pass	ND	ND	ND	ND	ND	ND	ND	ND	ND
WQ12	June 2007	04-Jun-07	Reference	**Fail**	ND	ND	Pass	ND	**Fail**	ND	ND	ND	Pass
WQ12	June 2007	04-Jun-07	Field Replicate	**Fail**	ND	ND	Pass	ND	ND	ND	ND	ND	ND
WQ12	July 2007 I	01-Jul-07	Reference	Pass	ND	ND	Pass	ND	ND	ND	ND	ND	Pass
WQ12	July 2007 II	24-Jul-07	Reference	Pass	Pass	ND	ND	ND	ND	Pass	Pass	ND	ND
WQ12	August 2007 I	14-Aug-07	Reference	Pass	Pass	ND	Pass	ND	ND	Pass	ND	ND	ND
WQ12	August 2007 II	27-Aug-07	Reference	Pass	ND	ND	Pass	ND	ND	Pass	ND	ND	ND
WQ12	September 2007 I	11-Sep-07	Reference	Pass	Pass	ND	Pass	ND	ND	ND	Pass	ND	ND
WQ12	September 2007 II	01-Oct-07	Reference	**Fail**	ND	ND	Pass	ND	ND	ND	ND	ND	ND
WQ12	October 2007	01-Oct-07	Field Replicate	**Fail**	ND	ND	Pass	ND	ND	ND	Pass	ND	ND
WQ12	October 2007	17-Oct-07	Reference	**Fail**	ND	ND	Pass	Pass	ND	ND	ND	ND	ND
WQ12	November 2007	13-Nov-07	Reference	Pass	Pass	ND	Pass	Pass	ND	Pass	Pass	ND	ND
WQ12	December 2007	15-Dec-07	Reference	**Fail**	ND	ND	Pass	ND	ND	ND	ND	ND	ND
WQ12	January 2008	09-Jan-08	Reference	Pass	ND	ND	Pass	ND	ND	ND	ND	NA	ND
WQ12	February 2008	14-Feb-08	Reference	**Fail**	ND	ND	Pass	Pass	ND	ND	ND	ND	ND
WQ12	March 2008	15-Mar-08	Reference	Pass	ND	ND	ND	ND	ND	Pass	ND	ND	ND
WQ12	April 2008	14-Apr-08	Reference	Pass	ND	ND	Pass	ND	ND	ND	ND	R	ND
WQ12	May 2008	08-May-08	Reference	Pass	ND	ND	ND	ND	ND	Pass	ND	ND	ND
WQ12	June 2008	28-Jun-08	Reference	**Fail**	ND	ND	ND	ND	ND	ND	ND	ND	ND
WQ12	July 2008	24-Jul-08	Reference	Pass	ND	ND	Pass	ND	ND	ND	ND	ND	ND
WQ13	February 2007	26-Feb-07	Reference	Pass	ND	ND	ND	ND	ND	ND	ND	ND	ND
WQ13	April 2007	10-Apr-07	Reference	Pass	ND	ND	Pass	ND	ND	ND	ND	ND	Pass
WQ13	April 2007	10-Apr-07	Field Replicate	Pass	ND	ND	Pass	ND	ND	ND	ND	ND	Pass
WQ13	May 2007	14-May-07	Reference	Pass	ND	ND	Pass	ND	ND	ND	ND	ND	Pass
WQ13	June 2007	04-Jun-07	Reference	Pass	ND	ND	**Fail**	ND	ND	ND	ND	ND	Pass
WQ13	July 2007 I	01-Jul-07	Reference	Pass	ND	ND	Pass	ND	ND	ND	ND	ND	Pass
WQ13	July 2007 I	01-Jul-07	Field Replicate	Pass	ND	ND	Pass	ND	ND	ND	ND	ND	Pass
WQ13	July 2007 II	24-Jul-07	Reference	Pass	Pass	ND	Pass	ND	ND	Pass	Pass	ND	ND
WQ13	August 2007 I	14-Aug-07	Reference	Pass	ND	ND	Pass	ND	ND	Pass	ND	ND	ND
WQ13	August 2007 II	27-Aug-07	Reference	Pass	ND	Pass	Pass	ND	ND	Pass	ND	ND	ND
WQ13	August 2007 II	27-Aug-07	Field Replicate	Pass	ND	Pass	Pass	ND	ND	Pass	ND	ND	ND
WQ13	September 2007 I	11-Sep-07	Reference	Pass	ND	ND	Pass	ND	ND	ND	ND	ND	ND
WQ13	September 2007 II	01-Oct-07	Information Only	Pass	ND	ND	Pass	ND	ND	ND	ND	ND	ND
WQ13	October 2007	17-Oct-07	Information Only	**Fail**	ND	ND	Pass	Pass	ND	ND	ND	ND	ND
WQ13	November 2007	13-Nov-07	Information Only	Pass	ND	ND	Pass	ND	ND	Pass	ND	ND	ND
WQ13	December 2007	16-Dec-07	Information Only	Pass	ND	ND	Pass	ND	ND	ND	ND	ND	Pass
WQ13	January 2008	09-Jan-08	Information Only	**Fail**	ND	ND	Pass	ND	ND	ND	Pass	NA	ND
WQ13	January 2008	09-Jan-08	Field Replicate	Pass	ND	ND	Pass	ND	ND	ND	ND	NA	ND
WQ13	February 2008	14-Feb-08	Information Only	Pass	ND	ND	Pass	Pass	ND	ND	ND	ND	ND
WQ13	February 2008	14-Feb-08	Field Replicate	Pass	ND	ND	Pass	ND	ND	ND	ND	ND	ND
WQ13	March 2008	15-Mar-08	Information Only	Pass	ND	ND	Pass	ND	ND	Pass	ND	ND	ND
WQ13	April 2008	15-Apr-08	Compliance	Pass	ND	ND	Pass	ND	ND	Pass	ND	R	ND

Table 3-8. ADEC Chronic Aquatic Life Criteria Screening Results - Surface Water

Station ID	Sample Event	Date	Sample Purpose	Aluminum Total	Arsenic Dissolved	Cadmium Dissolved	Copper Dissolved	Lead Dissolved	Mercury Dissolved	Nickel Dissolved	Selenium Dissolved	Silver Dissolved	Zinc Dissolved
WQ13	May 2008	08-May-08	Compliance	Pass	ND	ND	Pass	ND	ND	Pass	ND	ND	ND
WQ13	June 2008	27-Jun-08	Compliance	Pass	ND	ND	ND	ND	ND	ND	ND	ND	ND
WQ13	June 2008	27-Jun-08	Field Replicate	Pass	ND	ND	ND	ND	ND	ND	ND	ND	ND
WQ13	July 2008	25-Jul-08	Compliance	Pass	ND	ND	Pass	Pass	ND	ND	ND	ND	ND
WQ13	July 2008	25-Jul-08	Field Replicate	Pass	ND	ND	Pass	ND	ND	ND	ND	ND	ND
WQ13	October 2008	15-Oct-08	Compliance	Pass	ND	ND	ND	ND	ND	ND	ND	ND	ND
WQ13	March 2009	08-Mar-09	Compliance	Pass	ND	Pass	ND	Pass	ND	ND	ND	ND	Pass
WQ13	March 2009	08-Mar-09	Field Replicate	Pass	ND	ND	ND	Pass	ND	ND	ND	ND	Pass
WQ13	May 2009	13-May-09	Compliance	Pass	ND	ND	**Fail**	ND	ND	Pass	ND	ND	ND
WQ13	July 2009	23-Jul-09	Compliance	**Fail**	Pass	ND	**Fail**	ND	ND	ND	ND	ND	ND
WQ13	October 2009	17-Oct-09	Compliance	Pass	ND	ND	Pass	ND	ND	Pass	ND	ND	ND
			Count of Exceedances - All Data	**52**	**0**	**1**	**27**	**1**	**1**	**0**	**0**	**0**	**1**
			Count of Exceedances - Compliance Samples Only	**21**	**0**	**0**	**10**	**0**	**0**	**0**	**0**	**0**	**0**

Notes:

Shaded cells indicate samples collected in 2009.

Fail = Indicates that a detected sample concentration exceeds ADEC chronic aquatic life criterion.

Pass = Indicates that a detected sample concentration is equal to or below ADEC chronic aquatic life criterion.

-- = sample not collected

ADEC = Alaska Department of Environmental Conservation

NA = ADEC chronic aquatic life criterion does not exist for silver.

ND = Concentration below laboratory detection limit. Nondetect values were not screened against ADEC chronic aquatic life criteria.

R = The sample results are rejected. Rejected values were not screened against ADEC chronic aquatic life criteria.

Table 3-9. ADEC Chronic Aquatic Life Criteria Screening Results - Groundwater

Station ID	Sample Event	Date	Sample Purpose	Aluminum Total	Arsenic Dissolved	Cadmium Dissolved	Copper Dissolved	Lead Dissolved	Mercury Dissolved	Nickel Dissolved	Selenium Dissolved	Silver Dissolved	Zinc Dissolved
MW1	February 2007	28-Feb-07	Reference	**Fail**	Pass	ND	Pass	Pass	ND	ND	ND	ND	ND
MW1	April 2007	10-Apr-07	Reference	**Fail**	Pass	ND	Pass	Pass	ND	Pass	ND	ND	Pass
MW1	May 2007	14-May-07	Reference	**Fail**	Pass	ND	Pass	Pass	ND	Pass	ND	ND	Pass
MW1	June 2007	04-Jun-07	Field Replicate	**Fail**	Pass	ND	Pass	Pass	ND	ND	ND	ND	Pass
MW1	June 2007	04-Jun-07	Reference	**Fail**	Pass	ND	Pass	Pass	ND	ND	ND	ND	ND
MW1	July 2007 I	02-Jul-07	Reference	**Fail**	Pass	ND	Pass	Pass	ND	ND	Pass	ND	ND
MW1	July 2007 II	24-Jul-07	Reference	**Fail**	Pass	ND	Pass	Pass	ND	Pass	Pass	ND	ND
MW1	August 2007 I	14-Aug-07	Field Replicate	ND	Pass	ND	Pass	Pass	ND	Pass	ND	ND	ND
MW1	August 2007 I	14-Aug-07	Reference	**Fail**	Pass	ND	Pass	Pass	ND	Pass	ND	ND	ND
MW1	August 2007 II	28-Aug-07	Reference	**Fail**	Pass	ND	Pass	Pass	ND	Pass	ND	ND	ND
MW1	September 2007 I	11-Sep-07	Reference	**Fail**	Pass	ND	Pass	Pass	ND	Pass	Pass	ND	ND
MW1	September 2007 II	30-Sep-07	Compliance	**Fail**	Pass	ND	Pass	Pass	ND	Pass	Pass	ND	ND
MW1	October 2007	16-Oct-07	Field Replicate	**Fail**	Pass	ND	Pass	Pass	ND	Pass	Pass	ND	ND
MW1	October 2007	16-Oct-07	Compliance	**Fail**	Pass	ND	Pass	Pass	ND	Pass	Pass	ND	ND
MW1	November 2007	12-Nov-07	Compliance	**Fail**	Pass	ND	Pass	Pass	ND	Pass	Pass	ND	ND
MW1	December 2007	14-Dec-07	Reference	**Fail**	ND	ND	Pass	Pass	ND	Pass	ND	ND	ND
MW1	December 2007	14-Dec-07	Compliance	**Fail**	ND	ND	Pass	Pass	ND	Pass	ND	ND	ND
MW1	January 2008	09-Jan-08	Compliance	**Fail**	ND	ND	Pass	Pass	ND	Pass	ND	NA	ND
MW1	February 2008	14-Feb-08	Compliance	**Fail**	ND	ND	Pass	Pass	ND	Pass	ND	ND	ND
MW1	March 2008	14-Mar-08	Compliance	**Fail**	Pass	ND	Pass	Pass	ND	Pass	ND	NA	ND
MW1	April 2008	15-Apr-08	Compliance	**Fail**	ND	ND	Pass	Pass	ND	Pass	ND	R	ND
MW1	May 2008	07-May-08	Compliance	**Fail**	ND	ND	Pass	Pass	ND	Pass	ND	ND	ND
MW1	June 2008	26-Jun-08	Compliance	**Fail**	Pass	ND	ND	Pass	ND	ND	ND	ND	ND
MW1	July 2008	24-Jul-08	Field Replicate	**Fail**	Pass	ND	Pass	Pass	ND	Pass	ND	ND	ND
MW1	July 2008	24-Jul-08	Compliance	**Fail**	Pass	ND	Pass	Pass	ND	Pass	ND	ND	ND
MW1	August 2008	19-Aug-08	Compliance	**Fail**	ND	ND	**Fail**	**Fail**	ND	Pass	ND	ND	ND
MW1	September 2008	09-Sep-08	Field Replicate	**Fail**	Pass	ND	Pass	Pass	ND	ND	ND	ND	ND
MW1	September 2008	09-Sep-08	Compliance	**Fail**	Pass	ND	Pass	Pass	ND	ND	ND	ND	ND
MW1	October 2008	15-Oct-08	Field Replicate	**Fail**	ND	ND	Pass	Pass	ND	ND	ND	ND	ND
MW1	October 2008	15-Oct-08	Compliance	**Fail**	ND	ND	ND	Pass	ND	ND	ND	ND	ND
MW1	March 2009	09-Mar-09	Field Replicate	**Fail**	ND	ND	ND	Pass	ND	ND	ND	ND	ND
MW1	March 2009	09-Mar-09	Compliance	**Fail**	ND	Pass	ND	Pass	ND	ND	ND	ND	ND
MW1	May 2009	13-May-09	Compliance	**Fail**	ND	Pass	Pass	Pass	ND	Pass	ND	ND	ND
MW1	July 2009	24-Jul-09	Compliance	**Fail**	Pass	ND	Pass	**Fail**	ND	Pass	ND	NA	ND
MW1	October 2009	17-Oct-09	Compliance	**Fail**	Pass	ND	Pass	Pass	ND	Pass	ND	NA	ND
MW1	October 2009	17-Oct-09	Field Replicate	**Fail**	Pass	ND	Pass	Pass	ND	Pass	ND	ND	ND
MW2	April 2007	10-Apr-07	Reference	**Fail**	Pass	ND	Pass	Pass	ND	Pass	ND	ND	Pass
MW2	May 2007	14-May-07	Reference	**Fail**	Pass	ND	Pass	Pass	ND	Pass	ND	ND	Pass
MW2	June 2007	04-Jun-07	Reference	**Fail**	Pass	ND	**Fail**	Pass	ND	Pass	ND	ND	Pass
MW2	July 2007 I	02-Jul-07	Reference	Pass	ND	Pass	Pass	ND	ND	ND	ND	ND	Pass
MW2	July 2007 II	24-Jul-07	Reference	**Fail**	Pass	ND	Pass	Pass	ND	Pass	Pass	ND	ND
MW2	August 2007 I	14-Aug-07	Reference	**Fail**	Pass	ND	Pass	Pass	ND	Pass	ND	ND	ND
MW2	August 2007 II	28-Aug-07	Reference	**Fail**	Pass	Pass	Pass	**Fail**	ND	Pass	Pass	ND	ND
MW2	September 2007 I	11-Sep-07	Reference	**Fail**	Pass	ND	Pass	Pass	ND	Pass	Pass	ND	ND
MW2	September 2007 II	30-Sep-07	Compliance	**Fail**	Pass	ND	Pass	Pass	ND	Pass	Pass	NA	ND
MW2	October 2007	16-Oct-07	Compliance	**Fail**	Pass	Pass	Pass	Pass	ND	Pass	Pass	NA	Pass
MW2	November 2007	12-Nov-07	Compliance	**Fail**	Pass	ND	Pass	Pass	**Fail**	Pass	Pass	ND	ND
MW2	December 2007	14-Dec-07	Compliance	**Fail**	ND	ND	Pass	Pass	ND	Pass	Pass	ND	Pass
MW2	January 2008	08-Jan-08	Compliance	**Fail**	ND	ND	**Fail**	**Fail**	ND	Pass	ND	NA	ND
MW2	February 2008	13-Feb-08	Compliance	**Fail**	ND	ND	Pass	Pass	ND	Pass	Pass	ND	ND
MW2	March 2008	14-Mar-08	Compliance	**Fail**	Pass	ND	Pass	Pass	ND	Pass	ND	NA	ND
MW2	April 2008	14-Apr-08	Compliance	**Fail**	Pass	ND	Pass	Pass	ND	Pass	ND	R	ND
MW2	May 2008	07-May-08	Compliance	**Fail**	Pass	ND	Pass	**Fail**	ND	Pass	ND	ND	ND
MW2	June 2008	26-Jun-08	Compliance	**Fail**	Pass	ND	ND	Pass	ND	ND	ND	ND	ND
MW2	July 2008	24-Jul-08	Compliance	**Fail**	Pass	ND	Pass	Pass	ND	Pass	Pass	ND	ND

Table 3-9. ADEC Chronic Aquatic Life Criteria Screening Results - Groundwater

Station ID	Sample Event	Date	Sample Purpose	Aluminum Total	Arsenic Dissolved	Cadmium Dissolved	Copper Dissolved	Lead Dissolved	Mercury Dissolved	Nickel Dissolved	Selenium Dissolved	Silver Dissolved	Zinc Dissolved
MW2	August 2008	19-Aug-08	Compliance	**Fail**	Pass	ND	ND	Pass	ND	Pass	ND	ND	ND
MW2	September 2008	09-Sep-08	Compliance	**Fail**	Pass	ND	Pass	Pass	ND	Pass	ND	ND	ND
MW2	October 2008	15-Oct-08	Compliance	**Fail**	Pass	ND	ND	Pass	ND	Pass	ND	ND	ND
MW2	March 2009	08-Mar-09	Compliance	**Fail**	Pass	ND	ND	Pass	ND	Pass	ND	ND	ND
MW2	May 2009	13-May-09	Compliance	**Fail**	Pass	Pass	ND	ND	ND	Pass	ND	ND	ND
MW2	July 2009	24-Jul-09	Compliance	**Fail**	Pass	ND	Pass	Pass	ND	Pass	ND	NA	ND
MW2	September 2009 II	12-Sep-09	Compliance	**Fail**	ND	ND	Pass	Pass	ND	Pass	ND	ND	ND
MW2	October 2009	17-Oct-09	Compliance	**Fail**	Pass	ND	Pass	Pass	ND	Pass	Pass	NA	ND
MW3	February 2007	28-Feb-07	Reference	**Fail**	ND	Pass	**Fail**	ND	ND	ND	ND	ND	Pass
MW3	April 2007	10-Apr-07	Reference	**Fail**	Pass	ND	**Fail**	**Fail**	ND	Pass	ND	ND	**Fail**
MW3	May 2007	14-May-07	Field Replicate	**Fail**	Pass	ND	**Fail**	**Fail**	ND	Pass	ND	ND	Pass
MW3	May 2007	14-May-07	Reference	**Fail**	Pass	ND	**Fail**	**Fail**	ND	Pass	ND	ND	Pass
MW3	June 2007	04-Jun-07	Reference	**Fail**	Pass	ND	**Fail**	**Fail**	ND	Pass	ND	ND	Pass
MW3	July 2007 I	02-Jul-07	Reference	**Fail**	Pass	ND	**Fail**	**Fail**	ND	Pass	ND	ND	Pass
MW3	July 2007 II	24-Jul-07	Reference	**Fail**	Pass	ND	Pass	Pass	ND	Pass	Pass	ND	ND
MW3	August 2007 I	14-Aug-07	Reference	**Fail**	Pass	ND	Pass	Pass	ND	Pass	ND	ND	ND
MW3	August 2007 II	28-Aug-07	Reference	**Fail**	Pass	Pass	**Fail**	**Fail**	ND	Pass	ND	ND	ND
MW3	September 2007 I	10-Sep-07	Reference	**Fail**	Pass	Pass	Pass	Pass	ND	Pass	Pass	ND	ND
MW3	September 2007 II	30-Sep-07	Compliance	**Fail**	Pass	ND	Pass	Pass	ND	Pass	Pass	ND	ND
MW3	October 2007	17-Oct-07	Compliance	**Fail**	Pass	ND	Pass	Pass	ND	Pass	Pass	ND	Pass
MW3	November 2007	12-Nov-07	Compliance	**Fail**	Pass	ND	Pass	Pass	ND	Pass	Pass	ND	ND
MW3	December 2007	15-Dec-07	Compliance	**Fail**	ND	ND	Pass	**Fail**	ND	Pass	ND	ND	ND
MW3	January 2008	08-Jan-08	Field Replicate	**Fail**	ND	ND	Pass	Pass	ND	Pass	ND	ND	ND
MW3	January 2008	08-Jan-08	Compliance	**Fail**	ND	ND	Pass	Pass	ND	Pass	ND	NA	ND
MW3	February 2008	13-Feb-08	Compliance	**Fail**	ND	ND	Pass	Pass	ND	Pass	ND	ND	ND
MW3	March 2008	14-Mar-08	Compliance	**Fail**	Pass	ND	Pass	Pass	ND	Pass	ND	ND	ND
MW3	April 2008	14-Apr-08	Compliance	**Fail**	Pass	ND	Pass	Pass	ND	Pass	ND	R	ND
MW3	May 2008	07-May-08	Compliance	**Fail**	Pass	ND	ND	ND	ND	Pass	ND	ND	ND
MW3	June 2008	27-Jun-08	Compliance	**Fail**	Pass	ND	ND	Pass	ND	ND	ND	ND	ND
MW3	July 2008	24-Jul-08	Compliance	**Fail**	Pass	ND	Pass	Pass	ND	Pass	Pass	ND	ND
MW3	August 2008	19-Aug-08	Compliance	**Fail**	Pass	ND	**Fail**	Pass	ND	Pass	Pass	ND	ND
MW3	September 2008	09-Sep-08	Compliance	**Fail**	Pass	ND	Pass	Pass	ND	Pass	Pass	ND	ND
MW3	October 2008	15-Oct-08	Compliance	**Fail**	Pass	ND	Pass	Pass	ND	Pass	ND	NA	ND
MW3	March 2009	08-Mar-09	Compliance	**Fail**	ND	Pass	**Fail**	**Fail**	ND	ND	ND	ND	ND
MW3	May 2009	13-May-09	Compliance	**Fail**	Pass	Pass	**Fail**	**Fail**	ND	Pass	ND	ND	ND
MW3	July 2009	24-Jul-09	Compliance	**Fail**	Pass	ND	**Fail**	**Fail**	ND	Pass	ND	ND	ND
MW3	September 2009 II	12-Sep-09	Compliance	**Fail**	ND	ND	**Fail**	**Fail**	ND	Pass	ND	ND	ND
MW3	October 2009	17-Oct-09	Compliance	**Fail**	Pass	ND	**Fail**	**Fail**	ND	Pass	ND	NA	ND
MW4	February 2007	27-Feb-07	Field Replicate	**Fail**	ND	ND	**Fail**	ND	ND	ND	ND	ND	Pass
MW4	February 2007	27-Feb-07	reference	**Fail**	ND	ND	**Fail**	ND	ND	Pass	ND	ND	**Fail**
MW4	April 2007	10-Apr-07	Reference	**Fail**	ND	**Fail**	**Fail**	**Fail**	ND	Pass	ND	ND	**Fail**
MW4	May 2007	14-May-07	Reference	**Fail**	Pass	**Fail**	**Fail**	**Fail**	ND	Pass	ND	ND	Pass
MW4	June 2007	04-Jun-07	Reference	**Fail**	Pass	Pass	**Fail**	**Fail**	ND	Pass	ND	ND	Pass
MW4	July 2007 I	7/2/2007	Reference	--	--	--	--	--	--	--	--	--	--
MW4	July 2007 II	23-Jul-07	Reference	**Fail**	Pass	ND	**Fail**	Pass	ND	Pass	Pass	ND	ND
MW4	August 2007 I	14-Aug-07	Reference	--	--	--	--	--	--	--	--	--	--
MW4	August 2007 II	27-Aug-07	Reference	**Fail**	Pass	Pass	**Fail**	**Fail**	ND	Pass	ND	ND	ND
MW4	September 2007 I	10-Sep-07	Reference	**Fail**	Pass	Pass	**Fail**	**Fail**	ND	Pass	Pass	ND	ND
MW4	September 2007 II	30-Sep-07	Compliance	**Fail**	Pass	Pass	**Fail**	Pass	ND	Pass	Pass	NA	ND
MW4	October 2007	16-Oct-07	Compliance	**Fail**	Pass	Pass	**Fail**	**Fail**	ND	Pass	Pass	NA	Pass
MW4	November 2007	12-Nov-07	Field Replicate	**Fail**	Pass	ND	Pass	Pass	ND	Pass	Pass	ND	ND
MW4	November 2007	12-Nov-07	Compliance	**Fail**	Pass	ND	Pass	Pass	ND	Pass	Pass	ND	ND
MW4	December 2007	15-Dec-07	Compliance	**Fail**	ND	ND	Pass	**Fail**	ND	Pass	ND	ND	ND
MW4	January 2008	08-Jan-08	Compliance	**Fail**	ND	ND	Pass	Pass	ND	Pass	ND	NA	ND
MW4	February 2008	13-Feb-08	Compliance	**Fail**	ND	ND	Pass	Pass	ND	ND	ND	ND	ND

Table 3-9. ADEC Chronic Aquatic Life Criteria Screening Results - Groundwater

Station ID	Sample Event	Date	Sample Purpose	Aluminum Total	Arsenic Dissolved	Cadmium Dissolved	Copper Dissolved	Lead Dissolved	Mercury Dissolved	Nickel Dissolved	Selenium Dissolved	Silver Dissolved	Zinc Dissolved
MW4	March 2008	15-Mar-08	Compliance	**Fail**	Pass	ND	Pass	Pass	ND	Pass	ND	ND	ND
MW4	April 2008	14-Apr-08	Compliance	**Fail**	ND	ND	Pass	Pass	ND	Pass	ND	R	ND
MW4	May 2008	08-May-08	Field Replicate	**Fail**	Pass	Pass	Pass	ND	ND	Pass	ND	ND	ND
MW4	May 2008	08-May-08	Compliance	**Fail**	Pass	Pass	Pass	ND	ND	Pass	ND	ND	Pass
MW4	June 2008	27-Jun-08	Compliance	**Fail**	Pass	ND	**Fail**	Pass	ND	ND	ND	ND	ND
MW4	July 2008	24-Jul-08	Compliance	**Fail**	Pass	ND	Pass	Pass	ND	Pass	Pass	ND	ND
MW4	August 2008	19-Aug-08	Field Replicate	**Fail**	Pass	ND	**Fail**	**Fail**	ND	Pass	ND	ND	ND
MW4	August 2008	19-Aug-08	Compliance	**Fail**	ND	ND	**Fail**	**Fail**	ND	Pass	ND	ND	ND
MW4	September 2008	09-Sep-08	Compliance	**Fail**	Pass	ND	**Fail**	**Fail**	ND	Pass	ND	ND	Pass
MW4	October 2008	15-Oct-08	Compliance	**Fail**	Pass	ND	Pass	Pass	ND	Pass	ND	ND	ND
MW4	March 2009	08-Mar-09	Compliance	**Fail**	ND	Pass	**Fail**	Pass	ND	ND	ND	ND	**Fail**
MW4	May 2009	13-May-09	Compliance	**Fail**	ND	Pass	Pass	ND	ND	Pass	ND	ND	**Fail**
MW4	May 2009	13-May-09	Field Replicate	**Fail**	ND	Pass	Pass	ND	ND	Pass	ND	ND	Pass
MW4	July 2009	23-Jul-09	Compliance	**Fail**	Pass	Pass	**Fail**	**Fail**	ND	Pass	ND	ND	Pass
MW4	July 2009	23-Jul-09	Field Replicate	**Fail**	Pass	ND	**Fail**	**Fail**	ND	Pass	ND	ND	Pass
MW4	September 2009 II	13-Sep-09	Compliance	**Fail**	Pass	ND	**Fail**	Pass	ND	Pass	Pass	ND	ND
MW4	September 2009 II	13-Sep-09	Field Replicate	**Fail**	ND	ND	Pass	Pass	ND	Pass	Pass	ND	ND
MW4	October 2009	17-Oct-09	Compliance	**Fail**	Pass	ND	Pass	Pass	ND	Pass	ND	NA	ND
MW7	February 2007	28-Feb-07	Reference	**Fail**	Pass	Pass	**Fail**	**Fail**	ND	ND	ND	ND	Pass
MW7	April 2007	10-Apr-07	Field Replicate	**Fail**	Pass	ND	Pass	Pass	ND	Pass	ND	ND	Pass
MW7	April 2007	10-Apr-07	Reference	**Fail**	Pass	ND	Pass	Pass	ND	Pass	ND	ND	Pass
MW7	May 2007	15-May-07	Reference	**Fail**	Pass	Pass	Pass	**Fail**	ND	Pass	ND	ND	Pass
MW7	June 2007	05-Jun-07	Reference	**Fail**	Pass	Pass	Pass	Pass	ND	Pass	ND	ND	Pass
MW7	July 2007 I	01-Jul-07	Reference	**Fail**	Pass	ND	Pass	Pass	ND	Pass	ND	ND	Pass
MW7	July 2007 II	23-Jul-07	Reference	**Fail**	Pass	ND	Pass	Pass	ND	Pass	Pass	ND	ND
MW7	August 2007 I	13-Aug-07	Reference	**Fail**	Pass	ND	Pass	Pass	ND	Pass	ND	ND	ND
MW7	August 2007 II	28-Aug-07	Reference	**Fail**	Pass	Pass	Pass	Pass	ND	Pass	Pass	ND	ND
MW7	September 2007 I	10-Sep-07	Field Replicate	**Fail**	Pass	ND	Pass	Pass	ND	ND	Pass	ND	Pass
MW7	September 2007 I	10-Sep-07	Reference	**Fail**	Pass	ND	Pass	Pass	ND	Pass	Pass	ND	ND
MW7	September 2007 II	30-Sep-07	Reference	**Fail**	Pass	ND	Pass	Pass	ND	Pass	Pass	ND	ND
MW7	October 2007	16-Oct-07	Reference	**Fail**	Pass	ND	Pass	Pass	ND	Pass	Pass	ND	ND
MW7	November 2007	13-Nov-07	Reference	**Fail**	Pass	ND	Pass	Pass	ND	Pass	Pass	ND	ND
MW7	December 2007	15-Dec-07	Reference	**Fail**	ND	ND	Pass	Pass	ND	Pass	ND	ND	Pass
MW7	January 2008	09-Jan-08	Reference	**Fail**	ND	ND	Pass	Pass	ND	Pass	Pass	NA	ND
MW7	February 2008	14-Feb-08	Reference	**Fail**	ND	ND	Pass	Pass	ND	Pass	ND	ND	ND
MW7	March 2008	13-Mar-08	Reference	**Fail**	Pass	ND	Pass	Pass	ND	Pass	ND	ND	ND
MW7	April 2008	13-Apr-08	Field Replicate	**Fail**	ND	ND	Pass	Pass	ND	Pass	ND	R	ND
MW7	April 2008	13-Apr-08	Reference	**Fail**	ND	ND	Pass	Pass	ND	Pass	ND	R	ND
MW7	May 2008	06-May-08	Reference	**Fail**	Pass	Pass	ND	Pass	ND	Pass	ND	ND	ND
MW7	June 2008	26-Jun-08	Field Replicate	**Fail**	Pass	ND	ND	Pass	ND	ND	ND	ND	ND
MW7	June 2008	26-Jun-08	Reference	**Fail**	Pass	ND	ND	Pass	ND	ND	ND	ND	ND
MW7	July 2008	25-Jul-08	Reference	**Fail**	Pass	ND	Pass	Pass	ND	ND	ND	ND	ND
MW8	July 2007 I	02-Jul-07	Reference - Information Only	**Fail**	Pass	Pass	Pass	ND	ND	Pass	ND	ND	Pass
MW8	July 2007 II	23-Jul-07	Field Replicate	Pass	Pass	ND	Pass	ND	ND	Pass	Pass	ND	ND
MW8	July 2007 II	23-Jul-07	Reference - Information Only	Pass	Pass	ND	Pass	ND	ND	Pass	Pass	ND	ND
MW8	August 2007 I	13-Aug-07	Reference - Information Only	Pass	Pass	ND	Pass	ND	ND	Pass	ND	ND	ND
MW8	August 2007 II	28-Aug-07	Field Replicate	Pass	ND	Pass	Pass	ND	ND	Pass	ND	ND	ND
MW8	August 2007 II	28-Aug-07	Reference - Information Only	Pass	ND	Pass	Pass	ND	ND	Pass	ND	ND	ND
MW8	September 2007 I	10-Sep-07	Reference - Information Only	Pass	Pass	ND	Pass	ND	ND	ND	Pass	ND	ND
MW8	September 2007 II	30-Sep-07	Field Replicate	Pass	Pass	ND	Pass	ND	ND	Pass	Pass	ND	ND
MW8	September 2007 II	30-Sep-07	Reference - Information Only	Pass	Pass	ND	Pass	ND	ND	Pass	Pass	ND	ND
MW8	October 2007	16-Oct-07	Reference - Information Only	Pass	Pass	Pass	Pass	Pass	ND	Pass	Pass	ND	ND
MW8	November 2007	12-Nov-07	Reference - Information Only	Pass	Pass	ND	Pass	Pass	ND	Pass	Pass	ND	ND
MW8	December 2007	14-Dec-07	Reference - Information Only	ND	ND	ND	Pass	ND	ND	Pass	Pass	ND	ND
MW8	January 2008	08-Jan-08	Reference - Information Only	Pass	ND	ND	Pass	ND	ND	ND	ND	ND	ND

Table 3-9. ADEC Chronic Aquatic Life Criteria Screening Results - Groundwater

Station ID	Sample Event	Date	Sample Purpose	Aluminum Total	Arsenic Dissolved	Cadmium Dissolved	Copper Dissolved	Lead Dissolved	Mercury Dissolved	Nickel Dissolved	Selenium Dissolved	Silver Dissolved	Zinc Dissolved
MW8	February 2008	13-Feb-08	Field Replicate	ND	ND	ND	Pass	Pass	ND	Pass	Pass	ND	ND
MW8	February 2008	13-Feb-08	Reference - Information Only	ND	ND	ND	Pass	ND	ND	Pass	Pass	ND	ND
MW8	March 2008	13-Mar-08	Reference - Information Only	Pass	Pass	ND	Pass	ND	ND	Pass	Pass	ND	ND
MW8	April 2008	14-Apr-08	Reference - Information Only	Pass	ND	ND	Pass	ND	ND	Pass	ND	R	ND
MW8	May 2008	06-May-08	Reference - Information Only	ND	ND	Pass	Pass	ND	ND	Pass	Pass	ND	ND
MW8	June 2008	26-Jun-08	Reference - Information Only	Pass	ND	ND	ND	ND	ND	ND	Pass	ND	ND
MW9	July 2007 I	02-Jul-07	Field Replicate	**Fail**	ND	ND	Pass	ND	ND	ND	ND	ND	ND
MW9	July 2007 I	02-Jul-07	Reference - Information Only	**Fail**	ND	ND	Pass	ND	ND	ND	ND	ND	ND
MW9	July 2007 II	23-Jul-07	Reference - Information Only	**Fail**	Pass	ND	Pass	ND	ND	Pass	Pass	ND	ND
MW9	August 2007 I	13-Aug-07	Reference - Information Only	**Fail**	Pass	ND	Pass	Pass	ND	Pass	ND	ND	ND
MW9	August 2007 II	28-Aug-07	Reference - Information Only	**Fail**	ND	ND	Pass	ND	ND	Pass	ND	ND	ND
MW9	September 2007 I	10-Sep-07	Reference - Information Only	**Fail**	Pass	ND	Pass	ND	ND	ND	Pass	ND	ND
MW9	September 2007 II	30-Sep-07	Reference - Information Only	**Fail**	Pass	ND	Pass	ND	ND	Pass	Pass	ND	ND
MW9	October 2007	16-Oct-07	Reference - Information Only	**Fail**	Pass	ND	Pass	Pass	ND	Pass	Pass	ND	ND
MW9	November 2007	12-Nov-07	Reference - Information Only	**Fail**	Pass	ND	Pass	ND	ND	Pass	Pass	ND	ND
MW9	December 2007	14-Dec-07	Reference - Information Only	**Fail**	ND	ND	Pass	ND	ND	Pass	Pass	ND	ND
MW9	January 2008	08-Jan-08	Reference - Information Only	**Fail**	ND	ND	Pass	ND	ND	Pass	ND	ND	ND
MW9	February 2008	13-Feb-08	Reference - Information Only	Pass	ND	ND	Pass	Pass	ND	Pass	Pass	ND	ND
MW9	March 2008	13-Mar-08	Field Replicate	**Fail**	ND	ND	Pass	Pass	ND	Pass	ND	ND	ND
MW9	March 2008	13-Mar-08	Reference - Information Only	**Fail**	Pass	ND	Pass	Pass	ND	Pass	Pass	ND	ND
MW9	April 2008	14-Apr-08	Reference - Information Only	**Fail**	Pass	ND	Pass	ND	ND	Pass	ND	R	ND
MW9	May 2008	06-May-08	Reference - Information Only	**Fail**	Pass	ND	ND	ND	ND	Pass	Pass	ND	ND
MW9	June 2008	26-Jun-08	Reference - Information Only	**Fail**	ND	ND	ND	ND	ND	ND	Pass	ND	ND
EFF1	November 2007	13-Nov-07	Information Only	**Fail**	Pass	ND	Pass	ND	ND	Pass	Pass	ND	ND
EFF1	December 2007	16-Dec-07	Information Only	**Fail**	ND	ND	Pass	ND	ND	Pass	Pass	ND	ND
EFF1	January 2008	09-Jan-08	Information Only	**Fail**	ND	ND	Pass	ND	ND	ND	Pass	NA	ND
EFF1	February 2008	13-Feb-08	Information Only	**Fail**	Pass	ND	Pass	Pass	ND	Pass	Pass	ND	ND
EFF1	March 2008	17-Mar-08	Information Only	**Fail**	Pass	ND	Pass	Pass	ND	Pass	Pass	ND	ND
EFF1	April 2008	15-Apr-08	Field Replicate	**Fail**	Pass	ND	Pass	ND	ND	Pass	Pass	R	ND
EFF1	April 2008	15-Apr-08	Information Only	**Fail**	Pass	ND	Pass	ND	ND	Pass	Pass	R	ND
EFF1	May 2008	08-May-08	Information Only	**Fail**	Pass	Pass	Pass	ND	ND	Pass	Pass	ND	ND
EFF1	June 2008	27-Jun-08	Information Only	**Fail**	Pass	ND	ND	ND	ND	ND	Pass	ND	ND
EFF1	July 2008	25-Jul-08	Information Only	**Fail**	Pass	ND	Pass	Pass	ND	Pass	Pass	ND	ND
EFF1	August 2008	19-Aug-08	Information Only	**Fail**	Pass	ND	Pass	ND	ND	Pass	ND	ND	ND
EFF1	September 2008	09-Sep-08	Field Replicate	**Fail**	Pass	ND	Pass	Pass	ND	Pass	Pass	ND	ND
EFF1	September 2008	09-Sep-08	Information Only	**Fail**	Pass	ND	Pass	Pass	ND	Pass	Pass	ND	ND
EFF1	October 2008	15-Oct-08	Information Only	**Fail**	Pass	Pass	Pass	ND	ND	Pass	Pass	ND	ND
EFF1	March 2009	09-Mar-09	Information Only	Pass	Pass	Pass	Pass	Pass	ND	Pass	Pass	ND	**Fail**
EFF1	May 2009	14-May-09	Information Only	Pass	Pass	Pass	Pass	Pass	ND	Pass	Pass	ND	**Fail**
EFF1	July 2009	23-Jul-09	Information Only	Pass	Pass	**Fail**	Pass	Pass	ND	ND	Pass	ND	**Fail**
EFF1	October 2009	18-Oct-09	Information Only	**Fail**	Pass	ND	Pass	Pass	ND	Pass	Pass	NA	ND
			Count of Exceedances - All Data	**165**	**0**	**2**	**35**	**31**	**1**	**0**	**0**	**0**	**5**
			Count of Exceedances - Compliance Samples Only	**75**	**0**	**0**	**16**	**15**	**1**	**0**	**0**	**0**	**2**

Notes:

Shaded cells indicate samples collected in 2009.

Fail = Indicates that a detected sample concentration exceeds ADEC chronic aquatic life criterion.

Pass = Indicates that a detected sample concentration is equal to or below ADEC chronic aquatic life criterion.

-- = sample not collected

ADEC = Alaska Department of Environmental Conservation

NA = ADEC chronic aquatic life criterion does not exist for silver.

ND = Concentration below laboratory detection limit. Nondetect values were not screened against ADEC chronic aquatic life criteria.

R = The sample results are rejected. Rejected values were not screened against ADEC chronic aquatic life criteria.

Table 3-10. Summary of Statistical Tests Performed for Surface Water Permit Compliance Stations

Station ID	Sample Event	Date	Sample Purpose	Aluminum Total	Copper Dissolved
WQ4	September 2007 II	10/2/2007	Compliance	NC, Alt, UPL	--
WQ4	October 2007	10/17/2007	Compliance	NC, Alt, UPL	--
WQ4	November 2007	11/13/2007	Compliance	NC, Alt, UPL	--
WQ4	December 2007	12/15/2007	Compliance	NC, Alt, UPL	--
WQ4	January 2008	1/9/2208	Compliance	NC, Alt, UPL	--
WQ4	February 2008	2/14/2008	Compliance	NC, Alt, UPL	--
WQ4	March 2008	3/15/2008	Compliance	NC, Alt, UPL	--
WQ4	April 2008	4/14/2008	Compliance	NC, Alt, UPL	--
WQ4	May 2008	5/8/2008	Compliance	--	--
WQ4	June 2008	6/28/2008	Compliance	NC, Alt, UPL	--
WQ4	July 2008	7/24/2008	Compliance	--	--
WQ4	October 2008	10/15/2008	Compliance	--	--
WQ4	March 2009	3/9/2009	Compliance	--	--
WQ4	May 2009	5/13/2009	Compliance	--	NC, Alt, UPL
WQ4	July 2009	7/23/2009	Compliance	NC, Alt, UPL	NC, Alt, UPL
WQ4	September 2009 I	9/5/2009	Compliance	--	--
WQ4	September 2009 I	9/5/2009	Field Replicate	--	--
WQ4	September 2009 II	9/12/2009	Compliance	--	--
WQ4	September 2009 II	9/12/2009	Field Replicate	--	--
WQ4	October 2009	10/17/2009	Compliance	--	--
WQ6	September 2007 II	10/2/2007	Compliance	--	--
WQ6	October 2007	10/17/2007	Compliance	--	--
WQ6	November 2007	11/13/2007	Compliance	--	--
WQ6	December 2007	12/15/2007	Compliance	--	--
WQ6	January 2008	1/9/2208	Compliance	--	--
WQ6	February 2008	2/14/2008	Compliance	--	--
WQ6	March 2008	3/15/2008	Compliance	--	--
WQ6	April 2008	4/14/2008	Compliance	--	--
WQ6	May 2008	5/8/2008	Compliance	--	--
WQ6	June 2008	6/28/2008	Compliance	NC, Alt, UPL	--
WQ6	July 2008	7/24/2008	Compliance	--	--
WQ6	October 2008	10/15/2008	Compliance	NC, Alt, UPL	--
WQ6	March 2009	3/9/2009	Compliance	--	--
WQ6	May 2009	5/13/2009	Compliance	--	NC, Alt, UPL
WQ6	July 2009	7/23/2009	Compliance	NC, Alt, UPL	NC, Alt, UPL
WQ6	September 2009 I	9/5/2009	Compliance	--	--
WQ6	September 2009 II	9/12/2009	Compliance	--	--
WQ6	October 2009	10/17/2009	Compliance	--	NC, Alt, UPL

Table 3-10. Summary of Statistical Tests Performed for Surface Water Permit Compliance Stations

Station ID	Sample Event	Date	Sample Purpose	Aluminum Total	Copper Dissolved
WQ10	September 2007 II	10/1/2007	Compliance	NC, Alt, UPL	NC, Alt, UPL
WQ10	October 2007	10/17/2007	Compliance	NC, Alt, UPL	--
WQ10	November 2007	11/13/2007	Compliance	--	--
WQ10	December 2007	12/15/2007	Compliance	NC, Alt, UPL	--
WQ10	January 2008	1/9/2208	Compliance	--	--
WQ10	February 2008	2/14/2008	Compliance	NC, Alt, UPL	--
WQ10	March 2008	3/15/2008	Compliance	NC, Alt, UPL	--
WQ10	April 2008	4/14/2008	Compliance	--	--
WQ10	May 2008	5/8/2008	Compliance	--	--
WQ10	June 2008	6/28/2008	Compliance	NC, Alt, UPL	--
WQ10	July 2008	7/24/2008	Compliance	--	--
WQ10	October 2008	10/15/2008	Compliance	--	--
WQ10	March 2009	3/9/2009	Compliance	--	--
WQ10	May 2009	5/13/2009	Compliance	--	NC, Alt, UPL
WQ10	May 2009	5/13/2009	Field Replicate	--	NC, Alt, UPL
WQ10	July 2009	7/23/2009	Compliance	NC, Alt, UPL	NC, Alt, UPL
WQ10	September 2009 I	9/5/2009	Compliance	--	--
WQ10	September 2009 II	9/12/2009	Compliance	--	--
WQ10	October 2009	10/17/2009	Compliance	--	--
WQ10	October 2009	10/17/2009	Field Replicate	--	--

Notes:
No surface water compliance samples exceeded ADEC criteria for ammonia or the following trace elements: AAs, Cd, Ni, Se, Ag
-- = sample did not exceed ADEC criteria
ADEC = Alaska Department of Environmental Conservation
Alt = Integral Alternative Population Approach
NC = ADEC Natural Conditions Tool
UPL = Upper Prediction Limit Screen

Table 3-11. Summary of Statistical Tests Performed for Groundwater Permit Compliance Stations

Station ID	Sample Event	Date	Sample Purpose	Aluminum Total	Copper Dissolved	Lead Dissolved	Mercury Dissolved	Zinc Dissolved
MW1	September 2007 II	9/30/2007	Compliance	NC, Alt, UPL	--	--	--	--
MW1	October 2007	10/16/2007	Compliance	NC, Alt, UPL	--	--	--	--
MW1	November 2007	11/12/2007	Compliance	NC, Alt, UPL	--	--	--	--
MW1	December 2007	12/14/2007	Compliance	NC, Alt, UPL	--	--	--	--
MW1	January 2008	1/92008	Compliance	NC, Alt, UPL	--	--	--	--
MW1	February 2008	2/14/2008	Compliance	NC, Alt, UPL	--	--	--	--
MW1	March 2008	3/17/2008	Compliance	NC, Alt, UPL	--	--	--	--
MW1	April 2008	4/15/2008	Compliance	NC, Alt, UPL	--	--	--	--
MW1	May 2008	5/7/2008	Compliance	NC, Alt, UPL	--	--	--	--
MW1	June 2008	6/26/2008	Compliance	NC, Alt, UPL	--	--	--	--
MW1	July 2008	7/24/2008	Compliance	NC, Alt, UPL	--	--	--	--
MW1	August 2008	8/19/2008	Compliance	NC, Alt, UPL	NC, Alt, UPL	NC, Alt, UPL	--	--
MW1	September 2008	9/9/2008	Compliance	NC, Alt, UPL	--	--	--	--
MW1	October 2008	10/15/2008	Compliance	NC, Alt, UPL	--	--	--	--
MW1	March 2009	3/9/2009	Field Replicate	NC, Alt, UPL	--	--	--	--
MW1	March 2009	3/9/2009	Compliance	NC, Alt, UPL	--	--	--	--
MW1	May 2009	5/13/2009	Compliance	NC, Alt, UPL	--	--	--	--
MW1	July 2009	7/24/2009	Compliance	NC, Alt, UPL	--	NC, Alt, UPL	--	--
MW1	October 2009	10/17/2009	Compliance	NC, Alt, UPL	--	--	--	--
MW1	October 2009	10/17/2009	Field Replicate	NC, Alt, UPL	--	--	--	--
MW2	September 2007 II	9/30/2007	Compliance	NC, Alt, UPL	--	--	--	--
MW2	October 2007	10/16/2007	Compliance	NC, Alt, UPL	--	--	--	--
MW2	November 2007	11/12/2007	Compliance	NC, Alt, UPL	--	--	< 5 detected	--
MW2	December 2007	12/14/2007	Compliance	NC, Alt, UPL	--	--	--	--
MW2	January 2008	1/8/2008	Compliance	NC, Alt, UPL	NC, Alt, UPL	NC, Alt, UPL	--	--
MW2	February 2008	2/13/2008	Compliance	NC, Alt, UPL	--	--	--	--
MW2	March 2008	3/14/2008	Compliance	NC, Alt, UPL	--	--	--	--
MW2	April 2008	4/14/2008	Compliance	NC, Alt, UPL	--	--	--	--
MW2	May 2008	5/7/2008	Compliance	NC, Alt, UPL	--	NC, Alt, UPL	--	--
MW2	June 2008	6/26/2008	Compliance	NC, Alt, UPL	--	--	--	--
MW2	July 2008	7/24/2008	Compliance	NC, Alt, UPL	--	--	--	--
MW2	August 2008	8/19/2008	Compliance	NC, Alt, UPL	--	--	--	--
MW2	September 2008	9/9/2008	Compliance	NC, Alt, UPL	--	--	--	--
MW2	October 2008	10/15/2008	Compliance	NC, Alt, UPL	--	--	--	--
MW2	March 2009	3/8/2009	Compliance	NC, Alt, UPL	--	--	--	--
MW2	May 2009	5/13/2009	Compliance	NC, Alt, UPL	--	--	--	--
MW2	July 2009	7/24/2009	Compliance	NC, Alt, UPL	--	--	--	--
MW2	September 2009 II	9/12/2009	Compliance	NC, Alt, UPL	--	--	--	--
MW2	October 2009	10/17/2009	Compliance	NC, Alt, UPL	--	--	--	--

Table 3-11. Summary of Statistical Tests Performed for Groundwater Permit Compliance Stations

Station ID	Sample Event	Date	Sample Purpose	Aluminum Total	Copper Dissolved	Lead Dissolved	Mercury Dissolved	Zinc Dissolved
MW3	September 2007 II	9/30/2007	Compliance	NC, Alt, UPL	--	--	--	--
MW3	October 2007	10/17/2007	Compliance	NC, Alt, UPL	--	--	--	--
MW3	November 2007	11/12/2007	Compliance	NC, Alt, UPL	--	--	--	--
MW3	December 2007	12/15/2007	Compliance	NC, Alt, UPL	--	NC, Alt, UPL	--	--
MW3	January 2008	1/8/2008	Compliance	NC, Alt, UPL	--	--	--	--
MW3	February 2008	2/13/2008	Compliance	NC, Alt, UPL	--	--	--	--
MW3	March 2008	3/14/2008	Compliance	NC, Alt, UPL	--	--	--	--
MW3	April 2008	4/14/2008	Compliance	NC, Alt, UPL	--	--	--	--
MW3	May 2008	5/7/2008	Compliance	NC, Alt, UPL	--	--	--	--
MW3	June 2008	6/27/2008	Compliance	NC, Alt, UPL	--	--	--	--
MW3	July 2008	7/24/2008	Compliance	NC, Alt, UPL	--	--	--	--
MW3	August 2008	8/19/2008	Compliance	NC, Alt, UPL	NC, Alt, UPL	--	--	--
MW3	September 2008	9/9/2008	Compliance	NC, Alt, UPL	--	--	--	--
MW3	October 2008	10/15/2008	Compliance	NC, Alt, UPL	--	--	--	--
MW3	March 2009	3/8/2009	Compliance	NC, Alt, UPL	NC, Alt, UPL	NC, Alt, UPL	--	--
MW3	May 2009	5/13/2009	Compliance	NC, Alt, UPL	NC, Alt, UPL	NC, Alt, UPL	--	--
MW3	July 2009	7/24/2009	Compliance	NC, Alt, UPL	NC, Alt, UPL	NC, Alt, UPL	--	--
MW3	September 2009 II	9/12/2009	Compliance	NC, Alt, UPL	NC, Alt, UPL	NC, Alt, UPL	--	--
MW3	October 2009	10/17/2009	Compliance	NC, Alt, UPL	NC, Alt, UPL	NC, Alt, UPL	--	--
MW4	September 2007 II	9/30/2007	Compliance	NC, Alt, UPL	NC, Alt, UPL	--	--	--
MW4	October 2007	10/16/2007	Compliance	NC, Alt, UPL	NC, Alt, UPL	NC, Alt, UPL	--	--
MW4	November 2007	11/12/2007	Compliance	NC, Alt, UPL	--	--	--	--
MW4	December 2007	12/15/2007	Compliance	NC, Alt, UPL	--	NC, Alt, UPL	--	--
MW4	January 2008	1/8/2008	Compliance	NC, Alt, UPL	--	--	--	--
MW4	February 2008	2/13/2008	Compliance	NC, Alt, UPL	--	--	--	--
MW4	March 2008	3/15/2008	Compliance	NC, Alt, UPL	--	--	--	--
MW4	April 2008	4/14/2008	Compliance	NC, Alt, UPL	--	--	--	--
MW4	May 2008	5/8/2008	Compliance	NC, Alt, UPL	--	--	--	--
MW4	June 2008	6/27/2008	Compliance	NC, Alt, UPL	NC, Alt, UPL	--	--	--
MW4	July 2008	7/24/2008	Compliance	NC, Alt, UPL	--	--	--	--
MW4	August 2008	8/19/2008	Compliance	NC, Alt, UPL	NC, Alt, UPL	NC, Alt, UPL	--	--
MW4	September 2008	9/9/2008	Compliance	NC, Alt, UPL	NC, Alt, UPL	NC, Alt, UPL	--	--
MW4	October 2008	10/15/2008	Compliance	NC, Alt, UPL	--	--	--	--
MW4	March 2009	3/8/2009	Compliance	NC, Alt, UPL	NC, Alt, UPL	--	--	NC, Alt, UPL
MW4	May 2009	5/13/2009	Compliance	NC, Alt, UPL	--	--	--	NC, Alt, UPL
MW4	May 2009	5/13/2009	Field Replicate	NC, Alt, UPL	--	--	--	--
MW4	July 2009	7/23/2009	Compliance	NC, Alt, UPL	NC, Alt, UPL	NC, Alt, UPL	--	--
MW4	July 2009	7/23/2009	Field Replicate	NC, Alt, UPL	NC, Alt, UPL	NC, Alt, UPL	--	--
MW4	September 2009 II	9/13/2009	Compliance	NC, Alt, UPL	NC, Alt, UPL	--	--	--

Table 3-11. Summary of Statistical Tests Performed for Groundwater Permit Compliance Stations

Station ID	Sample Event	Date	Sample Purpose	Aluminum Total	Copper Dissolved	Lead Dissolved	Mercury Dissolved	Zinc Dissolved
MW4	September 2009 II	9/13/2009	Field Replicate	NC, Alt, UPL	--	--	--	--
MW4	October 2009	10/17/2009	Compliance	NC, Alt, UPL	--	--	--	--
EFF1	November 2007	11/13/2007	Information Only	NC, Alt, UPL	--	--	--	--
EFF1	December 2007	12/16/2007	Information Only	NC, Alt, UPL	--	--	--	--
EFF1	January 2008	1/9/2008	Information Only	NC, Alt, UPL	--	--	--	--
EFF1	February 2008	2/13/2008	Information Only	NC, Alt, UPL	--	--	--	--
EFF1	March 2008	3/17/2008	Information Only	NC, Alt, UPL	--	--	--	--
EFF1	April 2008	4/15/2008	Information Only	NC, Alt, UPL	--	--	--	--
EFF1	May 2008	5/8/2008	Information Only	NC, Alt, UPL	--	--	--	--
EFF1	June 2008	6/27/2008	Information Only	NC, Alt, UPL	--	--	--	--
EFF1	July 2008	7/25/2008	Information Only	NC, Alt, UPL	--	--	--	--
EFF1	August 2008	8/19/2008	Information Only	NC, Alt, UPL	--	--	--	--
EFF1	September 2008	9/9/2008	Information Only	NC, Alt, UPL	--	--	--	--
EFF1	October 2008	10/15/2008	Information Only	NC, Alt, UPL	--	--	--	--
EFF1	March 2009	3/9/2009	Information Only	--	--	--	--	NC, Alt, UPL
EFF1	May 2009	5/14/2009	Information Only	--	--	--	--	NC, Alt, UPL
EFF1	July 2009	7/23/2009	Information Only	--	--	--	--	NC, Alt, UPL
EFF1	October 2009	10/18/2009	Information Only	NC, Alt, UPL	--	--	--	--

Notes:
No groundwater compliance samples exceeded ADEC criteria for ammonia or the following trace elements: As, Cd, Ni, Se, Ag
-- = sample did not exceed ADEC criteria.
ADEC = Alaska Department of Environmental Conservation
Alt = Integral Alternative Population Approach
NC = ADEC Natural Conditions Tool
UPL = Upper Prediction Limit Screen
< 5 detected = Fewer than five reference values detected; cannot run statistical screening tests.

Table 3-12. Results of Natural Condition Criteria Comparisons for Surface Water

Analyte	Fraction	NC Criteria (All ND Included)[a] (µg/L)	NC Criteria (High ND Excluded)[b] (µg/L)	Event	Event Period	WQ8 (Waterfall Creek Upstream)	WQ4 (Waterfall Creek Downstream)	WQ7 (Camp Creek Upstream)	WQ6 (Camp Creek Downstream)	WQ12 (Unnamed Creek #1 Upstream)	WQ10 (Unnamed Creek #1 Downstream)	WQ13 (Unnamed Creek #2)
Aluminum	Total	55.4	All detected	October 1996 II	Pre-site activity	--	ND	--	ND	--	--	--
				April 2005 II		--	NA	--	NA	--	--	--
				February 2006 II		NA	NA	NA	NA	--	--	--
				May 2006 II		NA	NA	NA	NA	--	--	--
				August 2006 II		NA	NA	NA	NA	NA	NA	--
				October 2006		NA	NA	NA	NA	NA	NA	--
				December 2006		NA	NA	NA	NA	NA	NA	--
				February 2007		NA	NA	NA	NA	NA	NA	NA
				April 2007		NA	NA	NA	NA	NA	NA	NA
				May 2007		NA	NA	NA	NA	NA	NA	NA
				June 2007		NA	NA	NA	NA	NA	NA	NA
				July 2007 I		NA	NA	NA	NA	NA	NA	NA
				July 2007 II		NA	NA	NA	NA	NA	NA	NA
				August 2007 I		NA	NA	NA	NA	NA	NA	NA
				August 2007 II		NA	NA	NA	NA	NA	NA	NA
				September 2007 I		NA	NA	NA	NA	NA	NA	NA
Aluminum	Total	55.4	All detected	September 2007 II	Ongoing site activity	NA	NA	NA	NA	NA	NA	NA
				September 2007 I		NA	NA	NA	NA	NA	NA	NA
Aluminum	Total	55.4	All detected	September 2007 II	Ongoing site activity	NA	NA	NA	NA	NA	NA	NA
				October 2007		NA	NA	NA	NA	NA	NA	NA
				November 2007		NA	NA	NA	NA	NA	NA	NA
				December 2007 I		NA	NA	NA	NA	NA	NA	NA
				January 2008		NA	NA	NA	NA	NA	NA	NA
				February 2008		NA	NA	NA	NA	NA	NA	NA
				March 2008		NA	NA	NA	NA	NA	NA	NA
				April 2008		NA	NA	NA	NA	NA	NA	NA
				May 2008		NA	NA	NA	NA	NA	NA	NA
				June 2008		NA	NA	NA	NA	NA	NA	NA
				July 2008		NA	NA	NA	NA	NA	NA	NA
				October 2008		--	NA	--	NA	--	NA	NA
				March 2009		--	NA	--	NA	--	NA	NA
				May 2009		--	NA	--	NA	--	NA	NA
				July 2009		--	NA	--	NA	--	NA	NA
				September 2009 I		--	NA	--	NA	--	NA	--
				September 2009 II		--	NA	--	NA	--	NA	--
				October 2009		--	NA	--	NA	--	NA	NA
Aluminum	Dissolved	42.5	All detected	October 1996 II	Pre-site activity	--	ND	--	ND	--	--	--
				April 2005 II		--	NA	--	NA	--	--	--
				February 2006 II		NA	NA	NA	NA	--	--	--
				May 2006 II		NA	NA	NA	NA	--	--	--
				August 2006 II		NA	NA	NA	NA	NA	NA	--
				October 2006		NA	NA	NA	NA	NA	NA	--
				December 2006		NA	NA	NA	NA	NA	NA	--

Table 3-12. Results of Natural Condition Criteria Comparisons for Surface Water

Analyte	Fraction	NC Criteria (All ND Included)[a] (µg/L)	NC Criteria (High ND Excluded)[b] (µg/L)	Event	Event Period	WQ8 (Waterfall Creek Upstream)	WQ4 (Waterfall Creek Downstream)	WQ7 (Camp Creek Upstream)	WQ6 (Camp Creek Downstream)	WQ12 (Unnamed Creek #1 Upstream)	WQ10 (Unnamed Creek #1 Downstream)	WQ13 (Unnamed Creek #2)
				February 2007		NA	NA	NA	NA	NA	NA	NA
				April 2007		NA	NA	NA	NA	NA	NA	NA
				May 2007		NA	NA	NA	NA	NA	NA	NA
				June 2007		NA	NA	NA	NA	NA	NA	NA
				July 2007 I		NA	NA	NA	NA	NA	NA	NA
				July 2007 II		NA	NA	NA	NA	NA	NA	NA
				August 2007 I		NA	NA	NA	NA	NA	NA	NA
				August 2007 II		NA	NA	NA	NA	NA	NA	NA
				September 2007 I		NA	NA	NA	NA	NA	NA	NA
Aluminum	Dissolved	42.5	All detected	September 2007 II	Ongoing site activity	NA	NA	NA	NA	NA	NA	NA
				October 2007		NA	NA	NA	NA	NA	NA	NA
				November 2007		NA	NA	NA	NA	NA	NA	NA
				December 2007 I		NA	NA	NA	NA	NA	NA	NA
				January 2008		NA	NA	NA	NA	NA	NA	NA
				February 2008		NA	NA	NA	NA	NA	NA	NA
				March 2008		NA	NA	NA	NA	NA	NA	NA
				April 2008		NA	NA	NA	NA	NA	NA	NA
				May 2008		NA	NA	NA	NA	NA	NA	NA
				June 2008		NA	NA	NA	NA	NA	NA	NA
				July 2008		NA	NA	NA	NA	NA	NA	NA
				October 2008		--	NA	--	NA	--	NA	NA
				March 2009		--	NA	--	NA	--	NA	NA
				May 2009		--	NA	--	NA	--	NA	NA
				July 2009		--	NA	--	NA	--	NA	NA
				September 2009 I		--	NA	--	NA	--	NA	--
				September 2009 II		--	NA	--	NA	--	NA	--
				October 2009		--	NA	--	NA	--	NA	NA
Copper	Dissolved	f_{nd} > 20%	0.838	October 1996 II	Pre-site activity	--	ND	--	ND	--	--	--
				September 1997		--	ND	--	ND	--	--	--
				April 2005 II		--	ND	--	**Fail**	--	--	--
				February 2006 II		ND	ND	ND	ND	--	--	--
				May 2006 II		ND	ND	ND	ND	--	--	--
				August 2006 II		**Fail**	**Fail**	**Fail**	**Fail**	ND	**Fail**	--
				October 2006		ND	ND	ND	ND	**Fail**	**Fail**	--
				December 2006		ND	ND	ND	ND	ND	ND	--
				February 2007		ND	ND	ND	ND	ND	ND	ND
				April 2007		Pass	Pass	Pass	Pass	Pass	Pass	**Fail**
				May 2007		Pass	**Fail**	Pass	Pass	ND	**Fail**	**Fail**
				June 2007		**Fail**	**Fail**	**Fail**	**Fail**	**Fail**	**Fail**	**Fail**
				July 2007 I		**Fail**	**Fail**	**Fail**	**Fail**	Pass	Pass	**Fail**
				July 2007 II		Pass	Pass	Pass	Pass	ND	**Fail**	**Fail**

Table 3-12. Results of Natural Condition Criteria Comparisons for Surface Water

Analyte	Fraction	NC Criteria (All ND Included)[a] (µg/L)	NC Criteria (High ND Excluded)[b] (µg/L)	Event	Event Period	WQ8 (Waterfall Creek Upstream)	WQ4 (Waterfall Creek Downstream)	WQ7 (Camp Creek Upstream)	WQ6 (Camp Creek Downstream)	WQ12 (Unnamed Creek #1 Upstream)	WQ10 (Unnamed Creek #1 Downstream)	WQ13 (Unnamed Creek #2)
				August 2007 I		Pass	Pass	Pass	Pass	Pass	**Fail**	Pass
				August 2007 II		**Fail**	**Fail**	Pass	Pass	Pass	**Fail**	**Fail**
				September 2007 I		Pass	Pass	Pass	Pass	Pass	**Fail**	**Fail**
Copper	Dissolved	f_{nd} > 20%	0.838	September 2007 II	Ongoing site activity	**Fail**	**Fail**	**Fail**	**Fail**	Pass	**Fail**	**Fail**
				October 2007		**Fail**	**Fail**	**Fail**	**Fail**	**Fail**	**Fail**	**Fail**
				November 2007		Pass	**Fail**	Pass	Pass	Pass	Pass	Pass
				December 2007 I		**Fail**	**Fail**	**Fail**	Pass	Pass	**Fail**	**Fail**
				January 2008		Pass	Pass	ND	Pass	Pass	**Fail**	Pass
				February 2008		Pass	**Fail**	Pass	Pass	Pass	Pass	**Fail**
				March 2008		Pass	Pass	ND	ND	ND	**Fail**	Pass
				April 2008		Pass	Pass	Pass	Pass	Pass	Pass	Pass
				May 2008		**Fail**	Pass	**Fail**	**Fail**	ND	**Fail**	**Fail**
				June 2008		ND	ND	ND	ND	ND	ND	ND
				July 2008		Pass	**Fail**	Pass	Pass	Pass	**Fail**	**Fail**
				October 2008		--	ND	--	ND	--	ND	ND
				March 2009		--	ND	--	ND	--	ND	ND
				May 2009		--	**Fail**	--	**Fail**	--	**Fail**	**Fail**
				July 2009		--	**Fail**	--	**Fail**	--	**Fail**	**Fail**
				September 2009 I		--	**Fail**	--	**Fail**	--	**Fail**	--
				September 2009 II		--	Pass	--	**Fail**	--	**Fail**	--
				October 2009		--	**Fail**	--	**Fail**	--	**Fail**	**Fail**

Notes:

Fail = indicates that a detected sample concentration exceeds the Natural Conditions Tool calculated criterion.
Pass = indicates that a detected sample concentration is equal to or below the Natural Conditions Tool calculated criterion.
Pre-site activity is prior to September 21, 2007. Ongoing site activity is from September 21, 2007, through the present.
-- = sample not collected
NA = The Natural Conditions Tool calculated criteria of 55.4 µg/L (total) and 42.5 µg/L (dissolved) are less than the Alaska Department of Environmental Conservation (ADEC) chronic aquatic life criterion of 87 µg/L; therefore, the Natural Conditions criteria do not apply.
NC = natural condition
ND = Concentration below laboratory detection limit. Nondetect values were not screened against Natural Conditions Tool calculated criteria.
f_{nd} > 20% = Frequency of ND data greater than 20%; fails minimum data requirements of Natural Conditions Tool.

[a] All ND included indicates that all nondetect data values were included in the Natural Conditions Tool analysis at the full detection limit and were flagged as nondetect values.

[b] High ND excluded indicates that, prior to analysis with the Natural Conditions Tool, high nondetect values were screened out of the reference data set. High nondetects were defined as any nondetect value that was higher than the lowest detected value.

Table 3-13. Results of Natural Condition Criteria Comparisons for Groundwater

Analyte	Fraction	NC Criteria (All ND Included)[a] (µg/L)	NC Criteria (High ND Excluded)[b] (µg/L)	Event	Event Period	MW7 (Offsite Reference)	MW1 (Wetlands below NAG site)	MW2 (Wetlands below Treatment Ponds)	MW3 (Wetlands below PAG site)	MW4 (Wetlands below Infiltration Dystem)
Aluminum	Total	548	NA	February 2007	Pre-site activity	**Fail**	**Fail**	--	**Fail**	**Fail**
				April 2007		**Fail**	**Fail**	**Fail**	**Fail**	**Fail**
				May 2007		**Fail**	**Fail**	**Fail**	**Fail**	**Fail**
				June 2007		Pass	Pass	**Fail**	**Fail**	**Fail**
				July 2007 I		Pass	Pass	Pass	**Fail**	--
				July 2007 II		Pass	Pass	**Fail**	**Fail**	**Fail**
				August 2007 I		Pass	Pass	**Fail**	**Fail**	--
				August 2007 II		Pass	Pass	**Fail**	**Fail**	**Fail**
				September 2007 I		**Fail**	Pass	**Fail**	**Fail**	**Fail**
Aluminum	Total	548	NA	September 2007 II	Ongoing site activity	**Fail**	**Fail**	**Fail**	**Fail**	**Fail**
				October 2007		Pass	Pass	**Fail**	**Fail**	**Fail**
				November 2007		Pass	Pass	**Fail**	**Fail**	**Fail**
				December 2007 I		**Fail**	**Fail**	**Fail**	**Fail**	**Fail**
				January 2008		**Fail**	Pass	**Fail**	Pass	Pass
				February 2008		Pass	**Fail**	**Fail**	**Fail**	Pass
				March 2008		Pass	Pass	**Fail**	Pass	Pass
				April 2008		Pass	Pass	**Fail**	Pass	Pass
				May 2008		Pass	Pass	**Fail**	Pass	Pass
				June 2008		**Fail**	Pass	**Fail**	**Fail**	**Fail**
				July 2008		Pass	Pass	**Fail**	**Fail**	Pass
				August 2008		--	Pass	**Fail**	**Fail**	**Fail**
				September 2008		--	Pass	**Fail**	**Fail**	Pass
				October 2008		--	Pass	**Fail**	**Fail**	Pass
				March 2009		--	Pass	**Fail**	Pass	Pass
				May 2009		--	**Fail**	**Fail**	**Fail**	Pass
				July 2009		--	Pass	**Fail**	**Fail**	**Fail**
				September 2009 II		--	--	**Fail**	**Fail**	Pass
				October 2009		--	Pass	**Fail**	Pass	Pass
Aluminum	Dissolved	217	NA	February 2007	Pre-site activity	**Fail**	Pass	--	**Fail**	**Fail**
				April 2007		Pass	Pass	**Fail**	**Fail**	**Fail**
				May 2007		**Fail**	Pass	**Fail**	**Fail**	**Fail**
				June 2007		**Fail**	Pass	**Fail**	**Fail**	**Fail**
				July 2007 I		Pass	Pass	Pass	**Fail**	--
				July 2007 II		**Fail**	Pass	**Fail**	**Fail**	**Fail**
				August 2007 I		**Fail**	Pass	**Fail**	**Fail**	--
				August 2007 II		Pass	**Fail**	**Fail**	**Fail**	**Fail**
				September 2007 I		**Fail**	**Fail**	**Fail**	**Fail**	**Fail**
Aluminum	Dissolved	217	NA	September 2007 II	Ongoing site activity	**Fail**	**Fail**	**Fail**	**Fail**	**Fail**
				October 2007		**Fail**	**Fail**	**Fail**	**Fail**	**Fail**
				November 2007		Pass	**Fail**	**Fail**	**Fail**	**Fail**
				December 2007 I		**Fail**	Pass	**Fail**	**Fail**	**Fail**

Table 3-13. Results of Natural Condition Criteria Comparisons for Groundwater

Analyte	Fraction	NC Criteria (All ND Included)[a] (µg/L)	NC Criteria (High ND Excluded)[b] (µg/L)	Event	Event Period	MW7 (Offsite Reference)	MW1 (Wetlands below NAG site)	MW2 (Wetlands below Treatment Ponds)	MW3 (Wetlands below PAG site)	MW4 (Wetlands below Infiltration Dystem)
				January 2008		Pass	nd	**Fail**	Pass	Pass
				February 2008		Pass	Pass	**Fail**	**Fail**	Pass
				March 2008		Pass	Pass	**Fail**	**Fail**	Pass
				April 2008		Pass	Pass	**Fail**	**Fail**	Pass
				May 2008		Pass	Pass	**Fail**	**Fail**	Pass
				June 2008		Pass	**Fail**	**Fail**	**Fail**	**Fail**
				July 2008		Pass	**Fail**	**Fail**	**Fail**	**Fail**
				August 2008		--	**Fail**	**Fail**	**Fail**	**Fail**
				September 2008		--	**Fail**	**Fail**	**Fail**	**Fail**
				October 2008		--	Pass	**Fail**	**Fail**	**Fail**
				March 2009		--	Pass	**Fail**	**Fail**	Pass
				May 2009		--	Pass	**Fail**	**Fail**	Pass
				July 2009		--	**Fail**	**Fail**	**Fail**	**Fail**
				September 2009 II		--	--	**Fail**	**Fail**	**Fail**
				October 2009		--	Pass	**Fail**	**Fail**	**Fail**
Copper	Dissolved	NC tool failure	1.65	February 2007	Pre-site activity	**Fail**	**Fail**	--	**Fail**	**Fail**
				April 2007		Pass	Pass	Pass	**Fail**	**Fail**
				May 2007		**Fail**	Pass	Pass	**Fail**	**Fail**
				June 2007		Pass	Pass	**Fail**	**Fail**	**Fail**
				July 2007 I		Pass	Pass	Pass	Pass	--
				July 2007 II		Pass	Pass	**Fail**	**Fail**	**Fail**
				August 2007 I		Pass	Pass	Pass	Pass	--
				August 2007 II		Pass	Pass	**Fail**	**Fail**	**Fail**
				September 2007 I		Pass	**Fail**	**Fail**	**Fail**	**Fail**
Copper	Dissolved	NC tool failure	1.65	September 2007 II	Ongoing site activity	Pass	**Fail**	**Fail**	**Fail**	**Fail**
				October 2007		Pass	**Fail**	**Fail**	**Fail**	**Fail**
				November 2007		Pass	Pass	**Fail**	Pass	**Fail**
				December 2007 I		Pass	Pass	**Fail**	Pass	Pass
				January 2008		Pass	Pass	Pass	Pass	Pass
				February 2008		Pass	Pass	Pass	Pass	Pass
				March 2008		Pass	Pass	Pass	Pass	Pass
				April 2008		Pass	Pass	Pass	Pass	Pass
				May 2008		ND	Pass	Pass	ND	Pass
				June 2008		ND	ND	ND	ND	**Fail**
				July 2008		Pass	Pass	Pass	**Fail**	Pass
				August 2008		--	**Fail**	nd	**Fail**	**Fail**
				September 2008		--	Pass	Pass	**Fail**	**Fail**
				October 2008		--	Pass	ND	**Fail**	**Fail**
				March 2009		--	ND	ND	Pass	Pass
				May 2009		--	Pass	ND	Pass	Pass
				July 2009		--	**Fail**	Pass	**Fail**	**Fail**

Table 3-13. Results of Natural Condition Criteria Comparisons for Groundwater

Analyte	Fraction	NC Criteria (All ND Included)[a] (µg/L)	NC Criteria (High ND Excluded)[b] (µg/L)	Event	Event Period	MW7 (Offsite Reference)	MW1 (Wetlands below NAG site)	MW2 (Wetlands below Treatment Ponds)	MW3 (Wetlands below PAG site)	MW4 (Wetlands below Infiltration Dystem)
				September 2009 II		--	--	Pass	Pass	Pass
				October 2009		--	Pass	Pass	Pass	Pass
Lead	Dissolved	NC tool failure	0.314	February 2007	Pre-site activity	**Fail**	**Fail**	--	ND	ND
				April 2007		Pass	Pass	Pass	**Fail**	**Fail**
				May 2007		**Fail**	Pass	Pass	**Fail**	**Fail**
				June 2007		Pass	Pass	Pass	**Fail**	Pass
				July 2007 I		Pass	Pass	ND	**Fail**	--
				July 2007 II		Pass	**Fail**	Pass	**Fail**	Pass
				August 2007 I		Pass	Pass	Pass	**Fail**	--
				August 2007 II		Pass	**Fail**	**Fail**	**Fail**	Pass
				September 2007 I		Pass	**Fail**	**Fail**	**Fail**	**Fail**
Lead	Dissolved	NC tool failure	0.314	September 2007 II	Ongoing site activity	Pass	**Fail**	**Fail**	**Fail**	**Fail**
				October 2007		Pass	**Fail**	**Fail**	**Fail**	**Fail**
				November 2007		Pass	**Fail**	**Fail**	**Fail**	**Fail**
				December 2007 I		**Fail**	**Fail**	**Fail**	Pass	Pass
				January 2008		Pass	Pass	Pass	Pass	Pass
				February 2008		Pass	Pass	Pass	Pass	Pass
				March 2008		Pass	Pass	Pass	Pass	Pass
				April 2008		Pass	Pass	Pass	Pass	Pass
				May 2008		Pass	Pass	**Fail**	ND	ND
				June 2008		Pass	**Fail**	Pass	Pass	Pass
				July 2008		Pass	**Fail**	Pass	**Fail**	Pass
				August 2008		--	**Fail**	Pass	**Fail**	Pass
				September 2008		--	**Fail**	Pass	**Fail**	**Fail**
				October 2008		--	**Fail**	Pass	**Fail**	**Fail**
				March 2009		--	Pass	Pass	Pass	Pass
				May 2009		--	**Fail**	ND	Pass	ND
				July 2009		--	**Fail**	Pass	Pass	Pass
				September 2009 II		--	--	Pass	Pass	Pass
				October 2009		--	Pass	Pass	Pass	Pass
Zinc	Dissolved	NC tool failure	4.93	February 2007	Pre-site activity	**Fail**	ND	--	**Fail**	**Fail**
				April 2007		**Fail**	Pass	Pass	Pass	**Fail**
				May 2007		**Fail**	Pass	Pass	**Fail**	**Fail**
				June 2007		Pass	Pass	Pass	**Fail**	**Fail**
				July 2007 I		Pass	ND	**Fail**	**Fail**	--
				July 2007 II		ND	ND	ND	ND	ND
				August 2007 I		ND	ND	ND	ND	--
				August 2007 II		ND	ND	ND	ND	ND
				September 2007 I		**Fail**	ND	ND	ND	ND

Table 3-13. Results of Natural Condition Criteria Comparisons for Groundwater

Analyte	Fraction	NC Criteria (All ND Included)[a] (µg/L)	NC Criteria (High ND Excluded)[b] (µg/L)	Event	Event Period	MW7 (Offsite Reference)	MW1 (Wetlands below NAG site)	MW2 (Wetlands below Treatment Ponds)	MW3 (Wetlands below PAG site)	MW4 (Wetlands below Infiltration Dystem)
Zinc	Dissolved	NC tool failure	4.93	September 2007 II	Ongoing site activity	ND	ND	ND	ND	ND
				October 2007		ND	ND	**Fail**	**Fail**	**Fail**
				November 2007		ND	ND	ND	ND	ND
				December 2007 I		**Fail**	ND	**Fail**	ND	ND
				January 2008		ND	ND	ND	ND	ND
				February 2008		ND	ND	ND	ND	ND
				March 2008		ND	ND	ND	ND	ND
				April 2008		ND	ND	ND	ND	ND
				May 2008		ND	ND	ND	ND	**Fail**
				June 2008		ND	ND	ND	ND	ND
				July 2008		ND	ND	ND	ND	ND
				August 2008		--	ND	ND	ND	ND
				September 2008		--	ND	ND	ND	**Fail**
				October 2008		--	ND	ND	ND	ND
				March 2009		--	ND	ND	ND	**Fail**
				May 2009		--	ND	ND	ND	**Fail**
				July 2009		--	ND	ND	ND	**Fail**
				September 2009 II		--	--	ND	ND	ND
				October 2009		--	ND	ND	ND	ND

Notes:

Fail = indicates that a detected sample concentration exceeds the Natural Conditions Tool calculated criterion.
Pass = indicates that a detected sample concentration is equal to or below the Natural Conditions Tool calculated criterion.
Pre-site activity is prior to September 21, 2007. Ongoing site activity is from September 21, 2007, through the present.
-- = sample not collected
NA = Not applicable. Natural Condition Tool was successfully run with nondetect values included, so it was not necessary to run the tool separately without high nondetect values.
NC = natural condition
ND = Concentration below laboratory detection limit. Nondetect values were not screened against Natural Conditions Tool calculated criteria.
NC tool failure = Fails minimum data requirements of Natural Conditions Tool due to nondetect values which are greater than detected values.
NAG = non-acid-generating
PAG = potentially acid-generating

[a] All ND included indicates that all nondetect data values were included in the Natural Conditions Tool analysis at the full detection limit and were flagged as nondetect values.

[b] High ND excluded indicates that, prior to analysis with the Natural Conditions Tool, high nondetect values were screened out of the reference data set. High nondetects were defined as any nondetect value that was higher than the lowest detected value.

Table 3-14. Summary of Exceedances of Natural Conditions as Analyzed with the Alternative Population Approach for Surface Water

Analyte	Fraction	Event	Event Period	WQ8 (Waterfall Creek Upstream)	WQ4 (Waterfall Creek Downstream)	WQ7 (Camp Creek Upstream)	WQ6 (Camp Creek Downstream)	WQ12 (Unnamed Creek #1 Upstream)	WQ10 (Unnamed Creek #1 Downstream)	WQ13 (Unnamed Creek #2)
Aluminum	Total	October 1996 II	Pre-site activity	--	ND	--	ND	--	--	--
		April 2005 II		--	**Fail**	--	**Fail**	--	--	--
		February 2006 II		Pass	Pass	Pass	Pass	--	--	--
		May 2006 II		**Fail**	**Fail**	**Fail**	**Fail**	--	--	--
		August 2006 II		**Fail**	**Fail**	**Fail**	**Fail**	Pass	**Fail**	--
		October 2006		Pass	Pass	Pass	Pass	**Fail**	**Fail**	--
		December 2006		**Fail**	**Fail**	**Fail**	**Fail**	**Fail**	**Fail**	--
		February 2007		Pass	Pass	Pass	Pass	Pass	**Fail**	Pass
		April 2007		Pass	**Fail**	Pass	Pass	Pass	**Fail**	**Fail**
		May 2007		**Fail**	**Fail**	**Fail**	Pass	Pass	**Fail**	Pass
		June 2007		**Fail**	**Fail**	**Fail**	**Fail**	**Fail**	**Fail**	**Fail**
		July 2007 I		Pass	**Fail**	Pass	Pass	Pass	Pass	Pass
		July 2007 II		**Fail**	Pass	Pass	Pass	Pass	**Fail**	Pass
		August 2007 I		Pass	Pass	Pass	Pass	Pass	Pass	Pass
		August 2007 II		Pass	**Fail**	Pass	Pass	Pass	**Fail**	**Fail**
		September 2007 I		Pass	Pass	Pass	Pass	Pass	**Fail**	Pass
Aluminum	Total	September 2007 II	Ongoing site activity	**Fail**	**Fail**	**Fail**	**Fail**	**Fail**	**Fail**	**Fail**
		October 2007		**Fail**	**Fail**	**Fail**	**Fail**	**Fail**	**Fail**	**Fail**
		November 2007		Pass	**Fail**	Pass	Pass	Pass	**Fail**	Pass
		December 2007 I		Pass	**Fail**	Pass	**Fail**	**Fail**	**Fail**	**Fail**
		January 2008		Pass	**Fail**	Pass	Pass	Pass	Pass	**Fail**
		February 2008		**Fail**	**Fail**	Pass	**Fail**	**Fail**	**Fail**	**Fail**
		March 2008		**Fail**	**Fail**	Pass	Pass	Pass	**Fail**	Pass
		April 2008		Pass	**Fail**	Pass	Pass	Pass	**Fail**	Pass
		May 2008		Pass	**Fail**	Pass	Pass	Pass	**Fail**	Pass
		June 2008		**Fail**	**Fail**	**Fail**	**Fail**	**Fail**	**Fail**	**Fail**
		July 2008		Pass	Pass	Pass	Pass	Pass	Pass	Pass
		October 2008		--	**Fail**	--	**Fail**	--	**Fail**	Pass
		March 2009		--	Pass	--	Pass	--	Pass	Pass
		May 2009		--	**Fail**	--	**Fail**	--	**Fail**	**Fail**
		July 2009		--	**Fail**	--	**Fail**	--	**Fail**	**Fail**
		September 2009 I		--	**Fail**	--	Pass	--	**Fail**	--
		September 2009 II		--	**Fail**	--	Pass	--	**Fail**	--
		October 2009		--	Pass	--	Pass	--	**Fail**	Pass
Aluminum	Dissolved	October 1996 II	Pre-site activity	--	ND	--	ND	--	--	--
		April 2005 II		--	Pass	--	Pass	--	--	--
		February 2008		Pass	Pass	--	Pass	--	--	--
		May 2006 II		**Fail**	**Fail**	--	**Fail**	--	--	--
		August 2006 II		**Fail**	Pass	**Fail**	Pass	Pass	Pass	--
		October 2006		Pass	Pass	Pass	Pass	**Fail**	Pass	--

Table 3-14. Summary of Exceedances of Natural Conditions as Analyzed with the Alternative Population Approach for Surface Water

Analyte	Fraction	Event	Event Period	WQ8 (Waterfall Creek Upstream)	WQ4 (Waterfall Creek Downstream)	WQ7 (Camp Creek Upstream)	WQ6 (Camp Creek Downstream)	WQ12 (Unnamed Creek #1 Upstream)	WQ10 (Unnamed Creek #1 Downstream)	WQ13 (Unnamed Creek #2)
		December 2006		**Fail**	Pass	**Fail**	**Fail**	**Fail**	Pass	--
		February 2007		Pass	Pass	Pass	Pass	Pass	**Fail**	Pass
		April 2007		Pass	**Fail**	**Fail**	**Fail**	Pass	**Fail**	Pass
		May 2007		Pass	Pass	**Fail**	**Fail**	Pass	Pass	Pass
		June 2007		**Fail**	Pass	**Fail**	Pass	**Fail**	Pass	**Fail**
		July 2007 I		Pass	**Fail**	Pass	Pass	Pass	Pass	Pass
		July 2007 II		Pass	Pass	Pass	Pass	Pass	Pass	Pass
		August 2007 I		Pass	Pass	Pass	Pass	Pass	Pass	Pass
		August 2007 II		Pass	**Fail**	Pass	Pass	Pass	**Fail**	Pass
		September 2007 I		Pass	Pass	Pass	Pass	Pass	**Fail**	Pass
Aluminum	Dissolved	September 2007 II	Ongoing site activity	**Fail**	Pass	**Fail**	Pass	**Fail**	Pass	**Fail**
		October 2007		**Fail**	Pass	**Fail**	Pass	**Fail**	Pass	**Fail**
		November 2007		Pass	Pass	Pass	Pass	Pass	**Fail**	Pass
		December 2007 I		**Fail**	Pass	**Fail**	**Fail**	**Fail**	Pass	**Fail**
		January 2008		Pass	Pass	Pass	Pass	Pass	Pass	Pass
		February 2008		**Fail**	Pass	**Fail**	**Fail**	**Fail**	Pass	Pass
		March 2008		**Fail**	Pass	Pass	Pass	Pass	**Fail**	Pass
		April 2008		Pass	Pass	Pass	Pass	Pass	Pass	Pass
		May 2008		Pass	Pass	Pass	Pass	Pass	**Fail**	Pass
		June 2008		**Fail**	Pass	**Fail**	Pass	**Fail**	Pass	**Fail**
		July 2008		Pass	Pass	Pass	Pass	Pass	Pass	Pass
		October 2008		--	Pass	--	**Fail**	--	**Fail**	Pass
		March 2009		--	Pass	--	Pass	--	Pass	Pass
		May 2009		--	Pass	--	**Fail**	--	Pass	**Fail**
		July 2009		--	Pass	--	Pass	--	Pass	**Fail**
		September 2009 I		--	Pass	--	**Fail**	--	**Fail**	--
		September 2009 II		--	Pass	--	Pass	--	**Fail**	--
		October 2009		--	Pass	--	Pass	--	**Fail**	Pass
Copper	Dissolved	October 1996 II	Pre-site activity	--	ND	--	ND	--	--	--
		September 1997		--	ND	--	ND	--	--	--
		April 2005 II		--	ND	--	**Fail**	--	--	--
		February 2006 II		ND	ND	ND	ND	--	--	--
		May 2006 II		ND	ND	ND	ND	--	--	--
		August 2006 II		**Fail**	**Fail**	**Fail**	**Fail**	ND	**Fail**	--
		October 2006		ND	ND	ND	ND	**Fail**	**Fail**	--
		December 2006		ND	ND	ND	ND	ND	ND	--
		February 2007		ND	ND	ND	ND	ND	ND	ND
		April 2007		Pass	Pass	Pass	Pass	Pass	Pass	**Fail**
		May 2007		Pass	**Fail**	Pass	Pass	ND	**Fail**	**Fail**
		June 2007		**Fail**	**Fail**	**Fail**	**Fail**	**Fail**	**Fail**	**Fail**

Table 3-14. Summary of Exceedances of Natural Conditions as Analyzed with the Alternative Population Approach for Surface Water

Analyte	Fraction	Event	Event Period	WQ8 (Waterfall Creek Upstream)	WQ4 (Waterfall Creek Downstream)	WQ7 (Camp Creek Upstream)	WQ6 (Camp Creek Downstream)	WQ12 (Unnamed Creek #1 Upstream)	WQ10 (Unnamed Creek #1 Downstream)	WQ13 (Unnamed Creek #2)
		July 2007 I		**Fail**	**Fail**	**Fail**	**Fail**	Pass	Pass	**Fail**
		July 2007 II		Pass	Pass	Pass	Pass	ND	**Fail**	**Fail**
		August 2007 I		Pass	Pass	**Fail**	Pass	Pass	**Fail**	Pass
		August 2007 II		**Fail**	**Fail**	Pass	Pass	Pass	**Fail**	**Fail**
		September 2007 I		Pass	Pass	Pass	Pass	Pass	**Fail**	**Fail**
Copper	Dissolved	September 2007 II	Ongoing site activity	**Fail**	**Fail**	**Fail**	**Fail**	**Fail**	**Fail**	**Fail**
		October 2007		**Fail**	**Fail**	**Fail**	**Fail**	**Fail**	**Fail**	**Fail**
		November 2007		Pass	**Fail**	Pass	Pass	Pass	Pass	Pass
		December 2007 I		**Fail**	**Fail**	**Fail**	Pass	Pass	**Fail**	**Fail**
		January 2008		Pass	Pass	ND	Pass	Pass	**Fail**	Pass
		February 2008		Pass	**Fail**	Pass	Pass	Pass	Pass	**Fail**
		March 2008		Pass	Pass	ND	ND	ND	**Fail**	Pass
		April 2008		Pass	Pass	Pass	Pass	Pass	Pass	Pass
		May 2008		**Fail**	Pass	**Fail**	**Fail**	ND	**Fail**	**Fail**
		June 2008		ND	ND	ND	ND	ND	ND	ND
		July 2008		Pass	**Fail**	Pass	Pass	Pass	**Fail**	**Fail**
		October 2008		--	ND	--	ND	--	ND	ND
		March 2009		--	ND	--	ND	--	ND	ND
		May 2009		--	**Fail**	--	**Fail**	--	**Fail**	**Fail**
		July 2009		--	**Fail**	--	**Fail**	--	**Fail**	**Fail**
		September 2009 I		--	**Fail**	--	**Fail**	--	**Fail**	--
		September 2009 II		--	**Fail**	--	**Fail**	--	**Fail**	--
		October 2009		--	**Fail**	--	**Fail**	--	**Fail**	**Fail**

Notes:

Fail = indicates that a detected sample concentration exceeds the Alternative Population Approach central tendency screen.

Pass = indicates that a detected sample concentration is equal to or below the Alternative Population Approach central tendency screen.

Pre-site activity is prior to September 21, 2007. Ongoing site activity is from September 21, 2007, through the present.

-- = Sample not collected

ND = Concentration below laboratory detection limit. Nondetect values were not screened with the Alternative Population Approach.

Table 3-15. Summary of Exceedances of Natural Conditions as Analyzed with the Alternative Population Approach for Groundwater

Analyte	Fraction	Event	Event Period	MW7 (Offsite reference)	MW1 (Wetlands below NAG site)	MW2 (Wetlands below treatment ponds)	MW3 (Wetlands below PAG site)	MW4 (Wetlands below infiltration system)
Aluminum	Total	February 2007	Pre-site activity	**Fail**	Pass	--	Pass	**Fail**
		April 2007		Pass	Pass	**Fail**	Pass	**Fail**
		May 2007		Pass	Pass	**Fail**	Pass	**Fail**
		June 2007		Pass	Pass	**Fail**	Pass	Pass
		July 2007 I		Pass	Pass	Pass	**Fail**	--
		July 2007 II		Pass	Pass	**Fail**	**Fail**	Pass
		August 2007 I		Pass	ND	**Fail**	Pass	--
		August 2007 II		Pass	Pass	Pass	Pass	Pass
		September 2007 I		Pass	Pass	**Fail**	**Fail**	**Fail**
Aluminum	Total	September 2007 II	Ongoing site activity	Pass	Pass	**Fail**	**Fail**	Pass
		October 2007		Pass	Pass	**Fail**	**Fail**	**Fail**
		November 2007		Pass	Pass	**Fail**	**Fail**	Pass
		December 2007 I		**Fail**	**Fail**	Pass	**Fail**	**Fail**
		January 2008		Pass	Pass	Pass	Pass	Pass
		February 2008		Pass	Pass	**Fail**	Pass	Pass
		March 2008		Pass	Pass	**Fail**	Pass	Pass
		April 2008		Pass	Pass	**Fail**	Pass	Pass
		May 2008		Pass	Pass	**Fail**	Pass	Pass
		June 2008		Pass	Pass	**Fail**	Pass	Pass
		July 2008		Pass	Pass	**Fail**	**Fail**	Pass
		August 2008		--	Pass	**Fail**	**Fail**	Pass
		September 2008		--	Pass	**Fail**	**Fail**	Pass
		October 2008		--	Pass	Pass	**Fail**	Pass
		March 2009		--	Pass	**Fail**	Pass	Pass
		May 2009		--	**Fail**	**Fail**	Pass	Pass
		July 2009		--	Pass	**Fail**	Pass	Pass
		September 2009 II		--	--	Pass	Pass	Pass
		October 2009		--	Pass	Pass	Pass	Pass
Aluminum	Dissolved	February 2007	Pre-site activity	Pass	Pass	--	**Fail**	**Fail**
		April 2007		Pass	Pass	**Fail**	**Fail**	**Fail**
		May 2007		**Fail**	Pass	**Fail**	**Fail**	**Fail**
		June 2007		Pass	Pass	**Fail**	Pass	**Fail**
		July 2007 I		Pass	Pass	Pass	**Fail**	--
		July 2007 II		Pass	Pass	**Fail**	Pass	**Fail**
		August 2007 I		Pass	ND	**Fail**	Pass	--
		August 2007 II		Pass	Pass	Pass	Pass	**Fail**
		September 2007 I		Pass	**Fail**	Pass	Pass	Pass

Table 3-15. Summary of Exceedances of Natural Conditions as Analyzed with the Alternative Population Approach for Groundwater

Analyte	Fraction	Event	Event Period	MW7 (Offsite reference)	MW1 (Wetlands below NAG site)	MW2 (Wetlands below treatment ponds)	MW3 (Wetlands below PAG site)	MW4 (Wetlands below infiltration system)
Aluminum	Dissolved	September 2007 II	Ongoing site activity	Pass	Pass	**Fail**	Pass	Pass
		October 2007		Pass	Pass	**Fail**	**Fail**	Pass
		November 2007		Pass	Pass	**Fail**	**Fail**	**Fail**
		December 2007 I		**Fail**	Pass	**Fail**	Pass	Pass
		January 2008		Pass	ND	**Fail**	Pass	Pass
		February 2008		Pass	Pass	**Fail**	Pass	Pass
		March 2008		Pass	Pass	**Fail**	Pass	Pass
		April 2008		Pass	Pass	Pass	Pass	Pass
		May 2008		Pass	Pass	Pass	Pass	Pass
		June 2008		Pass	Pass	**Fail**	**Fail**	**Fail**
		July 2008		Pass	Pass	**Fail**	Pass	**Fail**
		August 2008		--	Pass	**Fail**	Pass	Pass
		September 2008		--	Pass	**Fail**	Pass	Pass
		October 2008		--	Pass	**Fail**	Pass	**Fail**
		March 2009		--	Pass	Pass	Pass	Pass
		May 2009		--	Pass	Pass	**Fail**	Pass
		July 2009		--	Pass	**Fail**	Pass	Pass
		September 2009 II		--	--	**Fail**	**Fail**	**Fail**
		October 2009		--	Pass	**Fail**	Pass	Pass
Copper	Dissolved	February 2007	Pre-site activity	**Fail**	**Fail**	--	Pass	**Fail**
		April 2007		Pass	Pass	Pass	**Fail**	**Fail**
		May 2007		**Fail**	Pass	Pass	**Fail**	**Fail**
		June 2007		Pass	Pass	**Fail**	**Fail**	**Fail**
		July 2007 I		Pass	Pass	Pass	Pass	**Fail**
		July 2007 II		Pass	Pass	**Fail**	**Fail**	--
		August 2007 I		Pass	Pass	Pass	Pass	--
		August 2007 II		Pass	Pass	**Fail**	**Fail**	**Fail**
		September 2007 I		**Fail**	**Fail**	**Fail**	**Fail**	**Fail**
Copper	Dissolved	September 2007 II	Ongoing site activity	Pass	**Fail**	**Fail**	**Fail**	**Fail**
		October 2007		Pass	**Fail**	**Fail**	**Fail**	**Fail**
		November 2007		Pass	Pass	**Fail**	Pass	**Fail**
		December 2007 I		Pass	Pass	**Fail**	Pass	Pass
		January 2008		Pass	Pass	Pass	Pass	Pass
		February 2008		Pass	Pass	Pass	Pass	Pass
		March 2008		Pass	Pass	Pass	Pass	Pass
		April 2008		Pass	Pass	Pass	Pass	Pass
		May 2008		ND	Pass	Pass	ND	Pass
		June 2008		ND	ND	ND	ND	**Fail**
		July 2008		Pass	Pass	Pass	**Fail**	Pass
		August 2008		--	Pass	ND	**Fail**	**Fail**
		September 2008		--	Pass	Pass	**Fail**	**Fail**

Table 3-15. Summary of Exceedances of Natural Conditions as Analyzed with the Alternative Population Approach for Groundwater

Analyte	Fraction	Event	Event Period	MW7 (Offsite reference)	MW1 (Wetlands below NAG site)	MW2 (Wetlands below treatment ponds)	MW3 (Wetlands below PAG site)	MW4 (Wetlands below infiltration system)
		October 2008		--	ND	ND	**Fail**	**Fail**
		March 2009		--	ND	ND	Pass	Pass
		May 2009		--	Pass	ND	Pass	Pass
		July 2009		--	**Fail**	Pass	**Fail**	**Fail**
		September 2009 II		--	--	Pass	Pass	Pass
		October 2009		--	Pass	Pass	Pass	Pass
Lead	Dissolved	February 2007	Pre-site activity	**Fail**	**Fail**	--	nd	nd
		April 2007		Pass	Pass	Pass	**Fail**	**Fail**
		May 2007		**Fail**	Pass	Pass	**Fail**	Pass
		June 2007		Pass	Pass	Pass	**Fail**	Pass
		July 2007 I		Pass	Pass	ND	**Fail**	--
		July 2007 II		Pass	**Fail**	Pass	**Fail**	Pass
		August 2007 I		Pass	Pass	Pass	Pass	--
		August 2007 II		Pass	Pass	**Fail**	**Fail**	Pass
		September 2007 I		Pass	**Fail**	**Fail**	**Fail**	**Fail**
Lead	Dissolved	September 2007 II	Ongoing site activity	Pass	**Fail**	**Fail**	**Fail**	**Fail**
		October 2007		Pass	**Fail**	**Fail**	**Fail**	**Fail**
		November 2007		Pass	**Fail**	**Fail**	Pass	**Fail**
		December 2007 I		Pass	**Fail**	Pass	Pass	Pass
		January 2008		Pass	Pass	Pass	Pass	Pass
		February 2008		Pass	Pass	Pass	Pass	Pass
		March 2008		Pass	Pass	Pass	Pass	Pass
		April 2008		Pass	Pass	Pass	Pass	Pass
		May 2008		Pass	Pass	Pass	ND	ND
		June 2008		Pass	**Fail**	Pass	Pass	Pass
		July 2008		Pass	**Fail**	Pass	**Fail**	Pass
		August 2008		--	**Fail**	Pass	**Fail**	Pass
		September 2008		--	**Fail**	Pass	**Fail**	**Fail**
		October 2008		--	**Fail**	Pass	Pass	Pass
		March 2009		--	Pass	Pass	Pass	Pass
		May 2009		--	**Fail**	ND	Pass	ND
		July 2009		--	**Fail**	Pass	Pass	Pass
		September 2009 II		--	--	Pass	Pass	Pass
		October 2009		--	Pass	Pass	Pass	Pass
Zinc	Dissolved	February 2007	Pre-site activity	**Fail**	ND	--	Pass	**Fail**
		April 2007		**Fail**	Pass	Pass	Pass	Pass
		May 2007		**Fail**	Pass	Pass	**Fail**	**Fail**
		June 2007		Pass	ND	Pass	**Fail**	**Fail**
		July 2007 I		Pass	ND	Pass	Pass	--
		July 2007 II		ND	ND	ND	ND	ND
		August 2007 I		ND	ND	ND	ND	--

Table 3-15. Summary of Exceedances of Natural Conditions as Analyzed with the Alternative Population Approach for Groundwater

Analyte	Fraction	Event	Event Period	MW7 (Offsite reference)	MW1 (Wetlands below NAG site)	MW2 (Wetlands below treatment ponds)	MW3 (Wetlands below PAG site)	MW4 (Wetlands below infiltration system)
		August 2007 II		ND	ND	ND	ND	ND
		September 2007 I		ND	ND	ND	ND	ND
Zinc	Dissolved	September 2007 II	Ongoing site activity	ND	ND	ND	ND	ND
		October 2007		ND	ND	**Fail**	**Fail**	**Fail**
		November 2007		ND	ND	ND	ND	ND
		December 2007 I		**Fail**	ND	**Fail**	ND	ND
		January 2008		ND	ND	ND	ND	ND
		February 2008		ND	ND	ND	ND	ND
		March 2008		ND	ND	ND	ND	ND
		April 2008		ND	ND	ND	ND	ND
		May 2008		ND	ND	ND	ND	**Fail**
		June 2008		ND	ND	ND	ND	ND
		July 2008		ND	ND	ND	ND	ND
		August 2008		--	ND	ND	ND	ND
		September 2008		--	ND	ND	ND	**Fail**
		October 2008		--	ND	ND	ND	ND
		March 2009		--	ND	ND	ND	**Fail**
		May 2009		--	ND	ND	ND	**Fail**
		July 2009		--	ND	ND	ND	**Fail**
		September 2009 II		--	--	ND	ND	ND
		October 2009		--	ND	ND	ND	ND

Notes:

Fail = indicates that a detected sample concentration exceeds the Alternative Population Approach central tendency screen.

Pass = indicates that a detected sample concentration is equal to or below the Alternative Population Approach central tendency screen.

Pre-site activity is prior to September 21, 2007. Ongoing site activity is from September 21, 2007, through the present.

-- = sample not collected

NAG = non-acid-generating

ND = Concentration below laboratory detection limit. Nondetect values were not screened with the Alternative Population Approach.

PAG = potentially acid-generating

Table 3-16. Summary of Exceedances of Natural Conditions as Compared to Upper Prediction Limits for Surface Water

Analyte	Fraction	95th Percentile Upper Prediction Limit (µg/L)	Event	Event Period	WQ8 (Waterfall Creek Upstream)	WQ4 (Waterfall Creek Downstream)	WQ7 (Camp Creek Upstream)	WQ6 (Camp Creek Downstream)	WQ12 (Unnamed Creek #1 Upstream)	WQ10 (Unnamed Creek #1 Downstream)	WQ13 (Unnamed Creek #2)
Aluminum	Total	144	October 1996 II	Pre-site activity	--	ND	--	ND	--	--	--
			September 1997		--	--	--	--	--	--	--
			April 2005 II		--	Pass	--	Pass	--	--	--
			February 2006 II		Pass	Pass	Pass	Pass	--	--	--
			May 2006 II		Pass	Pass	Pass	Pass	--	--	--
			August 2006 II		Pass	Pass	Pass	Pass	Pass	Pass	--
			October 2006		Pass	Pass	Pass	Pass	**Fail**	**Fail**	--
			December 2006		Pass	**Fail**	Pass	Pass	Pass	**Fail**	--
			February 2007		Pass	Pass	Pass	Pass	Pass	Pass	Pass
			April 2007		Pass	Pass	Pass	Pass	Pass	Pass	Pass
			May 2007		Pass	Pass	Pass	Pass	Pass	Pass	Pass
			June 2007		Pass	Pass	Pass	Pass	**Fail**	Pass	Pass
			July 2007 I		Pass	Pass	Pass	Pass	Pass	Pass	Pass
			July 2007 II		Pass	Pass	Pass	Pass	Pass	Pass	Pass
			August 2007 I		Pass	Pass	Pass	Pass	Pass	Pass	Pass
			August 2007 II		Pass	Pass	Pass	Pass	Pass	Pass	Pass
			September 2007 I		Pass	Pass	Pass	Pass	Pass	Pass	Pass
Aluminum	Total	144	September 2007 II	Ongoing site activity	Pass	Pass	Pass	Pass	Pass	Pass	Pass
			October 2007		Pass	**Fail**	Pass	Pass	Pass	**Fail**	**Fail**
			November 2007		Pass	Pass	Pass	Pass	Pass	Pass	Pass
			December 2007 I		Pass	**Fail**	Pass	Pass	Pass	Pass	Pass
			January 2008		Pass	**Fail**	Pass	Pass	Pass	Pass	Pass
			February 2008		Pass	**Fail**	Pass	Pass	Pass	Pass	Pass
			March 2008		Pass	Pass	Pass	Pass	Pass	**Fail**	Pass
			April 2008		Pass	Pass	Pass	Pass	Pass	Pass	Pass
			May 2008		Pass	Pass	Pass	Pass	Pass	Pass	Pass
			June 2008		Pass	**Fail**	Pass	Pass	**Fail**	**Fail**	Pass
			July 2008		Pass	Pass	Pass	Pass	Pass	Pass	Pass
			October 2008		--	Pass	--	Pass	--	Pass	Pass
			March 2009		--	Pass	--	Pass	--	Pass	Pass
			May 2009		--	Pass	--	Pass	--	Pass	Pass
			July 2009		--	**Fail**	--	**Fail**	--	**Fail**	**Fail**
			September 2009 I		--	Pass	--	Pass	--	Pass	--
			September 2009 II		--	Pass	--	Pass	--	Pass	--
			October 2009		--	Pass	--	Pass	--	Pass	Pass
Aluminum	Dissolved	92	October 1996 II	Pre-site activity	--	ND	--	ND	--	--	--
			September 1997		--	--	--	--	--	--	--
			April 2005 II		--	Pass	--	Pass	--	--	--
			February 2006 II		Pass	Pass	Pass	Pass	--	--	--
			May 2006 II		Pass	Pass	Pass	Pass	--	--	--
			August 2006 II		Pass	Pass	Pass	Pass	Pass	Pass	--

Table 3-16. Summary of Exceedances of Natural Conditions as Compared to Upper Prediction Limits for Surface Water

Analyte	Fraction	95th Percentile Upper Prediction Limit (µg/L)	Event	Event Period	WQ8 (Waterfall Creek Upstream)	WQ4 (Waterfall Creek Downstream)	WQ7 (Camp Creek Upstream)	WQ6 (Camp Creek Downstream)	WQ12 (Unnamed Creek #1 Upstream)	WQ10 (Unnamed Creek #1 Downstream)	WQ13 (Unnamed Creek #2)
			October 2006		Pass	Pass	Pass	Pass	**Fail**	**Fail**	--
			December 2006		Pass	Pass	Pass	Pass	Pass	Pass	--
			February 2007		Pass	Pass	Pass	Pass	Pass	Pass	Pass
			April 2007		Pass	Pass	Pass	Pass	Pass	Pass	Pass
			May 2007		Pass	Pass	Pass	Pass	Pass	Pass	Pass
			June 2007		Pass	Pass	Pass	Pass	Pass	Pass	Pass
			July 2007 I		Pass	Pass	Pass	Pass	Pass	Pass	Pass
			July 2007 II		Pass	Pass	Pass	Pass	Pass	Pass	Pass
			August 2007 I		Pass	Pass	Pass	Pass	Pass	Pass	Pass
			August 2007 II		Pass	Pass	Pass	Pass	Pass	Pass	Pass
			September 2007 I		Pass	Pass	Pass	Pass	Pass	Pass	Pass
Aluminum	Dissolved	92	September 2007 II	Ongoing site activity	Pass	Pass	Pass	Pass	Pass	Pass	Pass
			October 2007		Pass	**Fail**	Pass	Pass	**Fail**	**Fail**	Pass
			November 2007		Pass	Pass	Pass	Pass	Pass	Pass	Pass
			December 2007 I		Pass	Pass	Pass	Pass	Pass	Pass	Pass
			January 2008		Pass	Pass	Pass	Pass	Pass	Pass	Pass
			February 2008		Pass	Pass	Pass	Pass	Pass	Pass	Pass
			March 2008		Pass	Pass	Pass	Pass	Pass	Pass	Pass
			April 2008		Pass	Pass	Pass	Pass	Pass	Pass	Pass
			May 2008		Pass	Pass	Pass	Pass	Pass	Pass	Pass
			June 2008		**Fail**	Pass	Pass	Pass	**Fail**	**Fail**	Pass
			July 2008		Pass	Pass	Pass	Pass	Pass	Pass	Pass
			October 2008		--	Pass	--	Pass	--	Pass	Pass
			March 2009		--	Pass	--	Pass	--	Pass	Pass
			May 2009		--	Pass	--	Pass	--	Pass	Pass
			July 2009		--	**Fail**	--	**Fail**	--	**Fail**	**Fail**
			September 2009 I		--	Pass	--	Pass	--	Pass	--
			September 2009 II		--	Pass	--	Pass	--	Pass	--
			October 2009		--	Pass	--	Pass	--	Pass	Pass
Copper	Dissolved	1.4	October 1996 II	Pre-site activity	--	ND	--	ND	--	--	--
			September 1997		--	ND	--	ND	--	--	--
			April 2005 II		--	ND	--	Pass	--	--	--
			February 2006 II		ND	ND	ND	ND	--	--	--
			May 2006 II		ND	ND	ND	ND	--	--	--
			August 2006 II		Pass	**Fail**	**Fail**	**Fail**	ND	**Fail**	--
			October 2006		ND	ND	ND	ND	Pass	Pass	--
			December 2006		ND	ND	ND	ND	ND	ND	--
			February 2007		ND	ND	ND	ND	ND	ND	ND
			April 2007		Pass	Pass	Pass	Pass	Pass	Pass	Pass
			May 2007		Pass	Pass	Pass	Pass	ND	Pass	Pass
			June 2007		**Fail**	Pass	Pass	Pass	Pass	Pass	**Fail**

Table 3-16. Summary of Exceedances of Natural Conditions as Compared to Upper Prediction Limits for Surface Water

Analyte	Fraction	95th Percentile Upper Prediction Limit (µg/L)	Event	Event Period	WQ8 (Waterfall Creek Upstream)	WQ4 (Waterfall Creek Downstream)	WQ7 (Camp Creek Upstream)	WQ6 (Camp Creek Downstream)	WQ12 (Unnamed Creek #1 Upstream)	WQ10 (Unnamed Creek #1 Downstream)	WQ13 (Unnamed Creek #2)
Copper	Dissolved	1.4	July 2007 I	Ongoing site activity	**Fail**	Pass	Pass	Pass	Pass	Pass	Pass
			July 2007 II		Pass	Pass	Pass	Pass	ND	Pass	Pass
			August 2007 I		Pass	Pass	Pass	Pass	Pass	Pass	Pass
			August 2007 II		Pass	Pass	Pass	Pass	Pass	Pass	Pass
			September 2007 I		Pass	Pass	Pass	Pass	Pass	Pass	Pass
			September 2007 II		Pass	Pass	Pass	Pass	Pass	Pass	Pass
			October 2007		Pass	**Fail**	Pass	Pass	Pass	**Fail**	**Fail**
			November 2007		Pass	Pass	Pass	Pass	Pass	Pass	Pass
			December 2007 I		Pass	**Fail**	Pass	Pass	Pass	Pass	Pass
			January 2008		Pass	Pass	ND	Pass	Pass	Pass	Pass
			February 2008		Pass	Pass	Pass	Pass	Pass	Pass	Pass
			March 2008		Pass	Pass	ND	ND	ND	Pass	Pass
			April 2008		Pass	Pass	Pass	Pass	Pass	Pass	Pass
			May 2008		Pass	Pass	Pass	Pass	ND	Pass	Pass
			June 2008		ND	ND	ND	ND	ND	ND	nd
			July 2008		Pass	Pass	Pass	Pass	Pass	Pass	Pass
			October 2008		--	ND	--	ND	--	ND	ND
			March 2009		--	ND	--	ND	--	ND	ND
			May 2009		--	Pass	--	Pass	--	Pass	Pass
			July 2009		--	**Fail**	--	**Fail**	--	**Fail**	**Fail**
			September 2009 I		--	Pass	--	Pass	--	Pass	--
			September 2009 II		--	Pass	--	Pass	--	Pass	--
			October 2009		--	Pass	--	Pass	--	Pass	Pass

Notes:

Fail = indicates that a detected sample concentration exceeds the 95th percentile Upper Prediction Limit

Pass = indicates that a detected sample concentration is equal to or below the 95th percentile Upper Prediction Limit

Pre-site activity is prior to September 21, 2007. Ongoing site activity is from September 21, 2007, through the present.

-- = Sample not collected

ND = Concentration below laboratory detection limit. Nondetect values were not screened against Upper Prediction Limits.

Table 3-17. Summary of Exceedances of Natural Conditions as Compared to Upper Prediction Limits for Groundwater

Analyte	Fraction	95th Percentile Upper Prediction Limit (µg/L)	Event	Event Period	MW7 (Offsite Reference)	MW1 (Wetlands below NAG site)	(Wetlands below Treatment Ponds)	MW3 (Wetlands below PAG Site)	(Wetlands below Infiltration System)
Aluminum	Total	7394	February 2007	Pre-site activity	Pass	Pass	--	Pass	Pass
			April 2007		Pass	Pass	Pass	**Fail**	Pass
			May 2007		Pass	Pass	Pass	**Fail**	Pass
			June 2007		Pass	Pass	Pass	**Fail**	Pass
			July 2007 I		Pass	Pass	Pass	Pass	--
			July 2007 II		Pass	Pass	Pass	Pass	Pass
			August 2007 I		Pass	Pass	Pass	**Fail**	--
			August 2007 II		Pass	Pass	Pass	Pass	Pass
			September 2007 I		Pass	Pass	Pass	Pass	Pass
Aluminum	Total	7394	September 2007 II	Ongoing site activity	Pass	Pass	Pass	Pass	Pass
			October 2007		Pass	Pass	Pass	Pass	Pass
			November 2007		Pass	Pass	Pass	Pass	Pass
			December 2007 I		Pass	Pass	**Fail**	Pass	Pass
			January 2008		Pass	Pass	Pass	Pass	Pass
			February 2008		Pass	Pass	Pass	Pass	Pass
			March 2008		Pass	Pass	Pass	Pass	Pass
			April 2008		Pass	Pass	Pass	Pass	Pass
			May 2008		Pass	Pass	Pass	Pass	Pass
			June 2008		Pass	Pass	Pass	Pass	Pass
			July 2008		Pass	Pass	Pass	Pass	Pass
			August 2008		--	Pass	Pass	Pass	Pass
			September 2008		--	Pass	Pass	Pass	Pass
			October 2008		--	Pass	Pass	Pass	Pass
			March 2009		--	Pass	Pass	Pass	Pass
			May 2009		--	Pass	Pass	Pass	Pass
			July 2009		--	Pass	Pass	Pass	Pass
			September 2009 II		--	--	Pass	Pass	Pass
			October 2009		--	Pass	Pass	Pass	Pass
Aluminum	Dissolved	1236	February 2007	Pre-site activity	Pass	Pass	--	Pass	Pass
			April 2007		Pass	Pass	Pass	Pass	Pass
			May 2007		Pass	Pass	Pass	Pass	Pass
			June 2007		Pass	Pass	Pass	Pass	Pass
			July 2007 I		Pass	Pass	Pass	Pass	--
			July 2007 II		Pass	Pass	Pass	**Fail**	Pass
			August 2007 I		Pass	Pass	Pass	Pass	--
			August 2007 II		Pass	Pass	**Fail**	Pass	Pass
			September 2007 I		Pass	Pass	**Fail**	**Fail**	**Fail**
Aluminum	Dissolved	1236	September 2007 II	Ongoing site activity	Pass	Pass	Pass	Pass	Pass
			October 2007		Pass	Pass	Pass	Pass	Pass
			November 2007		Pass	Pass	Pass	Pass	Pass
			December 2007 I		Pass	Pass	Pass	Pass	Pass
			January 2008		Pass	ND	Pass	Pass	Pass
			February 2008		Pass	Pass	Pass	Pass	Pass
			March 2008		Pass	Pass	Pass	Pass	Pass

Table 3-17. Summary of Exceedances of Natural Conditions as Compared to Upper Prediction Limits for Groundwater

Analyte	Fraction	95th Percentile Upper Prediction Limit (µg/L)	Event	Event Period	MW7 (Offsite Reference)	MW1 (Wetlands below NAG site)	(Wetlands below Treatment Ponds)	MW3 (Wetlands below PAG Site)	(Wetlands below Infiltration System)
			April 2008		Pass	Pass	Pass	Pass	Pass
			May 2008		Pass	Pass	Pass	Pass	Pass
			June 2008		Pass	Pass	Pass	Pass	Pass
			July 2008		Pass	Pass	Pass	**Fail**	Pass
			August 2008		--	Pass	Pass	**Fail**	Pass
			September 2008		--	Pass	Pass	**Fail**	Pass
			October 2008		--	Pass	Pass	Pass	Pass
			March 2009		--	Pass	Pass	Pass	Pass
			May 2009		--	Pass	Pass	Pass	Pass
			July 2009		--	Pass	Pass	Pass	Pass
			September 2009 II		--	--	Pass	Pass	Pass
			October 2009		--	Pass	Pass	Pass	Pass
Copper	Dissolved	4.3	February 2007	Pre-site activity	Pass	Pass	--	**Fail**	Pass
			April 2007		Pass	Pass	Pass	Pass	**Fail**
			May 2007		Pass	Pass	Pass	Pass	Pass
			June 2007		Pass	Pass	Pass	Pass	Pass
			July 2007 I		Pass	Pass	Pass	Pass	--
			July 2007 II		Pass	Pass	Pass	Pass	Pass
			August 2007 I		Pass	Pass	Pass	Pass	--
			August 2007 II		Pass	Pass	Pass	Pass	**Fail**
			September 2007 I		Pass	Pass	Pass	Pass	**Fail**
Copper	Dissolved	4.3	September 2007 II	Ongoing site activity	Pass	Pass	Pass	Pass	**Fail**
			October 2007		Pass	Pass	Pass	Pass	**Fail**
			November 2007		Pass	Pass	Pass	Pass	Pass
			December 2007 I		Pass	Pass	Pass	Pass	Pass
			January 2008		Pass	Pass	Pass	Pass	Pass
			February 2008		Pass	Pass	Pass	Pass	Pass
			March 2008		Pass	Pass	Pass	Pass	Pass
			April 2008		Pass	Pass	Pass	Pass	Pass
			May 2008		ND	Pass	Pass	ND	Pass
			June 2008		ND	ND	ND	ND	Pass
			July 2008		Pass	Pass	Pass	Pass	Pass
			August 2008		--	Pass	ND	Pass	Pass
			September 2008		--	Pass	Pass	Pass	Pass
			October 2008		--	ND	ND	Pass	Pass
			March 2009		--	ND	ND	Pass	Pass
			May 2009		--	Pass	ND	Pass	Pass
			July 2009		--	Pass	Pass	Pass	Pass
			September 2009 II		--	--	Pass	Pass	Pass
			October 2009		--	Pass	Pass	Pass	Pass
Lead	Dissolved	0.96	February 2007	Pre-site activity	Pass	Pass	--	ND	ND
			April 2007		Pass	Pass	Pass	**Fail**	Pass
			May 2007		Pass	Pass	Pass	**Fail**	Pass
			June 2007		Pass	Pass	Pass	**Fail**	Pass

Table 3-17. Summary of Exceedances of Natural Conditions as Compared to Upper Prediction Limits for Groundwater

Analyte	Fraction	95th Percentile Upper Prediction Limit (µg/L)	Event	Event Period	MW7 (Offsite Reference)	MW1 (Wetlands below NAG site)	(Wetlands below Treatment Ponds)	MW3 (Wetlands below PAG Site)	(Wetlands below Infiltration System)
			July 2007 I		Pass	Pass	ND	Pass	--
			July 2007 II		Pass	Pass	Pass	Pass	Pass
			August 2007 I		Pass	Pass	Pass	Pass	--
			August 2007 II		Pass	Pass	**Fail**	Pass	Pass
			September 2007 I		Pass	Pass	Pass	Pass	Pass
Lead	Dissolved	0.96	September 2007 II	Ongoing site activity	Pass	Pass	Pass	Pass	Pass
			October 2007		Pass	**Fail**	Pass	Pass	**Fail**
			November 2007		Pass	Pass	Pass	Pass	Pass
			December 2007 I		Pass	Pass	Pass	Pass	Pass
			January 2008		Pass	Pass	Pass	Pass	Pass
			February 2008		Pass	Pass	Pass	Pass	Pass
			March 2008		Pass	Pass	Pass	Pass	Pass
			April 2008		Pass	Pass	Pass	Pass	Pass
			May 2008		Pass	Pass	Pass	ND	ND
			June 2008		Pass	Pass	Pass	Pass	Pass
			July 2008		Pass	Pass	Pass	Pass	Pass
			August 2008		--	Pass	Pass	Pass	Pass
			September 2008		--	Pass	Pass	Pass	Pass
			October 2008		--	Pass	Pass	Pass	Pass
			March 2009		--	Pass	Pass	Pass	Pass
			May 2009		--	Pass	ND	Pass	ND
			July 2009		--	Pass	Pass	Pass	Pass
			September 2009 II		--	--	Pass	Pass	Pass
			October 2009		--	Pass	Pass	Pass	Pass
Zinc	Dissolved	9.6	February 2007	Pre-site activity	**Fail**	ND	--	Pass	Pass
			April 2007		**Fail**	Pass	Pass	Pass	Pass
			May 2007		Pass	Pass	Pass	Pass	**Fail**
			June 2007		Pass	ND	Pass	Pass	Pass
			July 2007 I		Pass	ND	Pass	Pass	--
			July 2007 II		ND	ND	ND	ND	ND
			August 2007 I		ND	ND	ND	ND	--
			August 2007 II		ND	ND	ND	ND	ND
			September 2007 I		ND	ND	ND	ND	ND
Zinc	Dissolved	9.6	September 2007 II	Ongoing site activity	ND	ND	ND	ND	ND
			October 2007		ND	ND	**Fail**	Pass	**Fail**
			November 2007		ND	ND	ND	ND	ND
			December 2007 I		Pass	ND	**Fail**	ND	ND
			January 2008		ND	ND	ND	ND	ND
			February 2008		ND	ND	ND	ND	ND
			March 2008		ND	ND	ND	ND	ND
			April 2008		ND	ND	ND	ND	ND
			May 2008		ND	ND	ND	ND	**Fail**
			June 2008		ND	ND	ND	ND	ND
			July 2008		ND	ND	ND	ND	ND

Table 3-17. Summary of Exceedances of Natural Conditions as Compared to Upper Prediction Limits for Groundwater

Analyte	Fraction	95th Percentile Upper Prediction Limit (µg/L)	Event	Event Period	MW7 (Offsite Reference)	MW1 (Wetlands below NAG site)	(Wetlands below Treatment Ponds)	MW3 (Wetlands below PAG Site)	(Wetlands below Infiltration System)
			August 2008		--	ND	ND	ND	ND
			September 2008		--	ND	ND	ND	**Fail**
			October 2008		--	ND	ND	ND	ND
			March 2009		--	ND	ND	ND	**Fail**
			May 2009		--	ND	ND	ND	**Fail**
			July 2009		--	ND	ND	ND	**Fail**
			September 2009 II		--	--	ND	ND	ND
			October 2009		--	ND	ND	ND	ND

Notes:

Fail = indicates that a detected sample concentration exceeds the 95th percentile Upper Prediction Limit

Pass = indicates that a detected sample concentration is equal to or below the 95th percentile Upper Prediction Limit

Pre-site activity is prior to September 21, 2007. Ongoing site activity is from September 21, 2007, through the present.

-- = sample not collected

NAG = non-acid-generating

ND = Concentration below laboratory detection limit. Nondetect values were not screened against Upper Prediction Limits.

PAG = potentially acid-generating

Table 3-18. Laboratory Water Quality Results for the PAG Site

Sampling Date	Temperature deg C	DO mg/L	pH SU	Alkalinity as $CaCO_3$ mg/L	Conductivity mS/m	Hardness as $CaCO_3$ mg/L	Turbidity NTU	TSS mg/L	TDS mg/L	Sulphate mg/L	Chloride mg/L	Nitrate+ Nitrite as N mg/L	Ammonia as N mg/L	Aluminum Dissolved µg/L	Aluminum Total µg/L	Aluminum Dissolved µg/L	Aluminum Total µg/L	Cadmium Dissolved µg/L	Cadmium Total µg/L	Calcium Dissolved µg/L	Calcium Total µg/L	Chromium Dissolved µg/L	Chromium Total µg/L
8/19/2008	13.6	8.82	8.01	78	152	384	2.9	--	952	409	--	73.3	--	14.8	55	0.8	0.85	0.143	0.144	133,000	136,000	0.63	0.6
9/9/2008	13.9	10	7.44	67	105	362	3.2	--	695	267	--	34.9	--	14.7	84.7	0.91	0.98	0.122	0.148	113,000	112,000	0.16	0.38
10/15/2008	9	10.21	7.38	55	60.7	250	9.4	--	383	164	--	10.4	--	16.1	133	0.67	0.72	0.052	0.07	77,300	78,200	0.56	0.53
4/21/2009	0.69	12.06	7.32	48	26	148	10.7	5 *U*	225	92.2	2.1	1.42 *UJ*	0.047	18.7	122	0.4	0.4	0.026	0.033	50,400	49,300	0.24	0.38
5/21/2009	--	--	--	68	--	243	--	5 *U*	351	194	1.9	2.06 *UJ*	0.03 *J*	19.2 *UJ*	39.4 *UJ*	0.3 *J*	0.3 *J*	0.034	0.041	79,500	82,200	0.12 *J*	0.21
6/19/2009	--	--	--	52	--	212	--	9	324	190	1.3	0.75	0.07 *UJ*	19.1	55.3	0.4 *J*	0.3 *J*	0.024 *UJ*	0.035	72,900	71,000	0.18 *J*	0.24
7/25/2009	14.87	12.21	8.25	50	79.6	360	2.8	6	539	334	1.5	2.02	0.018 *UJ*	13.8 *J*	49.1 *J*	0.34 *J*	0.49 *J*	0.069	0.084	123,000	125,000	0.31 *UJ*	0.28 *UJ*
8/31/2009	14	7.98	8.32	48	71.7	254	--	5 *U*	387	210	1.8	0.98	0.06 *UJ*	12.8 *J*	37 *J*	0.29 *J*	0.34 *J*	0.038	0.051	86,500	86,500	0.42 *UJ*	0.47
9/13/2009	13.88	11.34	6.28	53.2	50.5	190	3.6	5 *U*	323	163	2.5	0.511	0.013 *UJ*	55.4	15.7	0.5 *UJ*	0.5 *UJ*	0.065 *UJ*	0.058 *UJ*	68,600 *J*	68,200 *J*	--	--
10/18/2009	9.55	9.32	7.59	53.4	41.9	165	5	5 *U*	268	150	2.23	0.43	0.027 *UJ*	12.5	47.1	0.27 *J*	0.3 *J*	0.065	0.069	64,200	62,700	--	--
10/31/2009	7.44	9.67	6.2		26.6	99.6	7.2	5 *U*	104	48.4	4.29	0.145	0.012 *J*	19	124	0.42 *J*	0.51	0.038	0.05	34,500	35,100	--	--
12/29/2009	3.41	10.16	6.84	54.7	30.2	114	6	5 *U*	172	57.2	6.25	0.192	0.009 *U*	12.3 *J*	91.2 *J*	0.29 *UJ*	0.3 *UJ*	0.079	0.084	41,200	41,400	--	--

Sampling Date	Copper Dissolved µg/L	Copper Total µg/L	Iron Dissolved µg/L	Iron Total µg/L	Lead Dissolved µg/L	Lead Total µg/L	Magnesium Dissolved µg/L	Magnesium Total µg/L	Mercury Dissolved µg/L	Mercury Total µg/L	Nickel Dissolved µg/L	Nickel Total µg/L	Potassium Dissolved µg/L	Potassium Total µg/L	Selenium Dissolved µg/L	Selenium Total µg/L	Silver Dissolved µg/L	Silver Total µg/L	Sodium Dissolved µg/L	Sodium Total µg/L	Zinc Dissolved µg/L	Zinc Total µg/L
8/19/2008	2.78	3.44	17.3 *UJ*	100	0.03	0.136	16,600 *J*	17,100 *J*	0.05 *U*	0.05 *U*	3.62	2.31	13,700	14,000	1.9	2.3	0.009 *UJ*	0.011 *UJ*	105,000	106,000	4.32 *J*	2.68 *J*
9/9/2008	2.4 *J*	2.92 *J*	29.7	222	0.019 *UJ*	0.303	13,800	13,800	0.05 *U*	0.05 *U*	2.16	2.2	9,670	9,630	1.4	1.7	0.009 *UJ*	0.009 *UJ*	44,400	44,500	1.61 *U*	3.12 *U*
10/15/2008	1.61	2.72	35.2 *UJ*	311	0.054 *UJ*	0.35	8,960	9,240	0.05 *U*	0.05 *U*	1.28	1.44	6,270	6,330	0.9 *J*	1.1	0.009 *U*	0.009 *U*	14,500	14,700	5.95 *U*	2.86 *U*
4/21/2009	0.96	1.67	48.2 *UJ*	179	0.042	0.22	4,500	4,420	0.05 *U*	0.05 *U*	1.37	1.13	3,330	3,250	0.9 *J*	0.9 *J*	0.009 *UJ*	0.009 *UJ*	3,240	3,170	4.02 *U*	3.68 *U*
5/21/2009	1.76 *J*	1.98 *J*	14.2 *J*	58.4	0.026 *UJ*	0.08	7,110	7,390	0.02 *U*	0.02 *U*	1	1.13	5,500	5,660	1.2	1.3	0.006 *J*	0.021 *J*	4,890	5,120	4.7 *U*	4 *U*
6/19/2009	3.65	4.07	29.2	138	0.09	0.811	6,110 *J*	5,990 *J*	0.02 *U*	0.02 *U*	1.15	1.3	6,000	5,850	0.7 *J*	0.4 *J*	0.006 *UJ*	0.009 *UJ*	4,870	4,780	8.2 *U*	8 *J*
7/25/2009	2.24	2.84	20.2 *UJ*	70.7	0.009 *UJ*	0.136	10,700	10,800	0.02 *U*	0.02 *U*	1.31	1.34	7,430	7,490	1.5	1.4	0.004 *U*	0.004 *U*	7,910	7,970	6.68 *U*	36.8
8/31/2009	1.9	2.48	11.9 *UJ*	62.7	0.015 *UJ*	0.112	6,950	6,970	0.02 *U*	0.02 *U*	4.74	4.68	5,940	5,960	1.1	1.2	0.035 *UJ*	0.004 *UJ*	6,460	6,540	11.8 *J*	15.5 *J*
9/13/2009	2.47	1.71	114	12.5 *UJ*	0.327	0.009 *UJ*	5,210	5,050	0.02 *U*	0.02 *U*	1.42	1.25	5,280	5,330	1 *J*	0.8 *J*	0.004 *UJ*	0.004 *UJ*	5,640	5,700	5.5 *U*	3.5 *U*
10/18/2009	1.53	2.2	11.2 *UJ*	91.9	0.006 *J*	0.161	4,480	4,420	0.02 *U*	0.02 *U*	1.04	0.89	4,850	4,820	0.8 *J*	0.8 *J*	0.045	0.004 *UJ*	4,230	4,170	4.22 *U*	5.1 *UJ*
10/31/2009	1.12	2.28	17.6 *J*	250	0.035 *UJ*	0.42	2,520	2,820	0.02 *U*	0.02 *U*	0.9	1.02	2,710	2,920	0.7 *UJ*	0.7 *UJ*	0.047 *UJ*	0.061 *UJ*	2,820	3,140	3.12 *U*	4.75 *U*
12/29/2009	0.94	1.96	20.1 *UJ*	145	0.034 *J*	0.32 *J*	2,580	2,680	0.02 *U*	0.02 *U*	3.57	3.67	3,170	3,300	0.6 *J*	0.7 *J*	0.004 *UJ*	0.022 *UJ*	3,810	3,840	3.61 *U*	4.78 *U*

Notes:
-- = data not available
DO = dissolved oxygen
NTU = nephelometric turbidity units
TDS = total dissolved solids
TSS = total suspended solids

Values shown in shaded cells indicate values greater than the maximum chronic aquatic life screening values for surface water as follows (Integral 2009):

Total aluminum	87	µg/L
Dissolved arsenic	150	µg/L
Dissolved copper	6	µg/L
Dissolved lead	1	µg/L
Dissolved mercury	0.05	µg/L
Dissolved nickel	34	µg/L
Dissolved selenium	4.6	µg/L
Dissolved zinc	78	µg/L

Data Qualifiers:
J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte.
U = The analyte was not detected above the reported sample quantitation limit.
UJ = The analyte was not detected above the reported sample quantitation limit; however, the reported quantitation limit is approximate.
R = The sample results are rejected.

Table 3-19. Field Measurements and Observations for the PAG Site

Date	Conditions	Time	Depth cm	Volume L	pH	Conductivity ms/cm	Turbidity	DO mg/L	Temp °C	SO_4 mg/L		Comments
11/25/2008	Partly cloudy, chilly but nice	14:30	5.5 [a]	2 [a]	5.90	1.87	12	10.10	5.9	--		Calibration parameters not recorded, meter was hanging rather than sitting, turbidity and conductivity were a oddly high; our first try at this, probably not a reliable entry.
11/26/2008	Light rain, partly cloudy, cold	12:27	5.5 [a]	2 [a]	6.76	0.17	20	13.30	5.8	--		--
12/2/2008	Mostly sunny, cold	14:25	9	1.75	6.47	--	--	--	--	--		Thin, 1-2 cm layer of ice on surface
12/9/2008	Rain, hail, overcast	13:23	9	1.75	6.32	--	--	--	--	--		--
12/16/2008	Cold, snowing	3:00	9	1.75	6.38	--	--	--	--	--		--
12/27/2008	Cold, snowing	13:30	--	--	--	--	--	--	--	--		Frozen
1/8/2009	Cold, deep snow	--	--	--	--	--	--	--	--	--	FA	Could not reach pond, snow too deep
1/15/2009	Cold, deep snow	--	--	--	--	--	--	--	--	--	FA	Could not reach pond, snow too deep
1/18/2009	Cold, deep snow	--	--	--	--	--	--	--	--	--	FA	Pond frozen solid
1/21/2009	Cold, deep snow	--	--	--	--	--	--	--	--	--	FA	Pond still frozen solid, too difficult to access for sample
2/2/2009	Cold, cloudy	14:45	9 [a]	1.75 [a]	7.32	--	--	--	--	--	KC	Did not do the whole parameters, was still frozen, had to break ice. Probably not a good representative.
2/9/2009	--	--	--	--	--	--	--	--	--	--	KC	Pond frozen solid
2/14/2009	--	--	--	--	--	--	--	--	--	--	KC	Pond frozen solid
2/21/2009	Snowing (on/off)	12:50	--	--	--	--	--	--	--	--	FA	Pond frozen solid
2/28/2009	Snowing lightly (on/off)	14:25	--	--	--	--	--	--	--	--	FA	Pond frozen solid
3/7/2009	Clear, cold	14:08	9 [a]	1.75 [a]	6.08	0.086	10 [b]	13.38	0.6	--	FA	Clear and cold - icy surface sample, may not be a perfect representation. Instrument - TURB was flashing - may be incorrect reading.
3/16/2009	--	--	--	--	--	--	--	--	--	--	KC	Frozen
3/23/2009	--	--	--	--	--	--	--	--	--	--	KC	Frozen
3/29/2009	Snowing on/off	14:45	--	--	--	--	--	--	--	--	FA	Frozen and too low to sample (just drained), lots of snow around.
4/4/2009	Rain and wind	14:55	9 [a]	1.75 [a]	6.6	0.1	2 [b]	12.1	2	--	FA	Rainy windy day
4/11/2009	Mostly clear, light rain	15:15	9 [a]	1.75 [a]	6	0.09	0 [b]	13.6	2	110	FA	Large Ice chunks still melting. Light rain on/off all day. Regular SO4 testing initiated.
4/18/2009	Rain on/off	11:30	9 [a]	1.75 [a]	5.8	0.17	1 [b]	13.8	4	115	FA	Light rain on/off all day, pond still 50% covered with ice.
4/25/2009	--	--	--	--	--	--	--	--	--	--		Horiba Instrument off-site for repairs
5/2/2009	--	--	--	--	--	--	--	--	--	--		Horiba Instrument off-site for repairs
5/9/2009	Partly coudly	12:21	9 [a]	1.75 [a]	8.46	0.203	-10 [b]	7.3	11	--	KC	Partly cloudy, mild
5/14/2009	Clear	--	--	--	--	--	--	--	--	--	KC	As per Andrew, Fadams & Bhogarty did not collect sample. Full suite sample will be sent 05.21.09.
5/16/2009	Rain and wind	14:30	9 [a]	1.75 [a]	7.66	0.371	1	10.1	8.1	150	FA	Steady rain and wind. PAG pond about half full.
5/21/2009	Overcast	7:00	9 [a]	1.75 [a]	--	--	--	--	--	--	FA	--
5/23/2009	Sunny, breezy	13:00	9 [a]	1.75 [a]	8.03	0.575	-10 [b]	7.98	15.6	180	FA	Sunny, warm day. PAG level low (2-3 ft.). Inflow to Pond is minimal, just a trickle. No ppt for last few days.
5/31/2009	Sunny, breezy	10:50	9 [a]	1.75 [a]	7.42	0.614	-10 [b]	7.96	13.1	185	FA	Sunny, warm day. PAG level low (1 ft.). Inflow to Pond is light. PAG was pumped 2 days earlier and no ppt for last 2 days.
6/9/2009	Clear sunny	17:45	9 [a]	1.75 [a]	8.83	0.695	1	8.02	23.5	100	KC	Clear, sunny
6/14/2009	Partly cloudy, warm	9:15	9 [a]	1.75 [a]	8.97	0.694	2	9.91	20.7	125	KC	Partly cloudy, warm
6/19/2009	Partly cloudy, little precip	9:45	9 [a]	1.75 [a]	8.8	0.504	2	8.7	13.5	150	KC	Cloudy, light rain 52 degrees
6/28/2009	Rain and wind	14:00	9 [a]	1.75 [a]	7.57	0.627	-10 [b]	7.46	8.7	190	FA	Rain and wind
7/5/2009	Clear and warm	10:15	9 [a]	1.75 [a]	8.66	0.811	-10 [b]	7.7	21.8	195	FA	Clear, warm and dry for several days
7/11/2009	Clear and warm	12:35	9 [a]	1.75 [a]	9.22	0.855	37	8.83	22.9	160	FA	Clear, warm and dry for several days
7/21/2009	--		--	--	--	--	--	--	--	--		Waiting for Barry Hogarty

Table 3-19. Field Measurements and Observations for the PAG Site

Date	Conditions	Time	Depth cm	Volume L	pH	Conductivity ms/cm	Turbidity	DO mg/L	Temp °C	SO_4 mg/L		Comments
7/25/2009	Partly sunny no rain	9:00	--	--	8.25	79.6	2.8	12.21	14.87	200	KC	With Barry's Horiba
8/2/2009	Sunny warm	17:20	--	--	8.99	0.914	8	9.93	28.2	200	KC	PAG really low; no precip for days
8/13/2009	Sunny warm	11:10	9 [a]	1.75 [a]	7.79	0.769	-10 [b]	7.95	16.1	200	FA	--
8/20/2009	Wind and rain	18:20	9 [a]	1.75 [a]	7.35	0.196	126	13.15	10.3	200.0	FA	Wind and rain
8/31/2009	Light winds, partly cloudy, warm	9:15	--	--	7.79	0.598	1	6.79	13.6	200+ (SF1)	BH	Light winds, partly cloudy-warm. Used U10 readings (Niblack's meter).
9/8/2009	Raining and cloudy	17:30	--	--	7.65	0.495	--	7.21	11.28	125	KC	Used U10 Horiba and SF1 for SO_4
10/1/2009	Light rain on/off	14:40	--	--	7.6	0.270	114	4.85 [b]	10.7	80	FA	DO readings likely incorrect due to error message during calibration
10/7/2009	Clear and cool	16:01	--	--	8.03	0.339	-10 [b]	7.08	10.8	95	FA/KC	Changed out DO sensor, reading correctly now.
10/14/2009	Partly cloudy, mild	16:10	--	--	8.72	0.342	2	13.24	5.1	100	KC	Thin layer of ice on pond
10/31/2009	--	8:45	--	--	6.2	0.266	7.2	9.67	7.44	--	BH	--
11/08/2009	Clear and cool	14:25	--	--	7.03	0.277	18	8.57	7.2	75	FA	--
11/27/2009	Overcast/calm	15:00	--	--	6.67	0.227	4	8.33	6.3	65	FA/MS	--
12/04/2009	Clear and COLD	15:45	--	--	--	--	--	--	--	--	FA	PAG pond frozen
12/11/2009	Clear and COLD	13:50	--	--	6.8	0.304	-10 [b]	11.33	2.3	90	FA	PAG pond frozen, but managed to get a sample
12/19/2009	Clear and COLD	10:20	--	--	6.31	0.29	6	10.16	1.3	125	BH	PAG pond frozen, but managed to get a sample
12/29/2009	--	12:40	--	--	7.36	0.302	7	10.11	3.41	80	BH	--

Notes:
-- = data not available
DO = dissolved oxygen
PAG = potentially acid-generating

[a] Indicates approximated value
[b] Indicates instrument reading may be incorrect

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June 1, 2010 Project No. C384

Mr. Jack DiMarchi
Mining Coordinator
Alaska Department of Natural Resources
Office of Project Management and Permitting
3700 Airport Way
Fairbanks, AK 99709-4699

Subject: Niblack Exploration Project
Final 2009 Annual Report

Dear Mr. DiMarchi:

On behalf of Niblack Project LLC, this letter transmits the final version of the 2009 Annual Report for the Niblack Underground Exploration Project. This final version addresses comments received on the Draft 2009 Annual Report, which was submitted to ADEC on April 1, 2010. The Annual Report was prepared in accordance with the requirements of Waste Management Permit 2006-DB0037, Reclamation Plan Approval J072711, and the Water Quality Baseline and Site Monitoring Plan. The Annual Report addresses the following major reporting elements:

- Summary of Activities at the Project in 2009
- Water Quality Reporting
- Stormwater Pollution Prevention Plan Reporting
- Adequacy of Financial Responsibility.

If you have any questions regarding this submittal, please contact Lena Brommeland or me.

Sincerely,

Michael V. Ruby
Principal

Enclosure

cc: Lena Brommeland, Niblack Project LLC